Prime®

**Operator's Guide
to System Commands**

Revision 22.0

DOC9304-4LA

OPERATOR'S GUIDE TO SYSTEM COMMANDS

Fourth Edition

Elizabeth Hanes Perry

This guide documents the software operation of the Prime Computer and its supporting systems and utilities as implemented at Master Disk Revision Level 22.0 (Rev. 22.0).

Printing History

Credits

How to Order Technical Documents

To order copies of documents, or to obtain a catalog and price list:

United States Customers

Call Prime Telemarketing,
toll free, at 1-800-343-2533,
Monday through Friday,
8:30 a.m. to 5:00 p.m. (EST).

International

Contact your local Prime
subsidiary or distributor.

Customer Support

Prime provides the following toll-free numbers for customers in the United States needing service:

1-800-322-2838 (Massachusetts)
1-800-541-8888 (Alaska and Hawaii)
1-800-343-2320 (within other states)

For other locations, contact your Prime representative.

Surveys and Correspondence

Please comment on this manual using the Reader Response Form provided in the back of this book. Address any additional comments on this or other Prime documents to:

Technical Publications Department
Prime Computer, Inc.
500 Old Connecticut Path
Framingham, MA   01701

CONTENTS

APPENDICES

ABOUT THIS SERIES

The Operator's Guide series is designed to help you, as a system operator or a System Administrator of a Prime® computer, do your job. This preface describes the eight Operator's Guides, together with other Prime documentation that is particularly useful for system operators and System Administrators. To display an online list of all Prime documentation, use the HELP DOCUMENTS command.

FOR THE SYSTEM OPERATOR

Before reading this book, you should have some familiarity with Prime systems. A good way to begin is to read the *PRIMOS User's Guide* (DOC4130-5LA), which explains the PRIMOS® file management system and provides introductory and tutorial information about essential commands and utilities. When you read any Prime documentation, be sure to consult the section entitled Prime Documentation Conventions, which follows the preface; this section is essential to understanding how information is presented.

After you are familiar with Prime systems, read the *Operator's System Overview*, which outlines the material in the Operator's Guide series. Then select the other books in the series as they apply to the tasks you must perform.

As you learn more about system operations, you will use this book, the *Operator's Guide to System Commands*, as a reference for many of the special system commands and arguments that you, as an operator, will need to perform your job. The *Operator's Guide to System Commands* documents most of the commands described in the Operator's Guide series.

The Operator's Guide Series

The following books contain detailed information for the system operator.

- *Operator's System Overview* (DOC9298-3LA) introduces the series and describes computer-room operation of Prime systems.

- *Operator's Guide to System Monitoring* (DOC9299-3LA) describes how to monitor system usage, activity, and messages.

- *Operator's Guide to File System Maintenance* (DOC9300-4LA) describes the PRIMOS file system and explains how to format disk partitions, run the disk partition maintenance program, determine physical device numbers, and interpret disk-error messages. In addition, this book discusses in detail dynamic badspot handling, mirroring, robust partitions, and record allocation.

- *Operator's Guide to the Batch Subsystem* (DOC9302-3LA) describes how to set up, monitor, and control the Batch subsystem.

- *Operator's Guide to the Spooler Subsystem* (DOC9303-3LA) describes how to set up, monitor, and control the Spooler subsystem.

- *Operator's Guide to System Commands* (DOC9304-4LA) serves as a reference guide for most of the commands described in the other books in the series.

- *Data Backup and Recovery Guide* (DOC10129-1LA) and its update package (UPD10129-11A) describe how to save information on disk or tape and how to restore that information when it is needed.

- *Operator's Guide to Prime Networks* (DOC10114-1LA) and its update package (UPD10114-11A) provide reference information about running network-related programs and monitoring network events.

Other Books for the Operator

- *Operator's Master Index* (DOC10110-4LA) indexes all the Operator and System Administrator Guides. Consulting this index is often the quickest way to find which manual has the information you need.

- The computer handbook for your particular CPU explains such topics as booting the system, shutting down PRIMOS, handling halts and hangs (including warm starts), performing tape dumps, and using the Virtual Control Panel (VCP).

- The *Using Your CPU* guide (available only for office CPUs) is intended for nontechnical users who are acting as system operators, and covers system startup and shutdown, system backups, troubleshooting, and other day-to-day system management issues.

- *MAGNET User's Guide* (DOC10156-1LA) and its update package (UPD10156-11A) describe the MAGNET utility, used to transfer data by magnetic tape from other operating systems to PRIMOS and vice versa.

FOR THE SYSTEM ADMINISTRATOR

In addition to the documentation in the Operator's Guide series, be sure to read the System Administrator's Guide series, which describes how to set up, configure, and maintain PRIMOS:

- *System Administrator's Guide, Volume I: System Configuration* (DOC10131-2LA) explains how to set up a system and allocate resources.

- *System Administrator's Guide, Volume II: Communication Lines and Controllers* (DOC10132-2LA) explains how to configure communication lines.

- *System Administrator's Guide, Volume III: System Access and Security* (DOC10133-2LA) explains PRIMOS security features and how to prevent unauthorized use of your system.

- *DSM User's Guide* (DOC10061-2LA) explains how to use the Distributed Systems Management (DSM) subsystem, including how to configure and operate DSM.

The System Administrator's Guides also provide information about most of the commands necessary to operate your Prime system.

OTHER RECOMMENDED READING

In addition to the books listed above, you may find the following books useful:

- *New User's Guide to EDITOR and RUNOFF* (FDR3104-101B) is a basic reference for any user of a Prime system and provides information about the Prime text editor and formatter.

- *PRIMOS Commands Reference Guide* (DOC3108-7LA) provides detailed information about user commands.

- *PRIMENET Planning and Configuration Guide* (DOC7532-4LA) describes how to plan, configure, and maintain PRIMENET™ software for a system.

- *User's Guide to Prime Network Services* (DOC10115-1LA) describes networking services that enable users to access files remotely, transfer files, and log in to other 50 Series™ systems on a network.

- *NTS User's Guide* (DOC10117-2LA) explains the Network Terminal Service (NTS).

- *50 Series Technical Summary* (DOC6904-2LA) describes the features of the 50 Series systems, including advanced architecture concepts and the software and hardware products the concepts support.

ABOUT THIS BOOK

The *Operator's Guide to System Commands* serves as a reference guide for most of the commands an operator uses often.

Some PRIMOS commands are specifically excluded from this book. Among these are

- Commands used for system backup and restore operations. Such commands are documented in the *Data Backup and Recovery Guide*.

- Commands that relate specifically to PRIMENET, which are documented in the *Operator's Guide to Prime Networks*.

- The VCP (Virtual Control Panel) commands, which are documented in the handbook for your CPU.

- Most DSM (Distributed Systems Management) commands. Although some DSM commands are documented in this book, most DSM commands are documented only in the *DSM User's Guide*.

The commands listed in the *Operator's Guide to System Commands* are sometimes called **operator commands**. This means that they are generally used only by an operator or a System Administrator, or that they are entered at the supervisor terminal.

HOW THIS BOOK IS STRUCTURED

This book is divided into two chapters and two appendices:

- Chapter 1, Commands Overview, introduces the operator commands by presenting them in functional categories. This chapter also includes a table that indicates any constraints on using the commands.

- Chapter 2, PRIMOS Operator Commands, is a dictionary of the operator commands, which are listed in alphabetical order. The text describes the commands and their related arguments, options, and keywords. In addition, the text provides references to other books where you may find additional or supplementary material.

- Appendix A, FUTIL, describes the operation of FUTIL, the file utility program used to copy and delete files on pre-Rev. 20.0 systems under PRIMOS II.

● Appendix B, Obsolete and Rarely Used Commands, lists commands that are seldom used or that are no longer necessary to operate a Prime computer.

CHANGES TO THIS BOOK AT REV. 22.0

The following commands have been added to this book at Rev. 22.0:

● CAB, which allows the operator to allocate users' asynchronous buffers without rebooting the system.

● FTOP, which lets the operator control the FTS file transfer service.

● LAB, which displays lines' asynchronous buffer sizes.

● LABEL, which writes computer-readable labels to tapes.

● LIST_CONTIGUOUS_BLOCKS, which gives information about available space on a partition.

● LEM, which lists the extent map of a CAM subfile.

● LIST_SERVER_NAMES, which lists the server names on the local node.

● LIST_SESSIONS, which lists InterServer Communications sessions.

● UX_TAPE, which allows you to read and write tapes in formats which are compatible with the UNIX® operating system.

The following commands have changed in syntax or function at Rev. 22.0:

● AMLC, which should no longer be used at Rev. 22.0.

● ASSIGN, which now supports priority selection of dual-ported disk drives.

● CHAP, which now allows you to specify the major timeslice in units of milliseconds or tenths of seconds.

● DSM subsystem commands, which are more fully documented in this edition of the *Operator's Guide to System Commands.*

● ELIGTS, which now allows you to specify the minor timeslice in units of milliseconds or tenths of seconds.

● FIX_DISK, which now has two new options: -MIN_EXTENT_SIZE and -MAX_EXTENT_SIZE.

● MAKE, which has three new options: -ROBUST, -MAX_EXTENT_SIZE, and -MIN_EXTENT_SIZE. The -ROBUST option is not supported at Rev. 22.0.

● MIRROR_ON, which now allows dual-ported disks to be priority selected.

● PROP, which now allows printing jobs to be suspended and restarted later.

● SET_ASYNC, which supports the use of up to 960 asynchronous lines.

- SPOOL, which now allows several paper formats to be specified.

- STATUS, which now lists users' line numbers in decimal only.

PRIME DOCUMENTATION CONVENTIONS

The following conventions are used throughout this document. The examples in the table illustrate the uses of these conventions.

Convention	Explanation	Example
UPPERCASE	In command formats, words in upper-case bold indicate the names of commands, options, statements, and keywords. Enter them in either upper-case or lowercase.	**LIST_GROUP**
italic	In command formats, words in lower-case bold italic indicate variables for which you must substitute a suitable value. In text and in messages, variables are in non-bold lowercase italic.	**LOGIN** *user-id* Supply a value for *x* between 1 and 10.
Abbreviations in format statements	If a command or option has an abbreviation, the characters which make up the abbreviation are printed in red. If no abbreviation is possible, the entire command is printed in red. Characters in variables that cannot be omitted are also printed in red.	**SET_QUOTA**
User input in examples	In examples, user input is in red; system prompts and output are not.	OK, LIST_GROUP
Brackets []	Brackets enclose a list of one or more optional items. Choose none, one, or several of these items.	LD $\begin{bmatrix} \textbf{-BRIEF} \\ \textbf{-SIZE} \end{bmatrix}$
Braces {}	Braces enclose a list of items. Choose one and only one of these items.	CLOSE $\begin{Bmatrix} \textit{filename} \\ \textbf{-ALL} \end{Bmatrix}$
Braces within brackets [{}]	Braces within brackets enclose a list of items. Choose either none or only one of these items; do not choose more than one.	BIND $\left[\begin{Bmatrix} \textit{pathname} \\ \textit{options} \end{Bmatrix} \right]$

Convention	Explanation	Example
Ellipsis ...	An ellipsis indicates that you have the option of entering several items of the same kind on the command line.	SHUTDN *pdev_1* [*...pdev_n*]
Hyphen -	Wherever a hyphen appears as the first character of an option, it is a required part of that option.	SPOOL -LIST
Subscript	A subscript after a number indicates that the number is not in base 10. For example, a subscript 8 is used for octal numbers.	200_8
Key symbol	In examples and text, the name of a key enclosed by a rectangle indicates that you press that key.	Press Return

COMMANDS OVERVIEW

This chapter introduces the PRIMOS operator commands, which are used by system operators and System Administrators. Chapter 2 provides reference information on these commands. Commands that are components of subsystems, such as the Batch and Spooler subsystems, are more fully described in the Operator's Guides for those subsystems. For example, the Spooler-related commands PROP and SPOOL are discussed fully in the *Operator's Guide to the Spooler Subsystem.*

This chapter also contains a quick-reference table that summarizes the constraints on executing the various operator commands (such as a requirement to use the supervisor terminal). The chapter closes with a list of operator commands grouped according to functional categories.

OPERATOR COMMANDS

There are two types of PRIMOS commands: user commands and operator commands.

User commands are generally available to any user and affect only that user's work. For example, anyone can use the SPOOL command to send a print request to a printer.

Operator commands are usually available only to the System Administrator and the operations staff at your site. These individuals use special commands that control and monitor the system itself, and that give special authority to their users. For example, you can use operator commands to start and stop printers, start up and shut down the system, and so on. Thus, operator commands can affect the work of many users.

Operator commands can have profound effects on system operation; to avoid unauthorized use, PRIMOS restricts access to most operator commands. Security restrictions on operator commands are discussed in this chapter and, in Chapter 2, in the discussions of the commands themselves.

Commands That Use Physical Device Numbers

Some of the commands in this book require the specification of a physical device number (pdev). For information on how to determine or construct a pdev, see the *Operator's Guide to File System Maintenance.*

Commands Not Documented in This Book

This book does not document all commands that an operator might conceivably use. Many commands are primarily intended for normal users, and so are documented in the *PRIMOS User's Guide.* Some other commands, like the PRIMENET and NTS network commands and the BRMS magnetic-tape commands, have special books devoted to their use. Table 1-1 lists the operator commands which this book does not document and gives the primary reference book for each.

TABLE 1-1. Commands Not Documented in This Book

Command	Description	Documented In
ARCHIVE	(BRMS) Creates tapes of user's files.	*Data Backup and Recovery Guide*
ARCHIVE_RESTORE	(BRMS) Restores ARCHIVE or MAGSAV tapes.	*Data Backup and Recovery Guide*
ARCHIVE_RELEASE	(BRMS) Releases ARCHIVE tapes for reuse.	*Data Backup and Recovery Guide*
BACKUP	(BRMS) Produces backup tape copies of data.	*Data Backup and Recovery Guide*
BACKUP_RELEASE	(BRMS) Releases BACKUP tapes for reuse.	*Data Backup and Recovery Guide*
BACKUP_RESTORE	(BRMS) Restores files from a BACKUP or MAGSAV tape.	*Data Backup and Recovery Guide*
BRMS	A group of magnetic tape utilities.	*Data Backup and Recovery Guide*
CONFIG_NET	Builds the network configuration file.	*PRIMENET Planning and Configuration Guide*
CONFIG_NTS	Lets you view, alter, or create an NTS configuration file.	*NTS Planning and Configuration Guide* (DOC10159-1LA & its update package UPD10159-11A)
COPY_DISK	Copies one disk partition to another and verifies the copy.	*Data Backup and Recovery Guide*

TABLE 1-1. *Commands Not Documented in This Book (Continued)*

Command	Description	Documented In
DPTCFG	Compiles the configuration file for a DPTX system.	*Distributed Processing Terminal Executive Guide (DOC4035-4LA)*
DPTX	Enables the Distributed Processing Terminal Executive System.	*Distributed Processing Terminal Executive Guide (DOC4035-4LA)*
DSM	A group of utilities which monitor system functions.	*DSM User's Guide*
FIND_RING_BREAK	Helps find a break between two active nodes of the ring network.	*Operator's Guide to Prime Networks*
FTGEN	Configures FTS subsystem.	*PRIMENET Planning and Configuration Guide*
FTR	Transfers files from local to remote sites.	*User's Guide to Prime Network Services*
GENERATE_CATALOG	(BRMS) Recreates a damaged tape catalog or verifies the catalog's validity.	*Data Backup and Recovery Guide*
HDXSTAT	Displays status of a half-duplex network configuration.	*Operator's Guide to Prime Networks*
LIST_CATALOG	(BRMS) Lists the contents of catalogs created by ARCHIVE and BACKUP commands.	*Data Backup and Recovery Guide*
LIST_TAPE	(BRMS) Lists information about the contents of BRMS and MAGSAV tapes.	*Data Backup and Recovery Guide*
MAGRST	Restores a MAGSAV tape to disk.	*Data Backup and Recovery Guide*
MAGSAV	Saves disk data to tape.	*Data Backup and Recovery Guide*
MONITOR_NET	Checks status of RINGNET network.	*Operator's Guide to Prime Networks*
NET	Manages PRIMENET in half-duplex mode on MDLC controllers.	*PRIMENET Planning and Configuration Guide; Operator's Guide to Prime Networks*

TABLE 1-1. Commands Not Documented in This Book (Continued)

Command	Description	Documented In
PHYRST	Restores PHYSAV tapes to disk.	*Data Backup and Recovery Guide*
PHYSAV	Backs up disk partition contents to tape.	*Data Backup and Recovery Guide*
PRIMAN	Generates system performance reports.	*PRIMAN User's Guide* (DOC10157-2LA)
PRIMON	Monitors system activity.	*PRIMAN User's Guide* (DOC10157-2LA)
TRANSPORT	(BRMS) Creates tapes for transport to another system.	*Data Backup and Recovery Guide*
TRANSPORT_RESTORE	(BRMS) Restores TRANSPORT or MAGSAV tapes on any system.	*Data Backup and Recovery Guide*
TRANSPORT_RELEASE	(BRMS) Releases TRANSPORT tapes for reuse.	*Data Backup and Recovery Guide*

Distributed Systems Management (DSM) Commands

START_DSM starts up the Distributed Systems Management (DSM) service. Once DSM is started, you may invoke commands that make use of DSM, such as the System Information and Metering (SIM) and RESUS commands.

This manual describes only the START_DSM, STOP_DSM, DISPLAY_LOG, LIST_ASSIGNED_DEVICES, LIST_ASYNC, LIST_DISKS, LIST_PROCESS, and RESUS commands. Other commands that may be invoked after DSM is started are listed in Table 2-6. All the DSM commands, including those described in this book, are documented fully in the *DSM User's Guide*.

Virtual Control Panel (VCP) Commands

There are various Virtual Control Panel (VCP) commands (also known as Diagnostic Processor commands) that may be used only from the supervisor terminal when the system is operating under the control of the Diagnostic Processor. These commands are not available under PRIMOS. See the handbook for your computer for an explanation of the function and format of these commands.

THE SUPERVISOR TERMINAL

The supervisor terminal is unique in that it is always logged in to the PRIMOS operating system as user SYSTEM, with the user number of 1 (User 1).

Generally, you should use the supervisor terminal only to do the following:

- Boot PRIMOS

- Start up and shut down disks

- Start and stop PRIMOS itself, PRIMOS subsystems (such as BATCH), and peripherals

- Configure devices

- Check status

- Collect a record of login, logout, and other messages

- Downline load communications controllers

- Send messages to users

- Maintain the file system, including backups

You should avoid using the supervisor terminal for other purposes. The supervisor terminal is given a higher priority by PRIMOS than other terminals receive. Doing nonessential work at the supervisor terminal, therefore, can slow down system performance for other users.

Also, the system displays informative messages at the supervisor terminal. If you are doing other work at the terminal, these messages may be delayed or garbled.

Note

On most Prime systems, you can use the supervisor terminal as an ordinary terminal by putting it into User Terminal mode. In this mode, the supervisor terminal functions like a normal user terminal: it runs at normal priority and does not print system messages. (The messages are stored in a buffer and are displayed when you return the terminal to Supervisor Terminal mode.)

This feature is especially useful for office systems, where the person in charge of the supervisor terminal often has other tasks to perform. On these systems, you should put the supervisor terminal into User Terminal mode if you are going to use it for any lengthy work that does not require the use of the supervisor terminal. If you need to leave the supervisor terminal unattended for more than a few minutes, you should place it in User Terminal mode and lock it in that mode to prevent any unauthorized use of operator commands. See your CPU handbook for further information.

The User Terminal as a Supervisor Terminal

When you are operating the Distributed System Management service, the RESUS command allows the System Administrator to enable a user terminal for use as a supervisor terminal. The RESUS command is described in Chapter 2, PRIMOS Operator Commands.

Use of the RESUS command is restricted to authorized users who are listed in the appropriate function groups and node groups. Refer to the *DSM User's Guide* for detailed information on assigning privileged users to these groups.

Note

This manual uses the phrase *supervisor terminal* to refer to both the physical supervisor terminal and a logical supervisor terminal that has been enabled by the RESUS command.

CONSTRAINTS ON INVOKING COMMANDS

Operator commands can affect the work being done by other users, as well as the state of the system itself. Access to these commands must therefore be limited. Prime provides three methods of restricting the use of these commands:

● Some commands can be issued only from the supervisor terminal.

● Some commands can be issued either from the supervisor terminal or by the System Administrator from any terminal.

● Some commands can be issued from the supervisor terminal, by the System Administrator, or by some other privileged user. The identity of these privileged users, and the method by which they are designated, varies from command to command. Many (but not all) of the methods use Prime's access control mechanism (ACLs, which are explained in the *PRIMOS User's Guide*). Others, like the DSM commands, use protections peculiar to a particular subsystem.

Table 1-2 shows which of these three constraints apply to each operator command. In the table, T stands for Terminal (the first method in the list above), A for Administrator (the second method), and P for special privilege required (the third method). The comment column explains each special privilege. Entries in this table apply to functions performed by the operator, not by ordinary users. For example, the operator uses the UNASSIGN command (to forcibly release a device assigned by any user) from the supervisor terminal. Users can release their own devices at any terminal.

Notes

Some commands documented in this manual (such as MAGSAV and USAGE) are not restricted commands. Rather, they are general user commands that operators are likely to use. Since any user can use these commands at any terminal, the commands are not included in Table 1-2.

When a command option is given in Table 1-2, the restriction applies to the use of the command with that option only. For instance, the BATCH command's -START option may only be used at the supervisor terminal, even though members of the ACL group .BATCH_ADMIN$ may issue most forms of the BATCH command from any terminal.

Users listed in the ACL group .SPOOL_ADMINISTRATOR$ may modify, list, and cancel requests in that queue from any terminal. Other terminal users may perform these functions on their own files only.

TABLE 1-2.   Special Constraints on Operator Commands

Command	Constraints	Comments
ADDISK	T	
ADMIN_LOG	D	
ASSIGN	T	
BACKUP	P or T	Member of .BACKUP$
BACKUP_RELEASE	P	Member of .BACKUP$
BACKUP_RESTORE	P	Member of .BACKUP$
BATCH -CONTINUE	P or T	Batch Administrators (members of .BATCH_ADMIN$)
BATCH -PAUSE	P or T	Batch Administrators
BATCH -START	T	
BATCH -STOP	P or T	Batch Administrators
BATGEN	P	Batch Administrators
BOOT_CREATE	Any user	
CAB	P	
CHAP -ALL	T	
CHAP -usernum	T	
CLOSE -ALL	T	Closes all users' files
CLOSE pathname	T	
COMM_CONTROLLER	T	
CONVERT_ENV	T	
CONVERT_TO_ACLS	A	Requires special search rules
CRASH_AUDIT	A	Requires special search rules
DEVICE_ACLS	A	
DISKS	T	
DISPLAY_LOG	D	
DPTCFG	T	
DPTX	T	
DUMP_SEGMENT	T	

TABLE 1-2. Special Constraints on Operator Commands (Continued)

Command	Constraints	Comments
DUMP_USER	T	
ELIGTS	T	
FIX_DISK -COMDEV	T	
FTGEN	A	
FTOP	T	May be used at other terminals if logged in as SYSTEM
GENERATE_CATALOG on BACKUP catalogs	A or T	
INIT	P	Batch Administrators
JOB -HOLD	T	
JOB -RELEASE	T	
JOB with other options	P	Batch Administrators
LAB	T or D	
LIST_ASSIGNED_DEVICES	D	
LIST_ASYNC	D	
LIST_CATALOG	A or P	Members of ACL group .BACKUP$
LIST_DISKS	D	
LIST_DUMP	T	
LIST_LHC_STATUS	P	Members of .NETWORK_MGT$ ACL group
LIST_LTS_STATUS	P	Members of .NETWORK_MGT$ ACL group
LIST_PROCESS	D	
LIST_TAPE on ARCHIVE tapes	A	Also owners of the tapes
LIST_TAPE on BACKUP tapes	A or T	
LOGOUT -ALL	T	
LOGOUT -usernum	T	
LOOPBACK	P	Members of .NETWORK_MGT$. ACL group
MAXSCH	T	
MAXUSR	T	

TABLE   1-2.   Special Constraints on Operator Commands (Continued)

Command	Constraints	Comments
MESSAGE -ALL	T	
MESSAGE -FORCE	T	
MIRROR_OFF	T	
MIRROR_ON	T	
NET	T	
NTS_ASSOCIATE	T	Members of .NETWORK_MGT$ ACL group
NTS_UNASSOCIATE	T	Members of .NETWORK_MGT$ ACL group
PASSWORD_DIRS	A	
PRINT_SECURITY_LOG	A	
PROP	P	SYSTEM, or members of ACL group .SPOOL_ADMINISTRATOR$
REMOVE_PRIORITY_ACCESS	A	
REPLY	T	
RESET_DUMP	T	
RESUS	D	
SECURITY_MONITOR	A	
SECURITY_STATUS	A	
SET_ASYNC -ASSIGNABLE	T	
SET_ASYNC -SPEED_DETECT	T	
SET_ASYNC -NO_SPEED_DETECT	T	
SET_ASYNC -LOOP	T	
SET_ASYNC -NO_LOOP	T	
SET_ASYNC -USER_NUMBER	T	
SET_PRIORITY_ACCESS	A	
SET_TIME_INFO	T	
SETIME	T	
SETMOD	T	

TABLE   1-2.   Special Constraints on Operator Commands (Continued)

Command	Constraints	Comments
SHARE	T	
SHUTDN	T	
SPOOL (altering others' jobs)	P	Members of ACL group .SPOOL_ADMINISTRATOR$
START_DSM	T	
START_LSR	T	
START_NET	T	
START_NTS	T	
STOP_DSM	T	
STOP_LSR	T	
STOP_NET	T	
STOP_NTS	T	
TRANSFER_LOG	A	
UNASSIGN	T	
USRASR	T	

Symbol	Meaning	Constraint
T	Terminal	From supervisor terminal only
A	Administrator	From supervisor terminal or by System Administrator from any terminal
P	Privileged	By members of privileged ACL groups
D	DSM-enabled	By users specifically designated under DSM

FUNCTIONAL GROUPING OF COMMANDS

This section groups system commands by function. Because some commands have several functions, a command may be listed in more than one category.

This chapter lists the following functional command categories:

- System Startup and Shutdown
- Customizing System Behavior
- Configuring and Controlling Asynchronous Lines
- Configuring Subsystems
- Monitoring Subsystems
- Modifying System, Terminal, and Process Characteristics
- Controlling File Access
- System Monitoring and Report Generation
- Performing Backups and Creating Tapes
- Restoring Files From Backups
- System Repair
- Disk Handling
- File Handling
- Communicating With Other Systems

System Startup and Shutdown

Command   *Function*

ADDISK   Makes the specified disk or disks available to users of the system.

COMM_CONTROLLER
                   Downline loads, upline dumps, and halts certain intelligent communications controllers (ICS, LHC and LTS).

CRASH_AUDIT   Ensures that system buffers are completely written to the security audit file specified after unexpected halts.

LOGOUT   Logs out a specified process.

MAXUSR   Permits users to log in.

SETIME   Sets the system date and time.

SET_TIME_INFO
                   Sets time zone and whether or not daylight saving time is in effect for the local system.

SHARE   Installs a command or static-mode library into a segment.

SHUTDN   Shuts down system, local partitions, and remote partitions.

START_DSM   Starts up the Distributed Systems Management subsystem.

START_LSR   Starts up the Login server.

START_NET   Starts up PRIMENET.

START_NTS   Starts Network Terminal Service (NTS) for the Prime host node on the LAN300 network.

STOP_DSM   Shuts down the Distributed Systems Management subsystem.

STOP_LSR   Shuts down the Login server.

STOP_NET   Shuts down PRIMENET.

STOP_NTS   Shuts down Network Terminal Service (NTS) for the Prime host node on the LAN300 network.

Customizing System Behavior

Command	Function
CHAP	Changes a user's timeslice and priority level in the ready list.
CONVERT_TO_ACLS	Converts any existing password directories to ACL directories.
DEVICE_ACLS	Turns on or off the ACLs that may be set on a specified subdirectory under DEVICE*.
DUMP_SEGMENT	Specifies which segments are to be written to tape during a partial tape dump.
DUMP_USER	Specifies which users are to have their segments written to tape during a partial tape dump.
ELIGTS	Modifies the eligibility timeslice for system users.
MAXSCH	Controls the amount of overlapped processing.
PASSWORD_DIRS	Prevents the creation of new password directories by users when invoked with the -OFF option by the System Administrator.
PRATIO	Allows the operator to change the paging ratios of the paging partitions currently installed on the system.
RESET_DUMP	Resets the parameters of a partial dump to the default values.
SETMOD	Sets the mode for magnetic tape assignments.
SET_ASYNC	Configures an asynchronous line connected to a controller or connected via the Network Terminal Service (NTS).
SET_QUOTA	Sets the maximum storage quota on a directory or a subdirectory.
SHARE	Installs a command or static-mode program into a segment.

Configuring and Controlling Asynchronous Lines

Command	Function
ASSIGN	Assigns asynchronous lines, both directly connected or connected via NTS.
CAB	Changes the size of asynchronous line buffers.
LAB	Lists the current sizes of asynchronous line buffers.
NTS_ASSOCIATE	Maps an LTS physical line to a PRIMOS line number.
NTS_UNASSOCIATE	Breaks the mapping of an associated LTS line with a PRIMOS line number in the NTS assigned range.
SET_ASYNC	Configures an asynchronous line connected to a controller, to a user, or connected via NTS.
UNASSIGN	Removes the assignment of an asynchronous line to any user or process connected via NTS.

Configuring Subsystems

Command	Function
BATGEN	Configures, adds, and deletes Batch queues in the Batch queue definition file, BATDEF.
FTGEN	Configures the File Transfer Service.
NTS_ASSOCIATE	Maps a physical line on an LTS controller to a PRIMOS line number.
NTS_UNASSOCIATE	Breaks the mapping of an associated LTS line with a PRIMOS line number in the NTS assigned range.

Monitoring Subsystems

Command	Function
BATCH	Controls the Batch monitor.
BATGEN	Configures, adds, and deletes Batch queues in the Batch definition file, BATDEF.
FIXBAT	Checks the Batch queue database integrity.
FTOP	Invokes the operator's interface to the File Transfer Service.
FTR	Invokes the user interface to the File Transfer Service.
INIT	Initializes the Batch database.
JOB	Manages Batch jobs.
PROP	Invokes the spool queue management utility for the system printer.
SPOOL	Modifies, monitors, and cancels requests from the spool queue.
TRANSFER_LOG	Invokes a program that backs up and moves audit trail files.

Modifying System, Terminal, and Process Characteristics

Command	Function
CHAP	Changes a user's timeslice and priority level.
ELIGTS	Modifies the eligibility timeslice for system users.
MAXSCH	Controls the amount of overlapped processing.
MAXUSR	Permits users to log in.
RESUS	Allows the use of a user terminal as a logical supervisor terminal.
SET_ASYNC	Changes the characteristics of an asynchronous line. (Users may modify only lines assigned to themselves and the characteristics of their own terminal lines.)
USRASR	Causes the supervisor terminal to act as a user terminal by associating it with a different process.

Controlling File Access

Command   *Function*

LIST__ACCESS   Lists the access rights for any file system object.

LIST_GROUP   Lists a user's ACL groups.

LIST__PRIORITY__ACCESS
                 Displays the contents of a priority ACL in effect on a specified partition.

REMOVE__PRIORITY__ACCESS
                 Removes a priority access from an entire partition.

SET__PRIORITY__ACCESS
                 Sets a priority access on an entire partition.

System Monitoring and Report Generation

Command	Function
BATCH	Monitors the Batch subsystem.
DISPLAY_LOG	Displays all or part of a system or network event log at your terminal, or writes it to a disk.
HDXSTAT	Displays the status of lines and sites of a half-duplex (HDX) network configuration.
LIST_DUMP	Displays the current parameters specified for a partial tape dump.
LIST_LHC_STATUS	Displays the status of a LAN Host Controller 300 (LHC).
LIST_LTS_STATUS	Displays the status of a LAN Terminal Server 300 (LTS).
LIST_PRIORITY_ACCESS	Displays the contents of a priority ACL in effect on a specified partition.
LIST_SERVER_NAMES	Lists information about servers on the local node.
LIST_SESSIONS	Lists InterServer Communications sessions.
LIST_TAPE	Lists information about the contents of tapes created by the ARCHIVE, BACKUP, and TRANSPORT commands.
PRINT_SECURITY_LOG	Invokes the Audit Report facility, which enables the System Administrator to examine the contents of an audit trail file.
PROP	Monitors the status of printers and queue configurations.
SECURITY_MONITOR	Turns the Security Audit facility on or off; also used to turn the facility for specific audit trail combinations on or off.
SECURITY_STATUS	Displays the status of the active Security Audit facility.
STATUS	Displays the current system status.
USAGE	Displays the status of several PRIMOS performance factors.
USERS	Displays the number of users currently logged in.

Performing Backups and Creating Tapes

Command	Function
ASSIGN	Assigns disk partitions and tape drives.
BACKUP	Copies file system objects to tape to produce full or incremental backups.
BACKUP_RELEASE	Releases BACKUP tapes for reuse.
BOOT_CREATE	Creates a tape from which you can boot the system.
COPY_DISK	Copies a disk partition to another disk partition and verifies the result.
GENERATE_CATALOG	Re-creates a damaged ARCHIVE or BACKUP tape catalog, or verifies the catalog's accuracy.
LABEL	Writes computer-readable labels to tapes.
MAGSAV	Writes files, directories, and partitions to magnetic tape.
PHYSAV	Writes disk partitions to tape in physical order.
REPLY	Replies to users' magnetic tape requests.
SETMOD	Sets the mode for magnetic tape assignments.
UNASSIGN	Unassigns disk partitions and tape drives.
UX_TAPE	Reads and writes tapes for use with UNIX systems.

