z/OS
Version 2 Release 4

Information Roadmap

IBM

Note

Before using this information and the product it supports, read the information in "Notices" on page 37.

Contents

How to send your comments to IBM

We invite you to submit comments about the z/OS® product documentation. Your valuable feedback helps to ensure accurate and high-quality information.

Important: If your comment regards a technical question or problem, see instead "If you have a technical problem" on page v.

Submit your feedback by using the appropriate method for your type of comment or question:

Feedback on z/OS function
If your comment or question is about z/OS itself, submit a request through the IBM RFE Community (www.ibm.com/developerworks/rfe/).

Feedback on IBM® Knowledge Center function
If your comment or question is about the IBM Knowledge Center functionality, for example search capabilities or how to arrange the browser view, send a detailed email to IBM Knowledge Center Support at ibmkc@us.ibm.com.

Feedback on the z/OS product documentation and content
If your comment is about the information that is provided in the z/OS product documentation library, send a detailed email to mhvrcfs@us.ibm.com. We welcome any feedback that you have, including comments on the clarity, accuracy, or completeness of the information.

To help us better process your submission, include the following information:

- Your name, company/university/institution name, and email address
- The following deliverable title and order number: z/OS Information Roadmap, SA23-2299-40
- The section title of the specific information to which your comment relates
- The text of your comment.

When you send comments to IBM, you grant IBM a nonexclusive authority to use or distribute the comments in any way appropriate without incurring any obligation to you.

IBM or any other organizations use the personal information that you supply to contact you only about the issues that you submit.

If you have a technical problem

If you have a technical problem or question, do not use the feedback methods that are provided for sending documentation comments. Instead, take one or more of the following actions:

- Go to the IBM Support Portal (support.ibm.com).
- Contact your IBM service representative.
- Call IBM technical support.

Summary of changes

This information includes terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations for the current edition are indicated by a vertical line to the left of the change.

Summary of changes for z/OS Version 2 Release 4 (V2R4)

The following changes are made for z/OS Version 2 Release 4 (V2R4). The most recent updates are listed at the top of each section.

Changed

The following deliverables were renamed in z/OS V2R4:

- *z/OS Migration* was retitled *z/OS Upgrade Workflow*.
- *z/OS Summary of Message and Interface Changes* was retitled *z/OS Release Upgrade Reference Summary*.
- *z/OS Distributed File Service zFS Administration* was retitled *z/OS File System Administration*.
- *z/OS Distributed File Service Messages and Codes* was retitled *z/OS File System Messages and Codes*.

Deleted

The section that listed the z/OS deliverable titles and PDF form numbers was removed and replaced with a link to the same information online.

The following deliverables were removed from the z/OS library in V2R4:

- BookManager® READ/MVS™ and BookManager BUILD/MVS General Information
- BookManager READ/MVS Displaying Online Books
- BookManager READ/MVS Getting Started and Command Summary
- BookManager READ/MVS Installation Planning and Customization
- Installing, Managing, and Using the Online Library
- Softcopy Librarian User's Guide
- Softcopy Reader User's Guide
- Library Server: Getting Started
- OSA-ICC 3215 Support
- OSA-ICC User's Guide
- OSA/SF on Hardware Management Console
- z/OS Batch Runtime: Planning and User's Guide
- z/OS Distributed File Service SMB Administration
- z/OS TSO/E Guide to the Server-Requester Programming Interface
- z/OS Communications Server Glossary
- z Systems® OSA-Express® Customer's Guide and Reference

Summary of changes for z/OS Version 2 Release 3 (V2R3)

The following changes are made for z/OS Version 2 Release 3 (V2R3). The most recent updates are listed at the top of each section.

New

- A new base element, z/OS Xvfb, was added. See "z/OS Xvfb" on page 31.

Changed

- Methods to use to contact IBM were updated in "How to send your comments to IBM" on page v.
- Information about ensuring that links work when information is viewed in PDF format was added to Chapter 1, "Accessing z/OS documentation," on page 1.
- Some methods for accessing or obtaining z/OS product documentation changed and are now properly represented in Chapter 1, "Accessing z/OS documentation," on page 1.
- Methods for printing product documentation are now updated in Chapter 2, "Printing z/OS documents," on page 3.
- z/OS Font Collection has been added to "System-level documents" on page 5.
- Information about Infoprint Server has changed. See "Infoprint Server" on page 16 for details.

Deleted

The following books were removed in z/OS V2R3:

- IBM Infoprint Coaxial Printer Support for z/OS Licensed Program Specifications

Summary of changes for z/OS Version 2 Release 2 (V2R2)

The following changes are made for z/OS Version 2 Release 2 (V2R2).

New

- z/OS Management Facility (z/OSMF) is a new base element of z/OS. For details about the z/OSMF information, see the topic "IBM z/OS Management Facility" on page 30.
- IBM Knowledge Center for z/OS is a new base element of z/OS. For details about the related information, see the topic "IBM Knowledge Center for z/OS" on page 15.
- z/OS OpenSSH is a new base element of z/OS. For details about the related information, see the topic "z/OS OpenSSH" on page 31
- IBM HTTP Server - Powered by Apache is a new base element of z/OS. For a link to the related information, see "IBM HTTP Server - Powered by Apache" on page 14.

Changed

- Information about z/OSMF has changed. See the topic about "IBM z/OS Management Facility" on page 30 for details.
- PDF file names and form number levels have been changed for z/OS books that are updated in V2R2.

Deleted

The following books were removed in z/OS V2R2:

- z/OSMF Program Directory
- z/OSMF Licensed Information
- z/OS RMF Reference Summary

Chapter 1. Accessing z/OS documentation

Product documentation for z/OS base elements and optional features is available in several formats to accommodate different uses.

HTML for online use
IBM Knowledge Center (hosted) provides online consumable product documentation in HTML format.

HTML for offline use
Use downloaded HTML plug-ins with IBM Knowledge Center for z/OS (KC4z), which is an element of z/OS, for offline consumption of product documentation.

PDF, individual or grouped
Most z/OS product documentation deliverables are provided in PDF format. The primary purpose for providing PDFs is for printing either a specific topic or the entire deliverable. You can view a PDF online or download one or many to your own repository.

Note: When you view a PDF online, it is recommended to always use Acrobat Reader. If you view a PDF within a browser, depending on the browser, links might not work.

Starting with z/OS V2R3, individual PDFs are served from Resource Link®. You can select and download either single or bulk sets of individual PDFs.

PDF, indexed set for search
For advanced search capabilities across all z/OS product documentation PDFs, download the Adobe Indexed PDF collection compressed file (SC27-8430).

The z/OS Internet library (www.ibm.com/servers/resourcelink/svc00100.nsf/pages/zosInternetLibrary) serves as a hub for all z/OS product documentation information and repositories, so start there when you need to access or obtain z/OS content.

Cross-document linking

PDFs of z/OS product documentation deliverables include cross document links to move directly from one PDF to another. While you are reading a PDF, you can click the highlighted section or title of a referenced PDF to open it. After you read the related material, you can close the referenced PDF to return to the original PDF. The links are typically indicated by blue highlighting either under or around the PDF title or topic reference.

Linking across PDFs works for all z/OS product documentation when the PDFs are physically colocated. If the linked PDF is not physically colocated with the linking PDF, for example when you view a PDF directly from Resource Link, cross-document links do not work. To ensure optimum usage of cross-document linking, download and use the Adobe Indexed PDF collection.

Important: When you use an intranet or local repository, ensure that the linking PDFs are in the same directory.

When you link from one PDF to another using the back function in Adobe Reader, you return to the original location in the first PDF. If you use the same link within an internet browser, the back function in the browser takes you to the original location in the first PDF.

By contrast, an IBM Knowledge Center topic links by file name, which typically stays the same from release to release. An unchanged file can usually link successfully to an updated target file. In addition, the z/OS product documentation is indexed by search engines, so you can find z/OS documentation titles and individual topics with a browser.

Chapter 2. Printing z/OS documents

You can print hardcopy from all z/OS product documentation digital formats. PDF files, whether viewed online or locally, provide the best format for printing hardcopy and can produce a document that looks like a traditional book. However, it is also possible to print from IBM Knowledge Center or KC4z.

To view and print PDF files, use the Adobe Reader, which is available for free on the internet at the Adobe website (www.adobe.com).

Tip: To print only selected pages of a PDF, specify the page numbers that are assigned by Acrobat Reader, not the page numbers that are printed on each PDF page.

To print individual IBM Knowledge Center or KC4z topics, use the print function designated by the printer icon within each topic.

Printing with a LAN- or host-attached Advanced Function Presentation (AFP) printer

Some large or graphically complex documents require an Advanced Function Presentation (AFP) printer. For these situations, consider having the host handle the transforms instead of transforming on the workstation before you send the file. To print PDF files from a host repository, you can use z/OS and the optional Infoprint Server feature to expand your printing options.

Infoprint Server with Infoprint Transforms to AFP for z/OS (5655-N60) can print high-quality hardcopy of PDF files on high-speed LAN-attached or host-attached AFP printers that are managed by Print Services Facility (PSF) for z/OS.

Workstation users on a LAN that is connected to z/OS can print PDF files from the web or the LAN. Host users can print PDF files from an MVS or zFS data set, such as a host repository of softcopy files, or uploaded PDF files. For more information, see the Infoprint product documentation.

Chapter 3. z/OS product documentation deliverable descriptions

The following information describes each of the z/OS product documentation deliverables. They are organized by element, beginning with the system level z/OS deliverables.

For a brief description of each z/OS V2R4 base element and optional feature, see List of base elements and optional features in *z/OS Planning for Installation*.

