



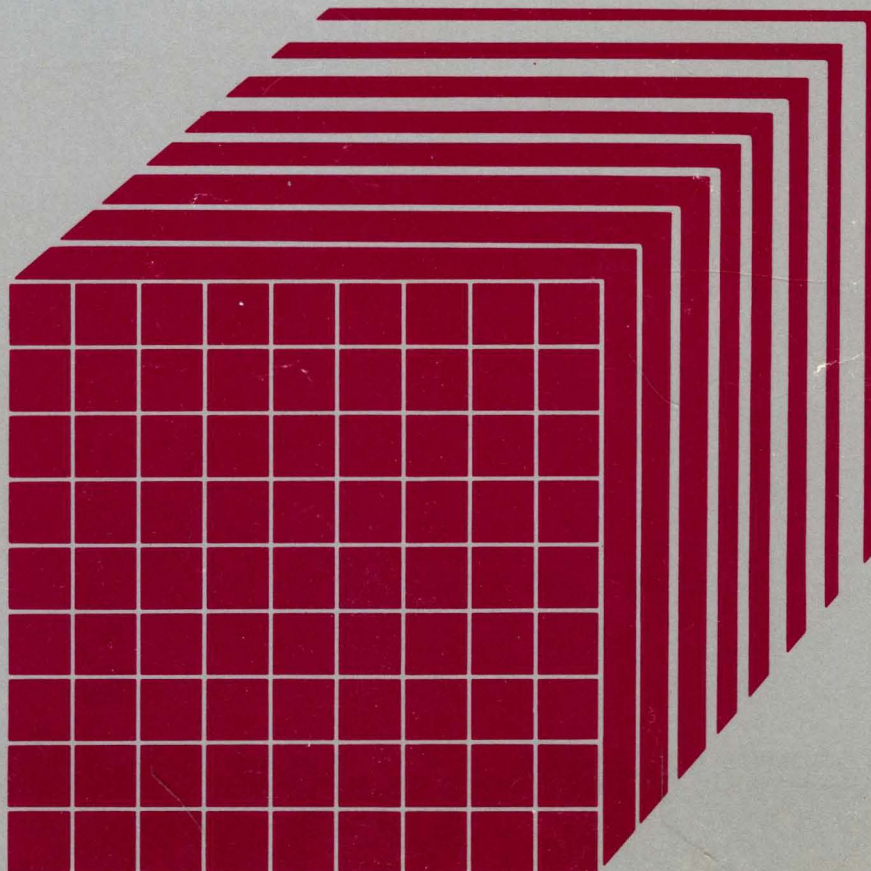
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Virtual Machine/  
System Product  
High Performance Option

**Library Guide, Glossary,  
and Master Index**

Release 3.6

GC23-0187-0





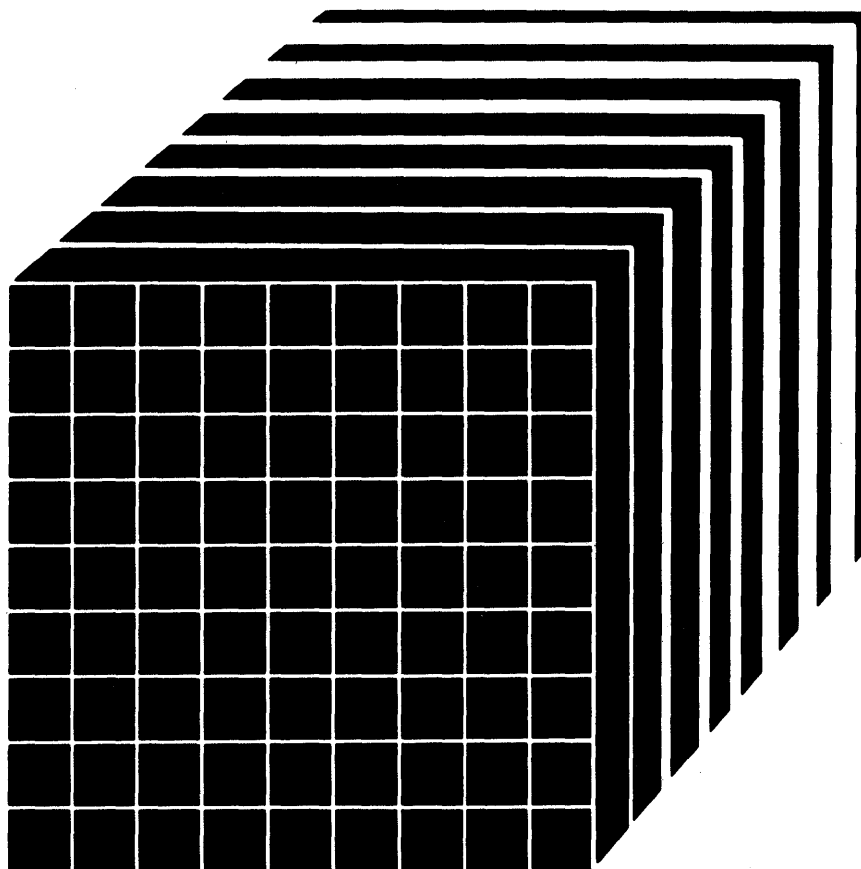
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System Product  
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and Master Index**

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The term "VM/SP High Performance Option" applies to VM/SP High Performance Option Program Product when used in conjunction with the VM/System Product Program Product.

### **First Edition (July 1985)**

This edition, GC23-0187-0, applies to Release 3.6 of the IBM Virtual Machine/System Product High Performance Option (5664-173) and to all subsequent releases until 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 and 4300 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

References in this publication to IBM products, programs or services do not imply that IBM intends to make them available in all countries in which IBM operates. Any reference to an IBM program product in this publication is not intended to state or imply that only IBM's program product may be used. Any functionally equivalent program may be used instead.

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A form for reader's comments is provided at the back of this publication. If the form has been removed, comments may be addressed to International Business Machines Corporation, Department 52Q, Neighborhood Rd., Kingston, NY U.S.A. 12401. IBM may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you.

# Preface

## The VM/SP High Performance Option Library

The VM/System Product High Performance Option library provides information about VM/SP High Performance Option (VM/SP HPO) when used with the VM/System Product (VM/SP). To obtain the entire VM/SP HPO library, combine the applicable VM/SP books with the VM/SP HPO books.

Since VM/SP HPO does not change the CMS component of VM, refer to the appropriate VM/SP publication for information about CMS function. However, because VM/SP HPO enhances the CP component of VM, you must refer to the appropriate VM/SP HPO book for information about CP function.

*Note: The VM/SP HPO manuals do not attempt to separate VM/SP Control Program function from VM/SP HPO Control Program function. Rather, they build the new VM/SP HPO function on the VM/SP base. To find out about specific CP functions in VM/SP, you must refer to the appropriate VM/SP publication.*

This manual explains the organization of the VM/SP HPO library and provides a master index to the contents of the library. It also provides a glossary of VM/SP HPO terms.

## Who this Book is For

The audience for this manual consists of anyone who uses manuals in the VM/SP HPO library.

## How this Book is Organized

“Chapter 1. The VM/SP HPO Library” describes how the library is organized and which manual to read first. It explains the tasks, cover design, and the relationships between the tasks and the colors of the covers. It tells how to order the manuals and coordinating binders. It contains abstracts of the manuals in the VM/SP HPO library, and describes library-related services, such as the System Library Subscription Service (SLSS).

“Chapter 2. VM/SP HPO Glossary” defines terms used by VM/SP HPO that may not appear in the *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699. The *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems* is considered a corequisite publication.



“Chapter 3. Master Index” is a guide to the VM/SP HPO library. It directs you to the publications that contain the specific information you are seeking. The entries are extracted from the indexes of the VM/SP HPO publications listed at the beginning of the chapter.

“Master Index Table” lists the abbreviations and order numbers for each of the VM/SP HPO publications. This table is repeated on a foldout sheet at the end of the manual.

## **How To Use This Publication**

When using this publication, you should:

- Refer to Chapter 1 to learn about the organization of the VM/SP HPO library, the related VM/SP library, and the contents of the individual manuals in the library. Use Chapter 1 to determine whether a manual is really the correct one for your needs.
- Refer to Chapter 2 for definitions of VM/SP HPO terms.
- Refer to Chapter 3 for a specific item of VM/SP HPO information; this section points you to the publication(s) containing information about a particular subject. Use this chapter to determine the appropriate manual, by topic.

## **Information Not Included in This Publication**

This publication does not contain line entries derived from VM/SP HPO logic publications or the Licensed Program Specification (LPS).

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Input/Output Configuration Program User's Guide and Reference, GC28-1027	27
Input/Output Configuration Program User's Guide and Reference--3090 Processor Complex, GC38-0039	28
VM/Directory Maintenance General Information Manual, GC20-1836	28
VM/Directory Maintenance Program Logic Manual, LY20-0889	28
VM/Directory Maintenance Guide for General Users, SC20-1839	28
VM/Directory Maintenance Installation and System Administrator's Guide, SC20-1840	28
VM/SP Remote Spooling Communications System Networking Program Reference Operations Guide, SH24-5005	28
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# Chapter 1. The VM/SP HPO Library

In this chapter you can learn about the organization of the entire library as well as the contents of the individual manuals. This information will help you determine the proper VM/SP HPO manuals for your needs. This chapter also describes library related services, such as methods for ordering, updating, and commenting on library manuals.

## What Manual Should I Read First?

Each VM/SP HPO manual focuses on one big task (like installation). In it are smaller subtasks (like installing hardware or installing an optional program). We suggest that you read the *VM/SP HPO General Information* manual first. It gives an overview of VM/SP HPO and describes how you can use it. Once you have read this manual, you can more easily decide what other manuals you will want to use. Remember, any manual you choose depends on the task you want to do.

## How To Use an Individual Manual

The first time you use a manual, start with its **Preface**. This will introduce you to the manual's:

- Purpose
- Audience
- Main subject
- Summary of the major topics
- Prerequisite level of knowledge for the reader
- List of related and prerequisite publications

If you want to locate a subtask in a manual:

- Look at the **Table of Contents** in the front. In it you will see what each chapter and appendix contains.
- Look at the **Index** in the back. Its pages contain detailed references to the manual's contents.

If you want to know what has changed in a manual:

- Look at the **Summary of Changes** in the front of each manual.
- Look for the **revision bars** that appear on the left side of the changed text.

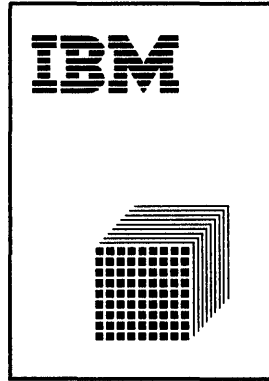
# How the Library Is Organized

The VM/SP HPO library is organized according to the nine major tasks that computer users do. The tasks are:

<b>Evaluation</b>	Examining and judging the applicability of an IBM product to an installation's needs.
<b>Planning</b>	Making fundamental decisions about the options a program offers. The decisions are presumably specified in written directions and procedures that are followed during the implementation tasks of installation, customization, operation, resource definition, application programming, and program service. Planning is an iterative task in that many of the decisions are made before installation, continually evaluated after installation, and revised as appropriate.
<b>Installation</b>	Making a program ready for use.
<b>Administration</b>	Defining the characteristics of data processing resources to a program. The resources may be data files, data bases, programs, users, etc.
<b>Customization</b>	Enhancing, extending, and otherwise altering an IBM program to meet an installation's special requirements.
<b>Operation</b>	Getting a program running, monitoring it to keep it operating, and shutting it down when no longer needed.
<b>Application Programming</b>	Designing, coding, compiling, executing, debugging, and maintaining application programs to perform specific functions.
<b>End Use</b>	Directing use of an IBM program for the purpose for which it was provided.
<b>Diagnosis</b>	Identifying the IBM program that is the source of a programming problem, describing the problem, comparing it to similar known problems, reporting a new problem, and correcting the problem.

## What Does the Cover Design Mean?

The cover design of each manual is a graphic that is printed in a color that identifies the major task associated with the particular manual.



**Figure 1. Cover Design**

The graphic design on the covers and binders represents the system image of VM. The grid represents multiple virtual machines within a real machine. The radiating lines symbolize VM as an expanding system that offers virtually unlimited resources and uses. The cover design is printed in different colors on the covers of the manuals. The color represents the major task associated with the publication. The colors and tasks are as follows:

<b>Blue</b>	Evaluation
<b>Green</b>	Planning
<b>Red</b>	Installation
<b>Purple</b>	Diagnosis
<b>Orange</b>	Customization
<b>Yellow</b>	Operation
<b>Cranberry</b>	End Use
<b>Turquoise</b>	Administration
<b>Pink</b>	Application Programming

The library chart that follows shows you the task-oriented design of the VM/SP HPO library.

**Evaluation**

VM/SP HPO  
General  
Information  
Manual  
GC19-6221

VM/SP  
Introduction  
GT00-1349

VM/SP HPO  
Library  
Guide,  
Glossary, and  
Master Index  
GC23-0187

**Planning**

VM/SP HPO  
Planning  
Guide and  
Reference  
SC19-6223

VM/SP HPO  
Operating  
Systems in  
A Virtual  
Machine  
GC19-6228

VM/SP  
Distributed  
Data  
Processing  
Guide  
ST24-5241

VM/SP  
Release 3  
Guide  
ST24-5240

Input/Output  
Configuration  
Program  
User's  
Guide and  
Reference  
GC28-1027

3090 Proces-  
sor Complex  
Input/Output  
Configuration  
Program  
User's Guide  
and Reference  
SC38-0038

**Installation**

VM/SP HPO  
Installation  
Guide  
SC38-0107

**Administration**

VM/SP HPO  
System  
Programmer's  
Guide  
SC19-6224

**Operation**

VM/SP HPO  
Operator's  
Guide  
SC19-6225

**End Use**

VM/SP  
Terminal  
Reference  
GT00-1355

VM/SP  
CMS  
Primer  
SQ24-5236

VM/SP  
CMS  
User's  
Guide  
ST00-1358

VM/SP  
CMS  
Command  
and Macro  
Reference  
ST00-1357

VM/SP  
SP Editor  
User's  
Guide  
SQ24-5220

VM/SP  
SP Editor  
Command  
and Macro  
Reference  
ST00-1369

VM/SP HPO  
CP  
Command  
Reference  
for General  
Users  
SC19-6227

VM/SP  
SP  
Interpreter  
User's Guide  
ST24-5238

VM/SP  
SP  
Interpreter  
Reference  
ST24-5239

VM/SP  
EXEC-2  
Reference  
ST00-1368

**Reference Summaries**

VM/SP HPO  
Quick  
Guide  
for Users  
SX22-0005

VM/SP  
HPO  
Commands  
(General  
User)  
SX22-0003

VM/SP  
HPO  
Commands  
(Other Than  
General  
User)  
SX22-0004

VM/SP  
SP Editor  
Command  
Language  
ST00-1370

VM/SP  
SP  
Interpreter  
Language  
ST00-1435

VM/SP  
EXEC-2  
Language  
ST00-1372

**Figure 2 (Part 1 of 2). The VM/SP High Performance Option Library**

**Program Service**

VM/SP HPO  
System  
Messages  
and Codes  
SC19-6226

VM/SP HPO  
OLTSEP  
and Error  
Recording  
Guide  
SC19-6230

VM/SP HPO  
Service  
Routines  
Program  
Logic  
LY20-0898

VM/SP HPO  
System  
Logic and  
Problem  
Determination  
Guide-CP  
LY20-0897

VM/SP  
System Logic  
and Problem  
Determination  
Guide  
Volume 2  
(CMS)  
LT00-1367

VM/SP HPO  
Data Areas  
and Control  
Blocks-CP  
LY20-0896

VM/SP  
Data Areas  
and Control  
Blocks  
Volume 2  
(CMS)  
LT64-5221

**Auxiliary Service Support**

Device  
Support  
Facilities  
GC35-0033

VM/IPCS  
Extension  
User's  
Guide and  
Reference  
SC34-2020

Device Support Facilities  
IPCS Extension 5748-SAT

EREP  
User's Guide  
and Reference  
GC28-1378

Environmental Record  
Editing and Printing  
(EREP)

**Auxiliary Communication Support**

RSCS  
Networking  
General  
Information  
GH24-5004

RSCS  
Networking  
Program  
Reference  
and  
Operations  
SH24-5005

RSCS  
Networking  
Logic  
LY24-5203

RSCS  
Networking  
Reference  
Summary  
SX24-5119

RSCS Networking  
5748-XP-1

VCNA  
General  
Information  
SC27-0501

VCNA  
Installation  
Operation  
and  
Terminal Use  
SC27-0502

VCNA  
Messages  
SC27-0510

VCNA  
Logic  
LY38-3033

VTAM Communications  
Network Application  
(VCNA 5735-RC5)

**Figure 2 (Part 2 of 2). The VM/SP High Performance Option Library**



## Binders Are Available

Binders, made to coordinate with the manuals, are available. Binders and labels of manual titles that suggest a library organization can be ordered with a set of manuals (using a Bill of Forms number), or the binders and labels can be ordered separately. For information on ordering see “Order Numbers, File Numbers, and Subject Codes” and “System Library Subscription Service (SLSS)” in this chapter.

## Manual Organization

### Titles

The first part of the title of a manual identifies the program product that is the subject of the manual; the subsequent parts more specifically identify the subject. For example, the first part of the title *Virtual Machine/System Product High Performance Option Installation Guide* identifies the product as a Virtual Machine/System Product High Performance Option, and the second part identifies the task that the manual describes, namely: installing a system.

Certain words in the title indicate the level or kind of information that the manual contains. *Introduction* and *general information* indicate general and conceptual material, especially for program product manuals. These introductory manuals contain basic information on their subjects and develop the vocabulary used by more detailed manuals.

A *guide* generally contains procedural information or step-by-step instructions on how to do something; for example, the *Virtual Machine/System Product High Performance Option System Programmer's Guide*.

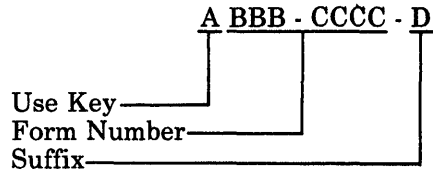
A *reference* manual is a source of information usually arranged alphabetically, such as the *Virtual Machine/System Product High Performance Option CP Command Reference for General Users*.

A *logic* manual is a kind of reference manual that describes the internal structure of a product, for example, *Virtual Machine/System Product High Performance Option Service Routines and Program Logic*.

A *messages* manual is a kind of reference manual that lists and explains the communications that the system makes to the user and suggests appropriate responses or actions. *Virtual Machine/System Product High Performance Option System Messages and Codes* is an example of a title for a messages manual.

## Order Numbers, File Numbers, and Subject Codes

Each VM/SP HPO manual is identified by a unique order number. To order a particular manual, you should use this number. It consists of three parts: the use key, the form number, and the suffix.



The use key is a letter that indicates the availability of the manual.

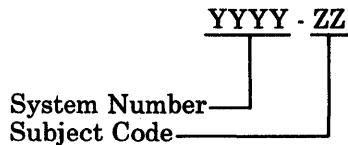
*G*, for *general*, means that the manual is available without charge to users of IBM systems.

*S* means that the manual is for *sale*.

*L* means that the manual is available only to *licensed* users of a particular program product.

The form number uniquely identifies the manual. The suffix helps to identify the revision version of the manual. The first edition of a manual has a suffix of 0.

File numbers appear on the back covers of the VM/SP HPO system manuals. These numbers are designed to aid filing in customer libraries and to provide an easy reference into the system bibliography. The file number consists of two parts: the system number and the subject code.



The system number for the VM/SP HPO library is S370. The subject codes are defined in the *IBM System/370 and 4300 Processor Bibliography*, GC20-0001.

# Library-Related Services

## Bibliography

The *IBM System/370 and 4300 Processors Bibliography*, GC20-0001, lists and provides abstracts of the publications available to help you set up, use, and maintain your library. The abstracts consist of brief descriptions of the purpose, scope, and intended readers for each publication listed. The bibliography also lists manuals by subject codes.

## System Library Subscription Service (SLSS)

The System Library Subscription Service (SLSS) is an automatic updating service for technical documentation. You can subscribe to documents in two ways: by *profile* of the system or by the *order numbers* (or bill of form number) of the manuals. Both methods require the SLSS order form, Z120-1816.

You should order a document by profile of the system if it is available through the profile service and you only want one copy.

You should order a document by its order number when the document is not available through the profile service (for example, program listing, logic manuals, or unlicensed application program literature) or when you need many copies of the document.

For easy ordering, you may also use the bill of form number (BOF). The advantage of using the BOF is that you only have to indicate one number on your SLSS subscription to receive the entire library.

### Filling out the SLSS for Initial Shipment of the Library

To fill out your SLSS subscription using the BOF, indicate:

- This is a new subscription
- The initial library is to be shipped
- The bill of forms order number.

*Note: When ordering by bill of forms, do not specify a subject or program number on your SLSS subscription. If you do, you will receive duplicate publications.*

Refer to Figure 3 on page 9 for an example of how to use the bill of form number for ordering an initial shipment of the library. The figure shows the two sides of an SLSS form.



## System Library Subscription Service

Subscriber name and street address	<input type="checkbox"/> Check if address change	<b>Check One:</b> IBM internal — <input type="checkbox"/> Standard address <input type="checkbox"/> Special address  <b>Customer Subscription Class:</b> <input type="checkbox"/> Billable <input type="checkbox"/> User <input type="checkbox"/> Nonbillable	<input type="checkbox"/> Check if branch office change		
			Div.	Br. Off. No. or Location	Dept. No.
Zip code			Date	Customer/Subscriber No.	
			For User and Billable orders (IBM use)		
			Exception Tax Data		
			State	County	Municipal
			Billing reference (e.g. P.O. number)		
		Should Initial Library be shipped?		<b>Check One</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

### SUBSCRIBER PROFILE

#### Section A: Type of service (check one):

- Order-number subscription only (PUB-).
- Profile: only use-key G items received (PUBG).
- Profile: use-key S and G items received

See *Entering an SLSS Subscription*, G320-1561.

In Sections R, C

Section

SLSS Order Form — Side One

### ORDER NUMBER SUBSCRIPTION:

Specify publications by order number when (1) not available by profile matching or (2) multiple copies are required.

**Note:** Use Key L and Z items are available on IBM Internal subscriptions only. Use Key S items are available outside IBM on Billable and User subscriptions only.

**Items To Be Added; and Quantity Changes.** (Place X in box after order number if you requested Initial Library but require only update service on this item):

ORDER NUMBER (Omit Suffix)	X	NEW TOTAL QUANTITY	ORDER NUMBER (Omit Suffix)	X	NEW TOTAL QUANTITY	ORDER NUMBER (Omit Suffix)	X	NEW TOTAL QUANTITY
SBOF-1146		1						

1st Screen

SLSS Order Form — Side Two

Figure 3. Filling out the SLSS Form for Initial Shipment of the Library

## Updating the SLSS to Receive Automatic Updates for the Entire Library

After you receive the initial books in the BOF, you should update your SLSS subscription to include the program number. If you do not do this, you will only receive automatic updates to the books in the BOF. You will not receive automatic updates to any between-release publications. To update your SLSS subscription, indicate the following on the SLSS form:

- This is a change
- The initial library is not to be shipped
- Include the profile and enter the VM/SP HPO program number, 5664-173, in Section E.

Whenever IBM releases a new or revised document that matches your SLSS subscription, you will receive the document automatically.

To discontinue this subscription service for particular subjects or individual manuals, you must mark "D" for delete on an SLSS order form.

For additional information on SLSS, see *Entering an SLSS Subscription*, G320-1561, or your IBM marketing representative.

## Between-Release Publications

From time to time, IBM provides new VM/SP HPO support that is announced between releases. Such support may be described for customers in a separate publication for each support item. This publication describes the new support, hardware device, new or changed commands and messages, system generation considerations, and new and changed modules. This means that the publication contains the information that would be contained in several Technical Newsletters (TNLs) if TNLs were published for the support item. This also means that if you are installing two or more new hardware devices, you will have to refer to the publication for each device. The publication contains only new information, and therefore, is to be used along with the regular library.

If your installation has updated the SLSS subscription to include the VM/SP HPO program number, you will automatically receive one copy of all of these publications that are published between releases.

TNLs will continue to be published when they are the best way to describe a new item.

