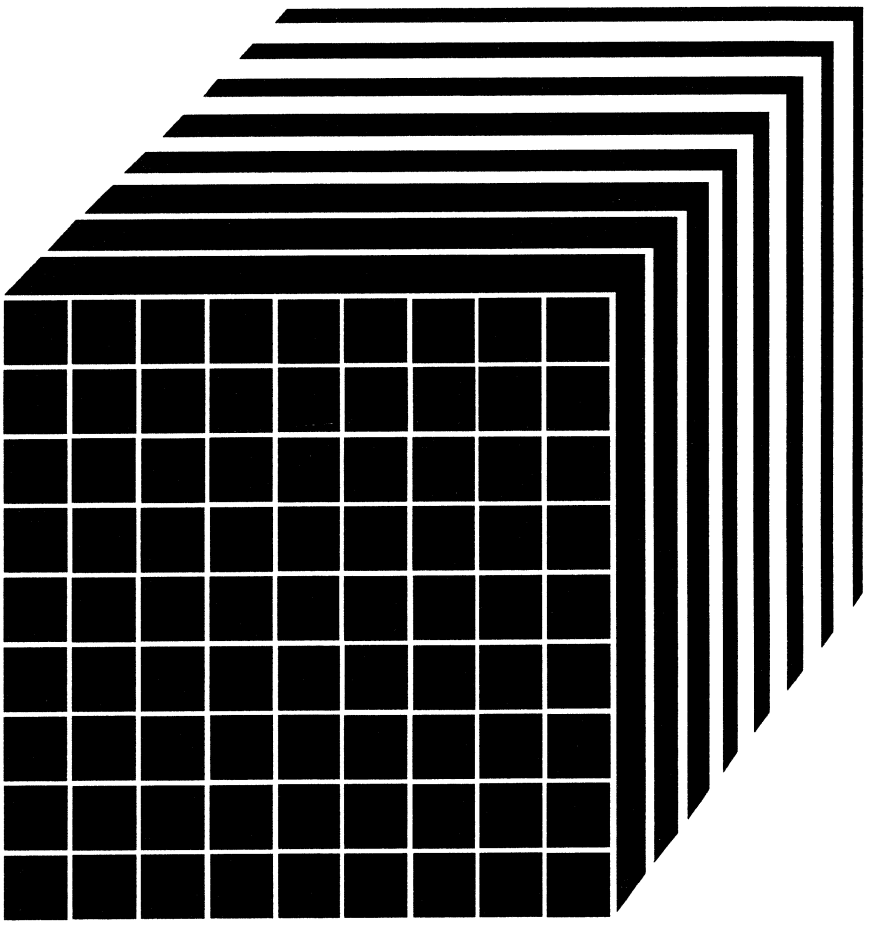
IBM

Virtual Machine/ System Product

Release 5 Guide

Release 5

SC24-5290-0



First Edition (December 1986)

This edition, SC24-5290-0, applies to Release 5 of the Virtual Machine/System Product (VM/SP), program number 5664-167, unless otherwise indicated in new editions or Technical Newsletters. Changes are made periodically to the information herein; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30xx, and 4300 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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Preface

Purpose

This manual describes additions and enhancements available with Virtual Machine/System Product (VM/SP) Release 5. This manual describes the main effects of each addition and enhancement to help you understand and take advantage of the changes. However, this manual does not intend to replace the full VM/SP library for new or current users.

Audience

This manual is for current users of VM/SP Release 4 who plan to migrate to Release 5. It is for data processing managers, system programmers, system analysts, and other programming personnel responsible for migrating an installation from VM/SP Release 4 to VM/SP Release 5. Other users, such as application programmers, can also learn about the new release.

Organization

"Part 1: Release 5 Overview" introduces you to new and enhanced functions in VM/SP Release 5 and describes changes to the VM/SP library.

"Part 2: New Facilities and Enhancements in Detail" gives you more detail about the functional changes introduced in VM/SP Release 5.

"Part 3: Special Considerations" describes considerations for migrating to and installing Release 5.

"Part 4: Internal Design Changes" describes changes to the internal design of VM/SP.

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Part 1: Release 5 Overview

A welcome to VM/SP Release 5 that includes:

- A summary of additions and enhancements
- A summary of changes to the VM/SP library.

Chapter 1. Summary of New Facilities and Enhancements

This chapter includes:

- A short description of major additions and enhancements
- A list of other additions and enhancements.

Major Additions and Enhancements

Major Additions and Enhancements in VM/SP Release 5 include:

- Addition of the Transparent Services Access Facility
- Addition of the Central Message Facility
- Addition of the Parsing Facility
- Addition of National Language Support
- Addition of CMS Session Services
- Addition of the System Profile, SYSPROF EXEC
- Addition of the Error Logging System Service
- Addition of the SPOOL System Service
- Addition of Alternate Userid Support
- Enhancement to Reliability, Availability, and Serviceability
- Enhancement of Usability
- Enhancement of the HELP Facility
- Enhancement of Installation and Service Procedures
- Enhancement of the PRINT Command.

Addition of the Transparent Services Access Facility

TSAF provides Advanced Program-to-Program Communication/VM (APPC/VM) services as a means of communication between two virtual machines. The APPC/VM interface provides a limited set of the SNA LU 6.2 base communication functions. TSAF also provides the TSAF virtual machine component to handle communication between systems by letting APPC/VM paths span more than one VM system.

TSAF lets you connect to and communicate with local or remote virtual machines within a collection of VM systems. With TSAF, you connect to a program by specifying a name the program has made known, instead of specifying a virtual machine userid and nodeid.

Refer to Chapter 3, "Addition of the Transparent Services Access Facility" on page 25 for more information about TSAF.

Addition of the Central Message Facility

The Central Message Facility lets you store all your message texts in a file or "repository." In this way, you just have to access the repository to display a message.

Refer to Chapter 4, "Addition of the Central Message Facility" on page 29 and Chapter 6, "Addition of National Language Support" on page 33 for more information about the Central Message Facility.

Addition of the Parsing Facility

The Parsing Facility parses and translates command arguments. Using the Definition Language for Command Syntax (DLCS), you can change keywords or command names to make it easier to communicate with CMS.

Refer to Chapter 5, "Addition of the Parsing Facility" on page 31 and Chapter 6, "Addition of National Language Support" on page 33 for more information about the Parsing Facility.

Additions and Enhancements

Addition of National Language Support

National Language Support lets you enter CMS commands and receive system messages in languages other than American English. In order for you to work in another language, the system administrator has to set up the appropriate language files.

Because of National Language Support, you can also:

- Separate message text from programs using message "repository" files
- Separate command syntax checking from programs using Definition Language for Command Syntax (DLCS) files.

Refer to Chapter 6, "Addition of National Language Support" on page 33 for more information about National Language Support.

Addition of CMS Session Services

CMS Session Services includes:

- Window functions for the end user
- A full-screen environment for CMS
- The CONSOLE macro for applications doing 3270 I/O
- Updates to the System Product Editor (XEDIT).

Refer to Chapter 7, "Addition of CMS Session Services" on page 37 for more information about CMS Session Services.

Addition of the System Profile, SYSPROF EXEC

The system profile is a new exec, SYSPROF EXEC, that contains part of the CMS initialization function previously done in a module. Your installation can use it to tailor the CMS environment.

Refer to Chapter 8, "Addition of the System Profile, SYSPROF EXEC" on page 43 for more information about the system profile.

Addition of the Error Logging System Service

The Error Logging System Service is a new IUCV system service that lets a virtual machine receive a copy of all records currently written to the VM/SP CP Error Recording Area.

Refer to Chapter 9, "Addition of the Error Logging System Service" on page 47 for more information about the Error Logging System Service.

Addition of the SPOOL System Service for Advanced Function Printers

The SPOOL System Service is a new IUCV system service that gives authorized users an interface for communication between CP and a "printer subsystem."

Refer to Chapter 10, "Addition of the SPOOL System Service for Advanced Function Printers" on page 49 for more information about the SPOOL System Service.

Addition of Alternate Userid Support

A "master" virtual machine can now tell CP the userid of a worker machine doing requested work and the userid of the end-user for which it is authorized to work.

Refer to Chapter 11, "Addition of Alternate Userid Support" on page 53 for more information about alternate userid support.

Enhancement of Usability

Enhancements that improve usability include:

- Logon from the Logo Screen
- Enhancements for Remote and VM/VTAM Terminals
- Protected Application Environment
- Addition of DIAGNOSE Code X'B0'
- New Option on the NAMESYS Macro
- Expanded DIAGNOSE Code X'08' Support
- Enhancement of the Inter-User Communications Vehicle (IUCV).

Refer to Chapter 12, "Enhancement of Usability" on page 55 for more information about these usability enhancements.

Enhancement of the HELP Facility

HELP enhancements include:

- New HELP Command Options
- Toggling (Switching) Ability
- Windowing of BRIEF HELP
- MOREHELP command
- Control Section Keywords
- DEFAULTS Command Enhancement
- Improved Search Algorithm
- National Language Support.

Refer to Chapter 13, "Enhancement of the HELP Facility" on page 59 for more information about HELP enhancements.

Enhancement of Installation and Service Procedures

New installation tools and profiles are :

ITASK EXEC	invokes other tools to do installation tasks
SPGEN EXEC	manages various system generation and maintenance functions
SPGEN PROFILE	contains information used by SPGEN EXEC
SPLOAD EXEC	manages tape loading functions
SPLOAD PROFILE	contains information used by SPLOAD EXEC
UTILITY EXEC	provides occasionally-used utility functions.

New service execs are:

VMFNLS EXEC	applies updates to national language files
VMFTXT EXEC	creates text libraries

VMFREMOV EXEC removes PTFs applied by VMFMERGE.

Note: VMFREMOV is object code only.

Other changes include:

- The volume labels on DASD used for installation have been renamed.
- Virtual machines listed in the base directory, except the MAINT and OPERATOR userids, are shipped with the NOLOG option.
- The INCLUDE, LOAD, and GENMOD commands let you include comments from TEXT files into MODULE files.
- The VMFMERGE EXEC places service history information in the TEXT files being serviced.

  In addition:

  - the limitation of being able to handle only ten nested PTFs has been removed.
  - VMFMERGE maintains a log (prodid VMFREQBY) for merged PTFs. VMFREMOV uses this log for its processing.
- The VMFLOAD EXEC has a new operand that lets you specify the national language of files you want to load into the nucleus.
- DMSNGP ASSEMBLE, the CMS Nucleus Generation Profile, contains responses to prompts you receive when you generate the CMS nucleus.

- A new, optional Installation Discontiguous Shared Segment (DCSS), CMSINST, contains execs and editor macros.
- A new Discontiguous Shared Segment (DCSS), HELP, contains HELP file directory information.

Refer to Chapter 14, "Enhancement of Installation and Service Procedures" on page 63 for more information about installation and service procedures.

Enhancement of the PRINT Command

The PRINT command has a new option that lets you print files with records larger than the virtual printer's carriage size. It also supports the use of X'5A' as a special carriage control character.

Refer to Chapter 15, "Enhancement of the PRINT Command" on page 69 for more information about the PRINT command.

Enhancement to Reliability, Availability, and Serviceability

Enhancements made to improve system reliability, availability and serviceability (RAS) include:

- Alternate Nucleus Support
- LOGON/LOGOFF Enhancements
- SPOOL File Compression Support
- CPTRAP, TRAPRED, and QUERY Function Enhancements
- Interactive Problem Control System (IPCS) Enhancements.

Refer to Chapter 16, "Enhancements to Reliability, Availability and Serviceability" on page 71 for more information about these enhancements.

Other Additions and Enhancements

This section lists other additions and enhancements provided by VM/SP Release 5.

- Enhancement of the System Product Interpreter
  - Enhancement of the DATE Function
  - Addition of New Function Calls for DIAGNOSE Codes X'C8' and X'CC'
- Enhancement of the Control Program (CP)
  - Addition of DIAGNOSE Code X'BC'
  - Enhancement of the DETACH Command
  - Enhancement of the VM/SP Message Identifier
- Enhancement of the Conversational Monitor System (CMS)
  - Addition of Alternate Tape Drive Support
  - Addition of the VALIDATE Command
  - Addition of the CMSDEV Macro
  - Addition of Shared Storage Access
  - Enhancement of the PRINTL Macro
  - Enhancement of the RDCARD Macro
  - Enhancement of the TXTLIB Command
  - Enhancement of the GLOBAL Command
  - Enhancement of the RDRLIST Command
  - Enhancement of the EXECIO Command
  - Enhancement of the FORMAT Command

  - Enhancement of CMS IUCV Support
  - Enhancements for Execs in Storage
  - Migration of CMS Commands and Modules to the CMS Nucleus
- Enhancement of the Group Control System (GCS)
  - Enhancement of IUCV Support
  - Enhancement of Serviceability
  - Enhancement of the GLOBAL Command
- Between-Release Support
  - Addition of Enhanced Connectivity Facilities on VM/SP
  - Addition of 3480 Volume Serial Error Recording
  - Addition of Vector Processing Support
  - Addition of OS Simulation Standard Label Tape Processing Exits
  - Addition of Auto-Deactivation of Restricted Passwords
  - Addition of IX/370 Handshaking Support
  - Addition of Access Verification Routines Support
  - Addition of IBM 3422 Magnetic Tape Subsystem
  - Addition of IBM Extended Data Stream Support for VM/Pass-Through Facility
  - Addition of the CONSOLE Macro
  - Enhancements to Security
  - Enhancement of the Logical Device Host Limit Relief
  - Enhancements to Support of ASCII
  - Enhancement of the VM/SP Directory
  - Enhancement of 3380 Direct Access Storage Device Support.

Chapter 2. VM/SP Library

This chapter lists the manuals that make up the VM/SP library and describes changes to the library for Release 5.

The chapter includes:

- Bill-of-forms for easy ordering
- Changes to the library.

Bill-of-Forms Number for Easy Ordering

Manuals

For easy ordering, there is one bill-of-forms number, SBOF-3241, that you can use to order the entire set of:

- 31 publications
- 12 binders
- binder labels.

Or, you can order them separately:

GC19-6200 *VM/SP Introduction*

GC19-6206 *VM/SP Terminal Reference*

GC19-6207 *VM/SP Library Guide, Glossary, and Master Index*

GC19-6212 *VM Running Guest Operating Systems*

GC20-1838 *VM/SP General Information*

SC19-6201 *VM/SP Planning Guide and Reference*

SC19-6202 *VM/SP Operator's Guide*

SC19-6204 *VM/SP System Messages and Codes*

SC19-6209 *VM/SP CMS Command Reference*

SC19-6210 *VM/SP CMS User's Guide*

SC19-6211 *VM/SP CP Command Reference*

SC24-5219 *VM/SP EXEC 2 Reference*

SC24-5220 *VM/SP System Product Editor User's Guide*

SC24-5221 *VM/SP System Product Editor Command and Macro Reference*

SC24-5236 *VM/SP CMS Primer*

SC24-5237 *VM/SP Installation Guide*

SC24-5238 *VM/SP System Product Interpreter User's Guide*

SC24-5239 *VM/SP System Product Interpreter Reference*

SC24-5242 *VM/SP CMS Primer for Line-Oriented Terminals*

SC24-5247 *VM/SP Application Development Guide*

SC24-5250 *VM/SP Group Control System Command and Macro Reference*

SC24-5264 *VM/SP System Messages Cross-Reference*

SC24-5282 *VM/SP Problem Reporting Guide*

SC24-5284 *VM/SP CMS Macros and Functions Reference*

SC24-5285 *VM/SP CP for System Programming*

SC24-5286 *VM/SP CMS for System Programming*

SC24-5287 *VM/SP Transparent Services Access Facility Reference*

SC24-5288 *VM System Facilities for Programming*

SC24-5290 *VM/SP Release 5 Guide*

SC24-5291 *VM Programmer's Guide to the Server-Requester Programming Interface for VM/SP*

SX20-4400 *VM/SP Quick Reference*

SX24-5129 VM/SP Library Binder

SX24-5131 VM/SP Library Binder Label Set

Reference Summaries

You can order reference summaries by using the bill-of-forms number, SBOF-3242, or you can order them separately. The reference summaries you receive by ordering the bill-of-forms number are:

SX20-4401 *VM/SP Commands (General User) Reference Summary*

SX20-4402 *VM/SP Commands (Other than General User) Reference Summary*

SX24-5122 *VM/SP SP Editor Command Language Reference Summary*

SX24-5124 *VM/SP EXEC 2 Language Reference Summary*

SX24-5126 *VM/SP System Product Interpreter Language Reference Summary*

SX24-5151 *VM/SP CMS Primer Summary of Commands*

SX24-5159 *VM/SP CMS Primer for Line-Oriented Terminals Summary of Commands*

SX24-5171 *VM Problem Reporting Summary (Poster)*

SX24-5173 *VM Summary of End Use Tasks and Commands (Poster)*

Refer to the *VM/SP Library Guide, Glossary, and Master Index* for more information about the VM/SP library.

Items Not Available in a Bill-of-Forms

You can order the following with their order numbers:

SX24-5123 *VM/SP Editor Program Function Key Template*

SX24-5139 Publication Storage Box

SC24-5241 *VM/SP Distributed Data Processing Guide*

Changes to the Library

New Manuals

The following manuals are new to the VM/SP library for Release 5.

SC24-5284, CMS Macros and Functions Reference

This manual provides CMS users with detailed information about CMS assembler language macro instructions and CMS functions. The information was formerly in the *VM/SP CMS Command and Macro Reference* and the *VM/SP CMS User's Guide*.

SC24-5285, CP for System Programming

This manual tells how to use and implement the functions of the Control Program (CP) of VM/SP. It contains material formerly in the *VM/SP System Programmer's Guide*, SC19-6203, and the *VM/SP Operator's Guide*, SC19-6202. A new chapter describing Alternate Nucleus Support makes it easier to do an IPL with a backup copy of the system nucleus.

SC24-5286, CMS for System Programming

This manual provides a system programmer with detailed information about the Conversation Monitor System (CMS) of VM/SP. Details on interrupt handling, CMS storage maps, CMS external macros, programming support for OS and VSE, access method support, CMS support of OS and DOS VSAM functions, and the CMS Batch Facility were formerly in the CMS section of the *VM/SP System Programmer's Guide*, SC19-6203. Information has also been extracted from the *VM/SP CMS User's Guide*, SC19-6210.

SC24-5287, Transparent Services Access Facility Reference

This manual contains all the reference material needed to use the Transparent Services Access Facility (TSAF). For the system administrator, it includes information about how to run the TSAF virtual machine and the service tools provided with it. For the application programmer, it includes a complete description of the Advanced Program-to-Program Communication/VM (APPC/VM) protocol, new with TSAF, and the system services associated with TSAF.

SC24-5288, System Facilities for Programming

This manual provides a system programmer with detailed information about external interfaces available in VM/SP. These interfaces include the DIAGNOSE instruction, the Inter-User Communications Vehicle (IUCV) for CP and CMS, CP System Services, the Virtual Machine Communication Facility (VMCF), and the Programmable Operator Facility. Information was formerly in the *VM/SP System Programmer's Guide*, SC19-6203, and in

the section on the Programmable Operator Facility in the *VM/SP Operator's Guide*, SC19-6202.

SC24-5291, Programmer's Guide to the Server-Requester Programming Interface for VM/SP

This manual provides an application programmer with information about how to write and install IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities. For the work station (for example, IBM Personal Computer) user, the manual also gives information about how to start IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities communications on VM/SP.

LY24-5241, Diagnosis Guide

This VM manual contains information to aid the system programmer in debugging CP, CMS, TSAF, and GCS. It also contains information about IPCS and the DUMPSCAN subcommands. This manual is a combination of information formerly in: chapters 45-47 of the *VM/SP System Programmer's Guide*, SC19-6203; chapter two and Appendix B of the *GCS Guide*, SC24-5249; and the *IPCS Guide*, SC24-5260. Information has also been extracted from the *VM/SP CMS User's Guide*, SC19-6210, and the *VM/SP Operator's Guide*, SC19-6202.

Release 4 Manuals

The following manual and its reference summary relate to VM/SP Release 4. Their descriptions do not appear in the *VM/SP Release 4 Guide*, because they were published after the *VM/SP Release 4 Guide*.

SC24-5282, Problem Reporting Guide

This book helps you identify a problem when it occurs in your VM system, get information about the problem, and report the problem and information about it to IBM in a complete, organized, and useful form.

SX24-5171, The VM/SP Problem Solving and Reporting Summary

This document accompanies the *VM/SP Problem Reporting Guide* as a poster. It summarizes the procedures for getting information about problems, errors, and malfunctions, as described in the manual.

Enhancements to Existing Manuals

All of the existing manuals in the VM/SP library include changes required by VM/SP Release 5. The following existing manuals in the library have undergone changes other than those due to changes in VM/SP:

GC19-6207, Library Guide, Glossary, and Master Index

This manual has new figures and cartoons that make it a more usable guide to the VM/SP library. Index entries in the master index are more consistent.

SC19-6201, Planning Guide and Reference

This manual has a new organization for VM/SP Release 5. Among the additions are: a glossary of terms; tables of contents within each chapter; new figures; tables to replace lists; cross-references to the *VM/SP Installation Guide* and other VM/SP books; information about IPCS and GCS from the *VM/SP System Programmer's Guide*, SC19-6203; and information about GCS from the *VM/SP GCS Guide*, SC24-5249. Privilege class information, previously in Chapter 19, is now in the *CP for System Programming*. Appendix C that formerly contained licensed program information, has been deleted.

SC19-6202, Operator's Guide

The CP privilege class command descriptions, formerly Chapter 3, are now in the *CP Command Reference*. The VM/SP service program descriptions, formerly Chapter 4, are now in the appropriate books in the system programmer series: the *VM/SP CP for System Programming*; the *VM System Facilities for Programming*; and the *VM Diagnosis Guide*. Therefore, the *VM/SP Operator's Guide* contains only operator tasks including hardware and software considerations, with pointers to other books for more detail.

SC19-6206, Terminal Reference

Chapter four now describes the IBM 7171 ASCII device attachment control unit and the IBM 3161/3163 ASCII display station.

SC19-6209, CMS Command Reference

Part three containing CMS functions and Part four containing CMS macro instructions are now in the *VM/SP CMS Macros and Functions Reference.*

SC19-6211, CP Command Reference

The CP commands formerly in the *VM/SP Operator's Guide* are now in this manual, so this manual contains information about CP commands for all privilege classes.

SC19-6210, CMS User's Guide

This manual now contains information for general VM/SP users. The manual still includes information about VM/SP environments, the CMS file system, editing, using the CMS batch facility, creating and using execs, using HELP, and tailoring the CMS system. The sections of most use to system programmers (Programming for the CMS Environment, Developing OS Programs Under CMS, Developing VSE Programs Under CMS, and

Using Access Method Services and VSAM Under CMS and CMS/DOS) are now in *VM/SP CMS for System Programming*. The chapter on debugging programs using CMS is now in the *VM Diagnosis Guide*.

SC24-5237, Installation Guide

The two chapters about VM/SP installation (using a Starter System and not using a Starter System) have been rewritten. Both chapters now include the GROUP EXEC panels for installing GCS, formerly in the *VM/SP Group Control System Guide*, SC24-5249. The introductory chapter has also been rewritten. A new chapter contains planning information. The chapters about service have been rewritten for clarity and usability. Two new appendices have been added: one provides the address, size, and content of the minidisks reserved for the MAINT userid; the other contains samples of the installation and system generation profiles. The information on control file identifiers has also been moved to an appendix.

