IBM z/OS V1.13 delivers new availability, batch programming, and usability functions

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At a glance

IBM® z/OS® V1.13 and IBM z/OS Management Facility V1.13 include many new capabilities designed to address systems management and operations, batch programming and performance, as well as usability and optimization functions. Your data, applications, and systems are critical; z/OS and z/OSMF can help you manage your systems and optimize your staff.

z/OS V1.13 includes several enhancements designed to:

- Help you get early warning of certain system issues before they become obvious to help you act quickly and decisively with integration between z/OS Predictive Failure Analysis and Runtime Diagnostics functions.
- Simplify application programming with a new z/OS base component, z/OS Batch Runtime environment, designed to enable COBOL and Java™ to interoperate with DB2® applications while maintaining transactional integrity, thus allowing enhancements to existing COBOL DB2 application suites with Java-based DB2 access.
- Help you shorten batch windows using JES2 JCL improvements and a new option to free tape volumes more quickly.
- Improve spool volume management by using new JES2 spool migration function and JES3 dynamic spool add capability.
- Improve I/O performance between 50% (1.5X) and 150% (2.5X) for many z/OS UNIX™ workload using shared zSeries® File System (zFS) in a Parallel Sysplex®. Applications that use zFS, such as z/OS UNIX System Services and WebSphere® Application Server for z/OS, are expected to benefit.[1]
- Improve performance for traditional workloads with IEBCOPY improvements.
- Provide more options you can use to secure your data with newer, faster, and more scalable encryption and security capabilities incorporated in IBM Tivoli® Directory Server for z/OS (LDAP), RACF®, z/OS System SSL, ICSF, and z/OS PKI Services.

z/OS Management Facility V1.13 offers several enhancements designed to:

- Clone z/OS images and deploy software more easily and consistently, using a new software deployment task
- Define new storage volumes to SMS quickly and easily, using a new DASD management task
- More easily maintain highly secure network connections with an updated z/OSMF-based Configuration Assistant for z/OS Communications Server
- Create a more unified z/OS experience for system programmers by enabling a new web-enabled ISPF interface from z/OSMF

- Support easier monitoring of z/OS Capacity Provisioning Manager status, using a new capacity provisioning task
- Consolidate monitoring for z/OS and Linux™ workload server resources with new, integrated Linux system data gatherers in the updated Resource Monitoring task
- Improve monitoring and management of incidents, and sending of diagnostic data using the updated Incident Log task
- Integrate the z/OS experience with the ability to link and launch between z/OSMF applications and between z/OSMF and other browser-accessible applications
- Deliver a new REST interface designed to enable z/OS and non z/OS systems to submit z/OS jobs, obtain job status, retrieve job output, and more

For more information on z/OS Management Facility, refer to Software Announcement 211-242, dated July 12, 2011.

[1]

- IBM Laboratory results; your results may vary.
- Batch elapsed time improvement possible when using FREEVOL=EOV parameter for workloads processing for multivolume tape data sets.
- I/O performance improvements measured for fully shared zFS ranged from very small to 900%, with the majority of workload conditions tested falling between 50% and 150%. The actual amount of improvement will depend on the environment (monoplex or Parallel Sysplex) and the type of file processing being done.
- Performance improvements are expected for workloads using IEBCOPY for PDS to PDS (partitioned data set) copies.

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: LE001).

Overview

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

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

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

z/OS Management Facility (z/OSMF, 5655-S28) is the new face of z/OS and forms the platform for revolutionizing the management of z/OS environments. z/OSMF V1.13 adds new management tasks and enhances those introduced in prior releases to simplify software deployment through the cloning of z/OS images, simplify disk storage volume management, simplify TCP/IP network and security configuration, consolidate monitoring of z/OS and Linux workload server resources, enable cross-application linking and launching, and create a more unified z/OS experience by enabling a new web-enabled ISPF interface from z/OSMF. In addition, z/OSMF delivers a new REST interface designed to enable z/OS and non-z/OS systems to submit z/OS jobs, obtain job status, and retrieve job output.

You can use z/OS to extend the value of your existing applications. This latest release delivers the foundation for batch modernization, enabling you to break down the traditional wall between batch and online workloads and allows you to access and transform business data as never before. New enhancements are designed to help shorten your batch window, simplify batch programming, and give you more flexibility in deploying batch applications. z/OS V1.13 also delivers improved performance for web-based applications with better overall I/O response times for z/OS UNIX System Services workloads in a Parallel Sysplex. Performance improvements are also anticipated for workloads using the IEBCOPY utility to copy one PDS (partitioned data set) to another.

Addressing the need for extraordinary scalability, performance, and reduced complexity for traditional database and for expanded data warehouse deployments, IBM intends to deliver new data-handling capability for the platform. Improved I/O performance is expected for many QSAM-, BPAM-, and BSAM-based workloads through the use of High Performance FICON®. Storage scalability and simplified storage management are planned with support for 1 TB extended address volumes (EAVs). Users should benefit from improvements to the industry-leading z/OS Workload Manager and planned new functions for IBM DS8700 and DS8800 disk storage subsystems. Refer to the Statements of direction section for more details.

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

Key prerequisites

z/OS V1.13 runs on these IBM System z servers:

- z196
- z114
- z10™ EC
- z10 BC
- z9® EC[2]
- z9 BC[2]
- z990[2]
- z890[2]
- z900[2]
- z800[2]

[2] These products are withdrawn from marketing.

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

Planned availability date

September 30, 2011

Description

Ease of use

z/OS V1.13 introduces many new simplification capabilities. It is designed to address the need for skills by making existing personnel more productive and by reducing

the time needed for someone new to gain proficiency on the platform. New function is designed to address overall operational efficiency by reducing the steps for tasks and introducing new streamlined processes. Ultimately, these new capabilities are intended to make your organization more responsive in meeting business needs.

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

Enhancements for z/OSMF V1.13 include capabilities to:

- Clone z/OS images and deploy software more easily and consistently, using a new software deployment task
- Define new storage volumes to SMS quickly and easily, using a new DASD management task
- Support easier monitoring of z/OS Capacity Provisioning Manager status, using a new capacity provisioning task
- Create a more unified z/OS experience for system programmers by enabling a new web-enabled ISPF interface from z/OSMF
- Make it easier to maintain highly secure network connections with an updated Configuration Assistant for z/OS Communications Server
- Consolidate monitoring for z/OS and Linux workload server resources using integrated performance data gatherers for Linux on System z, Linux on System x®, and AIX® systems in the updated Resource Monitoring task
- Improve monitoring and management of incidents, and sending of diagnostic data using the updated Incident Log task
- Integrate the z/OS experience with the ability to link and launch between z/OSMF applications and between z/OSMF and other browser-accessible applications

In addition to systems management tasks, z/OSMF V1.13 also delivers a new API for z/OS itself. A new RESTful API in z/OSMF can enable any distributed, non-z/OS system to submit batch jobs and access batch job information anytime. This API is enabled on z/OS V1.13, and later.

z/OS and z/OSMF together provide a wide range of usability improvements. Improvements have been made in existing z/OSMF applications and new z/OSMF applications have been added. Also, there are enhancements in z/OS Health Checker, IDCAMS, Catalog, ISPF, SDSF, DFSMSrmm, DFSMSdfp, SMF, and more. These updates are intended to help you manage, monitor, report on, and operate z/OS and its subsystems.

z/OSMF simplification enhancements

- z/OSMF supports a modern web browser-based management console for z/OS. More than just a veneer over existing functions, z/OSMF is designed to simplify z/OS administration. Guided and automated tasks can help reduce the learning curve and improve productivity. For example, new system programmers and administrators might need only weeks to become proficient with z/OSMF functions. In addition, embedded active user assistance and wizards can guide you through these tasks, potentially reducing the time needed for these tasks from hours to minutes, or from minutes to seconds.

  Version 1.13 of z/OSMF adds valuable new system management tasks

  New Software Deployment task

  The Software Deployment task is a simplified process for cloning z/OS images and deploying z/OS software and maintenance. The Software Deployment task is a valuable addition to, or even possible replacement for, existing in-house software deployment tools. It can help reduce the incidence of error during the installation of a deployment process and ultimately help reduce the skills needed for deploying z/OS software.

The Software Deployment task is designed to provide the functions needed to create and deploy a copy, or clone, of existing SMP/E-installed software, including:

- IBM software installed from ServerPac, CBPDO, or fee-based installation offerings
- ISV software
- z/OS operating system, and related products
- Subsystems and related products
- Service upgrades for all of the above (via complete replacement)

Central to Software Deployment is its checklist, which is the IBM recommended route for z/OS software deployment codified. The checklist steps users through:

- Selecting the software to deploy (a software instance)
- Reporting missing requisites and possible regressions
- Selecting the deployment objective
- Configuring the target software instance
- Validating the configuration against the target system
- Summarizing the deployment actions
- Generating and executing the deployment jobs

The Software Deployment task requires SMP/E V3.6 (and its CSI - Consolidated Software Inventory) to provide information and perform actions for z/OS software deployment.

The combination of z/OSMF V1.13 and z/OS V1.13 (with SMP/E 3.6) can help:

- Reduce or reallocate resources normally used to develop and maintain in-house deployment tools. The IBM recommended path for cloning/deployment is built in, complete with documentation and support.
- Reduce errors and missed steps in the cloning process. A deployment checklist provides a guide to help avoid missed steps required to deploy software, which includes requisite and regression checks that help reduce errors made prior to deploying software.
- Reduce the SMP/E skill level required by providing a task flow to complete a deployment.

Extensions to the Software Deployment task, designed to provide more granular authorization for deployment task definitions, a reuse capability for deployment operations, and improved support for z/OS UNIX Systems Services file systems, are planned for first half 2012 with the PTFs for APARs PM40764 and IO14267.

New DASD Management task

A new DASD Management task is the foundation for simplified disk storage management. The new task is intended to allow you to perform storage group management tasks from within the application. It is designed to streamline the process of adding volumes to SMS pool storage groups, reducing several manually intensive steps involving multiple applications to a reduced number of steps using a single interface. The DASD Management task is planned to be made available in first quarter 2012 with the PTF for APAR PM40869.

The DASD Management task allows you to:

- View collections of predefined available volumes with the introduction of the reserve storage pool resource. Once defined, the task can discover these volumes.
- View new pool storage group attributes to be used as policy within the task.
- View pool storage group and volume information associated with the active SMS configuration. An alert is displayed if a storage group has exceeded its

storage utilization threshold. In addition, the storage group information will display new storage group attributes to be used as policy within the task.
- Add storage to an SMS pool storage group via a new wizard.

The Add Storage wizard can enable you to add storage to an SMS pool storage group more easily than before. It uses the new storage group attributes as policy, if defined within the storage group definition. The Add Storage wizard guides you through the following steps:

- Determining the amount of capacity to add based on the storage utilization goal and available capacity found in the assigned reserve storage pool
- Selecting the volumes to add from the reserve storage pool
- Updating the SCDS with the selected volumes
- Initializing the selected volumes to match the naming convention of the storage group
- Optionally, varying volumes online and activating the changes to the SCDS to make the new capacity available for SMS use

New Capacity Provisioning task

IBM System z On/Off Capacity on Demand (OOCoD) can give you the ability to add or remove System z hardware capacity as needed. The z/OS Capacity Provisioning Manager (in the base of z/OS) can automate the OOCoD process.

The Capacity Provisioning Control Center (CPCC) is the user front end to administer capacity provisioning policies. Today, the CPCC is available as a separate Microsoft™ Windows-based stand-alone client. Only part of the Windows-based CPCC functionality is integrated into the z/OSMF V1.13 Capacity Provisioning task.

In z/OSMF V1.13, the new Capacity Provisioning task is designed to support easier monitoring of z/OS Capacity Provisioning Manager status, which can simplify the work of an administrator by reducing the amount of time it takes to get information about capacity provisioning status. The Windows-based CPCC is still required for managing the z/OS Capacity Provisioning Manager.

The Capacity Provisioning task can perform the following functions:

- Manage, create, modify, and delete CIM connections from a central shared repository. Local and remote CIM servers can be used.
- View the status of a domain. The same data is displayed that is retrieved when a REPORT DOMAIN command on the z/OS console is issued.
- View the active configuration of a domain. The same data is displayed that is retrieved when a REPORT CONFIGURATION command on the z/OS console is issued.
- View the active policy of a domain. The same data is displayed that is retrieved when a REPORT POLICY command on the z/OS console is issued.

New web-enabled "Classic" ISPF Interface

The new ISPF task under the Classic Interfaces category enables you to open and launch classic z/OS ISPF sessions directly from z/OSMF. You can open multiple sessions in multiple panes and navigate to ISPF applications from z/OSMF.

Additionally, this interface will make the ISPF applications URL addressable and thus allow the ability to directly launch to ISPF-based functions from z/OSMF tasks or from external applications. For example, you can launch from the Incident Log directly to browse a log snapshot data set in ISPF.

You can view up to four ISPF screen sessions at the same time. The panels appear similar to classic 3270 layout and can be navigated using both mouse and keyboard. Additional tabs allow you to navigate to other ISPF panels, and TSO/E messages are displayed in a popup window.

Version 1.13 of z/OSMF updates several existing tasks

The Incident Log, introduced with z/OSMF V1.11, is updated with improved incident management and data send capabilities with a new APAR search string, new view job status (via SDSF launch), and utilization of the new Problem Documentation Upload utility in the base of z/OS V1.13.

The Configuration Assistant for z/OS Communications Server, introduced with z/OSMF V1.11, is updated with new Intrusion Detection Services for improved network protection, reusable rules for IP Security (IPSec) to enable you to define a rule once and use it in multiple stacks, the ability to import local IP addresses from active systems, and support for configuration of both z/OS V1.12 and V1.13 stacks for larger network configurations.

The z/OS Management Facility Workload Management task, available with z/OSMF V1.12, is updated. The z/OS Management Facility Workload Management task can help simplify the creation, modification, and review of z/OS Workload Manager (WLM) service definitions. For example, to optimize a service definition based on best practices could take hours to read through the z/OS WLM-related manuals. It can now be reduced to minutes because best practices are built into z/OSMF.

In z/OSMF V1.13, the Workload Management task supports fine-grained authorization to better control which users can view, install, or modify service definitions.

Additional z/OSMF Workload Management updates give users persistent settings and preferences between z/OSMF sessions, obviating the need to re-establish settings manually.

The tasks of Resource Monitoring in the Performance category are renamed with Version 1.13. The Sysplex Status task is now called *System Status*. The Resource Monitoring task is the successor of Monitoring Desktops. Performance desktops are now called *dashboards*.

Resource Monitoring is updated to monitor Linux on System z, Linux on System x, and AIX systems to provide a consistent monitoring solution for zEnterprise ensembles. You can manage the AIX system complexes (IBM System p®) and Linux system complexes (System z and IBM System x) to be monitored in the Resource Monitoring task. The Resource Monitoring task uses the new z/OS RMF™ Cross Platform (RMF XP) Distributed Data Server. With RMF XP, you can monitor all operating systems that can run on an IBM zEnterprise System, including the zEnterprise BladeCenter® Extension (zBX). However, RMF XP does not necessarily require zBX hardware. You can monitor all AIX and Linux systems to which RMF XP can establish a TCP/IP connection.

Resource Monitoring supports to combine performance metrics of various platforms in the same dashboard to allow you to have a quick overview of the overall status of the zEnterprise ensembles.