TNLs update and correct existing manuals. A TNL consists of two parts: a cover letter listing the changes to the manual and additional or replacement pages. New pages are added to the manual; replacement pages are substituted for affected pages in the manual.

Minor revision takes place when the current stock of a manual to which TNLs have been issued is exhausted. Major revision occurs when there are major changes to be made in the content of the manual.



IBM automatically sends TNLs and major revisions to users who request the base document from the System Library Subscription Service.

## Revision Bars

When IBM revises a manual or issues a TNL, the entire contents of the manual are not usually changed. To highlight the new material and changed text, IBM marks it with revision bars. Revision bars appear to the left of the changed text, and provide a quick way to find the new or changed information. Look to the left of this sentence to see a revision bar.

## Reader's Comment Forms

A postpaid reader's comment form, included at the back of most IBM manuals, allows you to make comments about the manual or to suggest improvements to it. Users in countries other than the United States can submit their comments free by giving them to their IBM representative, who will forward them. Manuals that will not be updated or revised may not contain this form.

## Ordering System Reference Library Manuals, Binders, and Labels

For easy ordering there is a separate bill of form number that you can use to order each of the following:

- The VM/SP HPO library as a set
- The combined VM/SP HPO and VM/SP libraries as a set
- The VM/SP library as a set

*Note: Using bill of forms, you will get one copy of each publication and automatic updates for these publications. You will not get automatic updates for VM/SP HPO publications that are not included in the BOF.*

### Ordering the VM/SP HPO Library as a Set

To order the VM/SP HPO library as a set, use bill of form number SBOF-1146. You receive:

- Four binders
- Set of labels

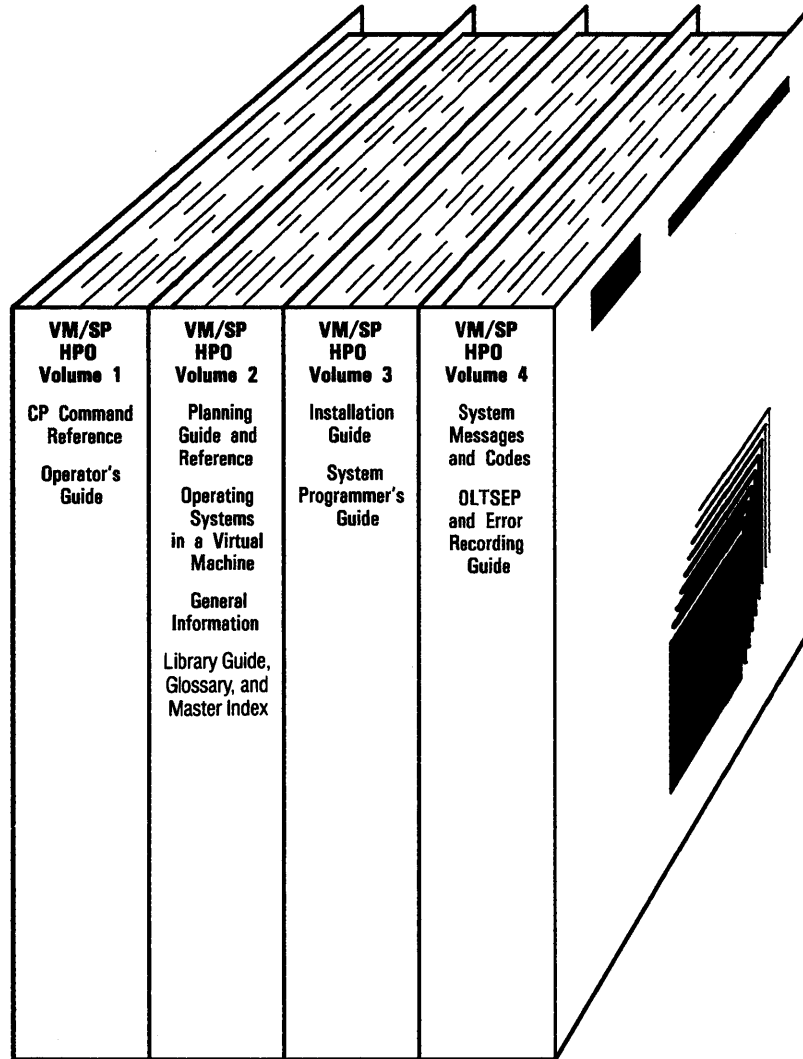
- Ten System Reference Library (SRL) manuals:
  1. *VM/SP HPO CP Command Reference for General Users*
  2. *VM/SP HPO Operator's Guide*
  3. *VM/SP HPO Planning Guide and Reference*
  4. *VM/SP HPO Operating Systems in a Virtual Machine*
  5. *VM/SP HPO General Information*
  6. *VM/SP HPO Installation Guide*
  7. *VM/SP HPO System Programmer's Guide*
  8. *VM/SP HPO System Messages and Codes*
  9. *VM/SP HPO OLTSEP and Error Recording Guide*
  10. *VM/SP HPO Library Guide, Glossary, and Master Index*

Figure 4 on page 13 shows the arrangement of the VM/SP HPO SRLs in binders with labels.

## Ordering the VM/SP HPO Library Separately

You can also order the binders, labels, and individual publications separately. Use the following order numbers.

- SX24-5129 - one binder
- SX23-0289 - one set of labels
- SRLs:
  1. SC19-6227 - *VM/SP HPO CP Command Reference for General Users*
  2. SC19-6225 - *VM/SP HPO Operator's Guide*
  3. SC19-6223 - *VM/SP HPO Planning Guide and Reference*
  4. GC19-6228 - *VM/SP HPO Operating Systems in a Virtual Machine*
  5. GC19-6221 - *VM/SP HPO General Information*
  6. SC38-0107 - *VM/SP HPO Installation Guide*
  7. SC19-6224 - *VM/SP HPO System Programmer's Guide*
  8. SC19-6226 - *VM/SP HPO System Messages and Codes*
  9. SC19-6230 - *VM/SP HPO OLTSEP and Error Recording Guide*
  10. GC23-0187 - *VM/SP HPO Library Guide, Glossary, and Master Index*



Note: The following manuals must be ordered separately from ISD. The binders for these manuals must be ordered separately from Mechanicsburg:

1. System Logic and Problem Determination Guide-CP
2. Data Areas and Control Block Logic-CP
3. Service Routines Program Logic

### **SBOF-1146**

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**Figure 4. Ordering and Organizing the VM/SP HPO Library**

## Ordering the Combined VM/SP HPO and VM/SP Libraries as a Set

To order the combined VM/SP HPO and VM/SP libraries as a set, use bill of form number SBOF-1104. You receive:

- Eight binders
- Set of labels
- 22 System Reference Library (SRL) manuals:
  1. *VM/SP HPO Library Guide, Glossary, and Master Index*
  2. *VM/SP Terminal Reference*
  3. *VM/SP Introduction*
  4. *VM/SP CMS User's Guide*
  5. *VM/SP CMS Command and Macro Reference*
  6. *VM/SP HPO CP Command Reference for General Users*
  7. *VM/SP HPO Operator's Guide*
  8. *VM/SP System Product Editor User's Guide*
  9. *VM/SP System Product Editor Command and Macro Reference*
  10. *VM/SP System Product Interpreter User's Guide*
  11. *VM/SP System Product Interpreter Reference*
  12. *VM/SP EXEC 2 Reference*
  13. *VM/SP Release 3 Guide*
  14. *VM/SP HPO Planning Guide and Reference*
  15. *VM/SP HPO Operating Systems in a Virtual Machine*
  16. *VM/SP Distributed Data Processing Guide*
  17. *VM/SP HPO General Information Manual*
  18. *VM/SP HPO Installation Guide*
  19. *VM/SP HPO System Programmer's Guide*
  20. *VM/SP HPO System Messages and Codes*
  21. *VM/SP HPO OLTSEP and Error Recording Guide*
  22. *VM/SP CMS Primer*

Figure 5 on page 17 shows the arrangement of the VM/SP HPO and VM/SP SRLs in binders with labels.

## Ordering the Combined VM/SP HPO and VM/SP Libraries Separately

You can also order the binders, labels, and individual publications separately. Use the following order numbers:

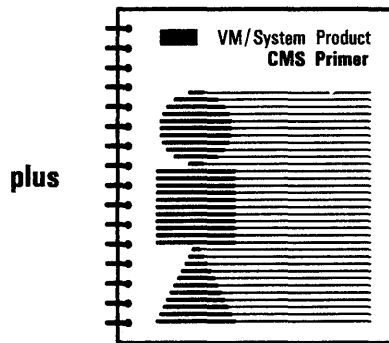
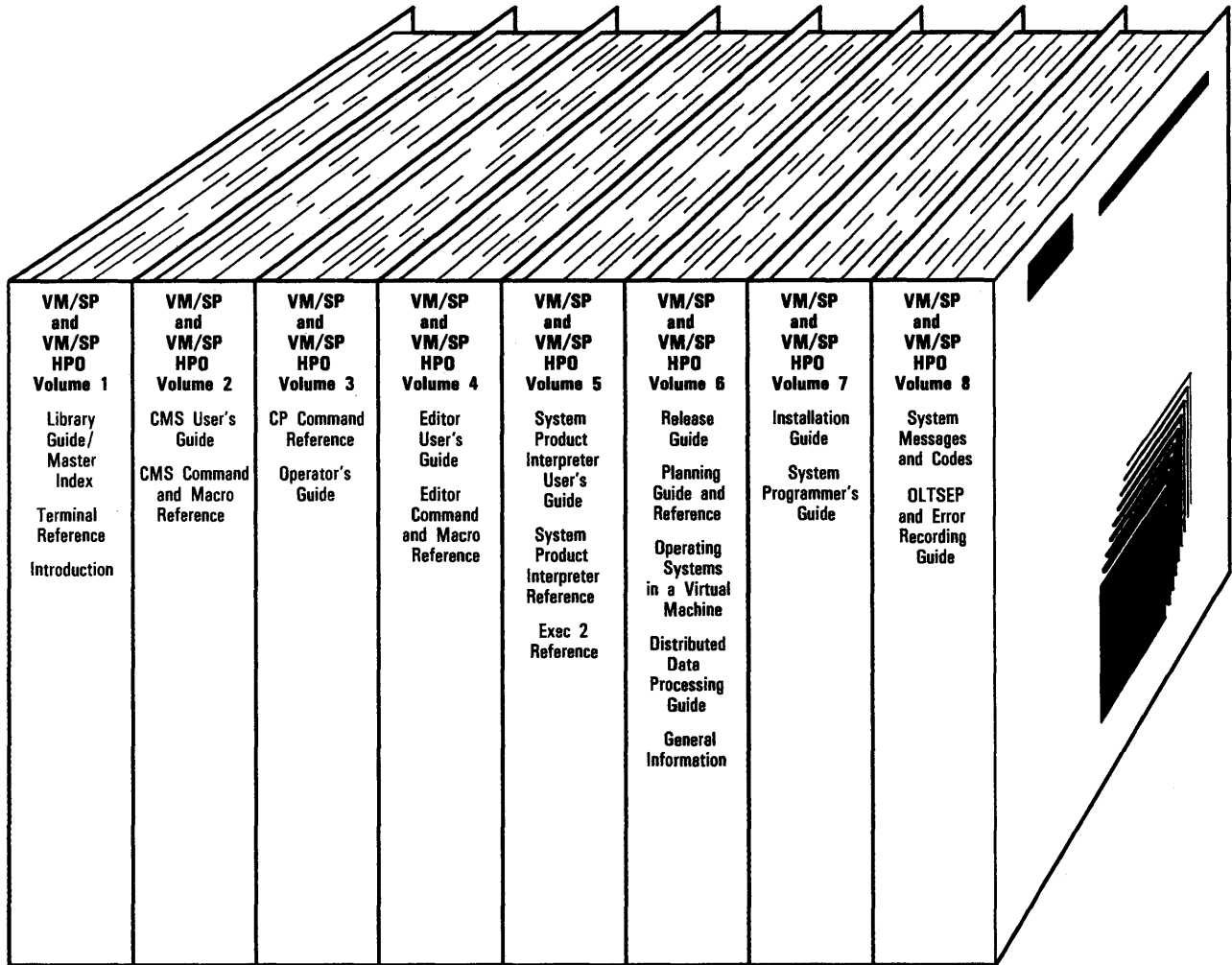
- SX24-5129 - one binder
- SX23-0282 - labels
- SRLs:
  1. GC23-0187 - *VM/SP Library Guide, Glossary, and Master Index*
  2. ST24-5240 - *VM/SP Release 3 Guide*
  3. GT00-1355 - *VM/SP Terminal Reference*
  4. GT00-1349 - *VM/SP Introduction*
  5. ST00-1358 - *VM/SP CMS User's Guide*
  6. ST00-1357 - *VM/SP CMS Command and Macro Reference*
  7. SC19-6227 - *VM/SP HPO CP Command Reference for General Users*
  8. SC19-6225 - *VM/SP HPO Operator's Guide*
  9. SQ24-5220 - *VM/SP System Product Editor User's Guide*
  10. ST00-1369 - *VM/SP System Product Editor Command and Macro Reference*
  11. ST24-5238 - *VM/SP System Product Interpreter User's Guide*
  12. ST24-5239 - *VM/SP System Product Interpreter Reference*
  13. ST00-1368 - *VM/SP EXEC 2 Reference*
  14. SC19-6223 - *VM/SP HPO Planning Guide and Reference*
  15. GC19-6228 - *VM/SP HPO Operating Systems in a Virtual Machine*
  16. ST24-5241 - *VM/SP Distributed Data Processing Guide*
  17. GC19-6221 - *VM/SP HPO General Information Manual*
  18. SC38-0107 - *VM/SP HPO Installation Guide*
  19. SC19-6224 - *VM/SP HPO System Programmer's Guide*
  20. SC19-6226 - *VM/SP HPO System Messages and Codes*



21. SC29-6230 - *VM/SP HPO OLTSEP and Error Recording Guide*

22. SQ24-5236 - *VM/SP CMS Primer*

*Note: The numbers for the VM/SP publications are pseudo numbers that you can use at any time to tie together VM/SP Release 3 with VM/SP HPO Release 3.2, 3.4, or 3.6 publications. These numbers would be valid even if VM/SP moves to a new release.*



Note: The following manuals must be ordered separately from ISD. The binders for these manuals must be ordered separately from Mechanicsburg:

1. System Logic and Problem Determination Guide-CP
2. System Logic and Problem Determination Guide-CMS
3. Data Areas and Control Block Logic-CP
4. Data Areas and Control Block Logic-CMS
5. Service Routines Program Logic

**SBOF-1104**

Figure 5. Ordering and Organizing the Combined VM/SP HPO and VM/SP Libraries

## Ordering the VM/SP Library

You can order the VM/SP library as a set or order the binders, labels and VM/SP SRLs separately. For this ordering information, refer to *VM/SP Release 3 Library Guide and Master Index*.

## Ordering Publications for Earlier Releases

If you request a publication by its order number, you will receive the latest edition of the publication supporting the latest release of VM/SP HPO; in this release it is the Release 3.6 level. To obtain publications relating to an earlier release, you must order using the pseudo-number assigned to the respective edition of the publication.

Therefore, to order a VM/SP HPO Release 3.2 or Release 3.4 edition, use Figure 6 on page 19 to find the pseudo-number that corresponds to the title of the HPO publication you want to order. To order the applicable VM/SP edition, see Figure 7 on page 20 for the pseudo-number that corresponds to the title of the VM/SP publication you want to order. And, to order applicable supplementary manuals, refer to Figure 8 on page 21 for the appropriate number.

If you order a manual through its pseudo-number, you will automatically receive any Technical Newsletters (TNLs) published for that manual.

## VM/SP HPO Release 3.2 and 3.4 Pseudo-Numbers

VM/SP High Performance Option Publications	3.2 Pseudo No.	3.4 Pseudo No.
Labels for VM/SP HPO Library	ST00-1712	ST00-1712
Labels for Combined VM/SP HPO and VM/SP Libraries	ST00-1711	ST00-1711
VM/SP HPO General Information Manual	GT00-1436	GT00-1549
VM/SP HPO Licensed Program Specifications	GT00-1495	GT00-1552
VM/SP HPO Planning Guide and Reference	ST00-1438	ST00-1555
VM/SP HPO Installation Guide	ST38-0107 (based on VM/SP Release 3)	ST00-1556
VM/SP HPO System Programmer's Guide	ST00-1439	ST00-1557
VM/SP HPO Operator's Guide	ST00-1440	ST00-1558
VM/SP HPO System Messages and Codes	ST00-1441	ST00-1559
VM/SP HPO CP Command Reference for General Users	ST00-1442	ST00-1560
VM/SP HPO Operating Systems in a Virtual Machine	GT00-1443	GT00-1561
VM/SP HPO OLTSEP and Error Recording Guide	SQ19-6230	ST00-1562
VM/SP HPO Data Areas and Control Block Logic-CP	LT00-1446	LT00-1563
VM/SP HPO System Logic and Problem Determination Guide	LT00-1447	LT00-1564
VM/SP HPO Service Routines Program Logic	LQ60-0898	LQ60-0898
VM/SP HPO Commands Summary (General User)	ST00-1431	ST00-1566
VM/SP HPO Commands Summary (Other than General User)	ST00-1432	ST00-1567
Virtual Machine Problem Determination Reference Information	N/A	GT00-1752
VM/SP HPO Quick Guide for Users	ST00-1550	ST00-1568

**Figure 6. VM/SP HPO Release 3.2 and 3.4 Publication Numbers**

## VM/SP Release 3 Publication Numbers

VM/SP High Performance Option Releases 3.2, 3.4 and 3.6 operate in conjunction with VM/SP Release 3. The following table lists pseudo-numbers for applicable VM/SP publications.

<b>VM/System Product Release 3</b>	<b>Base Publication</b>
VM/SP Introduction	GT00-1349
VM/SP Application Development Guide	ST24-5247
VM/SP CMS Primer	SQ24-5236
VM/SP CMS User's Guide	ST00-1358
VM/SP CMS Command and Macro Reference	ST00-1357
VM/SP Terminal Reference	GT00-1355
VM/SP System Logic and Problem Determination Guide Volume 2 (CMS)	LT00-1367
VM/SP EXEC 2 Reference	ST00-1368
VM/SP System Product Editor User's Guide	SQ24-5220
VM/SP System Product Editor Command and Macro Reference	ST00-1369
VM/SP System Product Interpreter User's Guide	ST24-5238
VM/SP System Product Interpreter Reference	ST24-5239
VM/SP Distributed Data Processing Guide	ST24-5241

**Figure 7. VM/SP Release 3 Publication Numbers**

## Supplementary Publications

The following publications apply to VM/SP HPO and, therefore, may be helpful to you.

Supplementary Publications	Order Number
VM/IPCS Extension User's Guide	SC34-2020
Device Support Facilities User's Guide and Reference	GC35-0033
Input/Output Configuration Program User's Guide and Reference	GC28-1027
3090 Processor Complex Input/Output Configuration Program User's Guide and Reference	SC38-0038
VM/Directory Maintenance General Information Manual	GC20-1836
VM/Directory Maintenance Program Logic Manual	LY20-0889
VM/Directory Maintenance Guide for General Users	SC20-1839
VM/Directory Maintenance Installation and System Administrator's Guide	SC20-1840

Figure 8. Order Numbers for Supplementary Publications

## Abstracts of Manuals

The following *abstracts* present a description of each manual and, consequently, a better idea about which manual is best suited for your task. The VM/SP HPO manuals are listed first, followed by the VM/SP manuals and the applicable supplementary manuals.

## VM/SP High Performance Option Publications

### VM/SP High Performance Option Library Guide, Glossary, and Master Index, GC23-0187

This manual describes the VM/SP HPO library. It tells how to order the library, defines VM/SP HPO terms and directs you to the appropriate manual within the library by giving you the index entries.

## **VM/SP High Performance Option General Information, GC19-6221**

This manual introduces and describes the features and facilities of VM/SP HPO, and provides customer management and technical staffs with information needed to evaluate the applicability of VM/SP HPO to their installations. It contains information needed for a basic understanding of using, programming, and installing VM/SP HPO. It also lists some program products that work with VM/SP HPO.

## **VM/SP High Performance Option Planning Guide and Reference, SC19-6223**

This manual is intended for system programmers and personnel responsible for planning a VM/SP HPO system. Part 1 of the manual describes the components, features, and options of VM/SP HPO. In addition, there is information describing what you must do during system generation to support the components, features, and options. Part 2 tells how to create files that define your system. These files include the real I/O configuration (DMKRIO), CP system control (DMKSYS), VM/SP HPO directory (DMKDIR), system name table (DMKSNT), and forms control buffer (DMKFCB). Also discussed are the macros and control statements needed to create the files. Additional information includes a list of licensed programs and integrated emulators, VM/SP HPO configurations, compatible devices, and VM/SP HPO restrictions.

## **VM/SP High Performance Option Installation Guide, SC38-0107**

This manual provides instructions for installing the Conversational Monitor System, Control Program, Interactive Problem Control System, and Installation and Service Process. It also contains samples of directories for the following device types: FB-512, 3310, 3330, 3340, 3350, 3370, 3375, and 3380. For each device type, there is a sample of the directory, a directory map, a DMKRIO file, a DMKSYS file, and a DMKSNT file supplied with the product tape.

The manual also contains a VMSRES pack layout for each device-type starter system.

## **VM/SP High Performance Option System Programmer's Guide, SC19-6224**

This manual, intended for VM/SP HPO system programmers, contains detailed descriptions of procedures, commands, and utility programs useful in debugging, as well as guidelines for reading dumps. It describes the Control Program and how it works and includes information on how to modify or better utilize it. A description of the Conversational Monitor System (CMS) and how it works, as well as details of some special features of CMS are included.

## **VM/SP High Performance Option Operator's Guide, SC19-6225**

This manual is intended for those responsible for the operation and administration of VM/SP HPO. It includes descriptions of all those commands that affect the I/O resources and operating characteristics of VM/SP HPO, the associated virtual machines, and the real hardware configuration. Also included is information on spooling, resource allocation, system startup and shutdown procedures, and VM/SP HPO service programs.

## **VM/SP High Performance Option CP Command Reference for General Users, SC19-6227**

This publication is a reference manual for the general class of users that are running systems such as OS, OS/VS, DOS, DOS/VS, VSE systems, CMS and networking systems in a virtual machine under VM/SP HPO. Control Program (CP) commands available to the general class of user are listed alphabetically. Each command description contains general usage information, the command line format, descriptions of all allowable operands, and default values for operands. Also included are tables showing the relationship of the general class of CP commands to the complete set of VM/SP HPO CP commands.

## **VM/SP High Performance Option Operating Systems in a Virtual Machine, GC19-6228**

This publication shows the system programmer how to use VM/SP HPO to execute a guest virtual machine operating system. This publication includes information that describes how to use VM/SP HPO functions more efficiently when executing virtual machine operating systems.

## **VM/SP High Performance Option System Messages and Codes, SC19-6226**

This manual contains messages and codes that may be encountered when using the Conversational Monitor System, Control Program, and Interactive Problem Control System. Conditions that generate these messages and codes are explained, the resulting action is described, and appropriate responses are suggested. The appendices contain cross-references and restrictions.

## **VM/SP High Performance Option OLTSEP and Error Recording Guide, SC19-6230**

This manual is intended for the IBM Program Service Representative (PSR) and the IBM Customer Engineer (CE). The manual will aid in performing hardware I/O maintenance from a virtual machine. It includes data on error handling and the error recording process. It describes how to run the online test system (OLTS) under OLTSEP, and how to use the CMS CPEREP command that interfaces with OS/VS EREP (IFCERER1) and error recorded data.



## **VM/SP High Performance Option Data Areas and Control Block Logic-CP, LY20-0896**

This publication describes the major data areas and control blocks used by the CP component of VM/SP HPO.

## **VM/SP High Performance Option System Logic and Problem Determination Guide-CP, LY20-0897**

Intended for IBM system hardware and software support personnel, this publication provides information about the internal logic of the VM/SP HPO control program including module descriptions, cross-references, and wait states.

## **VM/SP HPO Service Routines Program Logic, LY20-0898**

This publication describes the program logic for the VM/SP HPO service programs. Each service program (or group of programs) is described in its own chapter. Each chapter contains an introduction, method of operation section, directory, data areas, and diagnostic aids section.