Restoring Files From Backups

Command	Function
ASSIGN	Assigns disk partitions and tape drives.
BACKUP_RESTORE	Restores file system objects from a BACKUP tape to disk.
GENERATE_CATALOG	Re-creates a damaged ARCHIVE or BACKUP tape catalog or validates the catalog's accuracy.
MAGRST	Restores a disk file, directory tree, or partition from a magnetic tape written by MAGSAV.
MTRESUME	Invokes (with RESUME) COPY_DISK, FIX_DISK, MAGSAV, MAGRST, MAKE, PHYSAV, and PHYRST from tape.
PHYRST	Restores to disk the partitions saved by PHYSAV on magnetic tape.
UNASSIGN	Unassigns partitions and tape drives.

System Repair

Command	Function
FIND_RING_BREAK	Determines the location of a break in RINGNET.
FIXBAT	Checks the Batch queue database integrity.
FIX_DISK	Checks and restores PRIMOS file integrity on partitions.
SHUTDN	Shuts down the system, local disk partitions, and remote disk partitions.
START_LSR	Starts up the Login server.
START_NET	Starts up PRIMENET.
START_NTS	Starts Network Terminal Service (NTS) for the Prime host node on the LAN300 network.
STOP_LSR	Shuts down the Login server.
STOP_NET	Shuts down PRIMENET.
STOP_NTS	Shuts down Network Terminal Service (NTS) for the Prime host node on the LAN300 network.

Disk Handling

Command	Function
ASSIGN	Assigns disk partitions and tape drives.
COPY_DISK	Copies a disk partition to another disk partition and verifies the result.
DISKS	Adds or removes a disk from the Assignable Disks Table.
FIX_DISK	Checks and restores file integrity on a disk partition.
MAKE	Creates a file system for any PRIMOS disk partition.
MIRROR_OFF	Removes a partition from a mirrored pair.
MIRROR_ON	Starts a mirrored pair of partitions.
PHYRST	Restores to disk the partitions saved by PHYSAV on magnetic tape.
PHYSAV	Writes partitions to tape in physical order.
SHUTDN	Shuts down the system, local disk partitions, and remote disk partitions.
STATUS DISK	Displays the current status of disk partitions.
UNASSIGN	Unassigns disk partitions and tape drives.

File Handling

Command	Function
CLOSE	Temporarily removes user access to files.
CNAME	Changes the name of a file or directory.
COPY	Copies file system objects (files, directories, segment directories, access categories, and EPFs) from one directory to another or within a directory.
COPY_DISK	Copies a disk partition to another disk partition and verifies the result.
FTR	Transfers files between systems via the File Transfer Service (FTS).
JOB	Submits command files as Batch jobs or modifies a user's Batch requests.
MAGRST	Restores a disk file, directory tree, or a partition from a magnetic tape written by MAGSAV.
MAGSAV	Writes files, directories, and partitions to magnetic tape.
SPOOL	Queues a file for printing on a system printer or modifies a user's spool request.

Communicating With Other Systems

Command	Function
CONFIG_NET	Builds the network configuration file.
CONFIG_NTS	Builds the Network Terminal Service (NTS) configuration file.
DPTCFG	Compiles the configuration file for a DPTX system.
DPTX	Enables a DPTX system.
FIND_RING_BREAK	Determines the location of a break in RINGNET.
FTGEN	Configures the File Transfer Service (FTS).
FTOP	Invokes the operator's interface to the File Transfer Service.
FTR	Invokes the user interface to the File Transfer Service.
HDXSTAT	Displays the status of lines and sites of a half-duplex (HDX) network configuration.
LIST_LHC_STATUS	Displays the status of the LAN Host Controller 300 (LHC).
LIST_LTS_STATUS	Displays the status of the LAN Terminal Server 300 (LTS).
LOOPBACK	Send test messages between the nodes on a network.
MESSAGE	Sends messages to users or other operators.
MONITOR_NET	Checks the throughput and status of the RINGNET network from the point of view of the node.
NET	Controls half-duplex PRIMENET on SMLC/MDLC lines.
NTS_ASSOCIATE	Maps an LTS physical line to a PRIMOS line number.
NTS_UNASSOCIATE	Breaks the mapping of an associated LTS line with a PRIMOS line number in the NTS assigned range.
START_NET	Starts up PRIMENET.
START_NTS	Starts Network Terminal Service (NTS) for the Prime host node on the LAN300 network.
STOP_NET	Shuts down PRIMENET.
STOP_NTS	Shuts down Network Terminal Service (NTS) for the Prime host on the LAN300 network.

PRIMOS OPERATOR COMMANDS

This chapter lists the PRIMOS operator commands in alphabetical order. For some commands, this book refers you to other sources. For all other commands, this book gives a brief description of the command's function, followed by a summary of its syntax and an explanation of any arguments or options it accepts.

Some of these commands require that you specify a **pdev** (physical device number). For information on how to determine or construct a physical device number, see the *Operator's Guide to File System Maintenance*. For information on other (user) commands that may be useful to you as an operator, see the *Prime User's Guide* or the *PRIMOS Commands Reference Guide*.

ADDISK

ADDISK makes the specified disk partition or partitions available to users of the system.

First, ADDISK searches the table of logical disks for available table entry locations; then, if enough available entries are found, ADDISK starts up the specified disk partition or partitions. To reverse this process and shut down partitions, you use the SHUTDN command.

There is a limit of 238 logical partitions that may be added to a system. This limit applies to both local and remote partitions. **Local partitions** are those that are connected to your system; **remote partitions** are those that are connected to other systems in the network of which your system is a part. The **logical partition numbers** or **logical device numbers (ldevs)** (which are *not* the same as physical device numbers) range from 0_8 through 355_8. For full information about disk handling, disk names, and physical device numbers, see the *Operator's Guide to File System Maintenance*.

Note

In this discussion of the ADDISK command, the words *disk* and *partition* are often used interchangeably. Strictly speaking, a **disk** is the physical medium, and the **partitions** are the logical units into which it is divided.

Starting Up Local Partitions

Before you start up a local partition, you must ensure that the disk drive on which the partition resides is powered up and ready for operation. When the disk drive is ready, you can use ADDISK to start up the partition on the local system and make it available to users.

Starting up a local disk partition does not make the partition available to remote systems until the remote systems also add the partition as a remote partition, as described below. In order to be available to remote users, a disk must be added both by the system that owns it and by the remote systems that will use it.

Format:

$$\text{ADDISK} \quad \begin{Bmatrix} [\text{PROTECT}] \; pdev\text{-}1 \, [pdev\text{-}2 \; ... \; pdev\text{-}n] \, [\text{-FORCE}] \, [\text{-PRIORITY\_SELECT}] \\ pdev \; \text{-RENAME} \; diskname \; [\text{-PRIORITY\_SELECT}] \end{Bmatrix}$$

pdev-1 through *pdev-n* represent the physical device numbers of the partitions being added. For example,

```
OK, ADDISK 1460 2262 5260 42663 163260
```

ADDISK's arguments and options can only be combined in a limited number of ways. The PROTECT argument and the -FORCE option may not be used with the -RENAME option, and the -RENAME option may not be applied to more than one *pdev*. ADDISK's arguments and options are described under the title ADDISK Arguments.

Starting Up Remote Disk Partitions

If a local computer system is part of a network, disks on other systems on the network may be made available to users on the local system.

Format:

ADDISK *diskname-1* [*diskname-2 ... diskname-9*] -ON *nodename*

nodename is the network name for a valid Remote File Access (RFA, formerly FAM II) system. The node must be RFA-enabled. For more information about RFA, see the section on CONFIG_NET in the *PRIMENET Planning and Configuration Guide.*

diskname-1 through *diskname-9* are the names of the remote partitions. The remote partition does not have to be started, nor does the remote system have to be running, although the disk will not actually be available on the remote system until that system is up. If you attempt to add more than nine partitions in one command line, ADDISK displays the following error message:

Too many objects specified. <diskname-10> (addisk)

You cannot rename, force, priority select, or protect a remote partition. The name and the write-protection status of a device are always assigned at the device's local system.

Notes

Partitions to be added remotely are specified by *diskname* rather than by physical device number.

All disknames must be unique. You cannot add a new remote partition if its diskname is the same as that of a partition already started, and you must use the same diskname to refer to the disk as was used by the remote system which owns it.

ADDISK Arguments

Arguments:

pdev-1 ... pdev-n Specifies the physical device number(s) of the partitions to be added.

PROTECT *pdev-1 ...*

Specifies that *pdev* is to be **write-protected**, that is, it cannot be altered by the system. You may specify PROTECT only for partitions that are added locally.

Write-protection can be added or removed by shutting down the partition and then reentering the ADDISK command with or without the PROTECT argument. This procedure changes the partition's protection. (Whenever possible, a partition that is write-protected via ADDISK PROTECT should also have write-protection physically enabled, to ensure that the partition is not inadvertently written upon.)

-FORCE   Useful only with robust partitions. Forces ADDISK to add a partition whether or not the partition is consistent. If you use the -FORCE option and the partition is consistent (contains no errors), the partition is added normally. If you use -FORCE and the partition is inconsistent, the partition is added, but is write-protected; you can read its files, but cannot change them. -FORCE may be used with multiple pdevs.

-PRIORITY_SELECT

Takes over control of a dual-ported disk drive. (A **dual-ported disk** drive is one which can be attached to two systems simultaneously, although only one has control over the disk drive at any moment.)

WARNING

Never priority select a dual-ported disk drive while the other system attached to the drive is running. You could corrupt the disk's file system by interrupting the other system's write to disk.

Never place any system's COMDEV on a dual-ported disk drive; if someone inadvertently priority selected that disk from the secondary port, the first system would behave unpredictably, and would probably crash.

---

pdev -RENAME *diskname*

Allows the operator to specify a new name for a partition when adding it to the system. This is required when the partition being added has the same name as a partition that is already on the system. If the operator attempts to add such a partition without renaming it, the system displays the following error message:

```
Name diskname of disk pdev not unique (conflicts with LDEV n).
```

Only one device at a time can be added when you use the -RENAME option. For example,

```
OK, ADDISK 460 -RENAME ATON
```

The SHUTDN command also provides a -RENAME option. Thus, the operator may restore the partition's original name or give it a new name when removing it from the system.

ADDISK Messages

ADDISK may display one or more of the messages listed below. In this list, some message explanations are preceded by the word *Warning*, which is not part of the error message displayed at the terminal. Warning messages affect only one of the specified disks; if more than one disk was specified, ADDISK continues processing all disks except those affected by the error message.

Messages not preceded by *Warning* indicate that ADDISK stopped processing and did not perform the requested operation.

Cannot add already known disk *pdev*. (addisk)
You attempted to add a disk that is currently running on the system.

Cannot Priority Select a remote disk!
The -PRIORITY_SELECT option can only be used on a dual-ported disk drive which is connected directly to your system.

*** Cannot read DBS file of disk *pdev*.
The system cannot read the badspot file on the disk you are attempting to add. The disk may be damaged; you may want to verify its integrity with FIX_DISK. For details, see the *Operator's Guide to File System Maintenance*.

*** Cannot read DSKRAT of disk *pdev*.
Warning The partition specified by *pdev* has not been formatted by MAKE. The disk may be damaged; you may want to verify its integrity with FIX_DISK. For details, see the *Operator's Guide to File System Maintenance*.

Conflicting PDEVs *pdev1* **and** *pdev2*. (addisk)
Two of the pdevs given in the list specify overlapping partitions of the same disk. Check that you specified the pdevs correctly and try again.

Could not CLOSE PDEV *pdev* **due to controller or device errors.** (addisk)
There is a problem with either the controller or the device. This problem prevents you from adding a disk. Contact your Customer Support Center.

Could not OPEN PDEV *pdev* **due to controller or device errors.** (addisk)
If you have just warm-started your system and are trying to add a disk on an intelligent controller, this message means that the intelligent controller needs to be re-initialized. Wait until the message DLL and init ICOP complete *controller_address* - (disk_init) appears at the supervisor terminal and try again.

If you get this message at any other time, the controller may not be running properly. Check to be sure that the disk drive is powered on, is online, and is not write protected; check that you gave the correct PDEV. If the problem persists, contact your Customer Support Center.

.diskname **is not a valid partition name.** (addisk)
The *diskname* you specified with the -RENAME option does not conform to the partition name syntax. It either contains an invalid character or it is more than 6 characters long.

Disk *pdev* **A Dynamic Badspot Disk cannot be added to this controller.**
You attempted to add a Dynamic Badspot Handling (-IC) mode partition from a disk drive with a nonintelligent disk controller. The partition is not added. If you must run this disk on a nonintelligent controller, run FIX_DISK to convert the disk to All_Controller format.

*** Disk *pdev* **- A dynamic badspot handling disk cannot be started on this controller. Run FIX_DISK to convert the disk to an All-Controller format disk.**
You attempted to add a Dynamic Badspot Handling (-IC) mode partition from a disk

drive with a nonintelligent disk controller. The partition is not added. If you must run this disk on a nonintelligent controller, run FIX__DISK to convert the disk to All__Controller format.

Disk *pdev* Controller capable of Dynamic Badspotting.
You added a No Dynamic Badspot Handling (-AC) mode partition on a disk drive associated with an intelligent disk controller. You should plan to convert this partition to -IC mode.

*** Disk *pdev* is not a PRIMOS partition.
PRIMOS cannot recognize the partition you specified. This could be because the disk is in a pre-Rev. 19 format, because the disk does not contain the number of heads specified in the DSKRAT, or because the DSKRAT length or address is incorrect. Check that the pdev you specified is correct, and that it does not overlap or include another partition.

*** Disk *pdev*: Not ready.
Warning You specified either a nonexistent device or one that is not ready (has been turned on, but has not yet reached full speed) as *pdev*. Shut down this *pdev* with the SHUTDN command, wait until the device is ready, and then add the pdev again.

*** Disk *pdev*: Old partitions not supported.
Warning The partition specified as *pdev* has a pre-Rev. 14 format. Make sure that you have a backup copy of the data on the disk, then use the MAKE command to convert the disk to Rev. 22 format. See the *Operator's Guide to File System Maintenance* for details.

Disk table overflow: *n* entries required, only *x* free. (addisk)
The number of free entries (*x*) is smaller than the number of requested additions (*n*). You may free logical device entries by using SHUTDN to remove devices from the table. PRIMOS supports a maximum of 238 logical disks.

Duplicate partition name *diskname*. (addisk)
You specified partition name *diskname* more than once when adding remote partitions.

Duplicate PDEV *pdev*. (addisk)
You specified PDEV *pdev* more than once in this ADDISK command.

Dynamic badspot remapping area is at least 80 percent full.
Disk may have a hardware problem. Please have it checked.
You added a Dynamic Badspot Handling (-IC) mode partition to the system whose RMA has reached 80% or more of capacity. The partition is added, but you should have the disk checked for defects by your Customer Support Center.

*** Format of disk *pdev* not supported by this revision of PRIMOS.
Warning You see this message if you try to add a remote partition under a local version of PRIMOS which is earlier than the partition's format. Examples include adding a Rev. 20.0 or later remote disk to Rev. 19.0, adding a Rev. 21.0 or later remote disk to Rev. 20.0, and adding a Rev. 22.0 remote disk to Rev. 21.0. See the MAKE command in this chapter, or the discussion in the *Operator's Guide to File System Maintenance*.

More instances of *"option_name"* than are supported. (addisk)
> You have supplied some option or argument more than once. Enter the command, specifying each option only once.

Must specify at least one PDEV. (addisk)
> The ADDISK command requires at least one argument.

Must supply at least one partition name. (addisk)
> The ADDISK command requires at least one argument in addition to the -ON option.

*** Name *diskname* of partition *pdev* not unique (conflicts with LDEV *n*).
> *Warning* Partition *diskname* already exists on this system's partition list. This message is displayed when you do not specify -ON *nodename*.

nodename is the local system!
> Do not use the name of your local system with the -ON option. The -ON option may be used only to add remote disks.

nodename is not a valid system name. (addisk)
> The specified remote system name is invalid. You may have mistyped the name; it might also contain invalid characters or be more than 6 characters long.

Node *nodename* not configured in network. (addisk)
> The node specified as *nodename* is not currently RFA-enabled. Check that you typed the *nodename* correctly.

Only one disk may be RENAMEd at a time. (addisk)
> You may specify only one pdev when you use the -RENAME option.

Option *"name"* is not recognized by this command. (addisk)
> You gave an option which is not a valid ADDISK option. Check your spelling and try again.

pdev is not a valid PDEV. (addisk)
> The *pdev* specified is not a valid physical device number. Either it contains decimal numbers or nondigits, or it is an impossible *pdev*.

PDEV *pdev* conflicts with assigned or paging device. (addisk)
> The *pdev* is currently being used as, or overlaps with, a paging partition; or, the *pdev* is already an assigned partition. Check to see if you mistyped the pdev.

PDEV *pdev* conflicts with assigned or paging or mirrored device. (addisk).
> The *pdev* is currently being used in a mirrored pair, is already an assigned partition, or is currently being used as or overlaps a paging partition. Check to see if you mistyped the pdev.

PDEV *pdev* conflicts with existing LDEV *n*. (addisk)
> The *pdev* either overlaps with logical partition *n* or is in use in a mirrored pair. Check to see if you mistyped the pdev.

```
*** Proper shutdown of Robust Partition pdev did not take place.
*** The Partition will be write protected.
```
You added a damaged partition by using the -FORCE option. The partition was added, but you cannot write to it. You should use FIX_DISK to repair the partition.

```
Remote partitions may not be RENAMEd. (addisk)
```
You may use the -RENAME option for local partitions only.

```
Rename failed. (trwrat)
```
Your attempt to RENAME the disk failed. Check to make sure that you specified a legal disk name (6 alphanumeric characters). If the disk name you gave was legal, the rename probably failed because the disk was too badly damaged to be used. Use FIX_DISK to repair the disk.

```
*** Robust Partition pdev has not been properly shut down.
*** Fast Fix_Disk has to be run before it can be added.
```
You tried to add a damaged partition to the system. If you want to read the disk before you repair it with FIX_DISK, add this pdev again, using the -FORCE option.

```
Starting up revision n partition "diskname."
Starting up revision n Robust Partition "diskname".
```
Partition diskname is being added; if the word "Robust" appears in the message, the disk is a robust partition. n may be 18, 19, 20, 21, or 22. On a Rev. 19.0 or later partition, this message may be followed by the message

```
    (Quota system may be incorrect; run FIX_DISK.)
```

Quota systems may become corrupt if the partition was not shut down properly, possibly due to a system halt. Run FIX_DISK to repair the damage.

```
System console command only. (addisk)
```
The ADDISK command may be issued only from the supervisor terminal.

```
System name must be specified with -ON option. (addisk)
```
You specified the -ON option without a remote system name.

```
Too many objects specified. diskname-10 (addisk)
```
You attempted to add more than nine partitions in one command line.

```
Write-protected disks may not be RENAMEd. (addisk)
```
You cannot specify the -RENAME option along with the PROTECT or -FORCE options.

ADMIN_LOG

At Rev. 21.0 all Prime event logs are DSM logs and are administered by the general DSM log management utility ADMIN_LOG. Through ADMIN_LOG, you can create and customize event logs to suit your own system requirements by setting appropriate values for log file attributes. The ADMIN_LOG options allow you to perform the following tasks:

- Create DSM logs and specify their attributes, including size
- Delete logs
- List the attributes of existing logs
- Modify the attributes of existing logs
- Purge the logs of unwanted messages

Format:

ADMIN_LOG *logname* [*options*]

logname must be a valid PRIMOS pathname.

Options:

-PRIVATE_LOG	Creates a private log in any directory to which you have access. You can specify the pathname of the private log to which you have access rights. You must also have access to the DSM function PRIVATE_LOGGING on the system where the private log file resides. If you do not specify PRIVATE_LOG, a system log is assumed. You cannot specify this option and -SYSTEM_LOG on the same command line.
-SYSTEM_LOG	Creates a system log in the system logging directory, DSM*>LOGS. If you are attached to DSM*>LOGS, you may specify a relative pathname; otherwise, you must specify a pathname that begins with DSM*>LOGS. To access a system log, you must have access to the DSM function SYSTEM_LOGGING. You cannot specify -SYSTEM_LOG and -PRIVATE_LOG on the same command line.
-DEFAULT	Asks ADMIN_LOG to display the log file DSM*>LOGS>UMH>DEFAULT.LOG. Cannot be used with the *logname* argument.
-UNDELIVERED	Asks ADMIN_LOG to display the log file DSM*>LOGS>UMH>UNDELIVERED.LOG. Cannot be used with the *logname* argument.
-CREATE *attributes*	Creates a DSM log. For a description of log file attributes, see the following section, which describes log attribute options.

-MODIFY *attributes*	Changes the attributes of a log. You can also append new values for any attributes on the command line.
-PURGE $\begin{Bmatrix} age \\ ALL \end{Bmatrix}$	Allows you to delete those messages that are older than a specified number of days. For example, if you specify an *age* of 1, all messages that are more than one day old are deleted.
	Permitted arguments are ALL, 0 (zero), and any integer in the range 1 through 365. If you specify either an *age* of 0 (zero) or the keyword ALL, all messages in the log are deleted.
	If you do not specify a value for *age*, the current retention time is assumed. If the current retention time is infinite, no messages are deleted, and an error message is displayed.
-DELETE	Deletes a DSM log.
-LIST	Displays the attributes of a log, its current size, and the age of the oldest message.
-HELP [**-NO_WAIT**]	Explains how to use the command. If you specify -NO_WAIT, the display is not paginated at your terminal. This option cannot be used with the other options.
-USAGE	Displays the command syntax in brief. This option cannot be used with the other options.

Log Attributes:

-MAXIMUM_SIZE *records*

Sets the maximum size of the log in 2-Kbyte disk records. Permitted values are 0 (zero) and 1 through 32767. A value of 0 is interpreted as an unlimited size. The default is 10 records.

-MINIMUM_SIZE *records*

Sets the minimum size of the log in 2-Kbyte disk records. Permitted values are 1 through 32767. The default is one record.

-WARNING_LEVEL *fullpercent*

Defines an arbitrary level at which ADMIN_LOG will begin warning you that the log is approaching its maximum size. This option can be used only for logs for which you have defined a maximum size; *fullpercent* represents the percentage of records consumed which will be the warning threshold. There is no default value for *fullpercent*.

-CYCLIC	Defines the log as a **cyclic** log, one in which old messages are overwritten by new after the log reaches a specified size. For more information, see the *DSM User's Guide*.
-LINEAR	Defines the log as a **linear** log, one which is closed after it reaches a specified size. For more information, see the *DSM User's Guide*. The default is -CYCLIC.

-RETAIN *days*   Defines how many days messages are to be held in the log before being deleted. The permitted values for *days* are 0 (zero) and 1 through 365. If you specify 0 (zero), messages are retained indefinitely (infinite retention time). In logs with infinite retention time, messages are held until the log is deleted, the log is purged manually, or, for cyclic logs, until new messages overwrite older ones in the log. The default is infinite retention time.

-PURGE_TIME *hh:mm*

Defines the time of day when DSM purges the log. It must be in 24-hour format. The default is 01:00 (1:00 a.m.). All logs have a purge time set. In logs with infinite retention time, the purge time is never used.

ASSIGN

ASSIGN delegates authority over disk partitions, asynchronous lines, and devices such as tape drives. ASSIGN gives the operator complete control of a partition or a peripheral device for such purposes as performing backup procedures, formatting partitions, and repairing file system partitions. The ASSIGN command also assigns asynchronous communication lines and peripherals, including printers.

Although the ASSIGN command is fully described· in the *PRIMOS Commands Reference Guide*, a description of how to assign disk partitions, asynchronous lines, and tape drives is included here for your convenience.

Use the UNASSIGN command (described later in this chapter) to release previously assigned tapes, disk drives, and asynchronous lines; use UNASSIGN at the supervisor terminal to forcibly unassign devices or lines assigned to users.

Format:

$$\text{ASSIGN} \begin{cases} \text{DISK } pdev \text{ [-PRIORITY\_SELECT]} \\ \text{ASYNC -LINE } n \text{ \{-TO } m\text{\}} \\ device \text{ [-WAIT]} \end{cases}$$

The ASSIGN command has different formats depending on the intended use; the formats appropriate to specific uses are explained in the following sections.

Assigning Disks

Format:

ASSIGN DISK *pdev* [-PRIORITY_SELECT]

The specified physical device number, *pdev*, must already have been entered in the Assignable Disks Table via the DISKS command. See the *Operator's Guide to File System Maintenance* for information on determining pdevs and on the Assignable Disks Table.

The -PRIORITY_SELECT (-PRISEL) option tells the ASSIGN command to take over control of a particular dual-ported disk drive, whether or not that drive is currently being controlled through its alternate port. (A dual-ported disk drive is one which can be physically attached to two different machines at the same time.)

WARNING

Never priority select a dual-ported disk drive while the other system attached to the drive is running and has control of the disk. You could corrupt the disk's file system by interrupting the other system's write to disk.

Never place any system's COMDEV on a dual-ported disk drive; if someone inadvertently priority selected that disk from the secondary port, the first system would behave unpredictably, and would probably crash.

Assigning Asynchronous Communication Lines

Before you can use the ASSIGN command to assign a line, that line must be specified as assignable, either in the PRIMOS.COMI file at startup or interactively with the SET_ASYNC command. Refer to the SET_ASYNC command later in this chapter for the correct usage of this command. Refer also to the *Software Installation Guide — Rev. 22.0* (IDR10176-2PA) for a description of the PRIMOS.COMI file.

Format:

ASSIGN ASYNC -LINE n [-TO m]

The -LINE option assigns line n. You must specify this number in decimal. The -TO option assigns a range of lines from n to m inclusive, both decimal numbers.

At PRIMOS Rev. 21.0, the above format replaces the old ASSIGN AMLC format; you should convert your old ASSIGN AMLC commands to ASSIGN ASYNC commands.

Note

When you used ASSIGN AMLC, you specified the line number in octal. With the ASSIGN ASYNC command, specify the line number in decimal. Do not confuse the two numbering systems.

Assigning Devices

The ASSIGN command gives the system operator complete control of a disk or a peripheral device.

Format:

ASSIGN *device* [-WAIT]

device may be any of the following:

CARDR   Serial card reader

CENPR, CE2PR   Serial printer

CRn (n is 0 or 1)   MPC parallel card reader or reader/punch

GS0 — GS3   Vector General graphics display terminal

MG0 — MG3   Megatek graphics display terminal

MTn (n is 0-7)   Magnetic tape drive

PRn (n is 0-3)   Line printer

PTR   Paper tape reader

PUNCH   Paper tape punch

PLOT   Printer/plotter

SYNCnn (nn is 00-07) Synchronous communications line

Note

SYNC is the preferred version of the older device name SMLC.

Assigning Tape Drives

Format:

$$\text{ASSIGN} \quad \begin{Bmatrix} \text{MT}n \; [\text{-ALIAS MT}ldn] \\ \text{MTX -ALIAS MT}ldn \end{Bmatrix} \; [options]$$

Arguments:

MTn   Assigns a specific tape drive, n. Magnetic tape (MTn) units are numbered 0 through 7, inclusive.

MTX   Sends a user request to a system operator to assign an available tape drive. Use the REPLY command to reply to the user request. The argument must be accompanied by -ALIAS MTldn, which assigns a logical device number ldn to the drive for reference purposes. Legitimate values for ldn are 0 through 7, inclusive. The actual drive assigned depends on any other options that appear on the command line.

Note

You cannot use the MTX form of the ASSIGN command at the supervisor terminal.

Users may also request certain special options with their tape drive assignments. Use the REPLY command at the supervisor terminal to reply to requests that require your intervention; use the SETMOD command to set the mode of tape assignments with regard to your presence or absence. See the *Operator's System Overview* for information on handling user tape assignment requests.

Options:

$\begin{Bmatrix} \text{-7TRK} \\ \text{-9TRK} \end{Bmatrix}$ *Operator intervention required.* Specifies either 7-track or 9-track tape drive. Usually used in conjunction with the MTX argument. The operator must choose the correct tape drive.

-ALIAS MT*ldn*   Allows the user to specify tape drives with logical device numbers *ldns* 0 through 7. *Any physical device may be used as long as the drive is specified by the requested logical device number.* If you do not use this option, the logical device number defaults to the physical device number. This feature is particularly useful in programs that run from command files or in .CPL programs. It allows the programs to refer to logical device numbers, which remain constant. Physical device numbers may change from. run to run because they depend on the availability of particular drives.

-DENSITY *n*   *Operator intervention may be required.* Specifies tape density in bpi (bits per inch). Acceptable values for *n* are 800, 1600, 3200, and 6250 for the 4587; only 1600 and 3200 are acceptable for the Model 4660. You must check the tape drive to make sure it is capable of functioning at the desired density setting if your intervention is required; if not, the assigned tape drive supports the direct control of tape density by the user.

-MOUNT   *Operator intervention required.* Indicates that a new tape is to be placed on a previously assigned drive.

-RETENSION   Causes the tape to be fast-forwarded to end-of-tape and then rewound to beginning-of-tape. This action stabilizes the tape-to-head pressure and stacks the tape evenly on the reel. Applies to cartridge tape drives (version 5 controller) only. If used on any other tape drive, this option is ignored.

$\begin{Bmatrix} \text{-RINGON} \\ \text{-RINGOFF} \end{Bmatrix}$ *Operator intervention required.* Specifies protection rights as follows:

        -RINGON   Read permitted and write permitted

        -RINGOFF   Read only; write protection in effect

        You must remove or replace the write-ring if one of these options is specified.

-SPEED *n*   Selects the speed *n* for a streamer tape drive. For a Model 4660, the -SPEED option may only be used with a -DENSITY 1600 option, and *n* may be one of 25, 50, and 100 inches per second. For a Model 4587, the -SPEED option may be used with any -DENSITY, and *n* must be either 50 or 100 inches per second. For any other model of tape drive, this option is ignored.

-TPID *id*   *Operator intervention required.* Requests the operator to locate and mount a particular reel of tape, identified by a tape ID. *id* is a tape identifier describing a particular reel of tape and/or type of tape drive (name,

number, and so on). Identifiers may not begin with a hyphen (-), because hyphens are used to indicate the beginning of the next option on the ASSIGN statement line.

-WAIT   Indicates that the user is willing to wait until the requested drive is available.

Caution

Do not use the -WAIT option of the ASSIGN command at the supervisor terminal. Doing so causes the terminal to hang until the tape drive can be assigned by PRIMOS.

For full information on using ASSIGN with tape drives, see the *Data Backup and Recovery Guide.*

BATCH

The BATCH command allows all users to monitor usage of the Batch subsystem; Batch Administrators (members of the .BATCH_ADMIN$ ACL group) and those working at the supervisor terminal may also use the BATCH command to interrupt and restart the Batch subsystem's work.

Format:

BATCH *options*

Options:

-CONTINUE   Takes the monitor out of a paused state, allowing it to begin processing jobs again; opposite of -PAUSE (described below). This is the default mode. May be issued only from the supervisor terminal or by Batch Administrators.

-DISPLAY   Displays information on waiting, deferred, held, and executing jobs, arranged by queue. May be issued from any terminal.

-PAUSE   Tells the monitor to cease starting jobs, but to finish processing jobs that are currently executing; opposite of -CONTINUE. May be issued only from the supervisor terminal or by Batch Administrators.

-START [*options*]

     Starts the monitor; opposite of -STOP (described below). May be issued *only* from the supervisor terminal. You may use the following options with -START:

         -RLEVEL *rlv*   Sets the scheduler priority of the Batch monitor. The value for *rlv* must be in the range 0 through 3 inclusive, with 3 the highest priority. The default is 1. You cannot specify the IDLE or SUSPEND priority levels for *rlv*.

         -TIMESLICE *ts*   Sets the timeslice in tenths of a second for the Batch monitor. The value for *ts* must be in the range 1 through 99, inclusive. The default is 20 tenths of a second, or 2 seconds.

-STATUS   Displays a summary of waiting, deferred, held, and executing job information. May be issued from any terminal.

-STOP   Stops the monitor; opposite of -START. May be issued only from the supervisor terminal or by a System Administrator.

Starting Batch

Format:

BATCH -START [**-RLEVEL** *rlv*] [**-TIMESLICE** *ts*]

This command is usually included in the PRIMOS.COMI startup file and thus is normally part of the system startup routine. However, you may use it to stop and restart the Batch monitor while the system is running.

Although the two options -RLEVEL and -TIMESLICE are not required, many installations use them. If you start the Batch monitor interactively from the supervisor terminal, you should use the same values for *rlv* and *ts* specified in your system startup file.

Note

The priority specified by the BATGEN command for a given queue is relative to the priority of the Batch monitor. Thus, RLEVEL 0 is the same as the BATCH -START priority; RLEVEL 1 is one lower than the BATCH -START priority.

The options -START, -RLEVEL, and -TIMESLICE may be given in any order.

FIXBAT, INIT, and MONITOR, three other utility programs, are part of the Batch subsystem and are described later in this chapter. Other Batch commands are BATGEN, which configures, adds, and deletes Batch queues, and JOB, which controls and monitors Batch jobs. BATCH and BATGEN are fully described in the *Operator's Guide to the Batch Subsystem.* JOB is described fully in the *PRIMOS User's Guide* and the *PRIMOS Commands Reference Guide.*

BATGEN

System operators typically use the BATGEN command to monitor queues. However, you must be a Batch Administrator in order to change the state of queues. The Batch Administrator uses the BATGEN command to configure, add, modify, create an active window for, or delete Batch queues. Refer to the *Operator's Guide to the Batch Subsystem* for the BATGEN command options available to the Batch Administrator.