New interfaces

New z/OSMF application linking and launching capabilities can provide a more seamless experience for system programmers as they work with different tools and tasks on the z/OS system. A new API is designed to improve the integration of z/OS tasks by enabling application launching not only between z/OSMF applications, but between z/OSMF applications and other browser-based applications as well. Application launching may support context-sensitive connections or simple links. For example, between z/OSMF applications, context-sensitive launching might be used to enter an application at a point where actions can be taken immediately to simplify complex task flows, like launching directly from Incident Log to ISPF browse to view the log snapshot for an incident. Simple links would open another application so you could navigate to needed tasks. The launch point URLs defined via events and handlers may be registered via the REST API or the Application Linking Manager task in z/OSMF.

New to z/OSMF V1.13 is the z/OS jobs REST interface. The interface is a set of REST services that allow a client application to perform operations with batch jobs on a z/OS system. Operations such as submit a job to run on z/OS, obtain the status of a job, list the spool files for a job, retrieve the contents of a job spool file, cancel a job, or purge a job from the JES spool can be performed. The z/OS jobs REST interface services can be invoked by any HTTP client application, running on the z/OS local system or a remote system, both z/OS or non-z/OS.

z/OSMF is enhancing its security model to provide better integration with enterprise security management products. The z/OSMF SAF mode authorization support brings tighter integration with z/OS SAF-based authorization with the introduction of the new resource class ZMFAPLA for z/OSMF task-based resources. All z/OSMF tasks and links will be associated with resource names and resource class profiles under the new resource class, and SAF groups will represent roles. SAF mode further allows for custom roles via creation of SAF groups at the customer's discretion.

IBM specialty engines

A large portion of the z/OSMF application is written in Java and is, therefore, eligible for the IBM System z Application Assist Processor (zAAP). Some functions in z/OSMF use the Common Information Model (CIM) Server. As of z/OS V1.11, portions of this workload are eligible for zAAP. Some functions in z/OSMF use the CIM Server, and as of z/OS V1.11, portions of this workload are eligible for the IBM System z Integrated Information Processor (zIIP). As of z/OS V1.11, IBM also introduced a zAAP on zIIP capability, where zAAP-eligible workloads may run on the zIIP processor. For the new zAAP on zIIP capability, refer to Software Announcement 209-242, dated August 18, 2009.

z/OS simplification enhancements

- In z/OS Communications Server, the TCP/IP PORTRANGE profile statement allows ranges of TCP/IP ports to be reserved for specific job names. This statement is enhanced to allow specification of the job name as a wildcard, specified as a 1-7 character prefix followed by an asterisk (*). This allows several jobs with the same prefix to have access to the ports in the specified port range.
- In z/OS Communications Server, the requirement for using UID(0) for the Policy Agent (PAGENT) and Internet Key Exchange (IKED) daemons is removed. These daemons can now be started using any user ID and UID with access to the necessary directories and files. Additional documentation is provided to help you start the OMPROUTE and TN3270E daemons using UIDs other than zero.
- In z/OS V1.13, several batch enhancements are provided for JES2 environments, which are intended to help simplify the development of batch applications. Refer to the Application integration section for additional information.
- The z/OS Capacity Provisioning Manager (CPM, in the base of z/OS) can automate the process of managing System z capacity, including adding and removing capacity-based On/Off Capacity on Demand (On/Off CoD). For z/OS V1.13, CPM is enhanced to support the specification of capacity increments for both provisioning and deprovisioning actions, and allows you to specify different quantities for obtaining the first capacity increment and subsequent increments. This is designed to help you add the right amount of capacity more quickly, with fewer activation actions, and is also available for z/OS V1.11 and z/OS V1.12 with the PTF for APAR OA35284. In addition, support is provided for recurring time conditions, which can simplify defining the Capacity Provisioning policy for events that repeat by weekday. This support is also available for z/OS V1.11 and z/OS V1.12 with the PTF for APAR OA35284.

  Also, in the z/OS Capacity Provisioning Control Center (CPCC, the Windows-based interface for CPM), support is added for the 32-bit and 64-bit versions of Microsoft Windows™ 7 Professional Edition.

- The Health Checker framework is enhanced to allow you to specify when health checks should be run for the first time, and when they should be repeated using a new SYNCVAL keyword in the HZSPRMxx parmlib member or on the Health Checker MODIFY command. This can help you schedule checks to run at more

predictable times. Also, extensions to the Health Checker framework allow better control over messages and check intervals, and allow checks to increase the severity of their exceptions as system conditions change. These changes are intended to allow programmers to write advanced health checks with improved usability.

- New migration health checks are available for z/OS V1.13. These include:
  - A check designed to warn you when the zFS configuration option is not set to sysplex=filesys is available for z/OS V1.11 and z/OS V1.12 with the PTFs for APAR OA35465.
  - A check is available to verify that the new symbolic links added in z/OS V1.13 for easier read-only version root file system support are compatible with your z/OS V1.11 or z/OS V1.12 system. The check is available for z/OS V1.11 and z/OS V1.12 with the PTFs for APARs OA35636 and OA35605.
  - A check to warn you that the z/OS console mode of operation has not been specified, and the default has been selected, is available for z/OS V1.10, or later, with the PTFs for APAR OA32930.
- Additional new health checks are available for z/OS V1.13. These include:
  - In z/OS V1.13, three new health checks are added for Allocation. Two are designed to warn you of currently active allocation options that can result in deadlocks, and one to warn you that the specified task I/O table (TIOT) size is smaller than recommended. These checks are intended to help you prevent allocation deadlocks and unintentionally restricting the number of DD statements allowed per job step.
  - z/OS V1.13 DFSMS records tape library errors during IPL and displays them with a new DMO_TAPE_LIBRARY_INIT_ERRORS health check. This health check is designed to provide information about tape library devices that had initialization errors during IPL, with suggested actions for resolving those errors.
- New DFSMSrmm function is provided:
  - New function allows the system to automatically correct the volume list for multivolume tape data sets in many cases when a volume list does not include all necessary volumes or the volumes are specified out of order. This is intended to help you avoid problems when processing multivolume tape data sets, ensuring that all the data associated with them is available to be read.
  - New function allows you to specify whether data sets are managed by expiration date or Vital Record Specifications (VRS) policy when they are created. This is designed to help you simplify your retention policies, help you avoid batch VRS policy management, and enable you to determine how long a tape data set will be retained at the time it is created. Corresponding support for the DFSMSrmm dialog is designed to show either the VRS retention date or the expiration date in data set and volume search results.
  - DFSMSrmm command extensions for tape copy applications enable you to copy and restack tape data sets while retaining, and preventing incorrect settings for, data set attributes. Options allow setting predictable retention periods for source data. This simplifies moving and copying tape data, particularly when implementing new tape technologies and replacing older media.
  - An enhanced SEARCHDATASET command allows a more efficient search of tape data set metadata based on date ranges, including relative values, SMS constructs, and catalog status. This makes it easier to identify data sets that meet those criteria.
  - More control is provided over automatic inventory management driven volume movement, allowing you to specify locations that are not eligible for automated movement during inventory management processing; for example, those that might otherwise be moved based on VRS. Also, the VRS dialog and commands support searching by last reference and change dates to help you find unused VRS policies, and DFSMSrmm supports listing last changed information for all resources managed using its control data set.
  - The DATASET and VOLUME display panels are to be extended with ISPF point-and-shoot fields to simplify dialog navigation. Also, a new CHAIN primary command is designed to provide quick access to multivolume and multifile search results lists.
- New DFSMSdfp function is provided:

  - A new parmlib member, IGGCATxx, allows you to specify a number of Catalog system parameters. A new CATALOG parameter in IEASYSxx allows you to specify one or more IGGCATxx members, in which you can specify the maximum number of Catalog Address Space (CAS) user service tasks, a threshold value for how full a catalog can be made before a warning message is issued, whether functions that can be controlled using the ENABLE and DISABLE keywords of the MODIFY CATALOG command should be active, and the amount of primary and secondary space to be allocated for implicitly defined VSAM volume data sets (VVDSs). This new function is intended to make it easier to maintain those catalog parameters that are not needed very early during the IPL process.
  - DFSMSdfp allows you to use a new keyword in a DEVSUPxx member of parmlib to specify that descriptive text, in addition to abend codes and return codes, be provided for many Open, Close, and End of Volume errors. This is designed to make it easier to determine the reason for these errors quickly without having to look up the messages and return codes.
  - The system updates volume information across a Parallel Sysplex when DFSMSdss or DFSMShsm Fast Replication Backup and Recovery processing completes successfully, and the volume serial or VTOC location, or both, have been changed. When a new REFUCB keyword is specified in a DEVSUPxx member of parmlib, this is intended to eliminate the requirement to issue VARY commands on sharing systems in the sysplex when volume information has been updated by these functions.
  - DFSMSdfp Catalog processing and the IDCAMS utility are changed to issue an operator message that requires a response before allowing a user catalog to be deleted when RECOVERY is specified. This new function is designed to be enabled using new operands of the MODIFY CATALOG command and is intended to help prevent inadvertent deletion of user catalogs in batch jobs using IDCAMS.
  - DFSMSdfp function is added to ISMF to allow you to sort saved volume lists (using NaviQuest) by column and display space information in gigabyte units, and also supports a new display for pool storage groups. This new function is designed to make ISMF easier to use.
  - Access Method Services (IDCAMS) supports a new option for the LISTCAT LEVEL command. This new option is designed to allow you to specify whether related component names be listed when a data set entry is listed based on the pattern specified by LEVEL. For example, if a cluster name is listed, the new option is designed to allow you to specify whether the DATA and INDEX entries are also listed. This is intended to make it easier to customize LISTCAT output and reduce unwanted or unneeded LISTCAT data.
  - DFSMSdfp is changed to recalculate the number of buffers needed for each data set in a concatenation when accessed using the MULTSDN option with QSAM. This is intended to avoid out of storage conditions that can arise for concatenated data sets having different block sizes when MULTSDN is specified in the data control block extension (DCBE).
  - DFSMSdfp is now designed to determine whether the SMS configuration data set (CDS) has the REUSE attribute, and if not, change it from NOREUSE to REUSE automatically during activation.
  - A new utility, IEBPDSE, is designed to verify that the structure of a PDSE is valid, which can help you verify the state of a PDSE before and after critical operations.
- The SMF dump program used for processing SMF log streams (IFASMFDL) is enhanced to reduce the time it takes to extract the data. This new function is designed to allow you to specify a new SMARTENDPOINT keyword when running the utility, to limit the amount of data read from the log stream being processed. IFASMFDL is also designed to allow you to specify that an entire SMF log stream be archived or deleted. ARCHIVE and DELETE processing is designed to process all the SMF data you specify that exists in a log stream, rather than a subset of the data. This is intended to allow you to easily migrate SMF data management processes based on archiving the entire content of SYS1.MAN SMF data sets to use SMF log streams. The SMARTENDPOINT support is available now for z/OS V1.10, or later, with the PTF for APAR OA31737. The ARCHIVE and DELETE

processing changes are also available now for z/OS V1.11 and z/OS V1.12 with the PTF for APAR OA34589.

- ISPF provides support for:
  - Line command level Edit macros, in addition to the existing Edit macro support. This new design is intended to allow you to write macros to be used as line commands, in addition to those you might have already written for use as Edit primary or initial processing commands.
  - A new AL line command on the Data Set List panel (option 3.4) command that you can use to allocate a new data set using a specified data set as a model for the new data set's attributes.
  - A new option on the z/OS UNIX Directory List panel to allow authorized users to update access control lists (ACLs) from within ISPF.
  - Enhancements to the support provided in z/OS V1.11, for extended statistics for partitioned data set members with more than 32,756 lines. In z/OS V1.13, display support is provided for extended statistics with a new INFO command to display extended line counts when the Extended PDS statistics function has been enabled.
  - Displaying job and step names stored by the system for data sets that are eligible to reside in the extended addressing space (EAS) on an extended address volume (EAV) in the Data Set List utility (option 3.4), and retrieving this information using the DSLIST and LMDLIST services. This is intended to allow you to find the creating job and step names easily.
- Eliminate the need for WebSphere MQ for SDSF Sysplex environments. In z/OS V1.13, SDSF simplifies support for sysplex-scope displays in a JES2 environment. Once all systems in a MAS are running z/OS V1.13 JES2, all displays are sysplex-scope without the use of IBM WebSphere MQ for z/OS (5655-L82) . This new function is designed to help simplify SDSF setup and operation. Also, new SDSF support for JES2 includes JES network server and network connections displays. For JES3, SDSF is now designed to implement all applicable functions that are supported for JES2. This includes displays for initiators, output, held output, punches, and readers, as well as a new display for job 0. New SDSF support includes new displays for JES network servers and network connections. The corresponding SDSF Java classes have also been updated to support the new displays and actions. These changes are intended to provide systems management improvements.
- The Storage Management Initiative Specification (SMI-S) was published by the Storage Networking Industry Association (SNIA) and defines "an interface for the secure, extensible, and interoperable management of a distributed and heterogeneous storage system." The SMI-S specification defines the various domains of storage management in the form of Common Information Model (CIM) profiles and subprofiles. In z/OS V1.12, z/OS CIM Server added support for the Storage HBA and Host Discovered Resources (HDR) profiles. In z/OS V1.13, z/OS CIM Server is designed to add support for CIM Indications to the Storage HBA and SB Multipath Management profiles. These extensions are intended to help form a basis for multiplatform storage management tools.

In z/OS V1.13, a number of small enhancements are made to HCD:

- A new "View unused resources" action you can choose for the channel path list to show how many unit addresses and control units are used, and available for the selected channel path
- Additional IODF checking when building a production IODF or a validated work IODF
- Support for exporting and importing unconnected control units and devices in build I/O configuration statements and migrate functions

Scalability and performance

With z/OS V1.13 and related System z technologies, IBM delivers improved performance, scale, and economics to the platform. These technologies are intended to help enable you to leverage existing resources better or to free up existing resources to run more workload within your existing System z servers more efficiently. The traditional view on scalability and performance has been to

throw more hardware at something, or to wait and upgrade to faster hardware. z/OS has a different approach to these metrics of economics. With z/OS, IBM has long understood the balance between scalability, performance, and efficiency of the platform, and z/OS interacts with the major system components, such as the processors, storage, I/O, and software, to help manage system resources efficiently.

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

With z/OS V1.13, IBM delivers function to improve the performance of z/OS workloads:

- Improve I/O performance between 50% (1.5X) and 150% (2.5X) for many z/OS UNIX workloads using shared zFS in a Parallel Sysplex. Applications that use zFS, such as z/OS UNIX System Services and WebSphere Application Server for z/OS, are expected to benefit[3] .
- Improved performance is expected for traditional workloads with IEBCOPY improvements. Any workload using PDS to PDS copies is expected to benefit[3].

[3] Performance improvements are based on internal IBM laboratory tests. Your results will vary. I/O performance improvements measured for fully shared zFS ranged from very small to 900%, with the majority of workload conditions tested falling between 50% and 150%. The actual amount of improvement will depend on the environment (monoplex or Parallel Sysplex) and the type of file processing being done. IEBCOPY improvement will depend on the amount of data being copied.

