



IBM z/OS V1.5: Extends mainframe innovation and delivers the z/OS V1.4 Consoles Enhancements feature, and Preview: z/OS V1.6

Overview

z/OS® V1.5 continues to provide leadership in innovation and enhances the value of IBM @server zSeries® servers and products. In addition to z/OS V1.5 improvements previously announced in Software Announcement 202-190, dated August 13, 2002, and Software Announcement 203-131, dated May 13, 2003, z/OS V1.5 offers:

- Availability with integrated Consoles Enhancements feature
- Scalability and performance with 64-bit shared virtual storage
- DFSORT™ enhancements to support 64-bit memory objects
- Application flexibility with C/C++ compiler enhancements including options to help customers port C/C++ code to the 64-bit virtual environment
- Improved ease-of-use with Infoprint® Server enhancements, enhanced network management and monitoring program interfaces, z/OS Library navigation with Library Center for z/OS, and other enhancements

What's Next: Planned improvements for z/OS V1.6 include improved scalability, autonomic computing enhancements, improved security, and greater application flexibility.

Key prerequisites

z/OS V1.5 and all the features and Web deliverables described in this announcement run on the following IBM servers:

- zSeries z990, or equivalent
- zSeries z900, or equivalent
- zSeries z800, or equivalent
- S/390 Parallel Enterprise Servers — Generation 5 (G5) and Generation 6 (G6) models, or equivalent

Note: Driver 26, licensed internal code V1.6.2, or later, is required on a G5 or G6 server to support architectural enhancements required by z/OS.

- Multiprise® 3000 Enterprise Server, or equivalent

For a complete description of z/OS V1.5 software prerequisites, refer to *z/OS and z/OS.e Planning for Installation (GA22-7504)* at

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

Planned availability dates

- **March 26, 2004:**
 - z/OS V1.5
 - z/OS V1.4 Consoles Enhancements feature
- **September 2004:**
 - z/OS V1.6

For ordering, contact:

Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

800-IBM-CALL Reference: YE001

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Description

z/OS V1.5 offers a number of improvements and enhancements that build upon its focus to provide leadership in innovation and enhance the value of zSeries. These improvements include enhancements in availability, scalability and performance, application flexibility, and ease-of-use. A summary of some previously announced z/OS V1.5 capabilities found in Software Announcement 202-190, dated August 13, 2002, and Software Announcement 203-131, dated May 13, 2003 is provided below, followed by details on additional improvements that are being announced today for general availability with z/OS V1.5:

- Security with Multilevel Security
- Performance with DFSMSHsm™ Fast Replication in support of DB2® Universal Database (UDB) for z/OS V8
- Ease-of-use with Managed System Infrastructure for Setup (msys for Setup) exploitation of DB2, Resource Measurement Facility (RMF™), and File Transport Protocol (FTP)
- Networking with IPv6 and other enhancements
- Business resilience and effectiveness with DFSMS enhancements

Notes

- DFSMSHsm Secondary Space Management Multitasking was announced as part of the preview information for DFSMS in z/OS V1.5 (refer to Software Announcement 202-190, dated August 13, 2002). The availability of this function has been changed. Availability of DFSMSHsm Secondary Space Management is now planned for z/OS V1.6.
- Along with z/OS DFSMS V1.5, Basic Tape Library Support, V1.8 (5655-056) is planned to be made available on March 26, 2004. Refer to Software Announcement 204-014, dated February 10, 2004, for more information.

Availability

System-Managed Coupling Facility (CF) Structure Duplexing: System-Managed CF Structure Duplexing was available exclusively through a readiness review program since April 8, 2003. System-Managed CF Structure Duplexing is now generally available and the readiness review program has ended. Customers who are already participating in the readiness review program continue to receive support for their System-Managed CF Structure Duplexing implementation. Customers who want to begin using System-Managed CF Structure Duplexing may do so at any time and are encouraged to take advantage of a self-assessment questionnaire available on Resource Link™.

For further details, refer to the **System-Managed CF Structure Duplexing** topic under the **Additional information** section.

z/OS V1.4 Consoles Enhancements feature: As discussed in Software Announcement 203-131, dated May 13, 2003, the z/OS V1.4 Consoles Enhancements feature is the first phase of IBM strategy to enhance the operator messaging architecture of z/OS. The overall objective is to improve system availability by enhancing the capacity and reliability of message delivery. This capability was an optional feature in z/OS V1.4; it is integrated into z/OS V1.5.

For further details, refer to the **z/OS V1.4 Consoles enhancements** topic under the **Additional information** section.

Scalability and performance

64-bit shared virtual storage: z/OS V1.5 delivers the 64-bit shared memory support to enable middleware for sharing a large amount of 64-bit virtual storage among multiple address spaces. This is a significant capacity enhancement for relieving shared virtual storage constraints.

DFSORT

Memory object sorting is a new DFSORT capability that uses a memory object on 64-bit real architecture to reduce I/O processing, elapsed time, execute channel programs (EXCPs), and channel usage for selected sort applications. A memory object is a data area in virtual storage that is allocated above the bar and backed by central storage. With memory object sorting, a memory object can be used exclusively, or along with disk space, for temporary storage of records. DFSORT uses memory object sorting automatically when it offers better performance than hipsorting or dataspace sorting.

Ease of use through IBM innovative technologies

IBM Infoprint Server: Businesses seeking to reduce their IT costs often focus on the “big ticket” items in the budget. They ignore costs that appear relatively low, but are repeated across many areas of the business, or are hidden in a variety of general expense categories. The cost of distributed output management is one of these often overlooked expenses. However, when the costs of buying, managing, supporting, and administrating hundreds of distributed print servers are accumulated enterprise-wide, they can amount to a significant business cost.

Businesses may be able to achieve cost savings by

- Consolidating thousands of under-utilized desktop printers into centralized multi-application printers
- Converting print output for distribution as e-mail to save paper and supplies
- Centralizing management of the distributed print environment

The Infoprint Server feature of z/OS can provide the foundation for a reliable, highly secure print infrastructure that can scale to meet growing business needs.

Refer to the **IBM Infoprint Server** topic under the **Additional information** section for details concerning improvements to the Infoprint Server for z/OS V1.5.

z/OS Communications Server — Network management: Most z/OS application workloads depend on reliable network communications in order to meet business and end-user performance objectives. As a result, many users rely on network management and monitoring applications to track utilization of critical z/OS network resources and to detect disruptions in z/OS network communications.

In z/OS V1.5, the ability to perform these network management and monitoring functions is significantly enhanced by the introduction of several new programming interfaces provided by z/OS Communications Server. These new interfaces allow applications to efficiently obtain detailed statistics and information related to native TCP/IP workloads and SNA

workloads using Enterprise Extender (EE) and High Performance Routing (HPR).

z/OS msys for Setup: z/OS msys for Setup can simplify the configuration of z/OS components and z/OS products, helping to provide faster deployment of z/OS technologies. msys for Setup uses configuration dialogs based on meaningful defaults and best practices, helping avoid outages caused by misconfigurations.

Refer to the **z/OS msys for Setup — Continual Improvements** topic under **Additional information** section for further details.

RMF

- Monitor II and Monitor III performance data is now RACF®-protected. If customers are implementing name hiding and want to protect data set names from being exposed by RMF, new RACF profiles are supported and are designed to prevent unwanted access to RMF Monitor II and III data. System administrators are now enabled to deny unauthorized RMF Performance Monitor (PM) users access to z/OS performance data.
- The Spreadsheet Reporter provides a front-end to the RMF postprocessor to take advantage of the graphical features of Microsoft™ Windows™-based spreadsheet programs to present z/OS performance data. With z/OS V1.5, the Spreadsheet Reporter replaces the task flow of previous versions with a new and intuitive resource oriented concept. Working sets can now be generated from SMF data in one single step. Also part of the new Spreadsheet Reporter is a batch facility to perform all functions without user interaction.

Network File System (NFS): The NFS provides a flexible option for exchange of data between z/OS systems and UNIX® and Windows systems that support the NFS protocols. Enhancements to NFS include improved flexibility and ease-of-use with support for multi-volume data sets and improved serviceability with better NFS ABEND handling.

For more detailed information, visit

<http://www.ibm.com/servers/eserver/zseries/zos/nfs/>

Security improvements: Security Server (RACF) dynamic templates and improvements to Public Key Infrastructure (PKI) are available with z/OS V1.5. For more information, refer to the **Security Server (RACF) dynamic templates** and **PKI services improvements** topics under the **Additional information** section.

Library Center for z/OS: Starting with z/OS V1.5, IBM is providing an alternative way to navigate our z/OS library on the Internet: **Library Center for z/OS**. For further details, refer to the **Library Center for z/OS** topic under the **Additional information** section.

Application Flexibility

C/C++ enhancements: Enhancements to the C/C++ compiler feature include:

- Support for 64-bit compiles
- Performance enhancements
- DB2 preprocessor integration
- DEBUG option

For details, refer to the **C/C++ enhancements** topic under **Additional information** section.

Euro Sign Support: z/OS V1.5 includes euro currency symbol support for an additional set of countries and languages. For more information, visit

<http://www.ibm.com/servers/eserver/zseries/zos/le/whatsnew/euro.html>

SystemPac for z/OS, V1.5

This worldwide system migration vehicle for z/OS is the recommended IBM delivery vehicle for customers who want to help save time, resources, and effort to migrate, install, exploit, and maintain their z/OS system-related products, and selected vendor software products. SystemPac includes all of the functions and features of ServerPac, and provides additional installation and customization so that the user can have a “load and go” z/OS system in a day.

SystemPac offers the capability to build a system with integrated subsystems in either full volume dump/restore format or dataset copy format. The full volume dump/restore format enables the user to install z/OS without using the dialog. Installation is done via pack restore using DFSMSdss™ or FDR (if the vendor product is selected in the order).

SystemPac is designed for those who have limited skill or time to install or upgrade z/OS but who want to install or upgrade to exploit z/OS functions in e-commerce or other areas.

For more information about SystemPac, refer to the **Technical information** section or visit

<http://www.ibm.com/ca/custompac>

Important Web sites

- z/OS Web site
<http://www.ibm.com/servers/eserver/zseries/zos/>
- General Q & A
<http://www.ibm.com/servers/eserver/zseries/faq/>

Product positioning

In Software Announcement 903-149, dated August 5, 2003, IBM announced that end of service for z/OS V1.2 will be October 31, 2004, and that the end of service for z/OS V1.3 will be March 31, 2005, as planned. IBM also announced that the end of service for z/OS V1.4 and z/OS.e V1.4 will be extended to March 31, 2007. This date is the same as the end of service date planned for z/OS V1.5.

z/OS V1.4 and z/OS.e V1.4 can be ordered until September 9, 2004. To allow for adequate order processing time it is recommended that z/OS V1.4 orders be submitted by August 31, 2004. This end-of-marketing date for z/OS V1.4 is the same as the end-of-marketing date planned for z/OS V1.5. Customers with OS/390® are encouraged to migrate to z/OS V1.4 as soon as possible so that z/OS V1.4 is operational before the end of service of OS/390 V2.10.

z/OS V1.4 z990 Exploitation feature and z/OS V1.4 Consoles Enhancements feature can be ordered until December 2006, three months before end of service.

z/OS Bimodal Accommodation offering

IBM provides the z/OS Bimodal Accommodation offering to allow customers a fall-back to running in 64-bit mode when first migrating to z/OS V1.2, V1.3, or V1.4 on a z/Architecture™ server (z800, z900, z990, or equivalent). This offering, subject to specific terms and conditions, gives the user the security of knowing he/she can return to 31-bit mode if there are 64-bit issues during the migration. The z/OS Bimodal Accommodation offering will not be provided for z/OS V1.5.