Monitoring Batch Queues

Format:

$$\text{BATGEN } [pathname] \quad \begin{cases} \text{-STATUS} \\ \text{-DISPLAY } [queue] \end{cases}$$

Normally, you do not specify *pathname* with this format, and BATGEN defaults to the live queue configuration file, BATCHQ>BATDEF.

Options:

-STATUS   Displays a tabular list of defined queues and the status of each queue (blocked or unblocked, capped or uncapped, active or inactive, or flagged for deletion). The *Operator's Guide to the Batch Subsystem* explains the possible queue statuses.

-DISPLAY [*queue*]

         Displays complete information on the queue named *queue*. If no queue is specified, information is given for all queues.

The BATGEN command is one of three Batch commands. Other Batch commands are BATCH, which controls and monitors the Batch monitor, and JOB, which controls and monitors Batch jobs. BATCH and BATGEN are fully described in the *Operator's Guide to the Batch Subsystem*. The JOB command is described in the *PRIMOS User's Guide* and the *PRIMOS Commands Reference Guide*.

BOOT_CREATE

BOOT_CREATE allows you to make a boot tape from which you can boot your system if your system should fail. You can also start certain utility programs with this tape. See the discussion of the MAGSAV and MTRESUME commands later in this chapter.

To make the system boot tape, you must first create a **List File**, a file that contains the pathnames of all the directories and files necessary to restore your system to normal working order. BOOT_CREATE then uses the information contained in the file to generate the system boot tape. When the BOOT_CREATE program is run, it reads the List File twice: the first pass checks that each of the files listed is present and accessible; the second pass calls the magnetic tape save utility MAGSAV, which writes the files to the tape.

If any check in the first pass of the List File is unsuccessful, BOOT_CREATE displays an error message.

Although the tape generated by BOOT_CREATE is used to restore data to a disk, the tape itself does not actually do the restoration. The boot tape lets you bring up PRIMOS, and PRIMOS lets you run software which restores the disk. All files are restored with their original protection (ACLs or passwords) still intact.

Creating the List File

The List File containing the pathnames can reside anywhere in the system. You create it by using a text editor such as ED or EMACS.

The List File must contain pathnames for MAGSAV to read, one per line. The directory PRIRUN should be the first pathname in the file. You can add other utilities and files needed by PRIMOS as required; most sites also include MAGRST, MAGSAV, and NSED. When you are creating the file, you can specify the pathname of the directory or file that you want to save, in several ways:

- *<diskname>directory_name>object_name*

- *directory_name>object_name*

- *object_name*

You can use the last format (*object_name*) only if the object that you specify is in the directory to which you are attached while running BOOT_CREATE.

List File Options: You can use the following options inside the list file by appending them to the pathnames of the specified directories and files. Use only one option with each pathname.

-YES   Causes BOOT_CREATE to display an error message if the specified file or directory cannot be located or accessed and then to terminate the program. -YES is the default if no option is specified.

-NO   Causes BOOT_CREATE to display a warning if the specified file or directory cannot be located or accessed, and then to continue writing the remaining objects to the tape.

-CHECK   Allows you to check for the existence of an object in a directory without having to save it. If the file exists, nothing happens. If the file does not exist, an error message is displayed and BOOT_CREATE aborts.

The system boot can read only from logical tape 1; it is therefore vital that PRIRUN appear on the first logical tape, and it is recommended that you save all your boot files on a single logical tape.

Invoking BOOT_CREATE

After you have created the List File, make sure that a scratch tape is mounted on the tape drive and that the tape drive is on line. Then run the BOOT_CREATE program to generate a boot tape.

Format:

  BOOT_CREATE [*pathname*] [*options*]

pathname is the name of your List File. The options to the command line are listed below.

If you created the List File in a password-protected directory and want to use the -NO_QUERY option, then you must specify the password in the pathname when you give the BOOT_CREATE command. You must enclose the complete pathname in single quotation marks, and separate the password from the directory name by one space.

For example, if the List File is named BOOT.CR in the directory ENG1, and has the password GRAPH, then the command line would look like this:

  OK, BOOT_CREATE 'ENG1>BOOT.CR GRAPH' -NO_QUERY

If you run the BOOT_CREATE program without the -NO_QUERY option, you are prompted for the password if one is required.

Options:

-HELP   Displays the command format of BOOT_CREATE and explains the options available. Other options are ignored.

-NO_QUERY Suppresses a prompt for the password of the directory containing *pathname*. If *pathname* is contained in a password-protected directory and you either have not specified the password in the command line or you have specified the wrong password, an error message is displayed and BOOT_CREATE aborts.

-MT [*n*]   Suppresses the magnetic tape drive number prompt. If the -MT option is given without *n*, the default is drive 0 (zero).

Operator Prompts

BOOT_CREATE asks you to supply answers to the following prompts:

Does <DISKNAME>UFDNAME>SUBUFDNAME have a password?
You are asked this question when you give the BOOT_CREATE command. If you answer YES to this prompt, BOOT_CREATE asks you for the password of the directory that contains the file you created. If, after answering YES, you fail to give the password or give an incorrect one, BOOT_CREATE aborts. If the directory is not password-protected, answer NO to the prompt, and BOOT_CREATE continues.

Enter list filename:
If you did not specify a name for the file you created in the BOOT_CREATE command line, you are asked to provide one.

Which drive are you using ? (0 to 7):
If you did not specify the -MT option in the BOOT_CREATE command line, you are asked to provide the number of the tape drive you are using.

Have you mounted the tape on drive <ldn>?
BOOT_CREATE asks this question after you have entered a tape drive number in response to the previous prompt. (*ldn* is the number of the tape drive.) If you answer YES to this prompt, BOOT_CREATE continues. If you answer NO, BOOT_CREATE asks you to mount the correct tape on the tape drive.

If you do not want the prompts displayed at your terminal, you can suppress them by using the command-line options -MT and -NO_QUERY. If you run BOOT_CREATE as a phantom process, you may find it useful to make command output (COMO) files of the terminal output.

Sample List File

The following example gives the suggested contents of the List File and shows how to create it using ED, the PRIMOS line editor. In the following example, the file was created in the MFD of a disk partition called TEST, the command device.

```
OK, ATTACH <TEST>MFD
OK, ED
INPUT
PRIRUN
CMDNCO>MAKE.SAVE
CMDNCO>MAGRST.SAVE
CMDNCO>MAGSAV.SAVE
DOS>DOS.SAVE
CMDNCO>FIX_DISK.SAVE
CMDNCO>COPY_DISK.SAVE
```

```
CMDNCO>NSED
CMDNCO>PHYRST.SAVE
CMDNCO>PRIMOS.COMI -CHECK
CMDNCO>CONFIG -CHECK
[Return]
EDIT
FILE BOOT_LIST
OK,
```

Sample BOOT_CREATE Session

The following example runs the BOOT_CREATE program with the command-line option -NO_QUERY, and uses the file BOOT_LIST created in the previous example. The files PRIMOS.COMI and CONFIG do not appear in the display because the -CHECK option was supplied with them. Since this is a continuation of the example above, we are still attached to the MFD TEST. If for some reason you run BOOT_CREATE while attached to a directory other than the directory in which your LIST file is stored, you will have to include a full MFD-qualified pathname, for example, <TEST>BOOT_LIST.

```
OK, BOOT_CREATE BOOT_LIST -MT 1 -NQ
[BOOT_CREATE Rev. 22.0 Copyright (c) Prime Computer, Inc. 1988]


No Warnings

Assigning Tape drive 1 to your job ......
Device MT1 assigned.
Tape unit: 1
Calling MAGSAV ......
WARNING: Only one reel can be loaded during system boot,
*******  because MTBOOT does not handle continuation reels.
[MAGSAV Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]
Tape unit (9 Trk): 1
Enter logical tape number: 1
Tape name: BOOT1
Date (MM DD YY):
Rev no:
Name or Command: $TTY
Name or Command: $A MFD
Name or Command: PRIRUN
Name or Command: $A CMDNCO
Name or Command: MAKE.SAVE
Name or Command: $A CMDNCO
Name or Command: MAGRST.SAVE
Name or Command: $A CMDNCO
Name or Command: MAGSAV.SAVE
Name or Command: $A DOS
```

```
    Name or Command: DOS.SAVE
    Name or Command: $A CMDNCO
    Name or Command: FIX_DISK.SAVE
    Name or Command: $A CMDNCO
    Name or Command: COPY_DISK.SAVE
    Name or Command: $A CMDNCO
    Name or Command: NSED
    Name or Command: $A CMDNCO
    Name or Command: PHYRST.SAVE
    Name or Command: $R
    Device released.
    OK,
```

For complete information on the BOOT_CREATE command, see the *Data Backup and Recovery Guide.*

CAB

CAB (Change Asynchronous Buffers) allows users to change the sizes of their system's asynchronous buffers without rebooting the system. The command is available only from the supervisor terminal, from the PRIMOS.COMI file, or to DSM-privileged users (users who have been given special privileges through DSM security). Any buffer for which you do not specify a new size retains its previously specified size or, if no size was specified earlier, its default size.

Format:

$$
\text{CAB} \begin{bmatrix}
\text{-HELP} \\
\text{-LINE } num \begin{Bmatrix} \text{-IBS } size \\ \text{-OBS } size \\ \text{-DMQS } size \end{Bmatrix} \quad \text{[-TO } num \text{ [-EXCEPT } num\_1 \text{ [...} num\_10\text{]]]} \\
\text{-NTSBUF} \quad \text{[-IBS } size \text{][-OBS } size\text{]} \\
\text{-NTSABF} \quad \text{[-IBS } size \text{][-OBS } size\text{]} \\
\text{-REMBUF} \quad \text{[-IBS } size \text{][-OBS } size\text{]} \\
\text{-ON } node\_name
\end{bmatrix}
$$

Note

All numbers in arguments are decimal.

Options:

-DMQS *size*   Alters the size of lines' DMQ output buffers. *Size* must be one of 0, 15, 31, 63, 127, 255, 511, and 1023. If you do not specify *size*, the default is 31 8-bit characters. If you do not specify the -DMQS option, the lines' DMQ sizes do not change.

-EXCEPT *num-1* [... *num-10*]
      Alters the meaning of the -TO option, which allows a range of lines to be affected by the CAB command. The named lines are excluded from the range previously specified with the -TO option. -EXCEPT is legal only if -TO is specified; only ten numbers may be specified after -EXCEPT.

-IBS *size*   Alters the input buffer size of the specified lines. Legal values for *size* range from 2 through 8190, inclusive; if *size* is not specified or is specified as 0 (zero), input buffer size is reset to 256. If you do not specify the -IBS option, the lines' input buffer sizes do not change.

-LINE *num*   Specifies which line(s) should be affected by the CAB command. *num* may be the only line affected, or if the -TO option is present, may be the start of a range of lines to be affected. You cannot use this option in the same CAB command as the -NTSBUF, -NTSABF, and -REMBUF options.

Note

The CAB command accepts line numbers specified in *decimal*, not octal. Valid Direct Connect line numbers range from 0 through 511; valid NTS line numbers range from 1024 through 1536. If the -LINE, -TO, or -EXCEPT options specify line numbers from 512 through 1023, inclusive, CAB will print an error message and the command line will have no effect. However, if the range specified by -LINE and -TO includes numbers from 512 through 1023 (for instance, -LINE 0 -TO 1027) without specifying the illegal numbers directly, the CAB command will proceed normally, altering values for all lines within the legal range and ignoring all lines outside the legal range.

-NTSABF   Specifies the initial and default buffer sizes for all active NTS assignable lines and the initial buffer size only for all nonactive NTS assignable lines. You cannot use this option with the -LINE, -TO, and -EXCEPT options.

-NTSBUF   Specifies the initial and default buffer sizes for all active NTS login lines and the initial buffer size only for all nonactive NTS login lines. You cannot use this option with the -LINE, -TO, and -EXCEPT options.

-OBS size   Alters the output buffer size of the specified lines. Legal values for *size* range from 100 through 8190, inclusive; if *size* is not specified or is specified as 0 (zero), *size* is reset to 384. If the -OBS option is not specified, the lines' output buffer sizes do not change.

-ON *node_name*

Changes the asynchronous buffer settings on a remote system. If you do not supply this option, or if you supply -ON with no *node_name*, the CAB commmand is executed on the local system. You must be enabled through DSM to use the CAB command on remote systems.

-REMBUF   Specifies the initial and default buffer sizes for all active remote login files, and the initial buffer size only for all nonactive remote login lines. You cannot use this option with the -LINE, -TO, and -EXCEPT options.

-TO *num*   Specifies the end of a range of lines to be affected by the CAB command. The -LINE option must also be present if the -TO option is specified, and the *num* following -TO must be greater than or equal to the argument following -LINE. You cannot use the -TO option with the -NTSBUF, -NTSABF, and -REMBUF options.

-HELP   Lists the CAB command's arguments and their uses. If you specify other arguments with the -HELP option, the CAB command ignores them.

For example, to change the input and output buffers on lines 1-29 and 31-45 to 128 characters, you would issue the following CAB command:

```
OK, CAB -IBS 128 -OBS 128 -LINE 1 -TO 45 -EXCEPT 30
```

For complete information on the CAB command, see the *System Administrator's Guide, Volume II: Communication Lines and Controllers.*

CHAP

CHAP is an internal operator command that changes a user's major timeslice and priority level in the ready list. CHAP is used to alter system response time for one or more processes.

Format:

$$
\text{CHAP} \quad
\left\{ \begin{array}{l} \textit{-userno} \\ \text{ALL} \end{array} \right\}
\quad
\left\{ \begin{array}{l} \text{-IDLE} \\ \text{-SUSPEND} \\ \textit{priority} \; [\textit{tenths}] \\ \text{-TIMESLICE} \; \textit{milliseconds} \end{array} \right\}
$$

Options:

-userno	Specifies the number of the user to be modified, in the form *-nnn*. The user must be logged in. (You cannot modify the priority and major timeslice of User 1, NETMAN, LOGIN_SERVER, TIMER_PROCESS, and slaves.)
ALL	Specifies that changes are to be made to all users or processes except certain privileged processes such as User 1, NETMAN, LOGIN_SERVER, TIMER_PROCESS, and slaves.
-IDLE	Places the specified process at the IDLE priority level (explained below). This priority remains in effect until it is explicitly changed back to one of the normal priority levels (0 through 3).
-SUSPEND	Places the specified process at the SUSPEND priority level (explained below). This priority remains in effect until it is explicitly changed back to one of the normal priority levels (0 through 3).

-TIMESLICE *milliseconds*

Specifies user's new major timeslice value in milliseconds (thousandths of a second). (You can change the timeslice in units of tenths of seconds by using the *tenths* argument with the *priority* argument). *milliseconds* must be a decimal number, unlike the *tenths* argument, which is an octal number. If *milliseconds* is 0 or missing, the user's timeslice is reset to the default value for that machine; if *milliseconds* is -1, the user's timeslice is effectively infinite. (See the section titled Timeslice of -1.) Otherwise, *milliseconds* must be from 4 through 32767, inclusive.

priority	Specifies what priority level should be assigned to the user. *priority* must be an integer from 0 (least favored priority) through 3 (most favored priority), inclusive.
tenths	Specifies the user's new timeslice value in tenths of a second. *tenths* must be an octal number. If *tenths* is 0, the user's timeslice is reset to the default value for that machine; if *tenths* is 177777_8 (-1 decimal), the user's timeslice is effectively infinite. (This is explained in the section titled Timeslice of -1). Otherwise, *tenths* must be an octal number from 1 through 327, inclusive.

Setting Priorities

The default priority level is 1. All users logging in will be at this priority level unless the default has been reset by a CHAP ALL command.

To reset a user's priority and timeslice to the default values, issue the CHAP command for that user with no additional arguments, as in CHAP MARY.

If you specify the numerical priority level outside the range 0 through 3, you receive an error message telling you that you have specified an invalid level.

Using the ALL Argument

If you use the ALL argument, those processes for which the particular priority change is not valid are skipped. You are issued a warning message telling you the total number of processes (nnn) that were skipped:

    WARNING: <nnn> user(s) not affected by command. (CHAP)

If you use the CHAP ALL command, you also affect the user version of the CHAP command. (See the *PRIMOS Commands Reference Guide* for a description of the user version of this command.) A user cannot use CHAP UP, that is, set a priority level higher than the default priority level set by the system. If you use CHAP ALL to set the priority default level to 2 (normal default being 1), then a currently logged-in user can use CHAP UP to raise his own priority level to 2, and subsequent new users logging in will be at priority level 2. You can change the new default level only with another CHAP ALL command. When the system is cold started, the default priority level is 1.

Using the –IDLE and –SUSPEND Options

IDLE and SUSPEND are two special-purpose priority levels. IDLE allows you to define a class of users whom the CPU services when it is not servicing other users at other priority levels; that is, when the CPU is otherwise idle. This can decrease phantom users' competition with interactive users. The IDLE priority level can be applied only to phantom users. If you attempt to apply it to a terminal process, you get the following error message:

    Terminal process may not be made IDLE. (CHAP)

If you use the -SUSPEND option, a process is blocked from receiving service from the CPU until you explicitly change its priority to some other level. This option allows the System Administrator or operator to speed high priority jobs through the system by temporarily suspending other jobs. The System Administrator or operator can also synchronize the execution of large jobs that are interfering with one another by suspending one while the other is completed.

If you suspend a terminal process, the following warning message appears at the terminal of the suspended process:

Process suspended

Any characters typed by the affected user before the process is made eligible again may be lost. The SUSPEND level is valid only for normal terminal users and phantoms. If the requested priority change is not valid for the user specified by the *-userno* argument, the following error message is issued:

-IDLE or -SUSPEND not valid for specified user. (CHAP)

Note

The -IDLE and -SUSPEND options are not valid for time-critical processes, which are discussed in the section called Setting Timeslices.

Determining Priority Levels

To determine the priority level of all users currently logged in, issue a STATUS USERS command. The priority level for each user who is not at the default priority level is indicated at the end of that line of output in parentheses. Nothing is displayed if a user is at the default level. For instance, in the following example, users ELIZA, BENNET, and BINGHAM are at the default priority level, JANE is at level 0, DARCY is at level 2, and LYDIA is at the IDLE level.

OK, STATUS USERS

User	User No (In Decimal)	Line No	Devices (AL in Decimal)
SYSTEM	1	asr	<EAGLE> <SYSB16> AL024
ELIZA	3	1	<EAGLE2> <SYSB16>
DARCY	6	4	<EAGLE2> (2)
LYDIA	7	7	<EAGLE2> (IDLE)
MARY	8	8	<EAGLE2>
.	.	.	
.	.	.	
.	.	.	
JANE	64	35	<EAGLE2> (0)
BENNET	65	rem	<EAGLE> <SYSB16>
BINGHAM	66	rem	<EAGLE> (from LONDN)
NETMAN	166	nsp	<SYSB16>
NTS_SERVER	182	ncm	<SYSB16>
TIMER_PROCESS	183	kernel	<SYSB16>
LOGOUT_SERVER	184	kernel	<SYSB16>
LOGIN_SERVER	185	LSr	<SYSB16> (3)
ISC NETWORK_SERVER	189	ISCNsr	<SYSB16> (0)
DSMSR	190	DSM	<SYSB16>
DSM_LOGGER	191	DSM	<SYSB16>
SYSTEM_MANAGER	192	SMSr	<SYSB16>
SYSTEM	193	slave	<SYSB16> (0)
BATCH_SERVICE	194	phant	<SYSB16> (2)

Setting Timeslices

You can change users' timeslices in either of two ways: by using the *priority* and *tenths* arguments, or by using the -TIMESLICE *milliseconds* option. If you use the *tenths* argument, the number you enter will be interpreted as an **octal** quantity of tenths of seconds; if you use the -TIMESLICE *milliseconds* option, the number you enter will be interpreted as a **decimal** quantity of milliseconds.

If you specify *tenths* or *milliseconds* as zero, or if you specify -TIMESLICE and omit *milliseconds*, you reset the timeslice to that machine's default value. If you specify *priority*, but omit *tenths*, the timeslice is unchanged. Finally, if you issue the CHAP command without the -TIMESLICE option and without the *priority* and *tenths* arguments, the user's priority is reset to 1 (the level at which users normally run), and the timeslice is reset to the default value for that machine.

Default Timeslice Values: The default timeslice for a particular machine depends on that machine's model number. Table 2-1 lists the default values for most machines.

TABLE 2-1. Default Values for Major Timeslice

CPU Model Number	Major Timeslice in Seconds
500	2.000
550	2.000
650	2.000
750	2.000
850	2.000
2250	2.000
2350	2.000
2450	2.000
2455	2.000
2550	2.000
2655	2.000
2755	2.000
4050	2.000
4150	2.000
4450	0.402
6150	0.168
6350	0.168
6550	0.168
9650	2.000
9655	2.000
9750	0.828
9755	0.582
9950	0.624
9955	0.500
9955-II	0.400

Timeslice of −1: A special timeslice value, 177777_8 (-1 decimal), provides support for time-critical processes: processes, like transaction processing, that require small amounts of CPU time separated by long idle periods. A time-critical process runs without interference from other processes.

When a process' timeslice is set to 177777_8, the scheduler allows the process to continue running indefinitely. The process remains on the ready list while it waits for some occurrence such as terminal input or disk activity (for example, paging). The process can be interrupted only by a higher-priority process that is eligible to run. Giving a process a timeslice of 177777_8 may cause other processes to get no service.

Setting any process's timeslice to 177777_8 automatically sets the timeslice for User 1 to the same value. This setting guarantees that the supervisor terminal always gets service.

Caution

Never set the timeslice to 177777_8 in an ordinary computing environment. A timeslice of 177777_8 gives uninterrupted and unlimited time to a process. Such a privileged process, if it needed much time to complete, could produce an effect similar to that of a system hang: other users would not be serviced.

CLOSE

CLOSE, when issued from the supervisor terminal, closes the specified file for all users; that is, users no longer have access to the file.

Format:

CLOSE *pathname*

The *pathname* specified must reside on a local disk partition. The normal behavior of the CLOSE command is documented in the *PRIMOS Commands Reference Guide.*

COMM_CONTROLLER

COMM_CONTROLLER enables you to accomplish the following tasks without having to perform a warm or cold start.

- Start up or shut down an ICS controller

- Load an ICS, LTS, or LHC controller

- Upline dump the memory of the LHC or LTS controller to a disk file

- Verify the integrity of an ICS controller

Format:

COMM_CONTROLLER *subcommand* [*options*]

COMM_CONTROLLER Subcommands

The COMM_CONTROLLER command has five subcommands. Not all of them apply to every type of controller. You may specify only one subcommand on a command line.

Subcommands:

-INIT
: Initiates an automatic shutdown on the specified ICS controller. An integrity check follows, and then the controller is ready to be started.

-LOAD
: Initiates a full downline load of a specified file or protocol combination to a designated controller. The controller is automatically shut down, verified, and loaded.

-SHUTDOWN
: Freezes the designated ICS controller and breaks all logical connections between the controller and peripheral devices.

-UPLINE_DUMP
: Initiates a request for a designated LHC or LTS controller to write the contents of its memory into the specified file on the host machine. Only one controller at a time can upline dump data to the host.

-HELP
: Displays the associated help text. If you do not specify a subcommand, the COMM_CONTROLLER supplies -HELP by default.

COMM_CONTROLLER Options

You may issue the options associated with the main subcommands at any point on the command line. However, the combinations of options for a specified subcommand are restricted. Refer to the *ICS User's Guide* (DOC10094-1LA and its update package UPD10094-11A) for information on these restrictions.

Options:

-ALL   May be supplied only if the -DEVICE option is also present. -ALL specifies that the subcommand you have requested should be applied to all controllers of the type supplied with the -DEVICE option. You cannot use the -DEVICE__ADDRESS option with -ALL.

-DEST__NODE__ADDRESS *lts__address*
    Specifies the LTS address of the destination terminal server. This address is assigned by the manufacturer and is located on a metal tag attached to the LTS. Use the LIST__LTS__STATUS command to determine *lts__address*. Specify *lts__address* in either the short format, *nn nn nn*, or the long format, *nn nn nn nn nn nn*, in hexadecimal, with or without leading zeros. You cannot use the -DNA and -DNN options together on the same command line.

-DEST__NODE__NAME *lts__name*
    Specifies the LTS name of the destination terminal server. *lts__name* can contain as many as 16 characters. Use the LIST__LTS__STATUS command to determine *lts__name*. You cannot use the -DNN and -DNA options together on the same command line.

-DEVICE *device* Specifies the device type. The following devices are supported: ICS1, ICS2, ICS3, LHC, and LTS.

-DEVICE__ADDRESS *device__address*
    Specifies the device address of the designated device, which is a 2-digit octal number. Use either the STATUS COMM command or the LIST__COMM__CONTROLLERS command to determine this address. Valid ICS device addresses are 10, 11, 15, 16, 17, 32, 35, 36, 37, 52, 53, and 54 (octal). Valid LHC addresses are 10, 11, 15, 16, 17, 32, 35, 36, 37, 50, 51, 52, 53, 54, and 56 (octal).

-PATHNAME *pathname*
    Specifies the pathname of the object file to be used with the -LOAD or -UPLINE__DUMP subcommand. If you specify the filename alone, the DOWN__LINE__LOAD* directory is assumed for the load operation and the UP__LINE__DUMP* directory is assumed for the upline dump operation. If you do not specify this option, a default file is used with the -LOAD and -UPLINE__DUMP subcommands.

-PROTOCOL *token*
    Specifies a communications protocol token combination used by the LHC, ICS2, or ICS3 controllers. The supplied protocol token combination is validated and subsequently mapped to an appropriate downline load file in the DOWN__LINE__LOAD* directory.

The valid protocol tokens are

LHC Controller	ICS2/3 Controller
PRIMENET	ASYNC
NTS	SDLC
TCP_TEL	HDLC
	BSCRJE
	BCSX25

Notes

Do not specify both the NTS and TCP_TEL protocols for the same LHC controller.

You must specify a token with the -PROTOCOL option.

Before Rev. 22.0, the PRIMENET protocol was called LLCX25.

-NO_QUERY   Executes the command without prompting you for confirmation.

The COMM_CONTROLLER command allows the concurrent loading of multiple controllers of the same type, provided that they are connected to the same backplane and are using the same file and protocol combinations.

For further information about controllers, downline loading, and upline dumping, refer to the *ICS User's Guide* (DOC10094-1LA and its update package UPD10094-11A) and the *System Administrator's Guide, Volume II: Communication Lines and Controllers.*

CONFIG

CONFIG is used in the PRIMOS.COMI file to configure PRIMOS according to the parameters specified in the configuration file (usually named CONFIG).

Format:

> CONFIG -DATA *pathname*

pathname is the name of the file which holds your system CONFIG commands. For complete information on the CONFIG command and on PRIMOS.COMI, see the *Software Installation Guide — Rev. 22.0* (IDR10176-2PA) and the *System Administrator's Guide, Volume I: System Configuration.*

CONVERT_AMLC_COMMANDS

At Rev. 20.2, the AMLC command was replaced by the SET_ASYNC command, which provides a more straightforward way of configuring your asynchronous lines. CONVERT_AMLC_COMMANDS is a utility that converts AMLC commands to their equivalent SET_ASYNC commands. See the explanation of the SET_ASYNC command later in this chapter.

Invoking the CONVERT_AMLC_COMMANDS Utility

CONVERT_AMLC_COMMANDS is not a PRIMOS command; rather, it is located in the TOOLS directory as CONVERT_AMLC_COMMANDS.RUN.

Format:

$$\text{RESUME TOOLS>CONVERT\_AMLC\_COMMANDS} \left[\left\{ \begin{array}{l} \textit{in\_file out\_file} \\ \text{-INTERACTIVE} \\ \text{-HELP} \end{array} \right\} \right]$$

Arguments:

in_file   is the pathname of any file containing AMLC commands that you want converted to SET_ASYNC commands. Typically, AMLC commands are located in the PRIMOS system startup file (PRIMOS.COMI).

out_file   is the pathname of the file that will contain the converted SET_ASYNC commands. Any other commands in the input file are placed in the output file unchanged.

Options:

-INTERACTIVE   Allows you to enter AMLC commands interactively. CONVERT_AMLC_COMMANDS displays the suggested SET_ASYNC alternative at your terminal. This option is described in more detail under the heading Using the -INTERACTIVE Option.

-HELP   Displays the legal options for CONVERT_AMLC_COMMANDS.

CONVERT_AMLC_COMMANDS cannot generate command lines longer than 160 characters, which is the current maximum command-line length permitted by the PRIMOS command processor.

The following example is an excerpt from a PRIMOS system startup file containing AMLC commands along with other commands.

```
CONFIG -DATA CONFIG
COMO PRIMOS.COMO          /* Open como file to record this startup
RWLOCK PRIMOS.COMO UPDT
ADD 51460 3062 61062 100463 3260 61260
COMO -NTTY
AMLC TTY  0 2413
```

```
AMLC TTY  1 2413
AMLC TTY  2 2413
AMLC TTY  3 2413
AMLC TTY  4 2413
AMLC TTY  5 2413
AMLC TTY  6 2413
   .
   .
   .
SHARE SYSTEM>ED2000 2000           /* SHARE the ED editor
/*
...
```

After you use the CONVERT_AMLC_COMMANDS utility, the output file contains the conversions to SET_ASYNC commands, plus any other commands that were present in the input file, as in the following example:

```
CONFIG -DATA CONFIG
COMO PRIMOS.COMO          /* Open como file to record this startup
RWLOCK PRIMOS.COMO UPDT
ADD 51460 3062 61062 100463 3260 6126
COMO -NTTY
SET_ASYNC -LINE 0 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR NONE -CL 8
SET_ASYNC -LINE 1 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR NONE -CL 8
SET_ASYNC -LINE 2 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR NONE -CL 8
SET_ASYNC -LINE 3 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR NONE -CL 8
SET_ASYNC -LINE 4 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR NONE -CL 8
SET_ASYNC -LINE 5 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR NONE -CL 8
SET_ASYNC -LINE 6 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR NONE -CL 8
   .
   .
   .
SHARE SYSTEM>ED2000 2000           /* SHARE the ED editor
/*
...
```

To interpret the AMLC commands in the output file, refer to SET_ASYNC later in this chapter. Refer also to the *System Administrator's Guide, Volume II: Communication Lines and Controllers*.

Using the –INTERACTIVE Option

You can view the SET_ASYNC equivalent of an AMLC command by using the -INTERACTIVE (-INTER) option as follows:

```
OK, RESUME TOOLS>CONVERT_AMLC_COMMANDS -INTERACTIVE
```

When the right angle-bracket (>) prompt appears, enter a valid AMLC command. Type QUIT to end the program. The following example shows a sequence of AMLC commands entered interactively at the prompt, with their SET_ASYNC equivalents:

```
OK, RESUME TOOLS>CONVERT_AMLC_COMMANDS -INTERACTIVE
[CONVERT_AMLC_COMMANDS Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]
> AMLC TTY 71 2413

SET_ASYNC -LINE 57 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 1 -PAR ODD -CL 8
```

```
> AMLC TTY 72 2423

SET_ASYNC -LINE 58 -PRO TTY -DSC -NO_LOOP -SPEED CLOCK -NO_REV_XOFF -SB 2 -PAR NONE -CL 8

> AMLC TTY 73 1537

SET_ASYNC -LINE 59 -PRO TTY -NO_DSC -LOOP -SPEED 75 -NO_REV_XOFF -SB 2 -PAR EVEN -CL 8

> QUIT


OK,
```

For more information on CONVERT_AMLC_COMMANDS, see the *System Administrator's Guide, Volume II: Communication Lines and Controllers*; for more information on the PRIMOS.COMI file, see the *Software Installation Guide — Rev. 22.0* (IDR10176-2PA).

CONVERT_ENV

CONVERT_ENV is a utility that converts pre-Rev. 21.0 Spooler environment files into a format suitable for Spooler environment files at and after Rev. 21.0. CONVERT_ENV is not a PRIMOS command; it is a utility stored in the directory SPOOL*.

Format:

$$RESUME\ SPOOL*>CONVERT\_ENV\ \left\{ \begin{array}{l} \text{-ENVIRONMENT } \textit{name} \\ \textit{old\_env new\_env} \\ \text{-HELP} \end{array} \right\}$$

The old environment file should have a name in the format E.*environment-name*, and the converted file will have a name in the format *environment-name*.ENV. You may decide that you want several slightly different versions of a given environment; in that case, you can convert the old environment file to Rev. 21.0, then edit the converted output file to create the new versions. In any case, it is wise to treat the output file as a template that you can then edit to suit each different way that you use a particular printer.

Options:

old_env   Indicates the pathname of a pre-Rev. 21.0 environment file.

new_env   Specifies the pathname of the file in which the converted environment file is to be stored.

-ENVIRONMENT *name*
        Searches for the pathname SPOOLQ>E.*name* and produces the file SPOOL*>*name*.ENV from it.

-HELP   Prints a list of CONVERT_ENV options and their meanings.

If you specify both *old_env* and *new_env*, you can file both pathnames wherever you wish in the file system.

CONVERT_TO_ACLS

CONVERT_TO_ACLS is a utility delivered as part of the Prime Security Audit facility. It is not a PRIMOS command; rather, it is a utility located with other C2 software utilities in the TOOLS directory. CONVERT_TO_ACLS converts any existing password directories to Access Control List (ACL) directories. All MFDs must be manually converted to ACL directories before this utility is run.

Refer to the *System Administrator's Guide, Volume III: System Access and Security* for information on setting up a C2-secure system. This manual provides directions for adding the directory TOOLS to the COMMAND$ search rules for the System Administrator and for the supervisor terminal. Until the search rules have been added, you must use RESUME to invoke this utility.