With z/OS V1.13, IBM delivers function to improve the scale of z/OS workloads:

- Remove bottlenecks: The maximum size of a VSAM volume data set (VVDS) is increased to provide support for more data sets per volume, increasing the maximum from hundreds of thousands to millions. Also Catalog processing increases the number of aliases from approximately 3,500 to approximately 250,000 or more.
- Simplified storage management: In z/OS V1.13, IBM introduces FTP support for more data set types in the extended addressing space (EAS) of extended address volumes (EAVs), enabling FTP to access this additional DASD capacity when allocating, storing, and retrieving data sets that are eligible to reside there.
- Foundation for extreme data handling and simplified storage management: Potentially improved I/O performance without the need for application changes for QSAM-, BPAM-, and BSAM-based workloads by leveraging High Performance FICON. Also, existing EAV functionality is enhanced with support for larger, 1 TB Extended Address Volumes (EAVs). Refer to the Statements of direction section for more details.

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

- The maximum usable size of the VSAM volume data set (VVDS) is increased, which increases the architectural maximum number of SMS-managed and VSAM data sets that can reside on a single volume by a factor of 16. For most data set types, this is expected to be an increase from hundreds of thousands of data sets to millions of data sets per volume, and is intended to allow the number of data sets per volume to scale with Extended Address Volume (EAV) sizes.
- Catalog processing is enhanced to increase the number of aliases that can be defined for a user catalog. For example, if your master catalog is defined with the default record size, the maximum will be increased from approximately 3,500 single-level aliases per user catalog to approximately 250,000 or more. The actual maximums vary with the lengths of the aliases defined.
- zFS processing has been redesigned to allow all members of a Parallel Sysplex to perform zFS file system read and write I/O operations for shared file systems. In IBM laboratory tests, this new design yielded substantial file processing

performance gains for all systems, both those that would have been zFS owning systems in prior releases and those that would not, and for single systems as well as those which were members of a Parallel Sysplex. The performance improvements observed in file processing varied over a broad range, from small to over 900% (over 10X) improvement, depending on the environment (monoplex or Parallel Sysplex) and the type of file processing being done. For most measured environments, the range of improvement observed fell between 50% (1.5X) and 150% (2.5X).

- z/OS is designed to support some programs running in 64-bit storage, provided that they meet certain restrictions. This is intended to provide virtual storage constraint relief to applications, particularly those that imbed code in data areas for performance reasons.
- Extended Address Volumes (EAVs) allow more data to be stored on direct access storage devices. z/OS V1.13 Communications Server FTP, which already supports SMS-managed extended format sequential data sets, supports these additional data set types when they reside in the EAS of an EAV: both SMS-managed and non-SMS-managed physical sequential basic and large format data sets, PDS and PDSE data sets, and GDG data sets. Also, SDSF is designed to support extended format sequential (DSNTYPE=LARGE) print files, and print files that are placed in the EAS of an EAV.
- z/OS Communications Server adds support to FTP for large format data sets. With this support, FTP is designed to transfer, restart transfers for, and allocate large format data sets, which can have more than 65,535 tracks per volume or more than 2 gigabytes of data, without requiring them to be SMS managed.
- The VSAM RLS buffer management algorithm for least recently used buffers has been improved. This is expected to reduce the CPU time used for buffer management processing in the SMSVSAM address space for large VSAM RLS data sets with large buffer pools. Also, VSAM record-level sharing (RLS) supports a new storage class (STORCLAS) attribute you can use to specify whether VSAM RLS buffers and the associated resources are released quickly, or retained for a period of time as they are on prior releases, once all applications have closed a VSAM RLS data set on a given system. IDCAMS DCOLLECT is designed to include information about this new attribute in storage class (type SC) records. This enhancement is expected to help improve performance for other VSAM RLS data sets when buffer space is released immediately but would otherwise have been constrained.
- A Problem Documentation Upload utility is added to z/OS and is intended to be used to transmit dumps to IBM. This utility is designed to break dumps into segments that can be transmitted in multiple data streams to help reduce data transfer time and to support encryption. This utility is similar to the Problem Documentation Upload utility currently available for download, and has an alias entry point named MTFTPS for compatibility. This utility can be called from the z/OSMF V1.13 Incident Log application.

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

  http://www14.software.ibm.com/webapp/set2/sas/f/zaids/pduf.html
- Enhancements for the IEBCOPY utility are intended to improve performance when copying a partitioned data set (PDS) to another PDS. In addition, IEBCOPY exploits 31-bit storage for track buffers, and the current requirement for APF authorization is removed in z/OS V1.13.
- In z/OS V1.13, you can specify longer data set retention periods using JCL, TSO/E, SMS management classes, and DFSMSrmm. The current limit of 9,999 days (approximately 27 years) is increased to allow you to specify up to 93,000 days, or approximately 254 years. However, the system will continue to support a maximum expiration date of 31 December 2155 for data sets, even when you specify a retention period that would result in a later date. DFSMShsm and OAM honor these longer retention periods. Also, the maximum values for the RETPD and EVENTEXP keywords of OSREQ are extended from 32,767 days to 93,000 days. OAM objects are not subject to the system's Year 2155 expiration date limit for data sets, and will be retained for the amount of time you specify. Also, DFSMSrmm commands can be used to set expiration dates beyond the year 2155 for tape data sets as well. This new function is intended to make it easier to retain data for longer periods of time.

- Support is added for unauthorized programs to use extended task I/O tables (XTIOTs) when a captured UCB is not requested. This new function is designed to allow all programs to allocate more data sets than can be supported by TIOTs below 16 MB, and to take advantage of data set association blocks (DSABs) above 16 MB.
- DFSMSdfp is planned to add support to Open/Close/End of Volume to allow programs to use BSAM and QSAM DCBs and ACBs to access subsystem data sets with extended TIOTs (XTIOT).
- In z/OS V1.8, Language Environment® began to support large format (DSNTYPE=LARGE) data sets when accessed by C/C++ programs using QSAM (noseek). In z/OS V1.12, this function was extended to provide BSAM (seek) support for record I/O. In z/OS V1.13, BSAM (seek) is supported for binary and text I/O for sequential data sets. This new support is intended to let your Language Environment C/C++ applications take full advantage of large format data sets using Language Environment.
- The CSSMTP application provided by z/OS Communications Server can be used to send bulk email from z/OS JES2 or JES3 spool. In z/OS V1.13, CSSMTP supports extended retry processing for emails that cannot be delivered during the initial configured retry time. CSSMTP also releases memory and JES resources for emails in extended retries, allowing it to retry those emails for an extended period of time with less overall system impact.
- DFSMSdfp Open/Close/End of Volume processing is changed to reduce tape movement for tapes having ISO/ANSI Version 4 labels. This is intended to improve tape processing performance without requiring any application changes.
- z/OS supports up to 32 subchannels per coupling channel path. This function is expected to help improve the utilization of long-distance coupling links and provide more coupling link bandwidth for long-distance coupling links. This support requires z/OS V1.10 with the PTF for APAR OA33510, or z/OS V1.11, or later, and a zEnterprise System with 1x InfiniBand coupling links, HMC level V2.11.1, and Support Element level V2.11.1, with a minimum Machine Change Level (MCL). For more information, refer to Hardware Announcement 111-121, dated July 12, 2011. RMF support is provided in z/OS V1.13 and is also available on z/OS V1.11 and z/OS V1.12 with the PTF for APAR OA35076.

Application integration

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

z/OS V1.13 Batch Runtime, a new base component, and associated new function are intended to form the foundation for a powerful, integrated, and modern batch application development, deployment, and runtime environment. The z/OS Batch Runtime provides the framework for Java to COBOL interoperability, for transactional updates to DB2, and for sharing database connections between Java and COBOL, enabling you to extend your COBOL batch applications with Java. This new function is intended to help you reduce costs while improving business agility and the operational efficiency of your batch environment.

In addition, JES2 enhancements are designed to make programming JCL easier and to give you more control of your batch applications. Functions such as in-stream data in cataloged procedures, more options on reporting the return code for jobs, and the ability to stop and hold a job at the end of a step (not just at the end of the job) give much more granularity and control.

Extend the power of z/OS batch even more with a new REST API (included with z/OSMF V1.13), which can allow you to submit, query, and retrieve output for z/OS batch workloads from both z/OS systems and other systems.

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

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

- z/OS V1.13 introduces many new batch programming capabilities:
  - The z/OS Batch Runtime environment is intended to form the foundation for resilient, highly available, secure, and scalable services for batch applications. The z/OS Batch Runtime is intended to provide the framework for Java to COBOL interoperability, for transactional updates to DB2, and for sharing database connections between Java and COBOL.

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

    Initially, Java, DB2, and COBOL support is provided with IBM 31-bit SDK for z/OS, Java Technology Edition, Version 6.0.1 (5655-R31), DB2 V9.1 for z/OS (5635-DB2), or later, with PTFs, and IBM Enterprise COBOL for z/OS V4.2 (5655-S71), or later.
  - In z/OS V1.13, several batch enhancements are provided for JES2 environments that are intended to help simplify the development of batch applications.
    - Support is provided for in-stream data sets to be used within JCL procedures and for include statements. This is designed to improve usability of JCL procedures; for example, by making it possible for you to put utility control statements in the same member as the rest of the procedure.
    - Support is provided to allow jobs for which journaling is used to be stopped after a currently running step has finished and held for restart in the following step. This is intended to allow less-disruptive system shutdowns.
    - Job-level return code support is provided. A new JOBRC keyword on the JOB statement is designed to allow you to specify whether a job's return code should be set to the highest return code of any step that was run, the return code of the last step, or the return code of a specific step. This new support can make it simpler to determine whether a job succeeded or failed by looking in a single place for the result.
    - Support for specifying a time, interval, or number of output lines on the UNALLOC parameter of the SPIN keyword on the DD statement. This is intended to help improve availability for long-running address spaces.
- In addition to applications designed to simplify system management tasks, z/OSMF V1.13 also delivers a new API you can use to submit batch jobs and retrieve batch job information from z/OS using distributed systems as well as z/OS systems. This new API, which is HTTPS protocol-based and uses Representational State Transfer (REST), is introduced with z/OS V1.13 with z/OSMF V1.13. This is intended to make z/OS batch processing much more accessible to distributed systems and web-based processes.
- Batch concurrency can be improved. A new FREEVOL=EOV keyword on the JCL DD statement allows you to specify that volumes of a multivolume tape data set be made available for other processing once the processing for each volume is finished. This is intended to allow overlapped processing for multivolume data sets, which can speed batch processing.

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

  http://www.ibm.com/support/docview.wss?rs=114&uid=isg3T7000242
- z/OS V1.13 XL C/C++ includes these performance and usability enhancements:
  - For Metal C, new support is provided for:
    - -- IPA and HOT options, which provide interprocedural analysis and high-order loop analysis and transformations during optimization
    - -- Function property blocks to help you identify the C functions and their associated properties when code scanning or dump reading
    - -- A DSAUSER option you can use to request that a field the size of a pointer be reserved on the stack
    - -- An ARGPARSE option for automatic parsing of entry point options
    - -- The qsort() function, which allows an array to be sorted using a function you supply, and is intended to relieve Metal C programmers from having to write sort routines with similar capabilities
  - New ARCH(9) functions for programs running on zEnterprise System servers, including support for the interlocked storage access instructions, and for Multiply and Add in hexadecimal floating-mode with a new combination of FLOAT(MAF) and FLOAT(HEX) options
  - Informational messages, specified with FLAG(I), are now issued by default in z/OS UNIX System Services for consistency with batch compilations
  - TEMPLATEDEPTH option for C++ for increased template control, to specify the maximum number of recursively instantiated template specializations to be processed by the compiler
  - Additional source and binary compatibility support, including:
    - -- Suppress warnings for text following #else and #endif
    - -- Function attributes (gnu_inline, used, malloc)
    - -- Temporary lifetime extensions (C++ only)
    - -- Rvalue bindings to a non-constant reference (C++ only)
    - -- Intrinsic complex types added to C++
    - -- Addressable labels
  - New C++0x function, trailing return type, whereby the compiler deduces the type of an auto variable from the type of its initializer expression
  - Debugging enhancements:
    - -- In prior releases, the z/OS dbx debugger for C/C++ programs requires that the compiler insert Execute (EX) instructions (called hooks) so that the debugger can gain control during program execution to display information about the program and the data it processes. In z/OS V1.13, dbx provides support for debugging programs compiled without hooks, in addition to those compiled with hooks. This support is intended to allow you to debug programs whose sizes and performance characteristics are more closely aligned with production programs.
    - -- New debugging APIs provide easier access to debug information in .mdbg and .dbg files.
    - -- Debug information for inline procedures, gives the ability to set entry breakpoints at all inline instances.
- Language Environment supports recovery from additional abends during output and close operations for C/C++ programs, and can return to C/C++ programs,

indicating that an I/O error has occurred rather than issuing an abend. This is intended to provide a more predictable recovery environment for C/C++ programs when I/O errors are encountered.

- The Base Control Program internal interface (BCPii) allows authorized programs to perform functions related to CPC Image User groups on IBM zEnterprise and IBM System z10® servers with a minimum microcode level (MCL). New function in z/OS V1.13 is designed to allow available CPC Image User groups on a particular CPC and their member images to be listed in, connected to, and disconnected from groups; to support queries for group attributes; and to support issuing most HWICMD BCPii commands to all the members of a specified group.
- Support in z/OS UNIX System Services for user-level file system mounts is designed to provide support for limiting overall user mounts, the ability to allow these functions for specific users and groups of users, the ability to restrict which mount points a user may use, and the ability to allow user mounts only at empty mount points. Also, improved warning and failure messages are provided for some mount and unmount operations. The ability to move these mounts from system programmers or administrators directly to users can improve usability and flexibility, and make it easier to use z/OS UNIX.

  z/OS UNIX System Services is enhanced with:

  - A script command you can use to record the output of a shell session. For example, a script command could be used to create a session log file for auditing or another output file intended to be processed later.
  - Updates to the vi and ex editors that allow you to edit untagged text files and have them treated as if they contained text data using a codeset you specify. New support also allows you to override the built-in autoconversion function, making it easier to edit ASCII-encoded files under z/OS UNIX.
  - A capability that allows you to specify that IPv4 UDP datagram reply packets must flow on the same interface where the request arrived when a server system has multiple home addresses with multiple routes back to the client or is using a DVIPA. This support, designed to be similar to the existing support for IPv6, is intended to allow applications to require that the response to a request be restricted to the same IPv4 address from which the request was received.
- The Program Management Binder supports new operations for unnamed ($PRIVATE) sections in load modules and program objects. This new design allows you to specify that all unnamed sections be deleted or that specific unnamed sections be named (using CHANGE statements) or replaced. These new functions are intended to make it easier to maintain load modules and program objects in place while avoiding unnecessary growth and virtual storage use due to an accumulation of unnamed sections.
- Support is provided to allow tasks in a WLM enclave that have subtasks to leave that enclave and for subtasks of a task joining a WLM enclave to be joined automatically to that enclave. In prior releases, enclave tasks with subtasks are not allowed to leave an enclave. Any subtasks created by a task that has joined an enclave are automatically added to the same enclave. This new support is designed to allow a task to leave an enclave along with its subtasks. This new support also allows a task joining an enclave to have its non-enclave subtasks joined to that enclave. This support is also available on z/OS V1.11 and z/OS V1.12 with the PTFs for APARs OA33344 and OA33406.
- The DFS SMB Server supports clients running both the 32- and 64-bit versions of Microsoft Windows 7 Professional, Microsoft Windows 7 Enterprise, and Microsoft Windows 7 Ultimate Editions. This support is also planned to be available for z/OS V1.11 and z/OS V1.12 with the PTF for APAR OA36149 by z/OS V1.13 general availability.
- NFS provides support for the 32- and 64-bit versions of Microsoft Windows 7 Professional Edition with Open Text NFS Client or Open Text NFS Server installed.
- XCF provides a simplified set of interfaces for passing messages within a Parallel Sysplex. New services are designed to allow a server to be established to process messages and for messages to be sent across the sysplex without first joining an XCF group. This is intended to make it easier to exploit XCF services for

applications that do not require the member management and monitoring provided by the XCF group services interfaces.