Manuals No Longer Part of the VM/SP Library

The following manuals are available at the Release 4 level but are not part of the VM/SP Release 5 library:

SC19-6203, *VM/SP System Programmer's Guide*

SC19-6205, *VM/SP OLTSEP and Error Recording Guide*

SC24-5249, *VM/SP Group Control System Guide*

SC24-5256, *VM/SP System Definition Files*

SC24-5260, *VM/SP Interactive Problem Control System Guide*

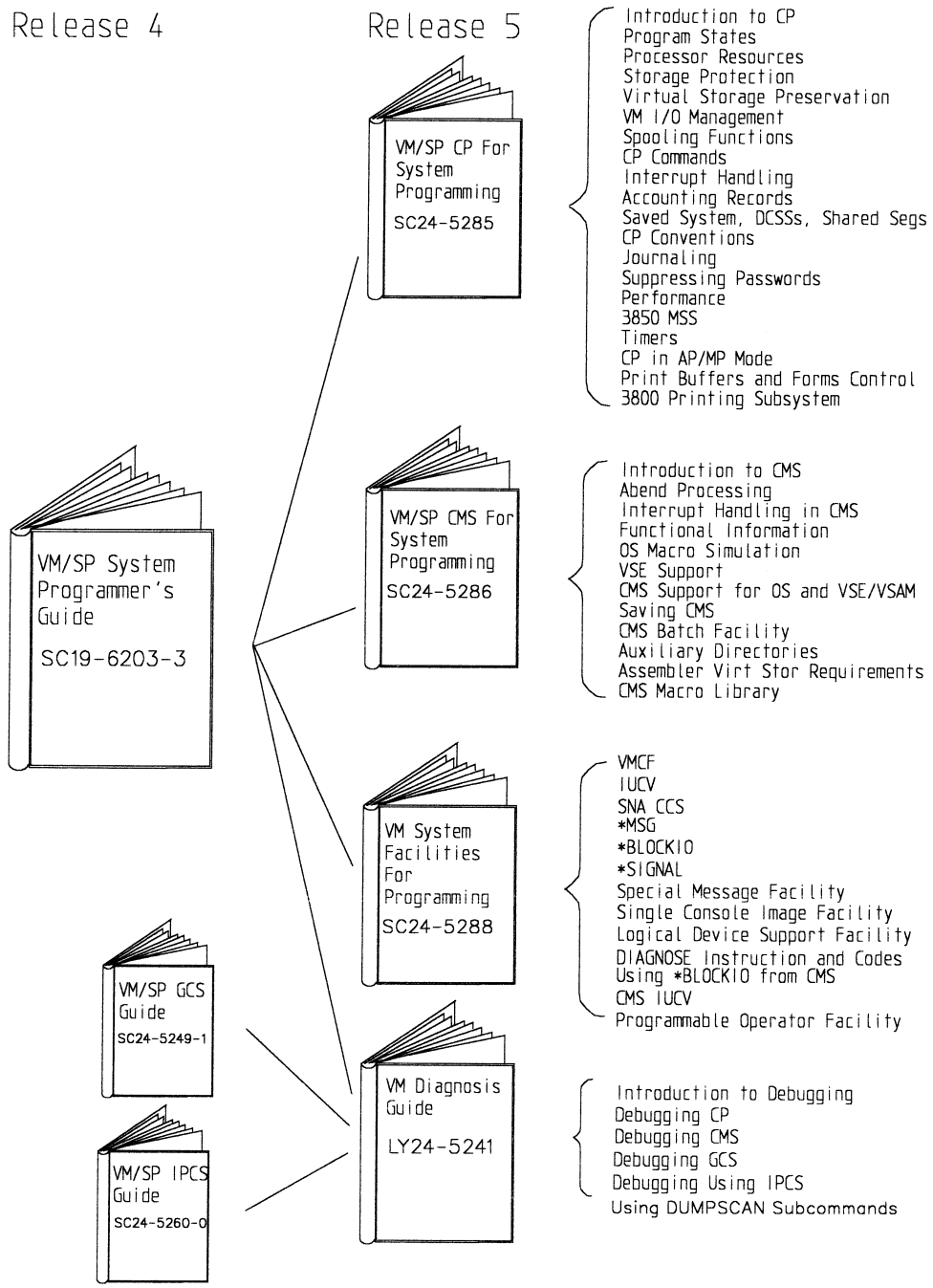
Note: Information formerly contained in these manuals might now be in other manuals. Refer to "New Manuals" on page 16 and "Enhancements to Existing Manuals" on page 17 for more information.

A reference summary that is no longer part of the library is:

SX24-5318, *VM/SP Interactive Problem Control System Reference Summary*

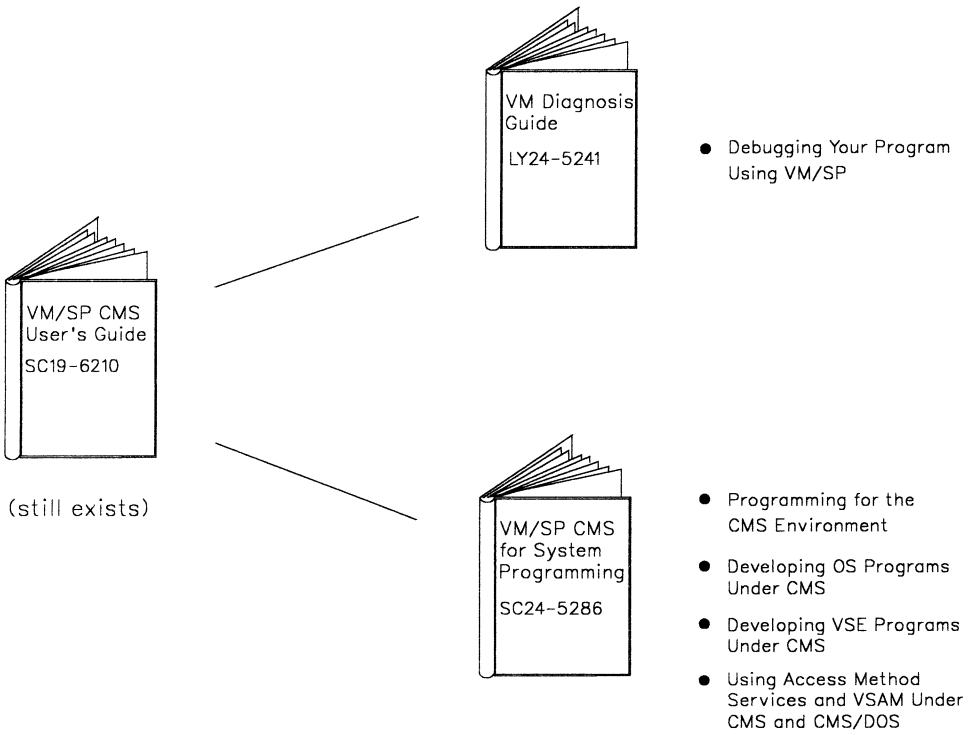
System Programmer's Guide Split

The following figure shows library changes due to the *System Programmer's Guide* split:



CMS User's Guide Changes

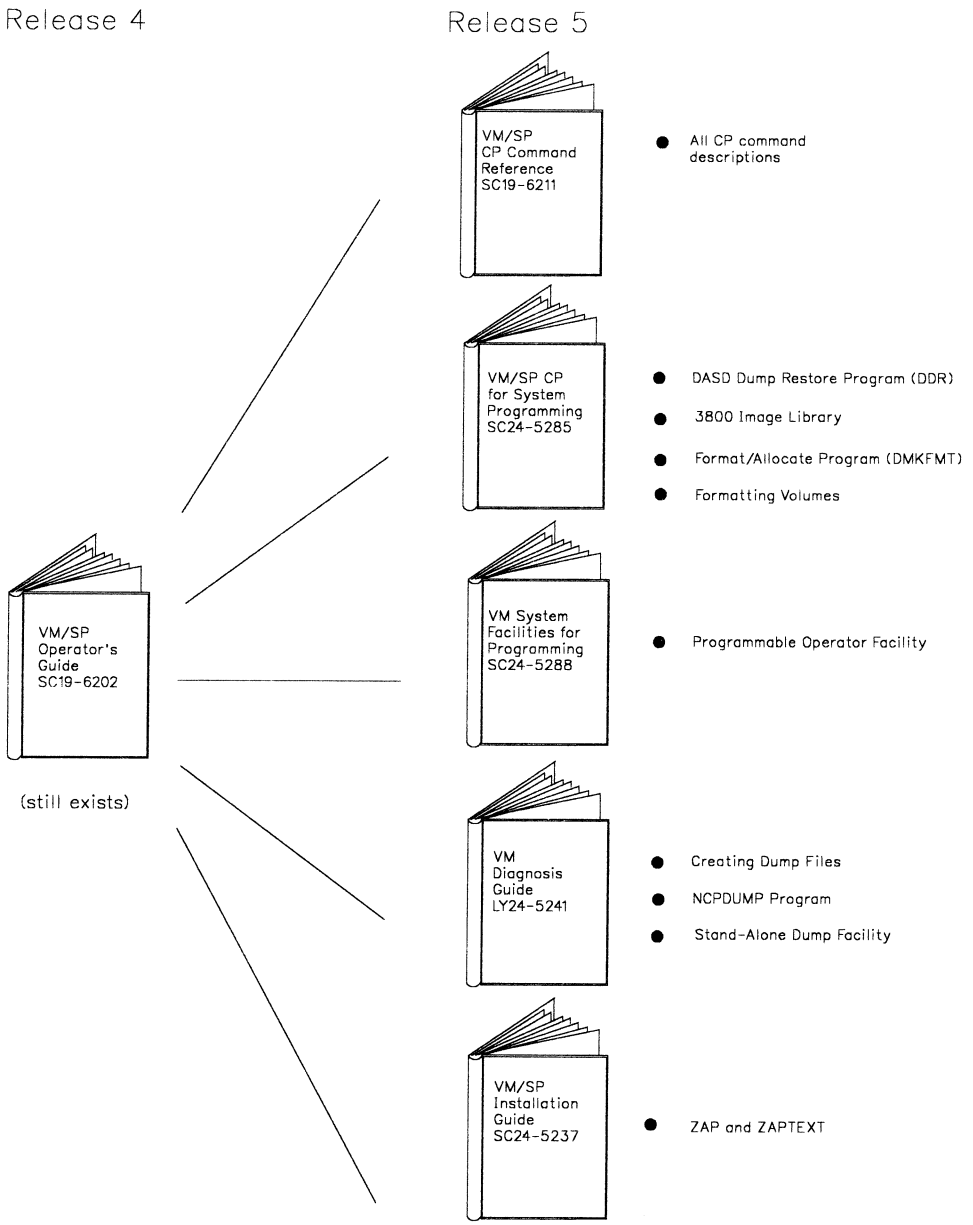
The following figure shows information that is no longer in the *VM/SP CMS User's Guide*:



Refer to "SC19-6210, CMS User's Guide" on page 18 for information about the contents of this manual.

Operator's Guide Changes

The following figure shows information that is no longer in the *VM/SP Operator's Guide*:



Refer to "SC19-6202, Operator's Guide" on page 18 for information about the contents of this manual.

Part 2: New Facilities and Enhancements in Detail

This part of the manual describes the functional changes introduced in Release 5.

The subjects described are:

- Transparent Services Access Facility
- Central Message Facility
- Parsing Facility
- National Language Support
- CMS Session Services
- System Profile
- Error Logging System Service
- SPOOL System Service
- Alternate Userid Support
- Usability
- HELP Facility
- Installation and Service Procedures
- PRINT Command
- Reliability, Availability, and Serviceability
- System Product Interpreter
- Control Program
- Conversational Monitor System
- Group Control System
- Between-Release Support.

Chapter 3. Addition of the Transparent Services Access Facility

The **VM/SP Transparent Services Access Facility (TSAF)** is a VM/SP component that lets you communicate with local or remote virtual machines within a collection of VM systems.

The TSAF support consists of three major areas:

- Advanced Program-to-Program Communication/VM (APPC/VM)
- The TSAF virtual machine
- The CP System Services, Identify and Collection Resource Management.

TSAF Program Communication Services

Programs communicate by using two TSAF program communication services:

- The APPC/VM program interface for VM program-to-VM program communication (provided by the APPCVM macro)
- IUCV functions used as a VM program-to-CP interface (provided by the IUCV macro).

The APPC/VM Program Interface

TSAF provides an APPC/VM program interface as a means of communication between programs in two virtual machines. This APPC/VM interface provides a limited set of the SNA LU 6.2 base communication functions and provides the following services within a single VM system and throughout a collection of VM systems:

- Establish and sever communication paths
- Send and receive data
- Send and receive error and control information.

APPC/VM lets you pass any amount of information between virtual machines in a collection of VM systems that are all using TSAF.

The IUCV Functions for Use with APPC/VM

Applications that use APPC/VM must also use a set of IUCV functions in order to establish and control the APPC/VM environment. These IUCV functions are unique to VM and are not part of the SNA LU 6.2 (APPC architecture) verb interface. The IUCV functions provide information between a VM program and CP about the following:

- APPC/VM communication paths

  IUCV provides functions to:

  - Establish an interrupt buffer for an APPC/VM path
  - Accept an APPC/VM path connection
  - Release an interrupt buffer for an APPC/VM path.

- APPC/VM and IUCV interrupts

  IUCV provides functions to:

  - Enable and disable interrupts
  - Interrogate interrupts
  - Process interrupts.

TSAF Virtual Machine

The TSAF virtual machine is a separate component in VM/SP that runs on CMS and is controlled using its own TSAF commands. The TSAF virtual machine keeps track of all the resources within the group of systems, or collection. A resource is an entity (such as a program, a data file, a set of files, or a device) necessary to perform a computation. Resources can be shared throughout the collection. Each system in a TSAF collection must have the TSAF virtual machine running.

The TSAF virtual machine is easy to set up and nearly operates itself. The TSAF virtual machines in a collection:

- Dynamically set up their own collection without the need for an operator
- Reconfigure the collection and choose new routes for communications to follow, if a system enters or leaves the collection.

Multiple users can have access to a resource at the same time. With proper authorization, you can connect to a resource anywhere within the collection, yet it seems like the resource is on your own system.

Collection Resource Management and Identify System Services

The Collection Resource Management System Service gives a TSAF virtual machine the ability to be a TSAF virtual machine and to query and change the local VM resource table.

The Identify System Service lets authorized virtual machines connect to it to be a resource manager and to own or revoke resources.

Reference

Refer to the *VM/SP Transparent Services Access Facility Reference* for more information about the TSAF facility.

Transparent Services Access Facility

Chapter 4. Addition of the Central Message Facility

Instead of coding message texts directly in a program, you can store all your message texts in a file or "repository." When you want to display a message, access the repository file and retrieve the message text you want.

Having all message text in a central file has the following advantages:

- Message text does not clutter your program.
- You can access the same message from many programs without specifying the message text each time.

New Commands and New Macro

A new command, GENMSG, compiles the message repository. You can then use the SET LANGUAGE command to make your message repository available.

Once the message file is available, you can access messages from REXX (Restructured Extended Executor language) programs, EXEC 2 execs, and CMS with the new XMITMSG command, or from assembler programs with the new APPLMSG macro.

National Language Support

Your message repository can be translated if you want your system messages to be available in a language other than American English. Refer to Chapter 6, "Addition of National Language Support" on page 33 for more information.

Reference

Refer to *VM/SP CMS for System Programming* for more information about making a message repository. Refer to the *VM/SP CMS Command Reference* for more information about the new commands. Refer to the *VM/SP CMS Macros and Functions Reference* for more information about the APPLMSG macro.

Central Message Facility

Chapter 5. Addition of the Parsing Facility

The Parsing Facility parses and translates command arguments. For a list of CMS commands that use the Parsing Facility, see *VM/SP CMS for System Programming*.

Just a few of the facility's advantages include:

- You keep syntax definitions in a separate file.
- Definition Language for Command Syntax (DLCS) keeps command syntax consistent.
- You can do parsing for EXEC 2 execs, REXX programs and BAL programs.

Two new CMS commands added for parsing are:

CONVERT COMMANDS takes an editable syntax definition table (DLCS file) and verifies its correctness or creates an "internal" form of the table (i.e. a text deck) for the Parsing Facility to use.

PARSECMD parses a command from a REXX program or EXEC 2 exec.

The new PARSECMD macro parses a command from an assembler program.

Defining Command Syntax

To use the Parsing Facility for your own commands, you have to define command syntax in a special language, the Definition Language for Command Syntax (DLCS).

You keep DLCS definitions for the command syntax in CMS files. A file can contain more than one DLCS definition. The Parsing Facility parses a specified command by checking to see if all operands, options, keywords, and so on, are specified according to the DLCS definition for that command. Therefore, you do not have to check syntax in your program.

National Language Support

If you want to be able to invoke your program in another national language, you just have to modify your DLCS file. Refer to Chapter 6, "Addition of National Language Support" on page 33 for more information.

Reference

Refer to *VM/SP CMS for System Programming* for more information about using the Parsing Facility and DLCS. Refer to the *VM/SP CMS Command Reference* for more information about the new commands. Refer to the *VM/SP CMS Macros and Functions Reference* for more information about the PARSECMD macro.

Chapter 6. Addition of National Language Support

National Language Support lets you enter CMS commands and receive messages in languages other than American English.

The VM/SP system is shipped with American English as the system national language: you have to enter CMS commands in American English, the panels you see are in American English, and the messages you receive are in American English.

However, you can order and install other languages on your VM/SP system. This lets you interact with VM/SP— enter CMS commands, see panels, and receive messages— in your own national language (if it is available on your system). See your marketing representative to find out what is available on your system for your language.

Note: Make sure your terminals and printing equipment can properly display the character set of any language you order.

Making Other Languages Available

For you to interact with VM/SP in a language other than the supplied system national language, American English, the system administrator must load appropriate language files from tape and then store them in the VM/SP system.

The administrator must decide whether to use the new language as the system national language instead of American English or just make the language available as an option to users.

To install a new system national language, the administrator must load the appropriate language files into the CP, CMS, and GCS nuclei. The procedure for doing this is similar to the one used for adding a local update.

However, to make another language available as just an option to users, the administrator must use:

- The NAMELANG macro to reserve DASD space for the CP message file
- The NAMESYS macro to create a DCSS for CMS language files
- The LANGMERG command to combine all CMS language files into one file
- The LANGGEN command to save the CP and CMS language files.

VM/SP allows multiple languages on one system. The administrator must go through the above process for each language.

Note: Some languages have special characters that might need certain terminal hardware.

Once the files for a language are saved, you can issue the SET LANGUAGE command to set your virtual machine to a language available on your system.

You can automatically set your virtual machine to a specified language when you log on using the new LANG directory option.

Using Other Languages

As a CMS user, you can use your own national language to enter CMS commands, and you can see panels and messages in that language.

You can change the current language of your CMS session and any applications running on CMS with the SET LANGUAGE command. SET LANGUAGE makes all the necessary language files available to your virtual machine.

You can also check the language status of your virtual machine using these commands:

QUERY CPLANG	displays the current language set for issuing CP messages
QUERY LANGUAGE	displays the current language set for issuing CMS messages
QUERY LANGLIST	displays a list of valid languages you can SET for CMS.

Making Your Own Message Repository

You can create your own message repository for storing all your message texts. In this way, just your single message file has to be translated if you want your messages to be available in a language other than American English. Refer to Chapter 4, "Addition of the Central Message Facility" on page 29 for more information about making your own message repository.

Checking Command Syntax

The Parsing Facility parses and translates command arguments. The Parsing Facility also lets non-English users communicate with CMS in their own national language.

You can set and query translations using these commands:

SET TRANSLATE sets user translation synonyms, user translations, system translation synonyms, and system translations on or off.

QUERY TRANSLATE displays the translations and translation synonyms in effect.

Refer to Chapter 5, "Addition of the Parsing Facility" on page 31 for more information about using the Parsing Facility.

Reference

Refer to *VM/SP CMS for System Programming* for more information about making other languages available, using other languages, making a message repository, and using the Parsing Facility and DLCS. Refer to the *VM/SP Installation Guide* for more information about installing a new system national language. Refer to the *VM/SP CMS Command Reference* for more information about the new commands. Refer to the *VM/SP CMS Macros and Functions Reference* for more information about the new macros.

National Language Support

Chapter 7. Addition of CMS Session Services

The addition of CMS Session Services improves the usability of VM/SP on 3270-type terminals. New functions let you work with data through windows. A full-screen environment for CMS lets you use the entire screen to enter input and display output. The CONSOLE macro provides a higher-level interface for applications doing 3270 I/O. In addition, windowing functions are used to display the XEDIT session.

Window Functions and Virtual Screens

You can now manage several pieces of information on the physical screen at the same time. Through windows, you can manipulate information as you might rearrange pieces of paper on your desk top.

A window is an area on your physical screen that lets you display and manipulate data. Data is maintained in virtual screens. A virtual screen is a "presentation space" or a functional simulation of a physical screen. When you enter input or view output through a window, you are really looking into the virtual screen data.

Because a window reflects a virtual screen, you can do several operations against a virtual screen and view the results in a window. The characteristics of virtual screens that you can manipulate include:

- Reserved areas for information such as titles and PF key descriptions
- Color and highlighting
- Options to log data into a file.

Figure 1 shows the relationship between the physical screen, a window, and a virtual screen:

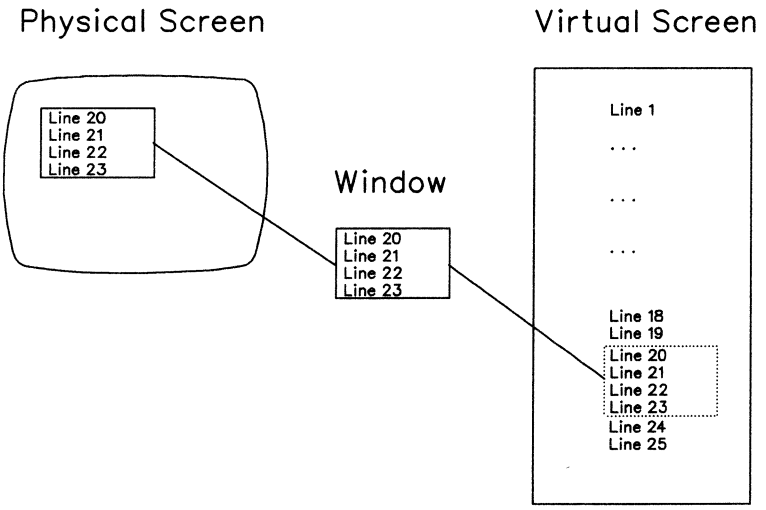


Figure 1. A window into a virtual screen.

When you work with windows, you do not have to consider the internal interactions between windows and virtual screens. However, as you become more familiar with how they work, you might find it useful to change or manipulate the system's default settings. You can make changes by using the new CMS commands for windows and virtual screens. (The following sections discuss some of these commands.)

What is in a Window

You can position a window almost anywhere on the physical screen. You can have many windows on the screen at once. You can display windows on top of each other and overlap them.

When you work with data in a window, you are actually working with the data in a virtual screen. You can view the data and scroll forward, backward, right, or left through it.

Windows are maintained in an ordered list. You can shuffle the order by "popping" and "dropping" windows. The new CMS commands that let you do this are POP WINDOW and DROP WINDOW.

Full-Screen CMS

Full-screen capability for CMS is optional for 3270-type terminals. You might be familiar with full-screen mode if you use a VM/SP editor such as XEDIT.

With full-screen CMS, you can enter a command from anywhere on the screen, not just from the command line. You can scroll forward and backward through your CMS session to see commands you entered before and CMS responses to these commands. You can reissue a command from your screen by placing the cursor on the command, typing over one character, and pressing the ENTER key.

You request to run in full-screen mode by entering SET FULLSCREEN ON or by putting this command in your PROFILE EXEC.

Note: When you enter full-screen CMS, the TERMINAL BRKKEY is set to the new option NONE. You cannot drop into CP by hitting your PA1 key.

Full-screen mode defines default virtual screens and windows, and it routes VM output and messages into windows. You can control the display of a message via the ROUTE and SET WINDOW commands. With these commands, you can sound the alarm when the message arrives, display the message, or issue a notice that a message is pending.

Other features of full-screen mode let you:

- Specify extended attributes for output such as extended highlighting, color and Programmable Symbol Sets.
- Define Program Function (PF) keys.

Interactive routines continue to issue output one line at a time and process input much like they used to. Full-screen CMS also captures and displays CP command responses and asynchronous messages formerly displayed on the CP screen. The current machine "states" such as RUNNING and HOLDING have been replaced by more meaningful status indications.

Border Commands

Border commands make working with windows even easier. You can type the single-character commands in any corner of a window border to execute a command on that window. For example, you can scroll left by entering the letter "L" in a corner of a window border.