For a list of PDF order numbers for all deliverables in the V2R4 product documentation library, as well as links to download the PDFs and the last updated dates, see z/OS V2R4 PDF Library (www.ibm.com/servers/resourcelink/svc00100.nsf/pages/zOSV2R4Library).

For information about deliverables in a previous release of z/OS, see the *z/OS Information Roadmap* for that previous release.

System-level documents

System-level documentation contains information that applies to z/OS as a whole, not to a specific element in z/OS.

z/OS Font Collection: Contains information about font concepts and the different types of fonts in the z/OS Font Collection.

z/OS Information Roadmap (the document you are now reading): Describes the information that is associated with including system-level documents and documents for the participating and features.

z/OS Introduction and Release Guide: Describes the contents and benefits of the planned packaging and delivery of the product. This document includes descriptions of the new functions in each release.

z/OS Licensed Program Specifications: Provides licensing information about z/OS.

z/OS Upgrade Workflow: Provides information about how to migrate to new releases of z/OS.

z/OS Planning for Installation: Helps you write an installation plan by providing the following information:

- Basics
- Help for deciding on the software installation method
- Driving system software and hardware requirements
- Target system software and hardware requirements
- Minimum levels of stand-alone products

z/OS Planning for Multilevel Security and the Common Criteria: Describes how to set up a secure system across elements to ensure compliance to Common Criteria Certification.

z/OS Planning for Sub-Capacity Pricing: Describes how to plan for and set up your system for subcapacity pricing for IBM products.

z/OS Using the Sub-Capacity Reporting Tool: Describes the Sub-Capacity Reporting Tool. This document is provided in PDF only available from the IBM Z software pricing - Licensing - Sub-capacity licensing (www.ibm.com/it-infrastructure/z/software/pricing-licensing).

z/OS Release Upgrade Reference Summary: Describes the changes to messages and interfaces for individual elements of z/OS.

ServerPac: Using the Installation Dialog: Explains how to use the CustomPac installer to install a ServerPac order. This document is included only with ServerPac orders; it is not included with any of IBM's CustomPac offerings, such as SystemPac, FunctionPac, ProductPac®, RefreshPac, or Selective Follow-on Services (SFS).

IBM Health Checker for z/OS User's Guide: Contains information that is needed to install and use IBM Health Checker for z/OS.

z/OS Problem Management: Contains information about how to determine problems and find solutions for z/OS. It contains all the information about Predictive Failure Analysis and Runtime Diagnostics.

BDT File-to-File

z/OS BDT File-to-File Transaction Guide

Explains how to create and submit transactions to copy data sets.

Common Information Model

z/OS Common Information Model User's Guide

Describes the overall CIM data model and how to use it, and also describes the z/OS specific supplements and differences, as well as installation, configuration, and security instructions for z/OS systems.

Communications Server

This section describes documents for the Communications Server.

z/OS Communications Server: New Function Summary

Describes new IP and SNA function. Helps you plan for IP and SNA, whether you are migrating from a previous version or installing z/OS for the first time. It summarizes what is new in the release and identifies the suggested and required modifications needed to use the enhanced functions.

z/OS Communications Server: CMIP Services and Topology Agent Guide

Describes the SNA LU 6.2 programming interface for host application programs. It applies to programs that use LU 6.2 sessions.

z/OS Communications Server: CSM Guide

Describes how to use the communications storage manager.

z/OS Communications Server: IP and SNA Codes

Describes the codes associated with SNA and IP.

z/OS Communications Server: IP Sockets Application Programming Interface Guide and Reference

Describes the syntax and options of the socket calls for the C, REXX, Assembler, PL/1, COBOL, PASCAL languages. It also documents how to use the VMCF and XTI interfaces.

z/OS Communications Server: IP CICS Sockets Guide

Describes how to set up, write application programs for, and diagnose problems with the socket interface for CICS® using IP.

z/OS Communications Server: IP Configuration Guide

Contains concepts and guidance, explaining an overall approach to IP configuration.

z/OS Communications Server: IP Configuration Reference

Describes parameters and options, syntax of statements used during configuration.

z/OS Communications Server: IP Diagnosis Guide

Provides information about diagnosing problems occurring in IP networks. It can help you determine if a specific problem is an IP problem and also tells you how to report it to the IBM Software Support Center.

z/OS Communications Server: IP IMS Sockets Guide

Describes how to write application programs that use the IMS IP application development services provided by IP.

z/OS Communications Server: IP Messages Volume 1 (EZA)

Describes the messages beginning with the prefix EZA that occur in IP. This document can also help with problem determination in an IP implementation.

z/OS Communications Server: IP Messages Volume 2 (EZB, EZD)

Describes the messages beginning with the prefix EZB and EZD that occur in IP. This document can also help with problem determination in an IP implementation.

z/OS Communications Server: IP Messages Volume 3 (EZY)

Describes the messages beginning with the prefixes: EZY that occur in IP. This document can also help with problem determination in an IP implementation.

z/OS Communications Server: IP Messages Volume 4 (EZZ, SNM)

Describes the messages beginning with the prefixes: EZZ and SNM that occur in IP. This document can also help with problem determination in an IP implementation.

z/OS Communications Server: IPv6 Network and Appl Design Guide

Describes concepts of z/OS Communications Server's support of IPv6, coexistence with IPv4, and migration issues. It is intended for programmers and system administrators who are familiar with TCP/IP, MVS, UNIX System Services, and TSO/E.

z/OS Communications Server: IP Network Print Facility

Describes how to customize and use a print feature for IP. This feature takes print request from a SNA or JES and uses IP to route them to remote printers.

z/OS Communications Server: IP Programmer's Guide and Reference

Describes the syntax and use of high-level application functions that enable you to write your own applications in an IP environment. The functions include authenticating access, use of distributed databases, distributed processing, network management, and device sharing (SNMP, X Windows, RPC, and NCS).

z/OS Communications Server: IP System Administrator's Commands

Describes common IP commands used during system administration and configuration.

z/OS Communications Server: IP User's Guide and Commands

Describes the end user functions and commands supported by IP, such as Telnet, FTP, and SMTP.

z/OS Communications Server: Quick Reference

Contains essential information about SNA and IP operator commands.

z/OS Communications Server: SNA Customization

Provides information that enables you to customize SNA by modifying tables and creating installation-wide exit routines.

z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures

Helps you identify a SNA problem, classify it, and collect information about it before you call the IBM Support Center. The information collected includes traces, dumps, and other problem documentation.

z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT

Helps you identify a SNA problem, classify it, and collect information about it before you call the IBM Support Center. The information collected includes using FFST dumps and interpreting VIT records.

z/OS Communications Server: SNA Messages

Describes messages, beginning with the prefixes ELM, IKT, IST, ISU, IUT, IVT and USS, and other information associated with SNA messages.

z/OS Communications Server: SNA Network Implementation Guide

Presents the major concepts involved in implementing a SNA network.

z/OS Communications Server: SNA Operation

Serves as a reference for programmers and operators who need detailed information about specific operator commands. The information includes:

- SNA commands and start options
- Logon manager commands
- DISPLAY output examples
- VSCS commands.

z/OS Communications Server: SNA Programmer's LU 6.2 Guide

Describes the SNA LU 6.2 programming interface for host application programs. It applies to programs that use LU 6.2 sessions.

z/OS Communications Server: SNA Programmer's LU 6.2 Reference

Provides reference material for the SNA LU 6.2 programming interface for host application programs.

z/OS Communications Server: SNA Programming

Describes how to use SNA macro instructions to send data to and receive data from a terminal or another application.

z/OS Communications Server: SNA Resource Definition Reference

Describes each SNA definition statement, start option, and macro instruction. It also describes NCP definition statements that affect SNA.

z/OS Communications Server: SNA Resource Definition Samples

Contains the VTAM® definition statements to help system programmers define resources in a VTAM network. Use this document in conjunction with the VTAM Network Implementation Guide and the Resource Definition Reference.

z/OS Communications Server: ACF/TAP Trace Analysis Handbook

Describes how to gather the trace data collected and stored in the host processor, and how to use the Advanced Communications Function/Trace Analysis Program (ACF/TAP) service aid to produce reports for analyzing the trace data information.

Cryptographic Services

This section describes documents for Cryptographic Services, including ICSF, Open Cryptographic Services Facility, System Secure Sockets Layer (SSL) base, and PKI.

z/OS Cryptographic Services ICSF Administrator's Guide

Explains how to administer ICSF. It describes managing cryptographic keys, entering keys into the Cryptographic Key Data Set (CKDS) and using the key generator utility program (KGUP).

z/OS Cryptographic Services ICSF Writing PKCS #11 Applications

Describes the support for PKCS #11 provided by the z/OS Integrated Cryptographic Service Facility (ICSF). This document is primarily intended for application programmers who want to write PKCS #11 applications for z/OS.

z/OS Cryptographic Services ICSF Application Programmer's Guide

Describes the callable services provided by ICSF. It is helpful to application programmers using the security application programming interface (API) to access cryptographic functions.

z/OS Cryptographic Services ICSF Messages

Explains the ICSF messages and the routing and descriptor codes for those messages.

z/OS Cryptographic Services ICSF Overview

Introduces ICSF and provides information about the capabilities and benefits of using cryptographic services in a environment.

z/OS Cryptographic Services ICSF System Programmer's Guide

Explains how to initialize and customize ICSF. It also contains information and problem diagnosis information.

z/OS Cryptographic Services ICSF TKE Workstation User's Guide

Explains installing, implementing and administering the IBM Trusted Key Entry product. It is intended for anyone who manages cryptographic keys, usually a security administrator. It includes information to support the following tasks for the solution:

- Planning
- Installing
- Administering
- Customizing
- Using

z/OS Cryptographic Services System SSL Programming

Contains guidance and reference information that an application programmer needs to use the System Secure Sockets Layer (SSL) callable services programming interfaces. SSL is a communications layer that provides data privacy and integrity as well as server and client authentication based on public-key certificates. The callable services programming interfaces provide protected communications over a TCP/IP socket communication path.

z/OS Cryptographic Services PKI Services Guide and Reference

Provides detailed procedures for planning, setting up, and using PKI Services. It also includes messages, log information, and coding samples.