## **VM/SP High Performance Option Commands (General User) Reference Summary, SX22-0003**

This handy card summarizes all CP, CMS, and RSCS commands available to the general user. It also includes service aids.

## **VM/SP High Performance Option Commands (Other than General User) Reference Summary, SX22-0004**

This card summarizes CP and CMS commands and service aids for other than general users.

## **Virtual Machine Problem Determination Reference Information, GX23-0347**

This new card summarizes trace table entries, CP and CMS commands, and Format/Allocate control statements that are useful in problem determination.

## **VM/SP High Performance Option Quick Guide for Users, SX22-0005**

This pocket guide describes some of the essential system operations for new users. For the experienced user, it includes a brief description of all VM/SP HPO commands.

# Applicable VM/System Product Publications

## VM/SP Release 3 Guide, ST24-5240

This manual provides **current** users of VM/SP Release 2 with a synopsis of the functional enhancements offered by the new release. It includes details for migrating to VM/SP Release 3 and identifies new and changed modules.

## VM/SP Application Development Guide, ST24-5247

The *Application Development Guide* tells FORTRAN and COBOL application programmers how to compile, link, load, run, test, and debug programs using CMS. It also contains information on using the Interactive System Productivity Facility (ISPF) for dialog management and the Structured Query Language/Data System (SQL/DS) for data base management.

## VM/SP CMS Command and Macro Reference, ST00-1357

This publication provides users of the Conversational Monitor System (CMS) with detailed reference information about command syntax and usage for: CMS commands; EDIT subcommands; DEBUG commands; EXEC control statements, special variables, and built-in functions; CMS assembler language macro instructions; CMS functions; and HELP format words.

## VM/SP CMS Primer, SQ24-5236

This manual teaches a new user how to do work using the VM System and a video display terminal. The primer presents only a subset of the available functions and commands. The material is presented in an interesting manner with suggested exercises woven through the text.

## VM/SP CMS Primer for Line-Oriented Terminals, ST24-5242

This manual is an interactive tutorial for users of line-oriented (line mode) video display terminals. The manual, which is similar in scope and content to the *VM/SP CMS Primer*, is designed to give the reader a working knowledge of VM in less than one week. Topics include logging on; editing, managing, and printing files; using the Document Composition Facility (SCRIPT/VS) to format files; and writing EXECs.

## **VM/SP CMS User's Guide, ST00-1358**

This manual contains general information and examples for the Conversational Monitor System (CMS). It shows how CMS can create and modify data files (including VSAM data sets) and programs. It demonstrates how to compile, test and debug OS or DOS programs under CMS. There is a chapter on communicating with other computer users. Also included are examples on using the System Product Editor and the System Product Interpreter. Usage information on the CMS Editor and CMS EXEC facilities is included in the appendix.

## **VM/SP Distributed Data Processing Guide, ST24-5241**

This manual explains how to use VM/SP in distributed data processing (DDP) networks. Introductory material briefly discusses the concept of distributed data processing and the hardware and software products, other than VM/SP, that make up the VM/DDP environment. Planning and implementation chapters discuss use of VM/SP and associated products in SNA and non-SNA networks, use of VM/SP as network host and distributed processor.

## **VM/SP EXEC 2 Reference, ST00-1368**

This is a reference manual that defines the EXEC 2 language. It contains all the formats, syntax rules, and descriptions of the arguments for EXEC 2 statements. An EXEC 2 primer for new users is included. It summarizes the language and what it is capable of. A detailed discussion of the different types of EXEC 2 statements is followed by examples. It lists the error messages and return codes issued by the EXEC 2 interpreter.

## **VM/SP Introduction, GT00-1349**

This manual is an extension to the *VM/SP General Information* manual. It describes, at an introductory level, what VM/SP is and what it can do for you. It is intended for anyone who wants basic information about VM facilities and capabilities. This manual is useful for those who plan a VM installation, use program products with VM/SP, or migrate to VM/SP from another operating system. Topics are discussed only to a depth needed to introduce VM/SP. This manual is suggested as a prerequisite before reading the more detailed reference manuals in the library.

## **VM/SP System Product Editor Command and Macro Reference, ST00-1369**

This publication is a reference manual that contains all the command formats, syntax rules, and operand and option descriptions for the XEDIT subcommands and macros. It tells how to enter XEDIT commands, subcommands and macros. It contains the format description, and operand and option list for the XEDIT command, which is used to invoke the editor. It lists EDIT subcommands and their XEDIT counterparts. You should be familiar with the information in the *System Product Editor User's Guide* before attempting to use this manual.

## **VM/SP System Product Editor User's Guide, SQ24-5220**

This manual is intended for the individual who has limited data processing experience. It is designed to give the user a working knowledge of the System Product Editor (invoked by the XEDIT command). XEDIT provides a wide range of functions for text processing and programming development. Both a full screen and a line mode editor, it can be used on display and typewriter terminals.

## **VM/SP System Product Interpreter Reference, ST24-5239**

This manual provides reference information about System Product Interpreter statements and their use. It is suitable for experienced programmers, particularly those who have used another high-level language (e.g., PL/I, Algol, or Pascal). It includes error messages and describes syntax, instructions, functions, debugging aids, and parsing.

## **VM/SP System Product Interpreter User's Guide, ST24-5238**

This manual is a step-by-step guide to using the System Product Interpreter, the new and powerful interpretive command and macro language. It is intended for a user with some knowledge of terminals, editors, and VM, but the user need not have any previous programming experience. The novice should read the System Product Interpreter chapter in the *VM/SP CMS Primer* for prerequisite knowledge.

## **VM/SP Terminal Reference, GT00-1355**

This manual is intended for those users who plan to use terminals with VM in their operations. It discusses the characteristics of terminals in general and the physical characteristics of some terminals and consoles. It contains a typical session that gives working examples from logon to logoff.

## **Supplementary Publications**

### **Input/Output Configuration Program User's Guide and Reference, GC28-1027**

This publication describes the VM/SP and stand-alone versions of IOCP. It is intended for system programmers and customer engineers who are responsible for defining, installing, and configuring the channels, control units, and I/O devices for a 308x Processor Complex.

## **3090 Processor Complex Input/Output Configuration Program User's Guide and Reference, SC38-0038**

This publication is intended for system programmers and customer engineers who are responsible for defining, installing, and configuring the channels, control units, and I/O devices for a 3090 Processor Complex.

## **VM/Directory Maintenance General Information Manual, GC20-1836**

This publication is for planning purposes and contains information about the VM/Directory Maintenance program product, Program Number 5748-XE4.

## **VM/Directory Maintenance Program Logic Manual, LY20-0889**

This publication is intended for use by system programmers who are responsible for the maintenance of the CP directory. It provides a description of the program logic, module descriptions, and cross references.

## **VM/Directory Maintenance Guide for General Users, SC20-1839**

This publication is intended for the user who needs to modify control statements in his own directory entry. The general user cannot make changes that involve system resources.

## **VM/Directory Maintenance Installation and System Administrator's Guide, SC20-1840**

This publication is intended for system programmers responsible for installing and maintaining the directory maintenance program product, and for system administrators responsible for maintaining the system's user directory. The publication provides system installation information and describes the directory maintenance commands.

*Note: The following publications contain information about the remote spooling communications subsystem (RSCS) and interactive problem control system (IPCS) components of VM/370. These components are not enhanced by VM/SP High Performance Option. If you have installed the RSCS Networking program product, program number 5748-XP1, or VM/IPCS Extension program number 5748-SAI, refer to the applicable program product publication.*

## **VM/SP Remote Spooling Communications System Networking Program Reference Operations Guide, SH24-5005**

This publication describes the capabilities of remote networks enhanced with the RSCS Networking program product. It contains descriptions of commands and protocols for operating remote terminals and display stations.

## **VM/Interactive Problem Control System Extension User's Guide, SC34-2020**

This publication is a reference publication for users of the VM/IPCS Extension program product. It is intended for system programmers and IBM program support representatives who are responsible for diagnosing and tracking system problems. In this publication, the reader will find information about interactive problem control commands and procedures useful in debugging disk-resident abend dumps.

## **Device Support Facilities User's Guide and Reference, GC35-0033**

Describes the Device Support Facilities processor and commands. It also discusses hardware considerations, operating system considerations, planning, and installation. It is intended for installation managers, system programmers, system operators, and other data processing personnel who manage or use direct access storage devices.



## Chapter 2. VM/SP HPO Glossary

This glossary defines terms that have special meaning in VM/SP HPO publications. Use it to find the definition of a term you do not know. It includes terms and definitions from the *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699.

### A

**A-disk.** In CMS, the primary user disk that is allocated to a CMS user. This read/write disk is used to store files created under CMS; such files are retained until deleted by the user. *Synonymous with primary user disk. See also D-disk, CMS system disk, virtual disk, S-disk, and Y-disk, which have special uses; all other disks (B,C, E-R, T-X, and Z) are optional user disks.*

**A-type address constant.** In assembler language, an address constant used for branching within a module or for retrieving data.

**abbreviation, command.** *See command abbreviation.*

**abend dump.** The contents of main storage, or of part of main storage, written to an external medium for the purpose of debugging an error condition that resulted in the termination of a task prior to its normal completion.

**access mode.** A method used by VM to control user access to data files. Access modes allow users to read and write data to a file, or only read data from a file. *See also filemode.*

**active disk table (ADT).** A table residing in the user's copy of the CMS nucleus that contains an entry for each valid filemode letter; that is, for each disk that has been accessed.

**active file table (AFT).** A table residing in the user's copy of the CMS nucleus that contains an entry for each disk file that is currently open.

**active link.** In RSCS, a teleprocessing link for which a line driver has been initiated; the RSCS operator uses the RSCS START command to initiate a line driver. The link is active until the line driver is terminated by another operator command.

**active wait.** A process in which an idle processor in an AP or MP system scans the dispatch request queues and dispatch lists looking for work.

**adcon.** An A-type address constant used in calculating storage addresses.

**address stop.** *See breakpoint, instruction address stop.*

**alternate path support.** In VM, the selection of a path to a device from any of the available paths, even though the primary path is busy. The selection is made in response to an I/O request for a device, through use of the two-channel switch, the two-channel switch additional features, and the string switch hardware feature.

**alternating operating systems.** In VM, multiple operating systems that are loaded consecutively into a virtual machine. Information is passed between the operating systems via CP spooling facilities. *Synonymous with flip-flop.*

**APAR.** *See authorized program analysis report.*

**apply.** In reference to installation and service, to load down program temporary fix (PTF) files from the tape, reassemble or rename as needed, and produce runnable (executable) code. The PTF may have been loaded down in a previous step. If that is the case, apply means to reassemble or rename if needed and place the files on the right staging disk for the build step to use, then produce the runnable code.

**AP/MP mode.** A mode of VM/SP HPO used when running in an attached processor or multiprocessor system. VM/SP HPO controls the execution of virtual machines on both processors.

**area.** This term is acceptable for storage space when there is no need to differentiate between DASD space on count-key-data devices and FB-512 devices. *See also DASD space.*



**Asymmetric Multiprocessing system (ASP).** An extension to the IBM System/360 Operating System that provides increased automation of computer operations for large-scale data processing installations.

**asynchronous exit.** In RSCS, a program call to a task subroutine directly from the RSCS supervisor, not as a result of dispatching.

**attached processor.** A processor that has no I/O capability. An attached processor is always linked to the processor initialized for I/O handling.

**attached processor operation.** In this mode, VM executes tasks on two processors, only one of which has attached channels; however, the tasks come from a common dispatch queue and share common storage.

**attention interrupt.** An input/output interrupt caused by a terminal user pressing the attention key (or equivalent). *See also* signaling attention, attention key.

**attention key.** A key on some terminals that, when pressed, causes an I/O interrupt in the main processing unit. Also referred to as the ATTN key. *See also* signaling attention.

**attention symbol (!).** Under CP, for printing terminals only, the character (always the exclamation point (!) character) that can be used to indicate each time the attention key is pressed.

**ATTN key.** *See* attention key.

**authorized program analysis report.** A report of a problem caused by a suspected defect in a current unaltered release of a program accepted by IBM support for further action.

**automatic logon.** A process by which an operator's or user's virtual machine is initiated by other than the user of that virtual machine. For example, the primary system operator's virtual machine is activated automatically during initialization. A user can issue the AUTOLOG command to activate some other (disconnected) virtual machine.

**auxiliary directory.** In CMS, an extension of the CMS file directory, which contains the names and locations of certain CMS modules that are not included in the CMS file directory.

**auxiliary file.** In CMS, a file that contains a list of filetypes of update files to be applied to a particular source file. *See also* control file, preferred auxiliary file.

**auxiliary storage.** Data storage other than main storage; in VM/SP HPO, auxiliary storage may be a DASD or paging storage.

## B

**basic control (BC) mode.** A mode in which the features of System/360 computing system and additional System/370 features, such as new machine instructions are operational on a System/370 computing system. *See also* extended control (EC) mode.

**batch facility.** *See* CMS Batch Facility.

**blip facility, CMS.** An indication to the user at a terminal, via a tilt/rotate of the Selectric type ball (if using a printing terminal), or the displaying of some specified character(s), every two seconds of either real or virtual execution time that has elapsed for his CMS virtual machine. Whether the time shown is real or virtual depends on the current setting of the REALTIMER option.

**block extent.** A continuous space on a direct access storage volume that does not have to be stored contiguously with a block (4096) of pages.

**bpi.** Bits per inch.

**BPI.** Bytes per inch.

**breakpoint.** An instruction address stop that can be established via a CMS DEBUG subcommand. *See* instruction address stop.

**broadcast message.** In VM, information that can be sent by the system operator to all terminal users that are enabled to receive messages. The three major classes of messages are: (1) log (LOGMSG) messages that are automatically displayed at the user's terminal when he logs on, (2) optional lower priority log messages, (3) informational warning messages that alert users to some imminent event or action.

**build.** In reference to installation and service, to perform the steps necessary to take derived files and produce runnable code or systems.

**built-in function, REXX/CMS EXEC.** A specialized function, invoked by a keyword, that has been built into the system program code because it is commonly required by many users; same as EXEC 2 predefined function.

## C

**#CP:.** *Synonym for escape to CP.*

**cache.** In a processing unit, a high-speed buffer that is continually updated to contain recently accessed contents of main storage. Its purpose is to reduce access time.

**cache block.** A cache-line that is resident in the cache.

**cache-line.** A block of bytes of central storage that maps to a specific area in the cache or high-speed-buffer. (Also see "high-speed buffer.")

**CAI.** Channel available interrupt.

**CCS.** *See console communication services.*

**CE.** (1) Channel end. (2) Customer Engineer.

**central site/system.** The main installation with skilled system support personnel such as system programmers and operations staff.

**chain link record.** In CMS, a record that contains a series of pointers to the physical blocks, normally discontinuous, that are currently assigned to a CMS disk file.

**changes.** In reference to installation and service, IBM and original equipment manufacturer (OEM) supplied service for their programs (PTFs, APARs, etc.) and user modifications to those programs.

**channel-set switching.** A facility used in some attached processor environments to allow processing to continue in uniprocessor mode on the attached processor after the main processor enters a disabled wait state following an uncorrectable error (a hard machine or channel check), or after the system operator varies the main processor offline. CP switches all active channels on the main processor to the attached processor, and processing continues in uniprocessor mode.

**channel-to-channel adapter (CTCA).** A hardware device that connects two channels on the same computing system or on different systems.

**channel-to-channel (CTC) device.** A hardware device used to connect two channels on the same computing system or on different systems. CTC devices include both channel-to-channel adapters (CTCAs) and 3088 Multisystem Communications Units (MCU).

**character delete symbol.** *Synonym for logical character delete symbol.*

**checkpoint start.** A system restart that attempts to recover information about closed spool files that was previously stored on the checkpoint cylinders. The spool file chains are reconstructed, but the original sequence of spool files is lost. Unlike warm start, CP accounting and system message information is also lost. *Contrast with* warm start, cold start, force start.

**CKD.** *See count-key-data device.*

**CKPT.** *See checkpoint start.*

**class A user.** *See primary system operator privilege class.*

**class Any user.** A subset of CP commands used to log on to VM/SP HPO, have the terminal logically connected to a multiple-access virtual machine, or send messages to the operator or another user.

**class authority.** Privilege assigned to a virtual machine user in the user's directory entry; each class specified allows access to a subset of all the CP commands.

**class B user.** *See system resource operator privilege class.*

**class C user.** *See system programmer privilege class.*

**class D user.** *See spooling operator privilege class.*

**class E user.** *See system analyst privilege class.*

**class F user.** *See service representative privilege class.*

**class G user.** *See general user privilege class.*

**clock comparator.** A hardware feature (required by VM) that causes an interruption when the time-of-day clock has equaled or exceeded the value specified by a program or virtual machine.

**CMS.** *See Conversational Monitor System.*

**CMS Batch Facility.** A facility that allows a user to run time-consuming or noninteractive CMS jobs in another CMS virtual machine dedicated to that purpose, thus freeing his own terminal and virtual machine for other work.

**CMSDOS.** The standard name of the CMS/DOS discontiguous saved segment. *See also* discontiguous segment.

**CMS/DOS.** Refers to the VSE simulation mode available in CMS. The VSE simulation mode becomes active when the CMS command SET DOS ON is issued. *Synonymous with* DOS simulation under CMS.

**CMS/DOS phase library.** *See* DOSLIB library.

**CMS Editor.** A CMS facility that allows the user to create, modify, insert, delete, or rearrange lines of data in a CMS file. *See also* input mode, edit mode.

**CMS EXEC language.** A general purpose, high-level programming language, particularly suitable for EXEC procedures and edit macros. (The language is documented in the *VM/SP CMS Command and Macro Reference*, SC24-6209.) Procedures and macros (programs) written in this language are executed by the CMS EXEC processor.

**CMS EXEC processor.** The component of the VM operating system that interprets and executes procedures and edit macros written in the CMS EXEC language.

**CMS EXEC/program.** An EXEC procedure or edit macro written in the CMS EXEC language and processed by the CMS EXEC processor.

**CMS file directory.** A directory on each CMS disk that contains the name, format, size, and location of each of the CMS files on that disk. When a disk is accessed via the ACCESS command, its directory is read into virtual storage and identified with any letter from A through Z. *Synonymous with* master file directory block.

**CMS files.** This term refers exclusively to files that are in the fixed-block format used by CMS file system commands. VSAM and OS data sets and DOS files are not compatible with the CMS file format and cannot be manipulated using CMS file system commands. Note that "disk", "minidisk", and "virtual disk" are used interchangeably to indicate disks that are in your CMS virtual machine configuration. Where necessary, a distinction is made between CMS-formatted disks and disks that are in OS or DOS format.

**CMS-formatted disk.** Is one that is formatted to be used specifically with the CMS file system macros. It does not contain a VTOC and is incompatible with OS and DOS formatted disks. OS and DOS access methods cannot be used directly with CMS formatted disks.

**CMS nucleus.** The portion of CMS that is resident in the user's virtual storage whenever CMS is executing. Each CMS user receives a copy of the CMS nucleus when he initial program loads (IPLs) CMS. *See also* saved system, shared segment.

**CMS primary disk.** *Synonym for* A-disk.

**CMS system disk.** The virtual disk (S-disk) that contains the CMS nucleus and the disk-resident CMS commands. The CMS system disk can have extensions, usually the Y-disk.

**CMS system file.** Any file residing on the CMS system disk instead of on a user's disk.

**CMS user disk.** One or more virtual disks that contain CMS or read-only DOS or OS files that may be accessed by the user. If the user has read/write access to a disk, he can create programs and data files on the disk. Files are retained until the user deletes them. The user may also link to and access other users' disks, usually on a read-only basis.

**CNTRL file.** *See* control file

**cold start.** A system restart that ignores previous data areas and accounting information in main storage, and the contents of paging and spool files on CP-owned disks. *Contrast with* warm start, checkpoint start, force start.

**command.** A request from a user at a terminal for the execution of a particular CP, CMS, RSCS, or IPCS function. A CMS command may also be the name of a CMS file with a filetype of EXEC or MODULE. *See also* subcommand, user-written CMS command.

**command abbreviation.** A short form of the command name, operand, or option that is not a truncation of the word. For example, MSG instead of MESSAGE, RDR instead of READER. *Contrast with* truncation.

**command privilege class.** *See* privilege class.

**command scan.** In CMS, a routine that scans the command line entered and converts it to a standard CMS parameter list. *See also* parameter list.

**concurrently.** Pertaining to a mode of operation that includes the performance of two or more operations within a given interval of time.

**console communication services.** A group of CP modules that interfaces with the VTAM service machine, providing full VM/SP or VM/SP HPO console capabilities for SNA terminal users.

**console function.** That subset of CP commands that allows the user to simulate almost all of the functions available to an operator at a real system console. *Contrast with* CP command.

**console spooling.** *See* virtual console spooling.

**console stack.** A two-part storage area. Console stack is a general term used to refer collectively to the program stack and the terminal input buffer. The term console stack is used when there is no need to distinguish between the two areas. *See also* program stack, terminal input buffer.

**context editing.** A method of editing a file without using line numbers. To refer to or change a particular line or a group of lines, all or part of the contents of that line are specified.

**control file.** (1) In CMS, the file that contains records that identify the updates to be applied and the macro libraries, if any, that are needed to assemble that source program. *See also* auxiliary file. (2) A CMS file that is interpreted and used to direct the flow of a certain process through a series of specific steps. For example, the control file could contain installation steps, default addresses, and PTF prerequisite lists as well as many other items that are necessary.

**Control Program (CP).** The component of VM/SP HPO that manages the resources of a single computer such that multiple computing systems appear to exist. Each virtual machine is the functional equivalent of an operating system.

**control program assist.** *See* CP assist.

**control statement.** A statement that controls or affects the execution of a program in a data processing system.

**control statements, REXX/EXEC 2/CMS EXEC.** Special statements of the REXX, EXEC 2, or CMS EXEC language that determine what is to be done within an EXEC procedure, edit macro or XEDIT macro. The statements can be used to control processing within the file; to manipulate variables; to communicate with a terminal user or with the VM/SP HPO system; or to create output files via the user's virtual punch.

**control terminal.** Any terminal currently controlling system resources and that is being used by the primary system operator (privilege class A), the resource operator (privilege class B) or the spooling operator (privilege class D).

**control unit.** A device that controls input/output operations at one or more devices.

**count-key-data device (CKD).** A disk storage device that stores data in the format: count field, usually followed by a key field, followed by the actual data of a record.

**Conversational Monitor System (CMS).** A virtual machine operating system that provides general interactive time-sharing, problem solving, and program development capabilities, and that operates only under the control of the VM/SP or VM/SP HPO control program.

**copy function.** In VM/SP HPO, the function initiated via a Program Function key to copy the contents of a display screen onto an associated hard copy printer. A remote display terminal copies the entire contents of the screen onto a printer attached to the same control unit. A local display terminal copies all information from the screen, except the screen status information, onto any printer attached to any local display control unit.

**corequisite change.** In reference to installation and service, a change that must be applied at the same time as another change.

**corrective service table.** A table that identifies all corrective service and user modifications a user installed. This table is used for regression checking.

**CP.** *See* Control Program.

**CP assist.** A hardware function available only on a processor that has Extended Control-Program Support (ECPS), that reduces CP overhead by performing the most frequently used tasks of CP routines.

**CP command.** A request from the terminal user for the execution of programming that controls his virtual machine. The VM/SP HPO control program commands are called CP commands. The subset of CP commands that perform console simulation are called console functions.

**CP-owned disk.** Any disk that has been formatted by the CP Format/Allocate program and designated as owned during system generation; for example, the CP system residence volume, or any disk that contains CP paging, spooling, or temporary disk space.

**CP privilege class.** *See* privilege class.

**CP read.** The situation in which the control program (CP) is waiting for a response or request for work from the user. On a typewriter terminal, the keyboard is unlocked; on a display terminal, the screen status area indicates CP READ.

**CP READ screen status.** For a display terminal used as a virtual console under VM/SP HPO, an indicator located in the lower right of the screen, that displays that CP is waiting for a response or request for work from the user.

**CP system disks.** Any disk space used by CP, other than the CP paging, spooling, and temporary disk space, for example, virtual disks.

**CP trace table.** A table used for debugging VM/SP HPO; its size is a multiple of 4096 bytes and is dependent on the size of real storage. This table contains the chronological occurrences of events that take place in the real machine, recorded in a wraparound fashion within the trace table.