Macro Support

CONSOLE Macro

The CONSOLE macro instruction is used to access 3270 full-screen console services. CONSOLE does the following:

- Does 3270 I/O operations
- Builds the Channel Command Word (CCW), or, for the CONSOLE EXCP function, executes the CCW built by the application
- Issues the DIAGNOSE code X'58' or SIO instruction
- Waits for the I/O to complete
- Checks any error status from the device.

The CONSOLE macro lets programs open "paths" (unique names that distinguish one application from another) to a display device. It coordinates use of the screen by indicating to an application writing to the device that another path has updated the screen last and that the screen must be reformatted. Thus, full-screen applications do not have to rewrite the entire screen each time a write occurs.

One CONSOLE path name, $WM, is reserved for system use.

LINERD and LINEWRT Macros

The LINERD and LINEWRT macros provide increased flexibility for doing line mode I/O. The LINERD macro instruction reads a line of input from the terminal. It supports all the functions of RDTERM, plus it provides enhanced input data editing and lets you specify a virtual screen name.

The LINEWRT macro instruction displays a line of output at the terminal. It supports all the functions of WRTERM, plus it lets you specify features such as virtual screen name, color, and extended highlighting.

You can use these macros when full-screen CMS is not active (SET FULLSCREEN OFF/SUSPEND) without being incompatible with the line mode environment.

The System Product Editor

The System Product Editor (XEDIT) uses windowing support. You have the option of specifying what window XEDIT should use to display a file. If you do not choose a window name, the window defaults to "XEDIT."

New CMS Windowing Commands

New CMS commands let you manipulate windows and virtual screens. Some of these new commands are POP WINDOW, DROP WINDOW, DEFINE VSCREEN, GET VSCREEN, SCROLL FORWARD and SCROLL RIGHT.

Enhancement of the QUERY Command

Added or updated functions for the QUERY command include QUERY APL, QUERY CMSPF and QUERY WINDOW.

Enhancement of the SET Command

Added or update functions for the SET command include SET APL, SET FULLSCREEN and SET VSCREEN.

Reference

Refer to the *VM/SP CMS User's Guide* for more information about full-screen CMS. Refer to the *VM/SP CMS Command Reference* for more information about new and enhanced commands. Refer to the *VM/SP CMS Macros and Functions Reference* for more information about the LINERD and LINEWRT macros.

Chapter 8. Addition of the System Profile, SYSPROF EXEC

The system profile is an exec, SYSPROF EXEC, containing part of the CMS initialization function previously done in a module. It can be invoked by default at CMS initialization time, before any user disks are accessed. Therefore, your installation can use it to tailor the CMS environment. In tailoring an environment, your installation can do such things as access additional system disks or bring up application programs automatically. Make tailoring decisions based on userid, responses to prompting, CMS parameters on the IPL command, or other conditions defined by your installation.

By having this initialization function in an exec rather than in a module, your installation can easily change the default CMS environment for its users without having to modify a CMS module and rebuild CMS. In addition, you do not have to modify user PROFILE EXECs and depend on users not to tamper with the execs you provide.

You can bypass the system profile by using the NOSPROF parameter provided on the IPL command. See "Bypassing the System Profile" on page 45 for more information.

The CMS initialization module calls the SYSPROF EXEC, before any user disks are accessed, and executes it from a DCSS (discontiguous saved segment), or from the S disk or its extension. The SYSPROF EXEC executes by default when you enter the IPL CMS command, unless you specify the NOSPROF parameter on the command line, the IPL is of a non-DASD device, or no SYSPROF EXEC is found.

Default Functions

The following are default functions in the supplied SYSPROF EXEC:

- Process the parameters passed on the IPL command
- Display the CMS system identification (system ID) defined when the CMS system was built
- Issue the initial console read
- Handle the first command entered at this read
- Access the 191 disk as the A-disk
- Access the 192 disk as the D-disk
- Issue the S-STAT/Y-STAT messages
- Issue other initialization related messages
- Execute the PROFILE EXEC if found.

CP provides restart information when it re-IPLs for a protected user who has dropped into CP. (See "Protected Application Environment" on page 56.) This information shows the nature of the problem and is available to the system profile. The system profile issues a message when this condition is detected. Your installation can choose a different action by modifying the exec.

You can place the IPL CMS command in your directory entry or issue the command after you log on.

Use With the IPL Command

The IPL command has a PARM keyword marking the start of any CMS parameters. These parameters can be up to 64 bytes of data (excluding all leading blank characters after the keyword, PARM, but including all other embedded and trailing blanks). All parameters are passed to the system profile, but CMS initialization ignores unrecognized parameters.

Note: If you are IPLing a non-DASD device, such as a reader, all CMS parameters are ignored and the system profile is bypassed.

Saving a Named System

To save a named system, do one of the following:

- Give a positive response to message 729R
- Modify the DEFNUC macro to include a positive response to the SAVESYS parameter
- Issue the IPL command with the "SAVESYS systemname" parameter.

Note: You can no longer enter the SAVESYS command at the initial VM READ.

Bypassing the System Profile

To bypass the system profile, specify the NOSPROF parameter in the PARM field of the IPL command. If no system profile exists, CMS modules do initialization. If you do not specify the NOSPROF parameter, and no SYSPROF EXEC exists, a warning message is displayed to inform the you of this condition.

Building a Protected Application Environment

If your only interest is using application programs, you can build a protected application environment. In this way, you are automatically placed in an application environment at logon time, and you cannot inadvertently drop into CP.

Examples of Functions That Can Be Done at Initialization

Examples of functions the SYSPROF EXEC can do at initialization time are:

- Recognition of new parameters in the PARM field of the IPL command. For example, your installation can add the following IPL statement in a user's directory:

  ```
  IPL CMS PARM PROFS
  ```

  Your installation can then recognize this parameter and set up a PROFS environment for the user.

- Access of additional system disks, or changing provided defaults. The default user disks (191 A-disk and 192 D-disk) can be changed or eliminated, or additional user disks can be accessed.

- Recognition of specific users or groups of users for placement into an application or other environment.

- Suppression of the initial console read or changing the default to AUTOCR.

- Prompting of novice users for information.

- Modification or suppression of certain system messages, such as the CMS system ID, to hide complexity of the system.

- Handling of conditions when protected users enter CP and are re-IPLed. For example, a message can be sent to the system administrator.

Reference

Refer to *VM/SP CMS for System Programming* for more information about the system profile.

Chapter 9. Addition of the Error Logging System Service

The Error Logging System Service is an IUCV system service. It lets a virtual machine receive a copy of all records currently written to the VM/SP CP Error Recording Area. The virtual machine can record this information, act on it, or report it to other programming support.

Support for NetView

The hardware monitor component of NetView uses this support to record local communication device errors for problem determination.

Reference

Refer to the *VM System Facilities for Programming* for more information about the Error Logging System Service.

Error Logging System Service

Chapter 10. Addition of the SPOOL System Service for Advanced Function Printers

The SPOOL System Service is an IUCV system service. It gives authorized users an interface for communication between CP and a "printer subsystem." The SPOOL System Service provides a way for VM/SP to support a printer subsystem. To a VM operator, printers driven by this subsystem appear very similar to existing system printers (1403, 3211, 3800, etc.). These subsystem printers are called logical printers to differentiate them from system printers supported directly by CP. For example, the Print Services Facility (PSF) uses this support.

This interface is a general interface that lets a virtual machine:

- Select a spool file from the print chain for processing
- Close a SELECTed file
- Send messages or command responses to the operator or other users
- Read the spool records (SFBLOKs and SPLINKs) for a selected file
- Read an external attribute buffer (XAB)[1] for a selected file
- Send printer commands to a logical printer
- Notify logical printers when a print file is available for processing
- Purge a print file being processed by a logical printer.

---

1 The external attribute buffer (XAB) is a control block that contains data you create to specify additional information about a print file. Each print file has its own XAB, and CP has the facilities to maintain the XABs.

Addition of the DESTINATION option for spool files

The DESTINATION option lets you select a specific printer or punch to process your print, punch, or console file. For example:

```
     SPool    Printer    DEST    dest1
or
     SPool    CONsole    DEST    dest1
```

prints your file at a printer handling output for a certain destination. A destination name (dest1) is a one- to eight-character alphameric name your installation assigns to specific printers.

Addition of DIAGNOSE Code X'B4'

A new diagnose code, DIAGNOSE code X'B4', lets you associate an external attribute buffer (XAB) an application provides with a virtual printer device.

With the new diagnose code, you can:

- Read the existing XAB into the storage of your virtual machine
- Write or rewrite an XAB
- Determine the size of an existing XAB
- Determine if an XAB has been defined
- Erase the XAB.

Addition of DIAGNOSE Code X'B8'

A new diagnose code, DIAGNOSE code X'B8', lets an application virtual machine read, write, or erase an external attribute buffer (XAB) associated with a spool print file.

With the new diagnose code, you can:

- Read the existing XAB associated with the file
- Write or rewrite an XAB
- Determine the size of an existing XAB
- Determine if an XAB has been defined
- Prevent a file from being used while the XAB is being changed
- Erase the XAB.

Reference

Refer to the *VM/SP CP Command Reference* for more information about the DESTination option. Refer to the *VM System Facilities for Programming* for more information about DIAGNOSE Codes X'B8' and X'B4'.

SPOOL System Service

Chapter 11. Addition of Alternate Userid Support

DIAGNOSE Code X'D4'

A new diagnose code, DIAGNOSE code X'D4', lets a "master" virtual machine tell CP the userid of a worker machine doing required work and the userid of the end-user it is authorized to work for. The end-user's userid is considered to be the "alternate userid." If this alternate userid exists, CP automatically uses it as the userid to be placed in the APPC/VM connection pending interrupt data. The CP spooling subsystem also uses the alternate userid. If an alternate userid exists, it replaces the actual id as the spool file origin id.

The master machine that issues the DIAGNOSE must be on the same system as the worker machine, but they do not have to be on the same system as the end-user.

The master machine must guarantee the identity of a remote user. It must also provide the userid of the end-user. CP cannot verify the end-user's id.

The master virtual machine must use the new DIAGNOSE to set and reset the identity of the end-user for whom the worker machine is performing. When the worker machine is finished, the master machine can reset the alternate userid by issuing DIAGNOSE code X'D4' with the alternate userid set to zero.

VMBATCH and RACF Support

VMBATCH issues an alternate userid so BATCH jobs can execute under that userid. RACF does authorizations based on alternate userid support.

Reference

Refer to the *VM System Facilities for Programming* for more information about DIAGNOSE code X'D4'. Refer to the *VM/SP Transparent Services Access Facility Reference* for more information about APPC/VM.

Alternate Userid

Chapter 12. Enhancement of Usability

Logon from the Logo Screen

- The VM logo message at the top of the screen is now "VIRTUAL MACHINE/SYSTEM PRODUCT" instead of "VM/370 ONLINE". (This change applies to start/stop terminals also.) The VM logo is now "VM/SP" instead of "VM/370".

- VM/SP lets you log on from the VM/SP logo screen of a 3270-type terminal. You do not have to clear the screen before you issue the LOGON command. This support applies only to 3270-type terminals with screen sizes of 20 x 80 or larger.

- A prompting screen advises you how to proceed if you enter an invalid userid or password.

- If you enter a USERID with one or more imbedded blanks or if you only enter the PASSWORD in the input area, you receive a new error message.

Enhancements for Remote and VM/VTAM Terminals

CP now provides the CONMODE 3270 option on the TERMINAL command for VM/VTAM and remote terminals. If you are a VM/VTAM or remote terminal user, you can issue "TERMINAL CONMODE 3270" for virtual machine start I/Os to be handled as 3270 start I/Os. CONMODE 3270 places the console in full-screen mode with the application program controlling the screen. The application program is responsible for providing 3270 control information in the data stream.

Note: The SCRNSAVE and BREAKIN options on the TERMINAL command are not provided for remote and VM/VTAM terminals as part of this support.

Protected Application Environment

A protected application environment is provided to prevent an interactive user from accidentally entering the CP environment.

You are placed in a protected application when you issue SET CONCEAL ON or at logon if your directory contains the new option CONCEAL.

When you are operating in a protected application:

- Multiple attentions do not cause you to enter CP mode.
- TERMINAL BRKKEY is set to the new option NONE.
- CP initiates an automatic re-IPL when it finds errors such as virtual machine disabled wait, paging error, invalid PSW, external interrupt loop, program interrupt loop, and translation exception.
- If a shared page is altered, CP attempts to resume execution in the virtual machine before initiating an automatic re-IPL.
- The error diagnostic information, provided by DIAGNOSE code X'B0', is not displayed on the screen.

Addition of DIAGNOSE code X'B0'

DIAGNOSE code X'B0' lets a virtual machine access diagnostic information saved for a user running in a protected application environment, for whom a re-IPL has been attempted. This information consists of the information normally displayed for one of the following errors: shared page altered, virtual machine disabled wait, paging error, invalid PSW, external interrupt loop, program interrupt loop, or translation exception.

New Option on the NAMESYS Macro

PARMRGS has been added as a new parameter on the NAMESYS macro to let specification of the virtual machine general purpose registers be used to pass the IPL parameters. The specified registers are filled with binary 0's before the IPL parameters are moved in.

The format for the new parameter on the NAMESYS macro entry is:

```
PARMRGS=(m,n)
```

where:

m and n are decimal numbers from 0 to 15 and m < = n

If specified, CP fills registers m through n of the virtual machine with binary zeros before moving in the IPL parameters. Parameters that do not fit in the specified registers are ignored. If this parameter is not specified, IPL parameters are moved into the virtual machine's general purpose registers for the length of the IPL parameters as is currently done. If only one register is to be used for IPL parameters, n can be omitted from the PARMRGS invocation.

Expanded DIAGNOSE code X'08' Support

DIAGNOSE code X'08' enhancements include:

- To provide a virtual machine with the capability of managing a full-screen environment by letting it prompt for the LINK or AUTOLOG password instead of CP.
- The 8K response buffer limit on the DIAGNOSE code X'08' instruction is eliminated.

Enhancement of the Inter-User Communications Vehicle

The new CONTROL= parameter on the DECLARE BUFFER and CONNECT functions of IUCV enable CP to manage paths in the virtual machine. The new Message All System Service is an IUCV system service that is an extension to the existing Message System Service. The Message All System Service lets a virtual machine receive most terminal output regardless of the current settings established via the SET command. Any output designated for the Message System Service has priority. Otherwise, console output is sent over the Message All System Service path except for the following:

- SMSGs
- Asynchronous CPCONIO
- EMSGs not generated as part of a DIAGNOSE X'08' operation
- CPCONIO not generated as part of a DIAGNOSE X'08' operation
- Output generated by the CP ECHO or CP SET LOGMSG commands.

Reference

Refer to the *VM/SP CMS User's Guide* for more information about the logo screen and the protected application environment.

Refer to the *VM System Facilities for Programming* for more information about enhancements for remote and VM/VTAM terminals, DIAGNOSE codes X'B0' and X'08', and IUCV.

Refer to the *VM/SP Planning Guide and Reference* for more information about the NAMESYS macro.

Chapter 13. Enhancement of the HELP Facility

Enhancements to the HELP facility include:

- HELP Command Options
  - BRIEF HELP
  - DETAIL HELP
  - RELATED HELP
  - Other Options
- Toggling (Switching) Ability
- Windowing of BRIEF HELP
- MOREHELP Command
- Control Section Keywords
- DEFAULTS Command Enhancement
- Improved Search Algorithm
- National Language Support.

HELP Command Options

Three new options to the HELP facility let you select the type of information displayed. The options are BRIEF, DETAIL, and RELATED.

BRIEF HELP

BRIEF HELP has been added for frequently used commands. The BRIEF layer is a short summary of the command. It includes a short description of the command, the basic syntax, an example, and a message instructing how to get more information (if it is available) for the requested command.

DETAIL HELP

DETAIL HELP can contain a description of the command, information about its format, parameters and options, notes on using the command and information about the error messages it issues. The options DESCRIPT, FORMAT, PARMS, OPTIONS, NOTES, ERRORS, and ALL can be used in any combination to control the information included in the detail layer. DETAIL HELP is especially useful when you use the DEFAULTS command to customize HELP default options.

RELATED HELP

RELATED HELP gives you a task menu of related commands. Although few HELP files contain this section in this release, the ability to add and to display this information is available.

The SET and QUERY task menus are a form of RELATED information. These RELATED task menus help you find HELP information about SET and QUERY operands faster and more easily. Each RELATED task menu gives a brief description of the SET or QUERY operands available for a specified component. You can ask for HELP information about an operand by selecting an entry from the menu.

Other Options

The new EXTEND option extends the search order to include the full default HELP search order. This option is especially useful when you request HELP from the editing environment and you are not sure of the component.

The NOTYPE option suppresses error message 254E

> HELP cannot find the information you requested. If not misspelled, please enter HELP for menu assistance or HELP HELP for the HELP command

so full-screen applications can handle the display of the message in whatever manner is suitable. In other words, NOTYPE lets you change the message text and its placement.

Toggling Ability

When in display mode, you can display BRIEF, DETAIL, ALL, and RELATED help, and you can toggle (switch) between these sections with PF keys. During each display, the PF1, PF10, and PF11 settings are updated to reflect the additional information you can display by pressing the key.

Windowing of BRIEF HELP

When full-screen CMS is active, BRIEF help is displayed in a window rather than on a full screen.

MOREHELP Command

The MOREHELP command assists you (especially if you are a line mode user, do not have PF keys, or choose the NOSCREEN option) to get additional HELP information. HELP saves information when you issue a valid HELP command. The MOREHELP command retrieves this information and uses it to redisplay the HELP file. You can use the MOREHELP options to display a different section of the HELP file.

Control Section Keywords

You can use new keywords to specify control sections in HELP files. These keywords are easier to remember and are more meaningful than using numbers to specify control sections. You can use these keywords to build or update your own HELP files.

DEFAULTS Command Enhancement

You can use two new DEFAULTS command options (BRIEF and DETAIL) to customize the HELP default options. The BRIEF option lets the BRIEF layer of help be displayed first for each help request. The DETAIL option lets the DETAIL layer be displayed first.

Improved Search Algorithm

An improved search algorithm for HELP reduces the number of directory blocks read. In a multiuser environment, the overall effect of this search algorithm on the system depends on the level of I/O contention.

National Language Support

All the associated HELP modules, HELP macros, and HELPCONV modules have been changed to provide National Language Support. You can now get HELP files in your own national language. The Central Message Facility displays all messages.

Reference

Refer to the *VM/SP CMS User's Guide* for more information about using the HELP facility.

Chapter 14. Enhancement of Installation and Service Procedures

Enhancements to Installation and service include:

- Addition of Installation Tools and Profiles
- Addition of Service Exec Procedures
- Enhancement of DASD Volume Labels
- Addition of the NOLOG option
- Enhancement of the INCLUDE, LOAD, and GENMOD Commands
- Enhancement of the VMFMERGE EXEC
- Enhancement of the VMFLOAD EXEC
- Addition of the Installation Discontiguous Shared Segment
- Addition of the HELP Discontiguous Shared Segment

Installation Tools and Profiles

Note: The ITASK, SPGEN, SPLOAD, and UTILITY EXECs replace the PREP and GENERATE EXECs.

ITASK EXEC

ITASK invokes other execs and commands to do most of the steps in the installation procedure.

SPGEN EXEC

This exec does various system generation and maintenance functions, using the information contained in SPGEN PROFILE.

These functions include:

- Creating, verifying, and displaying system profile parameters
- Assembling system files
- Generating CP, CMS, and GCS nuclei
- Receiving and verifying load maps.

SPGEN PROFILE

This file provides information, such as loadlists, control files, minidisk structure and access order, that the SPGEN EXEC uses to build CP, CMS, and GCS nuclei.

SPLOAD EXEC

This exec loads files from the product tape to disk using information contained in SPLOAD PROFILE.

SPLOAD PROFILE

This file specifies the location of files on the product tape, feature tape, and national language tape. It also tells where the SPLOAD EXEC loads each file.

UTILITY EXEC

You can invoke this exec to do occasionally used utility functions such as:

- Printing system definition files
- Creating a stand-alone service utility tape containing one or more of the following files:

  Device Support Facilities program

  DIR - CP Directory program

  FMT - CP Format/Allocate program

  DDR - DASD Dump Restore program
- Creating the stand-alone service programs (DIR, FMT, DDR, or any combination of them) on disk from their associated object modules (text decks)
- Writing a backup IPLable copy of the CP nucleus to tape.

Service Exec Procedures

The service execs below need certain files and tables to process correctly.

VMFTXT EXEC

The VMFTXT EXEC procedure creates text libraries. VMFTXT rebuilds a named TXTLIB file using a member list in an exec file with the same name. VMFTXT works much like the VMFMAC EXEC procedure.

VMFREMOV EXEC

Note: You can use this exec to service System Network Architecture products. However, you cannot use this exec to service base components for VM/SP.

The VMFREMOV EXEC removes PTFs that were applied with VMFMERGE. Previously, the only way to remove PTFs that were applied with VMFMERGE was to restore the product to the previous service level, then reapply the wanted PTFs. VMFREMOV is an easier way to remove a PTF.

VMFREMOV only removes PTFs that have a status of MERGED in the Merge Log. To make sure no PTFs are merged without having all requisite PTFs merged, VMFREMOV removes all dependent PTFs when needed. VMFREMOV also handles all PTFs that were superseded by the removal of the PTF. After VMFREMOV removes a PTF, the exec puts a comment in the Merge Log indicating the PTF has been removed.

You can use this exec when servicing VTAM, NetView, EP, SSP, NTO, and NCP.

VMFNLS EXEC

The VMFNLS EXEC automatically applies updates to the three kinds of national language-related files:

- Message repository files
- Uppercase translate files
- Definition Language for Command Syntax (DLCS) files.

VMFNLS then compiles the updated source files, and appropriately names them for loading into the system.

Enhancement of DASD Volume Labels

The volume labels on DASD used for installation have been renamed as follows:

Old Label	New Label
VMSRES	VMSRES
VMPK01	VMPK01
VMSTGE	VMPK04

In addition, the uses of volumes have changed in some cases.

Addition of the NOLOG Option

For system integrity, all virtual machines listed in the base directory, except the MAINT and OPERATOR userids, are shipped with the NOLOG option. You cannot log on a virtual machine that has the NOLOG option specified.

Enhancement of the INCLUDE, LOAD and GENMOD Commands

The INCLUDE, LOAD, and GENMOD commands let you include comments from TEXT files in MODULE files, using the HIST option on the LOAD or INCLUDE commands. (NOHIST is the default). These comments can document the service level of the module.

Enhancement of the VMFMERGE EXEC

Note: You can use this exec to service System Network Architecture products. However, you cannot use this exec to service base components for VM/SP.

The VMFMERGE EXEC places service history information in the TEXT files being serviced. This history includes the APAR/PTF number, a service time and date stamp, and any information on the :APARTEXT entry in the Service Control File (SCF).

In addition, the limitation of being able to handle only ten nested PTFs has been removed. VMFMERGE also maintains the REQBY log for merged PTFs. VMFREMOV uses this log for its processing.

Enhancement of the VMFLOAD EXEC

The VMFLOAD EXEC has a new LANGID operand that lets you specify the national language of files you want to load into the nucleus.

Addition of the CMS Nucleus Generation Profile

DMSNGP ASSEMBLE, the CMS Nucleus Generation Profile, contains predefined responses to prompts generated when you build a CMS nucleus.

Addition of the Installation Discontiguous Shared Segment

An optional Installation Discontiguous Shared Segment (DCSS), CMSINST, is a segment into which you can load execs and editor macros. The DCSSGEN procedure loads, builds, and saves the DCSS by processing a file containing a list of execs and editor macros. Frequently used execs reside in the DCSS, and all users can access it and share the same executing copy of the execs.

Addition of the HELP Discontiguous Shared Segment

The system name table (DMKSNT) defines a discontiguous shared segment (DCSS) named HELP. After you load the HELP files from the product tape, you can issue the SAVEFD command to load and save the HELP file directory information in the HELP segment. If you use the ITASK EXEC to load the HELP files, ITASK automatically issues the SAVEFD command.

Refer to "Enhancement of Shared Storage Access" on page 81 for more information about the SAVEFD command.

Reference

Refer to the *VM/SP Installation Guide* for more information about installation and service procedures.