WebSphere® Application Server for z/OS and OS/390, V4.0.1 support

The WebSphere Application Server for z/OS and OS/390, V4.0.1 will not be supported on z/OS V1.6. In addition, service for WebSphere Application Server for z/OS and OS/390, V4.0.1 will be discontinued on April 30, 2005 as announced in Software Announcement 904-021, dated February 3, 2004. Customers currently running WebSphere Application Server for z/OS and OS/390, V4.0.1 are strongly encouraged to migrate to WebSphere Application Server for z/OS, V5 now in order to avoid the need to simultaneously upgrade the WebSphere Application Server and z/OS levels when z/OS V1.6 becomes available.

Key pricing improvements

The IBM Mainframe Charter sets out the imperatives that will help guide IBM's investment priorities, today and far into the future. It can be summed up in three words: Innovation, Value and Community. Our commitment to Value has many components but, in general, we plan to deliver a continuing stream of technology and offerings that help lower the cost of mainframe computing on zSeries, that is, deliver more performance for a lower unit price.

As part of the mainframe charter, IBM announced a comprehensive set of pricing initiatives in 2003 designed to lower costs, and encourage customers to accelerate their move to on demand.

For further details, refer to the **Key pricing improvements** topic under the **Additional information** section.

Statement of direction

IBM plans to take the following actions in the future:

- IBM intends to provide a 64-bit SDK 1.4 level Java™ product concurrently with the general availability of z/OS and z/OS.e V1.6.
- z/OS Communications Server will remove support for the BIND DNS 4.9.3 function in a future release. This is a change to the statement of direction made in Software Announcement 203-266, dated October 7, 2003, which stated that z/OS V1.6 would be the last release to support BIND DNS 4.9.3. BIND DNS 9.2.0 has been available since z/OS V1.4, and customers should implement this version as a replacement for BIND DNS 4.9.3. Customers that use the load balancing Connection Optimization (DNS/WLM) feature of BIND DNS 4.9.3 should investigate Sysplex Distributor or alternative solutions.

For previously announced statements of direction affecting z/OS V1.6 and future releases, visit

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

These statements represent current intentions of IBM.

Any reliance on these Statements of Direction are at the relying party's sole risk and will not create any liability or obligation for IBM.

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

Hardware and software support services

SmoothStart™ /installation services: IBM offers a number of remote and on-site IBM SmoothStart Services, 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 IGS Services for z/OS or z/OS.e.

Reference information

- Software Announcement 202-191, dated August 13, 2002
- Software Announcement 202-190, dated August 13, 2002
- Software Announcement 203-131, dated May 13, 2003
- Software Announcement 203-130, dated May 13, 2003
- Hardware Announcement 103-125, dated May 13, 2003
- Software Announcement 203-266, dated October 7, 2003
- Software Announcement 204-017, dated February 10, 2004
- Software Announcement 204-016, dated February 10, 2004

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IBM US Announcement Supplemental Information

February 10, 2004

Additional information

Key pricing improvements

Workload license charges (WLCs): WLCs, IBM's strategic zSeries® pricing metric, offers LPAR-level granularity, managed growth on an LPAR-by-LPAR basis and the ability to align IBM software charges with LPAR utilization. WLC sub-capacity pricing has the potential to better manage IBM software charges by charging for products based on the LPARs in which a product executes and by allowing customers to grow hardware capacity separately from software charges. Customers are encouraged to work with their IBM representative or IBM Business Partner to better understand how WLC may benefit their environment.

Effective October 1, 2003, IBM reduced the cost of z/OS® under WLC for customers who have zSeries environments of less than 315 MSUs and who qualify for WLC. The combination of the reduced minimum license charge to 3 MSUs and the lower cost of z/OS for qualified customers under 315 MSUs is good news for our entry-level zSeries customers, who may now be better positioned to leverage the benefits of WLCs.

In addition, IBM has enabled our z800 customers to obtain the values of Workload License Charges, including the benefits of LPAR-level granularity, white space and utilization-oriented charges, with the introduction of Entry WLC (EWLC).

Early in 2003, IBM announced value unit pricing on selected WebSphere® products. Under value unit pricing, as customers grow their WebSphere environments, the cost of incremental value units decreases. Value unit pricing provides a lower entry price and can deliver a lower price than per processor pricing, and it allows for aggregation of value units across an enterprise which adds to potential savings. IBM now offers sub-capacity pricing for select WebSphere for zSeries products.

Improved software pricing on z990 servers: Superior performance and technology within the z990 has allowed IBM to provide improved software prices for key zSeries operating system and middleware software products. The superior technology includes superscalar processing, native "LPAR-only" mode of operation with the capability to support 30 LPARs, support for multiple logical channel subsystems within a single system footprint, and complete support of z/Architecture™. While the announced z990 MSU values remain unchanged, IBM is pricing the designated software on z990 at lower MSU values than those previously announced. In order to implement this IBM software pricing initiative on z990, IBM lowered the MSU values generated by the z990 microcode by approximately 10 percent.

z/OS new application license charge (NALC) price reduction: In support of our new workload initiatives, IBM also announced a price reduction of up to 80% on the NALC for z/OS. This price reduction delivers price points that are equivalent to z/OS.e on a per MSU basis. This is available for G5, G6, z900, and z990 servers. There are no changes to the current NALC terms and conditions or list of qualified workloads. z/OS.e is available for new workloads on z800 in both a full capacity and subcapacity environment.

Daily On/Off Capacity on Demand (CoD) software charges for z990: In support of our On/Off CoD offerings, IBM has announced Daily On/OFF CoD charging on select IPLA software products for zSeries. Daily On/Off CoD software charges are based on the duration (in days) and the amount of temporary capacity (in MSUs). These daily charges only apply to the select IPLA products running on qualified On/Off CoD hardware. Monthly license charge (MLC) software which is capacity based (Parallel Sysplex License Charge (PSLC) or full capacity WLC) will be based on the highest machine capacity (temporary plus permanent) for the month. Sub-capacity based MLC software will be based on the highest observed rolling 4 hour average utilization (temporary plus permanent) for the month.

z/OS UNIX® file systems

zSeries file system (zFS): zFS is the strategic UNIX Systems Services file system for z/OS. The Hierarchical File System (HFS) functionality has been stabilized. HFS is expected to continue shipping as part of the operating system and will be supported in accordance with the terms of a customer's applicable support agreement. IBM intends to continue enhancing zFS functionality, including RAS and performance capabilities, in future z/OS releases. All requirements for UNIX file services are expected to be addressed in the context of zFS only.

Availability

System-Managed CF Structure Duplexing: The System-Managed CF Structure Duplexing readiness review program ended with the closing of APAR OW41617. This APAR allows customers to follow the documented procedures for using System-Managed CF Structure Duplexing. A special keyword to use the function is no longer needed once APAR OW41617 is installed. Those customers that received the keyword as part of the readiness review program should use the documented procedures and stop using the keyword.

The architectural extensions to Parallel Sysplex® for the support of System-Managed duplexing of coupling facility structures for high availability are now generally available. All three structure types can be duplexed using this architecture:

- Cache structures
- List structures
- Locking structures

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Support for these extensions is included in CF Control Code (CFCC) Levels 11 and 12, and in z/OS V1.2, V1.3, V1.4, and V1.5 with any additional APARS as listed in the CFDUPLEXING PSP bucket. Considerations for key exploiters of this new function are included in the technical paper *System-Managed CF Structure Duplexing* (GM13-0103). Installing this software and microcode, and enabling this new function is designed to:

- Provide the necessary base for highly-available coupling facility structure data through the redundancy of duplexing
- Enhance use of Parallel Sysplex by reducing the complexity of CF structure recovery
- Enable some installations to eliminate the requirement for stand-alone CFs in their Parallel Sysplex configurations

For those CF structures that support use of System-Managed CF Structure Duplexing, customers can dynamically enable or disable, selectively by structure, the use of System-Managed CF Structure Duplexing.

Any of the following IBM eServer® servers and internal or external coupling facilities are considered key prerequisites for the use of System-Managed CF Structure Duplexing:

- Model 9672 G5 or G6 with Driver 26 at the current service level and CFCC Level 11
- zSeries 800 or 900 with Driver 3G or 990 server with Driver 52G at the current service level and CFCC Level 12
- Model 9672 R06 CF with Driver 26 at the current service level and CFCC Level 11
- z900 Model 100 CF with Driver 3G at the current service level and CFCC level 12
- z800 Model 0CF CF with Driver 3G at the current service level and CFCC Level 12
- z/OS V1.2, V1.3, V1.4, or V1.5 with any APARS included in the CFDUPLEXING PSP Bucket
- Bidirectional CF-to-CF connectivity via coupling links

Additional prerequisites are listed in the technical paper *System-Managed CF Structure Duplexing* (GM13-0103). Customers interested in deploying System-Managed CF Structure Duplexing in their test, development, or production Parallel Sysplex should also read this technical paper and analyze their Parallel Sysplex environments to understand the performance and other considerations of using the function. GM13-0103 is available at either

<http://www.ibm.com/server/eserver/zseries/psowhitepaper.html>

<http://www.ibm.com/server/eserver/zSeries/library/techpapers/gm130103.html>

After the customer analysis is completed, customers are encouraged to take a short self assessment questionnaire to help identify any potential implementation difficulties. The questionnaire is available on Resource Link™ at

<http://rl11.gpl.ihost.com/servers/resourcelink/edu03010.nsf/pages/SystemManagedCFDuplexForm?OpenDocument>

Access to the site will require a Resource Link ID and password. If customers do not have an ID, they may self-register with Resource Link at

<http://www.ibm.com/servers/resourcelink>

z/OS V1.4 Consoles Enhancements

The overall objective of the z/OS V1.4 Consoles Enhancements feature is to improve system availability by enhancing the capacity and reliability of message delivery. To accomplish this, major changes to the message production and consumption flow help reduce the possibility of bottlenecks which can cause a backlog of undelivered messages.

In a future release of z/OS, IBM plans to eliminate the one-byte console ID interface. With the advent of four-byte console IDs (in MVS™ SP V4.1.0), customers and vendors have been encouraged to migrate away from the use of one-byte interfaces. Details of the one-byte console ID interface elimination are planned to be communicated in a future z/OS announcement. To help prepare for the removal of this interface, tools have been provided in the z/OS V1.4 Consoles Enhancements feature that will identify uses of one-byte console ID interface in the environment.

More information about Consoles Enhancements and one-byte console ID interface can be found in *z/OS MVS Planning: Operations* (SA22-7601).

Ease-of-use through IBM innovative technologies

IBM Infoprint® Server

Infoprint Central: Continuing the IBM commitment to help lower customers' overall cost of distributed print operations, Infoprint Server includes a new component called Infoprint Central. Infoprint Central is a Web-based, GUI for managing print jobs and printers throughout the enterprise from anywhere in the enterprise using a Web browser. Intended primarily for help desk operators, it lets users query the status of jobs and printers, see job and printer messages, stop and start printers, move jobs from one printer to another, cancel or hold jobs, and many other functions. Infoprint Central can use integrated z/OS security services so that users can be authorized to perform only certain tasks, or to perform tasks only on designated devices.