**CPU timer.** A hardware feature that measures elapsed processor time and causes an interruption when a previously specified amount of time has elapsed. The CPU timer is decremented when the processor is executing instructions, is in a wait state, and is executing program loading instructions, but not when the processor is in a stopped state. A virtual machine that uses the CPU timer must have the ECMODE and REALTIMER options active.

**cross memory service.** This MVS/SP facility is a standard hardware feature on the IBM 3081 processor complex. It increases communication efficiency between address spaces. To implement cross memory services on the IBM 3033 processor, the processor must have virtual machine assist with the 3033 extension feature (#6850) as well as the virtual machine assist RPQ. *Synonymous with* dual address space assist.

**CTC.** *See* channel-to-channel (CTC) device.

**CTCA.** *See* channel-to-channel adapter (CTCA).

**current line pointer.** A pointer that indicates the line of a CMS file on which the CMS Editor and/or the System Program Editor (XEDIT) is currently working.

**cylinder.** A term used to describe specific space on count-key-data direct access storage devices.

## D

**D-disk.** In CMS, the disk that becomes a user disk with a mode letter of D if the user logs on and a virtual disk at address 192 is defined in the virtual machine configuration.

**DASD.** *See* direct access storage device.

**DASD Dump Restore (DDR) program.** In VM, a service program used to copy all or part of a minidisk onto tape, or to load the contents of a tape onto a minidisk.

**DASD space.** (1) Area allocated to DASD units on count-key-data devices. (2) Area allocated to DASD units on FB-512 devices. Note that "DASD space" is synonymous with "cylinder" when there is no need to differentiate between count-key-data devices and FB-512 devices. This term applies to VM/370, as well as to the VM/SP and VM/SP High Performance Option program products.

**DAT.** *See* dynamic address translation.

**DCSS.** *See* discontinuous saved segment.

**DDP logical operator.** The person who handles non-routine (non-programmed) messages forwarded from the local systems' programmable operator; the person who is "logically" responsible for distributed data processing system operations. *See also* Distributed Data Processing.

**DDP operator.** The person who handles non-routine (non-programmed) messages forwarded from distributed systems' programmable operators; the person who is "logically" responsible for distributed data processing network. *See also* Distributed Data Processing.

**DDR program.** In VM, refers to the DASD Dump Restore program.

**deadline priority.** A value that is used to determine when the user gets his next time slice. This value is calculated each time a user is dropped from a queue and is based on paging activity, processor usage, and the load on the system as well as on user priority.

**dedicated channel.** A channel that is attached to a virtual machine, for its sole use, so that CP can bypass translating the addresses of virtual devices.

**dedicated device.** An I/O device or line that is not being shared among users. The facility may be permanently assigned to a particular virtual machine via a VM directory entry, or temporarily attached by the resource operator to the user's virtual machine.

**default file attributes.** In CMS, certain reserved filetype names that cause the CMS editors (EDIT and XEDIT) to assume certain values for record length, tab settings, uppercase or lowercase setting, record sequence numbering, verification mode, fixed- or variable-length record type, truncation column, and other related record characteristics.

**default operand.** An operand that has a preset value if a value is not specified in the CP or CMS command line.

**delimiter.** (1) A flag that separates and organizes items of data. *Synonymous with separator.* (2) A character that groups or separates words or values in a line of input. In VM, normally one or more blank characters are used to separate the command name and each operand or option in the command line. In certain cases, a tab, left parenthesis, or backspace character can also act as a delimiter.

**derived file.** A CMS file created from selected versions of elements. A derived file is created by the build process. Some derived files may be provided by IBM on the PUT tapes. The customer installation may also create them.

**device support facilities.** A virtual disk initialization program operating under OS/VS1, OS/VS2 MVS, DOS/VSE and as a stand-alone program under a native or virtual machine environment. It can initialize a direct-access storage volume so that it can be used in an OS/VSE system, inspect a volume for defective tracks, reformat the volume label and IPL bootstrap and program records, and examine a device with a nonremovable storage mechanism to determine if there are problems with the drive or with reading and writing data stored on the volume.

**DIAGNOSE interface.** Under VM, a programming mechanism that allows any virtual machine, including CMS, to communicate directly with CP via the DIAGNOSE instruction. Specific interface codes allow a virtual machine to more efficiently request specific CP services.

**direct access storage device (DASD).** A storage device in which the access time is effectively independent of the location of the data.

**directory.** *See* auxiliary directory, CMS file directory, or VM/SP HPO directory.

**disconnect mode.** The mode of operation in which a virtual machine is executing without a physical line or terminal connected as an operator console. Any attempt to issue a read to the console causes the virtual machine to be logged off after 15 minutes have elapsed, unless the user logs on again within the 15-minute interval. Note that with the single console image facility (SCIF), a user can be disconnected from a primary virtual console but still have console communications via the console of the secondary user.

**discontiguous file.** A CMS file with missing records. The user may write records 1, 3, and 5 into a CMS file. Records 2 and 4 are missing. This results in a discontiguous file.

**discontiguous saved segment.** *Synonymous with discontiguous segment.*

**discontiguous segment.** A 64K segment of storage that was previously loaded and saved and assigned a unique name. The segment(s) can be shared among virtual machines if the segment(s) contains reentrant code. Discontiguous segments used with CMS must be loaded into storage at locations above the address of a user's CMS virtual machine address. They are attached when needed and detached when no longer needed.

**dispatcher.** The program in CP that places jobs or tasks into execution. The dispatcher selects the next virtual machine to run and prepares the virtual machine for problem state execution.

**dispatch list.** In VM, a list of those virtual machines that are executable and currently competing for a time slice of processor resources. The virtual machine currently executing is called the runuser. When virtual machines are dropped from the dispatch list, replacement is made from the eligible list. *See also* eligible list.

**dispatching.** The starting of virtual machine execution.

**dispatch request queue.** A queue of executable CP tasks, I/O tasks, and timer requests that are ready to be dispatched.

**dispatcher/scheduler favoring scheme.** A set of criteria used by the dispatcher and scheduler to create a bias in favor of queue 1 (Q1) users. Q1 users are usually highly interactive users.

**display mode.** A type of editing at a display terminal in which an entire screen of data is displayed at once and in which the user can access data through commands or by using a cursor. *Contrast with* line mode.

**display paging.** A technique used for scanning through a CMS file on a display terminal in display mode. When using the CMS Editor, scanning can include up to 20 lines at a time. When using the System Product Editor (XEDIT), use the BACKWARD or FORWARD subcommands; if a number is not given with either subcommand, only one screen is shown.

**disposable page collector.** A function of CP that scans the core table for pages that are no longer in use. If a page is no longer in use, its reference bits are set off and the page is put at the top of the flush list.

**Distributed Data Processing (DDP).** The operation of a network of interconnected processors/systems each capable of independent operation. These processors/systems are linked so it is not necessary to store all data and programs at every site. Authorized users of such a network can use the facilities of any part of this network. Such use can either be intentional or transparent to the user; that is, the user might intentionally request service from a remote system or a user's request for data or a program might automatically be routed to the appropriate part of the network by that system.

**distributed logical operator.** A virtual machine at the distributed system to which machine intervention requests are sent. There is a machine attendant who mounts forms and tapes, and turns the power on/off for that site.

**distribution code.** In the VM directory, a 1- to 8-character identification word that is printed or punched with the userid in the separator page (or punched card) to further identify the location or department of the user.

**Document Composition Facility (DCF).** A text processing program; its main component is the text formatter, called SCRIPT/VS. *See* SCRIPT/VS.

**dormant state.** A state in which the active pages of a virtual machine have been paged out.

**DOS simulation under CMS.** *Synonym for* CMS/DOS.

**DOSLIB library.** A CMS library that contains the executable phases produced by the DOS Linkage Editor under CMS. These phases are equivalent to, but not usable in the DOS/VS core image library. These phases can be fetched and executed only under CMS/DOS. *See also* CMS/DOS.

**double key protection.** This program support associates each 2K block of real storage with two storage protect keys. Two keys are needed to protect a 4K frame.

**DPA.** *See* dynamic paging area.

**draining a unit record device.** In VM, the stopping of spooling operations on a real unit record device after the current spool file has completed, or the immediate stopping of spooling operations if no spool file is being processed.

**driverid.** In RSCS, a 1- to 8-character alphanumeric filename of the CMS TEXT file that controls a communications line for a specific type of remote station.

**dual address space assist.** *Synonym for* cross memory service.

**dual processor.** A processor complex comprising two processors in one unit. Both processors share central storage, are controlled by a single operating system and communicate directly with each other. A dual configuration differs from a dyadic configuration because the channels are attached directly to each processor and channel set switching is not provided. *Contrast* with dyadic processor.

**dyadic processor.** A processor complex comprising two processors in one unit. Both processors share central storage, are controlled by a single operating system, communicate directly with each other, execute I/O operations through a common element, and can run with one central processor if the other is removed from the configuration because of an error. A dyadic processor cannot be configured into two independent uniprocessor units. Note that each processor has access to its own assigned channel set. *Contrast* with dual processor.

**dynamic address translation.** In System/370 virtual storage systems, the change of a virtual address to a real storage address during execution of an instruction.

**dynamically modified channel program.** A channel program that is altered by the program or by data being read in from a channel during the interval between the execution of the START I/O (SIO) instruction and the channel end interruption.

**dynamic paging area (DPA).** The area of real storage that is used by CP for the temporary storage of pages when paging occurs.

## E

**Early Warning System (EWS).** An information system for getting information pertaining to programming problems to the field. The information includes:

- programming symptom index (PSI)
- authorized program analysis report (APAR) list
- programming symptom index text
- miscellaneous program support information such as program temporary fix (PTF) application charts, PTF-to-APAR cross-reference list, etc.

**ECMODE.** See extended control mode.

**ECPS:VM/370.** See Extended Control-Program Support.

**edit.** To make changes, additions, or deletions to a file that is on a disk, and to make these changes interactively. The edit function is also used to generate information in a file that did not previously exist.

**edit macro.** (1) A procedure defined by a frequently used command sequence to perform a commonly required editing function. A user creates the macro to save repetitious re-keying of the sequence, and invokes the entire procedure by issuing a command (that is, the macro file's filename). The procedure may consist of a long sequence of edit, CMS, and/or CP commands, along with EXEC 2 or CMS EXEC control statements to control processing within the procedure. (2) A CMS file whose filename starts with a dollar sign (\$) character and whose filetype is "EXEC".

**edit mode.** The environment in which use of CMS EDIT subcommands and/or System Product editor (XEDIT) subcommands can be issued by the user to insert, change, delete, or rearrange the contents of a CMS file. *Contrast with* input mode.

**element.** In reference to installation and service, a file provided on a product tape or a PUT as input to a build process. All files that are associated with an element have the same filename.

**eligible list.** In VM/SP HPO, a list of virtual machines that are potentially executable, but are not placed on the dispatch list to compete for processor resources because of the current load on the system. See also dispatch list.

**EREP file.** A collection of error records produced by the malfunctioning of hardware components on a computer and stored for processing by the Environmental Recording, Editing, and Printing (EREP) Program.

**error recording area.** This term refers to the DASD space that the system programmer defines during system generation on the system residence volume that CP uses to record formatted outboard error recordings, machine check records, and channel check records. For count-key-data devices, this area is between 2 and 9 contiguous cylinders in size; for FB-512 devices, the size of this area can be any number of contiguous pages.

**escape symbol.** *Synonym for* logical escape symbol.

**escape to CP.** Under VM, a transfer of control to CP when either the terminal user or the machine stops virtual machine operation. This can be accomplished by a CP command (such as #CP), by invoking a DIAGNOSE function, or by signaling attention. *Synonymous with* #CP. See also DIAGNOSE interface, signaling attention, attention interrupt.

**EWS.** See Early Warning System.

**EXEC/EXEC procedure.** (1) A procedure defined by a frequently used sequence of CMS and/or CP commands to perform a commonly required function. A user creates the procedure to save repetitious re-keying of the sequence, and invokes the entire procedure by issuing a command (that is, the EXEC file's filename). The procedure may consist of a long sequence of CMS and/or CP commands, along with REXX, EXEC 2, or CMS EXEC control statements to control processing within the procedure. (2) A CMS file with a filetype of "EXEC".

**EXEC 2 EXEC/program.** An EXEC procedure, edit macro, or XEDIT macro written in the EXEC 2 language and processed by the EXEC 2 processor.

**EXEC 2 language.** A general purpose, high-level programming language, particularly suitable for EXEC procedures and XEDIT macros. (The language is documented in the *VM/SP EXEC 2 Reference*, SC24-5219.) Procedures and XEDIT macros (programs) written in this language are executed by the EXEC 2 processor.

**EXEC 2 processor.** The component of the VM/SP HPO operating system that interprets and executes procedures, edit macros, and XEDIT macros written in the EXEC 2 language.

**executable phase library.** See DOSLIB library.



**executable statement.** In an EXEC procedure, edit macro, or XEDIT macro, any statement that is processed by the System Product Interpreter, the EXEC 2 processor, or CMS EXEC processor. This may be a control statement or assignment, a CMS or CP command, or a null line.

**expanded storage.** An optional hardware feature on 3090 processors that provides from 16Mb to 256 Mb of additional storage. (Also see "paging storage.")

**expanded virtual machine assist.** A hardware assist function, available only on a processor that has Extended Control-Program Support (ECPS), that handles many privileged instructions not handled by virtual machine assist, and extends the level of support of certain privileged instructions beyond that provided by virtual machine assist.

**extended channel support.** Support for a one byte channel address. This allows a device address range of 0 through 1FFF.

**extended control (EC) mode.** A mode in which all the features of a System/370 computing system, including dynamic address translation, are operational. See also basic control (BC) mode.

**Extended Control-Program Support (ECPS:VM/370).** A hardware assist feature, available on certain processors, that improves the performance of CP by reducing CP overhead. ECPS:VM/370 consists of CP assist, expanded virtual machine assist, and virtual interval timer assist.

**extended PLIST.** This is an untokenized parameter list. It consists of four addresses that indicate the extended form of a command as it was entered at a terminal.

**Extended Count-Key-Data.** Those DASD devices that have a faster data transfer rate than some processors can utilize and that are connected to the processor through the use of a "speed matching buffer". You must use slightly different channel programs to communicate with such devices.

**extended storage.** Storage above the 16 megabyte line.

**external page storage.** The portion of auxiliary storage that is used to contain 4K byte pages.

**external page storage management.** A set of routines in the paging supervisor that control the transfer of data between real storage and external page storage.

## F

**favored execution performance option.** A virtual machine performance option that allows an installation to force the system to allocate more of its resource to a given virtual machine than would normally be the case.

**FBA.** See fixed block architecture.

**FCB.** Forms control buffer.

**FDP.** Field Developed Program.

**fetch protection.** A storage protection feature that determines right-of-access to main storage by matching the protection key associated with a main storage fetch reference with the storage keys associated with those frames of main storage.

**file access mode.** A filemode number that designates whether the file can be used as a read-only or read/write file by a user. *See also* filemode. The following are the filemode numbers available to the VM/SP HPO user:

- 0 Limits access to a file to only those other users who have read/write access to the disk. Files having filemode 0 are not listed for another user who links to a disk in read-only mode and requests a list of files on the disk.
- 1 Allows general read/write use of the file; this is the default.
- 2 Allows general read/write use of the file. Filemode 2 is usually used to group together files on a common disk, such as the system disk.
- 3 Causes the file to be erased after it is read.
- 4 Causes the file to be written in OS simulated data set format.
- 5 Allows general read/write use of the file. Filemode 5 is used to group together files so they can be manipulated as a group.
- 6 Causes existing records of a file to be written back to their previous location on the disk rather than to a new location. Filemode 6 eliminates the need for the dual directory scheme of block location on a disk, and reduces the possibilities of errors when one user links to another user's virtual disk.

**file definition.** (1) Equating a CMS file identifier (filename, filetype, filemode) with an OS data set name via the FILEDEF command; or equating a DOS file-id with a CMS file identifier via the DLBL command. (2) Identifying the input or output files to be used during execution of a program (via either the FILEDEF or DLBL commands).

**file status table (FST).** A table that describes the attributes of a file on a CMS disk, including filename, filetype, filemode, date last written, and other status information.

**file system command.** A CMS command that creates or manipulates CMS disk files.

**file system control block (FSCB).** A collection of information about a CMS file, used by CMS OS simulation commands and user programs. A file system control block is established for a file by the FILEDEF command or the FSCB macro instruction.

**file tag.** A character string associated with a VM spool file that contains information pertaining to that spool file. In RSCS, the file tag contains the destination linkid and transmission priority of the file.

**fileid.** A CMS file identifier that consists of a filename, filetype, and filemode. The fileid is associated with a particular file when the file is created, defined, or renamed under CMS. *See also* filename, filetype, filemode.

**filemode.** A 2-character CMS file identifier field comprising the filemode letter (A through Z) followed by the filemode number (0 through 6). The filemode letter indicates the CMS file directory on which the file resides and whether or not the disk is a user virtual disk or a CMS system disk. The filemode number indicates the access mode of the disk. *See also* file access mode.

**filename.** A 1- to 8-character alphameric field, comprised of A-Z, 0-9, and special characters \$ # @ + - (hyphen) : (colon) \_ (underscore), that is part of the CMS file identifier and serves to identify the file for the user.

**filetype.** A 1- to 8-character alphameric field, comprised of A-Z, 0-9, and special characters \$ # @ + - (hyphen) : (colon) \_ (underscore), that is used as a descriptor or as a qualifier of the filename field in the CMS file identifier. *See also* reserved filetypes.

**first-level storage.** Refers to real main storage. *See also* second-level storage, third-level storage.

**Fixed-Block Architecture (FBA).** Those DASD devices whose architecture uses fixed blocks or records of 512 bytes.

**flip-flop.** In VM/SP HPO *synonym* for alternating operating system.

**flush list.** A set of pages available to replenish the free list.

**force start.** A VM/SP HPO system restart that attempts to recover information about closed spool files that was previously stored on the checkpoint cylinders. All unreadable or invalid spool file information is ignored. *Contrast with* checkpoint start, warm start, cold start.

**format program.** (1) In CMS, the service program that creates 800-byte blocks on a minidisk, counts or redefines the number of cylinders on a virtual disk, or creates a DASD label for the virtual disk. (2) In CP, the service program that formats (in 4096-byte blocks), allocates, and creates DASD labels for CP-owned disks for paging, spooling, and CP system residence. *Contrast with* virtual disk initialization program.

**free list.** A list maintained by CP that points to a set of pages above or below the 16 Mb line that can be allocated to satisfy both virtual machine and system page requests. To satisfy system requests, pages below the 16 Mb line must be used.

**FSCB.** *See* file system control block.

**FST.** *See* file status table.

**full recording mode.** The mode of operation where transient processor and/or main storage errors that are corrected or circumvented by hardware retry or error correction code logic are recorded on the VM/SP HPO error recording cylinders.

## G

**general user privilege class.** The subset of CP commands that allows the Class G user to manipulate and control his virtual machine.

**global system lock.** A defer lock that provides system integrity for AP and MP support of command processing and code executed via IOBLOK, TRQBLOK, or CPEXBLOK.

**guest virtual machine.** A virtual machine in which an operating system is running.

## H

**handshaking feature.** See VM/VS handshaking feature.

**high-speed-buffer.** A set of logically partitioned blocks that provides significantly faster access to instructions and data than central storage.

**high-water mark.** The highest contiguous address, starting from location zero, where the virtual system's real addresses equal the virtual system's virtual addresses.

**history file.** In reference to installation and service, one or more CMS files that describe the modifications made to the system and any software products that are installed.

**HOLDING screen status.** For a display terminal used as a virtual console under VM/SP HPO, an indicator located in the lower right of the screen that displays that the current contents of the screen remain on the screen until the user requests that the screen be erased. This status occurs either by pressing the Enter key, or it is triggered by a message or warning being displayed on the screen.

**host mode.** The operating mode of a HASP main processor communicating with a HASP work station. In RSCS, an SML line driver operating in host mode appears to a remote work station as a HASP main processor.

**Houston Automatic Spooling Program (HASP).** A computer program that provides supplementary job management, data management, and task management functions such as controlling job flow, ordering of tasks, and spooling.

## I

**IBM Virtual Machine/System Product (VM/SP).** A program product that manages the resources of a single computing system so that multiple computing systems (virtual machines) appear to exist. VM/SP consists of a Control

Program (CP), which manages the real computer, and a Conversational Monitor System (CMS), which is a general-purpose conversational time-sharing system that executes in a virtual machine. Note that former VM/370 users continue to have a Remote Spooling Communications Subsystem (RSCS), which spools files to and from remote work stations, and the Interactive Problem Control System (IPCS), which provides an online problem management, diagnosis, debugging, and tracking facility.

*Note: Since RSCS and IPCS were not modified to support some VM/SP functions, the RSCS Networking Program Product (5748-XP1) and the IPCS Extension Program Product (5748-SA1) are recommended for use with VM/SP. The RSCS Networking Program Product (5748-XP1) and the IPCS Extension Program Product (5748-SA1) are recommended for use with VM/SP.*

**IBM Virtual Machine/System Product High Performance Option (VM/SP HPO).** VM/SP HPO is a separately orderable program product that can be installed and executed in conjunction with VM/SP. When you install and use VM/SP HPO in conjunction with the prerequisite VM/SP release, you obtain an operating system that extends the capabilities of VM/SP. VM/SP HPO offers enhancements for large system environments. These enhancements include system management performance improvements, additional processor and I/O support, and enhanced MVS/SP support.

**ID card.** Under VM, the identification card used to indicate the destination userid of a deck of real cards to be read into the system card reader or into the card reader of an RSCS remote station.

**immediate command (CMS).** A CMS command which, when issued after an attention interruption, causes program execution, tracing, or terminal display to stop. Another immediate command may be issued to resume tracing or terminal display. The immediate commands are HB (halt batch execution), HI (halt all System Product Interpreter or EXEC 2 programs or macros), HO (halt tracing), HT (halt typing), HX (halt execution), RO (resume tracing), RT (resume typing), SO (suspend tracing), TE (trace end), and TS (trace start). They are called immediate commands because they are executed as soon as they are entered; they are not stacked in the console stack. Within an EXEC, immediate commands may be established or cancelled by the CMS command IMMCMD.

**implied CP command.** In CMS, a CP command that is invoked without preceding the command line with "CP".

**implied EXEC.** An EXEC procedure that is invoked without identifying it as such; that is, the word "EXEC" is not used for the invocation. Only the filename is used, as if issuing a CMS command.

**improved spool file recovery.** The process of recovering from the disk the checkpoint data that was previously recorded for closed spool files. Thus, if warm start is not possible, the system operator may attempt a checkpoint start or force start. *See also* checkpoint start, force start.

**inactive page.** A page in real storage that has not been referenced during a predetermined period of time.

**initial program load (IPL).** The initialization procedure that causes an operating system to begin operation. A virtual machine user must IPL the specific operating system into the virtual machine that will be used to control his or her work. Each virtual machine may be loaded with a different operating system.

**in-memory file.** An EXEC 2 term for a file that is resident in storage, similar in concept to a file on disk.

**input line.** For typewriter terminals, information keyed in by a user between the time the typing element of his terminal comes to rest following a carriage return until another carriage return is typed. For display terminals, the data keyed into the user input area of the screen. *See also* user input area.

**input mode.** In the CMS Editor or System Product Editor (XEDIT), the environment that allows the user to key in new lines of data. *Contrast with* edit mode.

**in-queue virtual machines.** A virtual machine on the run list waiting to be dispatched. An interactive virtual machine is added to the run list if its projected working set is equal to or greater than the number of real page frames available for allocation. A non-interactive virtual machine is added to the run list if its projected working set plus the size of the interactive buffer is equal to or greater than the number of real page frames available for allocation. An in-queue virtual machine may be but is not necessarily runnable.

**installation verification procedure (IVP).** A procedure distributed with the VM/SP HPO system that exercises the newly generated VM/SP HPO system to verify that the basic facilities are functioning correctly.

**installed user program (IUP).** A licensed program produced by or for an individual IBM system user (customer or IBM internal). This kind of program may interface with program products, system control programming, currently available Type I, II, or III programs, or it may be a stand-alone program.

**instruction address stop.** An instruction address specified via a CP or CMS command, which, when fetched, causes the virtual machine to stop.