Chapter 15. Enhancement of the PRINT Command

The PRINT command supports an OVERSIZE option. This option lets you print files that have records larger than the virtual printer's carriage size. The PRINT command also supports the use of X'5A' as a special carriage control character. This special character lets a data line of up to 32K-1 characters (32767) be written to a spool print file.

Print Services Facility Support

The Print Service Facility (PSF) takes advantage of these enhancements.

Reference

Refer to the *VM/SP CMS Command Reference* for more information about the PRINT command.

PRINT Command

Chapter 16. Enhancements to Reliability, Availability and Serviceability

Enhancements made to improve system reliability, availability and serviceability (RAS) include:

- Alternate Nucleus Support
- LOGON/LOGOFF Enhancements
- SPOOL File Compression Support
- CPTRAP, TRAPRED, and QUERY Function Enhancements
- Interactive Problem Control Facility (IPCS) Enhancements.

Alternate Nucleus Support

Alternate Nucleus Support improves system availability by making it easier to IPL backup copies of the CP nucleus that can access spool files of the primary nucleus.

Alternate Nucleus Support also improves the IPL procedure in other ways:

- Two or more different copies of CP can share WARM start data, checkpoint data, and error recording data.
- Backup copies of the CP directory and override files are used if the primary directory fails during initialization.
- The SHUTDOWN command lets system operators re-IPL a different DASD volume. This makes switching to an alternate nucleus easier.

- A new length field on the SYSNUC operand can be used to protect the SYSRES volume from nucleus area overflow.

- An asterisk can be specified on the SYSVOL operand of the SYSRES macro to assist in maintaining two copies of CP with the same DMKSYS ASSEMBLE file.

LOGON/LOGOFF Enhancements

LOGON/LOGOFF enhancements improve system availability by detecting and handling known conditions that prevent you from logging on to virtual machines because CP thinks you are already logged on. (This occurs when, because of an I/O problem, LOGOFF/FORCE processing fails to log you off, causing your virtual machine to "hang-up" indefinitely.)

LOGON/LOGOFF enhancements also resolve conflicting messages issued in response to the LOGON, AUTOLOG, FORCE, and QUERY commands when the virtual machine in question is in the process of logging off. See the *VM/SP System Messages Cross-Reference* for the messages issued by these commands.

SPOOL File Compression Support

SPOOL File Compression Support improves the reliability of spooled data transmitted through a VM/SP system. With this support, the following information is now included in spooled data:

- The original record length.

  The original length is the length of the record before CP truncates trailing blanks. Programmers can use this length to reconstruct the original image of each record. If the original length exceeds the maximum length for data on the specified output device, the maximum data length for that device is saved.

- The original sequence of carriage control commands.

  Multiple carriage control commands are no longer replaced with a single equivalent command.

Before Release 5, the original record length and the original sequence of carriage control commands were not available to application programs that read spooled data.

Note: SPOOL File Compression Support only affects application programs that use the DIAGNOSE code X'14' interface to read virtual SPOOL files.

CPTRAP, TRAPRED, and QUERY Function Enhancements

CPTRAP supports monitor codes of 0, 1, and 2. Monitor code 2 identifies general virtual machine data. For monitor code 2 initiated entries, CPTRAP puts the machine type value passed from the virtual machine in the CPTRAP header record. The header record is present on every CPTRAP record.

The TRAPRED command provides access to the CPTRAP file. TRAPRED includes selectivity for the machine types. The types are:

- "TSAF" for TSAF records
- "FE" for records created by Field Engineering
- "USER1" for records created by a user installation.

The CP privilege-class C QUERY command includes a CPTRAP subcommand to return either:

- The current status of CPTRAP
- The current selectivity for a specific CPTRAP record type or for each type of CPTRAP record.

Interactive Problem Control System (IPCS) Enhancement

Diagnosing a TSAF Dump

A new DUMPSCAN subcommand, FDISPLAY, displays information about the TSAF virtual machine. It can display information about the service table, the collection control block, the resource table, and other information about links, paths, and routes.

The TRACE subcommand of DUMPSCAN lets you display TSAF trace table entries in a hexadecimal or formatted display.

DUMPSCAN Scroll Support

CP and TSAF provide a command to display their internal trace table. With this support, you can use the scroll functions to display trace table entries.

New parameters have been added to the DUMPSCAN SCROLL and DUMPSCAN TRACE commands to let you scroll through screen displays of trace entries and control the dump formats.

Enhancement to the IPCS MAP Command

The MAP command recognizes "TSAF" as a valid map type. You invoke the MAP command to compress a TSAF load map.

Reference

Refer to the *VM/SP CP for System Programming* for more information about SPOOL File Compression Support. Refer to the *VM/SP CP for System Programming* and the *VM/SP Planning Guide and Reference* for more information about Alternate Nucleus Support. Refer to the *VM/SP Transparent Services Access Facility Reference* for more information on TSAF serviceability. Refer to the *VM/SP CP Command Reference* for more information about the TRAPRED function. Refer to the *VM Diagnosis Guide* for more information about the CPTRAP and QUERY functions and the MAP command.

Chapter 17. Enhancement of the System Product Interpreter

Enhancements to the System Product Interpreter include:

- Enhancement of the DATE Function
- Addition of New Function Calls for DIAGNOSE Codes X'C8' and X'CC'.

DATE Function

A new option, Basedate, has been added to the DATE function. Basedate returns the number of days since the base date January 1, 0001.

Also, the Century option (C) has been updated to return the number of days since January 1 of the last year which is a multiple of 100 in the format: ddddd.

Addition of New Function Calls for DIAGNOSE Codes X'C8' and X'CC'

Four new functions: DIAG(C8), DIAGRC(C8), DIAG(CC), and DIAGRC(CC) have been added to the external function package. These are the REXX function calls for DIAGNOSE codes X'C8' and X'CC'.

Reference

Refer to the *VM/SP System Product Interpreter Reference* for more information about the DATE function and the DIAG(C8), DIAGRC(C8), DIAG(CC), and DIAGRC(CC) functions.

Chapter 18. Enhancement of the Control Program (CP)

Enhancements to CP include:

- Addition of DIAGNOSE Code X'BC'
- Enhancement of the DETACH Command
- Enhancement of the VM/SP Message Identifier.

Addition of DIAGNOSE Code X'BC'

DIAGNOSE code X'BC' opens a spool file for a spooled reader device and returns spool file identification into a user buffer. If a file is already open on the device, DIAGNOSE code X'BC' returns spool file identification.

DIAGNOSE code X'BC' lets a program running in virtual machine open a file with the appropriate class for a spooled reader device. The appropriate class is the current class of the spooled reader device. The program receives the same information received from issuing the following commands:

- QUERY READER spoolid
- QUERY READER spoolid ALL
- QUERY READER spoolid TBL.

Refer to *VM System Facilities for Programming* for more information about DIAGNOSE code X'BC'.

Enhancement of the DETACH Command

There are two new options for the privilege class B CP DETACH command: UNLOAD and LEAVE. These two options apply only to the detachment of a tape device.

The UNLOAD option detaches the tape device and rewinds and unloads it. If you do not specify UNLOAD or LEAVE, UNLOAD is the default.

The LEAVE option detaches the tape device without rewinding and unloading it. The tape remains positioned as it was before the DETACH command was issued. The LEAVE option lets the system operator or any other Class B user control access to tape devices and the tapes mounted on those devices.

Refer to the *VM/SP CP Command Reference* for more information about the DETACH command.

Enhancement of VM/SP Message Identifier

In the past, the identifier for system messages has been 11 characters (10 alphamerics and a blank) in the following format:

```
xxxmmm###s
```

where "xxxmmm" designates the component and module issuing the message, "###" is the 3-digit message number, and "s" is the severity code.

Now, the message identifier supports a 4-digit message number. Existing messages have not changed, but new messages over the number 999 have a 4-digit message number. Also, you can now edit messages with a user-specified message number length according to your virtual machine's EMSG setting.

Enhancements to DIAGNOSE code X'5C' let you edit error messages with a 10-character message identifier length or a new user-specified message identifier length.

The first byte in Ry contains a subcode identifying whether you want to use the default message length of 10 (subcode X'00') or a message identifier length you specify (subcode X'40'). If subcode X'40' is used, the message identifier length is contained in Rx+1.

Refer to the *VM/SP System Messages and Codes* for more information about the message identifier. Refer to *VM System Facilities for Programming* for more information about DIAGNOSE code X'5C'.

Chapter 19. Enhancement of the Conversational Monitor System (CMS)

Enhancements to CMS include:

- Addition of Alternate Tape Drive Support
- Addition of the VALIDATE Command
- Addition of the CMSDEV Macro
- Addition of Shared Storage Access
- Enhancement of the PRINTL Macro
- Enhancement of the RDCARD Macro
- Enhancement of the TXTLIB Command
- Enhancement of the GLOBAL Command
- Enhancement of the RDRLIST Command
- Enhancement of the EXECIO Command
- Enhancement of the FORMAT command
- Enhancement of CMS IUCV Support
- Enhancements for Execs in Storage
- Migration of CMS Commands and Modules to the CMS Nucleus.

Addition of Alternate Tape Drive Support

Alternate tape drive support lets you switch to a second tape drive when the data set you are reading from or writing to is greater than one tape volume. Two tape volumes can be mounted at one time so you do not have to wait for the next tape volume to be mounted. If the data set continues past the end of the second volume on the alternate drive, processing switches back to the primary drive.

You can specify an alternate tape drive with an option of the FILEDEF command. This support only applies to OS simulation support for standard label tapes, a CMS service that provides multivolume tape support.

Refer to the *VM/SP CMS Command Reference* for more information about the FILEDEF command.

Addition of the VALIDATE Command

The VALIDATE command verifies the syntax of a file identifier (filename filetype filemode). In addition, if the file mode is specified (and is not *), VALIDATE verifies by return code whether the disk is accessed, even if the disk is empty. For example, within an exec,

```
validate shopping list e
```

verifies the syntax of the file identifier, SHOPPING LIST E, and determines if disk E is accessed. You should determine if existing calls to STATE can be replaced with a call to VALIDATE.

Refer to the *VM/SP CMS Command Reference* for more information about the VALIDATE command.

Addition of the CMSDEV Macro

The new CMSDEV macro lets you determine the characteristics of a VM/SP device. It provides identifying information and status of a specified virtual device, that is returned to the caller in a user-specified storage area. With CMSDEV, programs running in problem state can obtain information available only through a DIAGNOSE code X'24' instruction. To use the CMSDEV macro you need not be familiar with a DIAGNOSE code X'24' or the standard addresses for virtual devices (00C, 00D, 00E, etc.).

Use CMSDEV with the new CMSDEV= parameter on the PRINTL macro to provide printer characteristics and status when printing.

Refer to the *VM/SP CMS Macros and Functions Reference* for more information about the CMSDEV macro.

Enhancement of Shared Storage Access

The SAVEFD command and two new options on the ACCESS command have been added to reduce nonshared storage use.

Addition of the SAVEFD Command

The SAVEFD command lets you save the file directory information of a read/only CMS Extended Data Format (EDF) disk in shared storage. This copy of the file directory information is then available to CMS users who access the disk as read/only.

For heavily shared disks, the SAVEFD command reduces the overall paging requirements of the system. It keeps the disk's directory information in a single shared storage copy rather than as multiple copies in the nonshared storage of each CMS user who accesses the disk.

Refer to the *VM/SP CMS for System Programming* for more information about the SAVEFD command.

Enhancement of the ACCESS Command

You can now use shared storage copies of file directory information for large read/only CMS EDF disks when you issue the ACCESS command. If you issue ACCESS with the new SAVEONLY option, only a saved copy of the file directory is used for the access. Read/only accesses of the entire disk use the saved copy by default whenever possible if you do not specify SAVEONLY or NOSAVE. The new NOSAVE option prevents the use of the saved file directory information for the access.

Note: If you access part of a disk (for example, all files with the filetype of SCRIPT), the shared storage copy is not used.

Refer to the *VM/SP CMS Command Reference* for more information about the ACCESS command.

Enhancement of the PRINTL Macro

Three new, optional parameters added to the PRINTL macro include:

- CMSDEV=
- FORM=
- CC=

The CMSDEV= parameter lets you specify the type of printer in use so CMS does not have to ask CP for this information each time a line is printed. CMSDEV= reduces the number of DIAGNOSE code X'24' executions when printing. If the device type is not specified or if the contents of the 12-byte area filled by the CMSDEV macro is zero, a DIAGNOSE code X'24' is executed to determine the device type.

Use the FORM= parameter to print multiple lines with the execution of a single PRINTL macro rather than printing one line per execution.

Use the CC= parameter to specify whether the data to be printed contains a carriage control character in the first byte of the record. To print records without a carriage control character (CC=NO), the system spaces one line before printing. If CC=c is specified (where c is the carriage control character to be used), it is used for all records.

Refer to the *VM/SP CMS Macros and Functions Reference* for more information about the PRINTL macro.

Enhancement of the RDCARD Macro

The RDCARD macro has a new operand that lets you reduce the number of START I/O instructions needed to read a file from the virtual reader:

```
[,RDAHEAD=YES|NO|CANCEL]
```

When you specify RDAHEAD=YES, the system reads as many lines as possible into a system buffer with a single START I/O instruction. Then, one line is read into the user-specified buffer with each RDCARD instruction.

When RDAHEAD=NO, the default, one line is read with each START I/O instruction. RDAHEAD=CANCEL releases the internal I/O buffer used for RDAHEAD=YES. Any lines still in the buffer are deleted.

The RECEIVE and EXECIO commands have been changed to use this support.

Refer to the *VM/SP CMS Macros and Functions Reference* for more information about the RDCARD macro.

Enhancement of the TXTLIB Command

The TXTLIB command has a new option that enhances usability by letting you reference a file in a TXTLIB by its name rather than the first CSECT name. You can enter a file into a TXTLIB with the membername as the file's name by specifying the FILENAME option on the GEN or ADD versions of the TXTLIB command. This option lets you name TXTLIB entries uniquely by their given file names. In this way, you can delete a specific file from the TXTLIB.

Refer to *VM/SP CMS for System Programming* and the *VM/SP CMS Command Reference* for more information about the TXTLIB command.

Enhancement of the GLOBAL Command

Listing MACLIBs, TXTLIBs, DOSLIBs, and LOADLIBs

The GLOBAL command lets you list up to 63 MACLIBs, TXTLIBs, DOSLIBs, or LOADLIBs (subject to other system limits, such as command line length) to be searched when processing subsequent CMS commands.

When issued by the VMFASM EXEC, the enhanced GLOBAL command accepts as its library list up to 29 MACLIBs specified in the MACS record of the control file identified by the UPDATE command (subject to the character limit of the MACS record line).

The QUERY Command

If you list more than eight libraries with the GLOBAL command, the MACLIB, TXTLIB, LOADLIB, DOSLIB, and LIBRARY functions of the QUERY command return multiple output lines (eight libraries per line) to the terminal or, if the function is used in an exec, to the program stack.

Refer to the *VM/SP CMS Command Reference* for more information about the GLOBAL command and the output format of the QUERY command.

Enhancement of the RDRLIST Command

The limit of 100 reader files has been removed from RDRLIST.

Refer to the *VM/SP CMS Command Reference* for more information about the RDRLIST command.

Enhancement of the EXECIO Command

The EXECIO command (CP option) has a new option, BUFFER, that lets you specify how many characters of CP command response data you want returned.

Refer to the *VM/SP CMS Command Reference* for more information about the EXECIO command.

Enhancement of the FORMAT Command

The default blocksizes of temporary and permanent CMS minidisks on CKD (Count Key Data) Direct Access Storage Devices have been enhanced.

The new default blocksizes are:

DASD	Default Blocksize
3330	2K
3350	2K
3375	4K
3380	4K

Note: CMS minidisks on FBA devices continue to default to 1024 (1K) bytes.

Enhancement of CMS IUCV Support

The CMS IUCV macros, HNDIUCV and CMSIUCV, support the Advanced Program-to-Program Communication/VM (APPC/VM) facility, new with TSAF. APPC/VM is a means of communication between two virtual machines. The APPC/VM interface provides a limited set of the Systems Network Architecture Logical Unit (SNA LU) type 6.2 base communication functions. HNDIUCV and CMSIUCV continue to support IUCV.

Refer to the *VM System Facilities for Programming* for more information about CMS IUCV support.

Enhancements for Execs in Storage

This support lets you share frequently used execs and editor macros that have been loaded into an Installation Discontiguous Shared Segment (DCSS). You can access the shared segment and use execs that execute in the DCSS.

This support includes the enhancement of six commands:

SET A new INSTSEG option lets you specify whether the system should search the DCSS when locating a command. You can also specify the location where the segment is searched in the command search order.

QUERY A new INSTSEG option lets you determine if you are using the Installation DCSS and where it is searched in the command search order.

EXECDROP A new SHARED option lets you discontinue use of a specific exec or all execs contained in the segment.

EXECMAP A new SHARED option lets you list the execs contained in the DCSS.

IPL A new parameter for the IPL (Initial Program Load) command loads the Installation DCSS for use by your virtual machine.

EXECUPDT Use the new NOCOMMENTS option to remove all comments and leading blanks from the source file. One comment line containing the name of the file is inserted at the beginning of the file. The new ETMODE option should be specified with NOCOMMENTS when the source file contains DBCS characters and shift-in and shift-out characters.

Refer to the *VM/SP CMS Command Reference*, the *VM/SP CMS User's Guide*, and the *VM/SP CP Command Reference* for more information about these commands.

Refer to the *VM/SP Installation Guide* for information about building and saving the Installation Discontiguous Shared Segment.

Migration of CMS Commands and Modules to the CMS Nucleus

The following CMS commands and modules reside in the nucleus and are no longer loaded into the transient or user area for execution:

Command	Modules
COPYFILE	DMSCPY
GLOBALV	DMSGLO
IDENTIFY	DMSIDE
PRINT	DMSPRT

Invocation of these commands has not changed. Programs that rely on these commands residing in the transient or user area must be modified.

The COPYFILE command can be issued from programs running in the user area and does not overlay the program.

The IDENTIFY, GLOBALV, and PRINT commands can be issued from programs running in the transient area and do not overlay the program.

In addition, module DMSRSF that contains the System Product Interpreter VM Functions now resides the the CMS nucleus.

Chapter 20. Enhancement of the Group Control System

Enhancements to the Group Control System include:

- Enhancement of IUCV Support
- Enhancement of Serviceability
- Enhancement of the GLOBAL Command.

Enhancement of IUCV Support

The GCS IUCV macros, IUCVCOM and IUCVINI, support the Advanced Program-to-Program Communication/VM (APPC/VM) facility, new with TSAF. APPC/VM is a means of communication between two virtual machines. The APPC/VM interface provides a limited set of the Systems Network Architecture Logical Unit (SNA LU) type 6.2 base communication functions. IUCVCOM and IUCVINI continue to support IUCV.

Enhancement of Serviceability

Enhancement of the GCS QUERY Command

The GCS Query command supports two additional subcommands, LOADALL and LOADCMD.

Use Query LOADALL to provide the names, addresses, and type of all the entry points residing in the virtual machine's storage.

Use Query LOADCMD to provide the module names, command names, and addresses of all the entry points loaded by the LOADCMD subcommand.

Enhancement of the GCS TRACE Command

GCS Trace can now trace branch entries to GETMAIN and FREEMAIN in addition to the SVC calls.

Enhancement of GCS TRACE Support for APPC/VM

The enhancement of GCS TRACE support includes:

- New TRACE support for the APPC/VM Synchronous function
- Changes to the TRACE support for the External Interrupts for APPC/VM
- Tracing the support of the APPC/VM for IUCVCOM and IUCVINI, new with TSAF.

Enhancement of GCS Dump Services

The enhancement of GCS dump services allows the option of printing formatted VSCS control blocks. Any dump generated by GCS dump services or through VMDUMP command with the dump type of GCS or RSCS2 has this capability.

Enhancement of GCS Recursive DUMP/ABEND

The enhancement of GCS recursive DUMP/ABEND allows the processing of a second dump if another abend occurs during abend processing. The second dump can be supported if ABTERM requests the dump, or if the DUMP parameter is specified on the ABEND.

Enhancement of the GLOBAL Command

Listing CMS Load Libraries

The GLOBAL command lets you list up to 63 (formerly 8) CMS load libraries (library type LOADLIB) to be searched when you invoke a program.

Depending on how you execute the command (such as from the command line or from an exec), there might be other system limits on the number of libraries accepted (command line length, for example).

The QUERY LOADLIB Command

If you list more that eight LOADLIBs with the GLOBAL command, the QUERY LOADLIB command returns multiple output lines (eight LOADLIBs per line) to the terminal.

Reference

Refer to the *VM/SP Group Control System Command and Macro Reference* for more information about GCS support.

Chapter 21. Between-Release Support

The following support was announced between VM/SP Release 4 and VM/SP Release 5:

- Addition of Enhanced Connectivity Facilities on VM/SP
- Addition of 3480 Volume Serial Error Recording
- Addition of Vector Processing Support
- Addition of OS Simulation Standard Label Tape Processing Exits
- Addition of Auto-Deactivation of Restricted Passwords
- Addition of IX/370 Handshaking Support
- Addition of Access Verification Routines Support
- Addition of IBM 3422 Magnetic Tape Subsystem
- Addition of the CONSOLE Macro
- Enhancements to Security
- Enhancement of the Logical Device Host Limit Relief
- Enhancements to Support of ASCII
- Enhancement of the VM/SP Directory
- Enhancement of 3380 Direct Access Storage Device Support.

Enhanced Connectivity Facilities on VM/SP

Enhanced Connectivity Facilities on VM/SP is a part of IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities. Enhanced Connectivity Facilities on VM/SP provides:

- A way for VM/SP to communicate with work stations (for example, IBM Personal Computers).

  A new CMS command, CMSSERV, coupled with a communication program on the work station, lets work station users set up communications between VM/SP and their work stations. With this, users have access to the services of IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities.

- The Server-Requester Programming Interface (SRPI).

  An application programmer can write server programs for VM/SP that use the SRPI. A companion requester program, typically on the work station can then ask the server to perform functions on VM/SP and pass the results back to the requester.

Refer to the *VM/SP Introduction*, GC19-6200, or the *Introduction to IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities*, GC23-0957, for more information about these services. Refer to the *VM/SP Programmer's Guide to the Server-Requester Programming Interface for VM/SP* for more information about Enhanced Connectivity Facilities on VM/SP.

3480 Volume Serial Error Recording

The purpose of 3480 Volume Serial Error Recording support is to provide the 3480 tape volume serial (VOLSER) in any Miscellaneous Data Records (MDR) or 3480 Outboard Records (OBR) when a virtual machine successfully executes the DIAGNOSE code X'D0' for the tape volume.

A X'90' type MDR is logged during shutdown and detach processing to indicate the tape has been rewound and unloaded.

CP logs the 3480 X'90' MDR when a virtual machine issues an SVC 76.

CMS provides CP with the VOLSER by issuing the new DIAGNOSE code as part of its volume label checking for standard labelled tape volumes. The specific CMS operations that support this new function are:

- OS simulation
- CMS DOS
- TAPEMAC, TAPPDS, MOVEFILE commands
- TAPESL macro.

This support improves serviceability, because you can keep track of the error frequency for each tape by examining the VOLSER in the OBR and MDR.

A new DIAGNOSE code, X'D0', lets any virtual machine provide CP with the virtual device address and the volume serial of a 3480 tape volume. The VOLSER is then recorded in the OBR or MDR when an OBR or MDR is logged for the tape device.

Refer to *VM/SP Support of 3480 Volume Serial Error Recording*, SC24-5329, for more information.

Vector Processing Support

Applications can utilize the vector facility to improve processing of larger numerical applications. Products such as FORTRAN Version 2 and Engineering and Scientific Subroutine Library use this support.

Refer to *VM/SP CMS Vector Processing*, SC24-5332, for more information.

OS Simulation Standard Label Tape Processing Exits

This support applies to OS simulation QSAM support for standard labelled tapes, a CMS service that provides multivolume tape support.

OS simulation tape processing provides user exits to let your installation do one of the following:

- Replace the current VM tape multivolume support with another installation provided switching routine
- Interface to a tape management system.