IP PrintWay™ extended mode: Infoprint Central is backed by a new architecture in the component that delivers print or e-mail output to printers, servers or users over TCP/IP or Internet Printing Protocol (IPP). IP PrintWay extended mode uses the Sysout Application Programming Interface (SAPI) to access print jobs and job information from the JES spool. The advantage of this change can be higher availability and throughput, more flexibility for handling print-related tasks, and scalability of Infoprint Server for very large distributed print environments.

Common message log: A new common message log helps to improve productivity of help desk operators for print problem diagnosis and resolution, thus helping to increase system availability and user satisfaction. Messages can easily be accessed from Infoprint Central for a particular job or printer. A utility is also provided that enables an administrator to see all messages for a particular time period, for example. Messages can be retained for a user-specified period of time, including messages for "historical" jobs which have already been processed by the system.

z/OS msys for Setup — Continued improvements: Since the availability of the msys for Setup Release 4 SPE, msys for Setup has been continually enhanced to:

- Reduce the amount of work that is necessary to get msys for Setup ready to use
- Provide new function or considerably extend existing function by following customer requirements and
- Improve user interface characteristics

As a result of this improvement focus, msys for Setup now offers the following new functions or support:

- **The msys Management Directory:** msys for Setup can now use the IBM Directory Server, OpenLDAP, on any IBM platform. This includes OpenLDAP on z/OS UNIX System Services which can make the Management Directory virtually transparent to the user.
- **Improved job handling:** msys for Setup interacts with its managed z/OS sysplexes and systems by submitting jobs to perform system management functions. Job results are now delivered to the msys for Setup workplace in a more concise and reliable way. In complex cases, the entire job output can now be inspected at the workplace in addition to the msys for Setup log files.
- **Export/import:** msys for Setup now supports exporting of configuration data that it manages or its exploiters manage. This exported configuration data can be imported into another configuration that is the same or imported to another system or systems. This function can also be used for comparing or verifying configurations.
- **RMF™ customization support:** A new msys for Setup plug-in will help customers get RMF up and running quickly. The plug-in includes a wizard that guides customization and migration tasks. All RMF Parmlib options are presented so knowledge about the correct syntax of session options is no longer necessary. In addition, the plug-in creates correct and consistent RMF Parmlib members. Thus, error messages during initialization of a monitoring session because of conflicting options or incorrectly specified parameters are greatly reduced.
- **DB2® customization support:** DB2 UDB for z/OS V8 joins the growing number of products that system administrators can customize using msys for Setup. msys for Setup for DB2 simplifies the task of customizing a DB2 subsystem on z/OS. A set of wizards provides guidance for specifying settings for DB2 subsystem parameters (DSNZPARMs) and helps reduce the amount of data that system administrators need to enter to set up and configure DB2. The configuration windows provide default values and recommendations for best practices wherever possible. After completion of the initial setup and configuration of DB2, system administrators can view and update the parameters and other information through notebooks. The msys for Setup DB2 customization support has a prerequisite of SDK for z/OS, Java™ 2 Technology Edition, V1.4.1 (5655-I56).
- **FTP customization support:** msys for Setup support will also be extended to FTP Servers and FTP Clients. The extensions will support complete configuration as well as multiple FTP servers and clients.
- **ISPF customization support:** A new release of the ISPF msys for Setup plug-in is provided which keeps msys for Setup ISPF support current with the ISPF product by supporting NLS and new keywords.
- **Product set generation:** This function extracts SMP/E for use by msys for Setup. It's now designed to require less customer input and therefore can be easier to use. Also, the performance is expected to be substantially

improved, particularly when working with complex software configurations.

In addition to these enhancements, sophisticated reporting functions on the installed software are now available, integrated into the msys for Setup workplace.

Security Server (RACF®) dynamic templates: The new dynamic templates function helps customers gain security function and avoid problems that can occur when they neglect to run the IRRMIN00 utility when updating the RACF database with new templates after applying maintenance or a new release. With this new function, RACF will automatically use the correct database templates, eliminating the need to re-IPL if the user has neglected to run the IRRMIN00 utility.

PKI services improvements: With z/OS V1.5, the PKI Services component of Cryptographic Services has been enhanced to provide better search capability and performance when a large number of certificates have been issued. Additionally, the following certificate enhancements and processing function has been added:

- Increased support for key usage and extended key usage
- Certificate Revocation List (CRL) Distribution Point extension support
- Online Certificate Status Protocol (OCSP) through a third-party vendor
- Ability to define multiple certificate policies
- Availability of additional certificate models
- Certificate suspension support
- Multiple application domains to let the user subset their end-user population
- 2048-bit key support for the Certificate Authority (CA) signing key

These enhancements provide the foundation of a trusted e-business infrastructure required for security-rich transactions over the Internet.

Library Center for z/OS: IBM is providing an alternative way to navigate our z/OS library on the Internet. Beginning with z/OS V1.5, the Library Center for z/OS provides a Microsoft™ Windows™ Explorer-like view of the contents of the entire z/OS and Software Products DVD Collection. The Library Center uses the new IBM Library Server with new advanced search functions to help users find information "on demand."

The Library Center offers:

- **Easier navigation:** When opened, the Library Center presents a left-hand navigation frame that lets the user visually navigate the entire repository (over 2000 manuals). The user can expand each shelf to see all the books in that shelf and expand each book to see all the topics.
- **New advanced search features:** A search scope pull-down on the Library Center lets the user search the entire repository, a particular shelf, or a specific book. In addition, new advanced searches lets users search by information type. For example, the user can search only on messages or commands. This new function will be expanded over time to other information types, such as PARMLIB statements, APIs and macros.

- Available single frame navigation: A single frame mode makes the new Library Center more accessible to people using screen readers, such as the IBM Homepage Reader.
- Integration of BookManager® with PDF: The Library Center provides even better integration between BookManager and PDF file formats than the z/OS Internet library. If a book is available in both, the user can choose which one to open by clicking the appropriate symbol in the table of contents.
- A portal to other information: An IBM Redbooks™ bookshelf lets the user perform a BookManager search and locate a corresponding Redbook in PDF format. The search scope pull-down lets the user launch searches in other repositories such as the WebSphere Application Server for z/OS or Google.
- Built-in handheld support: The Library Center also provides a handheld mode to support both connected and disconnected handhelds.

Application Flexibility

C/C++ enhancements: The C/C++ compiler feature introduces several new enhancements including the following:

- Support for 64-bit compiles: The compiler has been enhanced to generate z/Architecture instructions which include utilizing the 64-bit general purpose registers. This new 64-bit support will enable C and C++ developers to recompile existing 32-bit C/C++ applications into 64-bit code and to compile new 64-bit C/C++ code. The WARN64 compiler option will help developers detect possible portability errors when moving code from 32-bit to 64-bit. The LP64 compiler option can be used to identify compile-time problems when moving code to the 64-bit virtual environment. Object code is not generated in this release.
- Performance enhancements: A new higher optimization level, OPTIMIZE(3), provides the compiler's highest and most aggressive level of optimization. OPTIMIZE(3) is recommended when the desire for run-time improvement outweighs the concern for minimizing compilation resources. Profile-directed feedback, invoked by the IPA (PDF) suboption, can be used to collect execution profile information on an application and this information is then used to further tune compiler optimizations near conditional branches and in frequently executed code sections. Additional options and pragmas are introduced to help the developer to improve their application performance including Loop Unrolling option and pragmas, additional ARCH/TUNE options, and new Built-in functions.
- DB2 preprocessor integration: The C/C++ compiler has been enhanced to integrate the functionality of the DB2 precompiler. A new SQL compiler option enables the compiler to process embedded SQL statements.
- DEBUG option: The DEBUG option is introduced to generate debug information based on the Debug with Arbitrary Record Format (DWARF) Version 3 debugging information format, which has been developed by the UNIX International Programming Languages Special Interest Group (SIG), and is an industry standard format. The compiler is now capable of generating 2 different formats of debug information including the existing In-Store-Debug (ISD) format information.

C/C++ IBM Open Class® Library: As previously announced in Software Announcement 203-131, dated May 13, 2003, the application development support (that is, the headers, source, sidedecks, objects, and samples from the Application Support Class and Collection Class libraries) is withdrawn from the C/C++ IBM Open Class Library (IOC) in z/OS V1.5. Applications that use these IOC libraries cannot be compiled nor linked using z/OS V1.5. Run-time support for the execution of existing applications which use IOC libraries is provided with z/OS V1.5, but is planned to be removed in a future release. For additional information, visit

<http://www.ibm.com/software/awdtools/czos/features/classlib.html>

Euro Sign support: z/OS V1.5 includes euro currency symbol support for an additional set of countries and languages. For more information, visit

<http://www.ibm.com/servers/eserver/zseries/zos/le/whatsnew/euro.html>

Preview: z/OS V1.6

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

Note: This statement represents current intentions of IBM. IBM development plans are subject to change or withdrawal without further notice.

Removal of System SSL Java class support

In z/OS V1.6, System SSL Java class support will be removed. Applications that need to use SSL function through Java classes must use JAVA Secure Socket Extension (JSSE). Information about JSSE can be found at

<http://www.ibm.com/servers/eserver/zseries/software/java/jsse14.html>

Improved Scalability

C/C++ enhancements: The C/C++ compiler feature of z/OS will allow users to develop and port high-performance and complex C/C++ programs. This compiler is a critical element as customer business applications, customer server applications, ISV applications, and internal IBM componentry are being written in both C and C++.

z/OS V1.6 C/C++ will support the generation and debugging of 64-bit applications. This capability will remove the current limitations on virtual memory and address space sizing, and will aid in porting of applications from other platforms. The C/C++ compiler will support the industry-standard LP64 programming model to allow C/C++ code to exploit virtual memory above the bar. In addition, the architecture level of ARCH(6) will be supported to allow for exploitation of the new z990 hardware features for performance enhancements.

Debugger support: With z/OS V1.6, dbx will support 64-bit virtual C/C++ code. In addition, Unicode support for "wide-character ASCII," which is a subset of UCS-2 within dbx, will enhance the ability of dbx to be recognized for ASCII support by providing full debugging support of wide characters.

z/OS 64-bit C/C++ environment: z/OS V1.6 will deliver the capability to exploit 64-bit virtual in developing and deploying emerging e-business applications that require a significantly larger addressability of data. This capability will be provided with enhanced UNIX System Services, 64-bit Language Environment® (LE) run-time developed with the C/C++ compiler 64-bit support, and the Program Management Binder 64-bit support. The availability of this support will complete the major steps of the z/OS 64-bit virtual roadmap.

For more information regarding z/OS 64-bit virtual support, refer to the IBM eServer zSeries 900 z/OS 64-bit Virtual Storage Roadmap white paper at

<http://www.ibm.com/servers/eserver/zseries/library/whitepapers/pdf/gm130076.pdf>

Greater than 16 engines in a single z/OS image: z/OS V1.6 will support customer growth by allowing more than 16 engines in a single z/OS image.

Autonomic Computing

Self-healing improvements: *TCP/IP Sysplex health monitoring:* When a TCP/IP stack is configured for sysplex functions as a dynamic VIPA (DVIPA) owner or backup, or as a sysplex distributor or target, it will perform extended monitoring of key components to determine if it is performing as a healthy member of the sysplex. If a TCP/IP stack determines that the resources it requires to function properly are unavailable (for example, VTAM® or OMPROUTE are inactive), or it is unable to obtain storage, then it will automatically remove itself from the sysplex and allow a healthy backup TCP/IP stack to take over and perform the sysplex functions.