- Language Environment adds support for initializing multiple CEEPIPI main environments under one task control block (TCB) and to provide access to a user word for each environment both within and outside it. This is intended to help you migrate Preinitialization Compatibility Interface (PICI) environments to CEEPIPI.
- z/OS Unicode Services implement improved bidirectional character support for applications that process scripts such as those for the Arabic and Hebrew languages. These languages, among others, are written and read from right to left but often contain strings that read from left to right. This new function is designed to support such nested bidirectional ("Bidi") strings. Samples are supplied that show how to use these extended bidirectional services, and a sample object file is supplied that you can include with C applications to make it easier to use z/OS Unicode Services functions defined by The Open Group's Bidi interface. Also, the z/OS Unicode conversion information service provides additional information about Coded Character Set Identifiers (CCSIDs), including information to identify substitution, newline, line feed, carriage return, end-of-file, and space character codes.
- Storage management is changed to allow tasks using subspaces to access 64-bit private and 64-bit shared virtual storage without the overhead of a Branch in Subspace Group (BSG) instruction. This is intended to help provide virtual storage constraint relief by making it easier for applications to exploit 64-bit storage and to use system services that use 64-bit storage.
- These IBM Tivoli Directory Server for z/OS (LDAP) enhancements are provided:
  - DB2-based TDBM back end and bulk load utility are enhanced to support 64-bit addressing. This enhanced TDBM back end, when used with DB2 9 for z/OS (5635-DB2) with PTF UK50918 or a later release, is intended to improve scalability of IBM Tivoli Directory Server for z/OS for large LDAP deployments. In addition to this TDBM enhancement, a bulk load utility capable of executing in 64-bit addressing mode facilitates loading large LDAP directory databases.
  - Support is extended to enable Kerberos binds to be processed by Microsoft's Active Directory Server. This support is intended to improve the interoperability between z/OS applications that utilize the IBM Tivoli Directory Server for z/OS client services and Kerberos authentication in environments where Active Directory is being utilized.
  - Support is provided for server-side paged and sorted search results as described by RFC 2696 and RFC 2891. The first capability allows LDAP clients to specify that they should be passed a subset of search results (called a page) and successive pages one at a time rather than receiving an entire set of results. The second enables LDAP clients to receive sorted search results based on a list of criteria, where each criterion represents a sort key. For example, a client application might want to sort the list of employees at a particular work location by surname, common name, and telephone number. Rather than building two search lists, a client application can build a single search list for the server to use so the sorted list can be returned. This is intended to provide sorting capability for client applications that do not have available native sort functions and can help improve performance.
- z/OS CIM Server provides sequence identifiers in the indications profile. This is designed to allow unsuccessful deliveries to be retried by the CIM Server, lost and duplicate deliveries to be detected by a WBEM listener, and a listener to reorder any indications that arrive out of order. This new function can provide better reliability and robustness for event processing in CIM.
- HCM supports the 32-bit and 64-bit versions of Microsoft Windows 7 Professional Edition.
- z/OS Communications Server provides a DISPLAY TCPIP,TELNET command to display a list of TN3270E Telnet servers.
- z/OS Communications Server supports Network Management Interface (NMI) functions for the system resolver to allow the resolver configuration file and the contents of the global TCPIP.DATA file to be retrieved when they are in use. Also, the NMI TMI_Copybuffer callable services (EZBTMIC1, EZBTMIC4, and TMI_Copybuffer()) are available for use by unauthorized programs when the user

IDs under which they run are given access to resources defined to an external security manager, such as RACF.

- In z/OS V1.12, a Java API was implemented for SDSF to allow Java applications access to the data available through SDSF panels. That API is a set of classes, with each class corresponding to a panel, with each instance representing a row, with methods to perform operations similar to action characters and overtypes, and with support for filtering. In z/OS V1.13, support is provided for returning a subset of the requested data. For example, if a set of filters match a large number of SDSF instances normally all returned in a list, a sublist can be requested in a similar manner where the caller can specify relative starting and ending indexes to limit the number of instances to be returned. This new support is intended to allow Java applications to request smaller amounts of data from SDSF.
- In z/OS V1.13, SDSF REXX support is provided for reading the sysplex-wide operations log (OPERLOG), in addition to the single system log (SYSLOG). The support for OPERLOG is designed to be very similar to that for SYSLOG, allowing records to be selected by start time and date and providing the ability to specify a maximum number of records to be returned. Additionally, the OPERLOG display is designed to show messages in the same colors in which they would be displayed on a console. An SDSF Java interface also supports access to OPERLOG. These enhancements are intended to make it easier for you to perform complex repetitive functions programatically using SDSF.
- In z/OS V1.13, z/OS XML System Services supports a binary XML format, Extensible Dynamic Binary XML (XDBX). XDBX supports a subset of XML constructs in a new binary form, and appropriate use of XDBX is expected to provide performance improvements for validating parsing operations compared to conventional XML text documents. This function is planned to be enabled on z/OS V1.13 with the PTF for APAR OA36712 in fourth quarter 2011.

Security

z/OS V1.13 introduces capabilities to assist you in managing the security around your z/OS environment. Security is often a moving target. New security-related capabilities are often followed by ever-more sophisticated and creative attempts to circumvent them. z/OS has a huge breadth of security capabilities built into the base of the operating system at no extra cost. Many z/OS security functions, such as data encryption, encryption key management, digital certificates, and password synchronization can be deployed as part of enterprise-wide security solutions and can help accelerate implementation, mitigate risk, and reduce compliance costs. z/OS V1.13 delivers:

- Further integration of RACF and IBM Tivoli Directory Server for z/OS (TDS for z/OS, LDAP). RACF gives you tremendous power for user identification and authorization, resource protection, and overall auditing and reporting. TDS for z/OS, included in the base of z/OS, provides the capability for a simplified programmatic access to RACF function, and the ability to integrate with IBM Tivoli security products. This integration between RACF and TDS for z/OS gives you not only the ability to start synchronizing security processes and information across your enterprise, but also the ability to extend the power for RACF and z/OS security to non-z/OS users and resources. For z/OS V1.13, TDS for z/OS is expanded to include usage of SHA-2 based and salted SHA-2 based encryption standards.
- Integration and exploitation of new encryption standards. Encryption can obscure information, making it unreadable to unauthorized parties. Encryption can be used to protect the confidentiality, integrity, and availability of both data at rest and data being transmitted, and in general remains one of the strongest aspects of IT security. z/OS V1.13 is updated with many cryptographic capabilities. RACF supports hardware-generated Elliptic Curve Cryptography (ECC) secure keys, giving you the ability to issue and use certificates' hardware-protected ECC keys. z/OS System SSL enables TLS-based communications to leverage ECC keys (software or hardware generated).
- Highly scalable and resilient digital certificate support. Digital certificates, often a required part of security compliance guidelines, can be used to help authenticate users and devices, and to establish secure communications or virtual private

network (VPN) sessions. z/OS PKI Services is a complete digital certificate authority included in the base of z/OS at no additional charge. Billions of digital certificates can be efficiently created on z/OS. This capability can be useful in helping you to maintain your security standards while potentially reducing cost by virtue of generating and managing your own digital certificates from z/OS. In z/OS V1.13, PKI Services adds support for using DB2 9 for z/OS, or later, to store objects and certificates, enabling enterprise-class scale and resilient certificate management.

- Network communications capabilities designed with security in mind. z/OS Communications Server supports a wide range of security technologies for your networks designed to help you create end-to-end secure networking solutions. Extended and enhanced support for Internet Key Exchange version 2 (IKEv2) and Federal Information Processing Standards (FIPS 140-2) can help you meet stringent government or industry security compliance guidelines.
- System z Security Portal

  IBM urges all z/OS users to get registered for the System z Security Portal and to keep current with security and system integrity fixes.

  Many security experts agree that in today's world, it is more important than ever that you track and install critical security and system integrity fixes as part of your overall enterprise security policy to mitigate risk in an environment of heightened cybersecurity concerns. IBM recommends that users of the z/OS operating system validate the currency of security and system integrity service and take prompt action to install all security and integrity PTFs. Security and system integrity fixes are included in Recommended Service Upgrades (RSUs), and maintaining RSU currency can help you minimize exposure to security and integrity issues.

  The System z Security Portal is intended to help you stay current with security and system integrity fixes by providing current SMP/E HOLDDATA you can use to identify security and system integrity fixes that you might not have installed on your z/OS systems before they are marked RSU. The System z Security Portal now also provides Associated Common Vulnerability Scoring System (CVSS) V2 ratings for new APARs.[4] Because widespread specifics about a vulnerability could increase the likelihood that an attacker could successfully exploit it, and in response to many customer requests to maintain the confidentiality of any vulnerability information reported to IBM, this information is available only to registered z/OS customers who agree not to distribute it to others. IBM recommends that you visit the System z Security Portal site to get the information you need to be registered as an authorized user of this information. Visit

  http://www.vm.ibm.com/security/aparinfo.html

  Also, questions can be directed to: syszsec@us.ibm.com

[4] According to the Forum of Incident Response and Security Teams (FIRST), the Common Vulnerability Scoring System (CVSS) is an "industry open standard designed to convey vulnerability severity and help to determine urgency and priority of response." IBM PROVIDES THE CVSS SCORES "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. CUSTOMERS ARE RESPONSIBLE FOR ASSESSING THE IMPACT OF ANY ACTUAL OR POTENTIAL SECURITY VULNERABILITY IN THEIR SPECIFIC ENVIRONMENT.

IBM DOES NOT PROVIDE A CVSS ENVIRONMENT SCORE. THE CVSS ENVIRONMENT SCORE IS CUSTOMER ENVIRONMENT SPECIFIC AND WILL IMPACT THE OVERALL CVSS SCORE. CUSTOMERS SHOULD EVALUATE THE IMPACT OF ANY ACTUAL OR POTENTIAL SECURITY VULNERABILITY AND CAN CALCULATE A CVSS ENVIRONMENT SCORE.

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

- In z/OS V1.13 with the PTF for APAR OA35970, new function in z/OS UNIX System Services is provided to enable access control of z/OS UNIX file systems using SAF. This new optional access control check is designed to use profiles in a new FSACCESS class to determine whether access to any file in the entire file

system should be granted. When a user is authorized to use the file system, existing file permission bits and access control lists (ACLs) will be used to control access to individual files and directories. This new function is intended to help improve security administration and auditability for z/OS UNIX file systems, and is also planned to be available for z/OS V1.12 with the PTF for APAR OA35970 in September 2011.

- IBM Tivoli Directory Server for z/OS (LDAP) supports SHA-2 hashing for user passwords stored in the LDBM, TDBM, and CDBM back ends. This is intended to help address the need for stronger hashing and cryptographic algorithms and enhance interoperability with distributed IBM TDS, openLDAP, and other LDAP servers. Also, this is intended to meet the National Institute of Standards and Technology (NIST) policy for the use of hash functions.[5] This extension supports SHA-2 (SHA224, SHA256, SHA384, and SHA512) and salted SHA-2 (SSHA224, SSHA256, SSHA384, and SSHA512) hashing of user password attributes. This support uses the persistent PKCS#11 token in ICSF to perform the hashing.

[5] For more information, visit

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

- The Cryptographic Support for z/OS V1.11 through z/OS V1.13 web deliverable is planned to be made available September 9, 2011. To obtain this web deliverable, when available, visit

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

  This web deliverable is planned to support z/OS V1.11, z/OS V1.12, and z/OS V1.13, and to include support for these new functions when used with a Crypto Express3 Coprocessor (CEX3C) card, available on IBM zEnterprise servers:

  - AES Key-Encrypting-Keys (KEKs), which are thought to be stronger than DES and TDES KEKs, and to better protect AES and ECC encryption keys.
  - Diffie-Hellman key exchanges using elliptic curve cryptography (ECC), and encryption of ECC keys encrypted under AES Key Encryption Keys.
  - PKA RSA PKCS#1 Optimal Asymmetric Encryption Padding (OAEP) using the SHA-256 algorithm, in addition to the existing support for the SHA-1 algorithm. This function is intended to help meet the requirements of the Japanese Banking Association, and is planned to be available for z/OS V1.13 and the Cryptographic Support for z/OS V1.10 through z/OS V1.12 web deliverable with the PTF for APAR OA36705 in September 2011.
  - Storing up to 100 PIN decimalization tables within the secure boundary of the cryptographic coprocessors. This function is intended to help you meet the ANSI X9.8 PIN protection requirements that are thought to make PIN block security decimalization table attacks more difficult. This support also requires a Trusted Key Entry (TKE) V7.1 workstation, available on IBM zEnterprise servers.
  - Dynamic PKA Master Key Changes, designed to allow PKA callable services processing to continue while the key is changed. This support aligns PKA master key change procedures with those for AES, DES, and ECC master key changes. This support is also available with a Crypto Express2 Coprocessor (CEX2C) card, available for IBM System z10 servers.
  - Exchanging DES and TDES keys with other cryptographic systems using ANSI TR-31 Key Blocks. TR-31 key blocks are intended to allow keys and their attributes to be exchanged between different cryptographic systems, as described by the ANSI TR-31 Specification Interoperable Secure Key Exchange Key Block Specification for Symmetric Algorithms, Version 7-12-2010.