If your installation wants to use a tape multivolume switching routine not supplied by VM, or a tape management system, an interface routine (DMSTVI) that gives control to the selected switching routine or system must be provided. If this interface routine exists, it gets control instead of the VM volume switching routine (DMSTVS).

FILEDEF Command

The SYSPARM option has been added to the FILEDEF command to let users supply non-VM parameters to an installation-provided interface routine during QSAM tape processing.

LABELDEF Command

The maximum number of characters that can be specified with the FID ? operand of the LABELDEF command has increased from 17 to 44 so a full 44 character file id can be passed to the interface routine.

Refer to *VM/SP OS Simulation Standard Label Tape Processing Exits*, GC24-5334, for more information.

Auto-Deactivation of Restricted Passwords

Some installations have encountered security exposures because of published passwords or passwords included in sample directories shipped with the system.

Auto-deactivation of restricted passwords provides a method of making sure commonly known passwords are not allowed in the object directory. For every virtual machine you create, you must define a password on the USER control statement. A file called RPWLIST DATA resides on the CMS system disk and contains a list of IBM restricted passwords. When you execute the directory program, passwords are checked against the passwords in this file. If a restricted password is found, it is changed to NOLOG in the object directory, and the virtual machine issuing the DIRECT command receives a warning message.

If a userid is NOLOGed, the system administrator must replace the restricted password in the source directory with a password unique to the installation. The directory program must be rerun before the user with the restricted password can access the system.

Refer to *VM/SP Support of Auto-Deactivation of Restricted Passwords*, SC24-5335, for more information.

IX/370 Handshaking Support

IX/370 Handshaking improves IX/370 systems running under VM/SP. When an installation is running IX/370 under VM/SP, additional overhead is incurred by VM/SP's handling of Supervisor Call Instructions (SVC) 9, 10, and 11. This support reduces the overhead by accelerating SVC's 9, 10, and 11, issued by authorized IX/370 virtual machines.

Refer to *Support of IX/370 Handshaking*, SC24-5280, for more information.

Access Verification Routines

The access verification routines, used with the RACF/VM 1.7.1. increase security control. These access verification routines let an installation install software to tighten control over minidisk access, logon passwords, and movement of spool files.

A new directory control statement, ACIGROUP, identifies you as belonging to a certain group. A new DIAGNOSE, code X'A0', lets you find out what group you belong to.

Refer to *VM/SP Access Verification Routines*, SC23-0171, for more information.

IBM 3422 Magnetic Tape Subsystem

VM/SP provides programming support for the IBM 3422 Magnetic Tape Subsystem.

The 3422 can write or read data at 6250 BPI or 1600 BPI and has a tape speed of 125 inches per second. This allows a nominal data rate of 780Kb per second at 6250 BPI or 200 Kb per second at 1600 BPI.

The 3422 consists of a Model A01 with a tape control and one tape drive housed in the same frame and a Model B01 with one tape drive only. A maximum of seven Model B01s can be attached to a Model A01 for a total of eight drives per string.

CMS Support

The 3422 is supported in CMS as a 9-track tape device with 1600 or 6250 BPI. CMS support includes:

- CMS Tape Commands
- CMS Tape Macros
- OS Simulation Commands
- DOS Simulation Support
- CMS Tape Utility.

CP Support

CP provides IBM 3422 support for:

- Subsystem Definition
- Spool-to-Tape
- Monitor Recording
- System Dump Recording
- Stand-Alone Dump Facility
- DASD Dump Restore.

Refer to the *VM/SP and VM/SP HPO Support of IBM 3422 Magnetic Tape Subsystem*, GC24-5336, for more information.

IBM Extended Data Stream Support for VM/Pass-Through Facility

This support lets you install and run VM/Pass-Through Facility Release 3.

Enhancement of DIAGNOSE Code X'7C'

DIAGNOSE Code X'7C' is enhanced to:

- Support 3270 extended data streams that let logical devices use full color, programmed symbol sets, and extended highlighting capabilities
- Support 3284, 3286, 3287, 3288, and 3289 logical printer devices that allow presentation of status from a logical device printer and let an application create logical 328x printers in addition to logical 327x display devices
- Let the addresses of logical devices be kept in a table and accessed through an indexing algorithm
- Return status to CP after an ACCEPT function is performed.

Logical devices are permitted to DIAL or ATTACH to non-owning host virtual machines.

Enhanced CP Commands

The Laddr option has been added to the ATTACH, DETACH, DISABLE, ENABLE, and SET PFnn COPY commands to let CP accept a logical device address. In addition, the HOLD parameter is supported for logical devices on the DISCONN and LOGOFF commands.

Enhancement of DIAGNOSE Code X'8C'

DIAGNOSE code X'8C' detects storage protection exceptions such as if a user attempts to store into a protected area such as a CMS module or the nucleus area.

Refer to *VM/SP CP Extended Data Stream Support for VM/Pass-Through Facility Release 3*, GC24-5354, for more information.

CONSOLE Macro

The CONSOLE macro instruction has been added to access 3270 full-screen console service.

Refer to "CONSOLE Macro" on page 40 for more information.

Enhancements to Security

Enhancements to VM/SP security include:

Authorization Enhancements

You can use the Resource Access Control Facility (RACF) Program Product (if it is installed on your system) to authorize and journal the use of the STCP command and to authorize a LINK to a disk.

Logon Inductor

If the JOURNAL operand of the SYSJRL macro is set to YES, you can use the LOGLOC operand to specify the maximum number of invalid password attempts and the delay time until the next logon.

If YES is specified for the JOURNAL operand of the SYSJRL macro, your installation has the option to set the maximum number of invalid password attempts (n) and the delay time until next logon (m), or to accept the defaults of 10 attempts and 60 minutes. The system displays an error message if you enter an invalid password more than n times. After this point, any attempts to log on using the same userid, or at the same terminal, before m minutes have expired also result in an error message. Once you have successfully logged on or the delay time has expired, the invalid password count is reset.

Accounting Cards

The system generates accounting cards for **ALL** CP directory links.

The terminal address has been added in columns 65-72 of the Dedicated Device (02) accounting card.

In addition, the following new Virtual Machine Console Information (08) accounting card is generated when you disconnect or log off:

Column	Contents
1-8	Userid
9-16	Account number
17-28	Date and Time of Accounting (mmddyyhhmmss)
29-64	Reserved for IBM use
65-72	Terminal identification
73-78	Reserved for IBM use
79-80	Accounting record identification code (08)

Refer to *VM/SP Security Enhancements*, SC24-5317, for more information.

Enhancement of the Logical Device Host Limit Relief

The Logical Device Host Limit Relief removes the restriction of letting only eight virtual machines create 512 logical devices. In this way, any number of virtual machines can create up to 512 logical devices as long as the number of logical devices in the system does not exceed 4096.

For example:

Number of Virtual Machines	Number of Logical Devices Created
8	512
16	256
64	64
128	32
4096	1

You can use any combination, as long as **each** virtual machine does not create more than 512 logical devices and no more than 4096 logical devices are defined on the system.

Refer to *VM/SP Logical Device Host Limit Relief*, SC24-5327, for more information.

Enhancements to Support of ASCII

7171 Support

The 7171 is a protocol converter that allows emulation of ASCII devices as 327x. Enhancements to support of ASCII in connection with the 7171 include:

Line Drop at Logoff, Disconnect or Force

When you log off, disconnect from or are forced off an ASCII terminal connected to a 7171 port, the port is released for possible re-use by another terminal (unless you logoff or disconnect with the HOLD option or specify the E3270HLD feature). As a result, you will find ASCII devices more readily available.

Recognition of an Emulated 3270

Your application can detect an emulated 3270 if your device's DMKRIO entry contains the EMUL3270 feature. This support lets you distinguish between a 327x and an emulated 327x. An emulated 327x is indicated by a X'02' in the flag byte returned by DIAGNOSE code X'8C'. This emulation can be done by a 7171 control unit. Once your application detects a 7171, your application can use the special features of the 7171.

Line Mode Support

CP supports ASCII devices via 37x5 communications control units. Enhancements to support of ASCII in connection with line mode support include:

Provision of Translate Tables

If you find translate table discrepancies because your application uses STD ANSI X3.26 1980 translate tables, you can select these translate tables via the VM2 option of the TERMINAL command's new operand, ASCIITBL. If not, you can continue to use the STD TTY ANSI X3.4 1977 translate tables as the default or by selecting the VM1 option. (VM1 is the default.)

No Line Control Characters to Line Mode ASCII Devices

By selecting the USR option of the TERMINAL command's new operand, CNTL, you can handle the insertion of line control characters into the data stream. With the SYS option, CP will insert these characters. (SYS is the default.)

3270 Security Enhancement

A PF key no longer causes a "read inhibit" to change to a non-inhibited read for local, remote, or VM/VTAM 3270 terminals. Therefore, when you are prompted for your password at logon and hit a PF Key before you enter your password, the password is not visible on the screen as you type it in.

Refer to *VM Support of ASCII*, GC24-5328, for more information.

Enhancement of the VM/SP Directory

Directory Limitation Removal

The restriction on the number of USER entries that can be defined in the VM/SP Directory has been removed.

Directory Profiles

Installations can define directory entries called PROFILEs that contain commonly used directory control statements. You can define a PROFILE by using a PROFILE control statement in the VM/SP Directory.

An optional INCLUDE control statement is defined with a USER entry to include the information in the PROFILE. When the object directory is created, the information from the PROFILE is merged with the information in the USER entry. This reduces the size of both the source and object directories.

Refer to the *VM/SP Planning Guide and Reference* for the formats of the PROFILE and INCLUDE control statements.

3380 Direct Access Storage Device Support

Support for 3380 AE4/BE4

The support for the 3380 AE4/BE4 devices is functionally equivalent to that for other supported 3380 devices, but the increased number of cylinders for the 3380 AE4/BE4 is recognized.

These count-key-data (CKD) devices offer twice the capacity (5.04 billion bytes per unit) as earlier 3380 standard models. In addition, they improve data availability.

Strings composed of these extended capability models can transfer data simultaneously to or from any two actuators, utilizing the new Device Level Selection (DLS) function. Utilization of the DLS function improves path availability.

Refer to *IBM 3380 Direct Access Storage Device Models AE4/BE4 User's Guide*, SC24-5281, for more information.

Support for 3380 Under DOS Simulation

DOS Simulation of CMS now supports all models of 3380 DASD that are supported by CMS.

Part 3: Special Considerations

This part of the manual describes considerations for migrating to and installing VM/SP Release 5.

It includes:

- Environmental Considerations
- Migration Considerations.

Chapter 22. Environmental Considerations

This section describes environmental considerations for installing VM/SP Release 5.

Transparent Services Access Facility

Userids, Node Ids and Resource Ids within a Collection

A group of systems that each have the TSAF virtual machine component installed and running can form what is known as a collection. A collection can have up to eight systems.

Assigning Unique Userids

Your applications may rely on the userids of the connecting applications to maintain security and check authorization. The userid that TSAF presents is always the userid of the virtual machine that originated the request. Even if the connection is through the TSAF virtual machine, TSAF presents the userid of the originating virtual machine, not the TSAF virtual machine userid.

TSAF does not enforce it, but make sure no two users in a collection have the same userid. The exception is when a user has the same userid on multiple nodes within the collection. In this case, the user has the same authorization for resources from the system in the collection the user is logged onto.

A single user, however, can have userids on multiple nodes within the collection. In this case, the user can keep the same userid across systems and have the same authorization for resources from whatever system in the collection the user is logged onto.

Assigning Unique Node Ids

The following are different identifiers for each processor (i.e., system):

- The processor id, or CPUID, is a preassigned identification.
- The node id is an identification the system administrator assigns at the time of installation.

The SYSTEM NETID file, an existing CMS file, associates the CPUID of a processor with its node id. Two processors with the same nodeid cannot join the same collection.

Assigning Unique Resource Ids

A resource can be on the local system or on any system within the collection. Each global resource name within a collection must be unique. For local or global resources, do not specify the name to be the same as a userid within the collection. Also, do not specify a resource name as ALLOW, ANY, or SYSTEM.

When two collections are merging and the same resource name exists on each collection, TSAF automatically awards management responsibility to one of the systems. Two systems in the same collection cannot manage the same global resource at the same time.

Reliability in a Collection

The processors within a collection must support at least one of the following connections to another processor:

- 3088 links
- Channel-to-channel (CTC) adapters
- Binary synchronous communication (BSC) lines.

In general, the reliability of communication within a collection depends on how you set up the collection. For example, communication from a processor where TSAF has three links to three different processors is more reliable than if the processor has only one link to other processors. If a processor with only one link to the rest of the collection loses communication capability in that link, the collection is partitioned.

Multiple Links from TSAF Virtual Machine to TSAF Virtual Machine

Multiple active links from one TSAF virtual machine to another TSAF virtual machine can adversely affect the ability of these TSAF machines to join. When there are multiple links, both TSAF machines might not use the same link to communicate.

For example, Figure 2, shows two dedicated links between the TSAF virtual machines (link1 and link2). If link1 and link2 were both up and added to TSAF, the two TSAF virtual machines might not be able to join. The timing of messages crossing these links can cause this. For example, the TSAF virtual machine on Proc A might want to use link1, while the TSAF virtual machine on Proc B might want to use link2.

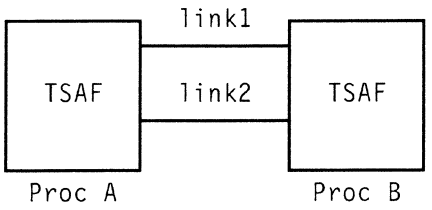


Figure 2. Multiple Connections between TSAF Virtual Machines

If you want to have more than one link available between two TSAF virtual machines, one link should remain detached from the TSAF virtual machines or deleted from TSAF's table of communications links. Then, when needed, you can attach the link or add the link to TSAF's table of communications links. For example, in Figure 2, link2 can be unattached. But when link1 fails, you can attach link2.

On the other hand, you can have two or more links connecting the same two processors (shown in Figure 3), one between the TSAF virtual machines and the other links between other virtual machines, such as RSCS or PVM.

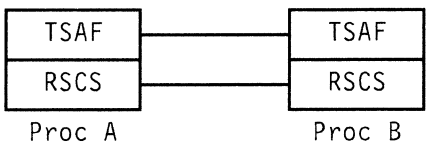


Figure 3. TSAF with RSCS

Multiple Links to Processors in a Collection

When setting up a collection of more than two processors, try to assign each processor a link to at least two other processors. In this way, each processor has at least two fully or partially distinct physical routes to communicate through, rather than just one.

In Figure 4, assume processors A, B, C, and D each have TSAF running. The processors, through the TSAF virtual machines, are connected by links A to B, B to C, and C to D. These systems form a collection.

If the link from B to C fails, the collection is partitioned. In this case, users on A who were communicating with, for example, programs on C are disconnected from those programs.

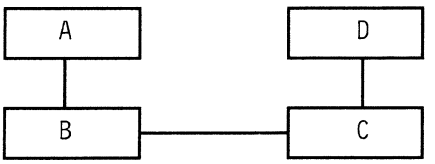


Figure 4. A TSAF Collection

On the other hand, if you add a link between processors A and D, as shown in Figure 5, the collection is more reliable. Again, if a user on A communicates with programs on C, and the link from B to C failed, communication continues on the path from A to D to C.

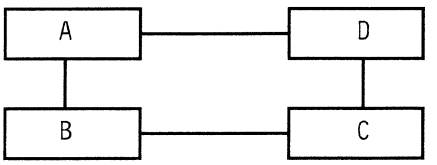


Figure 5. A More Reliable TSAF Collection

National Language Support

Your system administrator can make a language other than American English available on your system and can make this language the system default. Refer to "Making Other Languages Available" on page 33 for more information.

A *levelid* lets you have multiple versions of language-related information.

You can specify this levelid in one of the following places:

- During the CMS nucleus build. This lets you have several versions of language information for the nucleus.
- During the DCSS build for a language (on the LANGGEN command). This lets you have several versions of a language DCSS.

Environmental Considerations

Chapter 23. Migration Considerations

This section describes considerations for migrating to VM/SP Release 5.

- Previous Releases
- Program Products
- APPC/VM and IUCV
- Central Message Facility
- Parsing Facility
- National Language Support
- CMS Session Services
- System Profile
- HELP Facility
- Installation and Service
- LOGON/LOGOFF Enhancements
- SPOOL File Compression Support
- IPCS
- DETACH Command
- PRINTL Macro
- IDENTIFY Command
- Vector Processing Support
- Auto-Deactivation of Restricted Passwords
- IBM Extended Data Stream Support for VM/Pass-Through Facility
- Message Changes Affecting Programmable Operator Routing Tables
- Changes to NUCON.

Previous Releases

VM/SP Release 5 is compatible with VM/370 Basic Systems Extensions, VM/370 System Extensions, and VM/SP Releases 1, 2, 3, and 4.

The format and text for HELP files and some messages have been changed. You might have to update existing execs and/or programs to reflect the changes in messages and HELP text.

Otherwise, you do not need conversion aids besides those described in the *VM/SP Release 3 Guide*, and the *VM/SP Release 4 Guide* to move to Release 5 of VM/SP.

Program Products

Certain program products might need prerequisite service levels to run with Release 5 of VM/SP. Refer to the Program Directory shipped with the product for more information.

Some program products have not converted to full-screen CMS. Evaluate the use of program products in your installation's environment to determine if you should SET FULLSCREEN ON.

APPC/VM and IUCV

APPC/VM, like IUCV, supports virtual machine to virtual machine communication. But in addition to communication within a system, APPC/VM supports communication between different systems. APPC/VM does not support communication with CP System Services.

APPC/VM is a half-duplex protocol. In other words, only one communicator can send on a path at one time.

Refer to the *VM/SP Transparent Services Access Facility Reference* for information about the differences between APPC/VM and IUCV.

Modifying IUCV Applications to Use APPC/VM

IUCV applications continue to work on your systems. However, if you want the new function of TSAF, you have to modify existing IUCV applications to use APPC/VM and the Identify System Service or create new APPC/VM applications.

Coexistence of IUCV and APPC/VM Applications

APPC/VM uses the IUCV facility. For example, APPC/VM and IUCV applications use a common interrupt buffer. Like IUCV, APPC/VM supports but does not recognize multiple programs in a virtual machine.

CMS IUCV support and GCS IUCV support let more than one IUCV and/or APPC/VM program within a virtual machine share the IUCV facility in a nondisruptive manner. Applications written for the CMS or GCS environments should use the CMS or GCS IUCV support.

Refer to the *VM System Facilities for Programming* for more information about CMS IUCV support and the *VM/SP Group Control System Command and Macro Reference* for more information about GCS IUCV support.

IUCV or APPC/VM applications that can run in a virtual machine with other IUCV or APPC/VM applications should be careful in their use of IUCV DESCRIBE, IUCV TESTCMPL, and IUCV TESTMSG functions because these functions can "steal" interrupts intended for another application.

Central Message Facility

Most CP, CMS, and GCS message texts are no longer in individual modules. Message texts for these components now reside in central "repository" files. Modules now issue messages by accessing these files.

The texts of most CP and CMS messages have also changed—many messages are mixed case (instead of uppercase), some are reworded, and some have different punctuation. As a result, you might have to change applications that check for exact message texts.

Parsing Facility

If you SET ABBREV OFF, CMS command resolution accepts the full command name or the full synonym of a command name (if one exists), regardless of whether the command is an exec or a module.

National Language Support

CMS now searches for command translations and translation synonyms before it searches for command synonyms.

CMS Session Services

The System Product Editor

- XEDIT no longer carries out its own I/O. Windowing functions are responsible for XEDIT I/O. As a result, certain CMS settings affect the XEDIT environment, especially the following:
  - SET LANGUAGE (affects Double-Byte Character Sets (DBCS) display and the nondisplayable character set)
  - SET APL/TEXT
  - SET FULLREAD
  - SET NONDISP
  - SET REMOTE
- The XEDIT SET BRKKEY works differently. XEDIT no longer restores the BRKkey to whatever it was when SET BRKKEY ON was issued. Instead, if BRKKEY was set in XEDIT, the CP setting remains when you are no longer in XEDIT.

  In addition, the initial SET BRKKEY setting now reflects the CP TERMINAL BRKKEY setting. It is no longer always ON by default.
- The default PA1 key for XEDIT (and the NAMES and SENDFILE commands) is now COMMAND CMS POP WINDOW WM if BRKKEY is not assigned to the PA1 key.
- QUERY and EXTRACT return virtual screen information rather than physical screen information.
- COPYKEY copies the content of the virtual screen, rather than the content of the physical screen, into the printer spool.
- The initial SET ETMODE setting is no longer OFF by default. This setting is now based on whether the terminal in use is capable of handling double byte characters.
- If you are using a 3277 terminal and you issue QUERY PF, you now get the settings for 24 PF keys instead of just 12.

- Nullkey is an existing option you can specify on any XEDIT PF or PA key or on the enter key. Now, the nullkey function replaces trailing blanks with nulls on the field of the screen that contains the cursor. If the cursor is on a prefix area, the nulls are written to the field of the file line associated with that prefix area. Before, the nullkey function wrote the nulls on the line containing the cursor.

CONSOLE and HNDINT Macros

You can specify the EXIT parameter for the OPEN function of the CONSOLE macro instruction to handle unrequested device interrupts.

If EXIT is specified, **do not** define an interruption routine via the HNDINT macro for the same device. Use of the CONSOLE and HNDINT macros is mutually exclusive. CONSOLE OPEN with EXIT supercedes an HNDINT routine when the interrupt is requested. Therefore, if you want to do I/O to a 3270 device, use the CONSOLE macro instead of the HNDINT macro.

Applications using DIAGNOSE code X'58'

DIAGNOSE code X'58' applications should use the CONSOLE macro so CMS regulates the use of the screen between an application's output and CMS output (for example, messages and responses).

Applications that modify psws in low storage and issue their own DIAGNOSE code X'58', handle CSW error status, or handle their own I/O interrupts, should SET FULLSCREEN OFF or SET FULLSCREEN SUSPEND.

Applications using DIAGNOSE code X'58' and interacting with XEDIT should also convert to using the CONSOLE macro.

Console Spooling

When you are in full-screen CMS, console spooling does not record your input and CMS output in the CP console spool file. Instead, you can use the SET LOGFILE command to record input and output.

Refer to the *VM/SP CMS Command Reference* for more information about SET LOGFILE.

System Profile

To properly use the system profile and the new CMS parameters,

```
PARMRGS=(0,15)
```

must be coded in the NAMESYS macro for the CMS named system. If not, existing CMS parameters continue to work, but new functions might not work as you expect.

HELP Facility

The visual screens and PF keys have changed.

Installation and Service

IPL Command

The VM/SP WARM IPL code now accepts Release 3, Release 4, or Release 5 data as input. This input data is contained in the WARM start cylinders (or blocks) specified by the SYSWRM option of the SYSRES macro. (The SYSRES macro is used in the DMKSYS ASSEMBLE file, described in the *VM/SP Planning Guide and Reference.*) The WARM start data is written to DASD by the CP SHUTDOWN command.

Spool File Migration

You can migrate spool files using the SPTAPE command or using the SHUTDOWN and WARM IPL commands.

Using SPTAPE

The LOAD function of the SPTAPE command supplied with Release 5 processes a tape produced by the DUMP function of the VM/SP Release 3 or Release 4 SPTAPE command. The SPTAPE command also provides for migrating spool files back from Release 5 to Release 3 or 4. Although there are considerations when migrating backward, in general, files that do not use new functions provided in Release 5 can be successfully migrated back from Release 5 to Release 3 or 4.

Refer to the *VM/SP CP Command Reference* for more information about the SPTAPE command.

Using SHUTDOWN and WARM IPL Commands

You can WARM start IPL VM/SP Release 5 from the warmstart information written to disk by the Release 3 or 4 SHUTDOWN process. The CP nucleus at SHUTDOWN must be at the same level it was when the system was originally IPLed. Do not replace the CP nucleus of the running system with a Release 5 CP nucleus before SHUTDOWN, or the SHUTDOWN can fail and require a COLD start IPL. In addition, your Release 5 WARM start area must be at the same location as the release you are migrating from.

