Preview: IBM z/OS V2.5

Table of contents

At a glance

Adaptive business and operating models, driven by accelerated disruptions, are shaping the future of enterprises today. Enterprises are embracing the next normal with an accelerated and strategic focus on application modernization, cloud-native processes, and artificial intelligence (AI), all in an effort to ensure timely and resilient business use cases and enhanced business applications for a continuous and positive user experience.

The IBM(R) hybrid cloud approach is at the core of the plan to provide a solution for this swift and massive transformation. It provides a consistent, standards-based approach to development, security, and operations. In a hybrid cloud architecture, IBM Z(R) provides the privacy and security clients need with the common cloud experience they want to:

- Create better experiences for end users through application modernization
- Fuel business growth with a standard cloud-native approach
- Innovate with integrity with cyber solutions to address evolving threats and new regulations
- Build competitive advantage with a cyber resilient infrastructure that predicts, responds, and recovers

By leveraging the strengths of the IBM Z platform's computing power and resources, IBM z/OS(R) plays an important role in providing a secure, scalable environment for the underlying transformation process on which organizations are embarking to deliver swift innovation.

IBM z/OS V2.5 is designed to enable and drive innovative development to support new hybrid cloud and AI business applications. This is accomplished by enabling next-generation systems operators and developers to have easy access and a simplified experience with IBM z/OS, all while relying on the most optimal usage of computing power and resources of IBM Z servers for scale, security, and business continuity.

Overview

z/OS Version 2 Release 5 (V2.5) is planned to deliver the following features and capabilities to help organizations succeed in their modernization efforts:

Scale and simultaneous deployment to support agile business use cases for hybrid cloud and AI capabilities.

- Continue to drive performance and ease of use for z/OS Container Extensions (zCX). Initially released as part of z/OS V2.4, zCX provides IT Solutions architects with colocation agility and access to z/OS qualities of service for Linux(R) applications by integrating Linux applications and utilities into z/OS.

- Continue to deliver additional capabilities to IBM z/OS Cloud storage through DFSMS Transparent Cloud Tiering (TCT) and the Object Access Method (OAM) cloud tier support. TCT and separately OAM would enable z/OS to utilize hybrid cloud as an additional storage tier for both structured and unstructured data. z/OS usage of Cloud storage would be designed to reduce capital and operating expenses with data transfer to hybrid cloud storage environments for simplified data archiving and data protection on IBM Z.
- Continue the exploitation of IBM Integrated Accelerator for Z Sort. This hardware accelerated approach to sorting using a new CPU coprocessor on the IBM z15™ is intended to reduce CPU usage and improve elapsed time for eligible in-memory sort workloads.

Easier installation, management, and use of z/OS by administrators and developers with no special skills required for increased agility. z/OS V2.5 is planned to:

- Deliver the ServerPac for z/OS V2.5 as a portable software instance. This delivery format is intended to enable an efficient and accelerated installation path using a common, simple, and guided process within z/OS Management Facility (z/OSMF) without requiring extensive z/OS systems skills. z/OS V2.5 joins the list of the IBM z/OS subsystems and program products that are already available as portable software instances.
- Deliver a new z/OSMF task in z/OSMF Software Management called Software Update. The graphical user interface in Software Update is intended to provide a simplified and guided process to install any SMP/E-packaged PTF, regardless of software vendor. With use cases for installing corrective, recommended, and functional updates to a client's system, Software Update with z/OSMF is intended to achieve the same results as the traditional method, while requiring less time and experience to perform.
- Deliver new capabilities and additional enhancements to drive the effort of automating traditional tasks and simplifying areas of system management to help reduce the level of expertise needed for managing a system. IBM z/OSMF intends to provide a framework for managing various aspects of a z/OS system through a task-oriented web browser interface. Most notable are:
  - The z/OSMF browser-based desktop provides a basic facility for organizing and managing information about z/OS. Improvements are planned for searching, browsing, and editing files and data sets as well as managing frequently referenced files or data sets into folders. Simple manipulation of jobs and spool files is planned along with the capability to control access to functions from the browser.
  - The z/OSMF Security Configuration Assistant is planned to be extended to enable use by any third party or client who needs to provide security configuration help. This is intended to ease the complex task of introducing new capability securely on z/OS.
- Deliver many new functions and an enhanced user experience with IBM Cloud® Provisioning and Management for z/OS in order to offer a robust software provisioning platform on z/OS. Enhancements are intended to simplify resource management and security, help administrators efficiently manage templates and instances, and support expanded resource pools.
- Continue to reduce the requirement for assembler skills by extending the JES2 policy-based customization facility that was introduced in z/OS V2.4. New phases of processing and new attributes to be referenced and modified are planned with this support. This facility is intended to reduce the need for clients to code installation exits in JES2, which should reduce the effort to apply service or upgrade to a new release.
- Enhance the z/OS Workload Interaction Correlator, a priced feature that is intended to provide infrastructure to z/OS and middleware exploiters for generating additional data in a synchronized, standardized, context-rich way with a focus on low CPU cost.

Cyber security, systems integrity, heightened application availability, and automated detection and mitigation procedures to protect against the impacts of cyber attacks and help maintain exceptionally resilient environments. z/OS V2.5 is planned to:

- Deliver an Anomaly Mitigation solution leveraging Predictive Failure Analysis (PFA) that is intended to further enable clients to detect anomalous behavior in near real-time, so they can proactively address potential problems before an availability-impacting event can develop.
- Update RACF(R) PassTicket capabilities to support a stronger cryptographic algorithm with additional controls for a configurable validity period and an optionally expanded character set. The new enhancements also are intended to offer additional customer support, with plans to include improved error diagnostics and additional information logged in SMF.
- Deliver enhanced System Recovery Boost for IBM z15 servers. These capabilities are intended to enable clients to leverage a class of boost that can be applied to a range of z/OS sysplex recovery processes, including sysplex partitioning, Coupling Facility (CF) structure recovery, CF data sharing member recovery, and IBM HyperSwap(R).
- Deliver additional support for SYSMDUMP and TDUMP for IBM Z Data Privacy for Diagnostics. Data Privacy for Diagnostics is a z/OS security function that is available on IBM z15 to help clients maintain control when working with third-party vendors by redacting data tagged as sensitive and creating a protected diagnostic dump that can be shared externally. z/OS Diagnostics Analyzer, a new enhancement for Data Privacy for Diagnostics, is generally available and is planned to enhance sensitive data tagging and redaction in system dumps by enabling clients to customize sensitive data patterns that are unique to their organization. Data Privacy for Diagnostics is planned to help clients improve their capability to address compliance challenges in the area of diagnostic data without compromising on serviceability.
- Deliver Pervasive Encryption simplification. Most notable is the planned support for additional z/OS data set types, including sequential basic format and large format System Managed Storage (SMS)-managed data sets. In most instances, it is planned that clients will be able to encrypt data without application changes and simplify the task of compliance. Applications using Execute Channel Program (EXCP) are planned to be supported with an access method encryption macro designed to allow programmers to change EXCP programs to read and write data sets that are compatible with encryption by BSAM and QSAM. Encryption of basic and large format data sets, whether by an access method or EXCP, is designed to enable the installation to specify data sets to be encrypted through a policy such as SAF or SMS or manually. The data is intended to remain encrypted during administrative functions such as backup and restore, migration and recall, and replication.
- Support an optional priced feature called z/OS Authorized Code Scanner, which is intended to dynamically scan the client's authorized code and provide diagnostic information for subsequent investigation to help support clients in their effort to strengthen the security posture of the z/OS dev/test pipeline.

In addition to new functions that are developed and delivered in z/OS, it is important for IBM to continue to invest in z/OS Foundation enhancements to support the performance and optimization of new hardware as well as deliver and support new data management, scalability, and growth, and integration of industry standards and open functionality.

Statements by IBM regarding its plans, directions, and intent are subject to change or withdrawal without notice at the sole discretion of IBM. Information regarding potential future products is intended to outline general product direction and 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 any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for IBM products remain at the sole discretion of IBM.

Key requirements

z/OS V2.5 operates on the following IBM Z servers:

- IBM z15 Models T01 and T02
- IBM z14(R) Models M01-M05
- IBM z14 Model ZR1
- IBM z13(R)
- IBM z13s(R)

If you run z/OS V2.5 on IBM z/VM(R), the z/VM release must be z/VM V7.1, or later.

For a complete description of z/OS V2.5 hardware requirements, see *z/OS V2.5 Planning for Installation* (GA32-0890), when available, in IBM Knowledge Center.

Planned availability date

September 2021

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

Capabilities planned for IBM z/OS V2.5 include the following. Many of these items are also available in prior releases with continuous delivery (CD) and are noted as such.

Scalability and performance

Clients have come to expect a high degree of scalability from z/OS, whether running a small LPAR for testing or a massive 32-system sysplex. Maintaining and enhancing the scalability and performance of z/OS is one of the key areas of z/OS value. While this includes relieving constraints caused by growth of workloads, it also includes exploiting new hardware capabilities such as Z Sort acceleration.

IBM Integrated Accelerator for Z Sort

The z15 provides a hardware accelerated approach to sorting using a new CPU coprocessor that can be exploited by software using the new **SORTL** instruction. By providing one sort accelerator per core, frequently used functions can be accelerated to help speed up sorting, shorten batch windows, and improve select database functions such as reorganization. Integrated Accelerator for Z Sort, which is standard on the z15, is designed and planned to cut CPU costs and improve the elapsed time for eligible in-memory sort workloads, which typically occur during client batch windows. **DFSORT** and Db2(R) for z/OS Utilities Suite exploit the **SORTL** instruction. Integrated Accelerator for Z Sort is available for the following:

- V2.3 with DFSORT PTFs UI90067 and UI71976
- V2.4 with DFSORT PTFs UI90068 and UI71978
- Db2 12 for z/OS with PTF UI71668

IBM Z Batch Network Analyzer (zBNA) is planned to provide support for Integrated Accelerator for Z Sort in z/OS V2.5, with the application DFSORT Z Sort, which is intended to uniquely identify **DFSORT** -eligible candidates and estimate z15 benefits using data from the current environment without requiring a z15. The new information is planned to be integrated with the traditional batch information already available in zBNA. This no-charge tool is available for download from the IBM Techdocs Library web page.