**instruction simulation wait.** The virtual machine is in a wait state awaiting the completion of instruction simulation.

**intensive recording mode.** A special error recording mode that can be invoked by an IBM Field Engineer (FE) for only one I/O device at a time. On the first through tenth unit checks or other error conditions specified by the FE, an I/O error record is constructed, formatted, and written to the VM/SP HPO I/O error recording cylinder, after which no further errors are recorded.

**inter-user communication vehicle (IUCV).** A VM/SP HPO generalized CP interface that facilitates the transfer of messages either among virtual machines or between CP and a virtual machine.

**interaction.** A basic unit used to record system activity, consisting of acceptance of a line of terminal input, processing of the line, and a response, if any.

**Interactive Problem Control System Extension (IPCSE).** A Program Product that manages software failure, analysis, and tracking. It is an online facility for diagnosing and reporting software failures and for managing problem information and status.

**interactive user.** A user whose virtual machine is dispatched for the first time, or whose virtual machine had an I/O interrupt from the terminal before the previous time slice had ended.

**internal trace table.** See CP trace table.

**IPCS.** See Interactive Problem Control System.

**IPL.** See initial program load.

**IPL processor.** In an attached processor (AP) or multiprocessor (MP) system, the processor on which the control program was first initialized during system generation. Note that both the IPL and the non-IPL processors in a real MP configuration have I/O capabilities.

**IUCV.** See inter-user communication vehicle.

**IVP.** See installation verification procedure.

## J

**JIB.** In CMS/DOS, job information block.

## L

**line-deletion or line delete symbol.** *Synonymous with* logical line delete symbol.

**line driver.** An RSCS task (program) that permits communication between RSCS and a specific type of remote station.

**line end symbol.** *Synonymous with* logical line end symbol.

**line mode.** The mode of operation of a display terminal that is equivalent to using a typewriter-like terminal. When the CMS Editor is used, the terminal displays a chronological log of the CMS EDIT subcommands entered, the lines affected by the editing (unless that is suppressed), and the system responses. When the System Product Editor (XEDIT) is used, full screen editing is the norm but line mode can be used instead. *Contrast with* display mode.

**line number.** A number located at either the beginning or the end of a record (line) that can be used during editing to refer to that line. *See also* prompting.

**line-number editing.** A reference to new or existing lines in a CMS file by line number.

**link attribute.** In RSCS, a characteristic of a link, such as its line address, its linkid, or the line driver type it requires.

**linkid.** In RSCS, a 1- to 8-character alphanumeric name that identifies a telecommunications link.

**linking to a disk.** In VM/SP HPO, sharing a disk owned by another user. A user can share the disk on a temporary or permanent basis. The sharing is normally read-only and may require a password to access the data.

**load.** In reference to installation and service, to move files from tape to disk.

**load map.** A map containing the storage addresses of control sections and entry points of a program loaded into storage.

**loadable unit.** A separately installable and serviceable subset of a product. A product must contain at least one loadable unit. It may contain more than one. Two loadable units may provide different versions of the same element.

**loader.** A routine, commonly a computer program, that reads data into main storage.

**locationid.** In RSCS, a 1- to 8-character alphanumeric name that identifies an RSCS remote work station.

**locked page.** A page that is not to be paged out.

**logical character delete symbol.** A special editing symbol, normally the "at" (@) sign, that causes CP to delete it and the immediately preceding character from the input line. If a number of delete symbols are keyed in consecutively, that same number of preceding characters are deleted from the input line. The value may be redefined or unassigned by the installation or the user. *Synonymous with* character delete symbol.

**logical editing symbols.** Symbols that allow the user to correct keying errors, combine multiple lines of input on one physical line, and key in logical editing symbols as data. The logical editing symbols may be defined, reassigned, or unassigned by the user. *See also* logical character delete symbol, logical escape symbol, logical line delete symbol, logical line end symbol. .

**logical escape symbol.** A special editing symbol, normally the double quotation (") symbol, that causes CP to consider the immediately following character as a data character instead of as a logical editing symbol.

**logical line.** A command or data line that can be separated from one or more additional command or data lines on the same input line by a logical line end symbol.

**logical line delete symbol.** A special editing symbol, normally the cent (¢) sign, that causes CP to delete the previous logical line in the input line back to and including the previous logical line end symbol. *Synonymous with* line delete symbol. *See also* logical line.

**logical line end symbol.** A special editing symbol, normally the pound (#) sign, that allows the user to key in several command and/or data lines in the same physical line; that is, each logical line except the last line is terminated with the logical line end symbol. *Synonymous with* line end symbol.

**logical operator.** The name given to the virtual machine from which OPERATOR functions requested by the Programmable Operator Facility virtual machine are performed. This name also may describe the person who normally operates the Logical Operator virtual machine. In a mixed environment, an NCCF operator can be assigned as the logical operator to control a VM distributed system.

**logically connected terminal.** A terminal that is connected via leased or switched telecommunications or by local attachment to a multiple-access virtual machine via the CP DIAL command. *See also* multiple-access virtual machine.

**logical swapping.** The process of invalidating virtual machine page table entries and chaining the corresponding CORTABLE entries. The pages are not moved to DASD but stay grouped until they are moved (see “physical swapping”) or the virtual machine is again allowed to run. In the latter case, the pages are logically swapped in, unchained and revalidated.

**logical swap queue.** A chain of swap control blocks. The pages on the swap lists anchored in the swap control blocks are eligible to be physically swapped if the frames are needed. The FIFO logical swap queues are the interactive swap queue and the non-interactive swap queue.

**logon.** The procedure by which a user begins a terminal session.

**logoff.** The procedure by which a user ends a terminal session.

**look-aside entry.** A routine that is resident in the nucleus becomes a look-aside entry after it has been executed.

## M

**machine.** A synonym for a virtual machine running under the control of VM/370 or VM/SP HPO.

**MACLIB library.** A library that contains macros, copy files, or source program statements for use under CMS.

**map.** In CMS, the file that contains a CMS output listing, such as (1) a list of macros in the MACLIB library, including macro size and location within the library. (2) a listing of the directory entries for the DOS/VS system or private source, relocatable, and/or core image libraries. (3) a linkage editor map for CMS/DOS programs. (4) a module map containing entry point locations.

**master file directory block.** *Synonym for* CMS file directory.

**MIH.** See missing interrupt handler.

**minidisk.** *Synonym for* virtual disk.

**minidisk directory.** *Synonym for* CMS file directory.

**minimum truncation.** The shortest form of a command name, operand, or option that can be keyed in and still be recognized by VM. For example, AC is the minimum truncation for the ACCESS command. However, note that the letter A is the minimum truncation for ASSEMBLE. *See also* truncation.

**missing interrupt handler.** A component of VM/SP HPO that detects incomplete I/O conditions by monitoring I/O activity. It also tries to correct incomplete I/O conditions without operator intervention.

**module.** (1) A program unit that is discrete and identifiable with respect to compiling, combining with other units, and loading; for example, the input to, or output from, an assembler, compiler, linkage editor, or executive routine. (2) A file whose external references have been resolved. In CMS, these files must have a filetype of MODULE.

**MORE screen status.** For a display terminal used as a virtual console under VM/SP HPO, an indicator located in the lower right of the screen that displays that the user's display screen is full,

but that there is more data to be displayed. After 60 seconds, the screen is automatically erased and the next screen is displayed. To clear the screen immediately, press the Clear, Cancel, or PA2 key. To hold the data on the screen longer than 60 seconds, press the Enter key to enter HOLDING status. *See also* HOLDING screen status.

**moving cursor.** A DASD cylinder selection algorithm that selects the next non-full cylinder when the cylinder currently being used for page-slot allocation is fully allocated.

**MSSF.** Monitoring and service support facility.

**MULTI-LEAVING.** The telecommunications line protocol used to communicate between HASP- and ASP-type host and workstations. In RSCS, this protocol is supported by the Spool MULTI-LEAVING line driver.

**multiple-access virtual machine.** A virtual machine running under VM/SP HPO that supports teleprocessing terminals.

**MVS page fault assist.** This is a standard hardware feature on the IBM 3081 processor complex that reduces the time needed by the MVS/SP virtual machine to handle page translation exception interruptions. The MVS/SP V=R guest gets these interruptions the first time certain tasks access storage using the GETMAIN macro instruction. The virtual machine assist extension for the IBM 3033 extension feature (#6850) must be in place so that the user may obtain MVS/SP page fault assist on the IBM 3033 processor.

## N

**named system.** A system that has an entry in the CP system name table (DMKSNTBL). The entry in the system name table includes the system name and other pertinent data so that the system can later be saved. *See also* saved system.

**native mode.** Refers to running an operating system standalone on the real machine instead of under VM.

**netdata.** The name of the format used to send a file when the NEW option of the CMS SENDFILE command is specified.

**non-disruptive transition.** A facility that enables an installation to transfer control of an operating system from VM/SP HPO virtual machine mode to native mode (and vice versa) without having to shut down and reinitialize the operating system.

**non-IPL processor.** In an AP or a MP system, the attached or second processor initialized at system generation time. Note that both the IPL processor and the non-IPL processor in a real MP configuration have I/O capabilities.

**non-resident pages.** Pages whose contents are on DASD but not in real storage. A page is considered non-resident when an attempt to load its real address returns a non-zero condition code (except for pages above the 16 Mb line). A page may be also considered non-resident even though CC=0 if CP is referencing the page.

**noninteractive user.** A user whose virtual machine completed its previous time slice interval without having an I/O interrupt from the terminal.

**nonpaging mode.** *See* OS/VS1 nonpaging mode.

**nonprogrammable terminal.** In RSCS, a device such as an IBM 2770, 2780, 3770, or 3780 that performs a hardware-defined fixed set of functions; such as printing, reading, and punching data. *See also* remote spooling communications subsystem (RSCS).

**nonprogrammable terminal line driver.** An RSCS line driver that exchanges data with a nonprogrammable terminal.

**NOT ACCEPTED screen status.** For a display terminal used as a virtual console under VM/SP HPO, an indicator in the lower right of the screen that displays that the user is: (1) trying to enter another command line, but the terminal buffer still contains a previous command line; (2) using the copy function to copy the contents of the screen onto an associated hardcopy printer, however, the printer is busy, nonexistent, or otherwise unavailable.

**NPT.** Nonprogrammable terminal.

**N-select.** A DASD page-slot selection algorithm that allocates a selected number of consecutive requests to the same allocation area of the same DASD.

**nucleus.** That part of the CP or CMS that is resident in main storage.

**NUCON.** The nucleus constant area of CMS which is invoked via the NUCON macro.

**null line.** A logical line with a length of zero; usually used to signal the CMS Editor to terminate input mode and enter edit mode. In VM, a null line for typewriter terminals is a terminal input line consisting of a return character as the first and

only information, or a logical line end symbol as the last character in the data line. For display devices, a null line is indicated by the cursor positioned at the beginning of the user input area or the data in the user input area ending with a logical line end symbol.

## O

**OLTS.** On Line Test Sections. A program used by IBM customer engineers (CE) for I/O maintenance.

**OLTSEP.** On Line Test Standalone Executive Program. A program used by IBM customer engineers (CE) for I/O maintenance.

**ordered seek queuing.** A technique used by the CP I/O supervisor to schedule DASD I/O operations for nondedicated disks in an orderly progression from lower to higher cylinder numbers so that I/O operations for cylinders that are located at or near the present cylinder are handled before DASD accesses located at more distant higher cylinders are handled. When the highest cylinder is reached, the progression is reversed from high to low. This tends to minimize average seek times and to allow a greater level of I/O activity than initiating DASD seeks on an arbitrary "first come, first served" basis.

**OS simulation under CMS.** The environment of CMS that permits the simulation of OS functions. *Contrast with CMS/DOS.*

**OS/VS1 nonpaging mode.** If OS/VS1 executes under the control of a VM/SP HPO system that supports the VM/VS Handshaking feature and if the OS/VS1 address space is equal to the size of its VM/SP HPO virtual machine, OS/VS1 executes in nonpaging mode. When OS/VS1 executes in nonpaging mode, it uses fewer privileged instructions and avoids duplicate paging since paging is done only by CP.

**output display area.** For display devices, the upper portion of the display screen that contains an historical log of the most recent lines of console input to and output from the virtual machine and CP. On the 3270, this area is protected, that is, the user is unable to key information into the output display area. This display format is not used by the CMS Editor.

**overhead.** The additional processor time charged to each virtual machine for the CP functions needed to simulate the virtual machine environment and for paging and scheduling time.

## P

**page frame.** A block of 4096 bytes of real storage that holds a page of virtual storage.

**page frame table.** A table (called the CORTABLE) that contains an entry for each frame. Each frame table entry describes how the frame is being used.

**page locking.** Marking a page as nonpageable so that it remains in real storage until released.

**page migration.** Movement of inactive pages from preferred paging areas or general paging areas to nonpreferred paging areas. CP dynamically invokes page migration if:

- All preferred paging areas are full, or
- The maximum percentage of PG paging areas is reached, or
- More than one minute has elapsed since the last page migration.

Page migration can also be invoked by the system operator.

**paging media.** Media used for paging or swapping of virtual storage pages to and from real storage. This could be a DASD, paging storage, or a drum.

**page reclamation.** The process of making available and addressable the contents of a page in real storage that is waiting to be (or already has been) paged out. Page reclamation can occur after a page fault or after a request to fix or load a page, as long as no page-in operation has been scheduled for that particular page frame.

**page table.** A table (labeled PAGTABLE) that indicates whether or not a page is in real storage and that correlates virtual addresses with real storage addresses.

**page zero.** Storage locations 0 to 4095.

**pageable nucleus.** Less frequently used portions of the CP nucleus that are not normally resident in real main storage.

**paging activity indexes.** Values that affect the algorithm used by CP in controlling the dispatching and scheduling of all active logged-on virtual machines.



**paging area.** An area of direct access storage (and an associated area of real storage) that is used by CP for the temporary storage of pages when paging occurs.

**paging storage.** The VM/SP HPO name used in reference to the hardware Expanded Storage feature (see “expanded storage”).

**paging supervisor.** A part of the CP nucleus that allocates and releases real storage page frames for pages, selects the appropriate paging device, and initiates page-in and page-out operations based on ordered seek queuing and slot sorting techniques. *See also* ordered seek queuing, slot sorting.

**parameter list (PLIST).** In CMS, a string of 8-byte arguments that are used to call a CMS command or function. The first argument must be the name of the command or function to be called. General register 1 points to the beginning of the parameter list.

**parent directory.** The directory for a CMS disk that has a disk extension defined for it via the ACCESS command.

**partitioned processing mode.** A mode in which the 3084 is reconfigured into two separate and independent dyadic processors, each capable of executing an operating system of unique type or version. The 3084 is a four-way multiprocessor.

**password.** In VM/SP HPO, a 1- to 8-character symbol that the user is required to supply at the time he logs on to identify himself. The password is normally protected from inadvertent disclosure to unauthorized personnel by not displaying the password or by masking the password as it is keyed in. A password may also be assigned to a virtual disk to control or limit access to that disk.

**performance option.** One or more functions that can be assigned to a virtual machine to improve its performance, response time (if terminal-oriented) and/or throughput under VM/SP HPO.

**PFnn keys.** Special keys available on display terminals that can be defined as elementary cataloged procedures equivalent to one or more CP or CMS command lines, or input data for a virtual machine. A Program Function key can also be assigned a tabbing function for such terminals. When the PFnn key is pressed, the function or functions are performed, and the full command line can be displayed on the screen. *Synonymous with* program function (PFnn) keys.

**physical swapping.** The process of moving groups of a virtual machine’s pages (swap sets) to (physical swap-out) or from (physical swap-in) specifically defined areas on a paging media.

**physical unit block (PUB).** In a VSE system, an entry in a table containing the channel and device address of a device. There is a physical unit block for each and every physical device available in the system.

**PLIST.** *See* parameter list.

**predefined function, EXEC 2.** A specialized function, invoked by a keyword, that has been built into the system program code because it is commonly required by many users; same as REXX/CMS EXEC built-in function.

**preferred auxiliary file.** In CMS, an auxiliary file that applies to a particular version of a source module to be updated, if multiple versions of the module exist.

**preferred machine assist.** A hardware feature available on certain processors that improves MVS/SP (Release 1 enhancement or later) V = R virtual machine performance. The MVS/SP guest virtual machine operates in supervisor state with direct control of its own I/O operations under VM/SP High Performance Option. Note that preferred machine assist, is an extension of virtual machine assist, which eliminates CP simulation of certain instructions and interruptions.

**preferred paging area.** A special area of paging media where frequently used pages are paged out. It provides high speed paging.

**preferred virtual machine.** A particular virtual machine that has one or more of the performance options assigned to it.

**preferred storage area (PSA).** A storage area where the normal low core IPL, logout, PSW information, the processor model, type, and features, BALR and FREE areas, monitor and trace data, and the needed linkage to virtual machines, real devices, and spool files are stored.

**prefix area.** The five left-most positions on the System Product Editor’s full screen display, in which prefix subcommands or prefix macros may be entered. *See* prefix subcommands and prefix macros.

**prefix macros.** System Product Editor macros that are entered in the prefix area of any line on a full screen display. *See* prefix area.

**prefix storage area (PSA).** A storage area where the contents of the prefix register is stored during the execution of a store status operation if the multiprocessing facility is installed.

**prefix subcommands.** System Product Editor subcommands that are entered in the prefix area of any line on a full screen display. *See* prefix area.

**prepaging.** A physical swap-in that is initiated when a virtual machine is added to queue.

**prerequisite change.** In reference to installation and service, a change that must be applied prior to application of another change.

**primary paging device.** The direct access storage device with the highest effective data rate available for use by CP. CP always attempts to store pages on this paging device instead of on slower paging devices as long as space on the primary paging device is available.

**primary system operator.** The first CP privilege class A user that is logged on to VM after system initialization. Although class A may be assigned to more than one user, only one user at a time can use class A privileges.

**primary system operator privilege class.** The CP privilege class A user; this operator has primary control over the VM/SP HPO system, and can enable and disable teleprocessing lines, lock and unlock pages, force users off the VM/SP HPO system, issue warning messages, query, set (and reset) performance options for selected virtual machines, and invoke VM/SP HPO accounting. If the current primary system operator logs off, the next class A user to log on becomes the primary system operator.

**primary user disk.** *Synonym for* A-disk.

**prime subpool.** Storage for certain cache-aligned control blocks.

**print inhibit.** A hardware feature available on some typewriter terminals, such as the 2741, which permits the user to key in information via the keyboard without causing the data to be typed on the terminal's typewriter.

**priority performance option.** A virtual machine parameter that influences the internal scheduling algorithm of the VM/SP HPO control program. The lower the priority value specified, the higher the priority of the virtual machine.

**privilege class.** One or more classes assigned to a virtual machine user in the directory entry; each privilege class specified allows a user to access a logical subset of the CP commands.

**privileged instruction simulation.** The CP-incurred overhead to handle privileged instructions for virtual machine operating systems that execute as if they were in supervisor state but which are executing in problem state. *See also* virtual machine assist.

**problem state.** A state during which the central processing unit cannot execute I/O and other privileged instructions. VM/SP HPO runs all virtual machines in problem state. *See also* privileged instruction simulation. *Contrast with* supervisor state.

**PROFILE EXEC.** A special EXEC procedure with a filename of PROFILE which can be created by a user. The procedure is normally executed immediately after CMS is loaded into a virtual machine.

**program function (PFnn) keys.** *Synonym for* PFnn keys.

**program stack.** Part of the console stack; it is a storage area used for temporary storage of lines or files being exchanged by programs executing under CMS. *See also* console stack.

**program temporary fix (PTF).** A temporary solution or bypass of a problem diagnosed by IBM field engineering as the result of a defect in a current, unaltered release of a program.

**program update tape (PUT).** A vehicle for system maintenance which contains service for the system control programming (SCP) and/or the VM/System Product High Performance Option. It is customized to contain service for only those products listed in the PID user profile. A PUT may be one or more physical tape volumes.

**Programmable Operator Facility.** This facility enables automatic filtering and routing of messages from a specified virtual machine (for example the operator) to a logical operator virtual machine in a local distributed or mixed environment. The Programmable Operator Facility also permits installation defined actions to be performed automatically.

**programmable station.** An I/O configuration that must be programmed before it can communicate with other remote stations that adhere to a compatible protocol.

**programmed symbols.** A feature that allows definition of user-indicated shapes and/or symbols.

**projected working set.** The sum of referenced pages and pages stolen from the virtual machine which is used to determine whether the virtual machine can be added to the run list.

**prompting.** An interactive technique that allows the program to guide the user in supplying information to a program. The program types or displays a request, question, message, or number, and the user enters the desired response. The process is repeated until all the necessary information is supplied.

**protocol.** A set of rules for communication that are mutually understood and followed by two communicating stations or processes. The protocol specifies actions that can be taken by a station when it receives a transmission or detects an error condition.

**PSA.** See prefix storage area.

**pseudo page fault.** A facility available with VM/VS Handshaking that allows the VS1 virtual machine to dispatch another task while waiting for a page-in request to be completed for some other task. Without this facility, the whole virtual machine would wait until the page request was satisfied, even if higher priority tasks were ready to execute.

**pseudo timer.** A special timing facility that provides date, time, virtual processor and total processor time information to a virtual machine.

**PTF.** See program temporary fix (PTF).

**PUB.** See physical unit block.

**PUT.** See program update tape.

## Q

**quantum.** An eighth of a queue slice. It is the longest time period a virtual machine is allowed continuous access to the processor.

**queue-add.** The action by the system scheduler, DMKSCH, of placing a virtual machine on the list of virtual machines that can be given control of a processor.

**queue-drop.** The action by the system scheduler, DMKSCH, of removing a virtual machine from the list of virtual machines that can be given control of a processor.

**queue drop elimination.** A performance option that eliminates the dropping of a virtual machine from the active queue if the virtual machine is determined to be idle.

**queue slice.** The amount of processor time that a virtual machine is allowed to remain in-queue. This time depends on which queue (queue 1 or queue 2) the virtual machine is added to. The queue slice is further divided into eight equal slices, called quanta.

**queue 1 (Q1).** A queue of interactive users from which the dispatcher selects users for the dispatch list. The virtual machines may or may not be immediately runnable. The size of queue 1 is dependent upon the system's multiprogramming level. The time slice given to an interactive user is significantly shorter than that given to a noninteractive user, but the interactive user's virtual machine is dispatched more frequently. Queue 1 is filled from the eligible list. See also interactive user, noninteractive user, queue 2.

**queue 2 (Q2).** A queue of interactive or noninteractive users from which the dispatcher selects users for the dispatch list. The virtual machines may or may not be runnable. The time slice given to a Q2 user is significantly longer than that given to a Q1 user, but the noninteractive virtual machine is dispatched less often since runnable users in Q1 are selected first. See also interactive user, noninteractive user, queue 1.

**queue 3 (Q3).** A queue of noninteractive users that have cycled through at least eight consecutive Q2 processor time slices without a Q1 interaction before they are dropped from the queue. Q3 users receive eight times as much processor time each time in queue as Q2 users, but receive only one-eighth as often. The differences between Q2 and Q3 users are reflected in their deadline priority calculations. See also deadline priority, interactive user, noninteractive user, queue 1, queue 2.

**quiet recording mode.** The mode of operation where transient processor and/or main storage errors that are corrected or circumvented by hardware RETRY or error correction code logic are not recorded on the VM error recording cylinders. This mode is entered via the SET MODE RETRY QUIET command or after 12 transient machine checks have occurred while in full recording mode.

**Q1.** See queue 1.

**Q2.** See queue 2.

**Q3.** See queue 3.

**R**

**raddr.** The real device address of an I/O device.

**read.** See CP read, VM read.

**read-only access.** An access mode associated with a virtual disk that allows a user to read, but not write or update, any file on the disk.

**read-only system residence disk.** See shared read-only system residence disk.

**read/write access.** An access mode associated with a virtual disk that allows a user to read and write any file on the disk.

**real address.** (1) The address of a location in real storage. (2) The address of a real I/O device.

**real machine.** The actual processor, channels, storage, and input/output devices required for operation of VM/SP HPO.

**recording mode, full.** See full recording mode.

**recording mode, intensive.** See intensive recording mode.

**recording mode, quiet.** See quiet recording mode.

**remote batch system.** An operating system that provides for job input from and job output to remote work stations. A spool MULTI-LEAVING (SML) line driver executing in remote job entry (RJE) mode under RSCS in a virtual machine can act as a remote work station to such a system.