Note: You cannot use this procedure if you are using the Starter System to migrate VM/SP or if your system residence device is a 3380-AE4 or 3380-BE4.

Refer to the *VM/SP Installation Guide* for recommended procedures to migrate spool files.

Deletion of CMSL

The CMS saved system is defined in DMKSNT at a higher virtual storage address, the address formerly occupied by the CMSL saved system.

3480 Cartridge

The starter system, product tapes, and feature tapes are now also available in an 18-track bpi 3480 cartridge.

Starter System Versions

Starter system versions now supported are:

- 3330-11
- 3350
- 3375
- 3380/3380-E4
- FBA (3370/3370-2).

LOGON/LOGOFF

AUTOLOG, LOGON, FORCE, and QUERY Commands

This support does not change how you invoke the AUTOLOG, LOGON, FORCE, and QUERY commands. Changes made to them for VM/SP Release 5 are:

- AUTOLOG, LOGON, FORCE, and QUERY issue message

  ```
  361E LOGOFF/FORCE PENDING FOR USER userid
  ```

  when they are invoked by or for a virtual machine user in the process of logging off.

- If you are being forced off, you are no longer notified of the force because the possibility of hardware problems with your console can inhibit a message from being displayed. If you are logged on to a remote device, however, you receive the normal accounting message produced at logoff in addition to message

  ```
  LOGOFF AT hh:mm:ss zone weekday mm/dd/yy BY SYSTEM
  ```

DMKDID Module

LOGON/LOGOFF enhancements require module DMKDID to be in the CP nucleus. If you build a CP nucleus without module DMKDID, it can abnormally terminate (ABEND) during LOGOFF or FORCE processing for a virtual machine.

In previous releases of VM/SP, you could generate a smaller CP nucleus by using the CPLOADSM loadlist instead of the CPLOAD loadlist. The CPLOADSM loadlist was coded so module DMKDID and other optional CP modules were not included in the nucleus load deck. Now, the CPLOADSM loadlist is coded so module DMKDID is included in the nucleus load deck.

SPOOL File Compression Support

The content of virtual SPOOL files has changed in two ways:

- The original record length is saved with each output line written to a virtual console, printer, or punch.

  The spool file block (SFBLOK) is marked to indicate the availability of the original record length. The original length is the length of the record presented to the virtual machine's spooling device before CP truncates trailing blanks. Application programs needing a record image with all trailing blanks intact must be modified to locate the original byte count for each record and use it to pad the record with blanks.

- The original sequence of carriage control commands is saved without any merge operation.

  CP no longer replaces multiple carriage control commands with a single equivalent command. Instead, application programs reading the virtual SPOOL files encounter the original sequence of carriage control operations.

Before Release 5, the original record lengths and carriage control sequences were not available to receivers of spooled data.

IPCS

Run Release 5 functions of IPCS only on Release 5 CMS. If you try to run the Release 5 functions on a lower release, you lose print support.

DETACH Command

In addition to the two new options (UNLOAD and LEAVE) for the class B user, error handling has changed. Before this release, you could enter miscellaneous information on the command line following the last valid operand. Now, if there is information on the command line following the last valid operand, you receive an error message.

PRINTL Macro

If you are a present user of the PRINTL macro and want to print multiple lines with a single request, place your fixed length records in a buffer or provide a list containing both the address and the length of each record to be printed. If you want to continue using the PRINTL macro to print a line at a time, you do not have to recompile.

If you use the OS PUT/WRITE macros and direct the output to the virtual printer, you might want to block the output records (if previously unblocked).

IDENTIFY Command

The IDENTIFY command is now nucleus resident and, therefore, cannot be NUCXDROPed. If the SYSTEM NETID file is changed, CMS must be re-IPLed to force IDENTIFY to re-read the information in SYSTEM NETID.

Vector Processing Support

You need the following to use vector facility support:

- VM/SP HPO Release 4.2
- 3090 processor with at least one vector facility available.

Auto-Deactivation of Restricted Passwords

If you have userids with restricted passwords in the directory, change these passwords to unrestricted passwords. Otherwise, such userids cannot access the system. You can add additional passwords to or remove passwords from the restricted password list (RPWLIST DATA). If you remove restricted passwords, they can be used to access the system.

IBM Extended Data Stream Support for VM/Pass-Through Facility

For the INITIATE function of DIAGNOSE code X'7C', the high order byte of register Rx+1 indicates the following optional features:

Bit 0 - 3270 extended features to be supported
Bit 1 - ACCEPT function must be followed by STATUS function
Bit 2 - Specific device address requested.

Existing applications that use the high order byte of Rx+1 will experience migration and coexistence problems.

Message Changes Affecting Programmable Operator Routing Tables

When the SPOOL command is used to close an output device, the informational message

```
PRT
PUN   FILE spoolid  TO    userid COPY nnn  HOLD
CON                FOR                    NOHOLD
```

is received by the userid specified. This message previously specified as type 3 (CPCONIO) in a programmable operator routing table, is now an informational message (IMSG) and should be changed to type 7. (See Figure 6.)

```
:
:
*----------------------- --- --- -- -------- -------- -------- --------
*T                       S   E   T  U        N        A        P
*E                       C   C   Y  S        O        C        A
*X                       O   O   P  E        D        T        R
*T                       L   L   E  R        E        N        M
*----------------------- --- --- -- -------- -------- -------- --------
* ROUTE SPECIFIC MESSAGE TO THE LOGICAL OPERATOR
*----------------------- --- --- -- -------- -------- -------- --------
/PRT /FILE $TO                     7                  DMSPOS   LGLOPR
*----------------------- --- --- -- -------- -------- -------- --------
:
:
```

Figure 6. Programmable Operator Message Class Changes

Changes to NUCON

The following GLOBALed library fields have been removed from NUCON:

DOSDIRC
DOSLIBL
MACDIRC
MACLIBL
NUCLDLIB
NUCLDIRC
TXTLIBS

The following console fields have been removed from NUCON:

CONINBLK
CONINBUF

Changes applications that reference these fields to use higher level interfaces (such as the QUERY command) that are not release dependent.

Part 4: Internal Design Changes

This part of the manual lists changes to the internal design of VM/SP that affect performance, usability, or maintenance.

It includes:

- A list of new and changed modules, macros, control blocks, and so on, for each addition or enhancement
- A list of general changes for CP, CMS and XEDIT, and IPCS.

Chapter 24. Design Changes by Function

This section applies to CP, CMS, XEDIT and IPCS.
Information about GCS and TSAF is not included because the source code for GCS and TSAF modules is not always distributed with VM/SP.

This section lists new and changed CP, CMS, XEDIT and IPCS modules, control blocks, macros, and so on, for the new and changed functions.
It can help you with planning.
The functions are listed alphabetically.

Access Verification Routines

New and Changed CP Modules

DMKCNS	DMKCPI	DMKCPJ	DMKCSP	DMKCST
DMKCSV	DMKDIR	DMKEPS	DMKHVC	DMKHVD
DMKHVE	DMKIUA	DMKIUC	DMKLNK	DMKLOG
DMKLOH	DMKRPD	DMKRPI	DMKRPW	DMKUDR
DMKUDU	DMKUSO			

New and Changed CP Control Blocks and Macros

ACIPARMS	TTYDATA	UDIRECT	VMBLK
VMBLOK			

Alternate Nucleus Support

New and Changed CP Modules

DMKALO DMKCKF DMKCKH DMKCKP DMKCKT
DMKCPI DMKCPJ DMKCPS DMKDMP DMKHVE
DMKIOG DMKMES DMKOPE DMKRSP DMKSAV
DMKTOD DMKUDR DMKWRM

New and Changed CP Control Blocks and Macros

CKPLIST SYSRES

Alternate Tape Drive Support

New and Changed CMS Modules

DMSFLD DMSFLE DMSMVE DMSSOP DMSTLB
DMSSTP DMSTIO DMSTLM

New and Changed CMS Control Blocks and Macros

CMSCB DEVSECT DMSTLW FDEFSECT

Alternate Userid Support (DIAGNOSE Code X'D4')

New and Changed CP Modules

DMKHVC DMKHVF DMKIUC DMKOVR DMKSPL
DMKUSO

New and Changed CP Control Blocks and Macros

VMBLOK ALTBLOK

APPC/VM

New and Changed CP Modules

DMKDIR	DMKHVF	DMKIUA	DMKIUB	DMKIUC
DMKIUE	DMKIUG	DMKIUJ	DMKIUL	DMKIUN
DMKIUP	DMKIUS	DMKLOH	DMKPGS	DMKUSO

New and Changed CP Control Blocks and Macros

ALTBLOK	APPCVM	CALL	CONEXT
IPARML	IUCVBLOK	UDIRECT	VMBLOK

ASCII Enhancements

New and Changed CP Modules

DMKBLD	DMKCFT	DMKCNS	DMKCQU	DMKGRF
DMKHVE	DMKNES	DMKQCN	DMKRGC	DMKTBN
DMKTTX	DMKTTY	DMKUSQ	DMKVCP	DMKVCQ
DMKVCR	DMKVCS	DMKVCV		

New and Changed Control Blocks and Macros

RDEVICE	RDEVBLOK	VMBLOK

New and Changed Copy Files

DEVTYPES COPY	RBLOKS COPY	VMBLOK COPY

CP Module Split

Original Modules	Split Into
DMKTTY	DMKTTY
	DMKTTX

Auto-Deactivation of Restricted Passwords

New and Changed CP Modules

DMKDIR

Central Message Facility

New and Changed CMS Modules

DMSABN	DMSACC	DMSAMS	DMSARE	DMSASM
DMSASN	DMSBOP	DMSBTB	DMSBTP	DMSBWR
DMSCCK	DMSCIO	DMSCIT	DMSCLS	DMSCMP
DMSCPY	DMSCRD	DMSCVH	DMSCWR	DMSDAS
DMSDBD	DMSDBG	DMSDDL	DMSDIO	DMSDLB
DMSDLK	DMSDOS	DMSDSK	DMSDSL	DMSDSV
DMSEIO	DMSERD	DMSERS	DMSEXD	DMSEXE
DMSEXL	DMSEXM	DMSEXQ	DMSFCH	DMSFET
DMSFLD	DMSFNC	DMSFNS	DMSFOR	DMSFRE
DMSGAM	DMSGLB	DMSGLO	DMSGMF	DMSGND
DMSGRN	DMSGVE	DMSHDS	DMSICP	DMSIDE
DMSINI	DMSINS	DMSINT	DMSITE	DMSITP
DMSITS	DMSIUC	DMSLBD	DMSLBM	DMSLBT
DMSLDF	DMSLDR	DMSLDS	DMSLGT	DMSLIB
DMSLIC	DMSLIO	DMSLKD	DMSLLU	DMSLMX
DMSLOA	DMSLOS	DMSLSB	DMSLST	DMSMCM
DMSMDP	DMSMES	DMSMGC	DMSMGD	DMSMGE
DMSMGM	DMSMGX	DMSMOD	DMSMVE	DMSMVG
DMSNAM	DMSNUC	DMSNXD	DMSNXL	DMSNXM
DMSOPL	DMSOPT	DMSOR1	DMSOSR	DMSOVR
DMSOVS	DMSPIO	DMSPOA	DMSPOC	DMSPOD
DMSPOE	DMSPOL	DMSPOP	DMSPOQ	DMSPOR
DMSPOS	DMSPRE	DMSPRT	DMSPRV	DMSPUN
DMSQRS	DMSQRT	DMSQRU	DMSQRV	DMSQRW
DMSQRX	DMSQRY	DMSQRZ	DMSRDC	DMSRDR
DMSREX	DMSRFN	DMSRIN	DMSRNM	DMSROS
DMSRRV	DMSRSV	DMSSBS	DMSSCT	DMSSEB
DMSSET	DMSSLN	DMSSMN	DMSSOP	DMSSPR
DMSSRT	DMSSRV	DMSSSK	DMSSTG	DMSSTT
DMSSTX	DMSSUB	DMSSVT	DMSSYN	DMSTLB
DMSTLM	DMSTMA	DMSTPD	DMSTPE	DMSTPF
DMSTPG	DMSTPH	DMSTPI	DMSTPJ	DMSTVS
DMSTYP	DMSUPD	DMSUTL	DMSVIB	DMSVIP
DMSVLT	DMSXBG	DMSXCG	DMSXCM	DMSXCN
DMSXCT	DMSXDC	DMSXDS	DMSXED	DMSXER
DMSXFC	DMSXFD	DMSXFL	DMSXGT	DMSXIN
DMSXIO	DMSXMA	DMSXMB	DMSXMC	DMSXMD
DMSXML	DMSXMS	DMSXPO	DMSXPT	DMSXPX
DMSXQR	DMSXRE	DMSXSC	DMSXSD	DMSXSE
DMSXSF	DMSXSS	DMSXST	DMSXSU	DMSXTB
DMSXTE	DMSXTF	DMSXTR	DMSXUP	DMSXWS
DMSZAP				

New and Changed CMS Control Blocks and Macros

APPLMSG DMSMSG DMSSWPL

New and Changed CMS and XEDIT Execs

ALL	CANCEL	CMSGEND	CMSLOAD
DEFAULTS	DISCARD	EXECUPDT	EXECUTE
EXPAND	FILELIST	JOIN	LANGGEN
LANGMERG	MACLIST	NAMES	NOTE
PEEK	PREFIXX	PRFSHIFT	PRFSHOW
PROFFLST	PROFMLST	PROFNOTE	PROFPEEK
PROFRLST	PROPHCHK	PROPST	RDRLIST
RECEIVE	RGTLEFT	SENDFILE	SI
SPLTJOIN	STATUS	TELL	VMFNLS
X$MLST$X	X$SEND$X	ZAPTEXT	

Collection Resource Management and Identify System Services

New and Changed CP Modules

DMKCPJ DMKDIR DMKIDR DMKIUB DMKIUC
DMKCRM DMKUDR

New and Changed CP Control Blocks and Macros

IUCVBLOK PSA SRTBLOK SSCBLOK

CMSDEV Macro

New and Changed CMS Modules

DMSDEV DMSFNC DMSPIO

New and Changed CMS Control Blocks and Macros

CMSDEV

New and Changed CMS Execs

CMSLOAD

CMS Session Services

New and Changed CMS Modules

DMSABN	DMSALA	DMSCCS	DMSCLR	DMSCPF
DMSCRD	DMSCUR	DMSCWR	DMSDEF	DMSDEL
DMSDRP	DMSFNC	DMSGET	DMSHID	DMSINA
DMSITI	DMSMAX	DMSMIN	DMSPPO	DMSPST
DMSPUT	DMSQRF	DMSQRG	DMSQRH	DMSQRY
DMSREF	DMSRES	DMSROU	DMSSCL	DMSSEF
DMSSET	DMSSHO	DMSSIZ	DMSWAT	DMSWBX
DMSWEN	DMSWEX	DMSWID	DMSWIF	DMSWIM
DMSWIN	DMSWIO	DMSWIR	DMSWIS	DMSWIT
DMSWIW	DMSWLR	DMSWLW	DMSWMI	DMSWMM
DMSWMO	DMSWMU	DMSWMX	DMSWQI	DMSWQM
DMSWRD	DMSWRT	DMSWST	DMSWVC	DMSWVD
DMSWVE	DMSWVL	DMSWVQ	DMSWVS	DMSWVT
DMSWVX	DMSXBG	DMSXCM	DMSXCT	DMSXED
DMSXFC	DMSXIN	DMSXIO	DMSXMA	DMSXMC
DMSXMD	DMSXML	DMSXPO	DMSXPX	DMSXQR
DMSXSC	DMSXSD	DMSXSE	DMSXSF	DMSXSS
DMSXSU	DMSXTE	DMSXTR	DMSXWS	

New and Changed CMS and XEDIT Control Blocks and Macros

CQYSECT	DMSCDEV	DMSDSBLK	DMSEDWCL
DMSLRDP	DMSLWRP	DMSOSSAV	DMSQFSC
DMSQPLST	DMSSCRCB	DMSSMEQU	DMSWMLPL
DMSWMUPL	IO	LINERD	LINEWRT
LSCREEN	NUCON	PRSCB	VSDB
VSQB	ZBLOCKS		

CMS Support of APPC/VM

New and Changed CMS Modules

DMSABN	DMSINS	DMSITE	DMSIUC

New and Changed CMS Control Blocks and Macros

CMSIUCV	IUCVTAB

COMPARE Command

New and Changed CMS Modules

DMSCMP

CP DETACH Command

New and Changed CP Modules

DMKVDC DMKVDD DMKVDR

New and Changed CP Control Blocks and Macros

VDEVBLOK

DIAGNOSE Code X'08'

New and Changed CP Modules

DMKEPS DMKHVC DMKLNK DMKMES DMKQCN

New and Changed CP Control Blocks and Macros

VMBLOK VMBLK

DIAGNOSE Code X'BC'

New and Changed CP Modules

DMKHVC DMKHVF DMKVSW

DIAGNOSE Code X'B4'

New and Changed CP Modules

DMKHVC DMKHVE DMKXAB

New and Changed CP Control Blocks and Macros

SFBLOK VSPXBLOK

DIAGNOSE Code X'B8'

New and Changed CP Modules

DMKHVC DMKHVE DMKXAB

New and Changed CP Control Blocks and Macros

SFBLOK VSPXBLOK

Directory Enhancements

New and Changed CP Modules

DMKCSP DMKDIR DMKLOG DMKLOH DMKLOJ
DMKUDR DMKUDU

New and Changed CP Control Blocks and Macros

UDEVBLOK UDIRBLOK UMACBLOK

New and Changed CP Copy Files

DPLIST UDIRECT

Enhanced Connectivity Facilities on VM/SP

New and Changed CMS Modules

DMSABN	DMSADD	DMSALC	DMSAST	DMSBCT
DMSBLG	DMSCCP	DMSCDI	DMSCLN	DMSCRT
DMSCST	DMSDFT	DMSDRO	DMSEVC	DMSGRQ
DMSGTU	DMSIAC	DMSINS	DMSMKS	DMSPBK
DMSRTE	DMSSMG	DMSSRE	DMSSRH	DMSSRP
DMSSRQ	DMSSTC	DMSUPP	DMSUSR	DMSUST
DMSVLD				

New and Changed CMS Control Blocks and Macros

ADDENTRY	CPRB	CSMRETCD	DELENTRY
DMSBFREE	DMSBFRET	SENDREQ	

New and Changed CMS Execs

CMSGEND	CMSLOAD	CMSSERV

Error Logging System Service

New and Changed CP Modules

DMKIOF	DMKIUA	DMKIUB	DMKIUC	DMKIUP

New and Changed CP Control Blocks and Macros

PSA

Execs in Storage

New and Changed CMS Modules

DMSEXD DMSEXG DMSEXL DMSEXM DMSINI
DMSINS DMSQRT DMSQRY DMSSET

New and Changed CMS Control Blocks and Macros

EXISBLK NUCON

New and Changed CMS and XEDIT Execs

SYSPROF EXECUPDT X$EUPD$X

FORMAT Command

New and Changed CMS Modules

DMSFOR

GLOBAL Command

New and Changed CMS Modules

DMSABN DMSFCH DMSGLB DMSLDR DMSLGT
DMSLIB DMSLOS DMSNUC DMSQRW DMSSCT
DMSSLN DMSSOP DMSSTG DMSSVT

New and Changed CMS Control Blocks and Macros

NUCON

HELP Facility

New and Changed CMS Modules

DMSHLB DMSHLC DMSHLI DMSHLL DMSHLM
DMSHLP DMSHLR DMSHLS DMSHLT DMSHLZ
DMSXTB

New and Changed CMS and XEDIT Control Blocks and Macros

DMSHELP DMSHLNXT HELP HELPXED
HLPSECT

Deleted CMS Modules

DMSHLE

CMS Module Split

Original Modules	Split Into
DMSHLL	DMKHLC DMSHLL DMSHLM DMSHLR DMSHLT DMSHLZ

New and Changed CMS Execs

DEFAULTS MOREHELP

IBM Extended Data Stream Support for VM/Pass-Through Facility

New and Changed CP Modules

DMKCPV DMKCQV DMKDIA DMKGRF DMKGRG
DMKHPS DMKHPT DMKHPU DMKHVE DMKSCN
DMKUSO DMKUSQ DMKVDA DMKVDC DMKVDE
DMKVDF DMKVDS DMKVIO DMKVSI

New and Changed CP Control Blocks and Macros

VMBLOK VMPSCOM

Installation and Service

New and Changed CMS Execs

ITASK	SNTMAP	SPGEN	SPLOAD
UTILITY	VMFLOAD	VMFMERGE	VMFNLS
VMFREMOV	VMFTXT		

Deleted CMS Execs

GCSGEN	GENERATE	GENERAT2	GENERAT3
PREP			

New and Changed CMS Files

DMSNGP ASSEMBLE	SPGEN PROFILE	SPLOAD PROFILE
$DASD$ CONSTS	$MSG4I$ EXEC	

Deleted CMS Files

X$GENR$X

New and Changed CMS Control Blocks and Macros

DEFNUC MRGSC

New and Changed CP Modules

DMKSSP

Interactive Problem Control System Support for TSAF

New and Changed IPCS Modules

DMMCOM	DMMDCM	DMMDCP	DMMDIN	DMMDIR
DMMDSC	DMMFED	DMMLOC	DMMMAP	DMMPRT
DMMSCN	DMMSCR	DMMTAB	DMMTRC	DMMTRD
DMMVAL	DMMVMF			

New and Changed IPCS Control Blocks and Macros

WORKCP

IUCV Enhancements

New and Changed CP Modules

DMKBIO DMKDSP DMKIOF DMKIUA DMKIUB
DMKIUC DMKIUG DMKIUJ DMKIUL DMKIUN
DMKIUP DMKMSG DMKPRV DMKVCT DMKVCW
DMKVMG

New and Changed CP Control Blocks and Macros

CALL IPARML IUCV IUCVBLOK
PSA

CP Module Split

Original Modules	Split Into
DMKVCT	DMKVCT
	DMKVCW

IX/370 Handshaking

New and Changed CP Modules (VM/SP Release 3)

DMKCFJ DMKCFS DMKCQR DMKDIR DMKEMB
DMKLOH DMKSVC

New and Changed CP Modules (VM/SP Release 4)

DMKCFS DMKCMD DMKCQR DMKDIR DMKEMD
DMKLOH DMKSVC

New and Changed CP Control Blocks and Macros

VMBLOK UMACBLOK

Logical Device Host Limit Relief

New and Changed CP Modules

DMKHPS DMKHPT DMKSCN

LOGON/LOGOFF Enhancements

New and Changed CP Modules

DMKCFD DMKCNS DMKCQG DMKCQQ DMKCQY
DMKDID DMKGRF DMKLOH DMKMES DMKRGA
DMKUSO DMKUSQ

New and Changed CP Control Blocks and Macros

IOBLOKS RBLOKS TIMER VMBLK
VMBLOK

LOGON to the Logo Screen

New and Changed CP Modules

DMKBOX DMKCFM DMKCFR DMKCNS DMKCPB
DMKDIA DMKDID DMKGRF DMKGRT DMKHPT
DMKLOG DMKMES DMKQVM DMKRGA DMKRGB
DMKRGC DMKRNH DMKUSO DMKUSQ DMKVCR
DMKVCT DMKVCV DMKVCX DMKVDA DMKVDR
DMKVDS