High Performance FICON(R) for IBM Z (zHPF) volume table of contents (VTOC) I/O performance

zHPF I/O technology has been used for many years to improve the performance of data set I/O for sequential, partitioned, and VSAM data sets. Enhancements in DFSMS are planned to extend the use of zHPF to VTOC I/O performed by common VTOC access facility (CVAF) and Fast VTOC/VVDS (FVV) services and are designed to provide significant reduction of connect time for applications that sequentially read the entire VTOC. In addition, updates to the VTOC are intended to use zHPF. With the PTFs for APAR OA58111, this enhancement is also available on z/OS V2.3 and later.

zHyperLink write statistics

IBM zHyperLink is a short-distance, mainframe-attached link that provides up to 10 times lower latency than high-performance Fibre Connection (FICON). Low I/O latencies deliver value through improved workload-elapsed times and faster transactional response times and contribute to lower scaling costs. Enhancements in DFSMS are planned to provide a command to enable users to display zHyperLink write statistics for a data set and optionally clear them. In addition, new SMF fields are planned to be created in the SMF type 42 subtype 6 record to show more information related to zHyperLink write failures. With the PTFs for APAR OA57718, this enhancement is also available on z/OS V2.2 and later.

Data set open limit relief

z/OS V2.5 is planned to deliver enhancements that reduce the below-the-bar private-area memory requirements for each open data set, especially for Media Manager and Db2 open data sets. This is intended to provide constraint relief for the number of data sets that can be concurrently opened within a given address space. This can be an important consideration in environments such as a Db2 address space that is using Db2 single-tablespace data sets. Additionally, Db2 enhancements provided by the PTF for APAR PH09189 complement this z/OS constraint relief by providing improved support to better manage Db2 open data sets against the DSMAX limit for a Db2 address space.

Faster mount of zFS file systems

An improvement to overall IPL time is planned in the area of zFS file systems. Depending on how zFS file systems are copied or dumped, the system has historically waited (65 seconds) to maintain integrity if used outside of the sysplex. With this enhancement, which needs to be installed on both the copying and the restoring system, the need for the wait time is intended to be avoided. With the PTFs for APAR OA59145, this enhancement is also available on z/OS V2.3 and later.

zCX

z/OS Container Extensions provides the capability to run Linux on IBM Z software directly in z/OS. This capability enables Linux on Z application code to run on z/OS unmodified. Software available includes open source, client-written, IBM product, and third-party-vendor software. A project at the Open Mainframe Project™ called Ambitus is available to assist in creating a community around Linux on Z software.

Some of the IBM product use cases include products such as Application Connect Enterprise V11, Service Management Unite, and MQ Client Concentrator.

Improvements are planned to be made in the following areas:

- Performance updates:
  - Updates are planned to support single instruction multiple data (SIMD) processes. Some applications are compiled with SIMD instructions and require SIMD enablement. zCX is intended to support hardware SIMD. Applications that take advantage of SIMD are intended to deliver improved performance.
  - zCX to is planned to support 1 MB and 2 GB large pages. This is intended to improve the efficiency of zCX workloads.
  - The maximum number of containers supported is planned to be raised to 1000 per zCX server. The practical limit might be lower depending on available resources.

- The amount of each zCX guest's memory is planned to be configurable up to 1 TB. Given zCX use of fixed memory and z/OS memory layout, the practical limit is lower.

With the PTFs for APAR OA59865, APAR OA59111, and APAR OA59943, these performance enhancements are also available on z/OS V2.4.

- Inbound Workload Queueing (IWQ) support for IBM z/OS Container Extensions:

  In support of zCX, z/OS Communication Server's OSA-Express(R) Inbound Workload Queueing (IWQ) support is planned to be enhanced to add a new input queue for zCX network traffic. The OSA-Express IWQ separation of the zCX traffic from native z/OS traffic is planned to provide an optimal Communications Server processing environment for zCX traffic. When IWQ is enabled, the z/OS TCP/IP inbound processing for zCX traffic is intended to become zIIP eligible. OSA-Express is planned to direct zCX traffic for protocols TCP and User Datagram Protocol (UDP) to the zCX input queue. The z/OS IWQ zCX solution is planned to be made available on OSA-Express6S and beyond. With the PTFs for APARs PH16581 and OA58300, these enhancements are also available on z/OS V2.4.

- Planned capabilities for monitoring and alerting include:
  - Planned support to monitor and log zCX resource usage of the root disk, guest memory, swap disk, and data disks in the server's job log. An enhanced operator command option to display the version and service information about any zCX server and all the relevant components used to provision and run it is planned. This is intended to reduce the effort and improve the accuracy of service communications. The zCX instance root disk is planned to be able to be enlarged when using the software upgrade workflow of the zCX appliance. With the PTFs for APAR OA59835 and APAR OA60303, this enhancement is also available on z/OS V2.4.
  - zCX resource shortage z/OS alerts are proactive alerts that are planned to be sent to the z/OS system log (SYSLOG) or operations log (OPERLOG) to improve monitoring and automated operations. The server is intended to monitor used memory, root disk space, user data disk space, and swap space in the zCX instance periodically and issue messages to the zCX joblog and operator console when the usage rises to 50%, 70%, and 85% utilization. When returning below 50%, an information message would be issued. With the PTF for APAR OA60303, this enhancement is also available on z/OS V2.4.
  - Increased disk capacity is intended to be provided. The number of data and swap disks per appliance is planned to be increased to as many as 245. This is intended to enable a single zCX to address more data at one time. With the PTF for APAR OA60303, this enhancement is also available on z/OS V2.4.
  - A 90-day trial for zCX is planned to be available.[1] It is intended for clients to try zCX for up to 90 days without having to purchase the FC 0104 hardware feature. When the 90-day trial period has ended, zCX instances are planned to no longer function unless FC 0104 has been installed. It is intended that clients will have a full zCX user experience for the 90 days once the zCX trial is enabled. With the PTF for APAR OA58969, this enhancement is also available on z/OS V2.4.

    [1] The 90-day trial is no-charge, subject to normal hardware and software consumption when adding a workload to z/OS.

  - zCX is planned to support IPv6. This is intended to enable a zCX server to fully participate in an IPv6 network on z/OS systems and networks that are IPv6-enabled. IPv6 enablement can be an important prerequisite in some client configurations. With the PTF for APAR OA59508, this enhancement is also available on z/OS V2.4.
  - The IBM License Metric Tool (ILMT) is planned to be enhanced to support the zCX environment. Utilization of ILMT is required for sub-capacity pricing for licensing of IBM Linux on Z software programs procured through Passport Advantage(R).

    Additional information about ILMT enablement in zCX, including the required PTFs, can be found in IBM Knowledge Center.

Systems management and usability and skills

Efficient management and maintenance of z/OS has always been a focus. Whether in the form of improved backup and recovery or exploitation of object-based storage, z/OS has many features to help. Looking to the future, IBM intends to move to a browser-based management model. To that end, many functions are planned to be delivered in z/OS as part of the z/OS Management Facility (z/OSMF). The new functions aim to simplify and improve the processes to help manage z/OS. Historically, much of z/OS relied on assembler-written exits, in some cases for actions that are purely administrative. Reducing requirements for assembler skills continues to be a focus area.

IBM Job Entry Subsystem 2 (**JES2) policy enhancements**

Reducing the requirement for assembler skills to manage the system is a goal for JES2. In z/OS V2.4, JES2 introduced the initial code for using simple rule-based definitions (JES2 policies) at the end of the job conversion phase. With the PTF for APAR OA58190, JES2 added multisystem support for JES2 policy-based exits. For z/OS V2.5, JES2 is planned to add additional points in processing in which similar rule-based definitions can be exploited, as well as to increase the number of attributes that can be referenced and modified by the policies. The specific goal is to reduce the need to code assembler JES2 installation exits to implement company-specific customizations. Fewer assembler modifications would mean less need to rework code, which can make applying service simpler and speed up the release upgrade process.

DFSMShsm recover UNIX(R) files to a new directory

DFSMShsm is planned to add the capability to recover UNIX files to a directory other than the original directory from the time of the backup. This function is intended to enable users to recover files to a temporary location to verify that the recovered version is the desired level of the file. It also is intended to enable files to be recovered to a different directory and accessed directly from the new location. With the PTF for APAR OA58612, this enhancement is also available on z/OS V2.3 and later.

DFSMShsm UNIX file-level backup and recovery with EXCLUDE criteria

DFSMShsm UNIX file-level backup is planned to be enhanced to support an **EXCLUDE** keyword on backup and recovery commands. This keyword intends to accept a comma-separated list of either filename patterns or directory names that should be excluded from processing. With the PTF for APAR OA57868, this enhancement is also available on z/OS V2.3 and later.

DFSMShsm file mode hosts

A FILEMODE for DFSMShsm is planned to enable a separate HSMplex to exclusively process UNIX files within a sysplex that has an existing DFSMShsm HSMplex. Any DFSMShsm requests for UNIX files are planned to be automatically directed to the DFSMShsm hosts configured with FILEMODE. This support is intended to enable clients with very large existing DFSMShsm environments to add DFSMShsm UNIX data set backup processing without impacting their classic volume and data set environment. With the PTF for APAR OA58870, this enhancement is also available on z/OS V2.3 and later.