DFSMS Elements

The z/OS operating system enables you to efficiently manage e-business workloads and enterprise transactions 24 hours a day. Data Facility Storage Management Subsystem (DFSMS) comprises a suite of related data and storage management products for the z/OS system, helping to automate and centralize the management of storage based on the policies that your installation defines for availability, performance, space, and security. The heart of DFSMS is the Storage Management Subsystem (SMS). Using SMS, the storage administrator defines policies that automate the management of storage and hardware devices. These policies describe data allocation characteristics, performance and availability goals, backup and retention requirements, and storage requirements for the system and reduce the need for users to make many detailed decisions that are not related to their business objectives.

DFSMSdfp is automatically included with z/OS. The combined components of DFSMSdfp provide the essential data, storage, and device management functions of the system, along with Advanced Copy Services functions for disaster recovery and high availability.

DFSMSdss, DFSMShsm, DFSMSrmm, DFSMStvs, and DFSORT complement DFSMSdfp to provide a fully-integrated approach to data and storage management. In a system-managed storage environment, the full DFSMS suite automates and centralizes storage management based on the policies that your installation defines for availability, performance, space, and security. With these optional features enabled, you can take full advantage of all the functions that DFSMS offers.

DFSMS Mission Statement

The Data

Deliver structured and unstructured data through modernization and enhancements in storing, accessing, managing, auditing and protecting the data allowing clients to scale with performance.

Cyber Resiliency

Deliver regulatory, service level agreements, and business operational requirements for cyber resiliency for data protection and recovery (high availability, disaster recovery, backup, and continuous protection).

Data Lifecycle

Deliver seamlessly integrated online and offline storage tiers (including cloud) driven by serverless data movement.

Elements of DFSMS

DFSMS is an exclusive element of the z/OS® operating system. DFSMS is a software suite that automatically manages data from creation to expiration. The following elements comprise DFSMS:

DFP

> Provides I/O to storage devices through a number of protocols (access methods). Manages the data residing on storage devices. Provides control and reporting interfaces (ISMF) to end users and system administrators.

Data Set Services (DSS)

> Provides backup/recovery, data movement/replication and space management services.

Hierarchical Storage Manager (HSM)

> Provides policy driven backup/recovery, hierarchical storage management and disk space management for structured data.

RMM (Tape Management)

> Manages through policies (tape volumes, tape data sets, and tape libraries).

Transactional Virtual Access Method Services (TVS)

> Enables batch processing of VSAM data sets concurrently with CICS online processing.

Advanced Copy Services

DFSORT (www.ibm.com/support/docview.wss?rs=114&uid=isg3T7000077)

> Provides sorting, merging, copying, and reporting of records within files.

References

z/OS home page (www.ibm.com/it-infrastructure/z/zos)

IBM Z software trials (www.ibm.com/it-infrastructure/z/resources/trial)

z/OS Planning for Installation

z/OS Upgrade Workflow

Summit Service Request (www-946.ibm.com/support/servicerequest/Home.action)

IBM RFE Community (www.ibm.com/developerworks/rfe/execute?use_case=changeRequestLanding)

IBM Redbooks (www.ibm.com/redbooks)

DFSMSdfp

z/OS DFSMSdfp Advanced Services

Provides techniques for extending DFSMS/MVS data management capabilities and other system data operations.

z/OS DFSMSdfp Checkpoint/Restart

Contains information on establishing checkpoints during a program and restarting a job.

z/OS DFSMSdfp Diagnosis

Contains information for diagnosing DFSMSdfp-related errors, and guidance for using DFSMSdfp diagnostic tools and aids to gather failure-related information.

z/OS DFSMSdfp Storage Administration

Contains instructions for initializing and maintaining the storage management subsystem and for performing storage management tasks using ISMF panels.

z/OS DFSMSdfp Utilities

Contains instructions for using DFSMSdfp utility programs for data, program, and device management.

z/OS DFSMS OAM Application Programmer's Reference

Contains information about the OAM application interface used to manipulate objects.

z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Object Support

Contains OAM planning, installation, customizing, and storage management information for optical libraries.

z/OS DFSMS OAM Planning, Installation, and Storage Administration Guide for Tape Libraries

Contains OAM planning, installation, customizing, and storage management information for tape libraries.

DFSMSdss

z/OS DFSMSdss Storage Administration

Describes DFSMSdss tasks for copying, dumping, and restoring data sets and DASD volumes, and diagnosis information, including keyword search strings and other diagnostic tools.

DFSMShsm

z/OS DFSMShsm Data Areas

Describes DFSMShsm data areas for system programmers.

z/OS DFSMShsm Diagnosis

Provides diagnosis information for DFSMShsm, including instructions for building keyword search strings and other diagnostic tools. Contains information about the DFSMShsm control blocks and data areas used during diagnostic and maintenance procedures.

z/OS DFSMShsm Implementation and Customization Guide

Provides guidance for creating and maintaining DFSMShsm-owned data sets, including migration and coexistence considerations.

z/OS DFSMShsm Managing Your Own Data

Contains DFSMShsm user macros and user command syntax, conventions, and coding examples.

z/OS DFSMShsm Storage Administration

Describes DFSMShsm tasks for managing storage, including examples of storage administrator commands and results of DFSMShsm processing. Also contains information about disaster prevention and the recovery of DFSMShsm data based on real experiences.

DFSMSrmm

z/OS DFSMSrmm Application Programming Interface

Describes how to use the DFSMSrmm Application Programming Interface to obtain information about DFSMSrmm resources.

z/OS DFSMSrmm Diagnosis Guide

Contains information for diagnosing DFSMSrmm-related errors, including how to use DFSMSrmm diagnostic tools.

z/OS DFSMSrmm Managing and Using Removable Media

Provides instructions for using DFSMSrmm to manage removable media.

z/OS DFSMSrmm Implementation and Customization Guide

Contains information about implementing and customizing the functions of DFSMSrmm.

z/OS DFSMSrmm Reporting

This document provides information about creating reports in DFSMSrmm using DFSMSrmm reporting utilities, DFSORT and DFSORT's ICETOOL, DFSMSrmm TSO subcommands, and REXX EXECs.

DFSMStvs

z/OS DFSMStvs Administration Guide

Provides reference and guidance information for many of the major tasks that a user might need to perform when using DFSMS Transactional VSAM Services (DFSMStvs).

This document helps you:

- Understand certain functions such as VSAM RLS, and the manner in which DFSMStvs relates opto these functions and builds upon them
- Learn about the migration tasks that you must complete
- Perform tasks such as customizing, administering, and operating DFSMStvs, as well as diagnosing problems related to DFSMStvs

z/OS DFSMStvs Planning and Operating Guide

Provides system programmers, application programmers, and operators who are responsible for customizing, writing applications for, and operating DFSMStvs with information about:

- Using DFSMStvs to share VSAM data for concurrent batch updates
- Installing and operating DFSMStvs
- Designing and coding applications to use DFSMStvs
- Diagnosing and recovering from DFSMStvs problems.

DFSORT

This section describes documents for DFSORT.

z/OS DFSORT Application Programming Guide

This guide gives you the necessary information to use DFSORT to sort, merge, and copy data sets, including how to prepare DFSORT control statements, how to calculate storage requirements, and how to use the program exits. It also contains examples of DFSORT control statements and program exit routines.

z/OS DFSORT: Getting Started

This document is intended to help you get started using DFSORT to sort, merge, and copy data sets. It also contains step-by-step procedures for writing applications.

z/OS DFSORT Installation and Customization

This guide is intended to help you install and customize DFSORT. It is designed to be used with the DFSORT Program Directory, which contains the installation procedures.

z/OS DFSORT Messages, Codes and Diagnosis Guide

This document is intended to help you interpret informational and error messages issued by DFSORT. It contains explanations of and possible responses to these messages. It also contains the return codes and diagnostic messages issued by DFSORT. It shows you how to describe DFSORT program failures with a set of keywords used by the support center.

z/OS DFSORT Tuning Guide

This guide provides you with information about tuning DFSORT. It offers suggestions for reducing the use of system resources and achieving better turnaround time for applications that use DFSORT.

EREP

This section describes documents for EREP.

EREP Reference

Provides supplementary material to the User's Guide, including an overview of EREP parameters, control statements, and records; a listing of EREP messages and codes; examples of all types of output reports; and product dependent information about all supported IBM devices.

EREP User's Guide

Contains detailed instructions and sample procedures for setting up and running EREP in VM, VSE, and MVS environments.

Graphical Data Display Manager (GDDM)

To find all documents for GDDM (including PCLK and OS/2 Link) and GDDM-REXX, see Graphical Data Display Manager (GDDM) website (www.ibm.com/software/applications/gddm/library).

Hardware Configuration Definition

This section describes documents for Hardware Configuration Definition (HCD).

z/OS and z/VM HCD Messages

Describes the messages issued by HCD.

z/OS HCD Planning

Explains the concepts, actions, and general planning considerations needed to define and maintain an I/O configuration using HCD.

HCD Reference Summary

Provides a short overview of HCD tasks, navigation options, and information about online help. It also describes the relations among the configuration objects and lists the actions and action codes for each object.

z/OS HCD User's Guide

Explains how to use HCD to define, activate, modify or view hardware configurations, and query supported hardware. HCD also permits you to maintain and compare IODFs, obtain graphical and textual reports of configurations, and migrate existing configuration data.