  Also, ICSF is planned to support:

  - Support for hardware-based RSA 4096-bit cryptography using a Crypto Express3 Accelerator (CEX3A), available on zEnterprise System servers, in addition to the existing support for the same function using the Crypto Express3 Coprocessor (CEX3C) available on IBM zEnterprise servers.
  - Dynamic CKDS Administration, which is designed to allow CKDS refresh operations to be processed in parallel with CKDS updates, and to be coordinated for all members of a Parallel Sysplex that share the same CKDS

data set with the system on which the changes are originated, providing a single point of administration for all the systems in the sysplex while helping provide continuous availability for related ICSF encryption functions. This new function supports dynamic utility-based updates to an active CKDS and CKDS replacement.
  - Dynamic CKDS Reencipher and Symmetric Master Key changes, a function designed to simplify the process for changing symmetric master keys while helping provide continuous availability for related ICSF encryption functions. Similar to the refresh function described above, this will allow CKDS updates to be processed in parallel, without the need to suspend CKDS updates, and coordinate the changes for all members of a Parallel Sysplex that share the same CKDS data set with the system on which the changes is originated, providing a single point of administration for all the systems in the sysplex.
- In z/OS V1.13, PKI Services now supports:
  - Using DB2 9 for z/OS, or later, for Object Storage and for the Issued Certificate List. The optional use of DB2 by z/OS PKI is designed to allow you to take advantage of the scalability of DB2 for large-scale certificate deployments, and also take advantage of DB2 designs for high availability, backup, and recovery.
  - Using Mozilla-based web browsers on Windows and Linux platforms to use smart cards when generating certificates and to enable Microsoft Internet Explorer 6, Internet Explorer 7, and Internet Explorer 8 to use an updated PKI application that includes its own ActiveX controls, which allows users to install renewed certificates.
  - Certificate revocation lists (CRLs) larger than 32 kilobytes (32,767) in size. This is intended to help support CRL distribution point environments, such as those using LDAP, for large certificate hosting environments and to improve the flexibility of z/OS PKI Services.
- In z/OS V1.13, System SSL now supports:
  - Extending Elliptic Curve Cryptography (ECC) support to enable the creation of X.509 V3 certificates with ECC keys. This is designed to enable you to create these certificates in key database files or ICSF PKCS#11 tokens, and to allow applications that use certificate support through the Certificate Management Services (CMS) API to create ECC style certificates.
  - Extending its use of ECC to enable TLS V1.0 and TLS V1.1 handshakes using ECC cipher suites and digital certificates during secure connection negotiations as described by RFC 4492.
  - ECC certificates residing in SAF key rings with their private keys stored in the ICSF public key data set (PKDS). System SSL uses the private keys in secure digital signature generation operations using the Crypto Express3 Coprocessor (CEX3C) cards available on IBM zEnterprise servers.
- RACF Remote Sharing Facility (RRSF) is designed to support the use of TCP/IP connections, in addition to the current support for SNA Advanced Peer-to-Peer Communications (APPC). When used with TCP/IP, RRSF is designed to use Application Transparent Transport Layer Security (AT-TLS) to authenticate peer RRSF nodes and encrypt replication traffic. AT-TLS provides encryption algorithms thought to be stronger than those available using APPC. A sample rule that specifies the strongest available encryption method is provided. The use of TCP/IP is intended to help improve usability, simplify network configuration, and improve the security of RACF data shared between RACF nodes in the RRSF network.
- The IBM Tivoli Directory Server for z/OS (LDAP) allows LDAP administrators to delegate LDAP administrative authority. This function is designed to allow the LDAP administrator to define an administrative group, add one or more distinguished names to that group, and assign one or more administrative roles to each user, either in LDAP or in an external security manager such as RACF. This is intended to provide more flexibility in LDAP administration, help improve auditability, and help improve security by allowing for separation of duties and eliminating reasons for identity sharing.
- Network Authentication Service supports checking IP addresses in tickets for Kerberos, as described by RFC 4120. A new CHECKADDRS field in the KERB segment of the KERBDFLT profile in the REALM class allows you to specify whether address checking should be enabled or disabled. Network Authentication Service is updated to support the functions described by RFC 4537. This RFC

defines an encryption-type negotiation extension to the Kerberos protocol, to enable clients and servers to use stronger or different encryption mechanisms than are supported by the KDC. This is intended to help improve the security and interoperability of applications that use Kerberos and the GSS-API on z/OS and other platforms.

- RACF support generates Elliptic Curve Cryptography (ECC) secure keys using the Crypto Express3 Cryptographic Coprocessors (CEX3C) available for zEnterprise servers. New keywords on the RACDCERT command are designed to allow you to specify that an ECC key be stored in the ICSF public key data set (PKDS). Corresponding hardware ECC key support is available for PKI Services. This new support is intended to allow you to expand your use of certificates with ECC keys protected by hardware.
- The z/OS Communications Server adds many security enhancements:
  - z/OS Communications Server intrusion detection technology is enhanced to add support for IPv6 traffic and also additional attack types related to data hiding, TCP-related denial of service, and Enterprise Extender. This is intended to provide IPv6 intrusion detection security equivalent to that provided for IPv4 and help you prevent certain error situations and denial of service attacks on z/OS Communications Server from causing system-wide storage constraint situations. The Configuration Assistant for z/OS Communications Server provides a quick and easy interface to create the configuration for this new intrusion detection services (IDS) support.
  - Internet Key Exchange version 2 (IKEv2) is the latest version of the Internet Key Exchange (IKE) protocol specified by RFC 5996, and support for IKEv2 was added to z/OS Communications Server V1.12. z/OS V1.13 Communications Server adds Network Address Translation (NAT) traversal support using IKEv2 for IPv4 to make it easier to migrate to IKEv2 if you use NAT. The Configuration Assistant for z/OS Communications Server provides a quick and easy interface to create the configuration for IKEv2 support.
  - Sysplex-wide security associations in z/OS Communications Server allow IPSec protected workloads to benefit from workload balancing. This function works in conjunction with Sysplex Distributor to support both takeover and distribution of IPSec tunnels and traffic for dynamic VIPAs in a Parallel Sysplex environment. In prior releases, this function supports tunnels negotiated using IKEv1 and IPv4 addresses; in z/OS V1.13, sysplex-wide security associations support IPSec tunnels negotiated using IKEv2 and IPv4 addresses.
  - Resources defined to a security manager, such as RACF, are currently available to control which user IDs are allowed to create and destroy VIPARANGE DVIPAs. This capability is extended to allow you to specify authorization for specific ranges of VIPARANGE DVIPAs or for individual VIPARANGE DVIPA addresses.
  - IPSec support for FIPS 140-2 cryptographic mode is enhanced. AES-GCM and AES-GMAC support is added when using sysplex-wide security associations in FIPS 140-2 mode, and the IKE daemon is enhanced to take advantage of new services provided by ICSF when running in FIPS mode. The Configuration Assistant for z/OS Communications Server provides a quick and easy interface to configure FIPS 140-2 mode.
  - The FTP and TN3270 servers provided with z/OS Communications Server are updated to support password phrases. This is intended to enable FTP users and applications and TN3270 users to take advantage of the security and usability advantages of password phrases.
  - Processing of the LIST=SUMMARY option of the DISPLAY NET,EEDIAG,TEST=YES command from z/OS Communications Server is enhanced. This is designed to expedite Enterprise Extender connectivity test results and eliminate the dependency on ICMP messages, which are often blocked by firewalls. This is expected to provide value to you when your IP configuration includes firewalls that block ICMP messages, resulting in delayed EE connectivity test results. Processing for DISPLAY NET,EEDIAG,TEST=YES,LIST=DETAIL remains unchanged. It requires ICMP messages to display routing information for EE connections.
- IBM Ported Tools for z/OS (5655-M23), a no-charge product designed to deliver ported tools and utilities for z/OS, provided the sudo (su "do") utilities in the PTF for APAR OA34949. This function, part of the Supplementary Toolkit for z/

OS feature, is designed to deliver the sudo open source tools that allow system administrators to delegate authority to users or groups of users for running specified commands as a superuser, or as another user, while providing an audit trail of the commands and their arguments. This command-line application is designed to run under z/OS UNIX System Services.

Availability

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

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

- Smart technologies for improved system and subsystem availability. zSeries File System (zFS) is updated with self-healing capability for internal errors, improving the availability of any application using zFS, such as WebSphere Application Server for z/OS.
- Improved data availability and agility. JES3 enables the capability of adding spool volumes without IPL. DFSMSdfp enables concurrent service for some components, to allow you to apply maintenance and updates without IPL. JES2 enables you to discontinue the use of a spool volume or increase the size of a spool volume dynamically, to help you improve availability when managing these spool volumes.
- Predictive monitoring and diagnostics designed to help detect problems before they occur.
  - Predictive Failure Analysis (PFA), introduced with z/OS V1.11, enables your z/OS system to learn heuristically from its own environment to anticipate and report on system abnormalities, potentially detecting system problems before any outward symptoms occur. For z/OS V1.13, PFA adds additional monitors for JES2 spool utilization and enqueue activity. In addition, PFA adds the ability to automatically invoke Runtime Diagnostics to help you pinpoint the source of the anomaly even faster.
  - Runtime Diagnostics, introduced with z/OS V1.12, enables your z/OS system to quickly and automatically scan system components, analyze metrics, and report on components (such as address spaces or tasks) it suspects as being the cause of potentially abnormal system behavior. Runtime Diagnostics is designed to operate on a still-running z/OS system, giving your system programmers accurate information to work from in real time. z/OS V1.13 Runtime Diagnostics adds additional processing for GRS latch and z/OS UNIX System Services file system latch contention.
  - The combination of PFA and Runtime Diagnostics can help improve your system availability by identifying potential issues before they can cause an unplanned outage.

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

- JES3 is designed to support adding spool volumes dynamically; additional spool-related JES3 initialization statements can be processed by the *MODIFY CONFIG command and during JES3 hot starts with refresh. This is intended to help improve availability by removing the existing requirement for a JES3 complex-wide IPL when adding spool volumes.
- In z/OS V1.13, JES2 is designed to allow you to discontinue the use of a spool volume dynamically in a relatively short period. A new $M SPOOL command will allow you to specify that either a new spool data set of equal or greater size on a different volume be used to replace an existing spool data set, or that another

existing spool data set with sufficient contiguous space be used to replace an existing spool data set. Also, a new $TSPOOL,SPACE command allows you to increase the size of an existing spool data set. This new function is intended to help you improve availability when removing spool volumes from a JES2 system or MAS and expected to be much faster than draining a spool volume. For example, you could use dynamic volume expansion to increase the size of a spool volume, increase the size of the spool data set on that volume, and use that space to replace another existing spool volume. This function is planned to be enabled on z/OS V1.13 with the PTF for APAR OA36158. Availability is planned for fourth quarter 2011.

- Runtime Diagnostics is designed to provide more information intended to help you determine why a system is not running normally. It is extended to check for GRS latch and z/OS UNIX System Services file system latch contention.
- Predictive Failure Analysis (PFA) is designed to monitor JES2 spool utilization for persistent address spaces, monitor the enqueue request rates for the persistent address spaces having the highest rates, and monitor the enqueue request rate for the entire system. Also, when PFA detects a rate that is too low for SMF arrival rates, message arrival rates, or enqueue request rates, it is designed to invoke Runtime Diagnostics automatically. When Runtime Diagnostics indicates there is a problem, PFA is designed to issue a health check exception and include that information. This new function is intended to help you quickly diagnose system problems and problems with persistent address spaces.
- I/O Supervisor (IOS) improvements to I/O error recovery are provided. IOS is designed to track path-related errors and automatically remove failing paths from all affected devices for the affected control unit. This new capability is designed to reduce the time it takes the system to recover from path-related errors and help prevent system performance problems that can occur when a significant amount of time is spent in repetitive channel error recovery.
- zFS is designed to automatically recover disabled aggregates when possible in single-system and in sysplex environments when multiple systems are running in zFS sysplex-aware mode. This is intended to eliminate the need to recover the file system manually before applications close and reopen the files to regain access to them. zFS is also designed to maintain existing connections to file systems while recovering from internal errors when possible. This is intended to provide less-disruptive recovery from most internal zFS problems, and designed to allow applications with open files to retry file system operations successfully once zFS recovery has been completed.
- The Direct Access Device Storage Manager (DADSM) component provides Dynamic Exit support for both the preprocessing exit (IGGPRE00) and the postprocessing exit (IGGPOST0). In addition to providing the ability to change exits without interrupting the operation of the system, support for Dynamic Exits provides the ability to run multiple exit routines in an order you specify without having to integrate exits from multiple sources and vendors.
- The DADSM and CVAF components of DFSMSdfp support concurrent service. These components are designed to allow you to dynamically update their programs without IPL. This is intended to help improve system and application availability.
- In prior releases, the CATALOG, LLA, VLF, RESOLVER, TCP/IP, DFSMSrmm, and TN3270 address spaces were marked reusable. In z/OS V1.13, the DEVMAN address space is marked as reusable so that restarting it does not subtract from the system's maximum number of address spaces or from the system's reserve of nonrestartable address spaces when REUSASID(YES) is specified in DIAGxx. These changes are intended to help you improve system availability.
- In z/OS V1.11, GRS added support for latch obtainers to identify their latches to make it easier to determine who held them when reading messages from the DISPLAY GRS,ANALYZE command, and while troubleshooting problems using latch owner information contained in dumps. In z/OS V1.13, GRS adds the same latch identity information to the output of the DISPLAY GRS,CONTENTION command.
- Command processing improvements have been made. The CMDS operator command, which among other options can be used to terminate the processing of a particular command, has a new FORCE option. As with other FORCE commands and keywords, the FORCE option is intended to allow you to specify that a command be terminated, but because the effects of forcing command

termination are not always predictable, it is intended to be used only when there is no other option but to IPL. A security profile in the OPERCMDS class can be used to limit the use of FORCE to authorized users. This new function is intended to help improve system availability.

- The DISPLAY OMVS,WAITERS display is enhanced to show a table for file latch activity. Similar to the table for file system latches, it also shows information about the holders, waiters, latches, file device numbers, file inode numbers, latch set identifiers, file names, and owning file systems. Additionally, filtering options are provided for the DISPLAY OMVS,WAITERS command. This new function is intended to make it easier to diagnose latch contention problems related to z/OS UNIX file systems.
- DFSMShsm control data set (CDS) backup processing is enhanced. This processing is designed to begin the CDS backup function immediately instead of waiting for DFSMShsm requests to complete. When you specify that a point-in-time copy technique is to be used, CDS backup is also designed to back up the journal with minimum impact to DFSMShsm request processing.
- Message flood automation processing is changed to increase the limit of message IDs from 50 to 1024, allow up to 128 address spaces to be tracked per system, and allow the default message set to be identified in a parmlib member. This is intended to increase the scope of message flood automation, improve its usability, and help improve system availability.
- The z/OS system resolver was enhanced in Version 1.12 to detect unresponsive name servers and issue operator messages when one is detected. In Version 1.13, this support is taken a step further so that the system resolver will automatically stop using name servers that become unresponsive, and automatically start using them again when they recover. This is intended to enhance network availability for processes that rely on name resolution services by avoiding long time-out periods for unresponsive name servers.
- The z/OS Communications Server sysplex distributor VIPAROUTE function is enhanced to make it more responsive to changes in the routing topology as a TCP/IP stack joins or rejoins a sysplex group, and when OMPROUTE is recycled. This is expected to improve responsiveness of distributed dynamic VIPA connections during TCP/IP initialization and when TCP/IP rejoins a sysplex group.
- z/OS V1.13 Communications Server processing is enhanced to provide autonomic recovery from APPN routing tree corruption. Support for manual recovery using an operator command is also provided for recovery from cases of incorrect route selection.
- Sysplex autonomics functions provided by z/OS Communications Server are enhanced to monitor for a CSM-constrained condition and take recovery action based on configuration options. This is designed to allow autonomic recovery actions to prevent CSM-constrained conditions from affecting overall sysplex operations.
- In z/OS V1.13, new support is provided for the DFSMS System Data Mover (SDM) component. New keywords for the ANTMINxx member of parmlib, and corresponding support for the MODIFY ANTMAIN command, are intended to help you tune Concurrent Copy operations during periods of high update activity. Additionally, a new status filter option for the XQUERY command is provided to help you identify volumes for which performance might be causing application impacts, the PQUERY function of ANTRQST has new support to specify linkage adapter information between the primary and secondary storage controllers, and the CQUERY TSO/E command is designed to provide additional information about device connectivity.
- In z/OS 1.13, support is planned to allow devices used early during IPL processing to be accessed using subchannel set 1 or subchannel set 2. This is intended to allow the use of PPRC secondary devices defined using the same device number and a new device type in an alternate subchannel set to be used for IPL, IODF, and stand-alone dump volumes when needed. This support requires a zEnterprise System with HMC V2.11.1, Support Element V2.11.1, and a minimum Machine Change Level (MCL). This support is also available for z/OS V1.11 and z/OS V1.12 with the PTF for APAR OA35140.