OAM support for Db2 stored procedures

Db2 stored procedures are planned to enable clients to develop modular programs through which a set of common code can be invoked in a Db2 environment across applications. DFSMSdfp OAM provided a sample, CBROSRSP, available in SYS1.SAMPLIB, that illustrates how a user application can invoke the OAM OSREQ API in a Db2 stored procedure environment, and also how to manage multiple Db2 connections within a single stored procedure This is intended to provide flexibility for manipulating data between different databases without having to create multiple

programs. With the PTF for APAR OA57837, this enhancement is also available on z/OS V2.2 and later.

Enhanced support for Network File Systems (NFS)

The z/OS NFS Server is planned to be enhanced with a customizable Microsoft™ Windows™-specific attribute, known as *Windows prefix*, to help identify connections from a Windows 10 NFS client. This is intended to enable the z/OS NFS Server to tailor responses for a better experience when accessing z/OS UNIX directories. This support is designed to help clients migrate to the z/OS NFS Server because the Server Message Block (SMB) server is no longer available in z/OS V2.4. With the PTF for APAR OA57493, this enhancement is also available on z/OS V2.2 and later.

Tape device fencing using SMStape and Storage Management Subsystem (SMS) policies

In z/OS V1.11, support was provided for Demand Allocation with System-Managed Tape. Prior to that, SMStape would always ignore what was specified on the **UNIT** parameter and would instead allocate using the assigned SMS constructs. There was not an easy way to limit the devices that SMStape considered eligible or to select a particular device. To address that, a keyword (**SMSHONOR**) was added to the **UNIT** parameter on the DD statement. z/OS allocation would then honor what was specified as long as there was an intersection between what SMStape considered eligible and what was specified on the **UNIT** parameter. With RFE 127904, clients also wanted the capability to select what devices could be used through SMS constructs (policies). Now, **SMSHONOR** is planned to be enabled through the SMS tape storage group construct. This is intended to broaden the original **SMSHONOR** support and make it easier for clients (through SMS policies) to reserve a set of devices for critical applications by limiting the devices used by their less critical applications. If the JES3 subsystem is active, specification of **SMSHONOR** through the tape storage group construct is planned to be ignored. With the PTF for APAR OA59161, this enhancement is also available on z/OS V2.3 and later.

OAM cloud and additional backup enhancements

With the PTF for APAR OA55700 for z/OS V2.3 and later, OAM added a cloud tier to its existing storage hierarchy. With OAM cloud tier support, the primary copy of an OAM object can be managed and stored as an object to a public, private, or hybrid cloud infrastructure that supports the S3 API. However, OAM-managed backup copies continued to be supported as they are today to removable media, typically virtual or physical tape. With this planned enhancement, an OAM-managed backup copy of a primary object is planned to be additionally supported in the cloud, a zFS, or NFS. OAM is planned to continue to support up to two backup copies of an OAM object. This support, initially provided with the PTF for APAR OA55700, satisfies the statement of direction made in Software Announcement AP18-0453, dated November 13, 2018.

Upgrade Workflow

IBM is making continual enhancements with assistance in z/OS upgrades. For z/OS V2.5, z/OS Upgrade Workflow is planned to provide the steps for upgrading to this new release of z/OS. As in previous releases, two z/OSMF workflows are planned to be provided. Depending on whether clients are upgrading from z/OS V2.4 or z/OS V2.3, select the workflow that applies to your upgrade path and open it in z/OSMF to begin the upgrade process. Within the workflow, discovery functions are planned to run automatically to further streamline the upgrade process. Only the upgrade actions that apply to your particular system are planned to be identified in the z/OSMF UI.

Starting in z/OS V2.5, IBM plans to ship z/OS V2.5 Upgrade Workflow and z/OS z15 Upgrade Workflow as part of the z/OS product deliverable and include IBM service and support. Any updates and fixes for the Upgrade Workflows are planned to be delivered through the standard z/OS service process. By including these two Upgrade Workflows into the z/OS product and with the PTFs for APAR OA60711 supporting z/OS V2.4 and V2.3, IBM intends to make the acquisition of these

important technical upgrade materials faster and more convenient than supplying them in a different location.

Prior levels of the z/OS Upgrade Workflows for z/OS V2.2, V2.3, V2.4, and z14 are planned to be available on the IBM z/OS z14 Workflow web page. z/OS z15 Upgrade Workflow is planned to be provided and maintained in the z/OS APAR OA60711 information and on the IBM z/OS z15 Workflow web page.

z/OS Software Update enhancement

Because performing updates to z/OS software can be a complicated and time-consuming task, a z/OSMF task is planned to be made available in z/OSMF Software Management called Software Update for z/OS V2.5. SMP/E HOLDDATA contained in updates can be difficult to manage, but the Software Update is intended to enable clients to review and track this information in an orderly fashion. All installation output is planned to be saved so it can be reviewed at any time.

The Software Update task is planned to be used to install updates associated with three different use cases:

- Corrective. Install individual software updates to fix a problem. Clients can identify the updates to be installed by name.
- Recommended. Install all software updates that are recommended by a software vendor. The IBM recommendations are those designated as IBM Recommended Service Upgrade (RSU) fixes.
- Functional. Install software updates to support new hardware, software, or functions. Software Update identifies the fix categories associated with available updates, and clients can then select fix categories to install all updates associated with those categories.

Clients can continue to use their existing methods to install SMP/E-packaged software updates, such as with batch jobs, but they might find a simpler experience requiring lesser SMP/E skills by using z/OSMF Software Update instead.

To learn more about z/OSMF Software Update, including helpful instructions about how to get started, see the Software Update with z/OSMF web page.

With the PTF for APAR PH28412, this enhancement is also available on z/OS V2.3 and later, and satisfied the statement of direction made in Software Announcement AP20-0097, dated March 17, 2020.

IBM Cloud Provisioning and Management

Cloud Provisioning and Management for z/OS is intended to deliver many new functions and an improved user experience with z/OS V2.5. The following features are planned to be included to expand Cloud Provisioning and Management capabilities and offer a robust software provisioning platform on z/OS V2.5:

- Domain Shared Resource Pool:

  The concept of a shared resource pool is planned to be expanded to include sharing resources across an entire domain. Currently, clients are limited to sharing a resource pool within a single tenant. This support is intended to enable clients to simplify resource management in a cloud provisioning environment by enabling multiple tenants within a domain to share a resource pool. Administrators can create a domain shared resource pool once and then enable resources from the pool to be shared across multiple tenants. In contrast, if an organization's z/OS environment requires resource isolation across tenants and templates, it is recommended that a tenant-specific shared resource pool or a dedicated resource pool be defined.

  No changes are planned to be required in the middleware provisioning template to use this function because cloud provisioning orchestration is planned to dynamically detect that the template is associated with a domain shared resource pool and subsequently route REST APIs to obtain resources from that pool.

With the PTFs for APAR PH29813, this enhancement is available on z/OS V2.3 and later.

- Security simplification:

  The default domain is planned to support manual security mode for creating templates and tenants. This option is intended for provisioning environments that do not use an automatic security mode. Currently, clients are required to create a new domain if their environment does not support an automatic security mode. When the default domain is created at z/OSMF startup time, it will be placed in manual security mode if the **CLOUD_SEC_ADMIN** parameter is not specified in IZUPRMxx parmlib member.

  Cloud Provisioning and Management security definition sample IZUPRSEC is planned to be enhanced to configure a user ID that is not RACF SPECIAL for a cloud security administrator role. System programmers can specify a user ID that is not RACF SPECIAL for the **CLOUD_SEC_ADMIN** parameter.

  With the PTFs for APAR PH29813, this enhancement is also available on z/OS V2.3 and later.

- Template and instance management:

  Numerous enhancements are planned to be provided to help administrators efficiently manage templates and instances, including:

- When a template is created, it is intended that the domain administrator will be able to identify that instances can be automatically deleted after they are deprovisioned. With this enhancement, it is planned that the domain administrators will no longer be required to manually delete deprovisioned instances and will thus reduce instance management overhead.
- When creating a template, it is planned that the domain administrator will be able to select an option to automatically archive provisioning workflows after the template is provisioned successfully. This is intended to help the domain administrator to automatically manage the number of active workflows, which are limited to 200.
- Domain administrators are intended to be able to:
  - Modify the published template and change the description of the template and other properties, such as workflow and instance disposition.
  - Set a maximum time limit for a provisioned software instance, such as 7 days, 30 days, or unlimited. When consumers provision the template, it is intended that they can select the time duration for their provisioned instance. When a provisioned instance exceeds its time limit, it is planned to be marked as expired, and the consumer who provisioned the instance and domain administrators are notified. Consumers can then deprovision the instance. It is intended that this enhancement will help the domain administrator to clean up stale, expired instances in a timely manner and keep the provisioning environment in good health.

  With the PTFs for APAR PH29813, this enhancement is also available on z/OS V2.3 and later.

- Resource management enhancements:

  The following enhancements are planned to be provided in the Cloud Provisioning resource management function:

- Enhancements to support modification to the software service instance name prefix. If the naming convention for the provisioned instance is not properly established when resource pools are defined, it is intended that the domain administrator will be able to specify a different general name prefix or switch to using the SNA application ID as the prefix.
- Externalization of APIs so they can be programmatically invoked.

With the PTFs for APAR PH29813, this enhancement is also available on z/OS V2.3 and later.

- Support for multiple sysplexes:

  This enhancement is planned to improve the scalability and speed of z/OS middleware provisioning. By provisioning instances across multiple sysplexes using a primary z/OSMF system, it is intended that an application programmer can scale the cloud provisioning environment beyond the scope of a single sysplex. Clients will have access to a larger resource pool of z/OS systems. With this configuration, it is planned that system and application programmers no longer have to individually define and provision middleware templates and instances using different z/OSMF access points for each sysplex in their domain.