Hardware Configuration Manager

This section describes the document for Hardware Configuration Manager (HCM).

z/OS and z/VM HCM User's Guide

Explains how to install and use HCM to create, manage and maintain hardware configuration information.

High Level Assembler

This section describes documents for High Level Assembler.

HLASM General Information

Provides an overview of High Level Assembler.

HLASM Installation and Customization Guide

Contains installation, customization, diagnosis, and maintenance information for High Level Assembler.

HLASM Language Reference

Contains language reference information to help users code High Level Assembler language programs.

HLASM Programmer's Guide

Contains High Level Assembler product usage information.

For more information about High Level Assembler, see High Level Assembler and Toolkit Feature in IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSENW6).

High Level Assembler Toolkit

This section describes documents for the High Level Assembler Toolkit feature.

HLASM Toolkit Feature Debug Reference Summary

Provides a reference summary to help users debug assembler language applications.

HLASM Toolkit Feature Installation and Customization Guide

Contains information for installing and maintaining the High Level Assembler Toolkit Feature.

HLASM Toolkit Feature Interactive Debug Facility User's Guide

Contains both reference and guidance information for using the High Level Assembler Toolkit Feature Interactive Debug Facility.

HLASM Toolkit Feature User's Guide

Contains information for using all components of the High Level Assembler Toolkit Feature (other than the Interactive Debug Facility).

For more information about the High Level Assembler Toolkit, see High Level Assembler and Toolkit Feature in IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSENW6).

IBM HTTP Server - Powered by Apache

This section describes the information for IBM HTTP Server - Powered by Apache.

z/OS HTTP Server - Powered by Apache User's Guide

Explains how to migrate to, install, configure, secure and use IBM HTTP Server - Powered by Apache.

For more information about the HTTP Server - Powered by Apache, see WebSphere Application Server Knowledge Center (www.ibm.com/support/knowledgecenter/SSEQTP).

IBM Encryption Facility

This section describes documents for the z/OS related feature, Encryption Facility.

IBM Encryption Facility for z/OS: Planning and Customizing

This document explains how to plan for the Encryption Facility product, including Encryption Services, Encryption Facility for z/OS Client, Encryption Facility for OpenPGP, and DFSMSdss Encryption. It also provides detailed information for the Encryption Services CSDFILEN and CSDFILDE batch programs.

IBM Encryption Facility for z/OS: Using Encryption Facility for OpenPGP

This document explains how to use Encryption Facility for OpenPGP, which is part of the product feature, IBM® Encryption Services included in IBM Encryption Facility for z/OS. It is intended for anyone who plans, installs, customizes, administers, and uses Encryption Facility for OpenPGP.

z/OS Open Cryptographic Services Facility Application Programming

This document explains how to plan for the Encryption Facility product, including Encryption Services, Encryption Facility for z/OS Client, Encryption Facility for OpenPGP, and DFSMSdss Encryption. It also provides detailed information for the Encryption Services CSDFILEN and CSDFILDE batch programs.

IBM Knowledge Center for z/OS

This section describes the documents for IBM Knowledge Center for z/OS.

IBM Knowledge Center for z/OS operates on a local information repository. Installing the z/OS version of IBM Knowledge Center helps ensure that your enterprise has ready access to the information that you need to run your z/OS system, on your z/OS system.

IBM Knowledge Center for z/OS Configuration and User Guide

This document provides information for anyone who needs to set up and use IBM Knowledge Center for z/OS. This document assumes that you are familiar with the z/OS operating system and its associated products.

IBM Tivoli Directory Server for z/OS

z/OS IBM Tivoli Directory Server Client Programming for z/OS,

This document describes the Lightweight Directory Access Protocol (LDAP) client application, which is part of IBM Tivoli® Directory Server for z/OS. It is intended for application programmers who have previous knowledge of directory services.

z/OS IBM Tivoli Directory Server Administration and Use for z/OS

This document describes the LDAP server which supports Lightweight Directory Access Protocol (LDAP) and runs as a stand-alone daemon. It is based on a client/server model that provides client access to an LDAP server. The LDAP server provides an easy way to maintain directory information in a central location for storage, updating, retrieval, and exchange. It is intended to assist LDAP administrators. LDAP administrators should be experienced and have previous knowledge of directory services. It is also intended for anyone that will be implementing the directory service.

z/OS IBM Tivoli Directory Server Messages and Codes for z/OS

This document includes the messages and reason codes produced by the Lightweight Directory Access Protocol (LDAP) server.

z/OS IBM Tivoli Directory Server Plug-in Reference for z/OS

This document describes writing Lightweight Directory Access Protocol (LDAP) client applications, which are part of IBM Tivoli Directory Server for z/OS. It is intended for application programmers who have previous knowledge of directory services.

ICKDSF

This section describes the document for ICKDSF.

Device Support Facilities (ICKDSF) User's Guide and Reference

Includes information about how to perform service functions, error detection, and media maintenance for IBM DASD. It also includes a summary of ICKDSF commands that support error detection and media maintenance on IBM DASD.

Infoprint Server

This section describes documents for Infoprint Server and Infoprint Server Transforms. Major components of Infoprint Server are IP PrintWay, NetSpool, Print Interface, Printer Inventory Manager, Transform Manager, and Infoprint Central.

z/OS Infoprint Server Printer Inventory for PSF

Describes the Infoprint Server Printer Inventory for Print Services Facility (PSF), which lets PSF for z/OS customers who do not purchase Infoprint Server define PSF functional subsystems in the Printer Inventory. It describes how to customize Infoprint Server, start and stop Infoprint Server, administer the Printer Inventory for PSF, and diagnose problems in Infoprint Server.

Note: PSF customers who purchase Infoprint Server should use the other books in the Infoprint Server library.

z/OS Infoprint Server Introduction

Provides an overview of Infoprint Server for executives and technical personnel.

z/OS Infoprint Server Customization

Describes for the system administrator how to customize Infoprint Server. It describes required environment variables, configuration files, how to write IP PrintWay and NetSpool exit routines, Print Interface filter programs, and the Print Interface API.

z/OS Infoprint Server Messages and Diagnosis

Contains messages and abend codes that are issued by Infoprint Servers. It also describes how to diagnose problems in Infoprint Server.

z/OS Infoprint Server Operation and Administration

Describes for the operator and system administrator how to start and stop Infoprint Server, how to use Infoprint Central, and how to set up and maintain the Infoprint Server Printer Inventory, which contains all printer information that is required by Infoprint Server and its components.

z/OS Infoprint Server User's Guide

Describes user tasks for Infoprint Server. This document describes how to submit print jobs from remote systems (including Windows systems), the local z/OS system, and Virtual Telecommunications Access Method (VTAM) applications. It describes z/OS UNIX commands; the AOPPRINT JCL procedure; the AOPBATCH program; DD and OUTPUT JCL parameters that Infoprint Server supports; and how to download and install the Infoprint Port Monitor for Windows.

IBM Infoprint Transforms to AFP for z/OS

This book describes IBM Infoprint Transforms to AFP for z/OS (5655-N60). It describes the transforms and how to customize them, submit transform jobs, and diagnose errors.

IBM Infoprint XT for z/OS

Describes IBM Infoprint XT for z/OS (5655-O15), a data stream transform that uses IBM Xerox transform (XT) technology to convert Xerox data to Advanced Function Presentation (AFP) format.

IBM Print Transforms from AFP for Infoprint Server for z/OS

This book describes the following products.

- IBM Print Transform from AFP to PCL for Infoprint Server for z/OS (5655-TF2)
- IBM Print Transform from AFP to PDF for Infoprint Server for z/OS (5655-TF1)
- IBM Print Transform from AFP to PostScript for Infoprint Server for z/OS (5655-TF3)

It describes the transforms and how to customize them, submit transform jobs, and diagnose errors.

Integrated Security Services

This section describes documents for the Integrated Security Services, including Enterprise Identity Mapping, Network Authentication Service, and Open Cryptographic Services Facility.

z/OS Integrated Security Services EIM Guide and Reference

This document contains information about using Enterprise Identity Mapping (EIM). EIM is an architecture that serves as a security technology to make it easier to manage users in a cross-platform environment.

z/OS Integrated Security Services Network Authentication Service Administration

Provides an introduction to the implementation of Kerberos Version 5 from MIT, as well as configuration and administration information, including the few administration commands needed. It also includes status codes and messages.

z/OS Integrated Security Services Network Authentication Service Programming

Contains all of the application programming interfaces (APIs): Kerberos, GSS-API, and GSS-API with Kerberos mechanism, for the implementation of Kerberos Version 5 from MIT.

z/OS Integrated Security Services Open Cryptographic Enhanced Plug-ins Application Programming

Describes the OCEP service provider modules and how they are intended to be used with the framework provided by the Open Cryptographic Services Facility (OCSF). It also describes how these service provider modules enable daemon applications to use RACF® to provide security functions relating to digital certificates.

z/OS Open Cryptographic Services Facility Application Programming

Provides an overview of the Open Cryptographic Services Facility (OCSF). It explains how to integrate OCSF into applications and contains a sample OCSF application. It also defines the interfaces that application developers employ to access security services provided by the OCSF framework and service provider modules. It also describes specific information about the individual service providers.

z/OS Open Cryptographic Services Facility Service Provider Module Developer's Guide and Reference

Describes the features common to all OCSF service provider modules. It defines the interfaces for certificate, trust and data library service providers. Service provider developers must conform to these interfaces for the individual service provider modules to be accessible through the OCSF framework.