Resource Recovery Services (RRS) restart enhancements: Improved application availability will be provided with RRS enhancements that enable a resource manager to restart on any z/OS V1.6 whenever the resource manager terminates. This restart can occur independent of whether RRS or the system fails, or whether the terminating resource manager has incomplete interests or not.

Self-optimizing improvements

DFSMS data set allocation: Parallel Access Volume (PAV) is an optional feature of the IBM Enterprise Storage Server™ (ESS) that allows multiple data sets on the same volume to be accessed at the same time. This can eliminate I/O queue time and has been a significant performance enhancement especially for DB2 data. z/OS V1.6 will allow users to automatically allocate data with high-performance requirements to volumes with the PAV capability. This feature will provide a more efficient use of the PAV resources and help lower a customer's total cost of ownership.

Workload Manager (WLM) enhancements: Improvements to WLM in z/OS V1.6 include:

- DB2-stored procedures enhancements: WLM will provide improved performance for DB2 User-Defined Functions (UDFs), specifically those UDFs that create sequences of dependent work requests.
- WLM stateful session placement: The scalability of applications is improved by an enhanced queuing algorithm that makes more efficient use of the available server regions. The enhanced algorithm allows WLM to support round-robin scheduling of new transactions across active server regions. WebSphere

for z/OS Application Server plans to exploit this enhanced algorithm to improve horizontal scaling of WebSphere applications.

Security

Multilevel Security auditing: Multilevel Security auditing in z/OS V1.6 extends the SECLABEL auditing functions from resources to allow auditing control based on user SECLABELs. This function will extend the Multilevel Security functions provided in z/OS V1.5.

For more information about Multilevel Security, refer to the overview that was previewed in Software Announcement 202-190, dated August 13, 2002. (Use **Ctrl+F** and search on **Preview: z/OS V1.5**.)

Application flexibility

z/OS UNIX System Services enhancements: To support the porting and executing of UNIX applications on the z/OS platform the common UNIX functions of Condition Variables in Shared Memory and Superkill support are planned to be added.

Condition Variables in Shared Memory will provide a base for adding new standard compliance pthread functions in the future.

Superkill support provides a programmatic approach to terminate UNIX System Services processes, previously allowable only by the z/OS operator. It also will enable the addition of new shell and operator commands. Superkill support is planned to provide a qualified SIGKILL signal that will break through many of the z/OS inoperability issues, particularly those issues related to termination of a target process.

In addition to the above enhancements, several other z/OS UNIX System Services enhancements are planned for z/OS V1.6:

- z/OS UNIX Filesystem Sysplex support will be enhanced by supporting a Wildcard character in the file system SYSLIST. This will allow for better operational control for filesystems, specifically during planned and unplanned outages.
- The following new capabilities to ISHELL, OEDIT, shell mount utility, and z/OS UNIX REXX support are planned to be provided to benefit both system administrators and users:
 - Wildcard (filter) support on the directory list
 - Option to inherit the command line position from the previous dialog
 - Option to display permission bits in rwxrwxrwx format (instead of numeric format) on the directory list
 - Option to preserve extended attributes on a copy
 - Option to turn off autoskip on the directory list panel
 - Option to stop processing multiple actions on a directory list after an action fails or a message is issued
 - Option to allow executed shell commands to output in line mode as they are running
 - Support for AUTOUID/AUTOGID will be added to the respective panels

- Ability to specify default permissions for OEDIT when it is running under the shell and applying the umask value
- REXX enhancements to address Syscall WRITEFILE that will allow appending to an existing file
- The shell mount command that will produce additional details on mount failures when the verbose (-v) option is specified
- To not remember the last path on the main panel, an option will be added, providing for the same behavior that existed prior to z/OS V1.3
- To allow null Enter on directory list so that the list can be refreshed, an option will be added, providing for the same behavior that existed prior to z/OS V1.3
- Option that will enable copying of a data set member to a file without the requirement of permission settings
- New enhancements to the automount daemon are planned to help system administrators:
 - Provide the capability to add new automount managed directories to the existing automount policy
 - Allow automount policy files (master and map files) to reside in MVS data sets
 - Add a message that indicates that the existing policy is not replaced when an error is detected in the new policy

Modification to Euro Monetary symbol support: IBM will modify support for the Euro Monetary symbol. The base locales for the participating EU countries will be modified to contain the Euro Monetary symbol as the default currency symbol. This change will require modifications to customer applications which currently display monetary amounts in **both** the local currency and the Euro. A new modifier called @preeuro is being created to allow applications to continue displaying monetary amounts in the local currency, since the default currency symbol in the affected locales will be the Euro symbol. Existing applications using only the @euro modifier will not be affected.

Unicode support enhancements: Performance improvements and usability improvements will be provided in support for Unicode. The performance enhancement can help reduce the pathlength of converting EBCDIC to and from Unicode for both UTF-8 and UTF-16 encoding schemes. This enhancement will make use of specific hardware instructions introduced in zArchitecture and has already been made available to the field via APAR OA04043.

The usability enhancement can help eliminate the need to customize Unicode Services for certain environments like DB2. Specifically, when parmlib customization has been performed by the user, and a request to convert to Unicode is received from DB2, a pre-built image of ASCII and EBCDIC conversion tables will be loaded. This function has also been released to the field via APAR OA04069.

Ease-of-use through IBM innovative technologies

Hardware Configuration Manager (HCM): The usability of HCM will be enhanced by the implementation of some important user requirements:

- More user fields: The number of user fields, used for describing HCM objects in general, will be increased from 5 to 20. This will enable users to define their own attributes for an object. In addition, a number of user requirements such as defining a 'sysplex field' or a new 'location field' will also be satisfied.
- Save as button: A new button providing the 'Save As' capability will become available in the Director dialog (switch port list) as well as in the 'List Devices for OS Configuration' dialogs.
- Cropping the diagram — enhancing the PF4 key: In addition to the already implemented PF4 cropping function, a new enhanced cropping algorithm will be implemented with the use of the 'Shift + F4' keys. The new cropping algorithm will suppress the objects that are not directly part of the selection. Thus, the selections made in the 'Change View Attributes' dialog will no longer be considered.

In addition to these user requirements, other z/OS V1.6 HCM enhancements include:

- Enhanced HCM configuration diagram: An updated graphical representation and new filter functions will help to provide a correct and clear display of cabling information for spanned CHPIDs.
- Support of CHPID mapping tool: HCM will support the CHPID Mapping Tool. A new HCM dialog will allow the user to export an Input Output Configuration Program (IOCP) input file for a previously specified processor configuration on the Personal Workstation (PWS) as direct input to the CHPID Mapping Tool for Physical Channel Identification (PCHID) assignment. The generated updated IOCP input file from the CHPID Mapping Tool containing the PCHID values can be imported via this dialog back into the Input Output Definition File (IODF) while HCM, at the same time, updates its configuration file. Thus, several manual steps will be made obsolete in the interaction between HCD and the CHPID Mapping Tool.

Data access and storage management

The new DFSMS functions planned for z/OS V1.6 will focus on improving business efficiency by providing better system performance and throughput and by providing usability enhancements that increase storage administrator productivity. The introduction of a client/server relationship in DFSMSrmm™ will allow storage administrators the ability to more effectively manage large tape environments. Overall, the DFSMS enhancements will be designed to improve system availability, provide more efficient use of storage resources, and enhance security.

New DFSMS functions that improve business efficiency

- DFSMShsm™ secondary space management multitasking: This function will allow installations to reduce the time it takes to perform the secondary space management functions of migration cleanup and ML1 DASD to ML2 tape.

- DFMSDsss™ REPLACEUNCONDITIONAL keyword: The introduction of the new REPLACEUNCONDITIONAL keyword will allow a user to replace an existing data set with a new name in one step during a logical copy or restore operation. It will enable DFMSDsss users to copy, rename, or restore data sets, and be able to have the new data set overwrite an existing data set. Users can use this function as a way to copy production data to their test systems for debugging. This capability will help to improve the productivity of system programmers and storage administrators. This support is also provided for the following releases through maintenance: OS/390® V2.10, z/OS V1.1, V1.2, V1.3, V1.4 and V1.5.
- DFMSRmmm ISPF usability improvements:

The ISPF dialog will be updated to:

- Enable field values to be saved and reused
- Simplify actions on RMM resources by enabling the use of line commands from many more search results lists
- Enable use of the CLISToption for dialog initiated searches

These ease-of-use features will enhance the productivity of DFMSRmmm users and provide improved management of tape resources.

- DFMSRmmm Enterprise enablement: Extending DFMSRmmm to the enterprise will be initiated through enabling the use of client systems and by adding an object oriented interface to the DFMSRmmm API. These features will more easily allow users to use DFMSRmmm to manage all the tapes in their z/OS enterprise environment, providing a more efficient use of tape resources.
- Multilevel Security SECLABEL in ACS routines: The security label (SECLABEL) is a name used to represent the association between a particular security level and a set of security categories. The security label displayed is the minimum security label needed to access a data set protected by a profile. Many customers want to segregate data of specific classifications (SECLABELs) on specific sets of volumes. They do not want to mix data for different classified projects on the same volume. Currently, customers have to use allocation exits in order to provide this segregation. With the support of the SECLABEL read-only variable, customers will be able to assign an appropriate storage group dedicated to data of a particular classification. This support can improve the productivity of security administrators by eliminating the need to code and maintain exits to accomplish this objective.

e-business enabling

Networking for large-scale e-business: A number of enhancements are planned for z/OS Communications Server:

IPv6 support: z/OS continues to build and enhance support for IPv6 to provide network availability to z/OS applications that interoperate as part of IPv6 networks. The following Communications Server networking functions will be upgraded to support IPv6:

- Sysplex: Customers deploying IPv6 applications will be able to take advantage of the availability and workload balancing capabilities of the z/OS TCP/IP

Sysplex Dynamic VIPA and Sysplex Distributor functions for their mission-critical applications.

- OSPFv3: Support for the IPv6 OSPF dynamic routing protocol (RFC2740) will be added to OMPROUTE, the z/OS Communications Server routing daemon. This support will enable OSPF dynamic routing over IPv6, resulting in quicker convergence of network changes than offered by IPv6 RIPng.
- SNMP Network Management: The z/OS Communications Server SNMP TCP/IP subagent will provide additional IPv6 management data from the following version-neutral (for example, IPv4 and IPv6) MIB modules:
 - Support for the standard TCP-MIB and IP-MIB updated to the draft-ietf-ipv6-rfcnum-update-04.txt levels.
 - Support for the standard IP-FORWARD-MIB updated to the draft-ietf-ipv6-rfc2096-update-05.txt level.
 - Support for new interface, routing and TCP management data that has been added to the IBM MVS TCP/IP Enterprise-specific MIB module; the module is shipped as part of z/OS Communications Server.

Additional Communications Server enhancements

- Enterprise Extender/SNA enhancements: New functions and serviceability improvements will be provided for Enterprise Extender (EE) and Systems Network Architecture (SNA):
 - Configuration improvements for EE will help improve usability and availability:
 - EE XCA major node definitions can be updated without first inactivating the major node.
 - An entire EE definition GROUP (including all of the lines and physical units (PUs) under the GROUP) may be activated or deactivated with a single VARY command. Previously, a command had to be issued for each line or PU.
 - Availability for sessions that use EE connection networks will be increased. In cases where the underlying IP network may be temporarily unavailable, an alternate route that does not use the connection network will be used if available. Prior to this enhancement, sessions attempting to use the EE connection network would continue to fail without selecting an alternate path.
 - A new display command for EE will provide general and connection-specific performance information.
 - As an aid in EE problem diagnosis, the TCP/IP packet trace formatter will be enhanced to include the formatting of EE packets that flow to and from TCP/IP.
 - A new command which terminates a hung Advanced Peer-to-Peer Networking® (APPN®) search will enhance the availability of SNA resources by allowing future search requests to complete.
 - A new VTAM start option will be provided to control the display of additional diagnostic information when an APPN locate search fails.
 - When an HPR pipe stalls due to error conditions, extended recovery attempts will be activated and the operator informed.