  It is planned that no changes will be required in the middleware provisioning template to leverage this function. With this support, it is planned that an external cloud management platform, such as Red Hat(R) OpenShift(R), can provision z/OS middleware on any z/OS system in the private cloud infrastructure by communicating with a single z/OSMF instance using Cloud Provisioning and Management REST APIs.

  With the PTFs for APAR PH16513, this enhancement is also available on z/OS V2.3 and later.

- DASD and storage resource pool:

  With this new capability, Cloud Provisioning and Management is planned to expand resource pools of managed resources to include DASD and storage resources. Collaborating with the storage administrator, it is intended that a z/OS system programmer can partition the storage resources for z/OS middleware provisioning with tenant-level isolation and limits. By isolating storage resources of specific teams, it is planned that z/OS system programmers can prevent starvation, such as teams sharing a resource depleting available space and providing policy-based resource allocation.

  z/OS V2.5 plans to enable a storage administrator to create storage resources with dedicated attributes and settings defined using data classes, storage classes, and management classes, such as encryption or performance objectives. It is intended that the z/OS system programmer will be able to define a DASD and storage resource pool for specific teams and templates, enabling greater customization and quality of service tailored to tenant and template needs. Simplified and automated allocation of storage during provisioning through the use of templates in z/OSMF can enable less time to be spent on storage resource orchestration.

  To dynamically obtain data set allocation attributes, the middleware provisioning templates would need to be updated to invoke the resource pool services REST API, which is described in the *IBM z/OS Management Facility Programming Guide* SC27-8420-40).

  With the PTFs for APAR PH16513, this enhancement is also available on z/OS V2.3 and later.

- Support SAF group name for administrator:

  z/OS 2.5 is planned to enable clients to specify SAF groups for various administrator roles when domains are created, modified, or viewed. It is also planned that clients can specify an SAF group for template approvers when a template is created or modified. Currently, it is necessary to specify individual user IDs for these roles. Clients might find that using groups to represent administrators can help to simplify the management of cloud provisioning resources.

  With the PTFs for APAR PH16513, this enhancement is also available on z/OS V2.3 and later.

Workload Manager (WLM) batch initiator enhancements

WLM for z/OS V2.5 is planning to further improve the management of batch workloads. To meet performance goals, it is planned that WLM will no longer consider only available capacity on standard CPs when starting new batch initiators. Batch jobs that primarily execute on IBM z Integrated Information Processors (zIIPs) are planned to cause WLM initiators to be started preferentially on systems with available zIIP capacity. WLM would manage initiators most efficiently when clients use separate service classes for batch jobs that primarily execute on standard CPs and those that primarily execute on zIIPs.

OAM address space Db2 connection management enhancements

IBM intends to enhance Db2 connection management characteristics for OAM object users by enabling OAM to be more tolerant of Db2 connection issues and Db2 maintenance cycles, and intends to improve OAM availability by providing the capability to dynamically switch between object and SMS-tape configurations without the need to reactivate the Source Control Data Set (SCDS) or re-IPL.

Resource Measurement Facility (RMF) and Advanced Data Gatherer (ADG)

In z/OS V2.5, the priced feature, RMF, is planned to continue to provide the same functional capability that clients have come to expect. The function of RMF is planned to be delivered in two parts, the RMF Reporter and the z/OS ADG. The RMF Reporter feature is planned to continue to provide performance reports, which are based on the metrics from the ADG feature, and is designed to be entitled to all clients of the RMF priced feature. The ADG is a new, separately priced feature of z/OS that is planned to provide the function of gathering performance data in raw form. The RMF priced feature would include entitlement to the ADG priced feature. No action is planned to be required of RMF clients due to this change.

RMF and ADG have also been enhanced to:

- Gather information on the performance of hardware using callable services, such as Integrated Cryptographic Service Facility (ICSF) format-preserving encryption, Feistel-based encryption (FFX), and quantum-safe (QSA) digital signatures. With the PTF for APAR OA59330, this enhancement also is available on z/OS V2.3 and later.
- Provide the capability to analyze additional ICSF data with the RMF Postprocessor Crypto hardware report. With the PTF for APAR OA60202, this enhancement also is available on z/OS V2.3 and later.
- Provide the capability to display information about System Recovery Boost when running on suitable hardware. The Boost Class in the Postprocessor CPU Report REPORTS (CPU) is planned to indicate Recovery for the new sysplex recovery process boosts in addition to the already supported IPL, Shutdown, or None values for Boost Class. With the PTFs for APARs OA59852 and OA59321, this enhancement also is available on z/OS V2.3 and later.
- Support the CF monopolization avoidance enhancements of z/OS. With the PTF for APAR OA58726, this enhancement also is available on z/OS V2.3 and later.
- Report about storage class memory (SCM) busy percentage on a z15. RMF adds input/output processor (IOP) utilization SCM busy percentage for all IOPs in the I/O Queuing Activity (IOQ) report. With the PTF for APAR OA58727, this enhancement also is available on z/OS V2.3 and later.

IBM z/OS Workload Interaction Correlator

IBM z/OS Workload Interaction Correlator is a z/OS V2.5 priced feature that is intended to provide infrastructure to z/OS and middleware exploiters to generate synchronized, standardized, and context-rich data with a focus on low CPU cost. This data is intended to enable products like the IBM z/OS Workload Interaction Navigator, announced in Software Announcement AP20-0095, dated February 25, 2020, to dynamically identify, temporally correlate, and visualize exceptional deviations from normal across z/OS and its middleware silos. Together, these technologies are intended to help a subject matter expert implicate or exonerate workload components and their activities and reduce the time and skill required to diagnose the root cause of a z/OS workload performance problem.

z/OS V2.5 Supervisor correlator data generation enhancements for products like the IBM z/OS Workload Interaction Navigator are planned to perform the following functions:

- Identify interdependent activities to easily switch analysis amongst related activities.
- Define key activities whose anomalies or exceptionalism warrant further attention.
- Enable sysplex-wide analysis to dynamically identify, temporally correlate, and visualize disparate client-specific anomalies with exceptionalism, across all sysplex members, across the z/OS stack, on a single pane of glass, with no predefined policy.

With the PTFs for APAR OA57165 and OA60372, this enhancement also is available on z/OS V2.3 and later.

z/OSMF

z/OSMF, as the modernization platform of z/OS management, planned to continue delivering a number of significant new functions with z/OS V2.5. Together, they are intended to enable higher efficiency, lower skill requirements, and more industry-popular interfaces to drive z/OS operations. Following are the z/OSMF enhancements planned for z/OS V2.5:

- z/OSMF desktop UI is intended to provide higher efficiency and modernized operations to work with data sets, z/OS UNIX System Services files, and jobs:
  - Users would be able to submit a data set or UNIX file as JCL from the z/OSMF desktop search window or editor window. A new task named "Job Output" is planned to be introduced so that users can check job status and retrieve job output directly from the z/OSMF desktop UI. With the PTF for APAR PH16076, this enhancement is available on z/OS V2.4.
  - Users would be able to create a new physical sequential or partitioned data set based on an existing data set, a predefined template, or fully specified attributes, directly from z/OSMF desktop UI. With the PTF for APAR PH28692, this enhancement also is available on z/OS V2.3 and later.
  - The search function on z/OSMF desktop is intended to be enhanced to provide type-ahead capability for searching data sets, z/OS UNIX System Services files, and z/OS UNIX System Services directories. With the PTF for APAR PH28692, this enhancement also is available on z/OS V2.3 and later.
  - Every z/OSMF user would be able to create links on their z/OSMF desktop or folder. With the PTF for APAR PH24527, this enhancement also is available on z/OS V2.3 and later.
  - Syntax highlighting is intended to be supported when browsing or editing for JCL, XML, and HTML types in the z/OSMF Desktop Editor. With the PTF for APAR PH24527, this enhancement also is available on z/OS V2.3 and later.
- z/OS Operator Consoles plug-in is intended to provide a modernized interface for console operations support to:
  - Set console properties programmatically or from the z/OSMF UI. The intent is to simplify the configuration previously required for setting up console properties. With the PTF for APAR PH24072, this enhancement also is available on z/OS V2.3 and later.
  - Enable WTOR messages to be displayed in a separate larger window. With the PTF for APAR PH30881, this enhancement also is available on z/OS V2.3 and later.
- Intended enhancements of z/OSMF Workflow is to provide better auditability and workflow management experience:
  - Support for saving job output in a specified z/OS UNIX directory. With the PTF for APAR PH21919, this enhancement also is available on z/OS V2.3 and later.
  - Support for auto-deletion after a workflow is completed. This is intended to help reduce the clutter in the z/OSMF file system from workflows that clients do not want to save. The workflow administrator is planned to be able to delete

multiple workflow instances at a time. With the PTF for APAR PH24190, this enhancement also is available on z/OS V2.3 and later.

  - Perform a workflow on a remote sysplex. A single sign-on among z/OSMF instances is intended to no longer be strictly required. In the absence of a single sign-on, it is planned that the request will prompt for a user and password, if necessary. With the PTF for APAR PH28532, this enhancement also is available on z/OS V2.3 and later.
  - Exploit the "type-ahead" search for the workflow definition and workflow properties files in the "create new workflow instance" dialog. This is intended to eliminate the need to provide the full data set name or path name. With the PTF for APAR PH28532, this enhancement also is available on z/OS V2.3 and later.
  - Search keywords in the content of a workflow step. Keyword search extended to content of a workflow step would help users to quickly locate corresponding steps. With the PTF for APAR PH27725, this enhancement also is available on z/OS V2.3 and later.
- While enhancing the z/OSMF Workflow Engine, the Workflow Editor task is intended to be enhanced to simplify workflow creation.