New and Changed CP Control Blocks and Macros

BOXBLOK CALL GRTBLOK NETWORK
RBLOKS SNARBLOK TIMER VMBLOK
WEBLOK

Message Identifier Enhancement

New and Changed CP Modules

DMKHVC

Migration of CMS Commands and Modules to the CMS Nucleus

New and Changed CMS Modules

DMSCPY DMSFNC DMSGLO DMSIDE DMSINS
DMSNUC DMSPRT DMSRSF

New and Changed CMS Control Blocks and Macros

DMSIDEWK

New and Changed CMS Execs

CMSGEND CMSLOAD

National Language Support for CMS

New and Changed CMS Modules

DMSABN	DMSACC	DMSAMS	DMSARE	DMSASM
DMSASN	DMSBOP	DMSBTB	DMSBTP	DMSBWR
DMSCCK	DMSCIO	DMSCIT	DMSCLS	DMSCMP
DMSCPY	DMSCRD	DMSCSF	DMSCVH	DMSCWR
DMSDAS	DMSDBD	DMSDBG	DMSDDL	DMSDIO
DMSDLB	DMSDLK	DMSDOS	DMSDSK	DMSDSL
DMSDSV	DMSEIO	DMSERD	DMSERS	DMSEXD
DMSEXE	DMSEXL	DMSEXM	DMSEXQ	DMSFCH
DMSFET	DMSFLD	DMSFLE	DMSFNC	DMSFNE
DMSFNS	DMSFOR	DMSFRE	DMSGAM	DMSGLB
DMSGLO	DMSGMF	DMSGND	DMSGRN	DMSGVE
DMSHDI	DMSHDS	DMSHLB	DMSHLD	DMSHLI
DMSHLP	DMSHLS	DMSHTB	DMSICP	DMSIDE
DMSIMM	DMSINA	DMSINI	DMSINS	DMSINT
DMSITE	DMSITP	DMSITS	DMSIUC	DMSLBD
DMSLBM	DMSLBT	DMSLCK	DMSLDF	DMSLDR
DMSLDS	DMSLFS	DMSLGT	DMSLIB	DMSLIC
DMSLIO	DMSLKD	DMSLLU	DMSLMX	DMSLOA
DMSLOS	DMSLSB	DMSLST	DMSMCM	DMSMDP
DMSMES	DMSMGC	DMSMGD	DMSMGE	DMSMGM
DMSMGX	DMSMOD	DMSMVE	DMSMVG	DMSNAM
DMSNUC	DMSNXD	DMSNXL	DMSNXM	DMSOPL
DMSOPT	DMSOR1	DMSOSR	DMSOVR	DMSOVS
DMSPAR	DMSPCA	DMSPCB	DMSPCC	DMSPCL
DMSPCR	DMSPCT	DMSPCW	DMSPDB	DMSPIO
DMSPKT	DMSPMD	DMSPOA	DMSPOC	DMSPOD
DMSPOE	DMSPOL	DMSPON	DMSPOP	DMSPOQ
DMSPOR	DMSPOS	DMSPPL	DMSPRB	DMSPRE
DMSPRI	DMSPRJ	DMSPRT	DMSPRV	DMSPSC
DMSPSM	DMSPTC	DMSPTK	DMSPTL	DMSPTR
DMSPTT	DMSPUN	DMSPVF	DMSQRS	DMSQRT
DMSQRU	DMSQRV	DMSQRW	DMSQRX	DMSQRY
DMSQRZ	DMSRDC	DMSRDR	DMSREV	DMSREX
DMSRFN	DMSRIN	DMSRLD	DMSRNM	DMSROS
DMSRRV	DMSRSF	DMSRSV	DMSRTC	DMSRVA
DMSRXE	DMSSBS	DMSSCN	DMSSCR	DMSSCT
DMSSEB	DMSSET	DMSSLG	DMSSLN	DMSSMN
DMSSOP	DMSSPR	DMSSRT	DMSSRV	DMSSSK
DMSSTG	DMSSTT	DMSSTX	DMSSUB	DMSSVT
DMSSYN	DMSTLB	DMSTLM	DMSTMA	DMSTPD
DMSTPE	DMSTPF	DMSTPG	DMSTPH	DMSTPI
DMSTPJ	DMSTRT	DMSTVS	DMSTYP	DMSUPD
DMSUTL	DMSVIB	DMSVIP	DMSVLT	DMSXBG
DMSXCG	DMSXCM	DMSXCN	DMSXCT	DMSXDC
DMSXDS	DMSXED	DMSXER	DMSXFC	DMSXFD
DMSXFL	DMSXGT	DMSXIN	DMSXIO	DMSXMA
DMSXMB	DMSXMC	DMSXMD	DMSXML	DMSXMS
DMSXPO	DMSXPT	DMSXPX	DMSXQR	DMSXRE
DMSXSC	DMSXSD	DMSXSE	DMSXSF	DMSXSS
DMSXST	DMSXSU	DMSXTB	DMSXTE	DMSXTF

DMSXTR DMSXUP DMSXWS DMSZAP

New and Changed CMS Control Blocks and Macros

ACCSECT	DBGSECT	DMSABW	DMSPDBCB
DMSPGVAR	DMSPKTD	DMSPKTWK	DMSPSCCB
DMSPSDPL	DMSTRANS	EPLIST	FDEFSECT
IOSECT	LANGBLK	LDRST	NUCON
OVSECT	PARSECMD	PARSERCB	PARSERUF
PROPDTA	PVCENTRY	QRYWORK	SUBSECT
SVCSAVE	TABENT	TAPEWORK	TRANTBL

New and Changed CMS Execs

CMSGEND	CMSLOAD	CONVERT	DEFAULTS
DISCARD	FILELIST	LANGGEN	LANGMERG
MACLIST	NAMES	NOTE	PEEK
RDRLIST	RECEIVE	SENDFILE	TELL
VMFNLS			

National Language Support for CP

New and Changed CP Modules

DMKALG	DMKALO	DMKBLD	DMKCDM	DMKCDS
DMKCFC	DMKCFF	DMKCFG	DMKCFJ	DMKCFM
DMKCFO	DMKCFR	DMKCFS	DMKCFT	DMKCFU
DMKCFV	DMKCFY	DMKCKS	DMKCKT	DMKCKV
DMKCMD	DMKCNS	DMKCPB	DMKCPI	DMKCPJ
DMKCPO	DMKCPP	DMKCPT	DMKCPV	DMKCPW
DMKCPY	DMKCQC	DMKCQT	DMKCSB	DMKCSC
DMKCSF	DMKCSO	DMKCSP	DMKCSQ	DMKCST
DMKCSW	DMKDEF	DMKDEG	DMKDEI	DMKDIA
DMKDIB	DMKDID	DMKDIF	DMKDIR	DMKDRD
DMKDSP	DMKEPS	DMKERM	DMKGRF	DMKHVC
DMKHVD	DMKHVE	DMKHVF	DMKIDR	DMKIDU
DMKIOG	DMKIOH	DMKIUC	DMKIUJ	DMKIUP
DMKJRL	DMKLNM	DMKLOC	DMKLOG	DMKLOH
DMKLOJ	DMKLOM	DMKMCC	DMKMCD	DMKMIA
DMKMES	DMKMNI	DMKMNT	DMKMON	DMKMSG
DMKNEA	DMKNES	DMKNET	DMKNLD	DMKNLE
DMKOPE	DMKOVR	DMKPEI	DMKPEL	DMKPEN
DMKPEQ	DMKPER	DMKPET	DMKQCN	DMKQCO
DMKQCQ	DMKREI	DMKRGA	DMKRGB	DMKRNH
DMKRPD	DMKRSE	DMKRSP	DMKRST	DMKSCN
DMKSCO	DMKSND	DMKSPK	DMKSPL	DMKSPS
DMKSPT	DMKSSS	DMKSSU	DMKSSV	DMKSYS
DMKTCS	DMKTCT	DMKTOD	DMKTRA	DMKTRP
DMKTRT	DMKTRU	DMKTRX	DMKUDB	DMKUDR
DMKUDU	DMKUSO	DMKUSQ	DMKVAT	DMKVBM
DMKVCH	DMKVCN	DMKVCS	DMKVDA	DMKVDD
DMKVDE	DMKVDS	DMKVMA	DMKVMD	DMKVME
DMKVSP	DMKVST	DMKWRM	DMKWRN	

Deleted CP Modules

DMKEMA DMKEMB DMKEMC DMKEMD DMKEME
DMKEMR

Changed IPCS Module

DMMCPA

New and Changed CP Control Blocks and Macros

IOBLOKS	LANGBLOK	LANGNTRY	MIHREC
NAMELANG	NLSTBL	PSA	UCNTRL
UDIRECT	VMBLK	VMBLOK	WEBLOK

Changed CP Loadlists (Execs)

APLOAD	AVLOAD	CPLOAD	CPLOADSM
VRLOAD			

OS Simulation Standard Label Tape Processing Exits

New and Changed CMS Modules

DMSFLD	DMSFLE	DMSFLO	DMSLBD	DMSSPM
DMSSEB	DMSSOP	DMSTLB		

CMS Module Split

Original Modules	Split Into	
DMSFLD	DMSFLD	DMSFLO

New and Changed CMS Macros

CMSCB	FDEFSECT	LABSECT	TVISECT

New and Changed CMS Execs

CMSLOAD	DMSSP

Parsing Facility

New and Changed CMS Modules

DMSACC	DMSARE	DMSCMP	DMSCPY	DMSCSF
DMSDSK	DMSERS	DMSEXD	DMSEXL	DMSEXM
DMSFOR	DMSIDE	DMSINA	DMSINT	DMSITS
DMSLBT	DMSLST	DMSMDP	DMSNUC	DMSNXD
DMSNXL	DMSNXM	DMSOVR	DMSPAR	DMSPCA
DMSPCB	DMSPCC	DMSPCL	DMSPCR	DMSPCT
DMSPCW	DMSPDB	DMSPKT	DMSPMD	DMSPPL
DMSPRB	DMSPRI	DMSPRJ	DMSPRT	DMSPSC
DMSPSM	DMSPTC	DMSPTK	DMSPTL	DMSPTR
DMSPTT	DMSPUN	DMSPVF	DMSQRS	DMSQRY
DMSRDC	DMSRDR	DMSRNM	DMSRSV	DMSSET
DMSSRT	DMSSYN	DMSTPH	DMSTRT	DMSTYP
DMSUPD	DMSXBG			

New and Changed CMS Control Blocks and Macros

DMSPDBCB	DMSPGVAR	DMSPKTD	DMSPKTWK
DMSPSCCB	DMSPSDPL	DMSTRANS	EPLIST
NUCON	PARSECMD	PARSERCB	PARSERUF
PVCENTRY	SVCSAVE	TRANTBL	

New and Changed CMS Execs

CMSGEND	CONVERT	DEFAULTS	DISCARD
FILELIST	MACLIST	NAMES	NOTE
PEEK	RDRLIST	RECEIVE	SENDFILE
TELL			

PRINTL Macro Enhancements

New and Changed CMS Modules

DMSFNC DMSPIO

New and Changed CMS Control Blocks and Macros

PRINTL

Protected Application Environment

New and Changed CP Modules

DMKCFG DMKCFM DMKCFT DMKCFY DMKCMD
DMKCNS DMKCQU DMKDIR DMKDSP DMKGRF
DMKHVC DMKHVE DMKLOH DMKPRG DMKPTR
DMKREI DMKRGA DMKRGC DMKSYM DMKUSO
DMKUSQ DMKVCP DMKVCR DMKVCU DMKVDS
DMKVMA

New and Changed CP Control Blocks and Macros

NAMESYS PROTBLOK SYSTBL UMACBLOK
VCONCTL VMBLOK

RDCARD Macro Enhancements

New and Changed CMS Modules

DMSABN DMSCIO DMSDDL DMSEIO

New and Changed CMS Control Blocks and Macros

NUCON RDCARD

Remote and VM/VTAM Terminals

New and Changed CP Modules

DMKCFT DMKRGB DMKRGC DMKVCN DMKVCR
DMKVCS DMKVCU DMKVDS

New and Changed CP Control Blocks and Macros

WEBLOK VSMBLOK

Security Enhancements

New and Changed CP Modules

DMKACO DMKCFC DMKCKF DMKCKP DMKGRT
DMKJRL DMKLNK DMKLNM DMKLOG DMKMES
DMKUSO

New and Changed CP Control Blocks and Macros

ACCOUNT ACCTOFF ACIPARMS JPSCBLOK
PWDIBLOK SYSJRL

Shared Storage Access

New and Changed CMS Modules

DMSABN DMSACC DMSACF DMSACS DMSACP
DMSALU DMSLAD DMSSFD

New and Changed CMS Control Blocks and Macros

ACCSECT ADT DMSSFHDR NUCON

New and Changed CMS Execs

CMSGEND

SPOOL File Compression Support

New and Changed CP Modules

DMKRSP DMKVSP DMKVSQ DMKVST

New and Changed CP Control Blocks and Macros

SFBLOK

SPOOL System Service

New and Changed CMS Modules

DMSEIO DMSPIO DMSPRT DMSRDR

New and Changed CP Modules

DMKAPS	DMKAPT	DMKAPU	DMKAPV	DMKAPW
DMKAPX	DMKAPY	DMKAPZ	DMKCKF	DMKCKH
DMKCKS	DMKCKV	DMKCPT	DMKCQG	DMKCQH
DMKCQP	DMKCQQ	DMKCSF	DMKCSO	DMKCSP
DMKCSQ	DMKCSR	DMKCSU	DMKCSV	DMKCSW
DMKCSX	DMKHVC	DMKHVE	DMKIUA	DMKIUB
DMKIUC	DMKIUP	DMKMNT	DMKMSG	DMKRSP
DMKSEP	DMKSND	DMKSPK	DMKSPL	DMKSPS
DMKSPT	DMKURS	DMKVDD	DMKVDF	DMKVSP
DMKVSQ	DMKVSR	DMKVSX	DMKWRM	DMKXAB
DMKXAD				

New and Changed CP Control Blocks and Macros

CKPLIST	DEVTYPES	LPRTBLOK	LSPLCTL
PSA	RSPXBLOK	SFBLOK	SPLINK
VBFBLOK	VSPLCTL	VPRXBLOK	VSPXBLOK

System Profile

New and Changed CMS Modules

DMSACC DMSINI DMSINS DMSINT

New and Changed CMS Control Blocks and Macros

DEFNUC

New and Changed CMS Execs

SYSPROF

TSAF Changes to CPTRAP, TRAPRED, and QUERY

New and Changed CP Modules

DMKCFC DMKCKF DMKCMD DMKCPP DMKCQC
DMKTRP DMKTRR DMKTRT DMKTRU DMKTRX

New and Changed CP Control Blocks and Macros

CPTRAP OTABDATA TRTDATA

TXTLIB Enhancement

New and Changed CMS Modules

DMSLBT

VALIDATE Command

New and Changed CMS Modules

DMSFNC DMSSTT DMSRNM

Vector Processing Support

New and Changed CMS Modules

DMSABN DMSEXT DMSINI DMSINS DMSINT
DMSINV DMSITP DMSLBT DMSSAB DMSSTG
DMSZIN

New and Changed CMS Control Blocks and Macros

CVTSECT NUCON

New and Changed CMS Installation Files

LDT DMSINIW

3380 Direct Access Storage Device Support of Models AE4/BE4

New and Changed CP Modules

DMKALO DMKBIO DMKCCW DMKCPT DMKCPW
DMKDDR DMKDEF DMKDIR DMKEMB DMKFMT
DMKIOC DMKIOJ DMKMNT DMKPAG DMKSAV
DMKUDR DMKUNT DMKVDE DMKVDG DMKVSC

New and Changed CP Modules (VM/SP Release 3)

DMKCKP DMKCPI

New and Changed CP Modules (VM/SP Release 4)

DMKCKF DMKOVR DMKTOD

New and Changed CP Control Blocks and Macros

RDCLOK RDEVBLOK

New and Changed CMS Modules

DMSDIO DMSFOR DMSINI DMSLDS DMSQRS

New and Changed CMS Control Blocks and Macros

QRYWORK

3380 Direct Access Storage Device Support Under DOS Simulation

New and Changed CMS Modules

DMSASN DMSBOP DMSDLK DMSDSV DMSFCH
DMSSET

3422 Magnetic Tape Support

New and Changed CMS Modules

DMSASN DMSTIO DMSTPH VMFPLC2

New and Changed CP Modules

DMKACR	DMKACS	DMKCCS	DMKCCW	DMKCFR
DMKCPB	DMKCPM	DMKCPO	DMKCPP	DMKCPS
DMKCPT	DMKCPW	DMKDDR	DMKDMQ	DMKDSP
DMKIOC	DMKIOE	DMKIOF	DMKIOJ	DMKIOS
DMKMCC	DMKMCT	DMKMNT	DMKMSW	DMKQVM
DMKSPT	DMKSSP	DMKTAP	DMKTAQ	DMKVDS
DMKVIO	DMKVSI			

New and Changed CMS Control Blocks and Macros

TAPEWORK

New and Changed CP Control Blocks and Macros

CALL	DEVTYPES	IOER	OBRRECN
RCTLUNIT	RDEVICE	SAD	SDRBLOK
VBLOKS			

New and Changed CP Execs

SADUMP

3480 Volume Serial Error Recording

New and Changed CP Modules

DMKHVC	DMKIOE	DMKIOF	DMKIOJ	DMKIOS
DMKTPE	DMKVER			

New and Changed CMS Modules

DMSTLB

Chapter 25. General Design Changes

This section also applies to CP, CMS, XEDIT and IPCS.
Information about GCS and TSAF is not included because the source code for GCS and TSAF modules is not always distributed with VM/SP.

This section summarizes the new and changed modules, control blocks, macros, execs, and so on.

New CP Modules

DMKACS	DMKAPS	DMKAPT	DMKAPU	DMKAPV
DMKAPW	DMKAPX	DMKAPY	DMKAPZ	DMKCCS
DMKCPN	DMKCQC	DMKCRM	DMKCSW	DMKCSX
DMKDIF	DMKDMQ	DMKHVF	DMKIDR	DMKIUB
DMKIUN	DMKIUP	DMKIUS	DMKMES	DMKQCQ
DMKREI	DMKRPD	DMKRPI	DMKRPW	DMKTRX
DMKTTX	DMKUSQ	DMKVBM	DMKVCU	DMKVCW
DMKVDF	DMKXAB	DMKXAD		

Changed CP Modules

DMKACO	DMKACR	DMKALG	DMKALO	DMKBIO
DMKBLD	DMKBOX	DMKCCW	DMKCDM	DMKCDS
DMKCFC	DMKCFD	DMKCFF	DMKCFG	DMKCFJ
DMKCFM	DMKCFO	DMKCFR	DMKCFS	DMKCFT
DMKCFU	DMKCFV	DMKCFY	DMKCKF	DMKCKH
DMKCKP	DMKCKS	DMKCKT	DMKCKV	DMKCMD
DMKCNS	DMKCPB	DMKCPI	DMKCPI	DMKCPJ
DMKCPJ	DMKCPM	DMKCPO	DMKCPP	DMKCPS
DMKCPT	DMKCPV	DMKCPW	DMKCPY	DMKCQC
DMKCQG	DMKCQH	DMKCQP	DMKCQQ	DMKCQR
DMKCQT	DMKCQU	DMKCQY	DMKCSB	DMKCSC
DMKCSF	DMKCSO	DMKCSP	DMKCSQ	DMKCSR
DMKCST	DMKCSU	DMKCSV	DMKCSX	DMKDDR
DMKDEF	DMKDEG	DMKDEI	DMKDIA	DMKDIB
DMKDID	DMKDIR	DMKDMP	DMKDRD	DMKDSP
DMKEPS	DMKERM	DMKFMT	DMKGRF	DMKGRT
DMKHPS	DMKHPT	DMKHVC	DMKHVD	DMKHVE
DMKIDR	DMKIDU	DMKIOC	DMKIOE	DMKIOF
DMKIOG	DMKIOH	DMKIOJ	DMKIOS	DMKIUA
DMKIUC	DMKIUE	DMKIUG	DMKIUJ	DMKIUL
DMKIUP	DMKIUZ	DMKJRL	DMKLNK	DMKLNM
DMKLOC	DMKLOG	DMKLOH	DMKLOJ	DMKLOM
DMKMCC	DMKMCD	DMKMCT	DMKMIA	DMKMNI
DMKMNT	DMKMON	DMKMSG	DMKMSW	DMKNEA
DMKNES	DMKNES	DMKNET	DMKNLD	DMKNLE
DMKOPE	DMKOVR	DMKPAG	DMKPEI	DMKPEL
DMKPEN	DMKPEQ	DMKPER	DMKPET	DMKPGS
DMKPRG	DMKPRV	DMKPTR	DMKQCN	DMKQCO
DMKQVM	DMKRGA	DMKRGB	DMKRGC	DMKRNH
DMKRPD	DMKRSE	DMKRSP	DMKRST	DMKSAV
DMKSBL	DMKSCN	DMKSCO	DMKSEP	DMKSND
DMKSPK	DMKSPL	DMKSPS	DMKSPT	DMKSSP
DMKSSS	DMKSSU	DMKSSV	DMKSVC	DMKSYM
DMKSYS	DMKTAP	DMKTAQ	DMKTBN	DMKTCS
DMKTCT	DMKTOD	DMKTPE	DMKTRA	DMKTRP
DMKTRR	DMKTRT	DMKTRU	DMKTRX	DMKTTY
DMKUDB	DMKUDR	DMKUDU	DMKUNT	DMKURS
DMKUSO	DMKVAT	DMKVCH	DMKVCN	DMKVCP
DMKVCQ	DMKVCR	DMKVCS	DMKVCT	DMKVCV
DMKVCX	DMKVDA	DMKVDC	DMKVDD	DMKVDE
DMKVDG	DMKVDR	DMKVDS	DMKVER	DMKVIO
DMKVMA	DMKVMD	DMKVME	DMKVMG	DMKVSC
DMKVSI	DMKVSP	DMKVSQ	DMKVSR	DMKVST
DMKVSX	DMKWRM	DMKWRN		

Deleted CP Modules

DMKEMA DMKEMB DMKEMC DMKEMD DMKEME
DMKEMR

CP Module Splits

Original Modules	Split Into
DMKCCW	DMKCCD DMKCCF DMKCCO DMKCCS DMKCCT DMKCCW
DMKCPT	DMKCPT DMKCPN
DMKCSU	DMKCSU DMKCSW
DMKCSV	DMKCSU DMKCSX
DMKIUA	DMKIUA DMKIUB
DMKIUC	DMKIUC DMKIUP
DMKIUE	DMKIUE DMKIUN
DMKQCN	DMKQCN DMKQCQ
DMKTRT	DMKTRT DMKTRU DMKTRX
DMKTTY	DMKTTY DMKTTX
DMKUSO	DMKUSO DMKUSQ
DMKVCP	DMKVCP DMKVCU

New CP Control Blocks and Macros

ACIPARMS	ALTBLOK	APPCVM	CCWSAVE
CONEXT	DPLIST	LANGBLOK	LANGNTRY
LPRTBLOK	LSPLCTL	NAMELANG	NLSTBL
PLIST	PROTBLOK	SSCBLOK	SRTBLOK

Changed CP Control Blocks and Macros

ACCOUNT	ACCTOFF	BOXBLOK	CALL
CKPLIST	CPTRAP	DEVTYPES	GRTBLOK
IOBLOKS	IOER	IPARML	IUCV
IUCVBLOK	JPSCBLOK	MIHREC	NAMESYS
NETWORK	OBRRECN	OTABDATA	PSA
PWDIBLOK	RBLOKS	RCTLUNIT	RDCBLOK
RDEVICE	RDEVBLOK	RSPXBLOK	SAD
SDRBLOK	SFBLOK	SNARBLOK	SPLINK
SRTBLOK	SSCBLOK	SYSRES	SYSJRL
SYSTBL	TIMER	TRTDATA	TTYDATA
UCNTRL	UDEVBLOK	UDIRBLOK	UDIRECT
UMACBLOK	VBFBLOK	VBLOKS	VCONCTL
VDEVBLOK	VMBLK	VMBLOK	VPRXBLOK
VSMBLOK	VSPXBLOK	VSPXCTL	WEBLOK

Changed CP Loadlists (Execs)