- Growth constraints will be removed for HPR pipes with the extension of network element address allocation above the 64K line, up to 33M.
- As an aid in HPR problem diagnosis, a new IPCS VTAMMAP command option will be provided for the analysis of dumps taken for HPR problems.
- New configuration options will provide the ability to control how cross-subnetwork high performance routing (HPR) Rapid Transport Protocol (RTP) connections are established through APPN border nodes. Customers can use these controls to force HPR to terminate RTP connections at border nodes in order to maintain awareness of cross-subnetwork sessions.
- VTAM configuration controls will be provided to enable network administrators to control the passing of IP characteristics (via CV64) associated with logical units (LUs) that represent a TN3270 session.
- An indicator in the TCP/IP Control Information Vector (CV64) will be added to inform hosts and applications that the TKOSPECLURECON or TKOGENLURECON profile parameter was specified by the TN3270 server for session recovery. This enables network administrators to make decisions in their session exits to handle specific situations that can occur as part of recovery, such as a change in the IP address that was originally associated with the LU name
- FTP enhancements:
 - FTP Client API support will provide a callable API that will allow the z/OS FTP client to be invoked from applications written in Assembler, COBOL or PL/I.
 - Enhanced Multi-Byte Character Set (MBCS) support will upgrade the character set conversion support for the double byte character set (DBCS) codepages that FTP previously supported using the LOADDBCSTABLES configuration statement. LOADDBCSTABLES is still supported.
- Multilevel Security enhancements:
 - SO_Broadcast Control will provide a new SAF SERVAUTH class profile to allow customers to control which users and applications can send datagrams to broadcast addresses.
 - Enhanced consistency checking will be provided during profile processing to check the consistency of configuration information related to multilevel security.
 - The Trivial File Transfer Protocol daemon will be improved to allow it to optionally bind to a specific IP address. This will provide the flexibility to run multiple copies of TFTPd with different security labels.
 - Multiple copies of the Sendmail daemon may be run, each with a different security label.
- TN3270 Server enhancement: An enhancement will be provided to run the TN3270 server in a separate address space from the TCP/IP stack. This provides the customer with visibility and control over the TN3270 function separate from the TCP/IP stack. For example, the enhancement will allow users to run the TN3270 server at a different priority than the TCP/IP stack. It also provides the ability to stop and restart the TN3270 server without stopping the TCP/IP stack. This makes it easier to reset the server or apply

maintenance. Overall, problem diagnosis is easier and better when the TN3270 server and the TCP/IP stack are separate.

- Enhanced job specific source IP addressing: This function will allow a specific job or set of jobs to have a unique source IP address for outbound initiated connections. This can be useful when an application communicates with specific partners, by allowing a single address to get used as the source address, which can simplify firewall configuration.

Security for e-business

Security server LDAP improvements

- 64-bit Client will enhance the LDAP Client APIs to support 64-bit addressing. It will also allow LDAP C/C++ applications running on z/OS V1.6 to exploit 64-addressing.
- IPv6 support will enhance the LDAP Server, LDAP Operational Utilities, and Client APIs to support IPv6 communication.
- Change Log will provide a log of changes made to entries in the directory including RACF user password changes and will allow this log of changes to be searched by a client. It will also enable metadirectory products like IBM Directory Integrator that work from a changelog to work with the z/OS LDAP server.
- Alias Support will provide a means for a directory entry to point to another directory entry. An alias entry can provide a convenient public name for an entry or subtree, hiding the more complex actual name of the entry or subtree. It can also avoid the need to duplicate an entry in multiple subtrees.
- DB2 Restart/Recovery will improve LDAP RAS characteristics by removing the requirement to stop and restart the LDAP server each time DB2 is restarted.
- Dynamic/Nested Groups will allow the group administrator to define group membership in terms of attributes and lets the directory determine who is or is not a member. It will also allow administrators to construct and display group hierarchies that describe both direct and indirect group memberships. This support reduces the complexity of and administrative effort required for administrating groups.
- Search Results Cache stores results in memory. This may enhance LDAP server performance under certain conditions. Cache tuning and statistics monitoring capabilities are also provided.
- Enhanced Schema Support will reduce the complexity inherent in schema updates. Will also enable schema modification by replacement of individual attribute values effectively merging new attribute values into existing schema.

Security server (RACF) improvements: System administrators will appreciate improvements that will enable installation-defined classes in the RACF Class Descriptor Table (CDT) to be defined and updated without the need for an z/OS system IPL. This improvement also removes the user requirement to update the RACF Router Table. This capability will benefit application developers who will be able to exploit RACF security services for new applications without requiring an IPL in order to define new installation-defined RACF classes.

RACF will use LDAP change log support to create event notifications when a user profile is changed in RACF. A change log entry will be created by RACF regardless of whether LDAP or RACF commands are used to modify a RACF user.

In addition, RACF will be enhanced to support recoverable user passwords. User passwords can be stored in digitally encrypted PKCS#7 formatted envelopes which can only be recovered by authorized applications. Users, and groups of users, can be selectively enabled for the enveloping function. RACF can create an LDAP change log entry which will act as a notification of the password change, and LDAP clients can request the password envelope from RACF, using LDAP interfaces.

IBM Tivoli® Directory Integrator, 5.1.2 (5724-D99), will provide exploitation of this z/OS function to enable enterprise-wide password synchronization in which z/OS is an equal participant, without requiring z/OS-specific agents or exits.

Network Authentication Service/PKI/Enterprise Identity Mapping (EIM): Enhancements to z/OS Network Authentication Service, PKI, and EIM will significantly expand the applicability of IBM's user identification and authentication solutions which will improve the ability for non-UNIX z/OS applications to participate in distributed computing scenarios.

Secure Sockets Layer (SSL) enhancements: Enhancements will be made to System SSL to support industry standards, certificate administration, and 64-bit addressing to ensure continued secure communication through the usage of SSL/Transport Layer Security (TLS) protocol across distributed environments. System SSL will be enhanced to support the use of Diffie-Hellman key exchanges during the SSL/TLS handshake. To ease the administration task of sharing certificates, the gskkyman command will be enhanced to allow the exporting and importing of certificate chains using PKCS#7 format files. In prior releases, System SSL allowed a single certificate to be import/exported per PKCS#7 file. Now the complete certificate chain can be moved through a single file.

Reliability, availability, and serviceability (RAS) enhancements

Enhancements to RAS tools gives users the ability to more easily gather diagnostic data for IBM Service. In addition, some of the enhancements enable IBM Service to more easily interpret diagnostic data that resides in dumps and traces.

z/OS V1.6 will include several z/OS serviceability enhancements that enable the following:

- Users will be allowed to activate an additional generalized trace facility (GTF) trace specification when others have already been activated. It will facilitate collection of data related to problems when that data collection might otherwise need to be prioritized in competition with other demands for GTF tracing.
- GTF buffer controls will be provided so that extra blocks of storage are available to hold GTF data, prior to writing the data out to a data set. As a result, loss of records is expected to be prevented, especially when tracing VTAM or other high activity components that exploit GTF. In addition, support will be provided to include supervisor call (SVC) exit points in SVC traces.

- With z/OS, Standalone Dumps can be written to extended format data sets, as supported on ESS DASD. This will take advantage of larger data set sizes available with modern DASD. With the introduction of 64-bit real storage, customers have expressed strong concern about the growing size of Standalone Dump data sets, requiring as many as 6-12 DASD volumes to initially store and backup the dump. With exploitation of extended format data sets, the same quantity of dump data can be written, but requiring fewer DASD volumes.
- Improved latch contention detection in the UNIX System Services environment, with enhanced recovery and dumping for latch and storage manager problems will aid in serviceability.
- The memcheck tool, currently residing in LDAP, will be ported to the LE environment. The tool will do checking on malloc's and free's and is intended to identify storage overruns and double free's.

IOS restart time: In order to significantly reduce the restart time for both planned and unplanned outages, IOS will minimize the impact on restart time by executing device initialization functions in parallel.

Execute Channel Program (EXCP) — Virtual storage constraint relief: The amount of common, fixed storage below the 16-MB line required for EXCP and Execute Channel Program Virtual Request (EXCPVR) requests is reduced by moving many of the EXCP internal control blocks above the 16 megabyte line in virtual and/or real storage. This will reduce the number of system outages caused by storage shortages when a large number of EXCP or EXCPVR requests are active concurrently.

Raising the limits on z/OS: A number of system limits have been raised to improve reliability, availability, and serviceability.

- With z/OS V1.6, the process used to buffer SMF data prior to writing it will be improved. The size of the buffer will be customizable based on parmlib settings and improvements will be made to buffer management. Up to 1GB can be used to cache SMF records prior to writing them to SMF data sets. This will serve to minimize SMF data loss.
- The File Descriptor Limit will be adjusted from 64-K to 128-K. A single UNIX process will be limited to 128-K file descriptors allowing for an increased number of open socket connections. File descriptors are used for all open file system objects, including files, sockets, pipes, terminals, and directories.
- New support will allow the sysplex couple dataset to be formatted for up to 2047 members per cross-system coupling facility (XCF) group.

Architectural level set

As previously announced in Software Announcement 203-131, dated May 13, 2003, z/OS V1.6 will depend on z/Architecture and will establish a new architectural level set. Architectural enhancements provide performance and reliability improvements. To exploit these enhancements, simulations or dual paths within z/OS were needed to allow z/OS to run on servers without the enhancements. The benefits of the architectural level set include elimination of this redundant code and potentially greater exploitation of the enhancements by designers and programmers to deliver new function to customers

more quickly. z/OS V1.6 will support only the following servers:

- zSeries z990, or comparable server
- zSeries z900, or comparable server
- zSeries z800, or comparable server

The following IBM servers do not have these enhancements and will not run on z/OS V1.6:

- S/390 Parallel Enterprise Servers — Generation 5 (G5) and Generation 6 (G6), or comparable server
- All models of the Multiprise® 3000 Enterprise Server, or comparable server

z/OS V1.5 product content

z/OS is composed of base elements and optional features. Optional features are priced and unpriced. To learn more about these elements and features, refer to *z/OS and z/OS.e Planning for Installation (GA22-7504)* at

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

Replacing base elements: Customers have the ability to replace a z/OS base function with a commercially available product that provides a similar function. Contact an IBM representative for qualification and pricing information. All z/OS integrated testing results and performance claims are voided with such replacement.

Export considerations: The following z/OS functions have export considerations.