  With the PTF for APAR PH28532, these enhancements are available on z/OS V2.3 and later:

- A new, planned "Test" action is intended to enable users to open the Workflows task directly from the Workflows Editor. This is intended to provide a way to quickly create and run workflow instances using a client's workflow definition.
- A path selector option is planned to be added to some input fields to assist clients with locating workflow files and templates on their system.

  With the PTF for APAR PH24190, these enhancements are available on z/OS V2.3 and later:

- A raw text option is planned to be added to Workflow Editor. If clients select this option, the Workflow Editor opens the workflow definition in a simple text editor. Consider using the text editor when it is needed to quickly correct a syntax error that prevents the file from opening in the Workflow Editor UI. The flat text editor also is intended to help quickly locate where a specific variable is used.
- An **Expand** option is planned to be added to the **Instructions** tab on the **Step Details** page and the **Template** contents field for template steps. The intended use of this option is to expand the input area to full screen width for a larger text entry area.
- The Edit Workflow Definition dialog is planned to save the location of the files that clients edit. On subsequent uses, you can select the file location from the pull-down menu, rather than having to enter the full path and file name manually, as was previously necessary.
- The aim is to enable users to use the VS code editor, already included in z/OSMF, when working with large amounts of text. The VS code editor is intended to provide a large area to perform editing as well as standard editor support such as find and replace string, line numbers, and the file overview.

- z/OSMF REST APIs are planned to provide more job functions and data set functions and enable users to drive z/OS operations locally or remotely from any platform and language that supports invoking HTTP service.
  - REST Jobs API is intended to support returning execution data, such as the system name and timestamp at which a job was submitted. With the PTF for APAR PH23046, this enhancement also is available on z/OS V2.3 and later.
  - REST data set and file APIs are intended to support an additional option called "Allocate Like" for creating a z/OS data set by copying the attributes from another data set. In many cases, this would avoid the need to exhaustively specify every allocation parameter. With the PTF for APAR PH22030, this enhancement also is available on z/OS V2.3 and later.
  - Reductions in the response time of retrieving content from large data sets or z/OS UNIX files are planned by compressing the HTTP stream. With the PTF for APAR PH22030, this enhancement also is available on z/OS V2.3 and later.

  - A REST data set and file service are planned to support queueing concurrent requests from the same user when the number of Time Sharing Option (TSO) address spaces are exhausted. This can improve the processing when a large number of requests are sent to z/OSMF. With the PTF for APAR PH29745, this enhancement also is available on z/OS V2.3 and later
- z/OSMF configuration, diagnostic, and startup performance also are planned to be enhanced:
  - z/OSMF startup time and resource consumption during startup are planned to be improved. Actual results can vary, depending on the client's configuration. With the PTFs for APARs PH28921, PH28920, PH28971, PH28990, PH28451, PH29230, PH29243, PH28832, and PH28872, this enhancement also is available on z/OS V2.3 and later.
  - z/OSMF Security Configuration Assistant is planned to be enhanced to support variables so that more security configuration checking can be validated automatically. This is designed to reduce the number of manual actions reported by the assistant. With the PTF for APAR PH17871, this enhancement also is available on z/OS V2.3 and later.
  - A simple UI is intended to be provided to enable administrators to enable or disable most z/OSMF services. This is intended to provide more flexibility and better usability for administrators to tailor a minimum z/OSMF runtime. In addition to using the UI, systems programmers would be able to tailor z/OSMF runtime by uploading a simple JavaScript Object Notation (JSON) file to the z/OSMF configuration directory. This is designed to simplify settings deployment across multiple z/OSMF instances. With the PTF for APAR PH24527, this enhancement also is available on z/OS V2.3 and later.
  - **SETIZU** and **SET IZU** commands are planned to be added so that clients can dynamically change z/OSMF parmlib options without having to restart z/OSMF. With the PTF for APAR PH24088, this enhancement also is available on z/OS V2.3 and later.
  - z/OSMF diagnostic Assistant task is intended to be enhanced to support the display of z/OSMF data file system utilization on the z/OSMF desktop taskbar. It is planned to support automatic cleanup of z/OSMF diagnostic data based on a predefined policy. This is designed to help maintain the health of the z/OSMF data file system. With the PTF for APAR PH25691, this enhancement also is available on z/OS V2.3 and later.
- The z/OSMF Security Configuration (SCA) plug-in is intended to be enhanced to support z/OS components, features, and products:

  Previously, the SCA was able to give detailed information to a system programmer about the missing security rules for the z/OSMF component only. In z/OS V2.5, this capability is planned to be extended to any piece of software. An easy-to-create JSON file is planned to be provided by the exploiting software that defines the security requirements. A properly permitted system programmer or the security administrator would be able to run this plug-in and see in one list all the security rules that are missing and what that might mean. The SCA is designed to help system programmers to understand security requirements of specific function and quickly identify the function failure that would be caused by the incorrect security setup. Used as a vehicle to communicate between system programmers and security administrators, this information is intended to improve the time to value for software on z/OS. Several of the z/OS V2.5 DFSMS features are planned to be among the first exploiters of this function because they are intended to provide security JSON descriptor files that can be imported to SCA. With the PTF for APAR PH29907, this enhancement is available on z/OS V2.3 and later.

Cyber security

In the current world environment, there is a clear need for enterprises to further strengthen their overall cyber security and resiliency posture. Compliance regulations correspondingly continue to emerge that help clarify new risk use cases and demand functionality to mitigate them. z/OS is uniquely positioned to address the need, and planning includes a broad spectrum of enhancements in the areas of

authentication, authorization, logging, system integrity, system and data availability, encryption for data in flight and at rest, and overall data privacy.

Authorized code scanner

z/OS V2.5 is planned to provide, as an optional priced feature, an authorized code scanner of Program Call (PC) and Supervisor Call (SVC) routines for development and test environments. This scanner is designed to prevent unauthorized callers from being incorrectly granted an authorized state by detecting potential vulnerabilities in these routines with diagnostic information for remediation, as needed.

With the PTFs for APAR OA59702 and APAR OA60166, this enhancement also is available on z/OS V2.4 and satisfied the statement of direction made in Software Announcement AP19-0199, dated December 10, 2019.

SMF Quantum-safe signatures

Enhancements are planned to extend the digital signature support for SMF records written to log streams to optionally include a second digital signature for V2.5. When enabled, the second signature is planned to use a quantum-safe algorithm to provide an alternative to current algorithms that may be at risk in a quantum computing environment. Also, the SMF signature verification function is planned to be extended to include this second signature to help clients determine whether SMF records have been altered or removed. This function is intended to protect SMF data into the future. With the PTF for APAR OA57371, this enhancement also is available on z/OS V2.4.

RACF- Enhanced PassTicket support

RACF PassTicket capabilities are planned to support a stronger cryptographic algorithm with additional controls for a configurable validity period and an optionally expanded character set. To aid in conversion, RACF PassTickets are planned to be able to be concurrently configured with the original PassTicket algorithm and the enhanced PassTicket algorithm, using existing profiles in the PTKTDATA class. The support is planned to include improved error diagnostics and additional information logged in SMF. With the PTF for RACF APAR OA59196 and SAF APAR OA59197, these enhancements are available on z/OS V2.3 and later.

RACF- Disallowed profile management for users with ALTER access

RACF is intended to provide a mechanism to restrict profile management capabilities from users with ALTER access to a discrete profile. The existing behavior, at the installations request, would be preserved on a class-wide basis for specific users or groups. This enhancement is intended to separate access rights to a resource from management rights of the profile, thus protecting the resource in a manner that assists with compliance reporting.

RACF- New RACF health checks

RACF is planned to add a number of new health checks to help clients implement stronger security controls by adding a check to confirm that:

- All data sets are protected by RACF, by implementing the SETROPTS PROTECTALL(FAILURES) option
- Residual information is erased when data sets are deleted, by implementing the SETROPTS ERASE(ALL) option
- PassTicket keys are encrypted and stored in ICSF
- The RACF subsystem address space is active
- Either RACF sysplex communication mode or RACF data-sharing mode is active

Certificate fingerprint support

IBM plans to provide support to display the certificate fingerprint in RACF **RACDCERT** command and store them in SMF records that handle certificates, as

well as display and search for the certificate fingerprint through PKI Services web pages and store them in SMF records that handle certificates.

The certificate fingerprint support is intended to help to improve security policy management and implementation using certificates.

IBM z/OS Encryption Readiness Technology (zERT) Network Analyzer database administration enhancements

z/OS V2.5 is planned to enhance flexibility in the zERT Network Analyzer Db2 for z/OS database schema definitions and reduce the access privileges required by the zERT Network Analyzer's database user ID through the use of Db2 partitioned tables. The supplied database schema tooling is intended to add support for customizing the database schema name, index names, and table names, along with many other operational parameters that were already configurable. With the PTFs for APAR PH24492 and APAR PH24494, this enhancement also is available on z/OS V2.3 and z/OS V2.4, respectively.

IBM zERT aggregation recording interval

z/OS V2.5 is planned to provide the capability to specify a recording interval for zERT aggregation SMF records that is not bound to the system's SMF recording interval. With this support, it is intended that you can configure a zERT aggregation recording interval of up to 24 hours. The use of a custom aggregation recording interval can significantly reduce the number of SMF type 119 subtype 12 "zERT Summary" records that are written to SMF. This reduction would also improve the performance of the zERT Network Analyzer. With the PTFs for APAR PH25049 and APAR PH24543, this enhancement also is available on z/OS V2.3 and later.