Format:

$$\text{RESUME TOOLS>CONVERT\_TO\_ACLS} \quad \left\{ \begin{array}{l} \text{-DEFAULT} \\ \text{-NONE} \end{array} \right\}$$

Options:

-DEFAULT   Tells CONVERT_TO_ACLS to use the default ACL as the new ACL for each converted password directory. The default ACL is the ACL protecting the parent directory.

-NONE   Makes CONVERT_TO_ACLS provide the following ACL for each converted password directory:

```
System Administrator: ALL
$REST                : NONE
```

Refer to the *PRIMOS User's Guide* and the *System Administrator's Guide, Volume III: System Access and Security* for more information on Access Control Lists (ACLs).

CRASH_AUDIT

CRASH_AUDIT is a utility delivered as part of the Prime Security Audit facility. It is not a PRIMOS command; rather it is a utility located with other C2 software utilities in the TOOLS directory. CRASH_AUDIT completes a partially written audit trail file after a system halt. The utility ensures that system buffers holding audit trails have been written to an audit trail file.

Refer to the *System Administrator's Guide, Volume III: System Access and Security* for information on setting up a C2-secure system and for directions on adding the TOOLS directory to the COMMAND$ search rules for the System Administrator and for the supervisor terminal. Until the search rules have been added, you must use RESUME to invoke this utility.

Format:

    RESUME TOOLS>CRASH_AUDIT *options*

Options:

-MT *n*
        Specifies that the tape dump is to be read from magnetic tape unit *n*, where values for *n* may range 0 through 7, inclusive.

-DUMPFILE *pathname*
        Specifies that the tape dump is to be read into the disk file with the specified pathname.

-OUTFILE *pathname*
        Specifies that the audit records are to be written to the audit file with the specified pathname. The name must differ from the name of the original security audit file interrupted by the system halt.

-MAP *pathname*
        Specifies the pathname for the RING0.MAP file. If you do not give this pathname, the default is LOAD_MAP*>RING0.MAP.

In order to run the CRASH_AUDIT program, you must meet several requirements:

- Maintain a RING0.MAP file on the system. It is normally located in LOAD_MAPS*.

- Take a tape dump after every unplanned system halt. See your CPU handbook for directions on tape dumps.

- After the system is cold started, submit the tape dump to the CRASH_AUDIT utility.

DEVICE_ACLS

DEVICE_ACLS, which is part of Prime system security, enables the System Administrator to provide access control on devices such as printers. Control is implemented through a directory called DEVICE*. This directory contains a number of subdirectories, each of which corresponds to a specific device on the system. When device access control is in effect, the access rights on the appropriate directory in DEVICE* are checked. Refer to the *System Administrator's Guide, Volume III: System Access and Security* for details in setting up the DEVICE* directory.

Format:

$$\text{DEVICE\_ACLS} \quad \left\{ \begin{array}{l} \text{-ON} \\ \text{-OFF} \end{array} \right\}$$

Device access control remains in effect as long as DEVACL -ON is in effect. The default at cold start is -OFF.

Device List for Device ACLs

A list of the names of commonly found device subdirectories in DEVICE* follows. These devices may be protected through device access control commands.

Subdirectory	Device Description
CENPR	The Centronics printer.
CE2PR	The second Centronics printer.
CARDR	The serial card reader.
PTR	The paper tape reader/punch.
PUNCH	The card punch.
PRn	MPC printer n, where n ranges 0 through 3, inclusive.
CRn	Parallel card reader n, where n ranges 0 through 1, inclusive.
MTn	Magnetic tape unit n, where n ranges 0 through 7, inclusive.
SYNCn	SYNC line n, where n ranges 00 through 07, inclusive. Preceding zeros *must* be present.

Note

SYNC is the preferred version of the older device name SMLC.

SPAREn	Spare device n, where n ranges 1 through 5, inclusive. These devices may be assigned, but presently do not correspond to any configured device.

PLOT   The plotter.

MG*n*   Megatek graphics device *n*, where *n* ranges 0 through 3, inclusive.

GS*n*   Vector General graphics station *n*, where *n* ranges 0 through 3, inclusive.

GP*n*   General Purpose Parallel Interface device *n*, where *n* ranges 0 through 7, inclusive.

AL*n*   Asynchronous line number *n*, where *n* is a decimal number. If the line being affected is a local line, *n* must be from 0 through 377, inclusive; if the line affected is an NTS line, *n* must be from 1024 through 1535, inclusive. Leading zeros should be dropped. Thus, for asynchronous line number 007, the device directory must be named AL7.

DK*n*   Disk partition *n*, where *n* is the octal pdev of the partition. When making a pdev assignable by means of the DISK command, you can also create, and set access on, a corresponding DK*n* device directory within DEVICE*. If you are altering a previous DK*n* directory by increasing the size of the partition or by unassigning the partition, first update the device ACLs on the old DK*n*.

DEFAULT   A default directory that is checked when an added partition is assigned. If you do not create a specific DK*n* device directory for a given partition, the device ACLs mechanism will provide access to it for any users with a U right to DEFAULT.

DISKS

DISKS alters the Assignable Disks Table, adding or removing the specified partition(s). The DISKS command may be given only from the supervisor terminal.

Format:

DISKS [NOT] *pdev-0* [*... pdev-7*]

pdev-0 ... pdev-7 are physical device numbers. No more than 10 disk partitions may be contained in the Assignable Disks Table at any one time. You must specify a physical device number to add a partition to this table or remove a partition from the table.

For example, to add physical device numbers 20260, 50260, 60260, 70260, 10020, 110260, and 20262 to the Assignable Disks Table, type

```
OK, DISKS 20260 50260 60260 70260 10020 110260 20262
```

Either you or a user can assign (with the ASSIGN DISK command) or unassign (with the UNASSIGN DISK command) *only* those partitions placed in the table with the DISKS command. At Rev. 21.0, these partitions may be assigned by users or operators.

Use the NOT option to remove a disk partition from the Assignable Disks Table. For example, to unassign partition 20260 and remove the partition from the Assignable Disks Table, enter the following:

```
OK, UNASSIGN DISK 20260
OK, DISKS NOT 20260
```

Disk partition 20260 may now be added to the system with the ADDISK command. See the *Operator's Guide to File System Maintenance* for more discussion of the DISKS command.

Note

Removing a partition from the table does not cause the partition to be unassigned. Use the UNASSIGN DISK command to unassign a partition from a user, as noted above.

DISPLAY_LOG

DISPLAY_LOG, a Distributed Systems Management (DSM) command, replaces the PRINT_SYSLOG and PRINT_NETLOG commands at Rev. 21.0. You cannot run DISPLAY_LOG unless DSM is already running. DISPLAY_LOG allows you either to display all or part of a log at your terminal, or to write it to a file.

Format:

$$\text{DISPLAY\_LOG} \quad \begin{Bmatrix} logname \; [options] \\ \text{-HELP} \\ \text{-USAGE} \end{Bmatrix}$$

You must always specify a *logname*, except when using the -HELP and -USAGE options.

Options:

-PRIVATE_LOG Defines the log as a private log. If you do not specify -PRIVATE_LOG, a system log is assumed. You cannot specify this option and the -SYSTEM_LOG option on the same command line.

-SYSTEM_LOG -ON $\left[\begin{Bmatrix} node \\ nodegroup \end{Bmatrix} \right]$

Defines the log as a system log. If you do not specify *node* or *nodegroup*, the local node is assumed. You cannot specify this option and the -PRIVATE_LOG option on the same command line.

-DEFAULT Displays the log file DSM*>LOGS>UMH>DEFAULT.LOG. Cannot be used with the *logname* argument.

-UNDELIVERED Displays the log file DSM*>LOGS>UMH>UNDELIVERED.LOG. Cannot be used with the *logname* argument.

output_filename [-NO_QUERY]

Writes a log to a named file. If you use the -NO_QUERY option, you will not be notified if you overwrite an already existing file.

-FORMAT $\left[\begin{Bmatrix} \text{BRIEF} \\ \text{FULL} \\ format\_name \end{Bmatrix} \right]$

Allows you to choose several display formats; BRIEF gives you the message data in summary format, and is most suitable for unsolicited messages. For messages containing substantial amounts of information (such as SIM response messages) full or tabulated formats are preferred.

FULL gives you a dump of the contents of all the fields and records in the message. Full format reflects the internal structure of the message and may require skilled interpretation.

format_name allows you to specify one of the tabular formats available for use on PRIMOS or PRIMENET logging messages. Refer to the *DSM User's Guide* for detailed information on custom formats.

-NO_HEADER   Suppresses all header information except the date/time stamp. The format of the message data display is unaffected. This option applies only to the default brief format and has no effect if you use the -FORMAT FULL option.

-NO_WAIT   Presents the messages in a continuous stream. You can suspend and resume output by using the XON/XOFF feature. The default is output in screen pages.

-CENSUS   Gives you a count of each message type in the log. The messages are not displayed.

Message Selection Options

In addition to the above options, you may specify a maximum of eight of the message selection options listed below. You may specify most options more than once, the exceptions being the -LOGGED_AFTER and -LOGGED_BEFORE options. If you select no message selection options, all messages in the log are displayed.

You can extract specific messages for display by the following selection criteria:

- The origin of the message (-PRODUCT, -USER, and -NODE)

- The severity of the message (-SEVERITY)

- The time the message was logged (-LOGGED_AFTER and -LOGGED_BEFORE)

- The type of message (-MESSAGE_ID)

Message Selection Options:

-PRODUCT *names*

Retrieves messages that were generated by a particular DSM product (see following list). The default is to retrieve messages from all products.

ADMIN_LOG	LOG_OVFL
ASYNC$	LOG_SEG4
CONFIG_DSM	LOG_UNKN
CONFIG_UM	LOGGER
CONTROLLER_DLL	NMSR
CONTROLLER_ULD	PRIMENET
DISPLAY_LOG	RESUS
DISTRIBUTE_DSM	SCREEN_HANDLER
DSM	SIM
ICS	SPOOLER
LOGGER	START_DSM
LOG_COLD	STATUS_DSM
LOG_DISK	STOP_DSM
LOG_MISC	SYSTEM_MANAGER

-MESSAGE_ID *type*

Retrieves messages of a particular type. For a complete listing of the

message types recognized by DISPLAY_LOG, refer to the *DSM User's Guide.* The default is to return messages of all types.

-NODE *nodes*   Displays messages from the specified nodes. The default is all nodes.

-USER *usernames*

Displays messages from the specified users.

Note

PRIMOS user names are not necessarily unique on the network; there may be two users named Smith, one on node SILVER and one on node GOLD. If you want to retrieve messages from Smith on SILVER, you must specify both the username and the PRIMENET node.

-SEVERITY *severities*

Allows you to select messages of a particular severity, which is useful in conjunction with unsolicited messages from PRIMOS or PRIMENET. Refer to the *DSM User's Guide* for further information.

-REMARK *message*

Inserts a remark (which may not exceed 160 characters) in the log. -REMARK must be the last option on the command line; everything following -REMARK is entered into the log file.

-LOGGED_AFTER *date/time*

Allows you to select messages logged after a specific date and time. The format for *date/time* can be any of the following formats:

● YY-MM-DD.HH:MM:SS (ISO)

● MM/DD/YY.HH:MM:SS (USA)

● DD Mon YY HH:MM:SS (Visual) (The month is spelled out as its 3-letter abbreviation, with the first letter capitalized.)

-LOGGED_BEFORE *date/time*

Allows you to select messages that were logged before a specific date and time. Formats for *date/time* are identical to those for -LOGGED_AFTER.

If you specify -LAF or -LBF without any arguments, all messages that have been received since the start of the day are displayed.

-HELP [-NO_WAIT]

Explains how to use the command. If you specify -NO_WAIT, output is not paginated at your terminal. -HELP cannot be used with the other options.

-USAGE   Displays the command's syntax; -USAGE cannot be used with other options.

DUMP_SEGMENT

DUMP_SEGMENT is an internal command that specifies which segments for all users are written to tape during a partial tape dump. The segments must be specified according to their octal numbers. These segments are in addition to the default segments. (Note that you cannot remove the default segments; you can only add to them.) DUMP_SEGMENT can be issued only from the supervisor terminal.

Format:

$$
\text{DUMP\_SEGMENT} \quad \left\{ \begin{array}{l} segment\_number\text{-}1 \; \left[...segment\_number\text{-}10 \right] \\ \text{-RANGE } low\_segment\_no \; high\_segment\_no \\ \text{-HELP} \end{array} \right\}
$$

Options and Arguments:

segment_number-1 ... segment_number-10

> Allows you to specify segments to be dumped by number. A maximum of 10 segments may be specified in any one command line.

-RANGE *low_segment_no high_segment_no*

> Specifies a range of segments to be dumped. You may also issue this option in the same command line as *segment_number*, if you wish to dump a specific segment as well as a range of segments.

-HELP

> Provides a brief example of the syntax of the DUMP_SEGMENT command. If you specify other options with -HELP, they are ignored.

At cold start, the default values for DUMP_SEGMENT are as follows:

Segments that are always dumped

All segments from 0000 through 1777 inclusive
All segments from 6000 through 6003 inclusive
Segments 4000 through 7777 for the process that was using the CPU at the time of halt.

These are the segments that are dumped by default with a partial tape dump when you use the VCP command PARTIAL_TAPEDUMP (if your VCP has this command) or RUN 777. Use DUMP_SEGMENT to add other segments to segments that will be dumped at the next partial tape dump.

Three related commands are DUMP_USER, LIST_DUMP, and RESET_DUMP, which are discussed later in this chapter.

DUMP_USER

DUMP_USER is an internal command that specifies which users will have all of their segments written to tape during a partial tape dump. The segments numbers range from 4000_8 through 7777_8, inclusive. DUMP_USER can be issued only from the supervisor terminal.

Format:

$$\text{DUMP\_USER} \quad \left\{ \begin{array}{l} username\text{-}1 \ \left[...username\text{-}10\right] \\ \text{-HELP} \end{array} \right\}$$

The *username* argument allows the user to specify a maximum of 10 user IDs for each command line.

The -HELP option provides a brief example of the command format and syntax; no further action is taken after the example is printed.

Three related commands are: DUMP_SEGMENT, LIST_DUMP, and RESET_DUMP.

ELIGTS

ELIGTS is an internal command that modifies the eligibility (minor) timeslice for system users. Rarely used by operators, this command is used primarily to balance response time for interactive users (lower setting) against overall system throughput (higher setting).

Format:

ELIGTS $\left\{ \begin{array}{l} tenths \\ \text{-TIMESLICE } milliseconds \end{array} \right\}$

Arguments:

tenths Specifies the minor timeslice in tenths of a second. *tenths* is interpreted as an octal number, and must be from 0 through 517_8, inclusive. If you specify *tenths* as 0, the timeslice is set back to the default for your particular system.

-TIMESLICE *milliseconds*

Specifies the minor timeslice in milliseconds (thousandths of a second). *milliseconds* is interpreted as a decimal number, and must be from 4 through 32767, inclusive.

Note

Remember that ELIGTS interprets the *milliseconds* argument as a *decimal* number and the *tenths* argument as an *octal* number.

The argument to ELIGTS defines how long a user will run on the high-priority scheduler queue before being placed on the eligibility scheduler queue. At Rev. 22.0, the default value depends on the model of your CPU; before Rev. 22.0, the default value was three-tenths of a second.

TABLE 2-2.   Default Values for Minor Timeslice

CPU Model Number	Minor Timeslice in Seconds
500	0.333
550	0.333
650	0.333
750	0.333
850	0.333
2250	0.333
2350	0.333
2450	0.333
2455	0.333
2550	0.333
2655	0.333
2755	0.333
4050	0.333
4150	0.333
4450	0.067
6150	0.028
6350	0.028
6550	0.028
9650	0.333
9655	0.333
9750	0.138
9755	0.097
9950	0.104
9955	0.083
9955-II	0.066

The default major timeslice (set by the CHAP command) is also machine-dependent, but a user does not remain on the ready list for this interval. When the minor timeslice of CPU time has been used, a user is moved from the ready list to the eligibility scheduler queue, and the user timeslice is decreased by the ready timeslice. The eligibility queue is checked by the scheduler after checking for interactive users (on the high-priority queue) and before checking the low-priority queues. A user cycles between the ready list and the eligibility queue until the user timeslice is exhausted, at which time the user is entered into the low-priority queues (which are controlled by the CHAP command).

FIX_DISK

FIX__DISK is an external command that checks (and optionally restores) PRIMOS file system integrity on any partition. FIX__DISK is described fully in the *Operator's Guide to File System Maintenance*, which also includes examples of using FIX__DISK.

Format:

> FIX_DISK -DISK *pdev* [*options*]

You must specify -DISK *pdev* on the command line. *pdev* specifies the physical device number of the partition to be fixed. See the *Operator's Guide to File System Maintenance* for information on determining physical device numbers.

Note

It is recommended that you delete any pre-Rev. 22.0 version of FIX__DISK. This is to avoid the possibility of mistakenly invoking a pre-Rev. 22.0 version and thereby getting unexpected results. The Rev. 22.0 version of FIX__DISK is in CMDNCO>FIX__DISK.SAVE. When you invoke FIX__DISK, a copyright line and the version number of FIX__DISK are displayed.

FIX__DISK takes the same set of options when run from PRIMOS command level or when run from magnetic tape.

Options:

-DISK *pdev*   Specifies the *pdev* of the partition that you are checking or repairing. The -DISK option must be used and must be the first option on the command line. *pdev* must immediately follow the -DISK option.

-ADD_BADSPOT *record__number1* [*... record__number16*]
            Allows you to specify as many as 16 record numbers to be added to the badspot file. Record numbers are octal, and are offset from the beginning of the partition.

-ALL_CONTROLLER
            Selects Non-Dynamic Badspot Handling mode for this Rev. 22.0 partition. Either -ALL__CONTROLLER or -INTELLIGENT__CONTROLLER is recommended when you convert to Rev. 22.0. You must use -FIX with -ALL__CONTROLLER.

-AUTO_TRUNCATION
            Truncates directories nested too deeply in a directory tree. If you omit this option, FIX__DISK aborts if the maximum depth is reached. Maximum depth is set with the -MAX__NESTED__LEVEL option (The default is 99; see below.) Use -AUTO__TRUNCATION to delete directories nested too deeply.

-CHECK   Determines if a partition was shut down improperly or if its quota system has been damaged. FIX__DISK gives a message telling you if either is true. If FIX__DISK tells you that the partition was improperly

shut down or that the quota system was damaged, be sure to run FIX_DISK with the -FIX option. If you prefer, you can run FIX_DISK supplying both -FIX and -CHECK; in this case, the disk will be repaired if necessary.

-COMMAND_DEVICE [*pdev*]

Indicates that FIX_DISK is to operate on the command device. This option automatically closes all files in the command device and causes all running phantoms to abort, including the Login and DSM Servers.

Use the optional *pdev* if all of the following conditions are met:

● You are switching -IC to -AC or -AC to -IC or are converting an older disk from pre-Rev. 21.0 to Rev. 21.0 or 22.0.

● The partition affected is not the first partition.

● The first partition of this disk is the command device.

You should also use the optional *pdev* if

● The first partition is the command device and you want to display the DBS file.

When you use this option, FIX_DISK must be invoked from the supervisor terminal. Warn all users, then log out all users and shut down all servers. You must restart servers when FIX_DISK finishes, particularly the Login server and DSM.

Note

If you are running FIX_DISK on the partition where DSM* is located, all logging is disabled and no messages are recorded. Refer to the *Operator's Guide to File System Maintenance* for more information on restarting the logging mechanism.

-CONVERT_19   Converts a partition to a Rev. 19 partition from an earlier revision. Converts the BADSPT file to Rev. 19 format, initializes quota information, disables displaying of warning or error messages related to quotas, and creates a new revision stamp. You must use the -FIX option with -CONVERT_19.

-CONVERT_20   Converts a partition to a Rev. 20-format partition from an earlier revision. Directories created after the conversion are hashed directories. Existing directories are not hashed; rather, they retain their current formats. If you are converting directly from pre-Rev. 20.0, the -CONVERT_20 option also converts the BADSPT file to Rev. 20 format, initializes the quota information, disables displaying of warning or error messages related to quotas, and creates a new revision stamp. You must use the -FIX option with -CONVERT_20.

-CONVERT_21   Converts a partition to a Rev. 21-format partition. If a badspot file exists, it is read and the data is written to the DBS file. The DBS file and the RMA are created and initialized on the first partition of the

physical disk. The revision stamp is updated. You must use the -FIX and the -DISK_TYPE options with -CONVERT_21.

Caution

In order for FIX_DISK to convert a partition to Rev. 21, the first partition (the partition that contains surface 0) must be converted before any other partitions on that physical disk can be converted. The DBS file and the RMA must be on the first partition and FIX_DISK must have access to the first partition to repair other partitions on the disk.

-DISK_TYPE *type*

Specifies the type of disk being partitioned. Required with -CONVERT_21 since the size of the DBS file and the RMA depend on the disk type. Valid *types* are

CMD	SMD
68MB	158MB
160MB	600MB
MODEL_4475	MODEL_4711
MODEL_4714	MODEL_4715
MODEL_4719	MODEL_4721
MODEL_4735	MODEL_4845

-DUMP_DBS

Displays the dynamic badspot (DBS) file. If the partition is in Dynamic Badspot Handling mode (invoked with the -IC option), the DBS file is up-to-date; if in Non-Dynamic Badspot Handling mode (invoked with the -AC option), the DBS file may not be up-to-date. Use with -DISK *pdev* to specify the first partition where the DBS file is located or with -COMDEV *pdev* if the first partition is the command device.

-DUFE

Eliminates all inconsistent file entries or entries of unknown type. (The option -DUFE stands for Delete Unknown File Entries.) If you specify -DUFE or do not specify -SUFE, unknown file entries are deleted, directories containing unknown file entries are compressed, and the DSKRAT is altered to indicate which records are actually in use. This is appropriate if you are sure that you are running the correct version of FIX_DISK and if FIX_DISK seems unable to finish an operation on a particular partition.

If you accidentally run an old version of FIX_DISK on a newer (Rev. 20.0 or later) partition, you may accidentally delete valid file entries which the older software cannot recognize. The -SUFE option will prevent this deletion; the default is -DUFE. You cannot use -SUFE and -DUFE on the same line.

-FAST

Helps users of a robust partition to recover as quickly as possible from a system crash. The -FAST option is recommended for use only on robust partitions. For complete information on robust partitions, see the *Operator's Guide to File System Maintenance.*

WARNING

FIX_DISK -FAST should never be used on standard (nonrobust) partitions. On standard partitions, the -FAST option may not repair damaged DAM (Direct Access Method) files. There is no way to predict which files will be correctly repaired and which will not.

On robust partitions, FIX_DISK -FAST may not detect errors in CAM file data blocks, although these errors will be visible when you try to access damaged files through PRIMOS. To be absolutely sure that all file-system errors are detected, run full FIX_DISK.

(See Table 7-1 in the *Operator's Guide to File System Maintenance* for recommendations on running FIX_DISK after a system crash.)

To repair a partition, you must use the -FIX option.

-FIX   Directs FIX_DISK to perform the following modifications to the disk:

● Correct quota information

● Truncate or delete defective files

● Generate a corrected DSKRAT if the current one is bad

● Map the badspot records to the BADSPT file or to the DBS file

If you omit -FIX, no disk modifications are performed.

Use this option whenever repair or conversion operations are to be performed. However, if you suspect that the disk drive itself is faulty, do not use the -FIX option. It is important to run FIX_DISK once without using the -FIX option. FIX_DISK then reports inconsistencies, but does not attempt to repair them.

You must use the -FIX option whenever you specify any of the following options:

-ADD_BADSPOT	-INTELLIGENT_CONTROLLER
-ALL_CONTROLLER	-INTERACTIVE
-CONVERT_19	-OVERRIDE_DEFAULT_INTERLEAVE
-CONVERT_20	-RESTORE_DEFAULT_INTERLEAVE
-CONVERT_21	-UFD_COMPRESSION

-HELP   Displays a list of the available FIX_DISK options and brief explanations of their operation. Can be used alone and from any terminal.

-INTELLIGENT_CONTROLLER
Selects Dynamic Badspot Handling mode for this partition, allowing dynamic badspot handling and mirroring to take place. This option or the -ALL_CONTROLLER option is recommended when you convert to Rev. 21.0 with the -CONVERT_21 option.

-INTERACTIVE   Asks questions leading to the construction of a DSKRAT if the current DSKRAT is defective or missing. If you omit -INT and the current DSKRAT is bad or missing, FIX_DISK aborts. You must specify the -FIX option when you use the -INT option.

Use this option if FIX_DISK has previously aborted and displayed one of the following error messages:

- The file structure of DSKRAT is bad.

- The number of heads is different.

- The physical record size is different.

- The DSKRAT header has the wrong length.

-LEVEL [n]   Sets n (decimal) as the lowest level in the tree structure to be displayed by FIX_DISK. When you omit this option, the default value is level 1, the first level in the MFD.

-LIST_BADSPOTS
                Displays octal record numbers of all known badspots and, for equivalence blocks, displays record numbers of the badspot and the remapped record. In addition to the record number, the track, head, and sector numbers are also listed for badspots and equivalence blocks.

-LIST_FILE   Displays filenames in all directories down to the directory level determined by the -LEVEL n in effect at the time.

-MAX_EXTENT_SIZE max
                Sets the maximum extent size for the specified disk to max. (Extent size applies only to CAM files; for more information about extent size, see the *Operator's Guide to File System Maintenance.*)

-MAX_NESTED_LEVEL [n]
                Sets n (decimal) as the maximum depth to which directories can be nested. If you omit n or do not use the -MAX_NESTED_LEVEL option, the default maximum depth is 99 levels.

-MIN_EXTENT_SIZE min
                Changes the minimum extent size for the specified disk to min. (Extent size applies only to CAM files; for more information about extent size, see the *Operator's Guide to File System Maintenance.*)

-NO_QUOTA   Assumes the disk is not a quota disk; disables quota checking. Use this option when performing operations on a nonquota disk. This option must be used on all pre-Rev. 19.0 disks because these cannot be quota disks.

-NUMBER_OF_RETRIES number
-NUMRTY   Specifies the number of times FIX_DISK is to try to read a failing record. Each retry includes nine different ways of reading a record. The default is two retries.

-OVERRIDE_DEFAULT_INTERLEAVE

Changes the default file record allocation direction to forward and the default interleave factor to 3. This option can only be used on Rev. 20.0 and later partitions. Since robust partitions always allocate records forward, this option is meaningless on such a partition.

-RESTORE_DEFAULT_INTERLEAVE

On standard partitions, restores the default file record allocation direction to reverse and the default interleave factor to 1. On robust partitions, this option is ignored, since file record allocation direction is always forward on robust partitions. -RESTORE_DEFAULT_INTERLEAVE is valid only on Rev. 20.0 and later partitions.

-SUFE   Saves all inconsistent file entries or entries of unknown type. If you omit -SUFE, the default is -DUFE and all unknown file entries are eliminated, directories containing unknown file entries are compressed, and the DSKRAT is altered only to indicate which records are actually in use. Use -SUFE to avoid deleting valid file entries if you accidentally run the wrong version of FIX_DISK. You cannot use both -DUFE and -SUFE on the same command line.

-TRUNCATE   Specifies that FIX_DISK truncates a file when it encounters an uncorrectable badspot (or, on a robust partition, an uninitialized record in a file). When a file is truncated, the part of the file that is located at or beyond the file pointer is eliminated from the file. If the file pointer is at the beginning of the file, all the information in the file is removed, but the filename remains in the file directory. Normally, when FIX_DISK encounters an uncorrectable badspot or uninitialized record, it creates a null record (a record filled with zeros) on a good portion of the disk and appends the remaining records of the original file to the null record.

-UFD_COMPRESSION

Compresses directories by eliminating all entries for files or directories flagged as being deleted. Use of this option decreases the user search time for directories. You must specify the -FIX option when you use the -CMPR option.

Use this option to increase the number of free records available on a partition.

FIXBAT

FIXBAT is a utility that checks the integrity of the Batch queue database. FIXBAT is not a PRIMOS command; rather, it is supplied in the directory BATCHQ as FIXBAT.SAVE. See the *Operator's Guide to the Batch Subsystem* for a complete description of FIXBAT.

Format:

RESUME BATCHQ>FIXBAT [*options*]

Options:

-QUIET   Suppresses the message to the terminal when FIXBAT removes a job from the queue.

-STARTUP *argument*

This option cannot be used interactively; it may be issued only indirectly, when you start up Batch with the BATCH -START command. If the START_BATCH_MONITOR.COMI file contains the command FIXBAT -STARTUP, then the phantom running FIXBAT will become the Batch monitor when FIXBAT is finished.

The -STARTUP option takes one of four arguments, described below: SAVE, SPOOL, DELETE, or NOLOG. These arguments tell FIXBAT what to do with the Batch monitor command output log file.

Argument	Description
SAVE	Renames the current command output log file OLDLOG and deletes any existing OLDLOG file. Creates a new log file named O_LOG.
SPOOL	Spools the current command output log file, and names it BATCH.LOG. Creates and opens a new O_LOG file.
DELETE	Opens O_LOG as a command output log file. (An existing O_LOG file is truncated when the new file is opened, and the existing contents are destroyed.)
NOLOG	Takes no action with regard to command output files. No log file is kept.

FTOP

FTOP provides the operator's interface to the File Transfer Service (FTS). FTOP allows the operator to start, stop, control, and monitor the status of FTS phantoms. It can be invoked only by users logged in as SYSTEM. The -START_MNGR option must be invoked from the supervisor terminal; the -START_SRVR option should be invoked from the supervisor terminal in order for servers to function properly.

Format:

   FTOP [*option*]

Options:

-ABND_SRVR *server_name*

   Makes the server *server_name* abort all current file transfers, place the requests on hold and log out.

Note

   When possible, stop servers by using the -STOP_SRVR option. Forcing a server to logout with -ABND_SRVR is not recommended.

-ABRT_SRVR_LINK *server_name link_number*

   Causes the file transfer server called *server_name* to abort the current file transfer on the link *link_number* and to place the request on hold. The server continues to run and is not logged out.

-HELP [*subject*] Gives information on the requested *subject*. If no *subject* is specified, FTOP lists the available *subjects*. For a summary of FTOP usage type

```
OK, FTOP -HELP USAGE
```

   or

```
OK, FTOP
```

-LIST_SRVR_STS [*server_name*]

   Lists the status of the server *server_name*. The information listed includes the state of the server itself and the state of each of the eight file transfers the server is capable of running. Each transfer is identified by a link number in the range 1 through 8, inclusive. If you do not specify *server_name*, the status of all configured servers is listed.

-START_MNGR [*manager_name*]

   Starts up the FTS manager phantom. If you do not specify *manager_name*, the manager is named YTSMAN.

Note

You can only issue FTOP -START__MNGR from the supervisor terminal or from the PRIMOS.COMI file. If you include FTOP -START__MNGR in the PRIMOS.COMI file, FTS will be started automatically as part of every cold start.

-START__SRVR *server__name*

Starts up the file transfer server *server__name* as a phantom. If *server__name* is already running, FTOP displays an error message.

You should invoke FTOP -START_SRVR only from the supervisor terminal in order to ensure that the server phantom is created with the FTOP server's user name and that the phantom's priority and timeslice agree with those of the FTOP server. You can add this command to the PRIMOS.COMI file so that the appropriate servers start automatically after every cold start.

-STOP__MNGR Makes the FTS manager complete its current work and log out. An error message is displayed if the FTS manager is not currently running.

Stopping the FTS manager prevents remote requests from being received and serviced.

-STOP__SRVR *server__name*

Makes the server *server__name* complete currently proceeding file transfers and then log out. If the specified server is not currently running an error message is displayed. You should normally use -STOP_SRVR instead of -ABND_SRVR to halt an FTS server.

For complete details on FTOP, see the *Operator's Guide to Prime Networks.*

INIT

BATCHQ>INIT is a utility that initializes the Batch database. At Rev. 21.0, system operators cannot invoke this utility unless they are also Batch Administrators, and INIT can be invoked from the supervisor terminal only if SYSTEM is also a Batch Administrator.

BATCHQ>INIT will not run until the system date and time are set.

After setting the date and time, use the RESUME command to invoke INIT.

Format:

> **RESUME BATCHQ>INIT**

See the *Operator's Guide to the Batch Subsystem* for more information.

JOB

JOB allows the Batch Administrator to monitor, hold, release, change, cancel, or abort a user's Batch jobs; Batch Administrators may also use the JOB command to submit and modify their own jobs. System operators who are not Batch Administrators may use the -DISPLAY and -STATUS options to monitor their own Batch jobs only. Anyone using the supervisor terminal may use the -HOLD and -RELEASE options.

Modifying Users' Jobs

Format:

  JOB *job-id option*

job-id is the number given the job by the Batch subsystem and is in the form *#qnnnn*, where *q* is the number of the job's queue and *nnnn* uniquely identifies the job within that queue.

Selected Options:

-DISPLAY   Displays the status and parameters of your Batch jobs.

-HOLD   Holds a job in the queue. May be issued only from the supervisor terminal.

-RELEASE   Releases a held job so that it can run. May be issued only from the supervisor terminal.

-STATUS   Displays the status of your Batch jobs.

The options to the JOB command that Batch Administrators alone may issue (-ABORT, -CANCEL, -CHANGE, and -RESTART) are fully discussed in the *Operator's Guide to the Batch Subsystem.*

Running, Waiting, Deferred, and Held Jobs

A job can be in one of several states:

Running
  The job is executing as a phantom process.

Waiting
  The job is in the Batch queue, waiting for the Batch monitor to start a phantom and initiate the job. Waiting jobs are considered eligible to run — that is, they can begin running as soon as their phantoms become available. A job may be waiting because there are other jobs ahead of it in a queue or because its queue is not presently processing jobs.