Optimization and management capabilities

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

- The z/OS Workload Manager can be considered the gold standard of IT workload management. z/OS WLM allows you to define performance goals and assign a business importance to each goal. You define the goals for work in business terms, and the system decides how much resource, such as CPU and storage, should be given to it to meet each goal. z/OS Workload Manager will constantly monitor the system and adapt processing to meet the goals. The scope of z/OS WLM extends from helping the management of incoming TCP/IP and SNA traffic, to managing requests for I/O. z/OS middleware like DB2, CICS®, IMS™, WebSphere MQ, and other WebSphere products can take advantage of z/OS WLM to manage the priority and execution of transaction requests across the z/OS sysplex. In the future, IBM intends to more closely approach true end-to-end workload management with new z/OS Workload Manager extensions into IBM DASD storage subsystems. Refer to the Statements of direction section for more detail.
- RMF (optional priced feature of z/OS) collects performance data for z/OS and sysplex environments used to monitor systems' performance, detects bottlenecks, and allows you to tune and configure your system according to your business needs. For z/OS V1.13, RMF is enhanced to collect data on serialization-related performance issues and to provide more information about service classes for which WLM velocity goals are used. In addition, RMF takes advantage of the CIM-based data gatherers that are part of Linux on System z, Linux on System x, and AIX systems to give you the ability to monitor them along with your back-end z/OS systems in a single view. RMF data can also be viewed online and in real time using the z/OSMF Resource Monitoring task. z/OS V1.13 RMF and z/OSMF V1.13 give you more information to help you work with WLM policies and goals more easily.
- Just as z/OS WLM helps to improve server utilization, DFSMS helps to improve storage utilization. A new DFSMShsm function called on-demand migration is designed to make DFSMShsm space management more responsive. Additional storage optimization improvements are available for DFSMShsm and DFSMSdfp.

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

- A new DFSMShsm function called on-demand migration allows you to specify that space management be done when any volume in a storage group for which automigration is enabled exceeds the utilization threshold, rather than waiting for interval migration processing. This function is intended to allow you to use on-demand migration to replace interval migration processing, and to make DFSMShsm space management more responsive. Also, it is expected to reduce the high initial CPU utilization often associated with interval migration.
- A number of other DFSMShsm enhancements are provided:
  - Support in ARCCMDxx parmlib members for BEGIN and END specifications and multiple host IDs for the ONLYIF keyword, to allow you to specify groups of parameters related to one or more DFSMShsm hosts with a single ONLYIF keyword.
  - A new SETSYS subcommand you can use in place of the existing patch command to control the issuance of fast replication volume pairing messages.
  - A new subparameter for the RELEASE RECALL command you can use to specify that DFSMShsm avoid recalling data sets from missing or faulty tapes while releasing the hold on recalls from DASD.
  - Additional information in the output from the QUERY COMMONQUEUE(RECALL) command to identify the host from which a recall originated so you can more easily cancel a recall request.

  - A new patch you can use to suppress DFSMShsm messages when no storage groups or copy pools are eligible to be processed for various space management, backup, and restore operations.
- Improvements for the Object Access Method (OAM) component of DFSMSdfp include:
  - Adding to its current support of a storage hierarchy that includes disk, tape, and optical storage levels. In z/OS V1.13, OAM adds support for file systems to the disk level for zSeries File System (zFS) and Network File System (NFS) file systems, in addition to the existing support for DB2-backed object storage. Support of file systems for primary OAM object storage allows you to use z/OS UNIX file systems to store, retrieve, and delete objects, and to move objects between file systems and other locations in the OAM hierarchy. This support is intended to provide you new, more flexible ways to configure your OAM storage hierarchy.
  - Adding wildcard support for the MODIFY OAM,START,STORGRP command to allow you to initiate OSMC storage group processing for multiple object and object backup storage groups in single commands.
  - Providing dynamic update capabilities to allow you to change the maximum number of tape drives OAM will allocate to a given object or object backup storage group without restarting OAM.
  - Enhancing the OAM media migration utility, MOVEVOL, to improve performance when moving objects from a source volume that contains a large number of OAM collections.
  - Shipping the OAM component trace member, CTICBR00, in the SMP/E-managed parmlib data set so that you can use parmlib concatenation to avoid having to copy it from the samplib data set to parmlib during migration to new releases of z/OS.
  - Enhancing SMF Type 85 records to add counter fields with higher maximum values, in addition to the existing fields in kilobytes.
- The IBM Tivoli Directory Server for z/OS (LDAP) is extended to allow you to specify flexible search and time limits for LDAP groups. This new support is designed to enable LDAP administrators to balance LDAP server-enforced limits and the time needed by specific applications.
- With z/OS V1.13 and z/OSMF V1.13, RMF uses new CIM-based performance data gatherers for Linux on System z, Linux on System x, and AIX systems to provide a consistent monitoring solution for zEnterprise ensembles. This support is also planned to be available for z/OS V1.12 with the PTF for APAR OA36030 by z/OS V1.13 availability. Along with the Resource Monitoring plug-in for the z/OS Management Facility, first made available with z/OSMF V1.12, this is intended to display performance metrics from those platforms and combine them with z/OS metrics in common graphic views.
- RMF provides additional system suspend lock, Global Resource Serialization (GRS) enqueue, and GRS latch contention information in a new Postprocessor Serialization Report (available in XML output format) and also in new SMF Type 72 subtype 5 records. This is expected to help make it easier to respond to serialization-related performance issues.
- RMF also takes advantage of new WLM services to provide response time distribution information about all service classes for which velocity goals are set, in addition to those for which response time goals are set, in the Workload Activity Report. This is intended to give you a better view of response time distribution across all WLM service classes.
- PDSE support is enhanced with two new commands to simplify the identification of and recovery from some PDSE problems by allowing you to display all users of a specified PDSE, and to discard stale pages from PDSE directory cache.
- Infoprint Server supports:
  - Either a secondary JES2 subsystem or a primary JES2 subsystem. When a secondary JES2 subsystem is chosen, Infoprint Server is designed to use the secondary JES2 spool for all output data sets. This is intended to allow you to isolate your print data on a secondary JES2 spool so that unexpectedly large amounts of print output cannot cause impacts to the primary JES2 subsystem.
  - PrintWay™ Extended Mode, which is designed to allow you to select output to be printed based on the amount of the output to be printed for each job,

and direct it appropriately. For example, you might direct large print jobs to high-speed, high-volume printers and small ones to lower-speed distributed printers. This new support is intended to remove one of the last significant inhibitors for migrating from Infoprint Server PrintWay Basic Mode to Extended Mode so you can take full advantage of its more advanced functions. Infoprint Server PrintWay Extended Mode also provides several enhancements for emailing documents to allow you to:

  - -- Include text and line-data documents in the body of an email, so recipients can read them without opening an attachment
  - -- Use a subset of RFC 2822-compliant email headers in line-data documents without modifying JCL or printer definitions
  - -- Send different documents from a single print job to the same people or to different people using email headers, job attributes, or JCL, and include common introductory text in each
- The browser-based Infoprint Central application, which helps you display and control print status. It is enhanced to allow you to see the age of print jobs on the JES spool in all print job displays, display print jobs by age, and see new Infoprint Server PrintWay Extended Mode fields used for job selection in printer property displays.

Networking

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

Software support is provided for the OSA Express3 and OSA Express4S inbound workload queueing for Enterprise Extender as described in Hardware Announcement 111-121, dated July 12, 2011.

Software support is provided for OSA-Express4S QDIO IPv6 checksum and segmentation offload enhancements and for LPAR-to-LPAR checksum offload for both IPv4 and IPv6 packets as described in Hardware Announcement 111-121, dated July 12, 2011.

z/OS Communications Server is enhanced to allow HiperSockets™ to be integrated with the intraensemble data network (IEDN), extending the reach of the HiperSockets network outside of the central processor complex (CPC) to the entire ensemble, appearing as a single Layer 2 network. This enhancement works in conjunction with new HiperSockets integration with the IEDN support intended for the IBM zEnterprise and referenced in the Statement of Direction section of Hardware Announcement 111-121, dated July 12, 2011.

The number of VLANs supported by z/OS Communications Server on OSA Express is expanded. You can now define up to 32 VLANs per OSA port per IP version.

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

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

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

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

- More flexibility in specifying reserved ranges of TCP/IP ports
- Better memory and JES resource management for the CSSMTP server when retrying mail send operations
- Improved z/OS system resolver processing when name servers are unresponsive
- Autonomic recovery from APPN routing tree corruption
- Monitoring for CSM-constrained conditions and taking specified recovery actions
- Faster results from Enterprise Extender connectivity tests initiated using the DISPLAY NET,EEDIAG,TEST=YES command when firewalls block ICMP messages
- More-responsive VIPAROUTE processing when TCP/IP stacks join or leave the group and when OMPROUTE is recycled
- FTP support for more data set types in the extended addressing space (EAS) on extended address volumes (EAVs)
- Large format data sets in FTP
- A new DISPLAY TCPIP,TELNET command you can use to display a list of TN3270E Telnet servers
- New Network Management Interface (NMI) functions for the system resolver, and improvements to the NMI TMI_Copybuffer callable services
- Network Address Translation (NAT) traversal support using IKEv2 for IPv4, in addition to existing NAT traversal support for IKEv1
- More granular SAF-based security for VIPARANGE DVIPAs and individual VIPARANGE DVIPA addresses
- Password phrase support for the FTP and TN3270 servers
- Intrusion detection for IPv6 traffic and additional kinds of network attacks
- Sysplex Distributor takeover and distribution of IPSec tunnels and traffic for dynamic VIPAs using IKEv2 for better workload balancing
- AES-GCM and AES-GMAC when using sysplex-wide security associations in FIPS 140-2 mode, as well as IKE daemon exploitation of new ICSF services

Microsoft Windows client support

The Microsoft Windows-based Capacity Provisioning Control Center (CPCC) application supports the 32-bit and 64-bit versions of Microsoft Windows 7 Professional Edition.

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

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

HCM supports the 32-bit and 64-bit versions of Microsoft Windows 7 Professional Edition.

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

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Product positioning

z/OS has a long history of delivering innovative technologies for the enterprise; and with its leadership capabilities for scalability, availability, security, workload management, and application integration, some consider z/OS to be the best IT environment in the industry.

Extreme scalability

Consolidate your data and applications on z/OS. z/OS and its subsystems provide capabilities to assist you in handling increased scale as your user base, business processes, and data processing needs expand:

- Up to 80 processors per logical partition (with z/OS V1.11, or later, on zEnterprise servers).
- Up to 60 LPARs on a single server with IBM zEnterprise System (zEnterprise 196) and IBM System z10 Enterprise Class (z10 EC) servers.
- Support for up to 4 TB of real memory on a single z/OS image (z/OS 1.8, or later). This allows the use of up to 1.0 TB of real memory per LPAR on z10 EC and z196 servers.
- Support for large (1 MB) pages that can be used in addition to the existing 4 KB page size. This is expected to reduce memory management overhead for exploiting applications, and requires z/OS V1.9 or a later release and an IBM System z10 or later server.
- Planned support for storage volumes with up to 1 TB of storage per volume with z/OS V1.13 and IBM System Storage® DS8700 and DS8800 series with a minimum DS8000® licensed machine code, when available. Refer to the Statements of direction section.

Just as important as the scale of the system, is how it performs with that scalability. For example, HiperDispatch can provide intelligent dispatching of z/OS workloads and help improve the performance for higher n-way System z servers.

Near continuous availability

z/OS and System z hardware together can help provide outstanding single system availability. System z hardware has a base design point that is expected to provide over 30 years mean time between failures. It has self-healing capabilities, redundant componentry, dynamic sparing, and the ability for concurrent upgrades and microcode changes.

z/OS continues to refine its error checking, fault tolerance, isolation, and error recovery. System and data integrity are upheld with capabilities such as address space isolation, storage protect keys, I/O channel redundancy, and I/O error checking. With z/OS Predictive Failure Analysis and Runtime Diagnostics, z/OS goes one step beyond other operating systems to help detect system anomalies earlier, giving you time for corrective action before small issues can turn into larger system outages.

Beyond the single system is z/OS Parallel Sysplex clustering. Parallel Sysplex clustering is designed to provide your applications and data with not only continuous availability for both planned and unplanned outages, but also near-linear scalability and read/write access to shared data across all systems in the sysplex for data sharing applications. With IBM Parallel Sysplex technology, you can harness up to 32 z/OS systems into a single, logical computing facility while the underlying Parallel Sysplex clustering technology remains virtually transparent to users, outside networks, and applications. Sophisticated tools manage a sysplex to the highest levels of performance.

Enterprise security

Now more than ever, you have to protect your business from threats large and small, from external and even internal sources. z/OS and System z together are the

ideal security hub for the enterprise, with a wide range of security capabilities for authentication, audit, cryptography, and networking. IBM's commitment to z/OS system integrity coupled with the latest security and cryptographic enhancements can help your business protect users, applications, the network, transactions, and data. In addition, z/OS security features can help you meet regulatory reporting needs with confidence. These include encryption solutions to help secure data from theft or compromise, access control management, and extensive auditing features with the simplicity of centralized management.

The z/OS Communications Server can provide highly secure networking, via its Intrusion Detection Services (IDS), Application Transparent Transport Layer Security (AT-TLS), IPSec, Network Security Services (NSS), Defensive Filtering, and more.

The z/OS Security Server (RACF) can help support security roles outside of z/OS and into the enterprise. Working together with IBM Tivoli Directory Server (LDAP), RACF can provide enterprise-wide authentication and auditing capabilities.

z/OS PKI Services can provide centralized certificate life cycle management within z/OS, taking the cost of digital certificates out of the hands of third-party vendors and applying it back to your bottom line.

Cryptography

Cryptography on z/OS makes a lot of sense. On z/OS cryptographic capabilities are highly available and scalable and can take advantage of System z technologies such as Parallel Sysplex and Geographically Dispersed Parallel Sysplex™ (GDPS®). Key management is simpler on z/OS because a central key store is easier to maintain than many distributed key stores. And, of course, your encryption keys are highly secure; the secure key never leaves the System z server in the clear.

z/OS has great depth of encryption technologies, with support for the following encryption standards: Advanced Encryption Standard (AES), Data Encryption Standard (DES) and Triple DES, Secure Hashing Algorithms (SHA), Public Key Infrastructure (PKI), Elliptical Curve Cryptography (ECC), Galois/Counter Mode encryption for AES (GCM), Elliptic Curve Diffie-Hellman key derivation (ECDH), Elliptic Curve Digital Signature Algorithm (ECDSA), keyed-Hash Message Authentication Code (HMAC), RSA algorithms, and many more.