Data set encryption

z/OS V2.5 continues to drive pervasive encryption efforts within an enterprise with planned support for additional z/OS data set types, including sequential basic format and large format SMS-managed data sets, providing users with the capability to encrypt data without application changes and to simplify the task of compliance. This new data set support is intended to enable applications using standard Basic Sequential Access Method (BSAM) and Queued Sequential Access Method (QSAM) APIs to encrypt data with no, or minimal, changes. Restrictions should apply and investigation might be needed to identify eligible data sets. Applications using Execute Channel Program (EXCP) must change to encrypt data with the use of a new access method encryption macro. As with other supported data set types, this support is intended to enable the installation to specify data sets to be encrypted through a policy such as SAF or SMS, or manually. The data is intended to remain encrypted during administrative functions, such as backup and restore, migration and recall, and replication. With the PTF for APAR OA56622, this enhancement also is available on z/OS V2.3 and later.

Improved auditability and serviceability for password syscall

Support is planned to be added to the password syscall to include the caller's Port of Entry IP address when calling the SAF to authenticate the user. The security product is planned to include this IP address in SMF Type 80 records. This is intended to improve the logging and auditing capability of users by system security administrators. Also, this additional information in SMF could be helpful in determining network setup issues. With the PTF for APAR OA59444, this enhancement also is available on z/OS V2.3 and later.

z/OS Diagnostics Analyzer

IBM Z Data Privacy for Diagnostics is designed to tag and redact sensitive user data in diagnostic dumps after they are captured on the IBM z15. The base capability has been generally available and provides z/OS APIs to tag known locations of sensitive user data as "sensitive = yes" or metadata as "sensitive = no."z/OS Diagnostics Analyzer, a new enhancement for Data Privacy for Diagnostics, is generally available and intends to use built-in and custom identifiers to tag additional sensitive data in previously untagged pages. Data determined to be sensitive would be fully redacted

and a new dump would be created that can be shared with third-party vendors for root cause analysis. Data Privacy for Diagnostics also gives the user the ability to keep the complete original dump and maintain First Failure Data Capture. z/OS 2.5 is intended to include support for SYSMDUMP and TDUMP and to use the z/OS APIs and the z/OS Diagnostics Analyzer as post-processing steps without impacting the dump capture time. See fix category **IBM.Function.DataPrivacyForDiagnostics** and keyword "DPFD/K" to include all of the support.

See the IBM Support portal for the following APAR information:

- Available with CD for z/OS V2.3 and later:
  - Storage manager API support: PTF for APARs OA57633 and OA58289
  - Service aids support: PTF for APAR OA57570
  - z/OS diagnostics Analyzer support: PTF for OA58114
  - Db2 support: PTF for APAR PH15940
  - IMS support: PTF for APAR PH14059
  - VSAM support: PTF for APAR OA58730

FIPS compliance support for platform interoperability

IBM plans to provide FIPS compliance support for platform interoperability by completing the FIPS enablement to the UNIX file-based Kerberos database, following the same support provided by the RACF Kerberos database in the last release.

IPsec certificate reporting enhancements

The **ipsec -k** display command, the IPsec network management interface (NMI), and SMF type 119 subtype 73 and 74 records are planned to be enhanced to simplify the process of validating IPsec-related X.509 certificate configurations. The planned enhancements are intended to provide information about the X.509 certificates used during Internet Key Exchange (IKE) negotiations by the local and remote IKE peers, including certificate expiration information, certificate serial number, and subject and issuer distinguished names.

System SSL, AT-TLS, and IPsec certificate diagnostics

z/OS Cryptographic Services System SSL is planned to be enhanced to provide the capability for applications to obtain diagnostic details about the digital certificates used to authenticate a remote peer. z/OS Communications Server Application Transparent Transport Layer Security (AT-TLS) and IPsec services are planned to be enhanced to use the new certificate data for diagnosing failed negotiations. The planned enhancements are intended to simplify certificate-related problem determination in many common error scenarios by making critical diagnostic information easier to access and understand. The diagnostic information is planned to be written to syslogd when AT-TLS handshakes fail while validating a remote peer's certificate or when IKE negotiations fail while validating a remote IKE peer's certificate. The System SSL enhancements should be available to any System SSL application for similar diagnostic improvements.

IBM z/OSMF support for JSON Web Token (JWT)

z/OSMF plans to support JWT by optionally returning a JWT token during authentication and accepting a JWT token for authentication of z/OSMF services. With the PTF for APAR PH12143, this enhancement also is available on z/OS V2.3 and later.

ICSF enhancements

Starting with z/OS V2.5, it is planned that ICSF will no longer provide new downloadable web deliverables. The current web deliverables will be available until they reach end of service. New cryptographic hardware support is planned to be made available with APARs with appropriate SMP/E FIXCAT tags to enable clients to obtain cryptographic updates along with all the other z/OS hardware updates. It is not planned that ICSF unique installation will be required. New ICSF functions, not

related to hardware support, are intended to be delivered as z/OS updates as per all base z/OS components. Clients requiring new cryptographic hardware exploitation on z/OS V2.3 and z/OS V2.4 would need to install ICSF FMID HCR77D1 to get the SMP/E FIXCAT updates. In z/OS V2.5, ICSF is planned to support the following:

- Updates to the key data sets to enable storage of larger keys, such as the Dilithium algorithm asymmetric keys
- Improved capability to audit the age and key rotation policies associated with CEX master keys
- New SAF protections for elliptic-curve cryptography (ECC) keys
- The capability to limit the use of archived keys to decryption operations
- Additional hardware exploitation for certain SSL/TLS ciphers

Support for Crypto Express 7 coprocessors. With HCR77D1, the Crypto Express 7 coprocessors support also is available on z/OS V2.4.

With PTFs for APAR OA58880, these enhancements also are available on z/OS V2.4:

- New Edwards curves, Ed448 and Ed25519, for digital signatures
- New lattice-based algorithm for digital signatures
- CP Assist for Cryptographic Function (CPACF) protected key support for ECC Edwards and a subset of National Institute of Standards and Technology (NIST) curves
- TR-31 support for Hash-based Message Authentication Code (HMAC) keys
- Enhancements to Advanced Encryption Standard (AES) PIN(R) functions
- Additional options on TR-31 export services
- Europay, MasterCard, and Visa (EMV) service updates in support of CVN-18

With PTF for APAR OA60317, this enhancement also is available on z/OS V2.4:

- Additionally, in z/OS V2.5, ICSF is planned to enable clear keys to be used for generating and verifying message authentication codes (MAC) using the HMAC algorithm. CSNBMGN2, CSNBMVR2, CSNBHMG, and CSNBHMV are intended to enable the input key identifier to be a clear key token. When a clear key is provided as input to these services, ICSF would exploit CPACF functions to perform the cryptographic operations to generate or verify the MAC. In addition, the PKCS#11 services CSFPHMG and CSFPHMV are intended to exploit CPACF functions when the key object is a clear key and the hashing algorithm is SHA-1 or SHA-2.

With PTFs for APAR OA59593 for the z15 and OA60355 for the z14, these enhancements are available on z/OS V2.4:

- The capability to use AES keys in Derive Unique Key Per Transaction (DUKPT) services. Key derivation, especially the DUKPT derivation process, is critical for financial transactions, and with the intended expansion to include AES derivation keys, enterprises would have additional capability to migrate their applications to a more secure AES-based cryptography.
- Enhancements to AES-based ISO-4 PIN block processing. Building on prior efforts, APAR OA59593 completes the support for ISO-4 PIN blocks that enable financial institutions to exploit stronger AES cryptography.
- Format Preserving Encryption (FPE) algorithms. FPE algorithms enable data to be encrypted in such a way that it retains the original form of data. For example, a 16-byte account number when encrypted with an FPE algorithm results in ciphertext that is 16 numeric digits. The addition of callable services introduces FPE algorithms FF1, FF2, and FF2.1, which include:
  - FPE Encipher (CSNBFFXE)
  - FPE Decipher (CSNBFFXD)
  - FPE Translate (CSNBFFXT)
- A new curve for ECC, *secp256k1*, often referred to as a Koblitz Curve.

- Updated warn mode processing that includes services that use AES and RSA keys. The warn mode option enables clients to identify changes to their applications required to exploit a coprocessor configured in PCI HSM compliance mode.

Application development

Applications are at the heart of both transactional and batch workloads running on z/OS. Fundamentally, developing new and modernizing existing applications are part of the digital transformation journey occurring in many enterprises. z/OS V2.5 plans to deliver enhancements to enable application developers to use new hash utilities to maintain data integrity in files, new TLS support when using the z/OS client Web Enablement Toolkit, and with transparent interoperability between high-level languages when running in different addressing modes.

Web Enablement Toolkit

Enhancements to the HTTP/HTTPS Enabler portion of the z/OS client Web Enablement Toolkit are planned to include support for a new patch method and new options method, inclusion of Server Name Indication (SNI) when System SSL usage is specified, and enhanced tracing to help with debugging of complex situations with the capability to turn on verbose debug information using environment variables. With the PTF for APAR OA58707, this enhancement also is available on z/OS V2.3 and later.

In addition, the HTTP/HTTPS Enabler portion of the z/OS client Web Enablement Toolkit is planned to be enhanced to provide TLS 1.3 support when System SSL usage is specified. With the PTF for APAR OA58708, this enhancement also is available on z/OS V2.4.

Cryptographic hash utilities

Cryptographic hash utilities are planned to be provided in z/OS Unix System Services including md5, rmd 160, sha1, sha224, sha256, sha384, and sha512. These utilities are intended to use the ICSF One-Way Hash Generate callable service to generate a cryptographic hash for input files, respectively. The utilities are planned to check cryptographic hashes read from input files. With the PTF for APAR OA59201, this enhancement also is available on z/OS V2.3 and later.

Networking

IBM z/OS Communications Server, a high-availability enterprise transaction and data server, provides common applications, such as FTP, Telnet, and the remote execution of applications. Built for optimum productivity, it provides a secure platform for developing and sharing mainframe workloads. With z/OS V2.5, Communications Server is planned to provide improved notification of the availability of TCP/IP services after initialization.