Deferred
> The job is in the Batch queue waiting for the time specified by the -DEFER option. At that time it becomes eligible for execution and becomes a waiting job.

Held
> The job has been suspended by the system operator. Operators usually hold a job so that it can wait for some event (a tape drive's becoming available, for instance). A held job does not become eligible to run until the system operator releases it.

Note that jobs in all four of the states listed above are considered active jobs. Thus, the BATCH -DISPLAY command lists both running (executing) jobs and waiting, held, and deferred jobs.

Holding a job is useful when you know that a needed resource (such as magnetic tape, disk space, or the line printer) is not available. When the resource becomes available, you can release the job with the following command:

```
OK, JOB job-id -RELEASE
```

See the *PRIMOS Commands Reference Guide* and the *Operator's Guide to the Batch Subsystem* for more information on the JOB command.

LAB

LAB (List Asynchronous Buffers) is a command that allows you to display the asynchronous line buffer sizes for any line on your system. LAB displays the current sizes of each line's buffers, the default buffer size for each active line, and the initial buffer size for each inactive line.

LAB can be used to display buffer sizes for NTS lines and Primenet remote login lines as well as for terminal lines. When issued at the supervisor terminal or by a DSM-privileged user, LAB displays buffer size information on all lines; when issued by ordinary users, LAB displays information only for those lines owned by the issuing user.

Note
LAB only checks whether a user is DSM-privileged when the user supplies the -ON option. If a DSM-privileged user working at an ordinary terminal does not supply the -ON option, she will be given no more privileges than any ordinary user; she will be able only to list her own buffer sizes.

Format:

$$
\text{LAB} \begin{Bmatrix} \text{-LINE } n \; [\text{-TO } m \; [\text{-EXCEPT } y]] \\ \text{-HELP} \\ \begin{bmatrix} \text{-NTSABF} \\ \text{-NTSBUF} \\ \text{-REMBUF} \end{bmatrix} \end{Bmatrix} \begin{bmatrix} \text{-NO\_HEADER} \\ \text{-ON } node \\ \text{-ACTIVE} \\ \text{-ALL} \\ \text{-NO\_WAIT} \end{bmatrix}
$$

Options:

-ACTIVE   Requests that buffer information be printed for all active asynchronous lines on the system. Cannot be used with the -LINE or -ALL options.

-ALL   Requests that buffer information be printed for all lines within the specified range, whether they are active or not. By default, LAB prints buffer sizes only for active lines; the -LINE and/or -ALL options override this behavior. If -ALL is not accompanied by the -LINE option, the asynchronous line buffer sizes for all lines on the system are displayed.

-EXCEPT num-1 [... num-10]
                 Excludes up to 10 line numbers from a range of lines specified with the -LINE and -TO options. Cannot be used with the -NTSBUF, -NTSABF, and -REMBUF options.

-LINE num   Specifies which line(s) should be listed. If you don't specify the -TO option as well, LAB prints buffer sizes only for line num. If you do specify -TO as well as -LINE, num is the line number of the first line to be listed. Cannot be used with the -NTSBUF, -NTSABF, and -REMBUF options.

Note
Specify line numbers for LAB in decimal, not octal. Valid Direct
Connect line numbers range from 0 through 511, inclusive; valid
NTS line numbers range from 1024 through 1536, inclusive. If the
-LINE, -TO, or -EXCEPT options specify line numbers from 512
through 1023, LAB will print an error message and the command
line will have no effect. However, if the range specified by -LINE
and -TO includes numbers from 512 through 1023 (for instance,
-LINE 0 -TO 1027) without specifying the illegal numbers directly,
the LAB command proceeds normally, altering values for all lines
within the legal range and ignoring lines outside that range.

-ON *node_name* Asks for information about a remote system. If the -ON option is absent,
or if no *node_name* is specified, LAB gives information only about the
local system. If you are using LAB away from the supervisor terminal,
you must specify -ON in order for LAB to check whether you have
special privileges under DSM, and thus are allowed to get information on
all terminal lines.

-NO_HEADER   Suppresses the top header and entry type headers in multi-page displays.

-NO_WAIT   Suppresses the -More- prompt and does not interrupt output at the end
of each page. (The default is to print -More- at the bottom of each
page of output and to wait until prompted to print the next page.)

-NTSBUF   Specifies that the initial TFLIO buffer sizes for NTS login lines should be
displayed. Cannot be used with the -TO, -LINE, and -EXCEPT options.

-NTSABF   Specifies that the initial TFLIO buffer sizes for NTS assignable line
buffers should be displayed. May not be used with the -TO, -LINE, and
-EXCEPT options.

-REMBUF   Specifies that the initial TFLIO buffer sizes for remote buffers should be
displayed. May not be used with the -TO, -LINE, and -EXCEPT options.

-TO *num*   Specifies the end of a range of lines to be affected by the LAB command.
The -LINE option must also be present if you specify the -TO option, and
the *num* following -TO must be greater than or equal to the argument
following -LINE. May not be used with the -NTSBUF, -NTSABF, and
-REMBUF options.

-HELP   Lists the options and command syntax for LAB. Any other options
present on the command line are ignored.

An example of the LAB command's output follows.

```
OK, LAB
[LAB Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]

Node: MAUVE
+----------------------------------------------------------------+
I       I         Current Buffers       II   Default/Initial Buffers  I
I       I-------------------------------++-------------------------------I
I Line  I  Input  I Output  I   DMQ   II  Input  I Output  I   DMQ   I
I-------+---------+---------+---------++---------+---------+---------+
I    0  I    256I    1024I    127 II    256I    1024I    127 I
I    5  I    256I    1024I    127 II    256I    1024I    127 I
I   16  I    256I    1024I    127 II    256I    1024I    127 I
I   30  I    256I    1024I    127 II    256I    1024I    127 I
I  REM  I    512I    4096I   **** II    512I    4096I   **** I
+----------------------------------------------------------------+
OK,
```

Notice that remote buffers have no DMQ buffer sizes. If you ask to see only remote
buffers, the display has entries only for input and output buffers, as in the following
example.

```
OK, LAB -REMBUF
[LAB Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]

Node: MAUVE
+-----------------------------+
I       I  Initial Buffers   I
I       I--------------------I
I       I  Input  I  Output  I
I-------+---------+----------+
I REMBUF I   512I    4096 I
+-----------------------------+
OK,
```

LABEL

The LABEL command writes tape labels on magnetic tapes and verifies existing tape labels. These labels can be in IBM format (9-track EBCDIC or 7-track BCD), ANSI format (9-track ASCII), or Prime format (nonstandard Level 1 volume labels followed by a dummy HDR1 label and two file markers). You can also use LABEL to read existing VOL1 and HDR1 labels.

Format:

LABEL MT*n*
$$\begin{bmatrix} \text{-TYPE } type \\ \text{-VOLUME } volume\text{-}id \\ \text{-ACCESS } char \\ \text{-HELP} \\ \text{-INIT} \\ \text{-OVERWRITE} \\ \text{-OWNER } owner \\ \text{-PARITY} \end{bmatrix}$$

If you use LABEL without the -VOLUME option on a tape which is already labeled, it will read the existing label. (To read a BCD or EBCDIC label, you must specify the appropriate -TYPE option.) If you want to relabel a previously labeled tape, you must use the -INIT option.

Options:

MT*n*　　　　　Specifies the tape drive on which the tape to be labeled is mounted. *n*, an integer in the range 0 through 7 inclusive, is the tape drive's number. This argument must be present and must be the first option on the command line. You must previously have assigned the tape drive to yourself.

-ACCESS *char*　A single character which defines access rights to this tape. This character is ignored for Prime and IBM® format labels. On ANSI labels, this character is copied as the access if present; otherwise, the ACCESS field is left blank.

-INIT　　　　　Tells LABEL that this tape is being written for the first time. This option must be used on unformatted tapes or on tapes whose labels should be overwritten.

-OVERWRITE　Tells LABEL to overwrite a BRMS tape. If you try to overwrite an ARCHIVE, BACKUP, or TRANSPORT BRMS tape, you must use the -OVERWRITE option.

-OWNER *owner*　Identifies the owner of the tape. *owner* is a string which contains, for ANSI labels, 1 through 14 characters; for IBM labels, 1 through 10 characters. If you specify a label which is shorter than the allowed maximum length, it is blank-padded on the right to the maximum length. If you omit *owner*, LABEL uses your login name as the default value.

-PARITY { EVEN }
       { ODD }

               Specifies EVEN or ODD parity for the label. This option may be used only with the -TYPE B option.

-TYPE *type*   Specifies what sort of label you want written. The legal types are

               ANSI87   ANSI X3.27-1987 standard label

               BCD   IBM label for seven-track BCD tapes

               EBCDIC   IBM label for nine-track EBCDIC tapes

               PRIME   PRIME ASCII label. This is the default. ANSI and A are synonyms for label type PRIME.

               STANDARD_1   ANSI X3.27-1978 standard label

-VOLUME *volume-id*

               The volume number which uniquely identifies this tape reel. *volume_id* must be from 1 to 6 characters long; if it is shorter than 6 characters, it is blank-padded on the right to make 6 characters. -VOLSER and -VOLID are synonyms for -VOLUME. If this option is not present, LABEL attempts to read an exisiting label from the tape; if this option is present, LABEL writes a new label to the tape.

-HELP   Prints a list of the command's options.

LEM

The LEM command lists the extent map of a Contiguous Access Method (CAM) subfile, on either Prime standard partitions or robust partitions.

Format:

LEM $\begin{Bmatrix} segdir\text{>}subfile\text{-}number \\ filename \end{Bmatrix}$ [-NO_WAIT]

Options:

segdir>subfile-number

is the segment directory pathname and subfile-number of the desired CAM segment directory subfile.

filename   is the name of the CAM data file.

-NO_WAIT   This option, if present, tells LEM to halt its display after every 26 lines of output. You should press (Return) to see the next page of information.

The extent map occupies one disk record and is the first record in a CAM file. It serves as an index to all other records in the file. The extent map records the number of extents in the file, the length and location of each extent, the extent length, and the physical and logical end of file. In a CAM file, the physical size is the number of disk records allocated to the file and the logical size is the number of disk records that contain data.

For more information on CAM files, see the *Operator's Guide to File System Maintenance* and *Subroutines Reference II: File System* (DOC10081-1LA and its update packages UPD10081-11A and UPD10081-12A).

LIST_ACCESS

LIST_ACCESS lists the access rights for any file system object.

Format:

   LIST_ACCESS [*pathname*]

If you do not specify *pathname* on the command line, the system lists the access rights for the current directory. If the object specified by *pathname* is an access category, the system lists its contents (the ACL). In all other cases, the ACL that protects the object you specify is listed. Any priority ACL set for the disk partition on which the object resides is also listed, as shown in the example below. If you use the LIST_ACCESS command on a non-ACL UFD, any existing priority ACLs are listed. For example,

```
OK, LIST_ACCESS
  "<Current directory>" protected by default ACL
      (from "<SBUPT2>OLDMAN>CURLEW"):
           PMG:      ALL
           MARLEY:   ALL
           AUK:      ALL
           GENRE:    ALL
           IRMA:     ALL
           NAILS:    ALL
           SYSTEM:   ALL
           .SMGR:    ALL
           .SBUPT:   DALURWX
           .TYPOS:   ALL
           $REST:    LUR
OK, LIST_ACCESS <SBUPT>EVOG>EVOG.ACAT
  Access category "<SBUPT>EVOG>EVOG.ACAT":
           EVOG:     ALL
           .SBUPT:   NONE
           $REST:    NONE
```

See also LIST_GROUP later in this chapter to display the ACL groups to which a user belongs. LIST_ACCESS is also discussed in the *System Administrator's Guide, Volume III: System Access and Security*, the *Operator's System Overview*, the *PRIMOS User's Guide*, and the *PRIMOS Commands Reference Guide*.

Table 2-3 lists the access rights you can use to make up the Access Control Lists (ACLs) for a file or directory. The symbols for the access rights are displayed in the left column.

These ACL symbols can be combined to specify a variety of rights. For example, the combination ULAR allows a user to attach to a directory, list and add to its contents, and read any file within it that is not otherwise protected.

TABLE 2-3.   ACL Access Rights

Symbol	Right	Applies To	Meaning
R	Read	Files	File can be read or executed.
W	Write	Files	File can be modified.
X	Execute	Local EPF runfiles (no effect on remote EPF files)	Executable Program Format (EPF) file can be executed, but cannot be copied with the standard file system utilities. Read (R) access automatically includes X access.
U	Use	Directories	User can attach to directory.
L	List	Directories	Directory contents can be listed.
A	Add	Directories	Directory entry can be added.
D	Delete	Directories	Directory entry can be deleted.
P	Protect	Directories	Access can be changed.
O	Owner	Files and directories	Owner can set all rights, except P and ALL, and can change RWLOCK.
ALL		Files and directories	All of the above rights.
NONE		Files and directories	No access allowed.

LIST_ASSIGNED_DEVICES

LIST_ASSIGNED_DEVICES, a DSM command, displays all the devices that have been allocated with the ASSIGN command.

Format:

LIST_ASSIGNED_DEVICES [*devicename-1* [*...devicename-n*]] [*options*]

devicename1 ... devicename_n is a list of one or more devices; if you do not specify a *devicename*, LIST_ASSIGNED_DEVICES lists all currently assigned devices. (A list of legal *devicenames* is given in the explanation of the ASSIGN command earlier in this chapter.)

Options:

-NO_WAIT   Specifies that output not be paused after each screenful of information. If you do not specify -NO_WAIT, LIST_ASSIGNED_DEVICES pauses after every 23 lines of output and asks if you want to continue.

-ON { *node* / *nodegroup* }

Specifies that assigned devices be listed on a particular network node or node group. If you do not specify -ON, LIST_ASSIGNED_DEVICES executes on the node on which it was invoked.

-PRIVATE_LOG *pathname* [-NTTY]

Asks that the command's output be recorded in a DSM private log. If the *pathname* does not currently exist, it is created; if it does exist, output is appended to the file.

This option will not work unless both of the following conditions apply:

- You have access to the DSM PRIVATE_LOGGER function.

- The user DSM_LOGGER has ALL access to the directory containing the log.

If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If you specify -NTTY, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-SYSTEM_LOG *pathname* [-NTTY]

Sends command output to a local system log. *pathname* must begin with DSM*>LOGS, and must not contain a system partition name. The specified *pathname* must already exist. You cannot use the -SYSTEM_LOG option unless you have access to the DSM SYSTEM_LOGGER function.

If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If -NTTY is specified, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-USER [*name*
       number]
Specifies that only devices assigned to the specified users are to be displayed. The users can be designated either by name or by number, and you can mix names and numbers on the same command line. You can also specify a range of user numbers in the format *first_number:last_number*.

Frequency Options

The frequency options (-FREQ, -TIMES, -START, and -STOP) allow you to specify that a given command be issued repeatedly during a specific period. If you specify any of these four options, the system provides default values for the remainder as follows:

Argument	*Default*
-FREQ	0
-START	Now
-STOP	Never
-TIMES	Infinite

It is therefore important that you specify values for all of the frequency options if you want the command issued less often than the default values.

-FREQ *number*   Specifies that the command be repeated every *number* seconds. *number* is rounded down to the nearest multiple of 4; thus, if you specify -FREQ 15, the command is repeated every 12 seconds. If *number* is specified as 0, the command executes continuously, beginning anew after output from the last command is finished. If *number* is smaller than the time it takes to execute the command, the effect is the same as if *number* were specified as 0.

-START *starttime*

Makes the command begin processing at the specified *starttime*. *starttime* may be entered in either of two formats:

● ISO standard (YY-MM-DD.HH:MM:SS)

● USA standard (MM/DD/YY.HH:MM:SS)

If you do not specify -START, the command begins executing immediately.

-STOP *stoptime*   Makes the command stop processing at the specified *stoptime*. *stoptime* may be in the same format as *starttime* in the -START option, described earlier.

-TIMES *n*   Asks that the command be executed no more than *n* times over the specified period. If the command can be executed more than *n* times in the specified period, execution stops after *n* is reached.

-HELP [-NO_WAIT]

Explains how to use the command. All other options (except -NO_WAIT) on the command line are ignored. If you specify -NO_WAIT, the -HELP output does not pause after each screenful of information.

-USAGE   Gives a list of LIST_ASSIGNED_DEVICES's options with an explanation of their use. All other options on the command line are ignored.

LIST_ASYNC

LIST_ASYNC, a DSM command, displays the status and configuration of some or all of the system's asynchronous lines, and of all terminals attached to the Local Area Network.

Format:

$$\text{LIST\_ASYNC} \quad \begin{bmatrix} linenumber\_1 & [\_linenumber\_n] \\ linenumber1:linenumber2 & \end{bmatrix} \quad [options]$$

Options:

$\begin{bmatrix} linenumber\_1 & [\_linenumber\_n] \\ linenumber1:linenumber2 & \end{bmatrix}$

Specifies which lines should be displayed; lines that are not specified are not displayed. *linenumber* must be a decimal integer from 0 through 32767, inclusive. You can give a list of numbers separated by spaces; specify a range of numbers, separating the first and last number in the range with a colon; or do both on the same line. If no *number* argument is given, all lines currently in use are displayed.

-DETAIL   Tells LIST_ASYNC to display complete information on all lines. Normally, LIST_ASYNC lists the following information for each line: line number, line use, whether the line is autospeed enabled, line speed, protocol, user number, and user name. If you specify -DETAIL, LIST_ASYNC also lists for each line: whether echo is enabled, whether the line echoes LINEFEED when RETURN is sent, whether the line is parity enabled, what parity mode the line is in, character bit length, number of stop bits, buffer sizes for input, output, and DMQ buffers, whether XON/XOFF is enabled, reverse protocols, whether output is suspended, whether error detect is enabled, whether the line is looped, XON lag size, and XOFF lag size.

-NO_WAIT   Specifies that output should not be interrupted after each screenful of information. If you do not specify the -NO_WAIT option, the command pauses after every 23 lines of output and asks if you want to continue.

-ON $\begin{Bmatrix} node \\ nodegroup \end{Bmatrix}$

Requests that the command be executed on a particular network *node* or *nodegroup*. If you do not specify -ON, the command executes on the *node* on which it was invoked.

-PRIVATE_LOG *pathname* [-NTTY]
Specifies that the command's output be recorded in a DSM private log. If the *pathname* does not currently exist, it is created; if it does exist, output is appended to the file.

This option works only if both of the following are true:

- You have access to the DSM PRIVATE_LOGGER function.

- The user DSM_LOGGER has ALL access to the directory containing the log.

If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If you specify -NTTY, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-SYSTEM_LOG *pathname* **[-NTTY]**

Requests that output be sent to a local system log. *pathname* must begin with DSM*>LOGS, and must not contain a system partition name. The specified *pathname* must already exist. You cannot use the -SYSTEM_LOG option unless you have access to the SYSTEM_LOGGER function.

If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If you do specify -NTTY, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-USER { *name* }
{ *number* }

Specifies that only lines associated with the specified users are to be displayed. The users can be designated either by *name* or by *number*.

Frequency Options

The frequency options (-FREQ, -TIMES, -START, and -STOP) allow you to specify that a given command be issued repeatedly during a specific period. If you specify any of these four options, the system provides default values for the remainder as follows:

Argument	Default
-FREQ	0
-START	Now
-STOP	Never
-TIMES	Infinite

It is therefore important that you specify values for all of the frequency options if you want the command issued less often than the default values.

-FREQ *number*   Specifies that the command be repeated every *number* seconds. *number* is rounded down to the nearest multiple of 4; thus, if you specify -FREQ 15, the command is repeated every 12 seconds. If *number* is specified as 0, the command executes continuously, beginning anew after output from the last command is finished. If *number* is smaller than the time it takes to execute the command, the effect is the same as if *number* were specified as 0.

-START *starttime*

Makes the command begin processing at the specified *starttime*. *starttime* may be entered in either of two formats:

- ISO standard (YY-MM-DD.HH:MM:SS)

- USA standard (MM/DD/YY.HH:MM:SS)

If you do not specify -START, the command begins executing immediately.

-STOP *stoptime*   Makes the command stop processing at the specified *stoptime*. *stoptime* may be in the same format as *starttime* in the -START option, described earlier.

-TIMES *n*   Asks that the command be executed no more than *n* times over the specified period. If the command can be executed more than *n* times in the specified period, execution stops after *n* is reached.

-HELP [-NO_WAIT]

Explains how to use the command. All other options (except -NO_WAIT) on the command line are ignored. If you specify -NO_WAIT, the -HELP output does not pause after each screenful of information.

-USAGE   Gives a list of the command's options with an explanation of their use. All other options on the command line are ignored.

LIST_CONTIGUOUS_BLOCKS

LIST_CONTIGUOUS_BLOCKS provides information about available space on a partition. This command is most useful on a partition containing CAM files.

Format:

$$\text{LIST\_CONTIGUOUS\_BLOCKS} \quad \left[\left\{ \begin{array}{l} logical\_device\_number \\ partition\_name \\ \text{-HELP} \end{array} \right\} \right]$$

You can specify which partition you are interested in with either its partition name or its logical_device_number (ldev); *logical_device_number* must be in decimal, not octal.

The -HELP option (abbreviated -H) displays the legal options for the command.

When no parameter is supplied, LIST_CONTIGUOUS_BLOCKS gives information about the MFD of the user's current attach point, including the sizes of the 20 largest contiguous blocks of free space, the total available space on the partition, and the minimum and maximum extent sizes in effect for that partition. For more information about this command, the *Operator's Guide to File System Maintenance*.

```
OK, LIST_CONTIGUOUS_BLOCKS
+--------------------------------------------------------------+
I LIST_CONTIGUOUS_BLOCKS 22.0     HELVET                       I
+--------------------------------------------------------------+
I Largest 20 blocks of free             4142        0          I
I contiguous space larger                  0        0          I
I than 32 records.                         0        0          I
I                                          0        0          I
I                                          0        0          I
I                                          0        0          I
I                                          0        0          I
I                                          0        0          I
I                                          0        0          I
+-----------------------------+--------------------------------+
I                             I                                I
I Number of fragments :   25  I Total records    :   14814     I
I Minimum extent size :   16  I Free records     :    4205     I
I Maximum extent size :   32  I Percentage full  :   71.61%    I
I                             I                                I
+-----------------------------+--------------------------------+
OK,
```

LIST_DISKS

LIST_DISKS, a DSM command, lists, for every local disk currently added to the system, the partition name, ldev, pdev, size, number of records free, and whether the partition is robust. For remote disks currently added to the system, LIST_DISKS lists ldev, partition name, and nodename. (LIST_DISKS cannot tell whether a remote disk is robust or not.)

Format:

$$\text{LIST\_DISKS} \quad \begin{Bmatrix} \textit{diskname } [\textit{...diskname\_n}] \\ \textit{ldev } [\textit{...ldev\_n}] \ [\textit{options}] \\ \textit{ldev1:ldev2} \end{Bmatrix}$$

diskname or *ldev* specify which disks you are interested in. If neither of these is specified, information is displayed for all disks attached to the system. *diskname* may include wildcards; *ldev*, the disk's logical device number, must be an octal number. You can also specify a range of logical device numbers to be displayed, as in *ldev1:ldev2*.

Options:

-DETAIL   Requests that LIST_DISKS provide, in addition to its usual data, controller number, drive unit number, starting head, and ending head for all local partitions.

-LOCAL   Requests that only information about local disks be displayed. If -LOCAL is not specified, information is displayed for both local and remote disks.

-NO_WAIT   Requests that output not be paused after each screenful of information. If you do not specify -NO_WAIT, this command pauses after every 23 lines of output and asks if you want to continue.

-ON $\begin{Bmatrix} \textit{node} \\ \textit{nodegroup} \end{Bmatrix}$ Requests that the command be executed on a particular network *node* or *nodegroup*. If -ON is not specified, the command executes on the node on which it was invoked.

-PRIVATE_LOG *pathname* [-NTTY]
                 Requests that the command's output be recorded in a DSM private log. If the pathname does not currently exist, it is created; if it does exist, output is appended to the file.

                 This option works only if both of the following are true:

                 ● You have access to the DSM PRIVATE_LOGGER function.

                 ● The user DSM_LOGGER has ALL access to the directory containing the log.

                 If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If you specify -NTTY, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-REMOTE [*nodenames*]

Requests that only information about remote disks be displayed. If you specify *nodename*, only disks on that PRIMENET node are displayed. If you do not specify *nodename*, all remote disks are displayed. Remember that on remote disks LIST_DISKS lists only disk name, pdev, and the name of the disk's node.

Note

The -REMOTE option tells you only about local and remote disks that are added to the system on which you gave the command. If you want information on disks that are attached to other systems on your network (but are not added to your own system), use the -ON option.

-SYSTEM__LOG *pathname* [-NTTY]

Requests that output be sent to a local system log. *pathname* must begin with DSM*>LOGS, and must not contain a system partition name. The specified *pathname* must already exist. You cannot use the -SYSTEM__LOG option unless you have access to the SYSTEM__LOGGER function.

If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If you specify -NTTY, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-USERS

Displays information about users on the specified disks. For local disks, information is displayed about all users; for remote disks, only users local to your system are displayed.

Frequency Options

The frequency options (-FREQ, -TIMES, -START, and -STOP) allow you to specify that a given command be issued repeatedly during a specific period. If you specify any of these four options, the system provides default values for the remainder as follows:

Argument	*Default*
-FREQ	0
-START	Now
-STOP	Never
-TIMES	Infinite

It is therefore important that you specify values for all of the frequency options if you want the command issued less often than the default values.

-FREQ *number* Specifies that the command be repeated every *number* seconds. *number* is rounded down to the nearest multiple of 4; thus, if you specify -FREQ 15, the command is repeated every 12 seconds. If *number* is specified as 0, the command executes continuously, beginning anew after output from the last command is finished. If *number* is smaller than the time it takes to execute the command, the effect is the same as if *number* were specified as 0.

-START *starttime*

Makes the command begin processing at the specified *starttime*. *starttime* may be entered in either of two formats:

- ISO standard (YY-MM-DD.HH:MM:SS)

- USA standard (MM/DD/YY.HH:MM:SS)

If you do not specify -START, the command begins executing immediately.

-STOP *stoptime* Makes the command stop processing at the specified *stoptime*. *stoptime* may be in the same format as *starttime* in the -START option, described earlier.

-TIMES *n* Asks that the command be executed no more than *n* times over the specified period. If the command can be executed more than *n* times in the specified period, execution stops after *n* is reached.

-HELP [-NO_WAIT]

Explains how to use the command. All other options (except -NO_WAIT) on the command line are ignored. If you specify -NO_WAIT, the -HELP output does not pause after each screenful of information.

-USAGE Gives a list of the command's options with an explanation of their use. All other options on the command line are ignored.

LIST_DUMP

LIST_DUMP is an internal command that displays the current parameters for a partial tape dump. These parameters are the default parameters plus any added by the DUMP_SEGMENT and/or DUMP_USER commands. This command may be issued only from the supervisor terminal.

Format:

LIST_DUMP [-HELP]

The -HELP option displays the syntax of the command.

The following example shows a typical report of the parameters for a partial tape dump.

```
OK, LDMP
Partial Tape Dump Parameters
```

Dump Segments For All Users	

From	To
0	1777
6000	6003
2000	3777

Dump Users Segments
NETMAN
MAGGIE
JANE
TOM

LIST_GROUP

LIST__GROUP lists the ACL groups to which the user belongs.

Format:

 LIST__GROUP

Typically, the ACL groups determine access to files and directories other than the user's. Each user may be a member of a maximum of 32 groups. Group names are preceded by a period; for example, .OPERATORS indicates a group by that name. See also the *Operator's System Overview* and the discussion of LIST__ACCESS in this book.

```
OK, LIST_GROUP
Groups are:  .OPERATORS  .BATCH_ADMIN$
```

LIST_LHC_STATUS

LIST_LHC_STATUS displays status information pertaining to a LAN Host Controller 300 (LHC300), a component of an LAN300 network installation. LIST_LHC_STATUS can be used to determine the integrity of an LHC that is attached to either the local host system or to a remote system on the network.

The LIST_LHC_STATUS command displays its report in three parts:

1. Provides identification and performance data on the LHC controller.

2. Summarizes and lists current connection data from the LHC controller.

3. Reports operating system and network management status information from the LHC controller.

Format:

LIST_LHC_STATUS [*options*]

Options:

-DEST_NODE_NAME *host_name*

        Identifies the host on which the LHC resides. *host_name* cannot be greater than 6 characters. You cannot use this option with -DEST_NODE_ADDRESS.

        Use -DNN in combination with the -DEST_LHC_NUMBER option or with the -LAN_NAME option to identify a specific LHC on the host. If you do not specifically identify an LHC, the default LHC on the destination host will be used.

-DEST_NODE_ADDRESS *lhc_address*

        Identifies the destination Local Area Network (LAN300) address for the LHC. Specify *lhc_address*, in hexadecimal, in either the short format, *nn-nn-nn*, or the long format, *nn-nn-nn-nn-nn-nn*, with or without leading zeros. When you use the short format, the standard LAN300 address extension is added before the given address. You cannot use this option with the -DEST_NODE_NAME, -DEST_LHC_NUMBER, or -LAN_NAME options.

-DEST_LHC_NUMBER *lhc_number*

        Identifies the LHC on a particular node. When used with the option -DEST_NODE_NAME, -DEST_LHC_NUMBER identifies the target LHC on the network. *lhc_number* is an octal number and must be in the range 0 through 7, inclusive. You cannot use this option with the -LAN_NAME or -DEST_NODE_ADDRESS options. If you specify this option without the -DEST_NODE_NAME option, the LHC is assumed to be on the local host.

-LAN_NAME *netname*

        Identifies the name of the Local Area Network (LAN300) to which the

LHC is attached. *netname* identifies the LHC when the node address or the LHC number is not known. You cannot use this option with -DEST_NODE_ADDRESS or with -DEST_LHC_NUMBER. The maximum length of *netname* is 32 characters.

-CONNECTION *connection_type*

Selects the Connection screen. *connection_type* may be either PRIMENET or NTS. PRIMENET selects PRIMENET connection information. NTS selects NTS connection information. If you do not specify a *connection_type*, both types are selected. You cannot use this option with the -PERFORMANCE or -MANAGEMENT options.

The Connection screen presents a comprehensive review of all connections currently active on the controller and provides a higher layer view of controller activity than that given by the Performance screen.

Note

The amount of data displayed in the individual connection listing section for an LHC can be substantial because of the large number of possible connections. An LHC running both PRIMENET and NTS can have a maximum of 288 active connections at any one time (256 PRIMENET and 32 NTS). An LHC running PRIMENET exclusively can have a maximum of 256 active connections. An LHC running NTS exclusively can have a maximum active connection count of 128.

-MANAGEMENT

Selects the Management screen, which displays operating system and network management statistics pertinent to the current operation of the controller. The operating system statistics report current CPU utilization and I/O bus traffic rates as well as error conditions detected. The network management values report local management functions supported and alarms generated by individual applications.

You cannot use this option with the -CONNECTION or -PERFORMANCE options.

-PERFORMANCE

Selects the Performance screen, which displays information about the operational state of the host controller. Specifically, this screen identifies the controller, displays a comprehensive review of MAC and LLC statistics, and displays several operating system and error statistics. You cannot use this option with the -CONNECTION or -MANAGEMENT options.

-ALL

Displays all the information provided by the -PERFORMANCE and -MANAGEMENT options and an overview of the information provided by the -CONNECTION option. -ALL is the default if you do not specify a screen option.

-HELP   Displays online information about the command and its options.

LIST_LHC_STATUS is part of the LAN300 Network Management facility.   This facility
aids the Network Administrator in managing a LAN300 installation.   For more information,
see the *Operator's Guide to Prime Networks.*

LIST_LTS_STATUS

LIST_LTS_STATUS displays status information pertaining to a LAN Terminal Server 300 (LTS300), a component of a LAN300 network installation. LIST_LTS_STATUS may be used to determine the integrity of an LTS attached to the network.

The LIST_LTS_STATUS command displays its report in three parts:

1. Provides identification and performance data from the LTS terminal server.

2. Summarizes and lists current connection data from the LTS terminal server.

3. Reports operating system and network management status information from the LTS terminal server.

Format:

   LIST_LTS_STATUS [*options*]

Options:

-DEST_NODE_NAME *lts_name*

   Identifies the LTS by its name in the configuration file. *lts_name* cannot be greater than 16 characters. You cannot use this option with the DEST_NODE_ADDRESS option; however, you must specify one or the other.

-DEST_NODE_ADDRESS *lts_address*

   Identifies the destination Local Area Network (LAN300) address for the LTS. Specify *lts_address* in either the short format, *nn nn nn*, or the long format, *nn-nn-nn-nn-nn-nn*, in hexadecimal, with or without leading zeros. When you use the short format, the standard Prime LAN300 address extension is added before the given address. You cannot use this option with the DEST_NODE_NAME option; however, you must specify one or the other.

-CONNECTION *connection_type*

   Selects the Connection screen, which presents a comprehensive review of all connections currently active on the terminal server. This screen provides a higher layer view of server activity than that given by the Performance screen. You cannot use this option with the -PERFORMANCE or -MANAGEMENT options.

-MANAGEMENT

   Selects the Management screen, which reports operating system and network management statistics pertinent to the current operation of the terminal server. These statistics report current CPU utilization and error conditions detected. The network management values report local management functions supported and alarms generated by individual applications. You cannot use this option with the -PERFORMANCE or -CONNECTION options.

-PERFORMANCE

Selects the Performance screen, which displays information about the operational state of the terminal server. Specifically, this screen identifies the terminal server, displays a comprehensive review of MAC and LLC statistics, and displays several operating system and error statistics. You cannot use this option with the -CONNECTION or -MANAGEMENT options.