Support for open standards and new application development tools

Like other operating systems, z/OS provides support for current application enablement technologies. But what sets z/OS apart is the ability to operate both new and existing applications within the same system and in close proximity to the corporate data residing on z/OS. Applications can run on WebSphere in the same z/OS system as the DB2 database, which can enable tight, security-rich local connections ideal for high-volume transactional throughput. Current CICS or IMS transactions can be extended with these new technologies to deliver value in new and innovative ways, without incurring the substantial cost required to rip and replace current core assets. Here are some of the technologies you can use to modernize and extend existing z/OS applications:

- Java
- Perl
- PHP
- XML
- Unicode
- C/C++
- System REXX facility
- METAL C facility
- Web services and SOAP

z/OS V1.13 is planned to be the final release for which the IBM Configuration Assistant for z/OS Communications Server tool that runs on Microsoft Windows will be provided by IBM. This tool is currently available as an as-is, nonwarranted web download. Customers who currently use Windows-based IBM Configuration Assistant for z/OS Communications Server tool should migrate to the z/OS Management Facility (z/OSMF) Configuration Assistant application. The IBM Configuration Assistant for z/OS Communications Server that runs within z/OSMF is part of a supported IBM product and contains all functions supported with the Windows tool.

z/OS V1.13 builds on existing EAV functionality and is planned to support larger extended address volumes (EAVs), up to 1 TB per volume, on IBM System Storage DS8700 and DS8800 series, with new DS8000 licensed machine code. This enhanced support is intended to relieve storage constraints while helping you simplify storage management by providing the ability to manage fewer, larger volumes as opposed to many small volumes. Availability is planned for fourth quarter 2011, and it will also be available on z/OS V1.12 with PTFs.

In z/OS V1.13, Workload Manager (WLM) is designed to take advantage of new support planned for IBM System Storage DS8700 and DS8800 series, with new DS8000 licensed machine code, which enables more effective storage consolidation and performance management. This new function is intended to improve disk I/O performance for your most important workloads and is designed to drive I/O prioritization to the storage controller level by allowing high-priority work that is missing its performance goals preferred access to storage server resources. Availability is planned for fourth quarter 2011, and it will also be available on z/OS V1.11 and z/OS V1.12 with PTFs.

System z High Performance FICON (zHPF) with z/OS V1.13, zEnterprise System servers, and IBM System Storage is planned to be extended to support certain I/O transfers for workloads using QSAM, BPAM, and BSAM access methods. Significant I/O performance improvements are expected without the need for application changes. This builds upon existing zHPF support for VSAM, Extended Format sequential, zFS, and PDSE data sets and provides support for these data set types when a new parameter is specified in the IGDSMSxx member of parmlib:

- Basic nonextended format Physical Sequential data sets
- Basic and large format sequential data sets

Availability is planned for fourth quarter 2011. This new function will require:

- z/OS V1.13, z/OS V1.12, or z/OS V1.11 with PTFs
- A zEnterprise System server with channels that support zHPF and a minimum Machine Change Level (MCL)
- HMC V2.11.1
- Support Element V2.11.1
- IBM System Storage DS8700 or DS8800 series with new DS8000 licensed machine code

With z/OS V1.13, a new function is designed to provide improvements for DB2 list prefetch processing, which in turn is expected to provide significant performance improvements for certain DB2 queries and some DB2 utility operations. This function will take advantage of new support planned in fourth quarter 2011 for IBM System Storage DS8700 or DS8800 series with new DS8000 licensed machine code and will also be available on z/OS V1.11 and z/OS V1.12 with PTFs.

With z/OS V1.13 and GDPS V3.8, HyperSwap® support is planned to be enhanced to improve recovery in HyperSwap-enabled configurations. This support is intended to mitigate the impact of recovery scenarios and is targeted for GDPS/PPRC customers with IBM System Storage DS8700 or DS8800 series. Based upon notification, GDPS/PPRC will initiate an unplanned HyperSwap that will allow the

former primary PPRC DS8000 to complete its recovery while allowing host I/Os to proceed. Additional enhancements are planned to reduce the amount of system resources consumed during a HyperSwap by GDPS/PPRC users with a large number of volume pairs in their configurations. Availability is planned for fourth quarter 2011, and these functions will require the following:

- z/OS V1.13
- GDPS V3.8 with PTFs
- An IBM System Storage DS8700 or DS8800 with new DS8000 licensed machine code

z/OS V1.13 is planned to be the last release to support a staged migration for JES2 and JES3. Future releases will require you to migrate to all elements of z/OS at the same time, including JES2, JES3, or both.

With the introduction of the SAF mode authorization in z/OSMF 1.13, IBM intends to withdraw support for Repository mode authorization in a future release. Both modes are being currently supported to allow customers time to migrate to the new authorization mode.

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

The new DS87000 and DS8000 microcode referenced above may initially be made available through a Request for Price Quotation.

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

Hardware and software support services

SmoothStart/installation services

IBM offers a number of remote and on-site IBM Operational Support Services, Migration Services, and Installation Services designed to accelerate productive use of the IBM solution. These services are provided by IBM or an IBM Business Partner at an additional charge. For additional information, contact an IBM representative and ask for IBM Global Technology Services (GTS) Services for z/OS.

Reference information

Software Announcement 207-339, dated December 11, 2007, IBM Enterprise COBOL for z/OS V4.1

Software Announcement 209-244, dated August 25, 2009, IBM Enterprise COBOL for z/OS V4.2

Software Announcement 210-199, dated July 06, 2010, IBM Ported Tools for z/OS Version 1.2

Software Announcement 207-041, dated March 06, 2007, IBM DB2 V9.1 for z/OS

Software Announcement 210-380, dated October 19, 2010, IBM DB2 10 for z/OS

Program number

Program number	Program name
5694-A01	z/OS Version 1 Release 13

Installation and customization

Installation improvements concurrent with z/OS V1.13 availability:

- ServerPac (5751-CS9) and SystemPac® (5751-CS4) support is provided for:
  - Improved handling for user-supplied installation jobs by preserving their placement in the list of jobs generated by the CustomPac Installation Dialog, and improved user-specified data set and file system processing, including data set and file system merge support
  - WebSphere products that use IBM Installation Manager, and for additional z/OSMF plug-ins
  - Barcoded labels on 3590 and 3592 tape cartridges designed to enable them to be used in IBM Automated Tape Libraries (ATLs) without first having to label them locally
  - Program Directories and *ServerPac: Installing Your Order* in Adobe™ PDF format on DVD for orders on tape, so they can be read immediately from an optical drive on a workstation without the need to download them from z/OS data sets after the RECEIVE job has been run
- The Customized Offerings Driver (5751-COD) is updated to support z/OS V1.13 driving system requirements and the latest zEnterprise System servers, and is based on a subset of z/OS V1.11.
- For CBPDO (5751-CS3), the Memo to Users Extension and Program Directories will be provided in Adobe PDF format on DVD for orders on tape, so they can be read immediately from an optical drive on a workstation without the need to download them from z/OS data sets.

Important websites

- z/OS website

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

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

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

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

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

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

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

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

  http://www.ibm.com/software/shopzseries
- z/OS Communications Server

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

- z/OS Management Facility

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

Business Partner information

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

https://www.ibm.com/partnerworld/mem/sla.jsp?num=211-252

Education support

Here are just a few of the courses available for classroom delivery:

- Introduction to z/OS Environment (ES050)
- Fundamental System Skills for z/OS (ES10A)
- z/OS Facilities (ES155)
- z/OS Operations (ES270)
- z/OS Installation (ES41A)
- Basic z/OS Tuning Using the Workload Manager (WLM) (ES545)
- Basics of z/OS RACF Administration (ES191)
- Introducing z/OS UNIX System Services (OP052)
- Advanced Parallel Sysplex Operations and Recovery (ES902)
- Parallel Sysplex Implementation Workshop (ES420)
- IBM System z Parallel Sysplex Operations (ES732)

Call 1-800-IBM-TEACH (426-8322) to enroll in one or more of these classes. To find other z/OS-related courses, visit

http://www.ibm.com/training/us/catalog/zseries

Technical information

Specified operating environment

Hardware requirements

z/OS V1.13 runs on the following IBM servers:

- z196
- z114
- z10 EC
- z10 BC
- z9 EC[6]
- z9 BC[6]
- z990[6]
- z890[6]
- z900[6]
- z800[6]

[6] These products are withdrawn from marketing.

Software requirements

The z/OS base is a system that can be IPLed. There are no software prerequisites in order to IPL. Specific functions may require additional products not included in the z/

OS base, or in the optional features of z/OS. Refer to *z/OS Planning for Installation* (GA22-7504) for a listing of specific software requirements at

http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/E0Z2B1C0

Coexistence, release migrations, and fallback

z/OS gives you compatibility and flexibility as you migrate systems in a multisystem configuration by allowing multiple releases of z/OS to coexist. This includes non-Parallel Sysplex and Parallel Sysplex multisystem configurations.

Coexistence allows systems within a multisystem configuration to be upgraded to a new release level of z/OS one system at a time. This is contingent on the fact that the release you are migrating to can coexist with the lowest release running in your multisystem configuration.

The Coexistence-Migration-Fallback and Service policies are aligned. IBM intends to continue the practice of providing service support for each release of z/OS for three years following its general availability (GA) date. IBM, at its sole discretion, may choose to leave a release supported for more than three years. In that case, more than three releases may be coexistence, migration, and fallback supported. However, any z/OS release having three or fewer months of service remaining at the time of GA of a new release will not be coexistence, migration, and fallback supported.

Note: These statements represent the current intention of IBM. IBM reserves the right to change or alter the Coexistence-Migration-Fallback policy in the future or to exclude certain releases beyond those stated. IBM development plans are subject to change or withdrawal without further notice. Any reliance on this statement of direction is at the relying party's sole risk and does not create any liability or obligation for IBM.

Migration forward as well as fallback should be made within the same z/OS releases supported by the coexistence policy.

This table shows the span of coexistence for supported z/OS releases:

Table: Coexistence-supported releases

Release	Coexistence-supported with release in Column 1
z/OS V1.11	z/OS V1.9(1), z/OS V1.10(2), z/OS V1.11
z/OS V1.12	z/OS V1.10(2), z/OS V1.11, z/OS V1.12
z/OS V1.13	z/OS V1.11, z/OS V1.12, z/OS V1.13
z/OS V1.14(3)	z/OS V1.12, z/OS V1.13, z/OS V1.14

Notes:

1. z/OS V1.9 end of service was September 2010.
2. z/OS V1.10 end of service is planned for September 30, 2011.
3. Operating system levels beyond z/OS V1.13 represent current intentions of IBM.

This consistent coexistence, migration, and fallback policy applies to release migrations for all configurations, whether they are:

- Single system configurations
- Individual systems within a multisystem configuration
- Cases where a simultaneous IPL is used to migrate all systems in a multisystem configuration at the same time

It is very important that you order the required z/OS release you need for migration and coexistence while it is still available. Refer to the Key dates section to find out how long z/OS V1.9 will remain orderable.

For additional information on z/OS coexistence and release migration information, refer to *z/OS Planning for Installation (GA22-7504)* at

http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/E0Z2B1C0

For migrations inside the IBM migration and coexistence policy, IBM Global Technology Services (GTS) has fee-based offerings that provide a PTF on demand service for toleration and coexistence maintenance based upon a customer's SMP/E Consolidated Software Inventory (CSI). With these offerings, you specify the release of z/OS, or other products, or hardware (for example, 2094) to which you are migrating, and all configured toleration/coexistence maintenance for your current system (as specified by your CSI) will be delivered to you as a customized package in electronic or physical format. This is provided through the S/390® SoftwareXcel offering, via the Service Request and Delivery (SRD) function.

GTS also provides hands-on fee-based services to assess whether a migration outside the migration and coexistence policy might be possible. For more information on the migration services that GTS provides for both inside and outside the migration and coexistence policy, contact your local IBM sales specialist.

JES coexistence, release migrations, and fallback

IBM recommends that you migrate to the next version of JES2 or JES3 at the same time you migrate to the rest of z/OS. This way, you benefit directly from the new function provided by the most current JES and enable other elements and features to benefit from this level.

Fallback for z/OS is at a system level, rather than an element or feature level. When you migrate to JES2 or JES3 at the same time you migrate to z/OS, you cannot back out JES2 or JES3 separately; you can only back out the entire z/OS product.

However, because such a migration is not always practical, certain prior levels of JES2 and JES3 are supported with z/OS V1.13 so that you can stage your migration to z/OS V1.13 JES2 or JES3 (that is, migrate your JES2 or JES3 later). If you stage your migration to z/OS V1.13 JES2 or JES3, coexistence and fallback to a prior JES2 or JES3 is supported so long as the prior z/OS level can coexist with other z/OS and z/OS.e systems in the same MAS or multisystem complex.

For additional information on z/OS JES release migration and coexistence, refer to *z/OS Planning for Installation (GA22-7504)* by visiting

http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/E0Z2B1C0

Note: Refer to the Statements of direction section for important information about future JES migration and coexistence.

Performance considerations

Additional information on z/OS V1.13 performance will be published at general availability. Contact an IBM representative at or after general availability.

User group requirements

z/OS V1.13 satisfies or partially satisfies requirements from IBM customers and one or more of the worldwide user group communities. Information on the specific User Group Requirements (numbers and descriptions) can be found at

http://www.ibm.com/servers/eserver/zseries/zos/bkserv/user_group_reqs.html

Planning information

Direct customer support

Direct customer support is provided by IBM Operational Support Services - SoftwareXcel Enterprise Edition or SoftwareXcel Basic Edition. These fee services can enhance your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services - SoftwareXcel Enterprise Edition or SoftwareXcel Basic Edition will help answer questions pertaining to usage, how-to, and suspected software defects for eligible products.

Installation and technical support is provided by IBM Global Services. For more information on services, call 888-426-4343. To obtain information on customer eligibility and registration procedures, contact the appropriate support center.

Security, auditability, and control

Data security and auditability in the z/OS environment are enhanced by the functions available in the optional Security Server for z/OS feature. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

Ordering z/OS through the Internet

ShopzSeries provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product migration, and present your new configuration based on z/OS. Additional products can also be added to your order (including determination of whether all product requisites are satisfied). ShopzSeries is available in the US, Canada, and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries website at

http://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp

Order VM SDO and VSE SIPO through the Internet

ShopzSeries provides an easy way to plan and order System z software upgrades. This now includes VM and VSE. Using ShopzSeries, you can quickly generate orders for VM SDOs and VSE SIPOs. Additionally, ShopzSeries will ensure your order is technically correct (that is, ensures any co-req or pre-req or incompatibility conditions are resolved to ensure timely order placement and processing). ShopzSeries is available in the United States and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries website at

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

Current licensees

For pricing information previously announced for z/OS V1, refer to

- Software Announcement 200-352, dated October 3, 2000
- Software Announcement 202-036, dated February 19, 2002
- Software Announcement 202-105, dated April 30, 2002
- Software Announcement 202-190, dated August 13, 2002
- Software Announcement 203-131, dated May 13, 2003

- Software Announcement 204-056, dated April 07, 2004
- Software Announcement 205-167, dated July 27, 2005
- Software Announcement 207-006, dated January 09, 2007
- Software Announcement 907-245, dated December 04, 2007

Key dates

- **July 12, 2011**: z/OS V1.13 CFSW configurator support for stand-alone path (5694-A01) and price proposal support.
- **September 16, 2011**: First date for ordering z/OS V1.13 ServerPac, SystemPac, CBPDO using CFSW configuration support or ShopzSeries, the Internet ordering tool. Note that most z/OS media (executable code) is shipped only through Customized Offerings (ServerPac, SystemPac, and CBPDO).
- **September 30, 2011**: z/OS V1.13 general availability via ServerPac, CBPDO and SystemPac.
- **October 11, 2011**: Recommended last date for submitting z/OS V1.12 orders via the entitled Customized Offerings (ServerPac and CBPDO). This date will allow for adequate order processing time.
- **October 25, 2011**: Last date for processing orders for z/OS V1.12 via ServerPac and CBPDO.
- **September 9, 2011**: General availability of Cryptographic Support for z/OS V1R11-R13 web deliverable. This web deliverable will support z/OS V1.11 through z/OS V1.13.
- **June 26, 2012**: Recommended last date for submitting z/OS V1.12 orders via the fee Customized Offering SystemPac. This date will allow for adequate order processing time.
- **July 24, 2012**: Last date for processing orders for z/OS V1.12 via SystemPac.
- **September 30, 2012**: End of service for z/OS V1.11 (5694-A01).