- **Base elements**
 - Communications Server — SNA/APPN Services (includes VTAM) (limited DES)
 - Communications Server — TCP/IP Services (includes TCP/IP for MVS) (Firewall CDMF DES 40-bit, SNMPv3 DES 56-bit, IP Sec DES 56-bit)
 - Cryptographic Services — Open Cryptographic Services Facility (RC2/RC4/RC5 40-56-bit, DES 56-bit)
 - Cryptographic Services — PKI Services (uses RACF, OCSF and ICSF)
 - Cryptographic Services — System SSL (RC2/RC4, DES through 56 bit)
 - DCE Base Services (OSF DCE level 1.1) (limited DES)
 - Distributed File Service (DFS™/SMB/zFS) (DFS support at OSF DCE level 1.2) (DES 56 bit)
 - Integrated Security Services — DCE at OSF DCE level 1.2.2 (limited DES)
 - Integrated Security Services — Firewall Technologies (DES)
 - Integrated Security Services — LDAP Server (uses System SSL, OCSF, and ICSF)
 - Integrated Security Services — Network Authentication Service (DES)
 - Language Environment (limited DES)
- **Optional features**
 - Communications Server Security Level 3 (TDES)

- IBM HTTP Server NA Secure (uses System SSL)
- Security Server — RACF (limited DES and CDM, RC2 40 bit)
- z/OS Security Level 3 — Network Authentication Service Level 3 (TDES)
- z/OS Security Level 3 — Open Cryptographic Services Facility Security Level 3 (TDES, DES, RC2/RC4/RC5)
- z/OS Security Level 3 — System SSL Security Level 3 (RC2/RC4, TDES, AES)

Enabling optionally priced features: z/OS optionally priced features use a z/OS product registration service, together with product policy statements, to determine whether or not the z/OS priced feature has been ordered and should run. Optionally priced features that are ordered concurrently with z/OS will be shipped by IBM together with policy statements in PARMLIB that enable the ordered priced features. z/OS priced features that have not been ordered will also be shipped with z/OS, but with policy statements that disable the unordered features. If the customer subsequently enable any of the optional priced features, those features also become subject to the payment terms of the customer's existing z/OS license as described in the *z/OS Licensed Program Specifications (GA22-7503)*. Customers must notify IBM when they enable an optional feature that was shipped disabled. A detailed description of the enablement support is available in *z/OS and z/OS.e Planning for Installation (GA22-7504)*.

Program services

Central service for suspected defects in z/OS code is provided by the IBM Support Center within the customer's geography. On-site (local) support, although available in many geographies, is provided as part of IBM's portfolio of fee-based services.

Service policy

IBM plans to provide service support for each release of z/OS for three years following its general availability date. IBM, at its discretion, may choose to leave a release supported for more than three years.

The service policy for the priced and unpriced features and Web deliverables described in this announcement is the same as the service policy of the release on which it is installed.

At least 12 months' written notice prior to the withdrawal of service for a version or release will be given for z/OS.

Coexistence and migration rules should be taken into account in planning future migrations. Refer to the **General coexistence, release migrations, and fallback** section for additional information.

z/OS no longer supports service for client operating systems whose service is withdrawn by the operating system manufacturer. As an example of the actual implementation of this policy, IBM no longer support service for clients running Windows 95.

Recommended service upgrade

Effective September 2001, IBM redefined the Recommended Service Upgrade (RSU) for the z/OS platform based on additional Consolidated Service Testing (CST). Testing of service for the following

subsystems and products is now being done in a customer-like sysplex environment, using industry-representative workloads.

- z/OS
- OS/390
- IMS™
- DB2
- CICS®
- MQSeries®
- WebSphere MQ
- IRLM

Service will be tested in this consolidated service test environment on a quarterly basis. The resulting RSU is the new recommended level of service. Additionally, testing will be done on HIPERs, PE fixes, and other fixes as warranted, on a monthly basis. These monthly RSUs are recommended as we have found a correlation between availability and maintenance currency. As always, customers should review HIPERs and PE fixes on a regular basis and install those that apply to their environment.

For more information about CST, and how to order and install the redefined recommended service, visit

<http://www.ibm.com/servers/eserver/zseries/zos/servicetst>

Notes

- These service recommendations are based on the IBM test environment and workloads. Customer environments and workloads are likely to differ. Therefore, these service recommendations are provided without warranties of any kind. Customers must consider their environment, maintenance philosophy, and production needs in making the final decision as to what maintenance to apply.
- These statements represent IBM's current intentions. IBM development plans are subject to change or withdrawal without further notice.

Education support

The following worldwide courses are available for classroom delivery:

- An Introduction to the z/OS and OS/390 Environment (ES05)
- Fundamental System Skills in z/OS and OS/390 (ES10)
- z/OS and OS/390 Facilities (ES15)
- z/OS Update (OZ30)
- z/Architecture for zSeries (OZ09)
- z/OS and OS/390 Operations (ES27)
- z/OS Installation Using ServerPac (ES41)

In the U.S. and Canada, call 800-IBM-TEACH (426-8322) to enroll in one or more of these classes.

Technical information

Hardware requirements

z/OS V1.5 runs on the following IBM servers:

- zSeries z990, or equivalent
- zSeries z900, or equivalent
- zSeries z800, equivalent
- S/390 Parallel Enterprise Servers —G5 and G6 models, or equivalent

Note: Driver 26 (licensed internal code version 1.6.2) or later is required on a G5 or G6 server to support architectural enhancements required by z/OS.

- All models of the Multiprise 3000 Enterprise Server, or equivalent

z/OS V1.6 requires:

- zSeries z990, or equivalent
- zSeries z900, or equivalent
- zSeries z800, or equivalent

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 and z/OS.e Planning or Installation* (GA22-7504) for a listing of specific software requirements at

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

SystemPac® for z/OS, V1.5: This worldwide system migration vehicle for z/OS is the recommended IBM delivery vehicle for customers who want to help save time, resources, and effort to migrate, install, exploit, and maintain their z/OS system-related products, and selected vendor software products. It includes all of the functions and features of ServerPac, and provides additional installation and customization so that the user can have a “load and go” z/OS system.

SystemPac offers the capability to build a system with integrated subsystems in either full volume dump/restore format or dataset copy format. The full volume dump/restore format enables the user to install z/OS without using the dialog. Installation is done via pack restore using DFSMSdss or FDR (if the vendor product is selected in the order).

SystemPac includes the installation of IBM and selected vendor software products in a single package. The vendor products ordered within SystemPac will be verified by IBM to ensure that licenses with the offering vendors are in place before delivery is completed. For a list of the available vendor products offered with SystemPac, visit

<http://www.ibm.com/services/uk/isv/vendors.html>

After the delivery of the SystemPac, entitled selective follow-on services (SFSs) such as SMP/E HOLDDATA, HIPER PTFs, PTFs, resolving PTFs in error (PEs), and reach-ahead service, can be shipped at specified intervals and frequencies based upon the customer's selection at ordering time.

There are now two options for getting SFS:

1. Via the same physical media as the corresponding packaged offering, installed via the CustomPac dialog, or
2. A new streamlined version, delivered over the Internet, that contains the JCL for Batch JCL installation with its installation guide and all PTFs tersed

The electronic SFSs are offered in these CustomPac offerings:

- SystemPac (5751-CS4)
- RefreshPac (5751-CS7)
- ProductPac® (5751-CS5)
- SubsystemPac (5751-CS4)

Additionally, SystemPac comes with the option of having z/OS Communications Server enabled. This feature, coupled with the enablement of z/OS UNIX System Services in full function mode, allows the customer to easily tailor the default setup provided to match their standard for Internet access after the system is restored and IPLed. For details, visit

<http://www.ibm.com/ca/custompac>

SystemPac is further enhanced with the default enablement of WLM Goal Mode, MVS System Logger, Resource Recovery Services, and the following products when they are ordered in a SystemPac.

- CICS Transaction Server for z/OS V2.2 (5697-E93) and V2.3 (5697-E93)
 - CICS Log Manager
 - CICS Web Support
 - CICS 3270 Bridge
 - External CICS Interface
- DB2 Universal Database® Server for OS/390 and z/OS V7.1.0 (5675-DB2), and DB2 Universal Database Server V8 (5625-DB2)
 - DB2 Open Database Connectivity (ODBC)
 - DB2 Java Database Connectivity (JDBC)
 - DB2 Net.Data®
 - WLM-established Stored Procedures
- IMS V7.1.0 (5655-B01) and IMS V8.1.0 (5655-C56)
- WebSphere MQSeries V5.3.1 for z/OS and OS/390 (5655-F10)
- WebSphere Application Server V4.0.1 for OS/390 and z/OS (5655-F31) & V5.0.0 for z/OS (5655-I35), including its prerequisites
 - Selected products, elements, features, and functions of z/OS (such as z/OS UNIX System Services, Security Server (RACF), Communications Server, IBM HTTP Server, WLM Goal Mode, Resource Recovery Services)
 - IBM Developer Kit for OS/390
 - DB2

With Full Volume Dump and the above enablements, the user can now have a true “load and go” system for z/OS and the WebSphere Application Server ready on IPL. This unique capability is only available with SystemPac. The above enablements also allow installations to exploit features that come with the various subsystems and provide ease in migrating to e-business applications.

SystemPac is built according to a copy of the input/output definition file (IODF). The IODF can be sent to selected worldwide production centers via the Internet. To get access to the Internet application, visit

<http://www.ibm.com/ca/custompac>

- Select location or country
- Access the application “IODF/Dataset Shipment”

SystemPac is designed for those who have limited skill or time to install or upgrade z/OS but who want to install or upgrade to exploit z/OS functions in e-commerce or other areas.

Find more information about SystemPac on the Web at

<http://www.ibm.com/ca/custompac>

RefreshPac: This software preventive service package adds predefined collections of PTFs to a system to help avoid problems not yet encountered. The user will be required to send a copy of the SMP/E consolidated software inventory (CSI) profile every time the user requests preventive service so that the delivered service will be for all products that are:

- At the latest recommended service upgrade (RSU) level
- Already installed on the system to PUT-1

Additionally, HIPER and PE-fixing PTFs will be shipped, along with a customized installation guide and installation dialog jobs to install the service on the physical media specified. The service is tested with an SMP/E APPLY CHECK and any return codes greater than four are resolved before the package is built and delivered.

Electronic delivery of preventive maintenance: By accessing IBMLink™ and using the Service Request and Delivery (SRD) application offered in SoftwareXcel Enterprise Edition for zSeries, and requesting “Order Preventive Service based on CSI profile,” the user can now get preventive maintenance delivered electronically. This new function allows the ordering of preventive maintenance based on the user’s existing SMP/E CSI profile so that a copy of the CSI does not have to be sent every time an order is placed. Now Batch JCL for “load and go” installation is available, along with the option of using the installation dialog, if preferred. APPLY CHECK will not be done, and therefore, an APPLY report will not be included, resulting in much faster turnaround time. To make it even faster, instead of waiting for the preventive maintenance to be delivered on physical media, an e-mail notification will be sent containing the instructions and the Internet link for retrieving the order.

Compatibility

General coexistence, release migrations, and fallback: z/OS continues to deliver compatibility and flexibility as the user migrates systems in a multisystem configuration by allowing several releases of z/OS, OS/390, and z/OS.e to coexist. This includes Parallel Sysplex and non-Parallel Sysplex multisystem configurations.

Coexistence allows systems within a multisystem configuration to be upgraded to a new release level of the operating system one system at a time. This is contingent on the fact that the release the user is migrating to can coexist with the lowest release running in the user’s multisystem configuration.

As previously described in Software Announcement 200-352, dated October 3, 2000, z/OS V1.2, z/OS V1.3, z/OS V1.4, and z/OS V1.5 are coexistence-supported with z/OS V1.5. In addition, z/OS.e V1.3, z/OS.e V1.4, z/OS.e V1.5 are also coexistence-supported with z/OS V1.5.

IBM has a consistent coexistence, migration, and fallback policy. Migration forward as well as backward should be made within the same releases supported by the coexistence policy.