-ALL   Displays all the information provided by the -PERFORMANCE and -MANAGEMENT options and an overview of the information provided by the -CONNECTION option. The -ALL option is the default if you do not specify a screen option.

-HELP   Gives information about this command and its options.

LIST_LTS_STATUS is part of the LAN300 Network Management facility. This facility aids the Network Administrator in managing a LAN300 installation. For more information, see the *Operator's Guide to Prime Networks.*

LIST_PRIORITY_ACCESS

LIST_PRIORITY_ACCESS displays the contents of a priority Access Control List (ACL) in effect on the given partition.

Format:

    LIST_PRIORITY_ACCESS *partition-name*

LIST_PRIORITY_ACCESS is discussed in the *Operator's System Overview* and in the *System Administrator's Guide, Volume III: System Access and Security.* See also SET_PRIORITY_ACCESS later in this chapter.

LIST_PROCESS

LIST_PROCESS, a DSM command, displays, for every current user process on the system, its user number, name, type, and project ID.

Format:

$$\text{LIST\_PROCESS} \quad \begin{cases} \textit{username1 } [\textit{\_username2}] \\ \textit{usernumber1 } [\textit{\_usernumber2}] \\ \textit{usernumber1:usernumber2} \end{cases} [\textit{options}]$$

Arguments: You can specify which processes interest you by using one or more of the *username* and *usernumber* arguments, separating the names and numbers by spaces. User processes not specified are not displayed. You can use wildcards in *username*, or you can specify a range of *usernumbers* to be displayed by giving the first and last numbers in the range separated by a colon, as in *usernumber1:usernumber2*. If you do not specify either *username* or *usernumber*, information is displayed on all user processes.

Options:

-DETAIL   Asks that detailed information be specified about each user ID. LIST_PROCESS always returns the following information about each user:

- User number

- User name

- User type

- User's project ID

If -DETAIL is specified, LIST_PROCESS returns the following additional information about each user:

Initial attach point	Current attach point	Current abbreviation file
Current COMI file	Current COMO file	Connect time
CPU time consumed	I/O time used	ACL group memberships
Message state	Remote IDs	

-NO_WAIT   Asks that output not be paused after each screenful of information. If you do not specify -NO_WAIT, the command will pause after every 23 lines of output and ask if you want to continue.

-ON $\begin{cases} \textit{node} \\ \textit{nodegroup} \end{cases}$ Asks that the command be executed on a particular network *node* or *nodegroup*. If you do not specify -ON, the command executes on the *node* on which it was invoked.

-PRIVATE_LOG *pathname* [-NTTY]
    Asks that the command's output be recorded in a DSM private log. If the *pathname* does not currently exist, it is created; if it does exist, output is appended to the file.

This option works only if both of the following are true:

● You have access to the DSM PRIVATE__LOGGER function.

● The user DSM__LOGGER has ALL access to the directory containing the log.

If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If you specify -NTTY, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-PROJECT *project__id1* [*..project__id2*]

Restricts output to user processes which belong to the specified *project__ids*. You may use wildcards when specifying *project__ids*.

-SYSTEM__LOG *pathname* [-NTTY]

Asks that output be sent to a local system log. *pathname* must begin with DSM*>LOGS, and must not contain a system partition name. The specified *pathname* must already exist. You cannot use the -SYSTEM__LOG option unless you have access to the SYSTEM__LOGGER function.

If you do not specify -NTTY, command output is sent both to the user's terminal and to the specified log. If you specify -NTTY, command output is sent only to the specified log.

Note

The -NTTY option starts a phantom that runs under your user name. Command errors are written to a COMOUTPUT file in your origin directory, so you must have Write (W) access to that directory for -NTTY to work.

-TYPE *type1* [*..type__7*]

Asks that only users of the specified type be included in output. If -TYPE is not specified, users of every type are included in output. The valid types are

terminal	remote	slave
server	batch	child
phantom		

Frequency Options

The frequency options (-FREQ, -TIMES, -START, and -STOP) allow you to specify that a given command be issued repeatedly during a specific period. If you specify any of these four options, the system provides default values for the remainder as follows:

Argument	Default
-FREQ	0
-START	Now
-STOP	Never
-TIMES	Infinite

It is therefore important that you specify values for all of the frequency options if you want the command issued less often than the default values.

-FREQ *number*   Specifies that the command be repeated every *number* seconds. *number* is rounded down to the nearest multiple of 4; thus, if you specify -FREQ 15, the command is repeated every 12 seconds. If *number* is specified as 0, the command executes continuously, beginning anew after output from the last command is finished. If *number* is smaller than the time it takes to execute the command, the effect is the same as if *number* were specified as 0.

-START *starttime*

   Makes the command begin processing at the specified *starttime*. *starttime* may be entered in either of two formats:

- ISO standard (YY-MM-DD.HH:MM:SS)

- USA standard (MM/DD/YY.HH:MM:SS)

If you do not specify -START, the command begins executing immediately.

-STOP *stoptime*   Makes the command stop processing at the specified *stoptime*. *stoptime* may be in the same format as *starttime* in the -START option, described earlier.

-TIMES *n*   Asks that the command be executed no more than *n* times over the specified period. If the command can be executed more than *n* times in the specified period, execution stops after *n* is reached.

-HELP [-NO_WAIT]

   Explains how to use the command. All other options (except -NO_WAIT) on the command line are ignored. If you specify -NO_WAIT, the -HELP output does not pause after each screenful of information.

-USAGE   Gives a list of the command's options with an explanation of their use. All other options on the command line are ignored.

LIST_SERVER_NAMES

LIST_SERVER_NAMES lists the server names on the local node, giving the user ID and member process number for each server; it also displays the total number of servers on the local node.

The only option this command accepts is -HELP, which displays the command's usage.

LIST_SERVER_NAMES lists server information as follows:

```
OK, LIST_SERVER_NAMES

[LIST_SERVER_NAMES Rev 22.0 Copyright (c) 1988, Prime Computer, Inc.]

27 Servers for node NEHWON

    Server Name  UserID                Member Process(es)

    DSMSMSR$     SYSTEM_MANAGER        195
    DSMSR$       DSMSR                 193
    DSM_LOGGER   DSM_LOGGER            194
    ISC$NETSVR   ISC_NETWORK_SERVER    189
    TBRTDBJCBBBC SYSTEM                  1
    TBRTDBJCBBBG SLAVE$                150
    TBRTDBJCBBDG NTS_SERVER            182
    TBRTDBJCBBDJ TIMER_PROCESS         183
    TBRTDBJCBBDN LOGOUT_SERVER         184
    TBRTDBJCBBHN NETMAN                166
    TBRTDBJCBCRV JINIAN                 22
    TBRTDGZJBBDC AERIN                  29
    TBRTDGZJBBGX ALANNA                 31  32   33   34   40   41
                                        42  43
    TBRTDGZJBBXZ GARION                 30
```

Servers are listed in alphabetical order by server name.

For full information on the LIST_SERVER_NAMES command, see the *PRIMOS Commands Reference Guide*. See also the LIST_SESSIONS command below.

LIST_SESSIONS

LIST_SESSIONS lists InterServer Communications (ISC) sessions.

This command can list overview or detail information about a single ISC session, about all of the sessions belonging to a single ISC server, or about all ISC sessions. LIST_SESSIONS can list only information about sessions on the local node.

If you specify no options, LIST_SESSIONS displays overview information about all ISC sessions. If there are no sessions, LIST_SESSIONS returns the message No Sessions.

Format:

$$
\text{LIST\_SESSIONS} \quad \begin{bmatrix} \text{-SERVER\_NAME } name \text{ [-SESSION } number] \\ \text{-DETAIL} \\ \text{-HELP} \end{bmatrix}
$$

Options:

-SERVER_NAME *name* [**-SESSION** *number*]

Lists session information for all sessions owned by server *name*. *name* cannot be the ISC network server. If you specify the -SESSION option, this option lists information for session *number* owned by server *name*.

-DETAIL   Lists detailed information for the sessions selected by the other LIST_SESSIONS options. If you do not specify -DETAIL, this command lists session overview information.

-HELP   Displays a summary of this command's options.

For complete information on LIST_SESSIONS, see the *PRIMOS Commands Reference Guide*. See also the LIST_SERVER_NAMES command, documented earlier in this chapter.

LOGOUT

LOGOUT logs out a specified process. LOGOUT closes files, unassigns devices, clears attach points (initial, home, and current), breaks network connections, and returns assigned segments to the free segment pool.

Format:

$$\text{LOGOUT} \quad \begin{Bmatrix} \text{-usernumber} \\ \text{ALL} \end{Bmatrix}$$

Note

To log out any users other than yourself, you must issue this command from the supervisor terminal.

Options:

-usernumber
The decimal number of the user being logged out. (You can use the STATUS USERS command to determine the names and numbers of all users.) If the user is a local terminal using a remote process, the terminal is logged out of both systems. If the user is a remote terminal using a local process, the process is logged out and returned to the pool of free remote login processes.

ALL
Logs out most currently logged-in local and phantom users. Also disconnects remote users from your system and returns them to their own. Many system phantoms, including LOGOUT_SERVER, LOGIN_SERVER, and TIMER_PROCESS, are not affected by LOGOUT -ALL; such processes have their own shutdown procedures.

In addition to logging out all users except User 1 (the supervisor terminal), LOGOUT ALL automatically performs a MAXUSR 0 command, which prevents any subsequent logins until MAXUSR is reset. You should issue LOGOUT ALL a few minutes before you issue a SHUTDN ALL command in order to allow a more orderly shutdown of PRIMOS. LOGOUT ALL can be issued only from the supervisor terminal. (See also the MAXUSR command.)

Note

PRIMOS allows a process between one and two minutes of grace time following a forced logout if the program being run by the process is set up that way. For example, Prime's EMACS text editor uses that grace time to save any work the user has in progress. Also, the actual process of logging out may take some time if the system is heavily loaded, particularly if your system has an external logout program that performs any lengthy functions (such as checking for electronic mail, performing accounting, and so on). Therefore, allow at least three to four minutes for a forced logout to take effect before issuing the SHUTDN ALL command.

LOOPBACK

LOOPBACK sends test data packets between target components on the LAN300 network and reports the network operation back to the network user. This loopback is accomplished while the network is online and is used to verify the integrity of the network software operation and the network path between target components. Only members of the ACL group .NETWORK_MGT$ may issue the LOOPBACK command.

Format:

LOOPBACK [*options*]

The loopback test is an echo operation: a source point sends a test message to a destination point which, in turn, echoes the packet back to the source. The two messages are then compared at the source and the results are reported to the user. You can add a third point to the loopback test so that the results are sent to a point that is different from the source point.

Options:

-DEST_LBK_LAYER *loopback_layer*
> Identifies the loopback layer at which the test packet will loop back. *loopback_layer* must have a value of either NMSR or NME.
>
> If you do not specify -DEST_LBK_LAYER, the default destination loopback layer depends on the destination node. If the destination node is an LTS, then the default destination loopback layer is the NME. If the destination node is a host, then the default destination loopback layer is the NMSR.

-DEST_LHC_NUMBER *lhc_number*
> Identifies the LHC on a particular node. This option, used with the -DEST_NODE_NAME option, identifies the target LHC to which the test packet is sent. *lhc_number* is an octal number and must be in the range 0 through 7, inclusive. You cannot use this option with the -DEST_NODE_ADDRESS and -LAN_NAME options. If you do not use this option with the -DEST_NODE_NAME option, the specified LHC is assumed to be on the local host.

-DEST_NODE_ADDRESS *node_address*
> Specifies the destination network address for the LHC or LTS to which the test packet is sent. You may specify *node_address* in either the short format, *nn-nn-nn*, or the long format, *nn-nn-nn-nn-nn-nn*, in hexadecimal, with or without leading zeros. When you use the short format, the standard Prime LAN300 address extension is added before the given address.
>
> You cannot use the -DEST_NODE_ADDRESS option with other options that define addresses in the network, for example, -DEST_NODE_NAME, -DEST_LHC_NUMBER, or -LAN_NAME.

-DEST_NODE_NAME *node_name*

        Identifies the node (either a host or an LTS) on which the test packet will loop back. *node_name* cannot be greater than 16 characters.

-LAN_NAME *lan_name*

        Identifies the name of the Local Area Network (LAN300) to which the LHC and/or LTS is attached. Use this option to identify the LHC and/or LTS when no other information (for example, the node address, the LHC number, or the node name for an LTS) is known. You cannot use the -LAN_NAME option with the options -DEST_NODE_ADDRESS, -DEST_LHC_NUMBER, -SRC_NODE_ADDRESS, or -SRC_LHC_NUMBER.

-SRC_LBK_LAYER *loopback_layer*

        Identifies the loopback layer from which the test packet is sent. *loopback_layer* must have a value of either NMSR or NME. If you do not specify the -SRC_LBK_LAYER option, the default source loopback layer depends upon the source node. If the source node is an LTS, then the default source loopback layer is the NME. If the source node is a host, then the default source loopback layer is the NMSR.

-SRC_LHC_NUMBER *lhc_number*

        Identifies the LHC on a particular node. When you use this option with the -SRC_NODE_NAME option, the target LHC to which the test packet is sent is identified. *lhc_number* is an octal number and must be in the range 0 through 7, inclusive. You cannot use this option with the -SRC_NODE_ADDRESS or the -LAN_NAME options. If you use this option without specifying -SRC_NODE_NAME, it is assumed that the specified LHC is on the local host.

-SRC_NODE_ADDRESS *node_address*

        Specifies the network address for an LHC or LTS on the network from which the test packet is sent. Specify *node_address* in either the short format, *nn-nn-nn*, or the long format, *nn-nn-nn-nn-nn-nn*, in hexadecimal, with or without leading zeros. When you use the short form, the standard Prime LAN300 address extension is added before the given address.

        You cannot use the -SRC_NODE_ADDRESS option with other options that define an address on the network, for example, the options -SRC_NODE_NAME, -SRC_LHC_NUMBER, or -LAN_NAME.

-SRC_NODE_NAME *node_name*

        Identifies the node (either an LHC or an LTS) from which the test packet is sent. *node_name* cannot be greater than 16 characters.

        This option should be used with either the -SRC_LHC_NUMBER option or the -LAN_NAME option to specify an LHC or LTS. If you do not specify this option, the local originating node name will be the source node name.

-HELP   Lists the format of this command and its options.   You cannot use this option with any of the other options.

LOOPBACK is part of the LAN300 Network Management facility.   This facility aids the Network Administrator in managing a LAN300 installation.   For more information, see the *Operator's Guide to Prime Networks.*

MAKE

MAKE formats disks and partitions, preparing them for use in the PRIMOS file system or as paging disks. MAKE also lets you name each partition.

The MAKE command starts the MAKE utility program, which is stored in CMDNCO>MAKE.SAVE. MAKE can also be executed as a standalone utility, or through the MTRESUME command. See the handbook for your processor to learn how to use MAKE standalone; for details about MTRESUME, see its entry in this chapter.

Before using MAKE, you must place the disk in the Assignable Disks Table (using the DISKS command) and assign it (using the ASSIGN command).

Notes

Versions of MAKE at or after Rev. 20.0, unlike earlier versions, create ACL-protected partitions. The protection placed on the MFD when the partition is formatted is SYSTEM:ALL; $REST:LUR. All directories created on these partitions will be ACL-protected by default; if the partitions are not robust, the directories will be hashed. (You can still create password directories on post-Rev. 20.0 disks, but they will not be hashed.)

To avoid the possibility of mistakenly invoking a pre-Rev. 22.0 version of MAKE, it is recommended that you delete the older versions (CMDNCO>MAKE) of MAKE. If you invoke an earlier version, you may not get the results you expect.

Format:

> MAKE -DISK *pdev* -PARTITION *diskname* -DISK_TYPE *disk_type* [*options*]

The -DISK and -DISK_TYPE options are required on the command line. *pdev* is the physical device number of the disk to be created, *diskname* is the name to be assigned to the disk partition, and *disk_type* is the kind of disk being formatted. If you fail to specify the -PARTITION or -DISK_TYPE options or the *pdev*, *diskname*, or *disk_type* arguments, MAKE prompts you for the missing information. See the *Operator's Guide to File System Maintenance* for detailed information on how to use MAKE and on how to construct physical device numbers.

Caution

You must enter the -DISK keyword on the command line *immediately before* the *pdev* argument. Otherwise, PRIMOS interprets *pdev* as the starting address of the MAKE program, and does not start at location 1000_8 as expected by MAKE.

If you enter -DISK in any other position, the results are unpredictable. For example, you may lose data.

Options:

-DISK [*pdev*]   Specifies the physical device number (pdev) of the partition that you are creating. You must use the -DISK option, and it must be the first option on the MAKE command line. If you do not include *pdev*, MAKE prompts you for it.

-PARTITION [*name*]

Specifies a valid 6-character name for the partition you are creating. If you do not specify *name*, MAKE prompts you for a partition name.

-ALL_CONTROLLER

Specifies that the partition should be created to be compatible with any type of disk controller (both nonintelligent controllers and intelligent controllers). The partition is not capable of dynamic badspot handling or mirroring.

-BADSPOT_LEVEL [*n*]

Specifies the level of verification to be used in checking for badspots. *n* is in the range 0 through 4, inclusive. If *n* is 0, no verification takes place. The larger *n* is, the more verification is performed, and the longer MAKE takes to run. If you do not specify *n*, you are prompted for the number.

The default level for badspot checking is 1 if the disk type is either SMD or CMD, 2 for 2350™, 2450™, and 2455™ system FMDs, and 4 for other FMDs.

-BAUD_RATE [*bps*]

Sets the initial baud rate of the supervisor terminal for the partition. The baud rate takes effect when the partition being made is used to boot the system. *bps* can be 110, 300, 1200, or 9600. If *bps* is not specified, you are prompted for this information. The default is 300 bits per second.

-COPY_BADSPOTS_BY_DEVICE *pdev*

Specifies that MAKE is to copy a badspot file from a designated partition. The partition containing the source badspot file must be on the same disk pack as that of the partition being made. *pdev* identifies the source partition.

This option is useful when every badspot file on the disk carries information about badspots on all partitions on the disk. The default is for MAKE to read the badspot file only on the partition being made. Be sure to assign the partition from which you are copying badspots, as well as the partition you are formatting, before using this option.

-COPY_BADSPOTS_BY_NAME *diskname*

Specifies that MAKE is to copy badspot information from the named partition. This option is useful when each badspot file on a disk contains information on all badspots in the disk, not only on badspots in

its own partition. The named partition must reside on the same disk as that of the partition being made, and must be a disk that has been started with ADDISK. The default is for MAKE to read the badspot file only on the partition being made.

-DISK_REVISION [*rev*]

Specifies the revision of the partition that you want MAKE to create. *rev* must be 18, 19, 20, 21, or 22. If you do not include *rev* or you include an invalid *rev*, MAKE prompts you for a valid *rev*. If you do not include this option, MAKE creates a Rev. 22.0 partition.

Note that this option replaces the -PRE_REV 19 option.

-DISK_TYPE [*type*]

Specifies the type of disk. The valid types are:

SMD	CMD
68MB	158MB
160MB	600MB
MODEL_4475	MODEL_4711
MODEL_4714	MODEL_4715
MODEL_4719	MODEL_4721
MODEL_4735	MODEL_4845

If you do not specify *type*, you are prompted for it. Be sure to specify the correct *type*.

If you are creating Rev. 21.0 or later partitions, you must use the -DISK_TYPE option. If you do not supply the disk type, MAKE will prompt you for it.

-FORMAT

Specifies that formatting be performed on the disk before any other operations are attempted. You must specify -FORMAT if the disk has never before been used on a Prime system. If you want to create pre-Rev. 21.0 partitions on a disk that has been partitioned previously as a Rev. 21.0 disk, use the -FORMAT option to remodify the record headers.

WARNING

Do not use a pre-Rev. 22.0 version of MAKE on the first partition of an existing Rev. 22.0 or a Rev. 21.0 disk. Do not use any revision of MAKE with the -FORMAT option on the first partition of an existing Rev. 22.0 or Rev. 21.0 disk. If you do, the entire physical disk (all partitions on the disk) may be corrupted because MAKE overwrites the DBS file in these cases. Consequently, the data for records that initially were to be written to badspots on any partition of the physical disk, and that were thus written to the RMA, are lost. Be sure all the data on a disk is backed up before using MAKE.

-INTELLIGENT_CONTROLLER

Specifies that the partition should be created to be compatible with intelligent disk controllers capable of dynamic badspot handling and mirroring. If you are creating Rev. 21.0 or later partitions with dynamic badspot handling, create the first partition of the physical disk first.

-MAP_UNCORR Specifies that records with correctable errors are not to be considered badspots. This option is not recommended. The default is to consider records with correctable errors, in addition to those records having uncorrectable errors, to be badspots.

-MAX_EXTENT_SIZE

Specifies the maximum extent size for Rev. 22.0 partitions. The default maximum extent size is 256 for robust partitions or 32 for standard partitions. For a discussion of extent size, see the *Operator's Guide to File System Maintenance.*

-MIN_EXTENT_SIZE

Specifies the minimum extent size for Rev. 22.0 partitions. The default minimum extent size is 64 for robust partitions or 16 for standard partitions. For a discussion of extent size, see the *Operator's Guide to File System Maintenance.*

-NEW_DISK Specifies that the disk partition is being made for the first time. This prevents MAKE from searching for an existing badspot file.

-NO_FLAW_MAP

Specifies that MAKE should not process flaw maps but should use the default level of badspot checking for the disk type involved. (The default levels are listed under the -BADSPOT_LEVEL option.)

-NO_INIT Specifies that MAKE is not to initialize the file system portion of the partition. Since PRIMOS automatically initializes this portion when it writes records, using this option will shorten the time needed to format the disk. The default is to initialize.

-OVERRIDE_DEFAULT_INTERLEAVE

Specifies forward file record allocation with an interleave factor of 3. If you do not specify -ODI or -RDI, MAKE sets the record allocation method based on the CPU, partition type (robust or standard), and disk controller in your system. If you run MAKE standalone, MAKE prompts you for the file record allocation method. This option may only be used on a standard partition; MAKE always uses forward record allocation on robust partitions.

-PARTITION [*diskname*]

Specifies a valid 6-character name for the partition you are creating. If you do not include this option on the command line, MAKE prompts you for a name.

-QUERY_BADSPOTS

> Causes MAKE to prompt the user for known badspots on the disk, so that you can enter badspots manually, either from a list or hard-copy flaw map provided by the manufacturer, or from your own information. The default is no prompt.

-RESTORE_DEFAULT_INTERLEAVE

> Specifies reverse file record allocation with an interleave factor of 1. If you do not specify -ODI or -RDI, MAKE sets the file record allocation method based on the CPU, partition type (robust or standard), and disk controller in your system. If you run MAKE standalone, MAKE prompts you for the method of file record allocation. This option is only meaningful on a standard partition; if you are creating a robust partition, MAKE ignores this argument, since robust partitions always have forward record allocation.

-ROBUST

> Creates a Rev. 22.0 **robust** partition (that is, one which is less susceptible to file-system corruption). For complete information about robust partitions, see the *Operator's Guide to File System Maintenance*.

-SPLIT [*numrecs*]

> Specifies a split partition to be used for paging, with *numrecs* records used as paging records and the rest of the records used for file system data. If you omit *numrecs*, MAKE displays the number of available records and prompts you for the number of paging records. That number should be divisible by 16. The default is to use all the available storage for file storage and none for paging storage. Use the -SPLIT option whenever you want to create a paging partition.

MAXSCH

MAXSCH controls the amount of overlapped processing performed by the system by controlling the number of processes on the ready queue and the fast I/O wait queues.

This command is rarely used unless the default formula does not provide the optimal value for your system. You can determine this optimal value by first issuing the USAGE command, described later in this chapter. In general, if the percentage of I/O activity on the USAGE report is too high, this indicates too much paging activity, and you should lower the MAXSCH number. If the percentage of idle time is high, you should increase the MAXSCH number. For details, refer to the discussion of how to interpret the USAGE command in the *Operator's Guide to System Monitoring.*

Format:

MAXSCH *x*

The minimum value of *x* is 1. The default value of *x* depends upon factors such as the amount of main memory on the system, the number of paging partitions, and the type of CPU. The default value of *x* for a particular machine can be calculated with this formula:

$$x = y + (m + 3) * (.8 + (.2 * n))$$

where

    y is 1 if the CPU is a dual-CPU machine (850™ or 6550™).
       0 for all other models.
    m is the number of megabytes (MB) of main memory.
    n is the number of paging partitions.

MAXUSR

MAXUSR is an internal command that is issued during cold start to allow users to log in. If MAXUSR is issued before the system date and time have been set, it is ignored.

Format:

    MAXUSR [*n*]

n is the maximum number of allowable users (in decimal). If you do not specify a value for *n*, then the maximum number of users is the same as the number of configured users.

The first time the MAXUSR command is issued after the system date and time have been set, the Login please. message is issued at all terminals connected to the system via non-assignable asynchronous lines. Terminals connected via assignable asynchronous lines receive no such message. Once the login message has been issued, the system responds to commands issued from terminals.

Until the first MAXUSR command is issued, PRIMOS may echo characters typed on those terminals, but does not respond to them. The MAXUSR command also controls the number of users that are allowed to be logged in to PRIMOS at any time.

The Login please. message is sent to users' terminals even if the first MAXUSR command is MAXUSR 0; however, users are unable to log in until a higher value of *n* is specified in a subsequent MAXUSR command.

When it is necessary to limit the number of users on the system, you can use MAXUSR to specify that no more than *n* users are allowed to log in. If the number of users is already above *n*, no user is forcibly logged out, but no new users are allowed to log in, and no phantoms are started except those requested from the supervisor terminal (User 1). If other users attempt to log in, they receive the error message Too many users; please try again in a few minutes. If users who are already logged in try to start phantoms, they receive the error message No phantoms available.

When the system is to be shut down, setting MAXUSR to 0 prevents new logins. LOGOUT ALL logs out all users and sets MAXUSR to 0. Refer to your CPU handbook for further details.

MESSAGE

MESSAGE is an internal command used to send messages to users or to other operators. Both users and operators may send messages. Messages may be sent from

- Any user terminal to any user terminal, which may be on a different node in the network

- Any user terminal to the supervisor terminal

- The supervisor terminal to all users

- The supervisor terminal to a specified user

- The supervisor terminal to another supervisor terminal on a different node on the network

Note

When using the MESSAGE command, do not include the terminal's kill character in the text of the message. Doing so prevents words before the kill character from being sent. (Use the TERM -DISPLAY command to list the kill character of your terminal.) For example, assume that the kill character is the question mark during the following message:

```
OK, MESSAGE ALL -NOW -FORCE
Who owns the red sports car? Your lights are on.
```

The first sentence (everything up to and including the question mark) is not sent, and users receive only the message Your lights are on.

You may wish to include the terminal's BELL character (usually [Ctrl] [G]) as part of your message. This will alert users to check their terminals for your message.

Operator–to–user Messages

Format:

$$\text{MESSAGE} \quad \begin{Bmatrix} username \\ -userno \\ ALL \end{Bmatrix} \quad [options]$$

text of message

Arguments:

username Is a user ID. All users logged in as *username* receive the message.

-userno Is the number of a specific user process, preceded by a hyphen or dash. Only the user specified as *-userno* receives the message. To determine the user numbers for the various terminals, issue the STATUS USERS command.

ALL   Represents all users on the system. All users (except for slave processes) receive the message. This argument can be used only at the supervisor terminal.

text of message   Is a single line of text (maximum of 80 characters) to be sent. Sending a message produces two lines of information on the receiver's terminal: the sender identification and the time the message was sent; and the text of the message. For example,

```
*** SYSTEM (user 1 on MU) at 09:28
Jane -- the tape drive is yours now.
```

(If you use MESSAGE ALL -NOW from the supervisor terminal, the message has the header `Bulletin from MU.09:28` instead of the header shown above; if you use MESSAGE ALL without -NOW, the message has no header at all and can easily be mistaken for normal system output. It is wiser always to use the -NOW option with MESSAGE ALL.)

Options:

-FORCE   Allows you to override a user's receive state (see the following section, Receive States) to send messages to a user's terminal no matter what. This option is effective only when used from the supervisor terminal.

If -FORCE is not used, reception of the message may be blocked by some or all of the intended recipients. If this happens when ALL (sending to all users) is specified, the user numbers of all users who are blocking receipt of the message are displayed. If this happens when you are sending to a specific user, you are asked if the message should be forcibly sent to each user who is blocking receipt of the message.

-NOW   Sends the message immediately. This is undesirable if the user is engaged in a sensitive operation, but is essential if you will soon shut down the system. Only interactive terminal users receive a message sent with the -NOW option.

If -NOW is not specified, the message is stored in a broadcast buffer (MESSAGE ALL) or in a single user buffer. The message is displayed at the user's terminal (without any distinguishing header) when that user returns to PRIMOS command level. A message that is in the broadcast buffer (MESSAGE ALL with no -NOW option) is also displayed after a user issues the LOGIN command. To cancel a broadcast message, issue another broadcast message with a null line as *text of message*.

When -NOW is specified, stored messages are not affected.

-ON *nodename*   The message is sent to the specified user or users on the system *nodename* rather than on the local system. This option should immediately follow the *username* or *-userno* argument. ALL cannot be used with -ON. If you specify ALL with -ON, PRIMOS attempts to send the message to the user with the *username* ALL. If there is no user with the name ALL,

PRIMOS sends an error message indicating that you attempted to send the message to an unknown addressee.

Operator—to—operator Messages

Format:

MESSAGE -1 -ON *nodename* $\begin{bmatrix} \text{-FORCE} \\ \text{-NOW} \end{bmatrix}$

text of message

When you use this format, *text of message* is displayed at the supervisor terminal of the node specified by *nodename*.

If the *nodename* given is not connected to the local node, then the error message Unknown node. (SMSG$) is displayed *after* the operator enters the message to be sent.

Note

The *nodename* of the originating system is not displayed at the receiving system. The sending operator should include the originating *nodename* as part of the message text.

The -FORCE and -NOW options function as described previously.

Receive States

Users may set the receive state of their terminals with the -ACCEPT, -DEFER, and -REJECT options of the MESSAGE command.

Format:

MESSAGE *option*

Options:

-ACCEPT   Enables reception of all messages.

-DEFER   Inhibits immediate messages; accepts messages sent without the -NOW option. PRIMOS informs the sender that the receiver's status is -DEFER if the sender uses the -NOW option.

-REJECT   Inhibits all messages. The -FORCE option does not override this option if the MESSAGE command is issued from a user terminal.

Use the -STATUS option (abbreviation: -STAT) of the MESSAGE command to determine the receive state of each user. For example,

```
OK, MESSAGE -STATUS
User                           No  State
SYSTEM                          1  Accept
HARRIET                         2  Reject
PETER                           8  Defer
HONORIA                        10  Accept
BATCH_SERVICE                 102  Accept
YTSMAN                        105  Accept
FTP                           106  Accept
SYSTEM                        109  Accept
```

You may use either of the following formats to determine the message status of an individual user:

$$\text{MESSAGE -STATUS } \begin{Bmatrix} \textit{usernumber} \\ \textit{username} \end{Bmatrix}$$

The format to determine the receive state of the terminal you are using is

MESSAGE -STATUS ME

MIRROR_OFF

MIRROR_OFF allows you to remove a partition from a mirrored pair. **Disk mirroring** consists of having a secondary partition that duplicates all writes to the primary partition. The result is two logically equivalent partitions. If one partition fails, the other can be used in its place.

The MIRROR_OFF command can be issued only from the supervisor terminal. At least one option is required with this command. See the *Operator's Guide to File System Maintenance* for information on disk mirroring; see also the MIRROR_ON command, following.

Format:

$$\text{MIRROR\_OFF } pdev1 \;\; pdev2 \quad \begin{cases} \text{-SHUT\_BOTH [-FORCE]} \\ \text{-SHUT\_PRIMARY} \\ \text{-SHUT\_SECONDARY} \\ \text{-HELP} \end{cases}$$

Options:

pdev1, pdev2	Specifies the physical device numbers of the two partitions that are presently mirrored and that you want to shut down as a mirrored pair. You may omit these arguments if you are using the -HELP option. To list the physical device numbers of mirrored partitions, use the STATUS DISKS command.
-FORCE	Is similar in operation to the -FORCE option of the SHUTDN command. -FORCE makes it possible to shut down a partition even if problems prevent it from being read. You can use this option only with -SHUT_BOTH.
-SHUT_BOTH	Turns off the mirror and shuts down both partitions, giving them an identical date/time stamp. If one member of a mirrored pair has already been shut down, an error message is displayed at the supervisor terminal.
	This option is invalid with paging partitions. Paging partitions can be shut down only at system shutdown, with the SHUTDN ALL command. If paging partitions are specified, an error message is displayed.
-SHUT_PRIMARY	Turns off the mirror, if it was on, and shuts down the primary partition. A subsequent attempt to mirror this primary partition and secondary partition pair requires a catch-up copy because the date/time stamps cannot match. The reason for the mismatch is that the partitions were not shut down at the same time. This option is valid only if the mirror is on or if the primary partition is bad. Otherwise, an error message is displayed at the supervisor terminal.

-SHUT_SECONDARY
: Turns off the mirror, if it was on, and shuts down the secondary partition. A subsequent attempt to mirror the primary partition and the secondary partition requires a catch-up copy, because the date/time stamps will not match. The reason for the mismatch is that the partitions were not shut down at the same time. This option is valid only if the mirror is on or if the secondary partition is bad. Otherwise, an error message is displayed.

-HELP
: Lists the legal arguments for the MIRROR_OFF command.

MIRROR_ON

MIRROR_ON allows you to create a mirrored pair. **Disk mirroring** consists of having a secondary disk that duplicates all writes to the primary disk. The result is two logically equivalent disks. If one disk fails, processing on the other disk continues. Since mirrored pairs are logically equivalent, two disks in a mirrored pair must either be both robust partitions or both standard partitions.