To obtain the web deliverable listed above, visit

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

The end of service for a web deliverable occurs at end of service for the release on which it runs.

It is very important that you order the required z/OS release you need for migration and coexistence while it is still available. Refer to the Key dates section to find out how long z/OS V1.12 will remain orderable.

Products that are unavailable via CBPDO, ServerPac, or SystemPac such as Lotus® Domino® (5655-B86) can also be separately ordered for use with z/OS.

ServerPac, CBPDO and SystemPac are offered for electronic delivery where ShopzSeries product ordering is available. For more details on electronic delivery, refer to the ShopzSeries help information

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

Refer to the ShopzSeries website for product catalogs for the Customized Offerings

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

If a product catalog for your country is not available in ShopzSeries, use one of the following countries, United States or Germany, and select English language for the most complete product catalogs for the Customized Offerings.

Current licensees of z/OS V1

z/OS V1 customers can migrate to z/OS V1.13 by ordering the release through the Customized Offerings (ServerPac, SystemPac, CBPDO) as they have done in the past.

For more details, refer to the **New licensees** section that follows.

New licensees of z/OS V1.13

This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO). The media type is chosen during the customized offering ordering procedure. Refer to the Customized offerings section for the media types offered. Production of z/OS V1.13 orders will begin on the planned general availability date, **September 30, 2011**. Ship dates for orders will be based on order sequence, Customized Offering selected, production capability, and customer-requested arrival date. Due to the amount of customization of ServerPac orders, shipments will begin approximately **two weeks after** general availability. Due to the amount of additional customization of SystemPac orders, shipments will begin approximately four weeks after order and data input verification. For CBPDO orders, shipments will begin one week after general availability. In all cases, no delivery commitments are to be made to the customer until confirmed arrival dates are in ESW.

Basic license

To order a basic license, specify the z/OS V1.13 program number 5694-A01. Proceed to select the features listed which are required and then select any optional features.

Single version charging

To elect single version charging, the customer must notify and identify to IBM the prior program and replacement program and the designated machine the programs are operating on.

Basic machine-readable material

The following no-charge features are added to z/OS V1.13 and can be ordered effective July 12, 2011. These no-charge media features have pricing/billing features associated with them. It is those associated pricing/billing features where the charges are listed and not the media features listed below. See **Notes** below for details on past announcements for this information.

z/OS V1.13 Feature description	z/OS V1.13 Orderable supply ID
Base	S016MJ5

Notes:

- The billing features and pricing information for the above feature descriptions remain unchanged and are provided in:
  - Software Announcement 200-352, dated October 3, 2000
  - Software Announcement 202-036, dated February 19, 2002
  - Software Announcement 202-105, dated April 30, 2002
  - Software Announcement 202-190, dated August 13, 2002
  - Software Announcement 203-131, dated May 13, 2003
  - Software Announcement 204-056, dated April 07, 2004
  - Software Announcement 205-167, dated July 27, 2005
  - Software Announcement 207-006, dated January 09, 2007
  - Software Announcement 907-245, dated December 04, 2007
- This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO). The media type is chosen during the customized offering

ordering procedure. Refer to the Customized offerings section for the media types offered.

Basic publications

A program directory and one copy of the following publications are supplied together with the basic machine-readable material:

Basic unlicensed hardcopy publications

Title	Order number
z/OS Hot Topics Newsletter	GA22-7501

The z/OS publications are available at

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

Basic unlicensed softcopy publications

Title	Order number
z/OS V1R13 and Software Products DVD Collection	SK3T-4271

For a fee, the customer can order the softcopy collections or any z/OS V1.13 documents available in hardcopy using the IBM Publications Center at

http://www.ibm.com/shop/publications/order

For customers in 23 countries, the IBM Publications Center offers the option to order hardcopy publications or softcopy collections by customer number. Verify whether this option is available in the user's country.

For other publications ordering options, visit

http://www.ibm.com/systems/z/os/zos/bkserv/order_books.html

z/OS Version 1 Release 13 Collection (BookManager and PDF)

z/OS Version 1 Release 13 and Software Products DVD Collection (SK3T-4271) includes softcopy tools, libraries for z/OS Version 1 Release 13 (the element and feature libraries), the libraries for multiple releases of z/OS software products, and selected IBM System z Redbooks®. Both BookManager® and PDF formats, when available are included on the DVDs. The contents of the popular zFavorites for zSeries mini-CD are also included on the DVD collection. This collection requires a DVD drive that can read discs in DVD-9 (single-sided, dual-layer) format. If this collection is refreshed after general availability, an updated collection is automatically sent to z/OS V1.13 licensees.

By general availability, the z/OS V1.13 books will be available at:

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

For creating softcopy repositories, SoftCopy Librarian is the flagship tool for uploading and managing BookManager and PDF softcopy files on a z/OS host or server and on LANs and workstations. SoftCopy Librarian is a free program that is available on the softcopy tools disc of the collections or the web. Use it to obtain and manage shelves from IBM or OEM (original equipment manufacturers), CD or DVD collections, or the Internet from the IBM PUBLIB website, as well as from other websites that provide support for the SoftCopy Librarian.

Softcopy Librarian V4.4 is supported on Windows 2000, Windows XP, and Windows Vista.

The latest version of the SoftCopy Librarian can be downloaded at

http://publib.boulder.ibm.com/epubs/df/ebrsclwj.exe

Optional machine-readable material

To order, select the feature number for the desired distribution medium:

Optional machine-readable material

Optional unpriced features -- z/OS V1.13

The following optional features, offered at no additional charge, are added to z/OS V1.13 and can be ordered effective July 12, 2011.

z/OS V1.13 Feature description	z/OS V1.13 Orderable supply ID
Communications Server Security Level 3	S016MKB
z/OS Security Level 3	S016ML9

Notes:

- This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO). The media type is chosen during the customized offering ordering procedure. Refer to the Customized offerings section for the media types offered.
- All the above features can be exported outside the US..
- These features should be ordered during this release cycle since they are not automatically included in all orders due to need for export regulation tracking.

Optional priced features

The following optional no-charge features are added to z/OS V1.13 and can be ordered effective July 12, 2011. These optional no-charge media features have pricing/billing features associated with them. It is those associated pricing/billing features where the charges are listed and not the media features listed below. See **Notes** below for details on past announcements for this information.

z/OS V1.13 Feature description	z/OS V1.13 Orderable supply ID
BDT FTF	S016MKG
BDT SNA NJE	S016MKT
BookManager Build	S016MK9
C/C++ without Debug	S016MK8
DFSMS dss	S016MKC
DFSMS dss,hsm	S016MKK
DFSMS rmm	S016MKN
DFSMStvs	S016MKM
DFSORT	S016MKF
GDDM-PGF	S016MKX
GDDM-REXX	S016MKL
HCM	S016MKR
HLASM Toolkit	S016MKP
Infoprint Server	S016ML3
JES3	S016ML2
RMF	S016ML6
SDSF	S016ML0
Security Server	S016ML8

Notes:

- The billing features and pricing information for the above feature descriptions are described in:
  - Software Announcement 200-352, dated October 3, 2000
  - Software Announcement 202-036, dated February 19, 2002
  - Software Announcement 202-105, dated April 30, 2002
  - Software Announcement 202-190, dated August 13, 2002
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  - Software Announcement 204-056, dated April 07, 2004
  - Software Announcement 205-167, dated July 27, 2005
  - Software Announcement 207-006, dated January 09, 2007
  - Software Announcement 907-245, dated December 04, 2007
- This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO). The media type is chosen during the customized offering ordering procedure. Refer to the Customized offerings section for the media types offered.
- If the customer subsequently enables any of the optional priced features, those features also become subject to the payment terms of the existing z/OS license as described in **z/OS Licensed Program Specifications** (GA22-7503). The customer must notify IBM when an optional feature is enabled that was shipped disabled from IBM.
- One or both of the BDT optional features (File-to-File or SNA NJE) must be ordered and installed in order to use the BDT function shipped with the base.
- The DFSMS dss feature cannot be ordered with the DFSMS dss,hsm feature. Likewise, the DFSMS dss,hsm feature cannot be ordered with the DFSMS dss feature.

Optional unpriced language features

The z/OS V1.13 language features will become generally available on the same date the release becomes available.

z/OS V1.13 provides support in the languages listed below. However, not all elements within z/OS V1.13 are translated into each language. Refer to *z/OS Planning for Installation* (GA22-7504) for information on which elements are translated into which languages, by visiting

http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/E0Z2B11B

The following optional features, offered at no additional charge, are added to z/OS V1.13 and can be ordered effective July 12, 2011.

The language features for z/OS V1.13 are:

z/OS V1.13 Language feature description	z/OS V1.13 Orderable supply ID
Brazilian Portuguese Base (PTB)	S016MJM
Brazilian Portuguese BookMgr Build	S016MKH
Canadian French Base (FRC)	S016MJC
Canadian French BookMgr Build	S016MKJ
Danish Base (DAN)	S016MJV
Dutch Base (NLD)	S016MK0
French Base (FRA)	S016MK6
French BookMgr Build	S016MKS
German Base (DEU)	S016MJJ
German BookMgr Build	S016MKV
Italian Base (ITA)	S016MJR

JPN Base	S016MJ4
JPN C/C++ Without Debug	S016MKD
JPN Infoprint Server	S016MKZ
JPN RMF	S016ML7
JPN SDSF	S016ML4
JPN Security Server	S016ML5
Upper Case English Base (ENP)	S016MK5
Korean Base (KOR)	S016MJK
Norwegian Base (NOR)	S016MJP
Spanish Base (ESP)	S016MJB
Spanish BookMgr Build	S016MKW
Swedish Base (SVE)	S016MK1
Swiss German Base (DES)	S016MJN
Simplified Chinese Base (CHS)	S016MK3
Traditional Chinese Base (CHT)	S016MJD

Notes:

- The above feature descriptions are offered at no additional charge.
- This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO). The media type is chosen during the customized offering ordering procedure. Refer to the Customized offerings section for the media types offered.

Features not offered in z/OS V1.13

All features offered in z/OS V1.12 are offered in z/OS V1.13.

z/OS V1.12 features withdrawn

The following z/OS V1.12 features are withdrawn from marketing effective October 28, 2011:

z/OS V1.12 Orderable supply ID	z/OS V1.12 Feature description
S01604K	z/OS V1.12 Base
S016068	z/OS V1.12 BDT FTF
S016069	z/OS V1.12 BDT SNA NJE
S01606B	z/OS V1.12 BookManager Build
S01606L	z/OS V1.12 C/C++ without Debug
S01606H	z/OS V1.12 DFSMS dss,hsm
S01606N	z/OS V1.12 DFSMS rmm
S01606R	z/OS V1.12 DFSMS dss
S01606C	z/OS V1.12 DFSMStvs
S01606D	z/OS V1.12 DFSORT
S01606K	z/OS V1.12 GDDM-PGF
S01606S	z/OS V1.12 GDDM-REXX
S01606G	z/OS V1.12 HCM
S01606F	z/OS V1.12 HLASM Toolkit
S01606J	z/OS V1.12 Infoprint Server
S01606P	z/OS V1.12 JES3
S01606W	z/OS V1.12 RMF
S01606V	z/OS V1.12 SDSF
S01606X	z/OS V1.12 Security Server
S01606M	z/OS V1.12 Communications Server Security Level 3
S01606T	z/OS V1.12 z/OS Security Level 3
S015ZZJ	z/OS V1.12 SK3T-4271 z/OS V1R12 and Software Products DVD Collection
S016026	z/OS V1.12 Braz Port Base (PTB)
S016027	z/OS V1.12 Braz Port BookMgr Build
S016064	z/OS V1.12 Can Fren Base (FRC)
S016041	z/OS V1.12 Can Fren BookMgr Build
S016048	z/OS V1.12 Danish Base (DAN)
S01604N	z/OS V1.12 Dutch Base (NLD)
S01604P	z/OS V1.12 French Base (FRA)
S01604M	z/OS V1.12 French BookMgr Build
S01604L	z/OS V1.12 Germ Base (DEU)
S016067	z/OS V1.12 Germ BookMgr Build

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S01605K              z/OS V1.12 Ital Base (ITA)
S01605C              z/OS V1.12 JPN Base
S01605M              z/OS V1.12 JPN C/C++ Without Debug
S01605L              z/OS V1.12 JPN Infoprint Server
S01605N              z/OS V1.12 JPN RMF
S01605H              z/OS V1.12 JPN SDSF
S01605J              z/OS V1.12 JPN Security Server
S016063              z/OS V1.12 Upper Case English Base (ENP)
S01605P              z/OS V1.12 Kor Base (KOR)
S01605X              z/OS V1.12 Norw Base (NOR)
S01605Z              z/OS V1.12 Span Base (ESP)
S016060              z/OS V1.12 Span BookMgr Build
S01605T              z/OS V1.12 Swed Base (SVE)
S01605S              z/OS V1.12 Swiss Germ Base(DES)
S016049              z/OS V1.12 Simp Chin Base (CHS)
S01604C              z/OS V1.12 Trad Chin Base (CHT)
```

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Customized offerings

Product deliverables are shipped only via CBPDO, ServerPac, SystemPac.

CBPDO and ServerPac are offered for Internet delivery in countries where ShopzSeries product ordering is available. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on Internet delivery, refer to the ShopzSeries help information at

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

You choose the delivery method when you order the software. IBM recommends Internet delivery. In addition to Internet and DVD, the supported tape delivery options for CBPDO, ServerPac, SystemPac include:

- 3590
- 3592

Most products can be ordered in ServerPac and SystemPac the month following their availability on CBPDO. z/OS can be ordered via all three offerings at general availability. Production of software product orders will begin on the planned general availability date.

- CBPDO shipments will begin one week after general availability.
- ServerPac shipments will begin two weeks after general availability
- SystemPac shipments will begin four weeks after general availability due to additional customization, and data input verification.

Terms and conditions

The terms and conditions of z/OS Version 1 (5694-A01) are unaffected by this announcement. For more information, refer to Software Announcement 200-352, dated October 3, 2000.

IBM Operational Support Services -- SupportLine

Yes

Prices

For additional information and current prices, contact your local IBM representative.

Order now

To order, contact the Americas Call Centers or your local IBM representative, or your IBM Business Partner.

To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

```
Phone:      800-IBM-CALL (426-2255)
Fax:        800-2IBM-FAX (242-6329)
For IBM representative: callserv@ca.ibm.com
For IBM Business Partner: pwswna@us.ibm.com
Mail:       IBM Teleweb Customer Support
            ibm.com® Sales Execution Center, Americas North
            3500 Steeles Ave. East, Tower 3/4
            Markham, Ontario
            Canada
            L3R 2Z1
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Reference: LE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

Note: Shipments will begin after the planned availability date.

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