APLOAD	AVLOAD	CPLOAD	CPLOADSM
SADUMP	VRLOAD		

New CMS and XEDIT Modules

DMSACG	DMSACS	DMSADD	DMSALA	DMSALC
DMSAST	DMSBCT	DMSBLG	DMSCCP	DMSCDI
DMSCLN	DMSCLR	DMSCRT	DMSCST	DMSCUR
DMSDEF	DMSDEL	DMSDEV	DMSDFT	DMSDRO
DMSDRP	DMSEVC	DMSEXG	DMSFLO	DMSFND
DMSFRC	DMSGET	DMSGRQ	DMSGTU	DMSHID
DMSHLC	DMSHLL	DMSHLM	DMSHLR	DMSHLT
DMSHLZ	DMSIAC	DMSINV	DMSMAX	DMSMES
DMSMGC	DMSMGD	DMSMGE	DMSMGM	DMSMGX
DMSMIN	DMSMKS	DMSPAR	DMSPBK	DMSPCA
DMSPCB	DMSPCC	DMSPCL	DMSPCR	DMSPCT
DMSPCW	DMSPDB	DMSPKT	DMSPMD	DMSPPL
DMSPPO	DMSPRB	DMSPRI	DMSPRJ	DMSPSC
DMSPSM	DMSPST	DMSPTC	DMSPTK	DMSPTL
DMSPTR	DMSPTT	DMSPUT	DMSPVF	DMSQRF
DMSQRG	DMSQRH	DMSREF	DMSRES	DMSROU
DMSRTE	DMSRTV	DMSSCL	DMSSEF	DMSSFD
DMSSHO	DMSSIZ	DMSSLG	DMSSMG	DMSSPM
DMSSRE	DMSSRH	DMSSRP	DMSSRQ	DMSSTC
DMSTLW	DMSTRT	DMSUPP	DMSUSQ	DMSUSR
DMSUST	DMSVLD	DMSWAT	DMSWBX	DMSWEN
DMSWEX	DMSWID	DMSWIF	DMSWIM	DMSWIN
DMSWIO	DMSWIR	DMSWIS	DMSWIT	DMSWIW
DMSWLR	DMSWLW	DMSWMI	DMSWMM	DMSWMO
DMSWMU	DMSWMX	DMSWQI	DMSWQM	DMSWRD
DMSWRQ	DMSWRT	DMSWST	DMSWVC	DMSWVD
DMSWVE	DMSWVL	DMSWVQ	DMSWVS	DMSWVT
DMSWVX	DMSZIN			

Changed CMS and XEDIT Modules

DMSABN	DMSACC	DMSACF	DMSACM	DMSAMS
DMSARE	DMSASM	DMSASN	DMSAUD	DMSBOP
DMSBTB	DMSBTP	DMSBWR	DMSCCK	DMSCCS
DMSCIO	DMSCIT	DMSCLS	DMSCMP	DMSCPF
DMSCPY	DMSCRD	DMSCSF	DMSCVH	DMSCWR
DMSDAS	DMSDBD	DMSDBG	DMSDDL	DMSDIO
DMSDLB	DMSDLK	DMSDOS	DMSDSK	DMSDSL
DMSDSV	DMSEIO	DMSERD	DMSERS	DMSEXD
DMSEXE	DMSEXL	DMSEXM	DMSEXQ	DMSEXT
DMSFCH	DMSFET	DMSFLD	DMSFLE	DMSFNC
DMSFNE	DMSFNS	DMSFOR	DMSFRE	DMSGAM
DMSGLB	DMSGLO	DMSGMF	DMSGND	DMSGRN
DMSGVE	DMSHDI	DMSHDS	DMSHLB	DMSHLD
DMSHLI	DMSHLP	DMSHLS	DMSHTB	DMSICP
DMSIDE	DMSIMM	DMSINA	DMSINI	DMSINS
DMSINT	DMSITE	DMSITI	DMSITP	DMSITS
DMSIUC	DMSLAD	DMSLBD	DMSLBM	DMSLBT
DMSLCK	DMSLDF	DMSLDR	DMSLDS	DMSLFS
DMSLGT	DMSLIB	DMSLIC	DMSLIO	DMSLKD
DMSLLU	DMSLMX	DMSLOA	DMSLOS	DMSLSB
DMSLST	DMSMCM	DMSMDP	DMSMOD	DMSMVE
DMSMVG	DMSNAM	DMSNUC	DMSNXD	DMSNXL
DMSNXM	DMSOPL	DMSOPT	DMSOR1	DMSOSR
DMSOVR	DMSOVS	DMSPIO	DMSPOA	DMSPOC
DMSPOD	DMSPOE	DMSPOL	DMSPON	DMSPOP
DMSPOQ	DMSPOR	DMSPOS	DMSPRE	DMSPRT
DMSPRV	DMSPUN	DMSQRS	DMSQRT	DMSQRU
DMSQRV	DMSQRW	DMSQRX	DMSQRY	DMSQRZ
DMSRDC	DMSRDR	DMSREV	DMSREX	DMSRFN
DMSRIN	DMSRLD	DMSRNM	DMSROS	DMSRRV
DMSRSF	DMSRSV	DMSRTC	DMSRVA	DMSRXE
DMSSAB	DMSSBS	DMSSCN	DMSSCR	DMSSCT
DMSSEB	DMSSET	DMSSLN	DMSSMN	DMSSOP
DMSSPR	DMSSRT	DMSSRV	DMSSSK	DMSSTG
DMSSTP	DMSSTT	DMSSTX	DMSSUB	DMSSVQ
DMSSVT	DMSSYN	DMSTIO	DMSTLB	DMSTLM
DMSTMA	DMSTPD	DMSTPE	DMSTPF	DMSTPG
DMSTPH	DMSTPI	DMSTPJ	DMSTRK	DMSTVS
DMSTYP	DMSUPD	DMSUTL	DMSVIB	DMSVIP
DMSVIS	DMSVLT	DMSXBG	DMSXCG	DMSXCM
DMSXCN	DMSXCT	DMSXDC	DMSXDS	DMSXED
DMSXER	DMSXFC	DMSXFD	DMSXFL	DMSXGT
DMSXIN	DMSXIO	DMSXMA	DMSXMB	DMSXMC
DMSXMD	DMSXML	DMSXMS	DMSXPO	DMSXPT
DMSXPX	DMSXQR	DMSXRE	DMSXSC	DMSXSD
DMSXSE	DMSXSF	DMSXSS	DMSXST	DMSXSU
DMSXTB	DMSXTE	DMSXTF	DMSXTR	DMSXUP
DMSXWS	DMSZAP			

Deleted CMS Modules

DMSHLE

CMS Module Splits

Original Modules	Split Into
DMSACC	DMSACC DMSACP
DMSDIO	DMSDIO DMSDIP
DMSFLD	DMSFLD DMSFLO
DMSHLL	DMKHLC DMSHLL DMSHLM DMSHLR DMSHLT DMSHLZ
DMSINI	DMSINI DMSINQ
DMSINS	DMSINS DMSIND
DMSSEB	DMSSEB DMSSTP

New CMS and XEDIT Control Blocks and Macros

ACCSECT	ADDENTRY	APPLMSG	CPRB
CQYSECT	CSMRETCD	DEFNUC	DELENTRY
DMSABW	DMSBFREE	DMSBFRET	DMSCDEV
DMSDSBLK	DMSEDWCL	DMSFCACH	DMSFCHIN
DMSHELP	DMSHLNXT	DMSIDEWK	DMSLRDP
DMSLWRP	DMSMSG	DMSOSSAV	DMSPAGWK
DMSPATH	DMSPDBCB	DMSPKTD	DMSPKTWK
DMSPSDPL	DMSQFSC	DMSQPLST	DMSSCRCB
DMSSFHDR	DMSSMEQU	DMSSWPL	DMSSYSPL
DMSTRANS	DMSWMLPL	DMSWMUPL	DMSUSRPL
DMSXADT	HELP	IOSECT	LANGBLK
LINERD	LINEWRT	PARSECMD	PARSERCB
PARSERUF	PROPDTA	PVCENTRY	SENDREQ
TABENT	TRANTBL	TVISECT	VSDB
VSQB			

Changed CMS and XEDIT Control Blocks and Macros

ADT	AFT	CMSCB	CMSDEV
CMSIUCV	CVTSECT	DBGSECT	DCH
DEVSECT	DMSFRT	DMSFRWD	DMSFRWN
DMSFRWS	DMSGTWD	DMSGTWN	DMSGTWS
DMSPLAS	DMSPROC	DMSTLW	EPLIST
FDEFSECT	FVS	FVSECT	HELP
HELPXED	HLPSECT	IO	IOSECT
IUCVTAB	LABSECT	LDRST	LSCREEN
MRGSC	NUCON	OVSECT	PRINTL
QRYWORK	RDCARD	PRSCB	SUBSECT
SVCSAVE	SVCSECT	TAPEWORK	ZBLOCKS

New CMS and XEDIT Execs

CMMSERV	CONVERT	COPROC	ITASK
LANGGEN	LANGMERG	MOREHELP	SPGEN
SPLOAD	SYSPROF	UTILITY	VMFNLS
VMFREMOV	VMFTXT	X$EUPD$X	

Changed CMS and XEDIT Execs

ALL	CANCEL	CMSGEND	CMSLOAD
DEFAULTS	DISCARD	EXECUPDT	EXECUTE
EXPAND	FILELIST	JOIN	MACLIST
NAMES	NOTE	PEEK	PREFIXX
PRFSHIFT	PRFSHOW	PROFFLST	PROFMLST
PROFNOTE	PROFPEEK	PROFRLST	PROPHCHK
PROPST	RDRLIST	RGTLEFT	RECEIVE
SENDFILE	SI	SNTMAP	SPLTJOIN
STATUS	TELL	VMFLOAD	VMFMERGE
X$MLST$X	X$SEND$X	ZAPTEXT	

Deleted CMS and XEDIT Execs

GCSGEN	GENERATE	GENERAT2	GENERAT3
PREP	X$GENR$X		

Miscellaneous New CMS Files

SPGEN PROFILE SPLOAD PROFILE $DASD$ CONSTS

New IPCS Modules

DMMTRD DMMDIN DMMSCN

Changed IPCS Modules

DMMCOM	DMMCPA	DMMDCM	DMMDCP	DMMDIR
DMMDSC	DMMFED	DMMLOC	DMMMAP	DMMPRT
DMMSCR	DMMTAB	DMMTRC	DMMVAL	DMMVMF

IPCS Module Splits

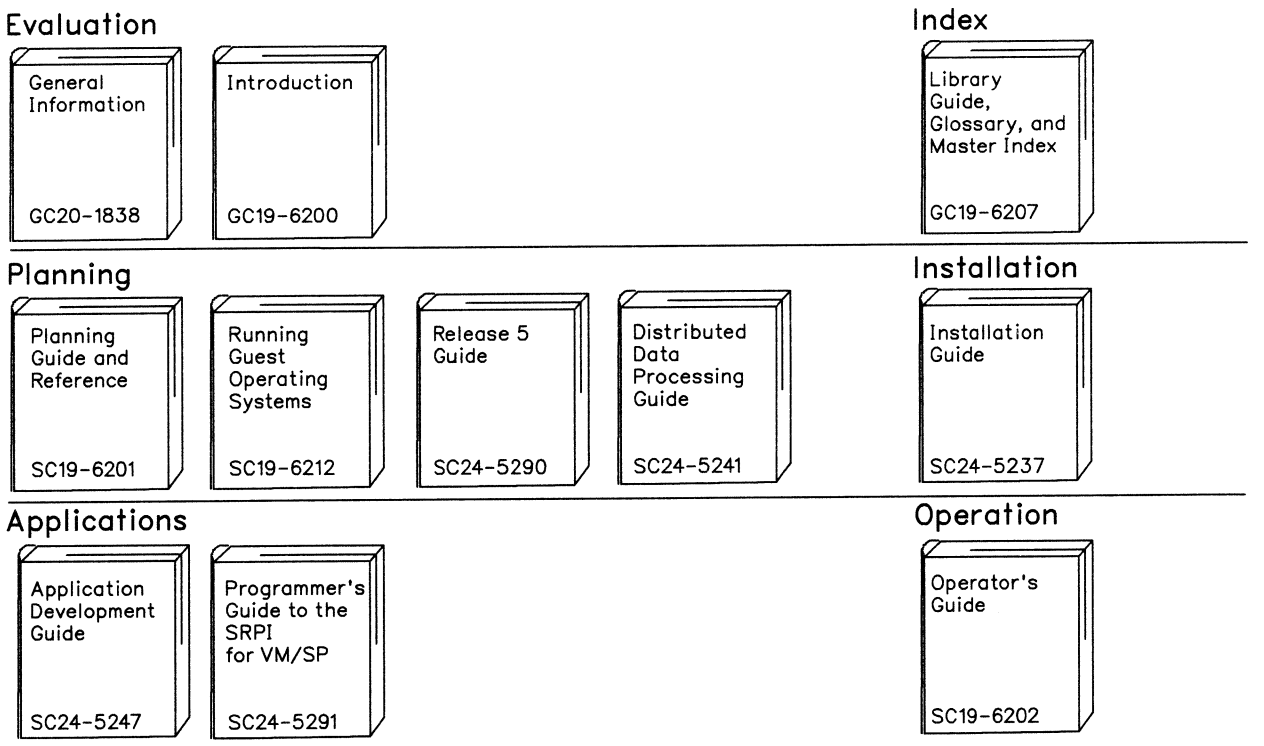
Original Modules	Split Into
DMMFED	DMMDIN DMMFED
DMMTRC	DMMTRC DMMTRD

New IPCS Copy Files

WORKCP

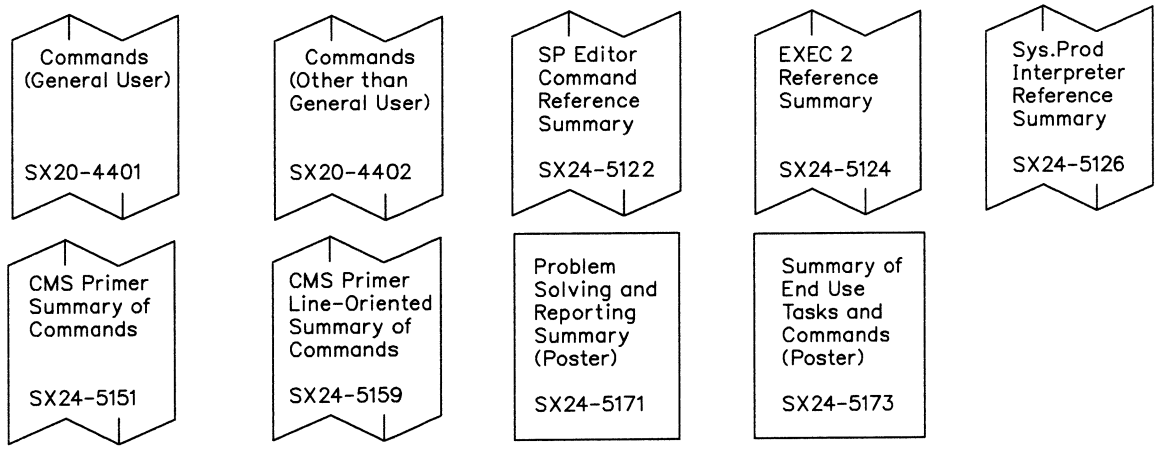
Bibliography

The VM/SP Library (Part 1 of 3)



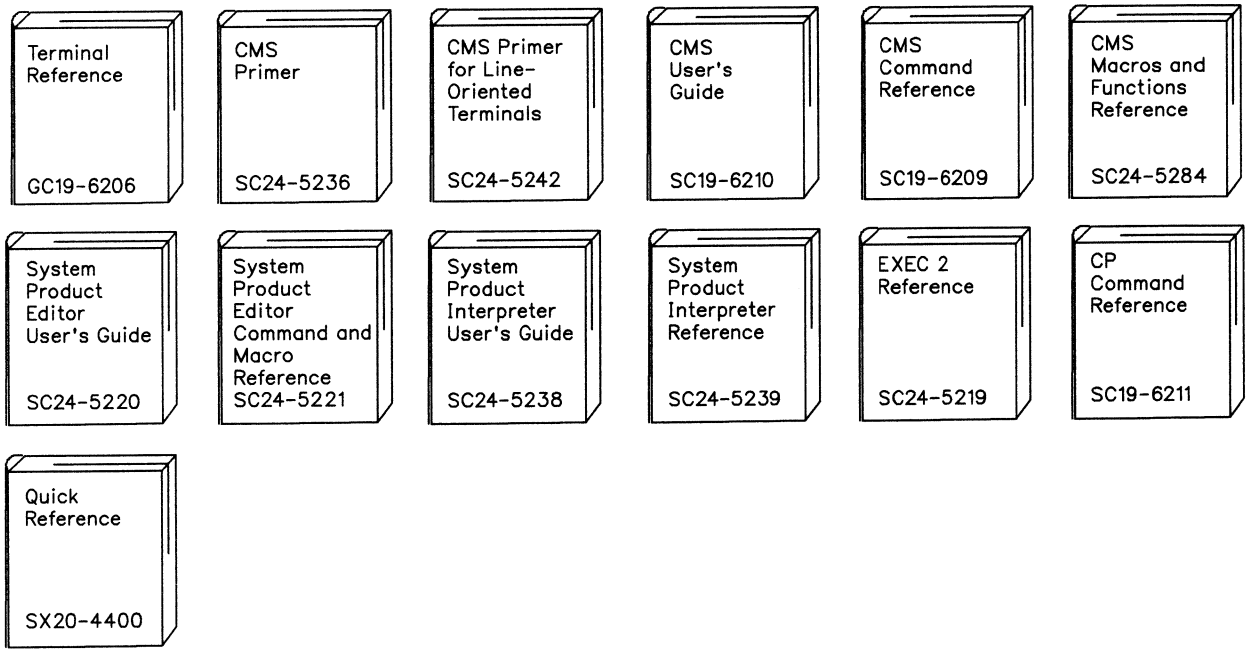
Reference Summaries

To order all of the Reference Summaries, use order number SBOF-3242



The VM/SP Library (Part 2 of 3)

End Use



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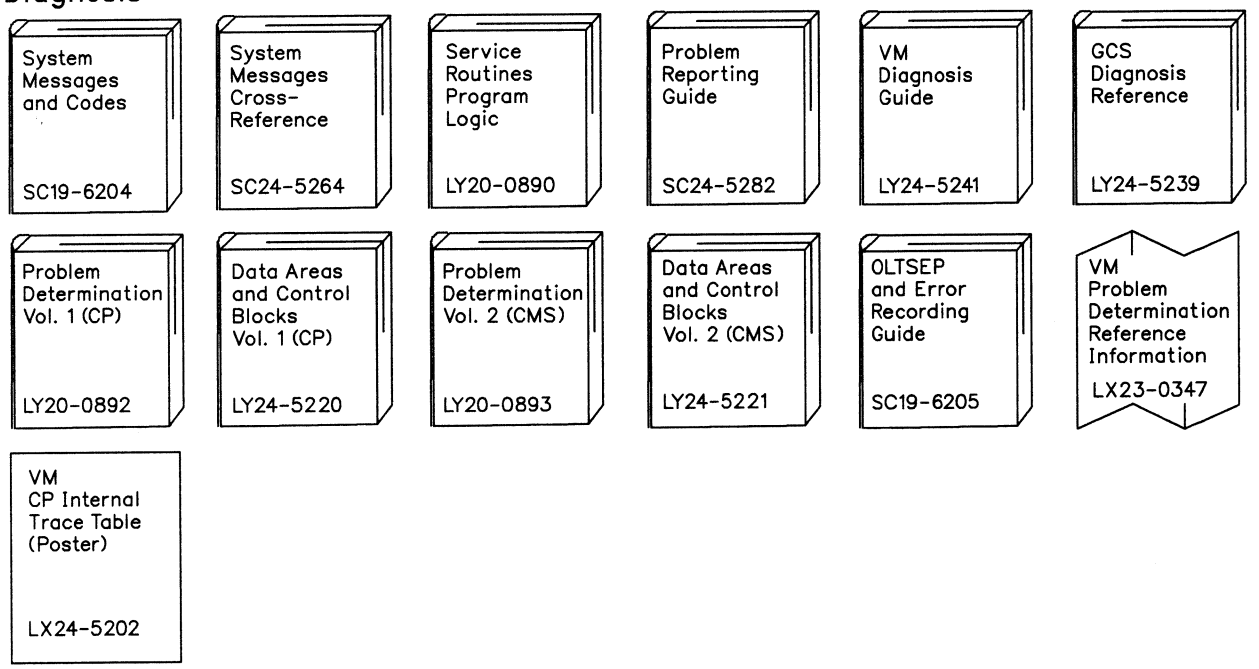
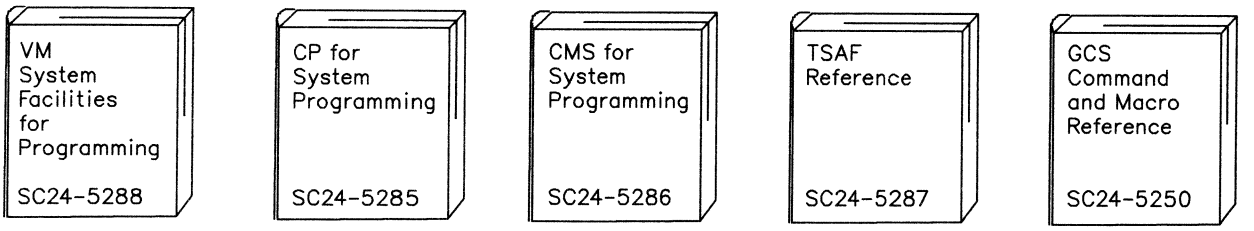
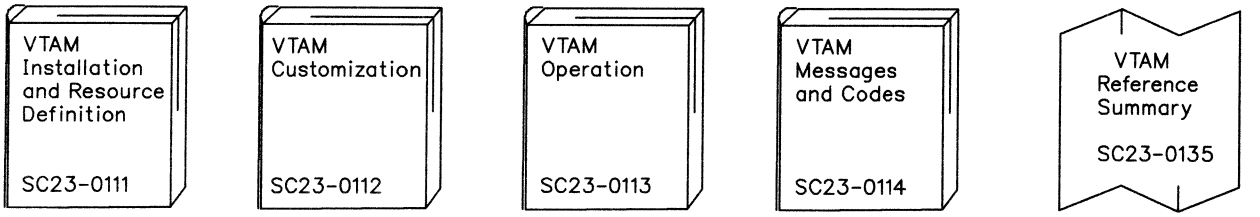


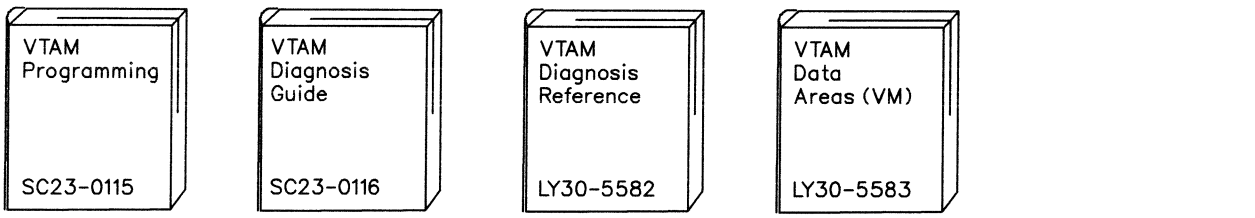
The VM/SP Library (Part 3 of 3)

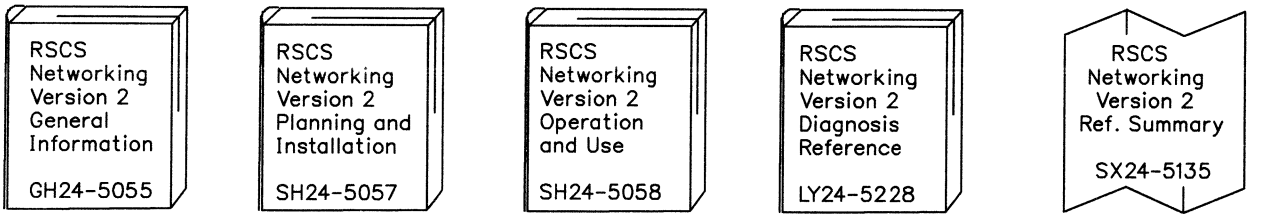
Administration

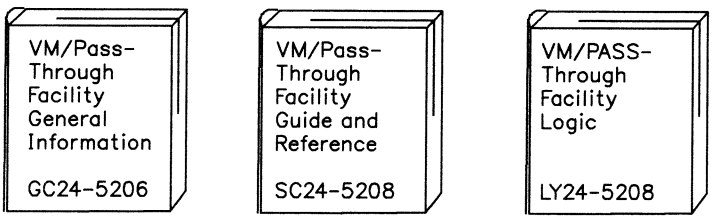


Auxiliary Communication Support









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