**remote operator console facility.** A 4300 Series Processor Support Processor microcode function that permits communication from a remote console for functions like initial microcode load (IML) or IPL using a switched line. The VM/Pass-Through Facility program provides a communication vehicle which allows any of its supported display stations to serve as this remote console.

**Remote Spooling Communications Subsystem (RSCS).** The component of VM/370 that provides for the transfer of spool files between VM/370 users, remote stations, and remote and local batch systems via HASP-compatible telecommunications facilities.

*Note: VM/SP HPO users should use the RSCS Networking Program Product (5748-XP1).*

**reserved filetypes.** (1) Filetypes recognized by the CMS editors (EDIT and XEDIT) as having specific default attributes that include: record size, tab settings, truncation column, and uppercase or lowercase characters associated with that particular filetype. The CMS Editor creates a file according to these attributes. (2) Filetypes recognized by CMS commands; that is, commands that only search for and use particular filetypes, or create one or more files with a particular filetype.

**reserved page frame performance option.** A virtual machine option that reserves a specific number of page frames for use by one virtual machine. Generally, this option allows the most recently active pages of a virtual machine's storage to remain allocated in real storage.

**resource allocation.** The distribution of system resources (devices, storage, and processor accessibility) to system users.

**response time.** (1) The time between the submission of an item of work to a computing system and the return of results. (2) In systems with time sharing, the time between the end of a block or line-end character of terminal input and the display of the first character of system response at the terminal.

**Restructured Extended Executor (REXX) Language.** A general purpose, high-level programming language, particularly suitable for EXEC procedures, XEDIT macros, or programs for personal computing. (The language is documented in the *VM/SP System Product Interpreter Reference*, SC24-5239.) Procedures, XEDIT macros, and programs written in this language are interpreted and executed by the System Product Interpreter.

**reverse video.** Color display terminal highlight feature.

**REXX EXEC/program.** An EXEC procedure or XEDIT macro written in the Restructured Extended Executor (REXX) Language and processed by the System Product Interpreter.

**REXX language.** *See* Restructured Extended Executor (REXX) Language.

**ring of files.** The arrangement of files in virtual storage when multiple files are being edited by the System Product editor.

**RJE mode.** The operating mode of HASP work stations submitting jobs to a host processor. In RSCS, an SML line driver operating in RJE mode appears as a HASP work station to a remote HASP- or ASP-type batch processor.

**rotational position sensing (RPS).** A standard or optional feature of most IBM disk storage devices that permits these devices to disconnect from a block multiplexer channel (or its equivalent on Model 3115/3125 processing units) during rotational positioning operations, thereby allowing the channel to service other devices.

**RPS.** *See* Rotational position sensing.

**RSCS.** *See* Remote Spooling Communications Subsystem.

**run list.** A queue that contains in-queue virtual machines that are competing for processor resources. These virtual machines are sorted by deadline priority.

**RUNNING screen status.** For a display terminal used as a virtual console, an indicator located in the lower right of the screen that displays that the user's virtual machine is in control (but not necessarily executing a program or command) and that the terminal is able to receive messages.

**runuser.** The virtual machine in the dispatch list that is currently executing.

## S

**S-disk.** *See* CMS system disk.

**S-STAT.** This is a block of storage that contains the file status tables (FSTs) associated with the S-disk. The FSTs are sorted so that a binary search can be used to search for files. The S-STAT usually resides in the CMS nucleus so it can be shared. Only files with filemode of 2 will have their associated FSTs in the S-STAT.

**saved system.** A special nonrelocatable copy of a virtual machine's virtual storage and associated registers that is kept on a CP-owned disk and that can be loaded by name instead of by I/O device address. Loading a saved system by name

substantially reduces the time it takes to IPL the system in a virtual machine. In addition, a saved system such as CMS can also share one or more 64K segments of reenterable code in real storage between virtual machines. This reduces the cumulative real main storage requirements and paging demands of such virtual machines.

**scale.** A line on the System Product editor's (XEDIT) full screen display, used for column reference.

**SCIF.** *See* Single Console Image Facility.

**screen attribute byte.** A character position on the screen of a display terminal that defines the characteristics of the next field displayed on the screen, such as protected, not protected, displayable or nondisplayable. The user is not allowed to set or change the screen attribute byte if the display terminal is used as the virtual console of a virtual machine.

**screen status area.** For a display terminal used as a virtual console, an indicator of the current status of the display screen. This indicator is located in the lower right of the display screen. *See also* CP READ screen status, HOLDING screen status, MORE screen status, NOT ACCEPTED screen status, RUNNING screen status, and VM READ screen status.

**SCRIPT.** *See* SCRIPT/VS.

**SCRIPT/VS.** A document- and text-processing program that executes in the CMS command environment. SCRIPT/VS is a component of the IBM Document Composition Facility program product available from IBM for a license fee. SCRIPT input consists of text and SCRIPT control words which control the output format of the text.

**scrolling.** In the CMS Editor and the System Product Editor (XEDIT), a technique used with display terminals in display mode to scan in a forward or backward direction.

**second-level storage.** The storage that appears to be real to a virtual machine. *See also* first-level storage, third-level storage.

**secondary user.** When a user is disconnected — that is, has no virtual console on line — a secondary user may be designated to receive the disconnected user's console messages and to issue commands to the disconnected user's console.

**segment.** (1) A contiguous 64K or 1024K area of virtual storage (not necessarily contiguous in real storage) that is allocated to a job or system task.

(2) VM/SP HPO does not use 1024K segments, but supports any virtual machine operating system that uses 1024K segments.

**segment number.** The part of a virtual storage address needed to refer to a segment.

**segment protect.** A hardware feature, available on certain processors that provides protection for shared segments at the hardware level.

**segment table.** A table used in dynamic address translation to control user access to virtual storage segments. Each entry indicates the length, location, and availability of a corresponding page table.

**selective line editing.** This is a feature of XEDIT that allows editing of a specified collection of lines while excluding other lines from the screen.

**separator.** *Synonymous with* delimiter.

**service level table.** A table that tracks the service applied to a loadable unit. This service is identified by a PTF number if one has been assigned; otherwise an APAR number is used. For user modifications, the user assigns a number.

**service machine.** A virtual machine running a program that provides system-wide services.

**service representative privilege class.** The CP privilege class F user, normally an IBM Field Engineer, is permitted to set or change the level of detail of I/O device error recording to the level desired. *See also* full recording mode, intensive recording mode, quiet recording mode.

**service routines.** CP or CMS routines used for addressing and updating directories; formatting or initializing disks; or performing disk, tape, or terminal input/output functions.

**shadow page table.** A page table created and used by CP to control the virtual storage of a virtual machine operating system (such as DOS/VS or OS/VS) that itself can perform paging on a real machine.

**shared read-only system residence disk.** A system residence disk that is tailored so that most of the system residence information is read-only and accessible to all relevant virtual machines, leaving a relatively smaller private read/write system disk that must be dedicated to each virtual machine. This technique can substantially reduce the disk requirements of an installation by avoiding needless duplication of disk packs by virtual machines that use the same operating system. *See also* saved system.

**shared segment.** A feature of a saved system that allows one or more segments of reentrant code in real storage to be shared among many virtual machines. For example, if a saved CMS system was generated, segment 1 of the CMS nucleus is shared in real storage among all CMS virtual machines loaded by name; that is, every CMS machine's segment of virtual storage maps to the same 64K of real storage. *See also* saved system, discontinuous segment.

**shared system.** *See* saved system, shared read-only system residence disk.

**signaling attention.** Pressing a key or keying in a CP command to present an attention interruption to CP or to a user's virtual machine.

**single console image facility (SCIF).** (1) Enables a user, who is disconnected from a primary virtual console, to continue to have console communications via the console of the secondary user. *See also* secondary user. (2) Enables a virtual machine operator to control multiple virtual machines from one physical terminal.

**single key protection.** This program support associates each 4K block of real storage with one storage key. Only one key is needed to protect a 4K frame.

**single key storage.** Real storage composed of storage frames that are protected by one storage key per 4K frame rather than two storage keys per 4K frame.

**single processor mode.** In tightly coupled multiprocessing (MP) or attached processor (AP) systems, single processor mode allows an installation to dedicate a processor to an MVS V=R virtual machine. In single processor mode, VM/SP HPO runs in uniprocessor mode in the main processor, and the MVS V=R virtual machine runs under VM/SP HPO in the main processor and has the exclusive use of the other processor for MP or AP operations. However, other virtual machines can operate under VM/SP HPO concurrently with the MVS V=R virtual machine in single processor mode. With certain releases of MVS/SP, the single processor user must also be the preferred guest. Single processor mode should not be confused with VM/SP HPO uniprocessor mode.

**sink virtual machine.** In Virtual Machine Communication Facility (VMCF), the virtual machine that receives messages or data from a source virtual machine. *Contrast with* source virtual machine.

**sleep mode.** An environment where the virtual machine is in a dormant state; that is, the virtual machine is not running, but connect time still accumulates, and messages may be displayed at the terminal. The virtual machine is reactivated either at the end of a specified time interval or when the user signals attention to CP. *See also* signaling attention.

**slot sorting.** A technique used by the CP paging supervisor to reduce the number of separate channel programs needed to read pages from or write pages on a paging device. This is accomplished by grouping, in the same channel program, the reading or writing of pages which occur in different relative record positions on the same track or within the same cylinder. *See also* ordered seek queuing.

**SMALLV virtual machine.** A virtual machine that uses less than a sixteenth of a quantum of virtual processor time before being dropped from queue. Real storage management does not trim a SMALLV virtual machine.

**SML.** Spool MULTI-LEAVING. *See* MULTI-LEAVING.

**smoothed data.** Statistical data (as in a curve or graph) freed from irregularities by ignoring random occurrences or by a process of continual averaging.

**software product.** Any IBM or original equipment manufacturer (OEM) supplied software or user written programs. The term includes program offerings and program products (PPs).

**source virtual machine.** In Virtual Machine Communication Facility (VMCF), the virtual machine that initiates the sending of messages or data to another virtual machine. *Contrast with* sink virtual machine.

**special variable.** A reserved variable name that is assigned a value during processing by the System Product Interpreter, the EXEC 2 processor or CMS EXEC processor. These variables can be tested within an EXEC procedure, edit macro, or XEDIT macro.

**spool, spooled, spooking.** Relates to the reading of input data streams and the writing of output data streams on auxiliary storage devices.

**spool file class.** A 1-character class associated with each virtual unit record device. For input spool files, the spool file class allows the user to control which input spool files are read next; and, for output spool files, it allows the spooling operator to better control or reorder the printing or

punching of spool files having similar characteristics or priorities. The spool file class value can be A-Z, 0-9, or an asterisk (\*).

**spool file tag.** A 136-character data field that is associated with each output spool file generated. The use, content, and format of this field is a bilateral decision between the originator and receiver of the file. In RSCS, the spool file tag contains the location identifier of the link on which the file is to be transmitted, the userid of the virtual machine that is to receive the file, and a transmission priority value.

**spool MULTI-LEAVING line driver.** In RSCS, the line driver that exchanges data with a programmable terminal.

**spoolid.** A spool file identification number that is automatically assigned by CP when the file is closed. The spoolid number can be from 0001 to 9900; it is unique for each spool file. To identify a given spool file, a user must specify the owner's userid, the virtual device type, and the spoolid.

**spooling.** The processing of files created by or intended for virtual readers, punches, and printers. The spool files can be sent from one virtual device to another, from one virtual machine to another, and to real devices. *See also* virtual console spooling.

**spooling area.** Any direct access storage area temporarily used by VM/SP HPO to store input for a virtual card reader, output for a virtual printer or punch, or a console log of input/output for a virtual console.

**spooling devices.** Input/output devices (card readers, punches, printers, DASD) used for reading input and writing output.

**spooling operator privilege class.** The CP privilege class D user who controls the real unit record equipment and all closed spool files.

**spooling unit record I/O.** *See* virtual spooling device, spooling.

**SRF (IBM 7443 Service Record File) device.** A diskette used in error recording procedures in either 303x uniprocessor environments or in 303x attached processor environments. The SRF device includes frames that contain information to format machine check and channel check records. CP accesses the SRF device at system initialization, retrieves the frames, and records them at the beginning of the error recording area. The CMS CPEREP command makes use of the information to interpret inboard errors for hardcopy output.

**stack.** See console stack; program stack.

**standalone dump.** A program used to print the contents of storage that runs in a virtual machine not under control of an operating system such as CMS. One such program is HMDDMPRS which dumps storage to tape or printer and runs in a virtual machine or on the real machine.

**static CP area.** Those portions of storage that are allocated to CP during system generation and IPL.

**storage key.** A four-bit control field associated with either 2K or 4K blocks of real storage.

**storage levels.** Three levels are available: first-level storage, which is real main storage; second-level storage, which is the storage that appears to be real to a virtual machine; and third-level storage, which is the virtual storage created and controlled by a virtual machine.

**subcommand.** The commands of processors such as EDIT or System Product Editor (XEDIT) and DEBUG that run under CMS.

**supersede change.** In reference to installation and service, a change that makes all the changes made by the change being superseded. A supersede change is used only for object-maintained elements.

**supervisor state.** A state during which the central processing unit can execute input/output and other privileged instructions. In VM/SP HPO, MVS/SP with preferred machine assist and CP can execute in the supervisor state; all virtual machine operating systems execute in problem state. *Contrast with* problem state.

**support programmer.** A data processing oriented user who may do some of the work of a system programmer. This includes installation of a new product or release of a product, and application of service to a product. The work could also include isolating the source of problems (identifying whether the problem is a user, vendor, program, or hardware error).

**SVC.** Supervisor call instruction.

**SVC 76 error recording interface.** A means for VM/SP HPO to record the error incidents encountered by certain operating systems running in a virtual machine under VM/SP HPO. When the virtual operating system issues SVC 76, VM/SP HPO translates the virtual storage and I/O device addresses to the real ones, records the information on the VM/SP HPO error recording cylinder, and

returns control to the virtual machine; thus bypassing the virtual machine's own error recording routine, and avoiding duplicate recording of the same errors.

**swap area.** An area on a paging media allocated for swapping by the SW option on the SYSPAG macro.

**swap fault.** An address translation exception that occurs when reference is made to a page physically swapped to a swap area.

**swap list.** The chain of pointers to a virtual machine's pages that have been logically swapped out at queue-drop time. The head of each queue is in the swap control block.

**swapping.** The process of moving a swap set pages to and from a swap area.

**swap set.** A group of pages belonging to a specific virtual machine to be written/read to and from a paging media as a group. The maximum number of pages contained in a swap-set is a system generation variable.

**synonym.** In CMS, an alternative command name defined by the user as equivalent to an existing CMS command name. Synonyms are entries in a CMS file with a filetype of SYNONYM. Issuing the SYNONYM command allows use of those synonyms until that terminal session ends or until the use of synonyms is revoked by issuing the SYNONYM command with no operands.

**SYSPAG macro.** A macro in DMKSYS used to define how the CP-owned volumes are to be allocated for swapping, paging, spooling, page migration, and dump. It is also used to allocate Paging Storage for swapping and paging.

**SYSPLIST.** A control block generated by the SYSPAG macro. A SYSPLIST control block is created for every SYSPAG macro specified in DMKSYS.

**system analyst privilege class.** The CP privilege class E user, normally the VM system analyst, who can query, examine, and print or display, but not modify, certain areas of the CP nucleus, and can create saved systems. *See also* saved system.

**system control file.** In CP, the file that consists of macro instructions that describe the CP system residence disk, the real main storage size, the CP-owned DASD volumes, the system operator's userid, and the system timer value.



**system integrity.** The property of a system that is designed, implemented, and maintained to protect itself from unauthorized access.

**system load.** The combination of active devices, programs, and users that use the system resources of the processor and storage.

**system name table.** In CP, the table that contains the name and location of saved systems, including discontinuous shared and nonshared segments.

**System Product Editor.** The CMS facility, comprising the XEDIT command and XEDIT subcommands and macros, that allows a user to create, modify, and manipulate CMS disk files.

**System Product Interpreter.** The component of the VM/SP HPO operating system that processes procedures, XEDIT macros, and programs written in the Restructured Extended Executor (REXX) Language.

**system programmer privilege class.** The CP privilege class C user; normally, the system programmer, who can alter the contents of any real storage locations in the machine.

**system resource operator privilege class.** The CP privilege class B user, who controls all the real resources of the machine, such as real storage, disk drives, and tape drives, that are not controlled by the primary system or spooling operators.

**system restart.** The restart that allows reuse of previously initialized areas. System restart usually requires less time than IPL. *See also* warm start.

**systems network architecture (SNA).** The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

## T

**T-disk.** *See* temporary disk.

**tag slot.** In RSCS, the area in task storage that contains status and attribute information pertaining to a spool file that has been accepted and enqueued for transmission by RSCS.

**tag, spool file.** *See* spool file tag.

**target.** One of several ways to identify a line to be searched for by the System Product Editor. A target may be specified as an absolute line number, a relative displacement from the current line, a line name, or a string expression.

**task name.** A 1- to 4-character alphameric string used by the RSCS operator to identify a task when he communicates with RSCS about that task.

**temporary disk.** In VM, an area on a direct access storage device available to the user for his newly created or stored files until he logs off, at which time the area is released. Temporary disk space is allocated to the user when he logs on or when he issues the CP DEFINE command.

**terminal.** A device, usually equipped with a keyboard and a display, capable of sending and receiving information over a communications channel. With VM, the terminal is used to communicate with the system.

**terminal input buffer.** Part of the console stack; lines typed at the terminal are placed in this buffer until CMS processes them.

**terminal session.** The period of time from logon to logoff when a user and his virtual machine can utilize the facilities of VM/SP HPO and/or his operating system. This also includes any period of time that the virtual machine is running in disconnect mode. *See also* disconnect mode.

**terminal user.** Anyone who uses a terminal to log on to VM/SP HPO.

**text library.** A CMS file that contains relocatable object modules and a directory that indicates the location of each of these modules within the library.

**third-level storage.** The virtual storage created and controlled by a VSE, OS/VS, or VM/SP HPO virtual machine. *See also* first-level storage, second-level storage.

**time-of-day (TOD) clock.** A hardware feature that is required by VM/SP HPO. The TOD clock is incremented once every microsecond, and provides a consistent measure of elapsed time suitable for the indication of date and time; it runs regardless of the processor state (running, wait, or stopped).

**time share.** To use a device or system for two or more interleaved purposes.

**time sharing.** A method of using a computing system that allows a number of users to execute programs concurrently and to interact with the programs during execution.

**time slice.** Synonymous with "quantum."

**timeout, logon.** For a terminal that is attempting to log on via a switched line, the Line Timeout hardware feature of a telecommunications control unit that logs off the user if he does not key in any character for a specified period of time, normally 28 seconds. If logged off, the user must dial the VM computer again.

**token.** An 8-character symbol created by the CMS EXEC processor when it scans an EXEC procedure or edit macro statements. Symbols longer than 8 characters are truncated to 8 characters.

**tokenized parameter list.** A parameter list in which each item in the list is tokenized; that is, each item is truncated or padded on the right with blanks to fit into an eight-character token. *See also* token, untokenized parameter list.

**total CPU time.** The virtual processor time plus the CP overhead to service the virtual machine.

**trace table.** *See* CP trace table.

**transient program area.** In CMS, the virtual storage area occupying locations X'E000' to X'10000'. Some CMS commands and user programs may execute in this area of CMS storage.

**translate mode.** The operating mode of a virtual machine when virtual addresses are converted to real addresses via segment and page tables.

**transparency mode.** A binary synchronous communications (BSC) mode that permits transmission of any data, bypassing normal BSC control character scanning.

**trimming.** The process by which the unreferenced pages of a virtual machine are placed on the flush list at queue-drop time.

**trim set.** The set of unreferenced virtual machine pages placed on the flush list at queue-drop time.

**truncation.** A valid shortened form of CP, CMS, IPCS, and RSCS command names, operands, and options that can be keyed in. When the shortened form is used, the number of key strokes is reduced. For example, the ACCESS command has a minimum allowable truncation of two, so AC, ACC, ACCE,

ACCES, and ACCESS are all recognized by CMS as the ACCESS command. *Contrast with* command abbreviations.

**truncation setting.** In the CMS Editor, the value that determines the maximum length of input lines.

**typewriter terminal.** This term refers to printer-keyboard devices that produce hard-copy output only, such as: the IBM 2741 Communication Terminal; the IBM 3215 Console Printer-Keyboards; the IBM 3767 Communication Terminal, Model 1 or 2, operating as a 2741. This term also refers to the IBM 3101 Display Terminal operating as a 2741.



**uniprocessor mode.** This term indicates that there is only one processor in the physical configuration, or that VM/SP HPO uses the facilities of one processor in an attached processor or multiprocessor system. The system operator can alter the VM/SP HPO mode of operation, from attached processor or multiprocessor operation (using more than one processor), to a one-processor operation (and vice versa). The term uniprocessor mode identifies the one-processor operation. *Contrast with* single processor mode.

**universal class card reader.** A virtual card reader with a spool file class of \* (asterisk) that can read any class of reader, printer, or punch files that have been spooled or transferred to it.

**untokenized parameter list.** A parameter list in which no restrictions are placed on the structure of the items in the list. *See also* token, tokenized parameter list.

**user-defined CMS command.** *See* user-written CMS command.

**user disk.** *See* CMS user disk.

**user identification card.** *See* ID card.

**user identification (userid).** A 1- to 8-character alphanumeric symbol identifying each terminal user.

**user input area.** For a display terminal, the bottom two lines of the screen where the user is allowed to key in command or data lines. This screen format is used with the CMS Editor only when line mode is in effect. *See also* line mode, display mode.

**user profile table.** A table of user attributes (called the VMBLOK) built for each active user from information gathered during logon. *See also* virtual machine control block, user-written CMS command.

**user program area.** In CMS, the virtual storage area occupying location X'20000' to the end of the user's virtual machine. The beginning of the user program area is the default loading point for user programs and for many CMS commands.

**User Program Switch Indicator (UPSI).** UPSI is an operand of the CMS SET command. The user can set the switches (one byte) to a desired value, which can be tested by a program in CMS/DOS.

**user-written CMS command.** Any CMS file created by a user that has a filetype of "MODULE" or "EXEC". Such a file can be executed as if it were a CMS command by issuing its filename, followed by any operands or options expected by the program or EXEC procedure.

**userid/vmid.** A unique identifier assigned to a user (virtual machine) in the VM directory. *userid* refers to a human user's identifier. *vmid* refers to an abstract user's identifier (the RSCS service machine, for example).



**V = R.** *Synonym for virtual = real.*

**vaddr.** Virtual device address.

**variable symbol.** In an EXEC procedure, a symbol beginning with an ampersand (&) character, the value of which is assigned by the user, or in some cases by the System Product Interpreter, the EXEC 2 processor or CMS EXEC processor. The value of a variable symbol may be tested and changed using control statements. *See also* special variable.

**verification setting.** When using the CMS Editor or XEDIT, the verification setting determines whether or not new lines keyed in or the results of editing changes keyed in by the user are displayed at the user's terminal.

**virtual address.** An address that refers to virtual storage or a virtual I/O device address, and that must, therefore, be translated into a real storage or I/O device address when it is used.

**virtual block multiplexer mode.** A virtual machine option that allows the interleaving of data to different virtual devices on the same virtual channel path.

**virtual card reader.** CP's simulation on disk of a real card reader. A virtual card reader can read card, punch, or print records of up to 151 characters in length. The virtual device type and I/O device address are normally defined in the VM directory. *See also* spool file class, universal class card reader.

**virtual console.** A 3210, 3215, 1052, or 3270 system console simulated on a communications terminal (such as a 2741 or 3278) by CP. The virtual device type and I/O address are defined in the VM directory entry for that virtual machine.

**virtual console function.** A CP command that is executed via the Diagnose Interface.

**virtual console spooling.** The writing of console input/output on disk as a printer spool file instead of, or in addition to, having it typed or displayed at the virtual machine console. The console data includes messages, responses, commands, and data from or to CP and the virtual machine operating system. The user can invoke or terminate console spooling at any time and as often as he likes. When the console spool file is closed, it becomes a printer spool file.