ISPF

This section describes documents for ISPF.

z/OS ISPF Dialog Developer's Guide and Reference

Describes how to use the ISPF Dialog Manager component. Explains how to create ISPF panels using Dialog Tag Language (DTL), control ISPF sessions, use ISPF facilities and services, and define ISPF panel messages and file tailoring skeletons.

z/OS ISPF Dialog Tag Language Guide and Reference

Explains how to use the Dialog Tag Language (DTL) to design and create ISPF dialogs containing elements such as application panels, help panels, variables, fields, messages, command tables and key lists. It also includes an alphabetical reference guide to DTL tags.

z/OS ISPF Edit and Edit Macros

Explains how to use the ISPF editor and how to use, write and test edit macros. Includes an alphabetical reference guide to edit line, primary, and macro commands available for ISPF.

z/OS ISPF Messages and Codes

Provides information for ISPF users about error messages and codes issued by ISPF, PDF, and SCLM.

z/OS ISPF Planning and Customizing

Provides planning information and procedures.

z/OS ISPF Reference Summary

Provides a quick reference for application developers and library administrators to ISPF services and variables, edit macro commands, SCLM services and macros, and DTL tags.

z/OS ISPF Services Guide

Describes how to use ISPF Dialog Management services and PDF Services to develop dialogs, including information about each service such as syntax, return codes, and examples.

z/OS ISPF Software Configuration and Library Manager Guide and Reference

Describes how to set up and maintain an SCLM project environment, and how programmers can use SCLM functions to control development projects.

z/OS ISPF User's Guide Vol I

Describes the ISPF user interface and introduces ISPF concepts and functions including commands, libraries, and data sets.

z/OS ISPF User's Guide Vol II

Provides detailed reference and usage information about using ISPF options 0 to 11 and the SuperC and Search-For data set utilities.

JES

This section describes documents that are shared between JES2 and JES3.

z/OS JES Application Programming

This document describes the application programming of JES2 and JES3. This document provides the information that you need to:

- Use the Spool Data Set Browse.
- Use the Server/Client Print Interface.
- Use the Internal Reader.
- Use the IBM-supplied External Writer.

JES2

This section describes documents for JES2.

Network Job Entry (NJE) Formats and Protocols

Explains the Network Job Entry (NJE) formats and protocols that are used by program products that support networking.

z/OS JES2 Commands

Provides the system console operator and system programmer with the information required to control JES2. The document presents task-oriented material required to use JES2 commands to perform various tasks and a reference section that presents all JES2 commands in alphabetic order.

z/OS JES2 Data Areas

Describes JES2 data areas for system programmers.

z/OS JES2 Diagnosis

Describes the use of JES2 diagnostic aids and tools and how to interpret the output of those aids and tools. The document helps the system programmer to identify a problem, collect information about the problem, report the problem to IBM, and fix the problem.

z/OS JES2 Initialization and Tuning Guide

Describes the general functions of JES2 and provides information about JES2 initialization, JES2 processing, network job entry (NJE), remote job entry (RJE), and factors affecting performance.

Its companion document, *z/OS JES2 Initialization and Tuning Reference* describes the JES2 initialization statements in detail.

z/OS JES2 Initialization and Tuning Reference

Describes the JES2 initialization statements and their parameters and provides summary or overview charts of the statements.

z/OS JES2 Installation Exits

Provides system programming information about the use of IBM-defined and installation-defined JES2 exit routines. It describes how to establish JES2 exit routines to tailor JES2 without source code modification.

z/OS JES2 Introduction

Provides a high-level overview of JES2, its functions, and its relationship to other MVS components. It also provides an overview of JES2 initialization, operation, and customization and diagnostic techniques.

z/OS JES2 Macros

Provides information about the use and syntax of JES2 executable macro instructions.

z/OS JES2 Messages

Describes JES2 messages and suggests appropriate operator, system programmer, and application programmer responses.

JES3

This section describes documents for JES3.

z/OS JES3 Commands

Describes the commands used to operate JES3 and provides system operators and system programmers with the information required to control JES3. This document contains task-oriented material required to use JES3 commands to perform various tasks and a reference section in which all JES3 commands are presented in alphabetic order.

z/OS JES3 Customization

Provides information on customizing JES3 through the use of dynamic support programs (DSPs) and installation exits. The document explains how to write a DSP and an installation exit routine and describes the JES3 macros available.

JES3 Data Areas Volume 1 (IATYADA - IATYSRS)

Describes JES3 data areas (group one of two) for system programmers.

JES3 Data Areas Volume 2 (IATYSRT - IATY8FB)

Describes JES3 data areas (group two of two) for system programmers.

z/OS JES3 Diagnosis

Provides information on tools for diagnosing JES3 and user-written extensions of JES3.

z/OS JES3 Diagnosis Reference

Contains interactive problem control system (IPCS) information pertinent to JES3, control block chaining, module tables, and mapping macro tables.

z/OS JES3 Initialization and Tuning Guide

Provides guidance information required to install, initialize, customize, and tune JES3.

z/OS JES3 Initialization and Tuning Reference

Provides reference information required to install, initialize, customize, and tune JES3.

z/OS JES3 Introduction

Provides overview information about JES3 including the various processor and device combinations under which JES3 operates. This document also describes JES3 features of interest to an operator, an application programmer, and a system programmer.

z/OS JES3 Messages

Describes JES3 messages and suggests appropriate operator, system programmer, and application programmer responses.

Language Environment

This section describes documents for Language Environment®.

z/OS Language Environment Concepts Guide

Introduces Language Environment architecture, a system of constructs and interfaces that provides a common runtime environment and runtime services for all Language Environment-conforming programming language products (those products that adhere to Language Environment's common interface).

z/OS Language Environment Customization

Explains how to customize and maintain Language Environment for z/OS.

z/OS Language Environment Debugging Guide

Explains how to debug applications that run with Language Environment, get details on runtime messages, and diagnose problems with Language Environment. Provides assistance with detecting and locating programming errors that occur during runtime under Language Environment. It can help you establish a debugging process to analyze data and narrow the scope and location of where an error might have occurred. You can read about how to prepare a routine for debugging, how to classify errors, and how to use the debugging facilities provided by Language Environment. Also included are chapters on debugging HLL-specific routines and routines that run under CICS.

z/OS Language Environment Programming Guide

Describes how to:

- Prelink, link, and run (under MVS, TSO/E, or UNIX System Services) single-language applications written in IBM C, C++, COBOL, PL/I, Fortran, and assembler.
- Effectively use Language Environment callable services and runtime options.
- Understand and use Language Environment initialization and termination, program management, storage management, condition handling, NLS, Date/Time, and locale support.

z/OS Language Environment Programming Guide for 64-bit Virtual Addressing Mode

Describes how to:

- Prelink, link, and run single-language applications using 64-bit virtual addressing mode and written in IBM C, C++, and assembler.
- Effectively use Language Environment callable services and runtime options for 64-bit addressing.
- Understand and use Language Environment initialization and termination, program management, storage management, condition handling, NLS, Date/Time, and locale support.

z/OS Language Environment Programming Reference

Provides application programmers with a detailed description of each Language Environment runtime option and callable service, as well as information on how to use them. It also provides programming examples that illustrate how each callable service can be used in routines written in Language Environment-conforming high-level languages (HLLs) and assembler language.

z/OS Language Environment Runtime Messages

Contains runtime messages and return codes for Language Environment and supported high-level languages, including C/C++. Fortran, PL/I, VisualAge® PL/I, and COBOL.

z/OS Language Environment Runtime Application Migration Guide

Provides an overview of the steps required to migrate applications for use with Language Environment. This document is designed to help you create a broad migration strategy. This document will help you identify which modules can be migrated first, and which will require relinking or recompiling. It also explains how to use Language Environment runtime options to achieve behavior that is compatible with your old modules.

The following runtime migration guides for specific languages are also provided in softcopy on the Collection.

- *z/OS C/C++ Enterprise COBOL for z/OS, V4R1 Compiler and Runtime Migration Guide*
- *z/OS XL C/C++ Compiler and Runtime Migration Guide for the Application Programmer*
- *Enterprise COBOL for z/OS and OS/390 Migration Guide*
- *Enterprise PL/1 for z/OS and OS/390 Migration Guide*
- *VisualAge PL/I for OS/390 Compiler and Run-Time Migration Guide*
- *PL/1 for MVS & VM Compiler and Run-Time Migration*
- *Language Environment for MVS & VM Fortran Run-Time Migration Guide*

z/OS Language Environment Writing Interlanguage Communication Applications

Describes how to create and run applications that contain interlanguage communication with Language Environment.

z/OS Language Environment Vendor Interfaces

Documents the set of low-level interfaces, or compiler-writer interfaces (CWIs), that can be used between the common runtime component and C, C++, COBOL, Fortran, PL/I, VisualAge PL/I, and other member runtime components of Language Environment.

Metal C Runtime Library

This section describes the document that supports Metal C Runtime Library.

z/OS Metal C Programming Guide and Reference

Provides instructions for users of the z/OS or z/OS.e C/C++ compiler who are using the Metal C compiler option. It contains an introduction, descriptions of C functions and header files, an appendix on stack requirements, It also contains advanced guidelines and information for developing C and C++ programs to run on the z/OS or z/OS.e operating systems.