This consistent coexistence, migration, and fallback policy applies to release migrations for:

- 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

Refer to the section, **Changes to the coexistence-migration-fallback policy**, for information on changes to the coexistence-migration-fallback policy that IBM intends to make effective starting with z/OS V1.6.

Since each release of z/OS can normally be ordered only until the next release of z/OS becomes orderable, it is very important that the user order the z/OS release needed for migration and coexistence while still available.

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

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

Changes to the coexistence-migration-fallback policy: IBM intends to align the coexistence-migration-fallback policy with the service policy. The intention of this policy change is to simplify and provide greater predictability to aid in release migrations. IBM intends to continue with the practice of providing service support for each release of z/OS or z/OS.e for three years following its general availability date. IBM, at its sole discretion, may choose to leave a release supported for more than three years. This change to the Coexistence-migration-fallback policy is planned to be effective starting with the first release of the new annual release cycle (that is, with z/OS V1.6). In some cases, more than three releases may be coexistence, migration, and fallback supported, if IBM at its sole discretion chooses to provide service support for greater than three years for a release. However, as an exception, any z/OS or z/OS.e release having three or fewer months of service remaining at the time of general availability of a new release will not be coexistence, migration, and fallback supported.

Note: These statements represent 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.

For z/OS V1.5 and V1.4, and z/OS.e V1.5 and V1.4, and lower releases, the existing coexistence-migration-fallback policy (and any accommodations previously provided) remains in effect and is unchanged as documented above.

With z/OS V1.6 and the new coexistence-migration-fallback policy, z/OS V1.6 is expected to be coexistence-supported with z/OS V1.3, V1.4, V1.5, and z/OS V1.6. In addition, z/OS.e V1.3, V1.4, V1.5, and V1.6 are also coexistence-supported with z/OS V1.6.

For migrations inside the IBM migration and coexistence policy, IBM Global Services (IGS) has fee-based offerings that provide a PTF on demand service for compatibility and coexistence maintenance based upon the user's SMP/E Consolidated Software Inventory (CSI). With these offerings, the user specifies the release of z/OS, z/OS.e, or OS/390, the subsystems (DB2, CICS, IMS, NCP), or the hardware (for example, 2064) to which the user is migrating, and all configured compatibility/coexistence maintenance for the user's current system (as specified by the CSI) will be delivered as a customized package in electronic or physical format.

This is provided through the SoftwareXcel Enterprise Edition for zSeries offering, via the Service Request and Delivery (SRD) function.

IGS 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 IGS provides for both inside and outside the migration and coexistence policy, contact the user's local IBM sales specialist.

JES coexistence, release migrations and fallback: It is recommended that the user migrate to the JES2 or JES3 that comes tested with z/OS V1.5 at the same time the user migrates to the rest of z/OS V1.5, or as soon as possible thereafter. In this way, the user can benefit directly from the new function provided by the most current JES and enable other elements and features to benefit from this level.

Because such a migration is not always practical, certain prior JES levels are supported. The JES levels supported by a given z/OS release (that is, the allowable JES-BCP combinations) are the same as the JES levels that may coexist in the same multi-access spool (MAS) or multisystem complex with the JES delivered in that z/OS release. That is, the JES levels that may run on the latest z/OS release (when run on either a single system or on individual systems participating in a multisystem configuration) are the four most recent JES levels.

For additional information on JES coexistence and release migration information, including the allowable JES-BCP combinations and the JES coexistence levels that are supported, refer to *z/OS and z/OS.e Planning for Installation* (GA22-7504) at

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

Installation and customization enhancements

The publication, *z/OS Migration*, has been enhanced to provide documentation for all supported migration paths to z/OS V1.5. These are: V1.4 to V1.5, V1.3 to V1.5, and V1.2 to V1.5.

ServerPac enhancements: ServerPac has been enhanced to provide the following support:

- Automated retrieval of DASD volume information
- Automatic block size optimization
- Support for zFS file systems

Additionally, the Customized Offerings Driver (5655-M12), which is a subset of an z/OS V1.4 system, is updated to include SMP/E 3.2 (5655-G44) and additional service.

Performance considerations: Additional information on z/OS V1.5 performance will be published at general availability. Contact an IBM representative at or after general availability.

User group requirements: z/OS V1.5 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 for questions about the installation and use of the product is provided by IBM Operational Support Services — SoftwareXcel Enterprise Edition or SoftwareXcel Basic

Edition. These fee services can help enhance 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.

Packaging: When ordering z/OS, IBM recommends that the customer also order all the unpriced optional (**export controlled**) features that may be needed in the future. That is because these features may not still be orderable later when the customer needs them. For example, to obtain encryption support (security) for IBM HTTP Server for z/OS, the customer **must** specify the security feature **IBM HTTP Server North America Secure**.

For specific details on feature numbers, refer to Software Announcement 202-190, dated August 13, 2002.

System integrity

IBM will accept APARs where the installation of z/OS introduces an exposure to system integrity.

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 (formerly SHOPS390) provides an easy way to plan and order the z/OS ServerPac or CBPDO. It will analyze the current installation, determine the correct product migration, and present the new configuration based on z/OS. Additional products can also be added to the order (including determination of whether all product requisites are satisfied). ShopzSeries is available in the U.S. and several countries in Europe. In countries where ShopzSeries is not available yet, contact an IBM representative (or Business Partner) to handle the order via the traditional IBM ordering process. For more details and availability, visit

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

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, and Software Announcement 203-131, dated May 13, 2003

Key dates

- **February 10, 2004:** z/OS V1.5 CFSW configurator support for stand-alone path (5694-A01) and price proposal support.
- **February 24, 2004:** From this date forward, z/OS V1.4 z990 Exploitation feature will be mandatory when ordering z/OS V1.4.
- **March 12, 2004:** First date for ordering z/OS V1.5 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 z/OS Customized Offerings (ServerPac, SystemPac, and CBPDO).
- **March 12, 2004:** First date for ordering z/OS V1.4 Consoles Enhancements (CBPDO, ServerPac, SystemPac).
- **March 26, 2004:** z/OS V1.5 planned general availability.
- **March 26, 2004:** Planned general availability of z/OS V1.4 Consoles Enhancements.
- **March 26, 2004:** Planned general availability of z990 Cryptographic Support Web Deliverable for z/OS V1.5 and z/OS.e V1.5. To obtain the Web deliverable, visit

<http://www.ibm.com/server/eserver/zseries/zos/downloads>

- **June 30, 2004:** Last date for Web download of the OS/390 V2R8/R9/R10 and z/OS V1.1 Support for Unicode Web deliverable. To obtain the Web deliverable, visit

<http://www.ibm.com/server/eserver/zseries/zos/downloads>

- **June 30, 2004:** Last date for Web download of the OS/390 V2.10 and z/OS V1.1 Managed System Infrastructure for Operations Web deliverable. To obtain the Web deliverable, visit

<http://www.ibm.com/server/eserver/zseries/zos/downloads>

- **August 31, 2004:** Recommended date for submitting z/OS V1.4 orders for ServerPac, SystemPac, CBPDO. This date will allow for adequate order processing time.
- **September 9, 2004:** Last date for ordering z/OS V1.4 ServerPac, SystemPac, CBPDO
- **December 2006:** Last date for ordering z/OS V1.4 z990 Exploitation feature and z/OS V1.4 Consoles Enhancements feature.

Typically, when one z/OS release becomes orderable in ServerPac, SystemPac, and CBPDO, the previous release is no longer orderable.

Today, IBM announces that z/OS V1.4 and z/OS.e V1.4 will remain orderable until September 9, 2004.

For additional information, refer to *z/OS and z/OS.e Planning for Installation (GA22-7504)*, Chapter 5 *Ensuring coexistence and fallback* at

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

For the latest product catalog for CBPDO, ServerPac, and SystemPac, visit the following Web site and select z/OS

<http://www.ibm.com/servers/eserver/zseries/software/swinfo/>

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.

The z/OS C/C++ with Debug Tool feature is no longer offered in Release 5. To obtain this function customers will need to order the C/C++ without Debug Tool feature of z/OS and the independent product, IBM Debug Tool for z/OS V4.1 (5655-L24).

Current licensees of z/OS V1

z/OS V1 customers can migrate to z/OS V1.5 by ordering the release through the Customized Offerings (ServerPac, SystemPac, CBPDO) as done in the past.

z/OS V1.5 will not be offering the optionally priced feature C/C++ with Debug Tool.

Note: To obtain the function in the above named feature, customers will need to order the C/C++ without Debug Tool feature of z/OS and the independent product, IBM Debug Tool for z/OS V4.1 (5655-L24).

z/OS V1.5 will not be offering the following optionally unpriced features:

- OCSF Security Level 3
- System SSL Security Level 3
- Network Authentication Service Level 3

These functions are now included under a new optionally unpriced feature named, z/OS Security Level 3.

For more details, refer to the **New licensees** section under **Ordering information**.

New licensees of z/OS V1.5

The z/OS product ships its executable code via Customized Offerings (CBPDO, ServerPac, SystemPac). Noncustomized items (for example, CD-ROMs, Memos, Hardcopy Publications) will continue to be shipped via the stand-alone product.

Production of z/OS V1.5 orders will begin on the planned general availability date, **March 26, 2004**. 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 V1.5 program number 5694-A01. Proceed to select the feature numbers listed, which are required, and then select any optional feature numbers.

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 V1.5 and can be ordered effective **February 10, 2004**. These features have pricing/billing features associated with them. Refer to notes below for details on past announcements for this information.

z/OS V1.5 feature description

Base

z/OS V1.5 feature number

6392

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, and Software Announcement 203-131, dated May 13, 2003.
- This product ships its executable code via Customized Offerings (CBPDO, ServerPac, SystemPac). Noncustomized items (for example, CD-ROMs, memos, hardcopy publications) will continue to be shipped via the stand-alone product.
- The media type for the above items is chosen during customized offering ordering procedure.

Basic publications

A memorandum, program directory, and one copy of z/OS V1.5 *Hot Topics Newsletter* (GA22-7501) is supplied automatically with the basic machine-readable material.

Notes

- Effective June 2003, the z/OS and z/OS.e *Planning for Installation* publication (GA22-7504) is no longer available in hardcopy.
- Starting with z/OS V1.5, the z/OS *Planning for Workload License Charges* publication (SA22-7506) will not be available in hardcopy.
- The z/OS publications are available on the Internet at

<http://www.ibm.com/servers/eserver/zseries/zos/bkserv/>

Basic/unlicensed softcopy publications

Title	Order number
z/OS V1.5 Collection	SK3T-4269

Starting with z/OS V1.4, as books are updated, they will be available in softcopy only on the softcopy collection and the Internet.

For a fee, the customer can order the softcopy collections or any z/OS V1.5 documents available in hardcopy using the IBM Publications Center on the Web at

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

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

For other publications ordering options, visit

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

z/OS V1.5 Collection (BookManager and PDF): The z/OS V1.5 Collection contains the z/OS V1.5 product books in both BookManager and PDF softcopy formats on CD-ROM.

If this collection is refreshed after general availability, an updated collection will be automatically sent to z/OS V1.5 licensees.

By general availability, the z/OS V1.5 unlicensed books will be available at

<http://www.ibm.com/servers/eserver/zseries/zos/bkserv/>

If the customer wants to upload either BookManager or PDF softcopy files and create softcopy repositories, the SoftCopy Librarian is our strategic tool for uploading and managing softcopy files on a z/OS or OS/390 host or server, and on LANs and workstations. Use SoftCopy Librarian, a free program that is provided on the softcopy tools disc of the collections, to obtain and manage bookshelves over the Internet, from the IBM PUBLIB Web site, as well as from other Web sites that provide support for the SoftCopy Librarian.