SMTPD compatibility enhancements for Communications Server SMTP (CSSMTP)

The CSSMTP application is planned to be enhanced with three configuration parameters to provide better compatibility with SMTPD for migration from SMTPD to CSSMTP. With the PTF for APAR PH18237, this enhancement also is available on z/OS V2.3 and later.

Notification of availability of TCP/IP extended services

When the TCP/IP stack completes initialization, a stack initialization complete message is issued before the TCP/IP extended services are available. For many operational tasks and applications that depend on z/OS TCP/IP communication services, the current message is insufficient. TCP/IP also relies on optional extended services, including sysplex dynamic VIPA (DVIPA) initialization, IP security infrastructure initialization, and completion of network policy installation. This enhancement is intended to enable automated operations and applications to be notified when required TCP/IP extended services have completed initialization. A

new message and event notification facility (ENF) event are planned to indicate that extended services have completed initialization. The new ENF event is planned to be augmented with a name/token pair. This solution improves z/OS startup for network operations and applications with dependencies on TCP/IP extended services availability.

Resiliency

Resiliency and high availability are traditional strengths of the Z and z/OS platforms, with mature and well-established support for Parallel Sysplex(R) clustering to provide redundancy and recovery mechanisms to avoid many planned and unplanned outages that can affect single systems, as well as robust recovery mechanisms to mitigate many single-system events. z/OS V2.5 is planned to build on these strengths with the following:

- Improvements to data resiliency through improved cloud tiering and backup and restore of data to mitigate against data loss or corruption
- New System Recovery Boost support to provide additional capacity to power you through sysplex recovery activities
- Enhancements to quickly identify anomalous behavior as it occurs, and provide information to expedite root-cause analysis and corrective actions to be taken
- Other improvements intended to provide an even higher level of availability, serviceability, and disaster recovery capabilities for z/OS workloads

Data resiliency through logical backup and recovery

A critical aspect of a robust cyber resiliency plan is the management of frequent backup copies to provide the capability to recover from accidental or malicious data corruption and destruction events. To address the significant resources that the creation of these backup copies consume, z/OS DFSMS is planned to deliver additional solutions based on the IBM DS8000(R) transparent cloud tiering architecture. Transparent cloud tiering is intended to enable z/OS DFSMS to direct all data movement for data set and full-volume operations to be performed by the DS8000 storage controller, consuming virtually no MIPS for the actual data movement to and from cloud object storage or an IBM TS7700 DS8000 object store. IBM z/OS 2.5 is planned to deliver the following enhancements:

- **Enhanced IBM z/OS transparent cloud tiering.** DFSMSdss full-volume dump support for transparent cloud tiering is intended to enable all data movement to be performed by a DS8000 directly to a TS7700 configured as an object store, or directly to cloud object storage. This capability is planned to enable the creation of a DFSMSdss full-volume dump from a FlashCopy(R) or safeguarded copy recovery volume to cloud object storage or a TS7700 DS8000 object store, with no MIPS consumed for the actual data movement. Off-premises, cloud object storage copies can enable air-gapped point-in-time copies of an entire enterprise, enabling a high level of resiliency from a malicious data destruction event and assisting with regulatory compliance. With the PTF for APAR OA57526, this enhancement also is available on z/OS V2.3 and later.
- **Compression support for transparent cloud tiering with TS7700 as an object store.** Data is planned to be able to be compressed within an IBM DS8900F prior to being transferred over TCPIP to a TS7700 configured as an object store. The intent is to enable clients to store more data in the same physical space within the TS7700, reducing cost per GB, reducing bandwidth requirements with no impact on IOPS performance, and maximizing system resources by avoiding compression of data already compressed or encrypted by IBM Z. With the PTFs for APARs OA59465 and OA59466, these enhancements are available on z/OS V2.3 and later.

These cyber resiliency planned solutions demonstrate the continued IBM commitment for z/OS to leverage leading-edge hardware solutions for data management, such as the z15 security capabilities of pervasive data set encryption, z15 data compression, z15 sort accelerator, and transparent cloud tiering solutions.

Coupling Facility (CF) monopolization avoidance

When CF requests directed to a single structure consume a disproportionate share of CF resources, workloads targeting other structures can be constrained and unable to achieve acceptable service times and throughput. The degradation can affect critical system components and middleware applications across the entire sysplex. Planned enhancements are intended to exploit a new function introduced by coupling facility control code level (CFLEVEL) 24 on z15 servers to prevent a runaway sysplex application from monopolizing a disproportionate share of CF resources. With the PTF for APAR OA56774, this enhancement also is available on z/OS V2.3 and later.

ISPF usability enhancements

Enhancements are planned for ISPF to provide improved messages when editing, browsing, and viewing members enabled for PDSE v2 member generations. Additionally, the ISPF SUBMIT command is planned to be enhanced to include support for the **SUBSYS** parameter for specification of an alternate Job Entry Subsystem (JES). This would be exploited in cases in which directing a submit to the JES2 emergency subsystem is required.

System Recovery Boost sysplex recovery enhancements

The initial z/OS support for System Recovery Boost for z15 servers provided additional capacity to accelerate image-level recovery (image shutdown and re-IPL/middleware startup) and enabled accelerated processing of workload backlogs that occurred as a result of those image-level events following the re-IPL. System Recovery Boost provided additional image-level processing capacity and parallelism for the images during the IPL and shutdown boost periods by making use of two underlying z15 technologies:

- Speed Boost that enables sub-capacity general-purpose processors to run at full capacity speed
- zIIP boost that makes general-purpose work eligible to run on zIIP processors.

With new enhancements to System Recovery Boost, IBM z/OS V2.5 intends to extend the solution to provide value in scenarios beyond just image-level shutdowns and startups. System Recovery Boost plans to offer a new class of short-term recovery process boosts addressing a specific set of z/OS Parallel Sysplex recovery events, utilizing the same underlying boost technologies. These Parallel Sysplex recovery events can cause workload disruption while the sysplex is recovering from a component failure or a reconfiguration event, until such time as the recovery processing completes and steady-state sysplex operation is restored. Boosted processor capacity is planned to automatically be provided to mitigate these short-term recovery impacts and restore normal sysplex operation as quickly as possible; the boosted processor capacity also can continue for a short time following restoration of steady-state operation. This provides workload catchup following the recovery activity.

The solution is intended to automatically provide boosted processor capacity and parallelism for the following specific recovery events:

- **Sysplex partitioning.** Planned to boost all surviving systems in the sysplex as they recover and take on additional workload following the planned or unplanned removal of a system from the sysplex.
- **CF structure recovery .** Planned to boost all systems participating in CF structure recovery processing, including CF structure rebuild, duplexing failover, and re-duplexing.
- **CF data sharing member recovery.** Planned to boost all systems participating in recovery following disconnection of a CF locking data-sharing member, such as a Db2 IRLM instance or an SMSVSAM instance, from a coupling facility lock structure with lock resources held.
- **HyperSwap.** Planned to boost all systems participating in a HyperSwap process.

These short-duration recovery process boost periods are a separate class of boosts from the existing image-level IPL and shutdown boost periods. Each participating image is planned to receive boosts as follows:

- One IPL boost for image-level startup (60 minutes)
- One shutdown boost for image-level shutdown (30 minutes)
- Several recovery process boosts, each of less than 5 minutes duration, with a total usage of no more than 30 minutes of recovery process boost time in a 24-hour period.

During recovery process boost periods, either Speed Boost, zIIP boost, or both are planned to be able to be applied under the control of the z/OS **BOOST =** system parameter. The use of System Recovery Boost Upgrade temporary capacity record activations for recovery process boosts is not supported. The System Recovery Boost Upgrade temporary capacity is intended for use only in conjunction with image-level IPL and shutdown boosts.

Use of the recovery process boosts requires a z15 T01 or T02 with new logical partition (LPAR) firmware support for recovery process boosts. This is provided by LPAR machine change level (MCL) P46602.005 and later, for z15 Driver 41C.

For z/OS V2.3 and z/OS V2.4, the PTFs are included in the z/OS FIXCAT for System Recovery Boost support, named **IBM.Function.SystemRecoveryBoost.** This enhancement is also available on z/OS V2.3 and later.

IBM System Display and Search Facility (SDSF) System Recovery Boost support

SDSF is planned to be enhanced to display information about the use of system recovery boost. With the PTF for APAR PH26552, this enhancement also is available on z/OS V2.3 and later.

Automatic Restart Manager (ARM) support for restarting a system task

The XCF ARM currently does not support registering system tasks as restartable ARM elements. This type of started task is common for elements started early during system initialization. Such system tasks cannot register with ARM, leaving them exposed to the possibility that they will fail and not be restarted automatically by ARM. With the planned enhancement to IXCARM REGISTER support, system tasks (such as ICSF) are intended to be able to register with ARM and be restarted as started tasks in the event that they terminate abnormally. This is designed to provide improved availability for the functions those system tasks represent. With the PTF for APAR OA59120, this enhancement also is available on z/OS V2.3 and later.

z/OS anomaly mitigation

IBM is planning to deliver a solution leveraging Predictive Failure Analysis (PFA) that will further enable clients to detect anomalous behavior in near real-time, so potential problems can be proactively addressed before an availability-impacting event can develop. This solution is planned to utilize new PFA checks to predict a wider range of anomalous behavior, including above-the-bar private storage exhaustion, JES2 resource exhaustion, and performance degradation in key address spaces. When a prediction of anomalous behavior occurs, PFA is planned to issue a report containing diagnostic data and recommended remedial actions, as well as a visual depiction of resource usage leading to resource exhaustion. These new capabilities are intended to enhance the capability to quickly identify anomalous behavior, expedite root-cause analysis, and take appropriate action to address the issue.

Catalog and IDCAMS enhancements

The following enhancements are planned:

- IDCAMS DIAGNOSE function is planned to be enhanced to check catalog entries for the rename-in-progress bits, and if they are on, write a message including the entry name and the issue. This alerts the installation to a circumstance that could result in job failures.