**virtual CPU time.** The time required to execute the instructions of the virtual machine.

**virtual disk.** A logical subdivision (or all) of a physical disk pack that has its own virtual device address, consecutive virtual cylinders (starting with virtual cylinder zero), and a volume table of contents (VTOC) or disk label identifier. Each user virtual disk is preallocated and defined via a VM directory entry as belonging to some user. *Synonymous with* minidisk.

**virtual disk initialization program.** *See* device support facilities (DSF).

**virtual interval timer assist.** A hardware assist function, available only on a processor that has Extended Control-Program Support, that provides, if desired, a hardware updating of each virtual machine's interval timer at location X'50'.

**virtual machine.** (1) A functional simulation of a computer and its associated devices, which you control from your terminal. (2) In VM/SP HPO, a functional equivalent of an IBM System/370 computing system. Each virtual machine is controlled by a suitable operating system. VM/SP HPO controls the concurrent execution of multiple virtual machines on a single System/370.

**virtual machine assist.** A hardware feature available on certain VM/SP HPO-supported System/370 models, that causes a significant reduction in the real supervisor state time used by VM/SP HPO to control the operation of virtual storage systems such as VSE, DOS/VS and OS/VS and, to a lesser extent, CMS, DOS, and OS when executing under VM. VM/SP HPO supervisor state time is reduced because the virtual machine assist feature, instead of VM/SP HPO, intercepts and handles interruptions caused by supervisor call instructions (SVCs), other than SVC 76, and certain privileged instructions. *See also* Extended Control-Program Support, CP assist, expanded virtual machine assist, virtual interval timer assist.

**Virtual Machine Communication Facility (VMCF).** A CP function that provides a method of communication and data transfer between virtual machines operating under the same VM/SP HPO system.

**virtual machine control block (VMBLOK).** The CP control block that contains, for each virtual machine, the following types of information: the dispatch and priority level of the virtual machine, the virtual machine's processor registers, preferred virtual machine options currently in effect, and information concerning all other significant activities.

**Virtual Machine/System Product High Performance Option (VM/SP HPO).** A program product that controls virtual machines. *See also* IBM Virtual Machine/System Product High Performance Option

**virtual machine/VTAM communications network application (VM/VCNA).** A program that runs in the VTAM service machine. VM/VCNA controls the physical appearance of the screen when displaying output on a VM terminal attached to a SNA network.

**virtual printer (or punch).** A printer (or card punch) simulated on disk by CP for a virtual machine. The virtual device type and I/O address are normally defined in the VM directory entry for that virtual machine.

**virtual=real area.** In VM, that part of real storage, starting with real page 1, where a virtual=real machine can execute. CP maintains control of real page zero; only page 0 (zero) of the virtual=real machine is relocated. Only one virtual machine at a time can occupy the virtual=real area. The area must be defined during VM system generation to contain the largest virtual=real machine that is likely to run. *See also* virtual=real option.

**virtual=real option.** A VM performance option that allows a virtual machine to run in VM's virtual=real area. This option eliminates CP paging and, optionally, CCW translation for this virtual machine.

**virtual reserve/release.** A function that allows several operating systems such as MVS, SVS, VS1, and VM/SP HPO itself to all run as virtual machines under the same VM/SP HPO operating system and have data protection on a minidisk. It prevents several users of the same data file from simultaneously accessing the same data, particularly when that data is being updated.

**virtual spooling device.** Unit record devices simulated on disk by CP. The virtual device type and I/O addresses are defined in the VM/SP HPO directory or via the CP DEFINE command. CP's spooling facilities allow multiple virtual machines to share the real unit record devices. In addition, VM/SP HPO has extended the concept of spooling to include the logging of all I/O to and from the virtual machine system console. *See also* virtual card reader, virtual printer (or punch), virtual console spooling.

**virtual storage.** Storage space that can be regarded as addressable main storage by the user of a computer system in which virtual addresses are mapped into real addresses. The size of virtual storage is limited by the addressing scheme of the computing system and by the amount of auxiliary storage available, and not by the actual number of main storage locations.

**virtual storage access method (VSAM).** An access method for direct or sequential processing of fixed and variable-length records on direct access devices. The records in a VSAM data set or file can be organized in logical sequence by a key field (key sequence), in the physical sequence in which they are written on the data set or file (entry-sequence), or by relative-record number.

**VM read.** The situation in which the user's virtual machine is not executing, but is waiting for a response or a request for work from the user. On a typewriter terminal, the keyboard is unlocked; on a display terminal, the screen status area indicates VM READ.

**VM READ screen status.** For a display terminal used as a virtual console, an indicator located in the lower right of the screen that displays that the user's virtual machine is not executing, but is waiting for a response or a request for work from the user.

**VM/370 hardware assist.** This term refers to both the virtual machine assist function and the VM/370 Extended Control-Program Support. Some form of the VM/370 hardware assist is available on all VM/370 supported System/370 systems except the 155 II, 165-III, and 4341 2.

**VMBLOK.** See Virtual machine control block.

**VMCF.** See Virtual Machine Communication Facility.

**VM/SP HPO.** See IBM Virtual Machine/System Product High Performance Option.

**VM/SP HPO directory.** A CP disk file that defines each virtual machine's normal configuration; the userid, password, normal and maximum allowable virtual storage, CP command privilege class or classes allowed, dispatching priority, logical editing symbols to be used, account number, and CP options desired.

**VM/SP HPO hardware assist.** A general term that represents any or all of the following hardware assist functions: expanded virtual machine assist, Extended Control-Program Support, virtual interval timer assist, and virtual machine assist.

**VM/SP HPO product tape.** A tape that contains only those modules and macros added or altered since VM/370 Release 6.

**VM/VCNA.** See virtual machine/VTAM communications network application.

**VM/VS handshaking feature.** A communication interface between VM/SP HPO and other operating systems that are running a virtual machine under VM/SP HPO. These operating systems and CP make each other aware of mutual capabilities and requirements.

**valid.** The volume identification label for a disk.

**VSAM.** See virtual storage access method.

**VSE.** The generalized term used to indicate the combination of the DOS/VSE system control program and the VSE/Advanced Functions program product. Note that in certain cases, the term DOS is still used as a generic term; for example, disk packs initialized for use with VSE or any predecessor DOS or DOS/VS system may be called DOS disks. Also note that the DOS-like simulation environment provided under the CMS component and CMS/DOS exists on VM/SP and VM/SP High Performance Option program product and continues to be referred to as CMS/DOS.

**VSM.** This term refers to the VTAM Service Machine which is a virtual machine. See VTAM service machine.

**VTAM service machine (VSM).** A virtual machine that contains an operating system (OS/VS1 or DOS/VSE), an access method (ACF/VTAM or ACF/VTAME), and VM/VCNA. VSM forms the interface for SNA communication in VM/SP HPO.



**warm start.** (1) The result of an IPL that does not erase previous system data. (2) The automatic reinitialization of the VM/SP HPO control program that occurs if the control program cannot continue processing. Closed spool files and the VM/SP HPO accounting information are not lost. *Contrast with* cold start, checkpoint start, force start.

**working set.** (1) The set of user's pages that must be active in order to avoid excessive paging. (2) For enhanced paging subsystem, this term has additional meaning. Working set, in this context, refers to the set of virtual machine pages that is placed on the swap list when the virtual machine is dropped from queue.



**XEDIT.** See System Product Editor.

**XEDIT macro.** (1) A procedure defined by a frequently used command sequence to perform a commonly required editing function. A user creates the macro to save repetitious re-keying of the sequence, and invokes the entire procedure by issuing a command (that is, the macro file's filename). The procedure may consist of a long sequence of System Product Editor (XEDIT) commands and/or subcommands, CMS and/or CP

commands, along with REXX or EXEC 2 control statements to control processing within the procedure. (2) A CMS file with a filetype of "XEDIT".

**XEDIT profile macro.** A special XEDIT macro with a filename of PROFILE and a filetype of XEDIT that can be created by a user. It is executed automatically when an XEDIT command (or subcommand) is issued.

**XMEM.** This option enables MVS cross memory services for the MVS/SP virtual machine. When specified, the MVS/SP V=R user can use the System/370 extended facility enhancements and cross memory services implemented in Release 3 and all subsequent releases of MVS/SP. Cross memory is initiated when it is present on either or both processors of an attached processor or multiprocessor system. The MVS/SP guest virtual machine thus operates in supervisor state with direct control of its own I/O operations under VM/SP High Performance Option.

## Y

**Y-disk.** An extension of the CMS system disk.

**Y-STAT.** This is a block of storage that contains the file status tables (FSTs) associated with the Y-disk. The FSTs are sorted so that a binary search can be used to search for files. The Y-STAT usually resides in the CMS nucleus so it can be shared. Only files with filemode of 2 will have their associated FSTs in the Y-STAT.

## Z

**zone-setting.** In the CMS Editor, a number range that specifies the positions within each data line that can be scanned and edited. In the System Product Editor, the starting position and ending position (columns) of each record within which the editor searches for targets.



## Chapter 3. Master Index

### Master Index Table

This index is a compilation of the indexes of all of the manuals in the VM/SP HPO library. Each entry in this index is followed by one or more codes that identifies the manual(s) in which the entry appears. The codes are defined in the following table, which also lists the document order number for each of the manuals.

To aid you in finding items in this index, the entries have been grouped together under first-level entries such as Control Program (CP). Some of the entries in such a major grouping may be listed in the individual manuals under their abbreviation, for example, CP.

<b>Code</b>	<b>Title</b>	<b>Order Number</b>
<b>CMSREF</b>	<i>VM/SP CMS Command and Macro Reference</i>	ST00-1357
<b>CMSUG</b>	<i>VM/SP CMS User's Guide</i>	ST00-1358
<b>CPREF</b>	<i>VM/SP HPO CP Command Reference for General Users</i>	SC19-6227
<b>DDPGD</b>	<i>VM/SP Distributed Data Processing Guide</i>	ST24-5241
<b>EXEC2</b>	<i>VM/SP EXEC 2 Reference</i>	ST00-1368
<b>GIM</b>	<i>VM/SP HPO General Information Manual</i>	GC19-6221
<b>INST</b>	<i>VM/SP HPO Installation Guide</i>	SC38-0107
<b>INTRO</b>	<i>VM/SP Introduction</i>	GT00-1349
<b>IPCSGDE</b>	<i>VM/SP Interactive Problem Control System Guide</i>	SC34-2020
<b>OLTSEP</b>	<i>VM/SP HPO OLTSEP and Error Recording Guide</i>	SC19-6230
<b>OPGDE</b>	<i>VM/SP HPO Operator's Guide</i>	SC19-6225
<b>OSVM</b>	<i>VM/SP HPO Operating Systems in a Virtual Machine</i>	GC19-6228
<b>PLNGDE</b>	<i>VM/SP Planning Guide and Reference</i>	SC19-6223
<b>PRIMER</b>	<i>VM/SP CMS Primer</i>	SQ24-5236
<b>REL3GDE</b>	<i>VM/SP Release 3 Guide</i>	ST24-5240
<b>SPG</b>	<i>VM/SP HPO System Programmer's Guide</i>	SC19-6224
<b>SPIREF</b>	<i>VM/SP System Product Interpreter Reference</i>	ST24-5239



<b>Code</b>	<b>Title</b>	<b>Order Number</b>
<b>SPIUG</b>	<i>VM/SP System Product Interpreter User's Guide</i>	ST24-5238
<b>SYMSG</b>	<i>VM/SP HPO System Messages and Codes</i>	SC19-6226
<b>TERMREF</b>	<i>VM/SP Terminal Reference</i>	GT00-1355
<b>XEDIT</b>	<i>VM/SP System Product Editor Command and Macro Reference</i>	ST00-1369
<b>XEDITUG</b>	<i>VM/SP System Product Editor User's Guide</i>	SQ24-5220

### How to Use This Master Index

1. Think of a subject or topic you want to look up. For example, suppose you want to find out about how to purge spool files; therefore, your topic is "purging spool files."
2. Look up your topic in the index, which is arranged alphabetically. (After Z are several numerical entries, such as 3 for 3851 and 9 for 9TRACK option.) You might not find your topic, though, in the first place you look. If that happens, think of another way to word your topic and look again. Let's say you looked under *P* for "purging." You would find this entry:

```

purging
  batch jobs  CMSUG
  closed files CPREF
  closed spool files CPREF
  discontinuous saved segment  SPG
  spool files CPREF
  the batch facility  OPGDE

```

3. The abbreviation to the right of the topic tells you what book to look in. Each abbreviation corresponds to a specific reference manual, as designated on the foldout page at the back of this book.

For our sample topic, the abbreviations and books are:

#### Abbreviation Book

CMSUG	<i>VM/SP CMS User's Guide</i> , ST00-1358
CPREF	<i>VM/SP HPO CP Command Reference for General User's</i> , SC19-6227
SPG	<i>VM/SP HPO System Programmer's Guide</i> , SC19-6224
OPGDE	<i>VM/SP HPO Operator's Guide</i> , SC19-6225

4. You can look in one or all of these manuals to find the topic. Then use the table of contents or the index in the book to find the specific chapter or page for your topic.

## Special Characters

- & subcommand **XEDIT**
- 0 predefined variable **EXEC2**
- .xxxx prefix subcommand **XEDIT**
- ¢ logical line delete symbol **CMSUG, OLTSEP**
- ¢ (cent symbol), line edit use **OLTSEP**
- ¢\* special variable
  - description **CMSREF**
  - in &IF control statement **CMSREF**
  - setting **CMSREF**
- ¢0 special variable **CMSREF**
- ./ \* (COMMENT) UPDATE control statement **CMSREF**
- ./ D (DELETE) UPDATE control statement **CMSREF**
- ./ I (INSERT) UPDATE control statement **CMSREF**
- ./ R (REPLACE) UPDATE control statement **CMSREF**
- ./ S (SEQUENCE) UPDATE control statement **CMSREF**
- .BX (BOX) format word **CMSREF, CMSUG**
- .CM (COMMENT) format word **CMSREF, CMSUG**
- .CS (CONDITIONAL SECTION) format word **CMSREF, CMSUG**
- .FO (FORMAT MODE) format word **CMSREF, CMSUG**
- .IL (INDENT LINE) format word **CMSREF, CMSUG**
- .IN (INDENT) format word **CMSREF, CMSUG**
- .OF (OFFSET) format word **CMSREF, CMSUG**
- .SP (SPACE LINES) format word **CMSREF, CMSUG**
- .TR (TRANSLATE CHARACTER) format word **CMSREF, CMSUG**
- .xxxx prefix subcommand **XEDITUG**
- < prefix macro **XEDIT**
- < SHIFT LEFT macro **XEDITUG**
- & predefined variable **EXEC2**
- &\$ special variable
  - description **CMSREF**
  - in &IF control statement **CMSREF**
  - setting **CMSREF**
- &ARGS control statement **EXEC2**
  - changing &n special variables with **CMSUG**
  - description **CMSREF**
  - embedded blanks **EXEC2**
- &ARGSTRING predefined variable **EXEC2**
  - embedded blanks **EXEC2**
- &BEGEMSG control statement
  - ALL operand **CMSREF**
  - description **CMSREF**
  - when to use **CMSUG**
- &BEGPRINT control statement **EXEC2**
  - truncation column **EXEC2**
- &BEGPUNCH control statement
  - ALL operand **CMSREF**
  - description **CMSREF**
  - when to use **CMSUG**
- &BEGSTACK control statement **EXEC2**
  - ALL operand **CMSREF**
  - description **CMSREF**
  - first-in, first-out (FIFO) **EXEC2**
  - FIFO operand **CMSREF**
  - last-in, first-out (LIFO) **EXEC2**
  - LIFO operand **CMSREF**
  - truncation column **EXEC2**
  - when to use **CMSUG**
- &BEGTYPE control statement **EXEC2**
  - ALL operand **CMSREF**
  - description **CMSREF**
  - examples **CMSUG**
  - truncation column **EXEC2**
  - when to use **CMSUG**
- &BLANK predefined variable **EXEC2**
  - embedded blanks **EXEC2**
- &BUFFER control statement **EXEC2**
- &CALL control statement **EXEC2**
  - label search **EXEC2**
- &CASE control statement **EXEC2**
- &CMDSTRING predefined variable **EXEC2**
- &COMLINE predefined variable **EXEC2**
- &COMMAND control statement **EXEC2**
- &CONCAT built-in function, description **CMSREF**
- &CONCAT OF predefined function **EXEC2**
- &CONCATENATION OF predefined function **EXEC2**
- &CONTINUE control statement
  - description **CMSREF**
  - following label **CMSUG**
  - used with &ERROR control statement **CMSREF, CMSUG**
- &CONTROL control statement
  - ALL operand **CMSREF**
  - CMS operand **CMSREF**
  - controlling execution summary of CMS EXEC
    - procedure **CMSUG**
    - description **CMSREF**
  - ERROR operand **CMSREF**
  - example **CMSUG**
  - MSG operand **CMSREF**

**&CONTROL** control statement (continued)  
   **NOMSG** operand **CMSREF**  
   **NOPACK** operand **CMSREF**  
   **NOTIME** operand **CMSREF**  
   **OFF** operand **CMSREF**  
   **PACK** operand **CMSREF**  
   **TIME** operand **CMSREF**  
**&CRASH** command **EXEC2, SPG**  
**&DATATYPE** built-in function  
   description **CMSREF**  
   using to test arguments **CMSUG**  
**&DATATYPE OF** predefined function **EXEC2**  
**&DATE** predefined variable **EXEC2**  
   evaluation **EXEC2**  
   Greenwich Mean Time (GMT) **EXEC2**  
**&DEPTH** predefined variable **EXEC2**  
**&DISK\*** special variable **CMSREF**  
**&DISK?** special variable **CMSREF**  
**&DISKx** special variable **CMSREF**  
**&DIV OF** predefined function **EXEC2**  
**&DIVISION OF** predefined function **EXEC2**  
**&DOS** special variable **CMSREF**  
**&DUMP** control statement **EXEC2**  
**&EMSG** control statement  
   description **CMSREF**  
   examples **CMSUG**  
**&END** control statement  
   description **CMSREF**  
   with **&BEGEMSG** control statement  
   **CMSREF**  
   with **&BEGPUNCH** control statement  
   **CMSREF**  
   with **&BEGSTACK** control statement  
   **CMSREF**  
   with **&BEGTYPE** control statement  
   **CMSREF**  
**&ERROR** control statement **EXEC2**  
   description **CMSREF**  
   example **CMSUG**  
   provide error exit for CMS commands  
   **CMSUG**  
**&EXEC** special variable **CMSREF**  
**&EXIT** control statement **EXEC2**  
   description **CMSREF**  
   example **CMSUG**  
   passing return code to CMS **CMSUG**  
**&FILEMODE** predefined variable **EXEC2**  
**&FILENAME** predefined variable **EXEC2**  
**&FILETYPE** predefined variable **EXEC2**  
**&FROM** predefined variable **EXEC2**  
**&GLOBAL** special variable **CMSREF**  
   testing recursion level of CMS EXEC  
   **CMSUG**  
**&GLOBALn** special variable **CMSREF**  
   example **CMSUG**  
   passing arguments to nested procedures  
   **CMSUG**  
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   description **CMSREF**  
   example **CMSUG**  
   label search **EXEC2**  
   **TOP** operand **CMSREF**  
   transferring control in a CMS EXEC  
   **CMSUG** procedure  
**&HEX** control statement  
   description **CMSREF**  
   examples **CMSUG**  
   **OFF** operand **CMSREF**  
   **ON** operand **CMSREF**  
**&IF** control statement **EXEC2**  
   comparands **EXEC2**  
   comparatives **EXEC2**  
   conditional statements **EXEC2**  
   description **CMSREF**  
   maximum number allowed in nest  
   **CMSUG**  
   testing variable symbols **CMSUG**  
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**&INDEX** special variable  
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   example **CMSUG**  
   setting **CMSREF**  
   testing **CMSUG**  
   using to establish loop **CMSUG**  
**&LEFT OF** predefined function **EXEC2**  
   embedded blanks **EXEC2**  
**&LENGTH** built-in function  
   description **CMSREF**  
   using to test arguments **CMSUG**  
**&LENGTH OF** predefined function **EXEC2**  
**&LINE** predefined variable **EXEC2**  
**&LINENUM** predefined variable **EXEC2**  
**&LINENUM** special variable **CMSREF**  
**&LINK** predefined variable **EXEC2**  
**&LITERAL** built-in function  
   description **CMSREF**  
   example **CMSUG**  
   substitution, example of **CMSUG**  
**&LITERAL OF** predefined function **EXEC2**  
   embedded blanks **EXEC2**  
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**&LOOP** control statement **EXEC2**  
   closing **EXEC2**  
   description **CMSREF**  
   example **CMSUG**  
   execution summary when **&CONTROL**  
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**&N predefined variable EXEC2**

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**&PIECE OF predefined function EXEC2**

**&POSITION OF predefined function EXEC2**

**&PRESUME control statement EXEC2**  
**&COMMAND control statement EXEC2**  
**&SUBCOMMAND control statement EXEC2**

**&PRINT control statement EXEC2**

**&PUNCH control statement**  
 description **CMSREF**  
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**&RANGE OF predefined function EXEC2**  
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**&RC predefined variable EXEC2**

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**&TRUNC control statement EXEC2**  
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 description **CMSREF**  
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**CMSUG**

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 procedure **CMSUG**

**&SPACE control statement**  
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 description **CMSREF**  
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**HT operand CMSREF**  
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**LIFO operand CMSREF**  
**RT operand CMSREF**  
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**CHANGE subcommand CMSREF**  
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**INPUT subcommand CMSREF**  
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**&SUBCOMMAND control statement EXEC2**  
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**&SUBSTR built-in function**  
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**&SUBSTR OF predefined function EXEC2**

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**OFF operand CMSREF**  
**ON operand CMSREF**  
**RESET operand CMSREF**  
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 Greenwich Mean Time (GMT) **EXEC2**

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**A**

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**LOG, ZAP** control record **OPGDE**

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**LOGMSG** operand of **QUERY** command **CPREF**

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## MACRO filetype

- adding to **MACLIBs CMSREF**
- default **CMS** editor settings **CMSREF**
- invalid records in, handling by **MACLIB** command **CMSREF**

## usage

- in **CMS CMSUG**
- in **CMS/DOS CMSUG**

## macro libraries

### CMS

- adding to **CMSREF, CMSUG**
- compacting members of **CMSREF**
- creating **CMSREF, CMSUG**
- deleting **CMSUG**
- deleting members of **CMSREF**
- display information about members in **CMSREF, CMSUG**
- distributed with **CMS** system **CMSUG**
- printing members **CMSREF**
- punching members **CMSREF**
- reading OS macro libraries into **CMSREF**
- replacing members of **CMSREF, CMSUG**
- typing members **CMSREF**

## creating

- from OS partitioned data sets on tape **CMSREF**
- from tapes created by **IEHMOVE** utility program **CMSREF**

## GEN3705 INST

- identifying for assembly **CMSREF**

## MAC3705 INST

## OS

- concatenating **CMSREF**
- identifying for use in **CMS CMSUG**
- reading into **CMS MACLIBs CMSREF**
- using in **CMS CMSREF**
- using in **CMS/DOS CMSUG**
- VSE** assembler language, restriction on using in **CMS/DOS CMSUG**
- VSE**, copying macros from **CMSREF**

## MACRO option

- in **QUERY XEDIT**
- in **SET XEDIT**
- in **TRANSFER XEDIT**

## MACRO subcommand XEDIT, XEDITUG

## macros

- ABEND SPG**
- ABNEXIT RESET SPG**
- ATTACH SPG**
- BLDL SPG**
- BSP SPG**
- CHAP SPG**
- CHECK SPG**
- CHKPT SPG**
- CLOSE SPG**
- CMSIUCV SPG**
- CMSIUCV CONNECT SPG**
- CMSIUCV SEVER SPG**
- COMND SPG**

macros (continued)