Starting in August 2003, a new release (4.2) of SoftCopy Librarian supports downloading and management of PDFs via extended shelves (XKS files). This release has also been repackaged to link the Java Runtime functions along with the SoftCopy Librarian application code. In addition to eliminating the prerequisite for the Java Runtime Environment on the client machine, this change has significantly improved runtime performance.

Starting in October 2003, SoftCopy Librarian is supported only on Windows 2000 and Windows XP.

The latest version of the SoftCopy Librarian can be downloaded from this Web site

<http://publib.boulder.ibm.com/epubs/df/ebrslwj.exe>

Customization options

Optional machine-readable material

Optional unpriced feature — z/OS V1.4: The following optional feature, offered at no additional charge, is added to z/OS V1.4 and can be ordered:

z/OS V1.4 feature description	z/OS V1.4 feature number
z/OS V1.4 Consoles Enhancements	6333

Notes

- z/OS V1.4 Consoles Enhancements feature description is shown in the ordering system. This description is also referred to as z/OS V1.4 Consoles Enhancements earlier in this announcement.
- Program Directory* (GI11-2834) is sent with this feature.

Optional unpriced features — z/OS V1.5: The following optional features, offered at no additional charge, are added to z/OS V1.5 and can be ordered:

z/OS V1.5 feature description	z/OS V1.5 feature number
Communications Server Security Level 3	6371
IBM HTTP Server NA Secure	6402
z/OS Security Level 3	6410

Notes

- z/OS Security Level 3 contains function from previous unpriced features formerly known as:
 - OCSF Security Level 3
 - System SSL Security Level 3
 - Network Authentication Service Level 3
- This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO). The media type is chosen during the customized offering ordering procedure.
- All the above features can be exported outside the U.S.
- 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.
- If ordering IBM HTTP Server NA Secure, z/OS Security Level 3 should also be ordered to obtain additional security function (System SSL) over what is provided in the Base.
- The Kerberos function is obtainable by ordering z/OS Security Level 3 feature, which includes Network Authentication Service Level 3 function.
- The above feature descriptions are offered at no additional charge.

Optionally priced features: The following optional no-charge features are added to z/OS V1.5 and can be ordered. These features have pricing/billing features associated with them. Refer to notes below for details on past announcements for this information.

z/OS V1.5 feature description	z/OS V1.5 feature number
BDT FTF	6406
BDT SNA NJE	6408
BookManager Build	6349
C/C++ without Debug	6362
DFSMSdss,hsm	6386
DFSMSrmm	6366
DFSMSdss	6378
DFSMSstvs	6407
DFSORT™	6389
GDDM®-PGF	6364
GDDM-REXX	6345
HCM	6409
HLASM Toolkit	6370
Infoprint Server	6397
JES3	6361
RMF	6355
SDSF	6336
Security Server	6359

Notes

- C/C++ with Debug Tool feature is not being offered in Release 5. To obtain this function, customers will need to order the C/C++ without Debug Tool feature of z/OS and the independent product, Debug Tool for z/OS V4.1 (5655-L24).
- As of z/OS V1.5, Security Server priced optional feature contains only RACF.
- As of z/OS V1.5, the following items (formerly in Security Server Feature) have been moved to the base element, Integrated Security Services:
 - DCE
 - Open Cryptographic Enhanced Plug-ins (OCEP)
 - LDAP Server

- Firewall Technologies
- Network Authentication Service

- As of z/OS V1.5, the PKI Services (formerly in Security Server Feature) has been moved to the base element, Cryptographic Services.
- 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, and Software Announcement 203-131, dated May 13, 2003.
- This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO). The media type is chosen during the customized offering ordering procedure.
- 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.
- DFSMSdss cannot be ordered with DFSMSdss,hsm and vice versa.

Optional unpriced national language version (NLV) features: The z/OS V1.5 NLV support features will become generally available on the same date the release code becomes available.

z/OS V1.5 provides support in the languages listed below. However, not all elements within z/OS V1.5 are translated into each language. Refer to *z/OS and z/OS.e Planning for Installation* (GA22-7504) for information on which elements are translated into which languages, by visiting

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

The following optional features, offered at no additional charge, are added to z/OS V1.5 and can be ordered.

NLV features for z/OS V1.5

z/OS V1.5 NLV feature description	z/OS V1.5 feature number
Brazilian Portuguese Base (PTB)	6358
Brazilian Portuguese BookMgr Build	6401
Canadian French Base (FRC)	6375
Canadian French BookMgr Build	6369
Danish Base (DAN)	6340
Dutch Base (NLD)	6341
French Base (FRA)	6398
French BookMgr Build	6384
German Base (DEU)	6335
German BookMgr Build	6373
Italian Base (ITA)	6351

z/OS V1.5 NLV feature description	z/OS V1.5 feature number
JPN Base	6381
JPN C++ Without Debug	6367
JPN DFSORT	6377
JPN Infoprint Server	6348
JPN RMF	6388
JPN SDSF	6368
JPN Security Server	6405
Upper Case English Base (ENP)	6337
Korean Base (KOR)	6390
Norwegian Base (NOR)	6404
Spanish Base (ESP)	6344
Spanish BookMgr Build	6363
Swedish Base (SVE)	6346
Swiss German Base (DES)	6365
Simplified Chinese Base (CHS)	6399
Traditional Chinese Base (CHT)	6400

Notes

- The above feature descriptions are offered at no additional charge.
- JPN C++ with Debug support is not offered as part of z/OS Release 5. For this function and NLS support, order the C/C++ without Debug Tool feature of z/OS and the independent product, Debug Tool for z/OS V4.1 (5655-L24).
- This product ships its executable code via Customized Offerings (ServerPac, SystemPac, CBPDO).
- The media type is chosen during the customized offering ordering procedure.

z/OS V1.4 optional feature: The following optional feature, offered at no additional charge is added to z/OS V1.4 and can be ordered:

NLV feature for z/OS V1.4

z/OS V1.4 NLV feature description	z/OS V1.4 feature number
JPN z/OS V1.4 Consoles Enhancements	6334

Note: *Program Directory* (GI11-2834) is sent with z/OS V1.4 Consoles Enh JPN.

Unlicensed documentation

Optionally Unpriced Source Media: The following optional features, offered at no additional charge, will be updated for z/OS V1.4 to include revised BCP source and can be ordered:

z/OS V1.4 optional source feature description	z/OS V1.4 feature number	4-mm DAT
Source Base (1)	3480	6291
Source Base JPN (2)	cartridge	6307

The following optional features, offered at no additional charge, are added to z/OS V1.5 and can be ordered:

z/OS V1.5 feature number		
z/OS V1.5 optional source feature description	3480 cartridge	4-mm DAT
Source Base (1)	6380	6376
Source Base JPN (2)	6354	6403
Source Security Server — RACF (3)	6357	6338

Notes

- Content for source media is as follows:
 1. Base source code contains source for elements: BCP, DFSMS, BDT base, BDT SNA-NJE, BDT File-to-File, and MICR/OCR.
 2. Base source code contains source for BCP JPN element.
 3. Security Server source code is for RACF.
- Effective with z/OS V1.2, unpriced source media is no longer offered in 6250 media format.
- The above feature descriptions are offered at no additional charge.
- The feature descriptions listed above are the same offered in z/OS V1.4.

Optional unlicensed publications

Optional unlicensed softcopy publications: The following optional one-time charge features are added to z/OS V1.5 and can be ordered.

Subscriptions to the following softcopy collections may be ordered for a fee by specifying the one-time charge feature numbers listed below:

Title	Order number	Feature number	Price
z/OS Software Products Collection	SK3T-4270	8015	\$275
IBM eServer zSeries Redbooks Collection	SK3T-7876	8016	150
z/OS Security Server RACF Collection	SK3T-4272	8018	150
z/OS V1R5 and Software Products DVD Collection	SK3T-4271	8017	350

Notes

- The Redbooks collection is updated, concurrently, with z/OS releases.
- The z/OS Security Server RACF Collection is updated, concurrently, with z/OS releases, and is available two weeks after the release general availability to licensees of the z/OS Security Server optional feature. The update for z/OS V1.5 is planned to be available April 9, 2004.
- The feature descriptions listed above are the same offered in z/OS V1.4.

- When the above softcopy collections are ordered as features of z/OS V1.5, the special subscription price includes automatic shipment of all updates made while the product version can be ordered.

The *z/OS Software Products Collection* includes over 1,565 unlicensed online documents for more than 260 z/OS software products and Parallel Sysplex, and a softcopy tools disc. This collection includes documents for multiple releases of software products that run on z/OS. The documents are provided in BookManager format and, when available, in PDF format as well.

The *IBM eServer zSeries Redbooks Collection* contains IBM Redbooks, in PDF format, related to z/OS and other zSeries products. IBM Redbooks, which are produced by the International Technical Support Organization, include timely technical information based on realistic scenarios and are created by IBM experts, customers, and business partners from around the world.

The IBM Redbooks are also available for viewing or downloading on the following Web site

<http://www.ibm.com/redbooks/>

To find Redbooks that apply to z/OS, enter z/OS in the search field at the top of the Web page.

The *z/OS Security Server RACF Collection* includes unlicensed softcopy documents, in BookManager format, for numerous software product libraries that reference z/OS Security Server RACF. It also includes education course listings, Web sites to access sample code on the Internet, and Portable Document Format (PDF) files for the z/OS Security Server manuals, as well as softcopy tools. Using this collection, the customer has easy access to all the Security Server RACF-related information without handling individual sets of documents and libraries on many CD-ROMs.

The *z/OS Version 1 Release 5 and Software Products DVD Collection (SK3T-4271)* includes softcopy tools, libraries for z/OS Version 1 Release 5 (the element and feature libraries), the libraries for multiple releases of z/OS software products, and selected IBM eServer zSeries Redbooks. Both BookManager and PDF formats, when available, are included on this single DVD. This comprehensive z/OS collection is essentially the *z/OS Version 1 Release 5 Collection (SK3T-4269)* and the *z/OS Software Products Collection (SK3T-4270)* combined with selected IBM Redbooks from the *IBM eServer zSeries Redbooks Collection (SK3T-7876)* and delivered on the higher-density DVD technology. The contents of the popular zFavorites for zSeries mini-CD is also included on the DVD collection.

Optional licensed publications: There are no optional licensed hardcopy or softcopy publications available for ordering by feature numbers, for inclusion in the product package shipment. However, z/OS licensed publications are offered in softcopy format on a CD-ROM, which can be ordered separately from the product package, and on the Internet.

Licensed users can obtain the licensed documents for z/OS by purchasing the z/OS Licensed Product Library collection (LK3T-4307) using the normal IBM publications ordering methods. Users can also access the licensed documents free of charge on the Internet using the IBM Resource Link Web site. Access to these documents on IBM Resource Link requires a key code and an IBM Resource Link Web user ID and password. The z/OS order includes a memo that contains the keycode. Information about ordering the licensed softcopy

collection and accessing IBM Resource Link is provided on the following Web site

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

Customized offerings

Most product media is shipped only via Customized offerings (for example, CBPDO, ServerPac, SystemPac). Non-customized items (CDs, diskettes, source media, media kits) will continue to be shipped via the stand-alone product.

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