MVS

This section describes documents for MVS, which is also called the Base Control Program (BCP).

z/OS MVS Capacity Provisioning User's Guide

Describes capacity planning on z/OS.

z/OS MVS Data Areas Volume 1 (ABE - IAR)

Describes MVS data areas (group one of four) for system programmers who diagnose and debug operating system and programming problems. It provides information for debugging installation-provided programs or diagnosing IBM-provided programs.

z/OS MVS Data Areas Volume 2 (IAX - ISG)

Describes MVS data areas (group two of four) for system programmers who diagnose and debug operating system and programming problems. It provides information for debugging installation-provided programs or diagnosing IBM-provided programs.

z/OS MVS Data Areas Volume 3 (ITK - RQE)

Describes MVS data areas (group three of four) for system programmers who diagnose and debug operating system and programming problems. It provides information for debugging installation-provided programs or diagnosing IBM-provided programs.

z/OS MVS Data Areas Volume 4 (RRP - XTL)

Describes MVS data areas (group four of four) for system programmers who diagnose and debug operating system and programming problems. It provides information for debugging installation-provided programs or diagnosing IBM-provided programs.

z/OS MVS Device Validation Support

Describes the requirements for I/O devices that are not supported.

z/OS MVS Diagnosis: Reference

Provides system reference material needed for diagnosing system problems. It describes the problem data that is available in dumps and traces and also explains how to request and format that data.

z/OS MVS Diagnosis: Tools and Service Aids

Describes how to use IBM tools (such as dumps and traces) and service aid programs (LIST and SPZAP) to diagnose and fix problems in system and application programs.

z/OS MVS Dump Output Messages

Provides a single dump message reference for the interactive problem control system (IPCS), the MVS components that provide IPCS formatters, and TSO/E.

z/OS MVS Initialization and Tuning Guide

Contains information about tasks related to MVS initialization, with a major focus on the use of SYS1.PARMLIB to manage system resources. Its companion document, *z/OS MVS Initialization and Tuning Reference*, describes the members of SYS1.PARMLIB in detail.

z/OS MVS Initialization and Tuning Reference

Describes the function, use, and format of each member of SYS1.PARMLIB. It contains reference information related to many MVS components and to other products. Its companion document, *z/OS MVS Initialization and Tuning Guide*, focuses on MVS initialization tasks and SYS1.PARMLIB usage.

z/OS MVS Installation Exits

Describes the installation exits available for modifying the processing of the MVS element of z/OS.

z/OS MVS IPCS Commands

Provides reference information about the IPCS commands, subcommands, and dialog commands. The document describes how to use IPCS and gives examples of subcommand syntax and output generated by the subcommands.

z/OS MVS IPCS Customization

Provides IPCS programming requirements and explains how to customize access to IPCS and the IPCS dialog. The programmer can use this document when writing IPCS exit routines, using IPCS-shipped CLISTs, and setting IPCS defaults.

z/OS MVS IPCS User's Guide

Explains how to access IPCS, presents the IPCS full-screen dialog, and provides information about the IPCS subcommands.

z/OS MVS JCL Reference

Describes how to code JCL, JES2, and JES3 control statements needed to perform the job control tasks presented in *z/OS MVS JCL User's Guide*.

z/OS MVS JCL User's Guide

Describes the job control tasks needed to submit jobs into the operating system, control the system's processing of jobs, and request the resources needed to run jobs. Its companion document, *z/OS MVS JCL Reference*, provides JCL coding information.

z/OS MVS Planning: APPC/MVS Management

Presents an overall picture of APPC/MVS as it relates to the rest of MVS, Systems Application Architecture®, and APPC, to help integrate APPC/MVS into existing configurations.

z/OS MVS Planning: Global Resource Serialization

Describes how to plan, install, operate, and tune a global resource serialization complex.

z/OS MVS Planning: Operations

Provides the information that a system programmer needs to understand how to plan MVS operations. Its primary focus is on how to plan an MVS console configuration.

z/OS MVS Planning: Workload Management

Describes workload management concepts and interfaces. It includes the steps required for using workload management and the benefits of using it.

z/OS MVS Product Management

Explains two usage pricing methods: S/390® Usage Pricing and Measured Usage License Charges. Also explains S/390 dynamic enablement externals for a product administrator. The document describes the data analysis utility covering both data collecting and reporting. It also describes how to change the enablement policy and provides information about the enablement report.

z/OS MVS Program Management: Advanced Facilities

Describes the programming interfaces provided by the program management component of z/OS. It describes the Binder Application Programming Interface, macros, user exits, and buffer formats.

z/OS MVS Program Management: User's Guide and Reference

Describes the end user interfaces provided by the program management component z/OS. It contains an overview of the components, describes how to create executable programs from source modules, use the program management binder (starting, defining input, editing data, options, control statements), the linkage editor, and the batch loader.

z/OS MVS Programming: Assembler Services Guide

Describes how to use MVS services for unauthorized assembler language programs. This document also contains guidelines and suggested coding practices for coding in 31-bit addressing mode and for modifying programs that use 24-bit addressing mode to use 31-bit addressing mode. If you are relatively new to assembler language programming for MVS, this document is a good place to start.

Its companion documents, *z/OS MVS Programming: Assembler Services Reference ABE-HSP* and *z/OS MVS Programming: Assembler Services Reference IAR-XCT*, describe coding the macros that invoke these MVS services.

MVS Programming: Assembler Services Reference, Volumes 1–2

z/OS MVS Programming: Assembler Services Reference ABE-HSP

z/OS MVS Programming: Assembler Services Reference IAR-XCT

Describe how to code the macros and callable services that invoke the services of MVS, as described in *z/OS MVS Programming: Assembler Services Guide*. These macros and callable services are available to all assembler language programs.

z/OS MVS Programming: Authorized Assembler Services Guide

Describes how to use MVS services for authorized assembler language programs. Its companion documents, *MVS Programming: Authorized Assembler Services Reference, Volumes 1–4*, describe coding the macros that invoke these services.

MVS Programming: Authorized Assembler Services Reference, Volumes 1–4

z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN

z/OS MVS Programming: Authorized Assembler Services Reference EDT-IXG

z/OS MVS Programming: Authorized Assembler Services Reference LLA-SDU

z/OS MVS Programming: Authorized Assembler Services Reference SET-WTO

Describe how to code the macros and callable services that are available only to authorized assembler language programs, as described in *z/OS MVS Programming: Authorized Assembler Services Guide*

z/OS MVS Programming: Callable Services for High-Level Languages

Describes the callable services available to the programmer coding in a high-level language such as COBOL, FORTRAN, C, Pascal, and PL/1. These services are also available to assembler language programmers.

z/OS MVS Programming: Extended Addressability Guide

Describes how to use cross memory services and extended addressability techniques, such as data spaces and hiperspaces to extend the virtual storage available to programs.

z/OS MVS Programming: JES Common Coupling Services

Provides MVS and JES system programmers with both guidance and reference information on how to use the JES common coupling services assembler macros and installation exits to affect JES communication processing in a sysplex environment.

z/OS MVS Programming: Product Registration

Provides guidance and reference information for the registration callable services, which are used to register an element or prepare an optional feature for dynamic enablement.

z/OS MVS Programming: Resource Recovery

Describes how to use recoverable resource management services (RRMS) in a resource manager that provides access to protected resources. Resource recovery services (), a system component, is the sync-point manager. While this document is primarily for experienced programmers, it also describes managing at an installation, including information about using system logger with RRS and running RRS.

z/OS MVS Programming: Sysplex Services Guide

Describes how to use the sysplex services available to assembler language programs that participate in a sysplex, communicate with other members of a sysplex, benefit from automatic restarts, and sharing data.

z/OS MVS Programming: Sysplex Services Reference

Describes how to code sysplex services for assembler language programs that participate in a sysplex, communicate with other members of a sysplex, benefit from automatic restarts, and sharing data.

z/OS MVS Programming: Workload Management Services

Describes the services intended for use by subsystem work managers and performance monitoring products.

z/OS MVS Programming: Writing Servers for APPC/MVS

Provides the information that an application developer needs to write servers for use in an APPC/MVS environment.

z/OS MVS Programming: Writing Transaction Programs for APPC/MVS

Provides the information that an application programmer needs to write APPC transaction programs for use on MVS.

z/OS MVS Programming: Writing Transaction Schedulers for APPC/MVS

Provides the information that an application programmer or system programmer needs to write transaction schedulers other than the one provided by APPC/MVS.

z/OS MVS Setting Up a Sysplex

Provides the information that a system programmer needs to plan, install, and tune MVS systems in a sysplex. It includes information about the policies available for managing a sysplex as well as information about the coupling facility.

z/OS Unicode Services User's Guide and Reference

This manual provides information for setting up and using the Support for the Unicode product. The manual also includes a complete list of the IBM-supplied conversion tables.

z/OS MVS System Codes

Describes system completion and wait state codes.

z/OS MVS System Commands

Describes the system commands available to control an MVS system.

z/OS MVS System Management Facilities (SMF)

Provides information for system programmers who implement policies and procedures to account for data processing costs. This task includes deciding how to apportion data processing costs to data processing users and using SMF record data to obtain the required information about the use of system resources.

MVS System Messages, Volumes 1–10

z/OS MVS System Messages, Vol 1 (ABA-AOM)

z/OS MVS System Messages, Vol 2 (ARC-ASA)

z/OS MVS System Messages, Vol 3 (ASB-BPX)

z/OS MVS System Messages, Vol 4 (CBD-DMO)

z/OS MVS System Messages, Vol 5 (EDG-GLZ)

z/OS MVS System Messages, Vol 6 (GOS-IEA)

z/OS MVS System Messages, Vol 7 (IEB-IEE)

z/OS MVS System Messages, Vol 8 (IEF-IGD)

z/OS MVS System Messages, Vol 9 (IGF-IWM)

z/OS MVS System Messages, Vol 10 (IXC-IZP)

Describe the messages issued by MVS and other elements, and suggests appropriate operator, system programmer, and application programmer responses.

z/OS MVS Using the Functional Subsystem Interface

Describes the functional subsystem interface (FSI) and shows how a functional subsystem (FSS) and a job entry subsystem (JES) communicate using the FSI.

z/OS MVS Using the Subsystem Interface

Provides information needed both to write a subsystem and to invoke subsystem services. This document describes the subsystem interface (SSI) and provides detailed, uniform descriptions of the subsystem interface function codes and examples that help users understand them.

z/OS XML System Services User's Guide and Reference

Provides information for application programmers, system programmers, and end users working on a z/OS system and using z/OS XML.