DCB SPG  
declarative SPG  
DELETE SPG  
DEQ SPG  
DETACH SPG  
DEVTYPE SPG  
DISPW SPG  
DMSABN SPG  
DMSEXS SPG  
DMSFREE SPG  
DMSFRES SPG  
DMSFRET SPG  
DMSFST SPG  
DMSKEY SPG  
DOS macro libraries under CMS PLNGDE  
DTFCN SPG  
DTFMT SPG  
DTFPR SPG  
DTFSD SPG  
ENQ SPG  
EXTRACT SPG  
FCB SPG  
FCB (extended) SPG  
FEOV SPG  
FIND SPG  
FOB SPG  
FOBCCW SPG  
FREEDBUF SPG  
FREEMAIN SPG  
FREEPOOL macro SPG  
FSOPEN SPG  
FSSTATE SPG  
GET (QSAM) SPG  
GETMAIN SPG  
GETPOOL macro SPG  
HNDEXT SPG  
HNDINT SPG  
HNDIUCV SPG  
HNDSVC SPG  
IDENTIFY SPG  
imperative SPG  
IPARML SPG  
IUCV SPG  
LINK SPG  
LOAD SPG  
LOCK SPG  
NAMENCP PLNGDE, SPG  
NAMESYS PLNGDE, SPG  
NAME3800 PLNGDE, SPG  
NOTE SPG  
OPEN SPG  
OPENJ SPG  
OS macro libraries under CMS PLNGDE  
OS macro simulation SPG

PIB SPG  
PIBCCW SPG  
POINT SPG  
POST SPG  
PRINTL SPG  
PUT (QSAM) SPG  
PUTX SPG  
RCHANNEL PLNGDE, SPG  
RCTLUNIT PLNGDE, SPG  
RDEVICE SPG  
coding to support 3800 image library  
PLNGDE  
to support 3704/3705 control program  
PLNGDE  
RDJFCB SPG  
READ (BISAM) SPG  
REGEQU SPG  
RETURN SPG  
RIOGEN PLNGDE  
SIGNAL SPG  
SNAP SPG  
SPIE SPG  
STAE SPG  
STAX SPG  
STIMER SPG  
STOW SPG  
STRINIT SPG  
supervisor SPG  
SWITCHVM SPG  
SWTCHVM SPG  
SYM SPG  
SYNADAF SPG  
SYNADRLS SPG  
SYSACNT PLNGDE, SPG  
SYSCOR PLNGDE, SPG  
SYSFORM PLNGDE  
SYSID PLNGDE  
SYSJRL SPG  
SYSLOCS PLNGDE  
SYSMIH PLNGDE, SPG  
SYSMON PLNGDE, SPG  
SYSOPR PLNGDE, SPG  
SYSOWN PLNGDE, SPG  
SYSPAG PLNGDE, SPG  
SYSPCLAS PLNGDE  
SYSRES PLNGDE  
SYSTIME PLNGDE  
TCLEARQ SPG  
TCLOSE SPG  
TGET SPG  
TIME SPG  
TPUT SPG  
TRANS macro SPG  
TSO macro libraries under CMS PLNGDE

macros (continued)  
   **TTIMER SPG**  
   **UCB SPG**  
   **UCC SPG**  
   **UCCCCW SPG**  
   **UCS SPG**  
   **UCSCCW SPG**  
   **VSAM SPG**  
   VSE macro libraries under CMS **PLNGDE**  
   VSE macros supported by CMS/DOS **SPG**  
   **WAIT SPG**  
   **WAITD SPG**  
   **WRITE (BISAM) SPG**  
   **WTO SPG**  
   **WTOR SPG**  
   **XCTL SPG**  
   **XDAP SPG**  
 magnetic tape **OSVM**  
   control units supported by VM/SP **PLNGDE**  
   devices **INTRO**  
     supported by VM/SP HPO **PLNGDE**  
 magnetic tape drives  
   dedicating to virtual machines  
     by using **DEDICATE** control statement  
     **OSVM**  
   defining  
     by using **SPECIAL** control statement **OSVM**  
**MAIN** operand  
   of **SET** command **OPGDE**  
 main storage  
   fault **OLTSEP**  
**MAINHIGH CMSUG**  
**MAINT**  
   maintenance virtual machine **INST**  
     disk access **INST**  
     **ECMODE** option **INST**  
     requirements **INST**  
 maintenance  
   essentials, VM/SP HPO **OLTSEP**  
   example  
     hardware maintenance directory entry  
     **PLNGDE**  
   schedule for device **OLTSEP**  
**MAKEBUF** command **SPIUG**  
   description **CMSREF**  
   return code, effect on **&ERROR** statement  
   **CMSREF**  
 making copies of output files **OPGDE**  
 malfunctions  
   See also error  
   alert **OLTSEP**  
   device  
     testing and troubleshooting **OLTSEP**  
     in hardware **OLTSEP**  
     in software **OLTSEP**  
   storage  
     testing and troubleshooting **OLTSEP**  
 managing  
   files **PRIMER**  
 manipulating  
   spool files **OPGDE**  
 mantissa **SPIUG**  
 manual logon, operator **OPGDE**  
**MANUAL** operand  
   of **START** command **OPGDE**  
 manuals **INST**  
**MAP** filetype  
   created by  
     **DOSLIB** command **CMSREF**  
     **DOSLKED** command **CMSUG**  
     **DSESV** command **CMSREF**, **CMSUG**  
     **LOAD** command **CMSREF**  
     **MACLIB** command **CMSREF**, **CMSUG**  
     **TAPE** command **CMSREF**  
     **TXTLIB** command **CMSREF**  
   usage in  
     **CMS CMSUG**  
     **CMS/DOS CMSUG**  
**MAP** operand  
   of **LOCK** command **OPGDE**  
   of **MACLIB** command **CMSUG**  
   of **GENERATE EXEC INST**  
**MAP** option  
   of **DOSLIB** command **CMSREF**  
   of **GENMOD** command **CMSREF**  
   of **INCLUDE** command **CMSREF**  
   of **LKED** command **CMSREF**  
   of **LOAD** command **CMSREF**  
   of **MACLIB** command **CMSREF**  
   of **TXTLIB** command **CMSREF**  
   of **VSE ACTION** control statement, effect in  
     **CMS/DOS CMSUG**  
 map storage allocations **OPGDE**  
 mapping virtual to real storage **INTRO**  
 maps  
   created by  
     **DOS/VSE** linkage editor **CMSUG**  
     **DOSLIB** command **CMSREF**  
     **GENMOD** command **CMSREF**  
     **LOAD** command **CMSREF**  
     **MACLIB** command **CMSREF**  
     **TXTLIB** command **CMSREF**  
   linkage editor, in **CMS/DOS CMSREF**  
   of **CMS** virtual storage **CMSUG**

margins  
   setting left margin for input with CMS editor  
   **CMSREF, CMSUG**  
   setting right margin for input with CMS editor  
   **CMSUG**

markup **PRIMER**

mask  
   line  
     changing **XEDIT**  
     defining **XEDIT**  
     type of **OLTSEP**

**MASK** event type of **PER** command **CPREF**

**MASK** option  
   in **QUERY XEDIT**  
   in **SET XEDIT**  
   in **TRANSFER XEDIT**

masking, password during logon **CPREF**

Mass Storage Control (MSC) **PLNGDE**  
   channel interfaces **PLNGDE**  
   communicating with **OPGDE**  
   introduction **PLNGDE**  
   table create program **OLTSEP**

Mass Storage Facility **PLNGDE**

Mass Storage System (MSS)  
   See also 3850  
   communication **SPG**  
   communication device  
     defining **PLNGDE**  
   CP automatic volume demount **OPGDE**  
   CP automatic volume mount **OPGDE**  
   creating MSS volumes **PLNGDE**  
   cylinder faults  
     VM/SP HPO processing **SPG**  
   defining devices **CPREF**  
   defining virtual volumes **CPREF**  
   devices  
     time intervals set and monitored **OPGDE**  
   error messages **OPGDE**  
   generating **PLNGDE**  
   generating CP to support 3850 **PLNGDE**  
   hardware supported **PLNGDE**  
   initialization **OPGDE**  
   mass storage control table **PLNGDE**  
   mount and demount processing **SPG**  
   mount processing  
     asynchronous **SPG**  
   restrictions **SYSMSG, PLNGDE**  
   specifying a partition **OPGDE**  
   VM/SP HPO access **SPG**

volumes  
   backup copies **SPG**  
   I/O management **SPG**  
   3850 **OLTSEP**

master catalog (VSAM)  
   identifying (OS VSAM) **CMSREF**  
   identifying in CMS/DOS **CMSREF**  
   defining **CMSUG**  
     in CMS/DOS **CMSUG**  
   sharing **CMSUG**

master file directory **CMSUG**  
   contents of **CMSREF**  
   identifying CMS files **PLNGDE**  
   suppressing updating after **RENAME**  
   command **CMSREF**  
   updating  
     entries in **CMSREF**  
     on disk **CMSREF**

**MATH EXEC SPIUG**

MAX function **SPIREF, SPIUG**

MAXCONN option  
   defining in directory **PLNGDE**

maximum  
   data items on minidisk **INTRO**  
   storage size **INTRO**

MAXPP operand  
   of **QUERY** command **OPGDE**  
   of **SET** command **OPGDE**

MAXSIZE operand  
   of **SET** command **OPGDE**

MAXSUBS operand of **LINEDIT** macro  
   **CMSREF**

MAXTEN option of **TAPPDS** command  
   **CMSREF**

MAXWSS operand  
   of **QUERY** command **OPGDE**  
   of **SET** command **OPGDE**

MCALL option of **ASSEMBLE** command  
   **CMSREF**

**MCDONALD EXEC SPIUG**

**MCH**  
   See machine check handler (MCH)

**MCKOPSW** (CMS machine check old PSW)  
   **SPG**

**MCU**  
   See 3088

**MDISK** control statement  
   defining in directory **PLNGDE**  
   example **PLNGDE**  
   defining system residence volume  
   for OS/VS virtual machine **OSVM**

examples  
   defining VM/SP HPO virtual machine  
   **OSVM**  
   sharing minidisks **PLNGDE**  
   specifying virtual reserve/release support  
   **OSVM**

MDR record  
 BUFFER UNLOAD command **OLTSEP**  
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 performance factors  
 to evaluate virtual machine performance  
**OSVM**

**MEMBER** option  
 CMS commands having this option **CMSUG**  
 of **FILEDEF** command **CMSREF**, **CMSUG**  
 of **PRINT** command **CMSREF**  
 of **PUNCH** command **CMSREF**  
 of **TYPE** command **CMSREF**  
 to copy member of OS partitioned data set  
 with **FILEDEF** **CMSUG**

**MEMO** filetype **CMSUG**  
 default CMS editor settings **CMSREF**  
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memory  
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**CMS HELP** **CMSUG**  
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**MENU** option of **HELP** command **CMSREF**  
**MERGE** = and description **OLTSEP**  
**MERGE** = operand **OLTSEP**  
**MERGE** option of **XEDIT** command **CMSREF**  
**MERGE** subcommand **REL3GDE**, **XEDIT**,  
**XEDITUG**  
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**CMS EDIT** subcommand **SYSMSG**  
**CMS EXEC** interpreter **SYSMSG**  
**CMS** ready message **TERMREF**

console  
 after **VM/SP HPO** initialization **OPGDE**

controlling **SPG**  
 informational **CPREF**  
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data transfer, **IUCV** **SPG**  
**DEBUG** command **SYSMSG**  
 default setting for displaying **SYSMSG**  
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display controlled by **SET MSGMODE** **XEDIT**  
 display in message line  
 using **EMSG** **XEDIT**  
 using **MSG** **XEDIT**  
 displayed in command line **XEDIT**  
 displaying at the terminal **SYSMSG**  
**DMKMSS**  
 mass storage system **OPGDE**  
**DMSEXE085E** **EXEC2**  
**DMSEXE175E** **EXEC2**  
**DMSEXE255T** **EXEC2**  
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**?CP ...** **TERMREF**  
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**CMS** **SYSMSG**  
**CP** **SYSMSG**  
**CCH**, a referral **OLTSEP**  
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**IPCS** **SYSMSG**  
**RSCS** **SYSMSG**

format **SYSMSG**  
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**GENERATE** **INST**  
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in output display area **TERMREF**  
 in status area **TERMREF**  
 information **XEDITUG**  
 issued from a macro **XEDITUG**  
**IUCV** **SPG**  
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**AT:** **OLTSEP**  
**NOT ACCEPTED** **TERMREF**  
**RESTART** **TERMREF**  
**UNKNOWN ...** **TERMREF**

line **PRIMER**  
 on screen **XEDITUG**  
**LOGON AT** **OLTSEP**  
 number, description of **SYSMSG**  
 preventing receipt of **PRIMER**

message (continued)

- queues, IUCV **SPG**
- RCTLUNIT macro, channel errors **PLNGDE**
- RDEVICE macro
  - control unit errors **PLNGDE**
  - unit record errors **PLNGDE**
- receiving special **CPREF**
- receiving warning **CPREF**
- recording enhancements **REL3GDE**
- return codes **EXEC2**
- routing with nicknames **REL3GDE**
- sending **PRIMER**
  - before logging on **TERMREF**
  - to other users **CPREF**
  - to other virtual machine users **CMSUG**
  - to system operator **CPREF, OPGDE**
- severity of **XEDIT**
- special **SYSMMSG**
- spooling, to a DASD file **TERMREF**
- statement **OLTSEP**
  - “does not exist” **OLTSEP**
- status messages **TERMREF**
- summary
  - alphanumerically by message identifier
    - CMS SYSMMSG**
    - CP SYSMMSG**
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- suppressing
  - FILE NOT FOUND SPIUG**
    - from CMS commands **SPIUG**
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- syntax conventions **SYSMMSG**
  - abbreviations **SYSMMSG**
- system **INTRO**
- System Product Editor **SYSMMSG**
- system service **SPG**
- text **SYSMMSG**
  - for LINEDIT macro **CMSREF**
- to operator **OLTSEP**
- to system operator, SVC 76 **OPGDE**
- transmitting **TERMREF**
- versus input **TERMREF**
- VM/370 ONLINE **TERMREF**
- warning **XEDITUG**
  - issued by **QUIT XEDIT**
- when display screen is full **CMSUG**
- without special headers
  - sent to users **OPGDE**

**MESSAGE** command **OLTSEP, SPG, TERMREF**

- basic terminal check **OLTSEP**
- basic terminal check via the **OLTSEP**
- described **CPREF**

operands

- \* **OPGDE**
  - ALL OPGDE**
  - msgtext **CPREF, OPGDE**
  - OPERATOR **CPREF, OLTSEP, OPGDE**
  - userid **CPREF, OPGDE**
- response **CPREF**
- summary **CPREF**
- usage notes **CPREF**
- use as an aid to logon **OLTSEP**

message system service **SPG**

message text-to-message identifier cross reference

- CMS SYSMMSG**
- CP SYSMMSG**
- IPCS SYSMMSG**
- RSCS SYSMMSG**

message-to-module cross-reference

- CMS SYSMMSG**
- CP SYSMMSG**
- IPCS SYSMMSG**
- RSCS SYSMMSG**

messages

- See message
- MESSY EXEC SPIUG**
- MF operand of LINEDIT macro **CMSREF**
- MFASAVE (DMKMCT save area) **SPG**
- MFT**
  - See also OS/VS
  - virtual machine
    - directory entry example **OSVM**
    - ISAM, using under VM/SP HPO **OSVM**

Mhexloc operand

- of STCP command **OPGDE**

Mhexloc1 operand

- of DCP command **OPGDE**
- of DMCP command **OPGDE**

middle of screen **REL3GDE**

**MIGRATE** command (CP) **OPGDE, SPG**

operands

- userid **OPGDE**
- summary **CPREF**

migrating from prior VM/SP release **INST**

migration **GIM**

aids

- AP/MP processor unit **REL3GDE**
- programmable operator routing tables **REL3GDE**
- PROPRTCV EXEC REL3GDE**
- SPOOL file **REL3GDE**
- compatibility **REL3GDE**
- from EDIT to XEDIT **XEDIT**

migration (continued)  
   from 800-byte to VM/SP HPO file system **SPG**  
   page, managing **SPG**  
   process **INTRO**  
   incompatibility **REL3GDE**  
     EDGAR support removal **REL3GDE**  
     IPCS incompatibility **REL3GDE**  
     RSCS incompatibility **REL3GDE**  
   incompatibility, **XEDIT** migration  
   consideration **REL3GDE**  
   column pointer movement **REL3GDE**  
   cursor handling **REL3GDE**  
   filetype defaults **REL3GDE**  
   new tags on READ TAG **REL3GDE**  
   null string target in CLOCATE **REL3GDE**  
   pending notice **REL3GDE**  
   PF key changes **REL3GDE**  
   protected FILE and SAVE **REL3GDE**  
   QUIT from a macro **REL3GDE**  
   routines  
     page/swap table, beginning **OPGDE**  
     screen changes **REL3GDE**  
     SET CMDLINE **REL3GDE**  
   migration considerations  
     channel model dependent functions **GIM**  
     channel programs **GIM**  
     CMS **GIM**  
     dynamically modified channel programs **GIM**  
     Mass Storage System **GIM**  
     minidisk **GIM**  
     miscellaneous **GIM**  
     processor model dependent functions **GIM**  
     timing dependencies **GIM**  
     virtual machine characteristics **GIM**  
**MIH**  
   See missing interruption handler  
**MIN** function **SPIREF**  
**MIN** operand  
   of MONITOR command **OPGDE**  
 minidisk **GIM, SPG**  
   See also disk  
   access to **INTRO**  
   accessing  
     by VM/SP HPO virtual machine **OSVM**  
   allocating for VTOC **PLNGDE**  
   alternate tracks  
     2314/2319 **PLNGDE**  
     3330/3350 **PLNGDE**  
     3340 **PLNGDE**  
   concept **INTRO**  
   copying **CMSREF**  
   counting cylinders on **CMSREF**  
   defective tracks  
     2314/2319 **PLNGDE**  
   defining **PLNGDE**  
     in directory **PLNGDE**  
     in directory, examples **PLNGDE**  
     primary access mode **PLNGDE**  
   definition of **CMSUG, OSVM**  
   description **INTRO**  
   devices containing  
     limits to detaching **OPGDE**  
   directory  
     overlapping extents **INST, PLNGDE**  
   error recovery support **PLNGDE**  
   example of use and definition **PLNGDE**  
   file-name  
     selecting for DOS virtual machine **OSVM**  
   for virtual machine  
     defining **OSVM**  
   formatting **PLNGDE**  
   how defined **INTRO**  
   initialization  
     OS and VSE **PLNGDE**  
   initializing **INTRO, OPGDE**  
     for DOS virtual machine **OSVM**  
   link mode, replacing directory entry **SPG**  
   linking **PLNGDE**  
   MDISK control statement **PLNGDE**  
   multiple **PLNGDE**  
     password, replacing directory entry **SPG**  
   read password, replacing directory entry **SPG**  
   reserve/release support  
     not used for paging and spooling **OSVM**  
   restrictions **PLNGDE**  
     cannot be on dedicated channels **OSVM**  
     on using EXPORT/IMPORT with VSAM  
       **CMSUG**  
   shared  
     VM/SP HPO reserve/release support for  
       **OSVM**  
   sharing **PLNGDE**  
     access modes **PLNGDE**  
     data between users **OSVM**  
     passwords **PLNGDE**  
     virtual machines **PLNGDE**  
   summary of VM/SP HPO reserve/release effect  
     on **OSVM**  
   temporary **PLNGDE**  
     defining and using for virtual machine **OSVM**  
   testing **OLTSEP**  
   transporting to OS system after using with  
     CMS VSAM **CMSUG**  
   using with VSAM data sets **CMSUG**  
   virtual reserve/release support  
     protecting with (caution) **OSVM**  
   virtual VM/SP HPO reserve/release support  
     protecting with **OSVM**

minidisk (continued)  
   write password, replacing directory entry  
     **SPG**  
   3340  
     using DDR utility **PLNGDE**  
   3344  
     using DDR utility **PLNGDE**  
 minimum  
   configurations  
     **CMS PLNGDE**  
     **RSCS PLNGDE**  
     **VM/SP HPO PLNGDE**  
   system **OLTSEP**  
   working set size  
     how to control the setting of **SPG**  
**MINNUMSS** operand  
   of **QUERY** command **OPGDE**  
   of **SET** command **OPGDE**  
 minus sign, used to **LOCATE** backward  
   **PRIMER**  
**MINWS** operand  
   of **QUERY** command **OPGDE**  
 missing interrupt  
   condition **OLTSEP**  
     correcting **OLTSEP**  
     detecting **OLTSEP**  
     taking action at later time **OLTSEP**  
   detected and cleared **OLTSEP**  
   detected and not cleared **OLTSEP**  
   monitoring  
     **SYSMIH** macro **PLNGDE**  
   record layout **OLTSEP**  
 missing interruption handler (**MIH**) **OPGDE**,  
   **SPG**  
   changing interval values **SPG**  
   default interval values **SPG**  
   determining interval values **SPG**  
   devices monitored **OLTSEP**, **SPG**  
   devices supported **PLNGDE**  
   diagnostic aids **SPG**  
     macro notes **SPG**  
     messages **SPG**  
     trace table **SPG**  
   **VM/SP HPO** system's error recording  
     area **SPG**  
   function **OLTSEP**  
   overview **OLTSEP**, **PLNGDE**  
   status **SPG**  
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**Network Control Program Basic Transmission Unit (NCP BTU)**  
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  **PAGING** command **SPG**  
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    **A OPGDE**  
    **B OPGDE**  
    **C OPGDE**  
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  **PSTOR** command **SPG**  
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  **AUTOREAD** option **CMSREF**  
  **BLIP** option **CMSREF**  
  **CMSLEVEL** option **CMSREF**  
  **CMSTYPE** option **CMSREF**  
  description **CMSREF**  
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  display search order of disks **CMSUG**

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**DOS** option **CMSREF**  
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**IMPCP** option **CMSREF**  
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**SYNONYM** option **CMSREF**  
**TXTLIB** option **CMSREF**  
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**QUERY** command (CP) **INTRO, OPGDE, SPG, TERMREF**  
  **AUTOSAVE** option **PRIMER**  
  Class G  
    described **CPREF**  
  defined **INTRO**  
  **DISK** option **PRIMER**  
  display color and extended highlight values  
    **CMSUG**  
  example of use **INTRO**  
  **NAMES** option **PRIMER**  
  **PFn** option **PRIMER**  
  operands  
    \* **OPGDE**  
    **ACTIVE OPGDE**  
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    **ALL CPREF, OPGDE**  
    **ATTACH OPGDE**  
    **CLASS CPREF, OPGDE**  
    **CPASSIST OPGDE**  
    **CPUID CPREF**  
    **CURRENT OPGDE**  
    **DASD OPGDE**

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of TAG command CPREF  
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CMSUG  
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**QUERY VIRTUAL** command  
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     **DASD CPREF**  
     **GRAF CPREF**  
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     counting lines in **SPIREF**  
     reading from with **PULL SPIREF**  
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## R

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**SPIREF**  
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**RCHBLOK OPGDE, SPG**  
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**RCUBLOK OPGDE, SPG**  
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**SPG**  
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**RDESUM = operand OLTSEP**

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**SPG**  
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**SPG**  
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**SPG**  
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**SPG**  
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**SPG**  
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**RDEVTMCD** (terminal flags) **SPG**  
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  - EDIT operand **CMSREF**
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     determine characteristics of next file  
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     job for CMS batch facility **CMSUG**  
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- CMS disk files **CMSUG**
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- CLEAR XEDIT**
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3032 **TERMREF**  
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 AP **OLTSEP**  
 MP **OLTSEP**  
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3066 operand  
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3138 operand  
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3145 **OLTSEP**  
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3148  
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3158  
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3262  
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3274  
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3275  
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3276  
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3277  
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3278 Display Station **TERMREF**  
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3284  
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3286  
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3287  
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3288  
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3289  
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3340  
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3411  
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3420  
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3525 operand of DEFINE command **CPREF**

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3770  
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3780  
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3811  
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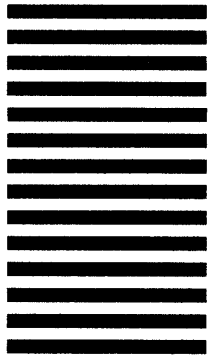
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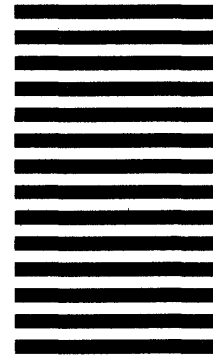
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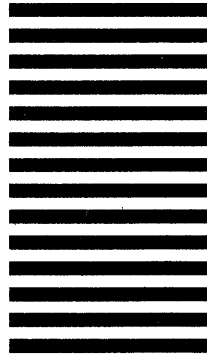
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