- The Catalog Address Space (CAS) RESTART function is planned to be enhanced to change the master catalog during a CAS RESTART. Previously the master catalog could only be changed at IPL.
- The Catalog MODIFY command is intended to be enhanced to enable comments following the command parameters when preceded by a blank.
- The IDCAMS DELETE MASK function is planned to be enhanced to include two new parameters, **TEST** and **EXCLUDE** . The **TEST** parameter is planned to be provided to enable DELETE MASK to return all the objects that would have been deleted if the **TEST** parameter had not been specified. The **EXCLUDE** parameter is planned to enable a subset of data sets that match the MASK filter to be excluded from those being deleted.
- The **IDCAMS DEFINE MODEL** parameter support is intended to be enhanced to model the **KEYLABEL** parameter.
- The **IDCAMS REPRO** support is planned to be enhanced to move its I/O buffers above the line. This is aimed at helping to avoid 878 (insufficient space) abnormal ends (abends).

Statement of general direction

z/OS V2.5 is the last release in which IBM intends to include JES3

As previously announced, for clients that use JES3, z/OS V2.5 is the last release for which IBM plans to include the JES3 feature. Clients should be making plans to migrate to JES2 or an alternative.

zERT policy-based enforcement

In the future, IBM intends to extend zERT to support policy-based rules that describe different levels of cryptographic protection along with optional actions to take when TCP connections match those rules. Since z/OS V2.3, zERT has provided a detailed view of the cryptographic protection attributes used on connections that terminate on the z/OS TCP/IP stack. The zERT policy-based enforcement feature would enable immediate notification through messages, auditing through SMF records, and even automatic connection termination when questionable or unacceptable cryptographic protection is used. IBM plans to enable z/OS network security administrators to create and manage zERT enforcement rules and actions through the z/OSMF Network Configuration Assistant and the z/OS Communications Server policy agent.

z/OS support for z/OS Global Mirror

For decades, IBM has offered two asynchronous replication strategies, IBM z/OS Global Mirror, also known as extended remote copy, or XRC, and DS8000 Global Mirror. IBM plans to support and maintain z/OS Global Mirror on z/OS with its current function only, and z/OS V2.5 will be the last release to provide such support. This withdrawal aligns with what was previously announced in Hardware Announcement WG20-0001, dated January 7, 2020, which indicated the DS8900F family would be the last platform to support z/OS Global Mirror. New functions to support asynchronous replication technology are intended to be developed only for DS8000 Global Mirror, and it is intended that no new z/OS Global Mirror functions will be provided with DS8900F and z/OS.

Encrypted VSAM data set support in RACF

IBM intends to enhance pervasive encryption through RACF support for the use of an encrypted VSAM data set as its database in specific configurations.

AI capabilities on z/OS

With the rapidly growing need to derive AI insights from data in critical business workloads, IBM is planning to optimize z/OS by introducing highly performing AI functionality targeted for clients' critical business workloads. These enhancements are planned to be delivered iteratively and are intended to enable IBM Z as a highly competitive AI inferencing platform. Areas of focus would include:

- Native z/OS solutions providing AI capabilities that would be tightly integrated with z/OS workloads
- Utilizing z/OS Container Extensions that broadly expand the AI libraries and tools ecosystem, including, but not limited to, technologies such as TensorFlow and ONNX
- Optimizations that would be focused on ensuring that AI libraries and runtimes can utilize the latest IBM Z hardware capabilities
- Guidance and content that would be focused on accelerating the path to adoption of AI technology

These capabilities are planned to further strengthen z/OS position as the premier platform for enterprise computing.

IBM software download usage for FTPS using TLS 1.2

On April 30, 2021, IBM is planning to remove support for Transport Layer Security (TLS) 1.0 and TLS 1.1 from the IBM software download servers. The affected servers are used for downloading files for the following z/OS software offerings:

- PTFs and HOLDDATA ordered using the SMP/E RECEIVE ORDER command
- PTFs ordered using Shopz
- PTFs ordered using ServiceLink
- Products in ServerPac and CBPDO offerings ordered using Shopz
- Products in CustomPac offerings

If clients currently download files for any of the listed offerings directly to their z/OS system using the HTTPS protocol, they will not be affected. However, if the FTPS protocol is used to download any of the listed offerings directly to their z/OS system, they might be affected and should take action now to ensure that the capability to download software products and fixes is not impacted.

More specifically, on April 30, 2021, the IBM software download servers will require download operations to connect to the server using TLS 1.2 or higher. Connection attempts using TLS 1.0 or TLS 1.1 will no longer be accepted. The SMP/E HTTPS client used for download operations will automatically use TLS 1.2 when connecting to the server. However, the z/OS Communications Server FTP client program will use TLS 1.2 only if configured to implement TLS using AT-TLS. Therefore, if clients currently use FTP as the download protocol, they must do one of the following to ensure that they can continue to download from the IBM software download servers:

- Use HTTPS instead as the download protocol. IBM recommends clients consider using HTTPS instead of FTPS, as this method often alleviates network, proxy, and firewall issues in an enterprise typical of using FTPS, and it is currently in use by many clients.
- Verify that the FTP client program is configured to implement TLS using AT-TLS (the TLSMECHANISM statement in FTP.DATA indicates ATTLS).

To learn more about using the HTTPS download protocol and how to indicate which download protocol SMP/E will use, see the Preparing for secure Internet delivery web page.

For information about configuring an IBM z/OS Communications Server FTP client, see the TLSMECHANISM (FTP client and server) statement web page.

Availability of the z/OS ServerPac as a portable software instance and the removal of CustomPac dialog support

IBM intends to provide z/OS V2.5 as a portable software instance. With this change, IBM plans to discontinue support for the CustomPac dialog method of installation for all IBM software products in Shopz in January 2022. Clients should prepare their driving system with z/OSMF now to accommodate this strategic direction and ensure that Shopz-orderable software can be installed in the future.

With an installation strategy that was developed in collaboration with leading industry software vendors, IBM continues to make great strides in delivering z/OS software. Today, CICS®, IMS, Db2, and the related licensed programs can be ordered as a ServerPac in a portable software instance format, installable with z/OSMF Software Management.

Building on that momentum, IBM intends to provide z/OS V2.5 in a portable software instance format.

To ensure that clients can install Shopz-orderable software in the future, it is recommended that clients take steps to prepare their driving system for z/OSMF-based installations. For an overview of ServerPac with z/OSMF Software Management and the steps to follow, see the ServerPac Installation using z/OSMF content solution website. Here, clients can find a sample portable software instance that can be used to verify that their z/OS driving system is operational for installing a CICS, IMS, Db2, or z/OS ServerPac.

Care is advised when clients plan to install z/OS V2.5, because the delivery choices are expected to change in Shopz in January 2022. At the general availability of z/OS V2.5, except for z/OS V2.4, and prior to January 2022, IBM intends to make all IBM z/OS software on Shopz orderable as a ServerPac, and installable as a portable software instance or by using the CustomPac dialog. It is not intended that z/OS V2.4 ServerPac will be offered as a portable software instance. Prior to January 2022, all other software (CICS, IMS, Db2, z/OS V2.5, and licensed programs) are planned to be offered as ServerPac orders deliverable through z/OSMF or the CustomPac dialog.

In January 2022, the CustomPac dialog delivery option is planned to be removed for all software, including CICS, IMS, Db2, z/OS V2.5, and all licensed programs. Thereafter, it is planned that all software that is orderable as a ServerPac must be installed with z/OSMF Software Management.

Although it is planned that z/OSMF will become a driving system requirement, it would be a requirement only for the system in a client's enterprise from which software installation activities are performed. However, clients might find that using z/OSMF throughout their enterprise offers tremendous benefits. If clients cannot meet the z/OSMF driving system requirements for ServerPac, the Customized Offerings Driver (5751-COD) is available on Shopz. It provides a z/OS system with z/OSMF, which will be activated at z/OS V2.5 availability.

Statements by IBM regarding its plans, directions, and intent are subject to change or withdrawal without notice at the sole discretion of IBM. Information regarding potential future products is intended to outline general product direction and 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 any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for IBM products remain at the sole discretion of IBM.

Reference information

To learn what has been delivered for z/OS V2.4 through continuous delivery, see the following:

- Software Announcement AP20-0469, dated December 8, 2020
- Software Announcement AP20-0455, dated October 13, 2020
- Software Announcement AP20-0362, dated September 22, 2020
- Software Announcement AP20-0211, dated June 16, 2020
- Software Announcement AP20-0097, dated March 17, 2020
- Software Announcement AP19-0199, dated December 10, 2019
- Software Announcement AP19-0326, dated July 23, 2019

- Software Announcement AP19-0011, dated February 26, 2019

Statement of good security practices

IT system security involves protecting systems and information through prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective. IBM does not warrant that systems and products are immune from the malicious or illegal conduct of any party.

AP distribution

Country/Region	Announced
ASEAN *	Yes
India/South Asia **	Yes
Australia	Yes
Hong Kong	Yes
Macao SAR of the PRC	Yes
Mongolia	Yes
New Zealand	Yes
People's Republic of China	Yes
South Korea	Yes
Taiwan	Yes

* Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam

** Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka

Trademarks

Terms of use

IBM products and services which are announced and available in your country can be ordered under the applicable standard agreements, terms, conditions,

and prices in effect at the time. IBM reserves the right to modify or withdraw this announcement at any time without notice. This announcement is provided for your information only.Reference to other products in this announcement does not necessarily imply those products are announced, or intend to be announced, in your country.Additional terms of use are located at

Terms of use

For the most current information regarding IBM products, consult your IBM representative or reseller, or go to the IBM worldwide contacts page

IBM Directory of worldwide contacts