Network File System

This section describes documents for Network File System.

z/OS Network File System Guide and Reference

This book is a combination of three earlier z/OS NFS books. It describes the following techniques.

- Accessing and creating MVS data sets from a client environment using the NFS protocol
- Customizing and operating the z/OS Network File System server
- Diagnosing and tuning NFS on z/OS.

Resource Measurement Facility (RMF)

This section describes documents for Resource Measurement Facility.

z/OS RMF Messages and Codes

Explains messages.

z/OS RMF Programmer's Guide

Describes Resource Measurement Facility programming interfaces.

z/OS RMF Report Analysis

Describes the content of all Resource Measurement Facility reports.

z/OS RMF User's Guide

Describes all relevant tasks belonging to performance management.

REXX Alternate Library

This section describes the documents for REXX Alternate Library.

IBM Compiler and Library for REXX on IBM Z: User's Guide and Reference

Describes how to compile and run programs written in the Restructured EXtended eXecutor (REXX) language. It describes how to use the:

- IBM Compiler for REXX on IBM Z® (referred to as the Compiler)
- IBM Library for REXX on IBM Z® (referred to as the Library)

IBM Compiler and Library for REXX on IBM Z: Diagnosis Guide

> Provides information to help system programmers and IBM service personnel to diagnose problems encountered when using the:
>
> - IBM Compiler for REXX on IBM Z® (referred to as the Compiler)
> - IBM Library for REXX on IBM Z® (referred to as the Library)

Runtime Library Extensions

This section describes documents for the C/C++ Compiler feature. For related books of the z/OS C/C++ Compiler features, see .

z/OS Common Debug Architecture User's Guide

> Common Debug Architecture User's Guide introduces the user to Common Debug Architecture (CDA). It first provides a high-level overview of CDA. The document then illustrates how to use the CDA libraries and utilities, through explanations and examples. Finally, it shows an example implementation, using the utilities that are shipped with CDA.

z/OS Common Debug Architecture Library Reference

> Common Debug Architecture Library Reference is the reference for the Common Debug Architecture (CDA) library, libddpi. It provides a brief overview of CDA, but the majority of the document is a detailed description of every API and type. CDA is written in the C programming language. CDA is based on ELF application binary interfaces (ABIs) and the DWARF format.

DWARF/ELF Extensions Library Reference

> DWARF/ELF Extensions Library Reference is intended for programmers who will be developing program-analysis applications and debugging applications for the IBM C/C++ compiler on the z/OS operating system. These applications will create or query information from ELF objects and DWARF debugging information on the z/OS operating system.

SDSF

This section describes the document for SDSF.

z/OS SDSF Operation and Customization

> Describes ISFPARMS, security, operation of the SDSF server, and problem determination, including messages and codes.

z/OS SDSF User's Guide

> Provides general user information to help system users understand the function and use of the SDSF panels.

Security Server

This section describes documents for the IBM z/OS Security Server (RACF).

z/OS Security Server RACROUTE Macro Reference

> Describes the RACF system macros and explains how to code the interfaces.

z/OS Security Server RACF Auditor's Guide

> Describes auditing considerations as well as how to use the SMF data unload facility, the RACF report writer, and the data security monitor.

z/OS Security Server RACF Callable Services

> Describes the RACF callable services and explains how to code the interfaces.

z/OS Security Server RACF Command Language Reference

> Contains the functions and syntax of all the RACF commands.

z/OS Security Server RACF Data Areas

> Contains descriptions of the data areas used by RACF.

z/OS Security Server RACF Diagnosis Guide

> Explains how to diagnose problems in RACF.

z/OS Security Server RACF Macros and Interfaces

> Describes each product macro and its syntax and explains how to code the interfaces.

z/OS Security Server RACF Messages and Codes

> Contains the RACF messages, routing and descriptor codes, RACF manager return codes, and RACF-related system completion codes.

z/OS Security Server RACF Security Administrator's Guide

> Explains RACF concepts and describes how to plan for and implement RACF.

z/OS Security Server RACF System Programmer's Guide

> Describes how to modify and maintain RACF.

z/OS Security Server RACF General User's Guide

> Explains how general users can perform basic security tasks with RACF, such as protecting data sets and general resources.

SMP/E

This section describes documents for SMP/E.

z/OS SMP/E Commands

> Contains detailed information about the syntax and processing of SMP/E commands and associated reports.

z/OS SMP/E Messages, Codes, and Diagnosis

> Explains how to handle and diagnose suspected SMP/E problems. Lists the messages issued by SMP/E, explains why they may be issued, and tells how to respond to them. It also lists the return codes that may be issued for each SMP/E command, explains what they mean and how to respond to them, and provides error recovery procedures for each command

z/OS SMP/E Reference

> Contains detailed information about the syntax and processing of SMP/E MCS statements. Also describes the data sets required by SMP/E commands, explains the contents of the entries used by SMP/E to manage the system, and explains the output produced by SMP/E. It explains how to use the SMP/E user exit routines and service routines, provides information on how to tailor SMP/E processing, and documents the intended programming interfaces.

z/OS SMP/E User's Guide

> Describes how to use SMP/E. It contains an overview of SMP/E and the data sets it uses, describes how to install software, and explains how to use SMP/E to manage the system.

TSO/E

This section describes documents for TSO/E.

z/OS TSO/E Administration

Describes ways to define users to TSO/E through the ACCOUNT command and through the Information Center Facility services. It also provides detailed information about maintaining the Information Center Facility services.

z/OS TSO/E CLISTs

Contains information about creating, structuring, and executing CLISTs.

z/OS TSO/E Command Reference

Contains syntax information for non-authorized TSO/E commands and Session Manager tasks. Authorized commands are described in *z/OS TSO/E System Programming Command Reference*.

z/OS TSO/E Customization

Contains the information necessary to customize and maintain a TSO/E system.

z/OS TSO/E General Information

Contains an overview of the TSO/E element of z/OS. It explains the purpose and benefits of TSO/E, the functions and tools available to end users and programmers, and introduces the customization, administration, and diagnosis aspects of TSO/E.

z/OS TSO/E Messages

Contains descriptions and the detecting module for TSO/E messages that are displayed on the screen.

z/OS TSO/E Primer

Explains simple concepts and leads new users through basic TSO/E tasks, such as logon, use of panels and data sets, and sending and receiving information. It shows them how to use the Information Center Facility, issue line mode TSO/E commands, and access ISPF/PDF.

z/OS TSO/E Programming Guide

Explains how to write application programs that run under TSO/E, such as CLISTs, REXX execs, command processors, servers, and callable programs.

z/OS TSO/E Programming Services

Describes TSO/E services including the parse service routine, I/O service routines, space management service, table look-up service, printer support CLISTs, and the TSO/E environment service. It also explains how to access the Information Center Facility names directory from an application program.

z/OS TSO/E REXX Reference

Describes the structure and general syntax of the REXX language including expressions and operators, clauses, and assignments and symbols.

z/OS TSO/E REXX User's Guide

Explains how to design, write, and run REXX execs.

z/OS TSO/E System Diagnosis: Data Areas

Contains mappings of data areas that are used by two or more components or programming interfaces, or are needed for debugging and diagnosis. It provides information for debugging installation-provided programs or diagnosing IBM-provided programs.

z/OS TSO/E System Programming Command Reference

Describes authorized TSO/E commands including ACCOUNT, CONSOLE, CONSPROF, OPERATOR, and PARMLIB.

z/OS TSO/E User's Guide

Reinforces basic concepts introduced and gives additional details. It also describes more complex tasks such as preparing and running programs in the foreground or background, customizing the terminal session, and using Session Manager.

XL C/C++ Compiler

This section describes documents for the XL C/C++ Compiler feature. For related books of the Runtime Library Extensions element of z/OS, see "Runtime Library Extensions" on page 27.

z/OS XL C/C++ Language Reference

Provides reference information for the C and C++ programming languages as implemented in the C/C++ compilers.

z/OS C Curses

Describes programming for the screen management orders known as curses.

z/OS XL C/C++ Compiler and Runtime Migration Guide for the Application Programmer

Provides information for programmers who are migrating to the C/C++ compiler and the Language Environment run-time library. It discusses migration from the C/370, AD/Cycle C/370, C/C++ for MVS/ESA, and previous C/C++ compilers; the C/370 libraries; and previous releases of Language Environment.

Standard C++ Library Reference

This document provides a technical reference on the details of the Standard C++ Library.

z/OS XL C/C++ Messages

Describes C/C ++ messages and suggests appropriate operator, system programmer, and application programmer responses.

z/OS XL C/C++ Programming Guide

Provides guidance on how to write C/C++ programs for the C/C++ compiler and the C/C++ run-time library component of Language Environment.

z/OS XL C/C++ Runtime Library Reference

Contains information for all C/C ++ library functions (except for C Curses).

z/OS XL C/C++ User's Guide

Describes the processes of compiling, IPA linking, binding, prelinking and linking, and running both C and C++ programs. This document includes information on compiler options, listings, C/C++ utilities, compiler messages, and program diagnosis.

z/OS File System (zFS)

This section describes documents for z/OS File System (zFS).

z/OS File System Administration

Provides guidance and reference information for system and network administrators to use when they work with zFS.

z/OS File System Messages and Codes

Contains messages and codes for zFS.

IBM z/OS Management Facility

This section describes the documents for IBM z/OS Management Facility (z/OSMF).

IBM z/OS Management Facility Configuration Guide

This document provides information for anyone who needs to set up and use z/OSMF or diagnose problems with this product. This document assumes that you are familiar with the z/OS operating system and its associated products.

IBM z/OS Management Facility Programming Guide

This document provides information for anyone who needs to write programs that use the services and facilities of z/OSMF. This document assumes that you are familiar with the z/OS operating system and its associated products.

z/OS OpenSSH

This section describes the documents for z/OS OpenSSH.

z/OS OpenSSH User's Guide

This document provides information for anyone who needs to set up and use z/OS OpenSSH. This document assumes that you are familiar with the z/OS operating system and its associated products.

z/OS UNIX System Services

This section describes documents for z/OS UNIX System Services.

z/OS UNIX System Services Command Reference

Provides information that you need to use a z/OS system with the shell and utilities feature. Included are shell commands, TSO/E commands, and REXX system commands.

z/OS UNIX System Services File System Interface Reference

Provides details for coding to the UNIX System Services file system interface.

z/OS UNIX System Services Messages and Codes

Explains the messages, return, and reason codes that occur in the UNIX shells or debugger.

z/OS UNIX System Services Planning

Contains information that is needed to plan for the use of z/OS UNIX System Services.

z/OS UNIX System Services Programming: Assembler Callable Services Reference

Describes UNIX callable services.

z/OS UNIX System Services Programming Tools

Describes advanced application programming tools, such as make and dbx.

z/OS UNIX System Services User's Guide

Describes how to use the UNIX shells and file system.

z/OS Using REXX and z/OS UNIX System Services

Describes how to use the REXX programming language to access z/OS UNIX System Services.

z/OS Xvfb

This section describes the document for z/OS Xvfb.

z/OS Xvfb User's Guide

This document provides information for anyone who needs to set up and use z/OS Xvfb. This document assumes that you are familiar with the z/OS operating system and its associated products.

Appendix A. Accessibility

Accessible publications for this product are offered through IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSLTBW/welcome).

If you experience difficulty with the accessibility of any z/OS information, send a detailed message to the Contact the z/OS team web page (www.ibm.com/systems/campaignmail/z/zos/contact_z) or use the following mailing address.

IBM Corporation
Attention: MHVRCFS Reader Comments
Department H6MA, Building 707
2455 South Road
Poughkeepsie, NY 12601-5400
United States

Accessibility features

Accessibility features help users who have physical disabilities such as restricted mobility or limited vision use software products successfully. The accessibility features in z/OS can help users do the following tasks:

- Run assistive technology such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using the keyboard.
- Customize display attributes such as color, contrast, and font size.

Consult assistive technologies

Assistive technology products such as screen readers function with the user interfaces found in z/OS. Consult the product information for the specific assistive technology product that is used to access z/OS interfaces.

Keyboard navigation of the user interface

You can access z/OS user interfaces with TSO/E or ISPF. The following information describes how to use TSO/E and ISPF, including the use of keyboard shortcuts and function keys (PF keys). Each guide includes the default settings for the PF keys.

- *z/OS TSO/E Primer*
- *z/OS TSO/E User's Guide*
- *z/OS ISPF User's Guide Vol I*

Dotted decimal syntax diagrams

Syntax diagrams are provided in dotted decimal format for users who access IBM Knowledge Center with a screen reader. In dotted decimal format, each syntax element is written on a separate line. If two or more syntax elements are always present together (or always absent together), they can appear on the same line because they are considered a single compound syntax element.

Each line starts with a dotted decimal number; for example, 3 or 3.1 or 3.1.1. To hear these numbers correctly, make sure that the screen reader is set to read out punctuation. All the syntax elements that have the same dotted decimal number (for example, all the syntax elements that have the number 3.1) are mutually exclusive alternatives. If you hear the lines 3.1 USERID and 3.1 SYSTEMID, your syntax can include either USERID or SYSTEMID, but not both.

The dotted decimal numbering level denotes the level of nesting. For example, if a syntax element with dotted decimal number 3 is followed by a series of syntax elements with dotted decimal number 3.1, all the syntax elements numbered 3.1 are subordinate to the syntax element numbered 3.

Certain words and symbols are used next to the dotted decimal numbers to add information about the syntax elements. Occasionally, these words and symbols might occur at the beginning of the element itself. For ease of identification, if the word or symbol is a part of the syntax element, it is preceded by the backslash (\) character. The * symbol is placed next to a dotted decimal number to indicate that the syntax element repeats. For example, syntax element *FILE with dotted decimal number 3 is given the format 3 * FILE. Format 3* FILE indicates that syntax element FILE repeats. Format 3* * FILE indicates that syntax element * FILE repeats.

Characters such as commas, which are used to separate a string of syntax elements, are shown in the syntax just before the items they separate. These characters can appear on the same line as each item, or on a separate line with the same dotted decimal number as the relevant items. The line can also show another symbol to provide information about the syntax elements. For example, the lines 5.1*, 5.1 LASTRUN, and 5.1 DELETE mean that if you use more than one of the LASTRUN and DELETE syntax elements, the elements must be separated by a comma. If no separator is given, assume that you use a blank to separate each syntax element.

If a syntax element is preceded by the % symbol, it indicates a reference that is defined elsewhere. The string that follows the % symbol is the name of a syntax fragment rather than a literal. For example, the line 2.1 %OP1 means that you must refer to separate syntax fragment OP1.

The following symbols are used next to the dotted decimal numbers.

? indicates an optional syntax element
The question mark (?) symbol indicates an optional syntax element. A dotted decimal number followed by the question mark symbol (?) indicates that all the syntax elements with a corresponding dotted decimal number, and any subordinate syntax elements, are optional. If there is only one syntax element with a dotted decimal number, the ? symbol is displayed on the same line as the syntax element, (for example 5? NOTIFY). If there is more than one syntax element with a dotted decimal number, the ? symbol is displayed on a line by itself, followed by the syntax elements that are optional. For example, if you hear the lines 5 ?, 5 NOTIFY, and 5 UPDATE, you know that the syntax elements NOTIFY and UPDATE are optional. That is, you can choose one or none of them. The ? symbol is equivalent to a bypass line in a railroad diagram.

! indicates a default syntax element
The exclamation mark (!) symbol indicates a default syntax element. A dotted decimal number followed by the ! symbol and a syntax element indicate that the syntax element is the default option for all syntax elements that share the same dotted decimal number. Only one of the syntax elements that share the dotted decimal number can specify the ! symbol. For example, if you hear the lines 2? FILE, 2.1! (KEEP), and 2.1 (DELETE), you know that (KEEP) is the default option for the FILE keyword. In the example, if you include the FILE keyword, but do not specify an option, the default option KEEP is applied. A default option also applies to the next higher dotted decimal number. In this example, if the FILE keyword is omitted, the default FILE(KEEP) is used. However, if you hear the lines 2? FILE, 2.1, 2.1.1! (KEEP), and 2.1.1 (DELETE), the default option KEEP applies only to the next higher dotted decimal number, 2.1 (which does not have an associated keyword), and does not apply to 2? FILE. Nothing is used if the keyword FILE is omitted.

* indicates an optional syntax element that is repeatable
The asterisk or glyph (*) symbol indicates a syntax element that can be repeated zero or more times. A dotted decimal number followed by the * symbol indicates that this syntax element can be used zero or more times; that is, it is optional and can be repeated. For example, if you hear the line 5.1* data area, you know that you can include one data area, more than one data area, or no data area.

If you hear the lines 3* , 3 HOST, 3 STATE, you know that you can include HOST, STATE, both together, or nothing.

Notes:

1. If a dotted decimal number has an asterisk (*) next to it and there is only one item with that dotted decimal number, you can repeat that same item more than once.

2. If a dotted decimal number has an asterisk next to it and several items have that dotted decimal number, you can use more than one item from the list, but you cannot use the items more than once each. In the previous example, you can write HOST STATE, but you cannot write HOST HOST.

3. The * symbol is equivalent to a loopback line in a railroad syntax diagram.

+ indicates a syntax element that must be included

The plus (+) symbol indicates a syntax element that must be included at least once. A dotted decimal number followed by the + symbol indicates that the syntax element must be included one or more times. That is, it must be included at least once and can be repeated. For example, if you hear the line 6.1+ data area, you must include at least one data area. If you hear the lines 2+, 2 HOST, and 2 STATE, you know that you must include HOST, STATE, or both. Similar to the * symbol, the + symbol can repeat a particular item if it is the only item with that dotted decimal number. The + symbol, like the * symbol, is equivalent to a loopback line in a railroad syntax diagram.

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Policy for unsupported hardware

Various z/OS elements, such as DFSMS, JES2, JES3, and MVS, contain code that supports specific hardware servers or devices. In some cases, this device-related element support remains in the product even after the hardware devices pass their announced End of Service date. z/OS may continue to service element code; however, it will not provide service related to unsupported hardware devices. Software problems related to these devices will not be accepted for service, and current service activity will cease if a problem is determined to be associated with out-of-support devices. In such cases, fixes will not be issued.

Minimum supported hardware

The minimum supported hardware for z/OS releases identified in z/OS announcements can subsequently change when service for particular servers or devices is withdrawn. Likewise, the levels of other software products supported on a particular release of z/OS are subject to the service support lifecycle of those products. Therefore, z/OS and its product publications (for example, panels, samples, messages, and product documentation) can include references to hardware and software that is no longer supported.

• For information about software support lifecycle, see: IBM Lifecycle Support for z/OS (www.ibm.com/software/support/systemsz/lifecycle)

• For information about currently-supported IBM hardware, contact your IBM representative.

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