The purpose of disk mirroring is to increase system availability by making it possible to process with pairs of logical disks. These logical disks are identical; if one fails, the other is a duplicate and is available for use. The changeover to the duplicate disk is automatic. With mirroring, all records are written to both the primary partition and the secondary partition. Reading of the records, however, is split between the two mirrored partitions. This reduces the average time it takes to read a record.

This command may be issued only from the supervisor terminal. For this command to be valid, one of the mirroring configuration directives (MIRROR, COMDVM, PAGINM) must be in the configuration file.

Notes

If you do not shut down a mirrored disk properly with the MIRROR_OFF command, the next time you try to start that disk with MIRROR_ON you will see the following message at the supervisor terminal:

```
Are you sure you want to do a catch-up copy?
```

Your system boot will pause until you answer this question, and no users will be allowed to log on until the question is answered.

If, after a warm start, you try to use MIRROR_ON on a disk on an intelligent controller, you may see the following message at the supervisor terminal:

```
Could not OPEN PDEV pdev due to controller or device errors. (mirror_on)
```

If you see this message, wait until you see the following message:

```
DLL and init ICOP complete controller_address - (disk_init)
```

This message means that the firmware for the intelligent disk controller has been reloaded. You can then issue the MIRROR_ON command again.

See the *Operator's Guide to File System Maintenance* for information on disk mirroring.

Format:

MIRROR_ON *pdev1* *pdev2* $\left\{ \begin{array}{l} \text{-PRIORITY\_SELECT} \\ \text{-HELP} \end{array} \right\}$

pdev1 and *pdev2* are the physical device numbers of the two partitions that you want to mirror.

If you attempt to mirror a pair of partitions that are not identical, the system issues the following warning query:

```
A catch-up copy of primary device <pdev1> to secondary device <pdev2> will be started.
Are you sure you want to continue?
```

If you are running MIRROR_ON from a COMI file, you may still answer this query from your terminal.

The -PRIORITY_SELECT option (abbreviated -PRISEL) specifies that the system should take over control of a dual-ported disk, whether or not that disk is currently being controlled from its alternate port. (A **dual-ported** disk is one which can be simultaneously connected to two different systems.)

WARNING

Never priority select a dual-ported disk drive while the other system attached to the drive is running. You could corrupt the disk's file system by interrupting the other system's write to disk.

Never place any system's COMDEV on a dual-ported disk drive; if someone inadvertently priority selected that disk from the secondary port, the first system would behave unpredictably, and probably crash.

The -HELP option displays a brief help message and the correct format of the MIRROR_ON display. You cannot use -HELP with any other option.

MONITOR

BATCHQ>MONITOR is the program that monitors the Batch subsystem. It can be run only by the BATCH_SERVICE phantom that is started by the BATCH -START command. See the *Operator's Guide to the Batch Subsystem* for details.

At Rev. 21.0, BATCHQ>MONITOR does not send messages to the supervisor terminal each time it begins or finishes a job. (The Batch Administrator can specify otherwise.) MONITOR does, however, continue to send and record these messages to the Batch monitor log file. The Batch subsystem always sends error messages to the supervisor terminal, even if the initiation and termination messages are suppressed.

To display job initiation and termination messages, edit the Batch startup command file (BATCHQ>START_BATCH_MONITOR.COMI) and change the line that runs the Batch monitor (the RESUME MONITOR command) to read RESUME MONITOR instead of RESUME MONITOR -HUSH. The change takes effect the next time the Batch monitor is started up.

MTRESUME

MTRESUME is an internal command that has two distinct functions. First, you can use it to invoke the following utility programs from magnetic tape:

- COPY_DISK
- FIX_DISK
- MAGSAV and MAGRST
- MAKE
- PHYRST

Second, you can use MTRESUME to print an index of a tape mounted on the system tape drive.

MTRESUME performs two major functions: running programs and printing a tape index. Each function requires a different command-line syntax. No matter how you want to use MTRESUME, you must be aware of the conditions under which MTRESUME can be invoked. These conditions are

- The utility programs listed above must have been written to the tape using the MAGSAV or BOOT_CREATE commands.
- The tape drive must be assigned to your process.
- PRIMOS must be running.

Starting Utility Programs

When MTRESUME is used to start one of the utility programs listed above, it first copies the file containing the specified program to memory and then invokes the program.

Format:

$$
\text{MTRESUME} \quad \left\{ \begin{array}{l} \text{MT}n \ pathname \left[\begin{array}{l} \text{-LOGICAL\_TAPE } m \\ \text{-COMMAND\_LINE\_OPTIONS } options \end{array} \right] \\ \text{-HELP} \end{array} \right\}
$$

This command-line format directs PRIMOS to read the pathname from a MAGSAV-formatted magnetic tape mounted on unit n into memory. The format also directs the read operation to start at segment 4000_8 at the starting address specified by the file's RVEC.

The MTRESUME command ignores the 16-bit RVEC ending address and continues loading until the end-of-file (EOF) is reached. Segment boundaries are crossed, as necessary.

A common use of the MTRESUME command using this format is to resume MAGRST from tape to restore system software during the bootstrap procedure.

You would also use MTRESUME in this format if the command device is damaged so that the FIX__DISK utility program on the disk (stored in CMDNC0>FIX__DISK.SAVE) is inaccessible. Then you could use MTRESUME to run FIX__DISK from the magnetic tape. A sample command line follows:

```
OK, MTRESUME MT0 CMDNC0>FIX_DISK.SAVE -CMDOPT -DISK 1060 -FIX
```

You cannot use MTRESUME to invoke utility programs that assume that any libraries are installed. The utilities listed earlier do not make this assumption.

Arguments and Options:

MT*n* *pathname*   Designates the tape drive, MT0 through MT7, from which you are resuming the utility program *pathname*.

-LOGICAL__TAPE *m*

    Specifies the number of the logical tape to be used. The default is logical tape one (-LT 1).

-COMMAND__LINE__OPTIONS *options*

    Specifies the options for the command being invoked from tape. This must be the last option on the command line. Replace the argument *options* with the set of options appropriate to the command being invoked.

-HELP   Displays the command's syntax. Do not use any other options with -HELP.

Creating a Tape Index

MTRESUME can also be used to create a **tape index**: a list of files that have been saved by MAGSAV on a tape. The index is displayed at the supervisor terminal and is not written into a file.

Format:

    MTRESUME [*options*]

Options:

MT*n*   Designates the tape drive from which you resume the utility program. *n* is an integer from 0 through 7, inclusive. You must supply both the MTn argument and the -INDEX option if you want to print a tape index.

-INDEX   Specifies that an index of the tape is to be displayed on the terminal screen or printed at the terminal printer. You must supply both the MTn argument and the -INDEX option if you want to print a tape index.

-LOGICAL__TAPE *m*

    Specifies the number of the logical tape to be used. The default is logical tape one (-LT 1).

-PAGE__LENGTH *lines*

Lets you change the number of lines to be displayed or printed before pausing. *lines* is a decimal value that specifies the number of lines to display or to print.

If you do not specify this option, MTRESUME uses a default page size of 23 lines. You cannot specify both -PAGE__LENGTH and -NO__WAIT.

-NO__WAIT   Overrides the default method of displaying the tape list and displays the entire list without pausing. You cannot specify both -PAGE__LENGTH and -NO__WAIT.

-HELP   Displays the command's syntax. Do not use any other options with -HELP.

MTRESUME Error Messages

In addition to the errors sent by the PRIMOS command environment, MTRESUME generates the following error messages:

A file name (*filename*) and -INDEX can not both be specified. (MTRESUME)
The -INDEX option is used to display an index for the tape currently mounted on the tape drive. This index is printed on the supervisor terminal; it cannot be written to a file.

A file name or -INDEX must be specified. (MTRESUME)
If you supply the -INDEX option, MTRESUME prints out an index of the specified tape. If you supply a *filename* argument, MTRESUME runs the specified program. You must supply one of these two.

Command line options and -INDEX can not both be specified. (MTRESUME)
The -COMMAND__LINE__OPTIONS option may only be specified when you are running a program with MTRESUME; it has no meaning when you run MTRESUME with the -INDEX option.

Device not connected, MT*n* (MTRESUME)
The controller for the specified tape drive, MT*n*, does not exist. Reenter the command with a valid drive number.

Device not assigned, MT*n* (MTRESUME)
Assign the tape drive, MT*n*, using the ASSIGN command and try again.

Empty file, cannot resume *filename* (MTRESUME).
The *filename* you specified contains no data, and therefore cannot be run. Check to be sure that you specified the correct name.

File is too small, cannot resume *filename* (MTRESUME).
The file you specified is too small to be a runnable file. Check to be sure that you specified the correct name.

`Incorrect number of words in tape block. Unable to use tape. (MTRESUME)`
> Check to make sure that you have mounted the proper tape. MTRESUME cannot read the tape you mounted.

`Invalid logical tape specified:` *tape_number*. `(MTRESUME)`
> You specified a logical tape number which was negative. Logical tape numbers must be zero or greater.

`Invalid magtape specifier "`*user_specifier*`" (MTRESUME)`
> You entered something other than MT0 through MT7 to specify a magnetic tape drive. Enter your command again, giving a proper magtape specifier.

`Invalid rvec, cannot resume` *filename*.
`Start` *x*, `End` *y*, `PB` *z* `(MTRESUME)`.
> The *filename* you have specified is not a Static Mode (.SAVE) program, and MTRESUME cannot run it. Be sure that you have specified the correct filename and mounted the proper tape. (For details on Static Mode, see the *Programmer's Guide to BIND and EPFS* (DOC8691-1LA and its update package UPD8691-11A.))

`Magtape error on` *MTn*, `controller status:` *xxxxxx xxxxxx*,
`recovered (MTRESUME)`
`Magtape error on` *MTn*, `controller status:` *xxxxxx xxxxxx*,
`unrecovered (MTRESUME)`
> The preceding two messages state that MTRESUME encountered either a recoverable or an unrecoverable error while reading from the tape. (The numbers *xxxxxx xxxxxx* (octal values) are the hardware status words that correspond to *statv(2)* and *statv(4)* as passed back by the subroutine T$MT. See the *Subroutines Reference IV: Libraries and I/O* (DOC11083-2LA) for the definitions of these words and for a discussion of the subroutine T$MT.) If the error is unrecoverable, MTRESUME returns you to PRIMOS level. Clean and align the tape heads or try another tape.

`Magtape MT`*n* `offline or not ready. (MTRESUME)`
> Put the tape drive, MT*n*, online, or mount and load the tape.

`Magtape MT`*n* `at physical end of tape. (MTRESUME)`
> Rewind the tape; check to make sure that you did not specify too large a logical tape number.

`Missing end of file, not a valid MAGSAV tape. (MTRESUME)`
> The tape you are trying to read was not completely written by MAGSAV. Check to make sure that you are using the proper version of the tape.

`Not a file:` *filename* `(MTRESUME)`.
> The *filename* you gave is not the name of a program; it is some file-system object, like a directory, which cannot be executed. Be sure that you have specified the proper filename and mounted the proper tape.

`Pathname not found or inaccessible,` *pathname* `(MTRESUME)`
> The *pathname* you specified was not found on the tape.

Tape block out of sequence; should be x is y. Unable to use tape. (MTRESUME)
> Something is wrong with the tape which you mounted. Check that you have mounted the proper tape.

This is not a MAGSAV tape. (MTRESUME)
> The tape you are trying to read was written by some tape utility other than MAGSAV. MTRESUME can only read tapes which were written with MAGSAV.

Running MTRESUME to Start a Utility Program

This is an example of using MTRESUME to start the utility MAGRST.

```
OK, ASSIGN MTO
OK, MTRESUME MTO CMDNCO>MAGRST
This is a revision 20 MAGSAV tape.
Date:      06-01-88
Revision: 0
Reel:      1
Name:      BOOT1

[MAGRST REV. 22.0 Copyright (c) Prime Computer, Inc. 1988]
TAPE UNIT (9 TRK): 0
(Tape not at load point)
ENTER LOGICAL TAPE NUMBER: 1
NAME:
DATE(MM DD YY): 06-01-88
REV NO:       0
REEL NO:       1
READY TO RESTORE: YES
*** STARTING RESTORE ***
Restoring Password UFD into existing ACL UFD: CMDNCO
Restoring Password UFD into existing ACL UFD: DOS
***End Logical tape***
***Restore Complete***
OK, UNASSIGN MTO -UNLOAD
Device released.
OK,
```

Sample Tape Index

The next example shows an index listing sent to the supervisor terminal. A Rev. 20.0 tape was mounted and indexed.

```
OK, ASSIGN MTO
Device MTO assigned.
OK, MTRESUME MTO -INDEX
This is a revision 20 MAGSAV tape.
Date:      06-01-88
```

```
Revision: 0
Reel:     1
Name:     BOOT1

--- Start of logical tape ---
PRIRUN
MAKE.SAVE
MAGRST
MAGSAV
DOS.SAVE
FIX_DISK.SAVE
COPY_DISK.SAVE
NSED
PHYRST
PRIMOS.COMI
CONFIG
--- End of logical tape ---
OK,
```

NTS_ASSOCIATE

NTS_ASSOCIATE maps a physical line on an LTS controller to a PRIMOS line number. This command is restricted to Network Administrators, system operators, or System Administrators who are members of the .NETWORK_MGTS ACL group.

Format:

$$\text{NTS\_ASSOCIATE} \quad \begin{Bmatrix} \text{-LINE } x \text{ -LTS\_NAME } y \text{ -LTS\_LINE } z \text{ [-PERMANENT]} \\ \text{-HELP} \end{Bmatrix}$$

Options:

-LINE x Specifies the physical line number to be associated with an LTS controller. x is the decimal number of the NTS assignable line, in the range 1024 through 1536, inclusive.

-LTS_LINE z Specifies the physical LTS line number. Each LTS has 8 physical lines. z is a decimal number in the range 0 through 7, inclusive.

-LTS_NAME y Identifies the LTS that you want to associate with a particular PRIMOS line. y, which may have a maximum of 16 characters, is usually designated in the NTS configuration file by the Network Administrator through the use of the CONFIG_NTS command.

-PERMANENT   Indicates whether this line is to be reconnected automatically when a disconnect occurs. If an association already exists and a change from temporary to permanent, or permanent to temporary, is desired, you can issue the NTS_ASSOCIATE command using either the -LINE option or the -LTS_NAME and LTS_LINE options.

                 A permanently associated line is also connected when you issue the ASSIGN command for that line, regardless of whether the connection was completed. This is useful for Spooler lines when the LTS may not be running before the line is assigned.

-HELP   Provides information about the proper format of the command and its options.

For more information, see the *NTS User's Guide.*

NTS_LINE

NTS_LINE places a terminal connected to PRIMOS via a LAN Terminal Server 300 (LTS300) into Command mode.

When you have successfully connected to an NTS host and logged in, you are automatically in Data Transfer mode with a default set of session parameters configured at the LTS. You may wish to or need to alter some of those parameter settings. To do so, you must switch to the LTS Command mode by typing an escape character. If the escape character on your terminal is disabled, you can still enter Command mode with the NTS_LINE command.

Format:

$$\text{NTS\_LINE} \quad \left\{ \begin{array}{l} \text{-COMMAND} \\ \text{-HELP} \end{array} \right\}$$

NTS_LINE is a command used with the Prime Network Terminal Service (NTS). For more information, see the *NTS User's Guide*.

NTS_LIST_ASSOCIATE

NTS_LIST_ASSOCIATE displays the current associations of assignable PRIMOS NTS line numbers with their corresponding LTS name or LTS line numbers. It also specifies whether lines are permanently associated.

Format:

$$\text{NTS\_LIST\_ASSOCIATE} \quad \begin{cases} \text{-LINE } \textit{line\_number} \\ \text{-LTS\_NAME } \textit{lts\_name} \text{ [-LTS\_LINE } \textit{lts\_line number]} \\ \text{-HELP} \end{cases}$$

Options:

-LINE *line_number*

Displays the association for a specific PRIMOS NTS line. *line_number* is the decimal number of the NTS assignable line, in the range 1024 through 1536, inclusive.

-LTS_NAME *lts_name*

Displays the association for a specific LTS. *lts_name* may have a maximum of 16 characters and is usually designated by the Network Administrator in the NTS configuration file with the CONFIG_NTS command.

-LTS_LINE *lts_line_number*

Displays the association for a specific LTS line number. *lts_line_number* is a decimal number in the range 0 through 7, indicating the LTS physical line number.

-HELP   Displays information on the syntax of the command and its options.

If you invoke the NTS_LIST_ASSOCIATE command without any options, the system displays the association for all lines on every LTS. The display also indicates any permanent associations.

NTS_UNASSOCIATE

NTS_UNASSOCIATE breaks the mapping of an associated LTS line with a PRIMOS line number in the NTS assigned line range. You cannot break an association if the line is currently assigned.

Format:

$$NTS\_UNASSOCIATE \begin{Bmatrix} \text{-LINE } line\_number \\ \text{-LTS\_NAME } lts\_name \text{ [-LTS\_LINE } lts\_line\_number \\ \text{-HELP} \end{Bmatrix}$$

NTS_UNASSOCIATE is a privileged command and is restricted to the Network Administrator or system operator.

Options:

-LINE *line__number*

Specifies the physical line number associated with an LTS controller. *line_number* is the decimal number of the PRIMOS NTS assignable line, in the range 1024 through 1536, inclusive.

-LTS_NAME *lts__name*

Specifies the name of the LTS to which the line is associated. *lts_name* may have a maximum of 16 characters and is usually designated by the Network Administrator in the NTS configuration file with the CONFIG__NTS command.

-LTS_LINE *lts__line__number*

Specifies the physical LTS line number. *lts_line_number* is a decimal number in the range 0 through 7, inclusive.

-HELP
Provides information about the proper format of the command and its options.

For more information, see the *NTS User's Guide.*

PASSWORD_DIRS

PASSWORD_DIRS is used to prevent (-OFF option) or allow (-ON option) the creation of password directories. The System Administrator may want to prevent users from having password directories, thus forcing them to set access control lists on their files and directories. To prevent users from creating password directories, the System Administrator must issue the -OFF option to PASSWORD_DIRS.

Format:

$$\text{PASSWORD\_DIRS} \quad \begin{Bmatrix} \text{-ON} \\ \text{-OFF} \end{Bmatrix}$$

The -ON option specifies that the creation of password directories is allowed. This is the default for the system if the PASSWORD_DIRS command is not used at cold start.

The -OFF option specifies that the creation of additional password directories is prohibited. When this option is in effect, any attempt to create a password directory, either from the program level or the command level, is prevented. If a user specifies the -PASSWORD option to the CREATE command, the following error message appears:

```
Use of password directories not allowed on this system (create).
```

Password directories are not allowed on a C2-secure system. See the CONVERT_TO_ACLS command earlier in this chapter, which enables C2 software users to remove old password directories from the system.

PRATIO

PRATIO allows the operator to change the paging ratios of the paging partitions currently installed on the system. This command may be used only at the supervisor terminal. The paging partitions are established by the PAGING or PAGDEV and ALTDEV directives in the system configuration file and are activated at startup. A maximum of eight paging partitions may be allocated on a system.

Refer to the *Operator's Guide to File System Maintenance* for information on partitioning physical disks. Refer also to the *System Administrator's Guide, Volume I: System Configuration* for information on paging devices.

Format:

$$\text{PRATIO} \quad \begin{Bmatrix} percent\text{-}1 \; [\;...percent\text{-}8\;] \\ \text{-DISPLAY} \end{Bmatrix}$$

Options:

percent-1...percent-8

Determines the percentage of paging activity that is to take place on each paging partition. The total of percentages for all paging partitions must equal 100.

The default paging ratio for a paging partition is calculated by PRIMOS at cold start. It is based on the size of the paging partition in relation to the total number of paging records. For example, if you have four paging partitions and one of them has 15% of the paging records, then that partition's paging ratio is 15% (that is, it is used 15% of the time for paging).

-DISPLAY   Provides information on the percentage of paging activity currently specified for each paging partition, as set at cold start by PRIMOS or in a subsequent PRATIO command.

The following example shows a system with four paging partitions:

```
OK, PRATIO -DISPLAY
PRATIO values for each paging partition
```

Partition # 1	PDEV = 110061	PRATIO = 14 %
Partition # 2	PDEV = 100263	PRATIO = 28 %
Partition # 3	PDEV = 100463	PRATIO = 29 %
Partition # 4	PDEV = 110261	PRATIO = 29 %

Using the PRATIO command, you can change the percentage of paging activity of these paging partitions, as in the following example:

```
OK, PRATIO 10 20 20 50
```

If the total of the PRATIO values does not add up to 100, the system generates an error message. An error message is also displayed if you have more PRATIO values than there are paging partitions on the system.

PRINT_SECURITY_LOG

PRINT_SECURITY_LOG is used in a C2-secure system to invoke the Audit Report facility. The System Administrator uses this facility to examine the contents of an audit file. You create this file by issuing the SECURITY_MONITOR command, which is discussed later in this chapter.

Format:

   PRINT_SECURITY_LOG -LOGFILE *pathname* [*options*]

Argument:

-LOGFILE *pathname*

> *pathname* is the audit trail file whose contents are to be displayed. The file must be a closed file on disk. If the file has been backed up to tape already, it first must be restored to disk.

Options:

-USERS [*userid_list*]

> Selects only those records generated by the users in *userid_list*. The *userid_list* may contain a maximum of 16 user IDs separated by blanks. If no *userid_list* follows the -USERS option, then all users' records are reported.

-NUMBER_OBJECT [*num_obj_list*]

> Reports only those audited number objects that are specified in *num_obj_list*. The *num_obj_list* may contain a maximum of 16 number objects separated by blanks. If no *num_obj_list* follows -NUMBER_OBJECT, then all number objects are reported.
>
> A number object may be a positive number, such as a file unit number or a segment number. It may be a negative number, such as an imaginary address used with an EPF.

-TEXT_OBJECT [*text_obj_list*]

> Reports only those audited text objects that are specified in *text_obj_list*. The *text_obj_list* may contain a maximum of 16 text objects separated by blanks. If no *text_obj_list* follows -TEXT_OBJECT, then all text objects are reported. A text object may be either a full or partial pathname. You can also specify a device name by designating a subdirectory to DEVICE*.

-EVENTS [*args*] Selects the set of event categories to be reported. If you omit this option, a report of all events specified below is displayed. The -EVENTS option may take one or more of the following event category arguments (*args*):

Argument	Description
FILE_SYSTEM	Specifies that file system events are to be reported.
SYSTEM	Specifies that system events are to be reported.
PRIV_OPS	Specifies that events involved with privileged operations are to be reported.
ATTACHES	Specifies that attach operations are to be reported.

-EVENT_TYPES [*args*]

Specifies the event types to be reported. If you omit this option, all event types are reported.

The -EVENT_TYPES option takes one or more of the following event type arguments, (*args*):

Argument	Description
SUCCESS	Specifies that successful events are to be reported.
NO_ACCESS	Specifies that access failure events are to be reported.
FAILURE	Specifies that failed events are to be reported.

-NO_WAIT Specifies that the command should not pause after every screenful of output, but should instead print out the entire report uninterrupted. Phantoms used to create COMO files must use this option.

-HELP Displays a summary of the command's options.

If you want a permanent copy of the security log, you can send PRINT_SECURITY_LOG output to a COMO file. You can avoid tying up a terminal while the log is being displayed by creating this COMO file from a small CPL program which you start as a phantom.

The CPL program should contain the following lines:

```
COMO  your__file__name.COMO
PRINT_SECURITY_LOG -LOGFILE your__logname -NO_WAIT
COMO -E
```

You can submit this file as a phantom as follows:

```
OK, PH CPL__name
```

After the phantom has completed printing the report, you can spool it to a printer that has a wide margin format. Here is a sample output file from the PRINT_SECURITY_LOG command.

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
Event Group  Date/Time        Type   User#  Code   User
Description
Object(s)
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ATCH         88-07-05 07:04:23  SUCC    17     0    **userid not set**
Attach to directory
<OP_SYS>SAD

FS           88-07-05 07:04:23  SUCC    17     0    **userid not set**
Open file
<OP_SYS>SAD>UVF Unit requested: 32 Unit assigned: 32

FS           88-07-05 07:04:23  SUCC    17     0    **userid not set**
Open file
<OP_SYS>SAD>MPF Unit requested: 31 Unit assigned: 31

FS           88-07-05 07:04:23  SUCC    17     0    **userid not set**
Check existence of file
<OP_SYS>SAD>SDF

FS           88-07-05 07:04:23  SUCC    17     0    **userid not set**
Open file
<OP_SYS>SAD>MGF Unit requested: 30 Unit assigned: 30

ATCH         88-07-05 07:04:23  SUCC    17     0    **userid not set**
Relative attach
<OP_SYS>SAD>DEFAULT

FS           88-07-05 07:04:23  SUCC    17     0    **userid not set**
Open file
<OP_SYS>SAD>DEFAULT>PVF Unit requested: 29 Unit assigned: 29

FS           88-07-05 07:04:23  SUCC    17     0    IRENE
Open file
<OP_SYS>SAD>DEFAULT>PDF Unit requested: 28 Unit assigned: 28

FS           88-07-05 07:04:23  SUCC    17     0    IRENE
Open file
<OP_SYS>SAD>DEFAULT>PPPF Unit requested: 27 Unit assigned: 27

FS           88-07-05 07:04:23  SUCC    17     0    IRENE
Open file
<OP_SYS>SAD>DEFAULT>MPP Unit requested: 26 Unit assigned: 26

ATCH         88-07-05 07:04:23  SUCC    17     0    IRENE
Attach to directory
<BANKIT>IRENE

FS           88-07-05 07:04:23  SUCC    17     0    IRENE
Close file by unit
28
```

```
FS            88-07-05 07:04:23   SUCC     17      0     IRENE
Close file by unit
27

FS            88-07-05 07:04:23   SUCC     17      0     IRENE
Close file by unit
30

FS            88-07-05 07:04:23   SUCC     17      0     IRENE
Close file by unit
26

FS            88-07-05 07:04:23   SUCC     17      0     IRENE
Close file by unit
31

FS            88-07-05 07:04:23   SUCC     17      0     IRENE
Close file by unit
32

FS            88-07-05 07:04:23   SUCC     17      0     IRENE
Close file by unit
29

ATCH          88-07-05 07:04:23   SUCC     17      0     IRENE
Attach to directory
<OP_SYS>CMDNCO

SYS           88-07-05 07:04:23   SUCC     17      0     IRENE
Return segment/delete EPF
-4
                .
                .
                .
```

PROP

PROP enables the computer operator to perform the following operations on the Spooler:

- Monitor the Spooler's status

- Control despooler phantoms

- Change to another printer environment

- Verify a printer environment

- Suspend a currently printing job and restart it later

Changes to PROP at Rev. 22.0

At Rev. 22.0, the PROP command accepts two new arguments, -SUSPEND and -RELEASE, which allow the operator to suspend currently printing jobs and restart them later from the point of interruption. The functionality of the -BACK option has also changed slightly.

Changes to PROP at Rev. 21.0

The PROP command changed significantly at Rev. 21.0. With the pre-Rev. 21.0 PROP command, users created printer environment files with the -CREATE option and modified environment files with the -MODIFY option. These two options and their subcommands are not supported at or after Rev. 21.0.

At Rev. 21.0 and later, PRIMOS requires that the system operator or System Administrator create these environment files, one for each environment, as regular ASCII files, and place them in the SPOOL* directory. These files may be created with any PRIMOS editor, including EMACS and ED. Refer to the *Operator's Guide to the Spooler Subsystem* for detailed information about creating environment files.

Caution

Environment files created with pre-Rev. 21.0 PROP commands do not work with the Rev. 21.0 or Rev. 22.0 Spooler. You must create new environment files, using the Rev. 21.0 format, in order to run the Spooler under Rev. 21.0 or Rev. 22.0 PRIMOS.

The CONVERT_ENV utility is available to convert pre-Rev 21.0 environment files to templates that can then be modified for use on Rev. 21.0 or 22.0 Spoolers. This utility is explained earlier in this chapter.

Format:

$$\text{PROP} \quad \begin{Bmatrix} environment\_name \quad options \\ \text{-STATUS} \end{Bmatrix}$$

All of the options except -STATUS and -DISPLAY require you to be a privileged user.

environment_name specifies a printer environment that has been created by the System Administrator. The environment specifies such details as the printer or plotter to be used, type of paper, number of lines to be printed on a page, the width (margins) of a page, the type characteristics, whether or not a header appears on the output, and so on. Details of the environment are in an environment file.

Options:

-ABORT   Causes the despooler phantom to stop printing the current file; the request is left in the spool queue. If the aborted file is large, this option allows the operator to force the printing of all short files, and then restart the aborted file from the beginning. This option also forces a previously requested paper change, hang, or shutdown to occur immediately, provided that the request was made by using the -FINISH keyword with the appropriate option. In addition, -ABORT implies a -CONTINUE. See -HANG, -MODIFY, and -STOP.

-BACK *n*   Causes the despooler phantom to back up a given number of pages (*n*) and reprint the data from that point forward. *n* must be an integer greater than 0; if you do not supply *n*, the default value is 1.

       The -BACK option is useful for situations in which very large files have been partially printed when a printer problem occurs. The -BACK option allows the operator to restart the printing of the file, beginning from the point at which printer problems began.

-COLDSTART Used during cold start to initialize the Spooler data structures and reset the queue control information.

-CONTINUE Takes the despooler phantom out of hang or lineup mode so that it can continue printing or scanning. Printer operation continues where it left off.

-DISPLAY [-NO_WAIT]
       Displays the status of *environment_name* and displays the contents of the corresponding environment file. If you do not specify -NO_WAIT, the --More-- prompt is printed after each page of information, and you must press ⌈Return⌉ to see the next page. If you specify -NO_WAIT, output is uninterrupted.

-DROP   Causes the despooler phantom to stop printing the current file and to delete the request from the spool queue. This option also forces a previously requested hang or shutdown to occur immediately, provided that the request was made by using the -FINISH keyword with the appropriate option. (The SPOOL option -CANCEL deletes a file from the spool queue if it has not started printing, or attempts to issue a -DROP request if it has started printing on a local printer.)

-HANG [*time_option*]

Temporarily suspends printing and/or scanning the queue by stopping the phantom that services the *environment_name*. *time_option* may be one of -NOW, -FINISH (abbreviated -FIN), or -IDLE. If you specify no *time_option*, the default is -FINISH. -NOW suspends the phantom immediately. The print request remains in the spool queue and the file is printed when you restart the phantom. -FINISH suspends the phantom after it finishes the currently printing file. -IDLE suspends the phantom when it has no more work to do. When the phantom hangs, it sends you the message `Hanging`; printing may continue for a short while as buffers empty. Use the -ABORT, -CONTINUE, -DROP, or -RESTART options, as appropriate, to resume printer operation.

-LINEUP [linum]

Causes the despooler to back up to the start of the current page, print *linum* lines of the document and then to pause and display the message `paper alignment check` to the operator. Restart despooling by issuing another PROP command with either the -CONTINUE option (which does not reprint the first part of the data) or the -LINEUP option to repeat the lineup sequence.

Note

You may specify -LINEUP as part of the -START command. For example, `PROP PR1 -START -LINEUP 5`.

In this case, the lineup is done on the first file eligible for printing.

-RELEASE

Restarts a previously-suspended job. The job will continue printing from the page at which it was interrupted.

-RESET [*new_environment*] [*time_option*]

Causes the despooler phantom to shut down and restart. Use this option if the environment file has been amended. The optional *new_environment* argument allows you to replace one despooler environment with another using only one command. This sequence is commonly used when you are changing paper types. *time_option* specifies when the job is to begin printing. -NOW asks that the job begin immediately, -FINISH (abbreviated -FIN) asks that the job begin when the currently printing file has completed, and -IDLE asks that the job begin when all other jobs in the queue have completed. The default is -FINISH.

-RESTART

Causes the despooler phantom to restart the currently printing file. This is often used after the printer has been halted because paper has run out, paper has jammed, or a similar cause. Printing of the file restarts from the beginning of the file. This option also forces a previously requested paper change, hang, or shutdown to occur immediately, provided that the request was made by using the -FINISH keyword with the appropriate option. In addition, -RESTART implies a -CONTINUE. See -HANG and -STOP.

-START   Starts up the named environment.   Use this option to start the Spooler
                initially or after you have used -STOP.

-STATUS [-ALL]
                Displays a list of the currently active environments and indicates the
                status of each one.   Possible status indications are: Aborting, Backing Up,
                Dropping, Hanging, Idle, Lineup, Printing, Reset, Restarting, Starting Up,
                and Stopping.   If the status is Printing, the filename, current copy, and
                page number are shown.

                The -ALL option lists all environments, along with their status.   The
                status of inactive environments is Inactive.

-STOP [*time_option*]
                Causes the named despooler environment to shut down.   This is used to
                stop printing or scanning the queue.   *time_option* must be one of -NOW,
                -FINISH (abbreviated -FIN), and -IDLE.   -NOW shuts down the phantom
                immediately.   -FINISH shuts down the phantom after the current file is
                finished printing.   -IDLE shuts down the phantom when it has no more
                work to do.   (The default is -FINISH.) Use the -START option to start
                up another phantom to service *environment_name*.   A message is
                displayed when the phantom shuts down successfully.

-SUSPEND   Halts a currently printing job and allows other jobs to begin printing.
                The suspended job can later be restarted from the point at which it was
                interrupted with the -RELEASE option.

-VERIFY   Checks the syntax of an environment file and notifies you of any errors.

-HELP   Displays the command-line syntax.

REMOVE_PRIORITY_ACCESS

REMOVE_PRIORITY_ACCESS removes a priority ACL (Access Control List) from a partition and overrides the effect of a previous SET_PRIORITY_ACCESS command.

Format:

    REMOVE_PRIORITY_ACCESS *diskname*

diskname is the name of the disk partition from which the priority ACL is to be removed. This command may be issued only from the supervisor terminal or by the System Administrator. Use the LIST_PRIORITY_ACCESS command (described earlier in this chapter) to display the priority ACL in effect for a disk partition. See also the SET_PRIORITY_ACCESS command, later in this chapter.

REPLY

REPLY is used to reply to users' magnetic tape requests. See the *Operator's System Overview* for examples of handling tape assignment requests. See also the ASSIGN command for assigning tapes and the SETMOD command for setting the mode of tape assignments.

Format:

$$\text{REPLY } \textit{-usernum } \text{-TAPE } \begin{cases} \text{ABORT} \\ \text{GO} \\ \textit{pdn} \\ \text{RESEND} \end{cases}$$

In this form of the REPLY command, you must include the *-usernum* (user number) and -TAPE arguments, or an error message results.

Arguments to –TAPE Option:

ABORT
You are unable to assign the requested drive because no drive is available, the tape is not found, and so on. The following message is displayed at the user's terminal:

```
Device not available.  Magtape assignment request aborted (asnmt$)
```

GO
You approve the request. The message displayed at the user terminal indicates that the desired tape drive has been assigned. Use GO to answer all requests that did *not* specify the MTX -ALIAS MT*ldn* option.

pdn
Use the *pdn* option in all cases where a user specifies the MTX -ALIAS MT*ldn* option. Select a suitable drive, perform any special requests, then use this option to send the drive's physical device number to the user's terminal. The following message is then displayed at the user's terminal:

```
Device MTpdn Assigned.
```

RESEND
The most recently sent assignment request from user *-usernum* is repeated at the supervisor terminal.

Four additional REPLY options are available for your use.

Format:

    REPLY *option*

Options:

-TAPE RESEND	Repeats the most recent of all outstanding requests at the supervisor terminal.
-ALL RESEND	Repeats all outstanding (unanswered) requests at the supervisor terminal.
-*usernum* RESEND	Repeats all outstanding requests from the specified user number.
-REPEAT *seconds*	Allows you to set how frequently (in seconds) requests are repeated. The *seconds* parameter is a decimal number. The default repeat frequency is 180 seconds.

RESET_DUMP

RESET_DUMP is an internal command that resets the parameters of a partial tape dump to the default values. The default is that the following segments are to be written to tape during a partial tape dump.

- 0_8 to 1777_8. (These contain the kernel operating system and its databases.)

- 6000_8 to 6003_8 for all logged-in users.

- 4000_8 to 7777_8 for the live user (that is, the process that was using the CPU at the time of the halt).

RESUS

RESUS is a DSM (Distributed Systems Management) facility that gives you access to the same command privileges at a user terminal that you would have at the supervisor terminal. Refer to the *DSM User's Guide* for detailed information on the RESUS command.

Format:

$$
\text{RESUS} \begin{Bmatrix} \text{-ENABLE} \\ \text{-DISABLE} & [\text{-FORCE}] \\ \text{-START} & [\text{-ON } \textit{nodename}] \\ \text{-STOP} \\ \text{-STATUS} & \left[\text{-ON } \begin{Bmatrix} \textit{nodename} \\ \textit{nodegroup} \end{Bmatrix}\right] \\ \text{-HELP} & [\text{-NO\_WAIT}] \\ \text{-USAGE} \end{Bmatrix}
$$

Options:

-ENABLE   Enables RESUS at any user terminal. Once RESUS is enabled, any authorized local or remote user can gain supervisor terminal privileges on the system by issuing RESUS -START. In effect, your user terminal becomes the *logical* supervisor terminal. Once RESUS is enabled, the real or *physical* supervisor terminal no longer functions as the supervisor terminal; it only echoes commands that you enter and the system's responses. It ignores all input except the RESUS -DISABLE and RESUS -DISABLE -FORCE commands.

When RESUS is enabled, the system and error prompts change to

  nodename.RESUS_OK>
  nodename.RESUS_ER>

-DISABLE   Disables RESUS at the local system. This option is valid only at the *physical* supervisor terminal. Disabling RESUS at one system has no effect on the ability of authorized users on that system to gain control of other systems where RESUS is enabled.

-DISABLE is not honored if another RESUS user is already in control of the system. In this case, you must use -DISABLE -FORCE to forcibly disable RESUS.

Note

The -ENABLE and -DISABLE options can be issued only at the physical supervisor terminal.

-DISABLE -FORCE
  Forcibly disables RESUS at the local system, even if another user is controlling the system through RESUS. The user's terminal is disabled from functioning as a supervisor terminal and normal supervisor terminal

activity is returned to the *physical* supervisor terminal. This option is valid only at the *physical* supervisor terminal.

Notes

When you forcibly disable RESUS, the User 1 process remains in the most recently entered subsystem. To return system control to the physical supervisor terminal, quit the subsystem in the normal way. For example, if you are in BATGEN, type QUIT to return to PRIMOS command level. To identify the subsystem, refer to the supervisor terminal record: the output of a hard-copy supervisor terminal, for instance.

When you enter the RESUS -DISABLE -FORCE command at the supervisor terminal, there may be a short delay before the command is executed. The RESUS command accepts type-ahead.

-START [-ON *nodename*]

Assumes control of a system where RESUS is enabled. If you do not specify a nodename, the local system is assumed. -START is not available from the supervisor terminal, or from a terminal at which you are already using RESUS.

You cannot control more than one system at a time through RESUS, and only one user can be in control of a system at any time.

-STATUS -ON $\left\{ \begin{array}{l} node \\ nodegroup \end{array} \right\}$

Displays information about the enable/disable status and current users of RESUS on a system or node group. If you do not specify a *nodegroup*, the local system is assumed.

-STOP

Terminates the RESUS session and returns the terminal to PRIMOS command level at the system where you are logged in. The following message is displayed at the supervisor terminal when the RESUS session ends:

```
16 Oct 88 14:37:22 Thursday : RESUS facilities no longer in use
OK,
```

-HELP [-NO_WAIT]

Displays information on how to use the command. -HELP overrides other options. If you specify -NO_WAIT, display is not paginated at your terminal.

-USAGE

Displays the command format.

Precautions When Using RESUS

RESUS creates a special environment. It is a systems control facility that operates through the networking software. Table 2-4 lists the PRIMOS commands which you should avoid using during a RESUS session.

TABLE 2-4.   PRIMOS Commands to Avoid in a RESUS Session

Command	Effect of Command
AMLC or SET_ASYNC	These commands can deassign the line to the terminal. Recover by disabling RESUS at the physical supervisor terminal and reconfiguring the line.
EMACS	The EMACS subsystem is specific for a terminal type, and therefore may lock the supervisor terminal keyboard. Also avoid using other terminal-specific subsystems. Check documentation for subsystems to see if they are terminal specific.
ICE	ICE (INITIALIZE_COMMAND_ENVIRONMENT) is an emergency reinitializing command that resets your command environment to the login state and resets all terminal prompts to PRIMOS defaults. If ICE is used within RESUS, the special RESUS prompts are lost for the remainder of the session and are restored only when RESUS is next enabled.
LOGOUT	This command can log out the DSM server. If the DSM server is inadvertently logged out while RESUS is being used on a system, the supervisor terminal function can be temporarily lost. Restore normal function by disabling RESUS at the physical supervisor terminal.
MIRROR_ON and MIRROR_OFF	These commands cause RESUS to hang because they may request input from the physical supervisor terminal's keyboard. Recover by disabling RESUS at the physical supervisor terminal (by using the RESUS –DISABLE –FORCE command) and answering the appropriate prompt.
NETLINK	Your netlink session is switched to the physical supervisor terminal and will be lost at your terminal. Recover by disabling RESUS at the physical supervisor terminal and quit the NETLINK session from there.
STOP_DSM	This command stops the DSM facility. The operation of RESUS itself depends on DSM running on the system.
TERM	This command allows remote or local system users to customize their operating environment. Such changes remain in force on the supervisor terminal when the system returns to local control. Because others will use the supervisor terminal after you, it is good practice not to alter the environment at all, either when operating the system from the supervisor terminal, or from a user terminal through RESUS.
USRASR	This command can hang the User 1 process and requires special recovery procedures. For those procedures, see the manual for your terminal.

Caution

When using RESUS, take care when using subsystems, such as EMACS and PRIMON, which take advantage of special terminal characteristics. The user terminal must be identical to the supervisor terminal (for example, both must be PT200s). Otherwise, because the RESUS session echoes at the physical supervisor terminal, the supervisor terminal may lock. Use RESUS -STOP (to return the logical supervisor terminal to User Terminal mode) before using EMACS or any other program which redraws the terminal screen, unless you are certain the two terminals are of the same type.

SECURITY_MONITOR

SECURITY_MONITOR runs the Audit Collection facility. Different command options allow the System Administrator to

- Start and stop the facility (see the -START and -STOP options)

- Turn audits of certain users on and off (see the -ON and -OFF options)

- Enable and disable audits of event groups and event types (see the -ENABLE and -DISABLE options)

- Tune the Audit Collection facility to record only those events that conclude a given way, such as only attaches that fail (see the -EVENTS and -EVENT_TYPES options)

- Manage the audit trail file (see the -OUTFILE and -MT options)

The SECURITY_MONITOR command is a privileged command. The System Administrator may use it at any terminal under his or her own user ID; otherwise, it may be run only from the supervisor terminal.

Format:

SECURITY_MONITOR [*options*]

Options:

-BUFFERS *n*   Sets the number of 4-Kbyte buffers to be used by the audit mechanism. The number *n* must be an integer in the range 2 through 12, inclusive. Omission of this option generates a default value of 4 buffers. You may change this value at any time by invoking SECMON with a new -BUFFERS *n* command.

{-ENABLE
-DISABLE}   Indicates that only the specified event types for the selected event group are activated or deactivated. This option allows implied combinations of -EVENTS and -EVENT_TYPES options. For example, to audit only problem occurrences for all event groups and all users presently audited, you can disable the nonproblems:

    OK, SECMON -EVTYPE SUCC -DISABLE

You might then choose to eliminate the audit overhead for attaches, since this constitutes about a third of user activity:

    OK, SECMON -EV ATT -DISABLE

You are still auditing all operations that had problems either accessing a file or executing a program.

-EVENTS [*args*]

Selects the set of event categories to be audited. If you omit this option, all events specified below are audited. After the -EVENTS option, specify one or more of the following event category arguments (*args*):

Argument	Description
ALL	Specifies explicitly that all events are to be selected.
ATTACHES	Selects all attach operations. To reduce system overhead, the System Administrator can turn off all attaches or successful attaches. See the examples in the next section.
FILE_SYSTEM	Selects all file system events.
PRIV_OPS	Selects events involved with privileged operations.
SYSTEM	Selects all system events.

-EVENT_TYPES [*args*]

Specifies the event types to be selected. If you omit this option with -START, all event types are selected. -EVENT_TYPES presumes the additional option -ENABLE as a default. You must specify -DISABLE to turn off specific event types.

The -EVENT_TYPES option takes one or more of the following event type arguments (*args*):

Argument	Description
ALL	Specifies explicitly that all event types are to be selected.
FAILURE	Selects only failure events. The audit records an operation failure for reasons other than insufficient access rights.
NO_ACCESS	Selects only access failure events. The audit records an operation failure caused by a user's insufficient access rights to the target object.
SUCCESS	Selects only successful events. The audit selects successful operations for the specified event(s).

-MT *n*	Specifies that the security audit log is to be written to tape on unit *n*, with a value for *n* from 0 through 7, inclusive.
-ON	Activates the auditing of selected users, indicated after the -USERS option. The default is -ON when the -USERS option is specified. You must include the -USERS option after specifying -ON.

-OFF   Deactivates the auditing of selected users, indicated after the -USERS option. You must include the -USERS option after specifying -OFF.

-OUTFILE   Specifies the disk file to which audit data is to be written. If you do not specify the -OUTFILE option or if you do not specify a pathname, the audit data is written to the default file, which is named SECURITY_LOG *yymmdd hhmmss.* (*yymmdd hhmmss* is a time stamp.) The file is opened in the current directory.

                       If you specify a pathname that does not exist, the file is created with ACLs of ALL for the System Administrator, W for the user (if not the System Administrator), and NONE for $REST. This presumes the user has Protect rights to the current directory.

                       If a specified pathname already exists, an error is returned. If you specify a new pathname with the -OUTFILE option while another file is still active, the old file is completed and closed before the new file is activated. No events are lost by switching files.

-START   Activates the Audit Collection facility and initializes its data structures. If you enter this option by itself, all events, event types, and users are audited, and the system uses default values for its other assignments. The -START option is not valid when the monitor is already running.

                       Note
                       The options -ON and -OFF are reserved for auditing selected users only. See the description of those options.

-STOP   Shuts down the Audit Collection facility and terminates all audits. You are prompted to verify that -STOP is desired. Type the full word YES to close the output file. A message at the supervisor terminal warns that security audits are now inactive. The -STOP option is not valid when the monitor is not running.

-USERS *list*   Specifies the users to be selected. If you omit this option when you specify -START, the system defaults to all users. Thereafter, you must enter all changes explicitly. The list consists of user IDs separated by blank spaces. If you omit *list* you receive an error message:

                       ```
                       Must give user list with -USER option. (SEC$MON)
                       ```

-HELP   Displays help information.

SECURITY_STATUS

SECURITY__STATUS provides information on the status of audit collection. SECURITY__STATUS is a valid command only when issued by the System Administrator or from the supervisor terminal. The command, without options, produces a summary display of all online users and of the events and event types being audited. This command, with options, displays the specific information requested.

Format:

SECURITY__STATUS [*options*]

Options:

-LIST__USERS   Displays a list of all users being audited.

-LIST__EVENTS   Displays a list of event groups being audited.

-GETF   Retrieves the name of the log file open for audit collection.

-HELP   Displays help information.

If you invoke SECURITY__STATUS with no options, information similar to the following example is displayed:

```
[SECURITY_STATUS rev. 22.0  Copyright (c) 1988, Prime Computer, Inc.]
        Auditor process:      AUDITOR (user 193)
        Users audited:        TIM, BOB, SCROOGE, SYSTEM
        Events audited:       File System: ALL
                              System:      ALL
                              Priv ops:    ALL
                              Attaches:    ALL
        # buffers configured: 4
        # buffers written:    84
        Audit trail file:     <BANKIT>BOB>SECLOG1.880826.084514
```

SET_ASYNC

SET_ASYNC configures an asynchronous line connected to an AMLC or ICS controller. SET_ASYNC specifies the line numbers in decimal, provides extended command-line options, and, thus, is more straightforward and easier to use than the older AMLC command, which it replaced at Rev. 20.2. If you are taking advantage of Rev. 22.0's support of up to 960 terminal lines, you *must* use SET_ASYNC instead of AMLC to configure your terminal lines.

You can issue the SET_ASYNC command interactively or in a command input (COMI) file (for instance, PRIMOS.COMI, the system startup file). However, only System Administrators or the operator working at the supervisor terminal may issue certain options.

All numeric input to SET_ASYNC must be in decimal.

At or after Rev. 21.0, you can also use the SET_ASYNC command interactively from your own terminal while the system is running either to change the characteristics of lines you have assigned or to temporarily change the characteristics of your terminal line.

Note

Interactive terminal users may not specify the following options with the SET_ASYNC command:

    -ASSIGNABLE
    -SPEED_DETECT
    -NO_SPEED_DETECT
    -LOOP
    -NO_LOOP

Interactive SET_ASYNC commands are not maintained through a cold start. In addition, these changes are valid for the current login session only and revert to the system login characteristics for the line(s) affected when you log out.

If you intend to assign asynchronous lines at a later time, you must designate them as assignable with the SET_ASYNC command (either interactively or in the PRIMOS.COMI file) *before* using the ASSIGN command.

Format:

    SET_ASYNC [-LINE x] [-TO y] option-1 [option-2 ...]

The -LINE option configures an asynchronous line with the decimal line number of x. The -TO option enables you to specify one set of configuration values for lines x through y. Specify one or more *options* to set various parameters for the asynchronous lines, as explained below.

It is not necessary to reset every value for the line; any values that you do not specifically modify remain as they were before you used SET_ASYNC. For example, the

default line speed is 1200 bps. You can change the speed to 9600 bps without affecting any other values that were previously set, as follows.

    OK, SET_ASYNC -LINE 8 -SPEED 9600

After you use SET_ASYNC to change one or several options for a line, you may want to reset the line to the default settings. To do so, you can specify the -DEFAULT option, rather than resetting the options individually. Refer to Table 2-5 for a listing of the default values assigned with the -DEFAULT option of SET_ASYNC.

    OK, SET_ASYNC -LINE 8 -DEFAULT

You may also use SET_ASYNC with the -SYSTEM option to return the line to the system defaults, that is, the system line characteristics that existed at the beginning of the login session. These settings may be established by the cold-start defaults, by the SET_ASYNC options specified in the PRIMOS.COMI file, or by the SET_ASYNC options issued by the System Administrator from the supervisor terminal.

    OK, SET_ASYNC -LINE 8 -SYSTEM

Options:

-ASSIGNABLE $\begin{Bmatrix} \text{YES} \\ \text{NO} \end{Bmatrix}$

Specifies whether the line is assignable. YES specifies that the line is an assignable line. NO (the default) specifies that the line is not an assignable line. Use -ASGN NO to reset a line that was previously assigned.

-CHAR_LENGTH *n*

Sets the character length to n bits. n may be 5, 6, 7, or 8. The default is 8 bits.

-DATA_SENSE_ENABLE

Enables the DSS (data set sense) protocol on the line. DSS is also known as reverse channel protocol. The default is -NO_DATA_SENSE_ENABLE.

-DATA_SET_CONTROL

Sets DSC (data set control) on the line. DSC is a handshaking signal that is momentarily sent to wake up a line. This option, which is the default, is required for modems and port selectors, but is ignored by terminals.

-DATA_SET_SENSE $\begin{Bmatrix} \text{HIGH} \\ \text{LOW} \end{Bmatrix}$

Sets the specified value, either HIGH (the default) or LOW, of the DSS (data set sense) protocol. The DSS protocol must be enabled with the -DATA_SENSE_ENABLE option.

-DEFAULT   Sets all parameters (except those specified in the current command, which are set to the value given) to their default settings.   See Table 2-5 for the default settings.

-DISLOG   Enables logout when the line is disconnected.   This option may be specified only by the System Administrator from the supervisor terminal.

-DISPLAY   Displays all the current line characteristics for the line or lines specified. Except for -LINE and -TO, described below, no other settings can be specified with this option.

The following example demonstrates how to use SET__ASYNC to display the values for line 12.   All the parameters are set to default values.

```
OK, SET_ASYNC -LINE 12 -DISPLAY
[SET_ASYNC Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]
LINE = 12
        PARity          = NONE      ECHO
        PROtocol        = TTY       XOFF
        SPEED           = 1200      NO_LOOP
        Stop_Bits       = 1         NO_Line_Feed
        Char_Length     = 8         NO_Data_Sense_Enable
        REVerse_XOFF    = OFF       NO_ERRor_DETection
        ASsiGNable      = NO        NO_Speed_Detect
        Data_Set_Sense  = HIGH      NO_DISLOG
        Owner Process   = 14        Data_Set_Control
```

-ECHO   Sets the line to full-duplex.   The line is echoed by the host.   This is the default.

-ERROR__DETECTION

Sets the line to send a NAK character (225_8) if an input parity or input buffer overflow error is sensed.   -NO__ERROR__DETECTION is the default.

-HELP   Displays a list of the SET__ASYNC options and syntax.   If you specify the -HELP option with any other options, the other options are ignored.

-LINE _n_   When SET__ASYNC is used by the System Administrator at the supervisor terminal, the -LINE option must be given to specify the line number(s), in decimal, of the asynchronous line(s).   When specified at an interactive terminal by a user, the -LINE option can be omitted.   In that case, the line number of the user's terminal is assumed.   Interactive terminal users can specify only their own terminal line number or the number of a line they have assigned.   _n_ must be a decimal number from 0 through 512, inclusive for local lines, from 1024 through 1536, inclusive for NTS lines.

-LINE__FEED   Sets the line to echo a line feed character when `Return` is pressed.   This option is valid only if the -NO__ECHO option is specified.   The default is -NO__LINE__FEED.

-LOOP_LINE   Sets the looped line characteristics, which instruct the hardware to return all transmitted data back on the receive line. This option is used only for testing purposes. The default is -NO_LOOP_LINE. This option is not for interactive users.

-NO_DATA_SENSE_ENABLE
    Disables the DSS (Data Set Sense) protocol on the line. This is the default.

-NO_DATA_SET_CONTROL
    Disables the DSC (Data Set Control) line attribute. The default is -DATA_SET_CONTROL.

-NO_DISLOG   Disables logout when a line is disconnected. This option can be specified only by the System Administrator from the supervisor terminal. The default setting is -NO_DISLOG.

-NO_ECHO   Sets the line to half-duplex. The line is not echoed by the host; the user application must handle echo. The default is -ECHO.

-NO_ERROR_DETECTION
    Prohibits the line from sending a NAK character (225_8) if an input parity or input buffer overflow error is sensed. This is the default.

-NO_LINE_FEED
    Does not echo a line feed character when the [Return] key is pressed. This is the default. (See the -LINE_FEED option, described earlier.)

-NO_LOOP_LINE
    Disables the looped line characteristic. This is the default. (See the -LOOP option, described earlier.)

-NO_REVERSE_XOFF
    Disables Reverse Flow Control for the line. This is the default.

-NO_SPEED_DETECT
    Disables Auto Speed Detect on the specified line. This option can be issued only by the System Administrator from the supervisor terminal. The default setting is -NO_SPEED_DETECT.

-NO_XOFF   Prevents the line from recognizing CONTROL-S (XOFF, 223_8) and CONTROL-Q (XON, 221_8) characters to stop and start the flow of data on the line from the host to the terminal. The default is -XOFF.

-PARITY *value*   Sets the line parity to *value*. *value* is ODD (for odd parity), EVEN (for even parity), or NONE (to disable parity entirely). The default is NONE.

-PROTOCOL [*name*]

Sets *name* as the line protocol.   The values for *name* are as follows:

TTY	The standard terminal protocol. This is the default when you specify the -DEFAULT option.
TRAN	The transparent protocol usually used on lines connected to peripheral devices or to other computers. No echoing is done and no response is made to carriage returns, line feeds, CONTROL-P, or other special characters. All data passes through unaltered. An exception occurs when XON/XOFF is enabled, in which case transmission ceases when the XOFF character is received from the terminal.
TTY8	Configures a line to transmit and receive a full 8 bits of data to and from the host computer, thus enabling communication with other computers that may or may not support ASCII-8. Otherwise identical to the TTY protocol.
TTY8HS	Identical in functionality to the TTY8 protocol, this protocol is used with terminal lines connected to an older model AMLC board (5052 or 5054).
TTYNOP	Configures a line to ignore all traffic.
TTYUPC	Similar to the TTY protocol, except that data is transmitted only in uppercase. Used for devices that can receive data only in uppercase.
TT8BIT	Runs Arabic terminal support for terminal output. With this protocol, the input protocol is TTY.
ASD	Used for Auto Speed Detect. At Rev. 19.4 and later, the speed of a terminal attached to a specifically configured line can be detected automatically. Only the speeds 110, 300, 600, 1200, 2400, 4800, 9600, and 19200 can be detected.
TTYHS	Similar to TTY, except that per-character interrupts are supported. This protocol is used with terminal lines connected to an older model AMLC board (5052 or 5054).
TTYHUP	Similar to TTYUPC, except that per-character interrupts are supported. This protocol is used with terminal lines connected to an older model AMLC board (5052 or 5054).

TRANHS | Similar to TRAN, except that per-character interrupts are supported. This protocol is used with terminal lines connected to an older model AMLC board (5052 or 5054).

Note

The TTYHS, TTYHUP, TTY8HS, and TRANHS protocols are obsolete and should never be used with lines attached to the 5154 AMLC board (also known as AMLCQ or DMQ AMLC board).

-REVERSE_XOFF

Enables Reverse Flow Control for a line connected to an ICS controller. Reverse Flow Control allows the ICS controller to send an XOFF character to a terminal to indicate that the PRIMOS input queue is full and cannot receive any more data. When the queue is no longer full, the controller sends an XON character to the terminal to resume transmission. The default is -NO_REVERSE_XOFF.

-SPEED [*value*]

Sets the baud rate of the line to *value*. *value* may be any of the following:

50	75	110	134.5
150	200	300	600
1200 (*default*)	1800	2400	3600
4800	7200	9600	19200
CLOCK	J1	J2	J3

However, if *value* is not one of the hard-wired speeds (110, 134.5, 300, or 1200), the current values for the programmable clock, or the jumpered speeds, you have used an invalid speed value and will receive an error message.

The CLOCK value uses the rate of the programmable clock as specified by the AMLCLK configuration directive. The J1, J2, and J3 values use one of the three jumpered speeds that are either assigned to hardware jumper wires (on AMLC boards) or included in the ASYNC JUMPER configuration directive. The default speeds for the jumpered values are 75, 150, and 1800 baud, respectively.

-SPEED_DETECT

Enables Auto Speed Detect for the line. The speed of a terminal attached to a specifically configured line can be detected automatically before login. Only the speeds 110, 300, 600, 1200, 2400, 4800, 9600, and 19200 can be detected. This option can be specified only by the System Administrator from the supervisor terminal.

-STOP_BITS *n*

Specifies how many stop bits to use on the line. *n* may be 1 or 2; the default is 1.

-SYSTEM

Sets all line characteristics to the system login characteristics that existed at the beginning of the login session. The only options that can be specified with the -SYSTEM option are -LINE and -TO.

-TO *y*   Instructs SET_ASYNC to use the same set of configuration values for all
                    lines beginning from line *x* specified in the -LINE option through line *y*,
                    inclusive.   The value of *y* must be greater than the value of *x* in the
                    -LINE option.

-USER_NUMBER *n*
                    At Rev. 22.0, this option is no longer supported.   To change a line's
                    asynchronous buffer sizes, use the CAB command, which is documented
                    earlier in this chapter.

-XOFF   Sets the line to recognize CONTROL-S (XOFF, 223_8) and CONTROL-Q
                    (XON, 221_8) characters to stop and start the flow of data on the line
                    from the host to the terminal.   This is the default.

SET_ASYNC Settings Using the –DEFAULT Option

Table 2-5 lists the default settings that a line receives when you use SET_ASYNC with
the -DEFAULT option alone.

The following example illustrates a typical use of the SET_ASYNC command:

```
OK, SET_ASYNC -LINE 5 -TO 20 -PROTOCOL TTY -SPEED 9600 -DEF
```

This command line configures lines 5 (decimal) to 20 (decimal) as loginable, full-duplex
lines with TTY protocols and baud rates of 9600 bps.   At the same time, the -DEF option
resets the lines to the remaining defaults, as listed in Table 2-5.

For more details on SET_ASYNC, including a complete list of error messages, see the
System Administrator's Guide, Volume II: Communication Lines and Controllers; for more
information on the PRIMOS.COMI file, see the *Software Installation Guide — Rev. 22.0*
(IDR10176-2PA).

TABLE 2-5. SET_ASYNC Settings With the -DEFAULT Option

Parameter	Setting
-ASSIGNABLE NO	Line is not an assignable line, but is a loginable line.
-CHAR_LENGTH 8	Character length is 8 bits.
-DATA_SET_CONTROL	Data Set Control attribute is set.
-DATA_SET_SENSE	HIGH.
-ECHO	Full-duplex line.
-LINE_FEED	Line feed character for RETURN is echoed.
-NO_DATA_SENSE_ENABLE	Data Set Sense (or reverse channel) protocol is disabled.
-NO_DISLOG	Disables logout when a line is disconnected.
-NO_ERROR_DETECTION	Line does not send a NAK character if an input parity or input buffer overflow is sensed.
-NO_LOOP_LINE	Looped line characteristic is not set.
-NO_REVERSE_XOFF	Reverse Flow Control is not enabled.
-NO_SPEED_DETECT	Auto Speed Detect is disabled.
-PARITY NONE	Line parity is disabled.
-PROTOCOL TTY	Line uses the TTY protocol.
-SPEED 1200	Line speed is 1200 bits per second.
-STOP_BITS 1	1 stop bit.
-XOFF	CONTROL-S stops and CONTROL-Q starts the flow of data from the CPU to the terminal.

SET_PRIORITY_ACCESS

SET_PRIORITY_ACCESS specifies a user's access to an entire partition, and overrides all other Access Control List (ACL) specifications. The command sets a priority ACL on the specified partition for the users specified. This command can be issued only from the supervisor terminal or by the System Administrator.

Format:

    SET_PRIORITY_ACCESS *diskname access-control-list*

diskname is the name of the partition to be affected, and *access-control-list* is the list of identifiers and access rights.

Users can be included in the *access-control-list* argument by user name, group name, or $REST (all users not listed by name or not in a listed group). If users are in this list, the access rights specified are granted to them whenever they use the specified disk and while the priority ACL remains in effect. The priority remains for the users (even if the priority ACL has been removed by REMOVE_PRIORITY_ACCESS) until they attach away from the directory or log out.

If all users are to be affected by a list of priority ACLs, the $REST specifier *must* be present in *access-control-list*. There is no implied $REST:NONE, as with regular ACLs.

If a user is not specified in the priority-ACL list, the access rights granted the user are taken from the normal ACL and password information on the disk volume.

A $REST specifier in a priority ACL *overrides* normal security protections specified on the disk; therefore, operators should only specify $REST:NONE. If a priority ACL included $REST:LUR, for example, all users would be able to read all files, even if they normally would be denied access by ACL information on the disk.

For security reasons, use of this command causes an event (event type PACL) to be logged in the system event log file. In addition, a message is displayed at the supervisor terminal. The message includes the date and time at which the priority ACL was added, the partition to which it was added, and the user number and user name of the user who added it. No event or message occurs when a priority ACL is removed.

To remove a priority ACL, use the REMOVE_PRIORITY_ACCESS command. To list a priority ACL, use the LIST_PRIORITY_ACCESS command.

See the *Operator's System Overview*, the *PRIMOS User's Guide*, or the *System Administrator's Guide, Volume III: System Access and Security* for a discussion of ACLs, the meanings of ACL symbols, and other commands associated with ACLs.

SET_QUOTA

SET_QUOTA is used to set the maximum storage quota on a directory or subdirectory.

Format:

SET_QUOTA *pathname* -MAX *number*

Arguments:

pathname Is the pathname of the directory on which a quota is to be set. If a quota is to be placed on the current directory, you must give the full pathname. However, if the quota is to be placed on a subdirectory of the current directory, you can specify only the name of the subdirectory.

-MAX *number* Specifies the maximum number of records the directory can use. If *number* is zero, the quota is removed, and the directory can use as much storage as necessary, being limited only by the available disk space or by a quota placed on a parent directory.

Note

You cannot set a quota on an MFD.

If you attempt to set a quota on a directory or subdirectory to which you have insufficient access rights, the message Insufficient access rights is displayed. If this happens, use the SET_PRIORITY_ACCESS command at the supervisor terminal to acquire sufficient access on the disk partition containing *pathname*. Then use the SET_QUOTA command again.

If *pathname* has no current quota (quota = 0), and there are users attached or files open in the directory or its subtree, a File in use. *filename* (set_quota) message is generated. This can happen on system directories, such as CMDNC0 and BATCHQ, because users and phantom processes frequently access them. To successfully set a quota on a directory that is in use, either wait until all users and phantoms log out or set a quota before they log in after a system cold start.

SET_TIME_INFO

SET_TIME_INFO establishes time information for the local time zone, including

- The time zone

- Whether or not daylight saving time goes into effect

- When daylight saving time goes into effect

This information is used to calculate the Universal time (formerly Greenwich mean time).

Format:

$$
\text{SET\_TIME\_INFO} \quad
\begin{bmatrix}
\text{-DLST YES} \quad [start\_date \ end\_date \ dlst\_offset] \\
\text{-DLST NO} \\
\text{-TIMEZONE} \ timezone\_offset \\
\text{-HELP}
\end{bmatrix}
$$

This command is optional, although it is customarily included in the PRIMOS.COMI file. Remember that issuing this command has no effect on starting the PRIMOS clock. The PRIMOS clock is started in one of two ways:

- If your system has a battery clock, the PRIMOS clock is initialized from the Diagnostic Processor clock. (Almost every system with a 4-digit model number has a battery clock; the only exception is the 2250™.) When the battery clock is initialized, the following message is displayed.

  ```
  System clock has been initialized.
  ```

- If your system does not have a battery clock (for example, older systems such as the 750™ and 850™), the PRIMOS clock is initialized when you issue the SETIME command.

Unless you issue the SET_TIME_INFO command, your local time zone is set to zero (Universal time) and no adjustment for daylight saving time is made.

Options:

-TIMEZONE *timezone_offset*

Specifies the time zone of the local system, as offset from Universal time (UT). The value for *timezone_offset* is expressed as HHMM or -HHMM and can range from 12 hours behind to 12 hours ahead of Universal time. Starting at Universal time, the absolute values of the negative time zone offsets increase from east to west; the values of the positive time zone offsets increase from west to east. For example, the *timezone_offset* for Framingham, Massachusetts is -0500. The command line would be

```
OK, SET_TIME_INFO -TIMEZONE -0500
```

The local time zone for Munich, Germany is one hour ahead (+0100) of UT. In this case, the command line would be

OK, SET_TIME_INFO -TIMEZONE 0100

> The range of acceptable values extends from UT to the international date line.

-DLST YES [*start_date end_date dlst_offset*]

> Specifies that daylight saving time is to be considered when calculating Universal time. If you do not specify this option, then standard local time is not adjusted for daylight saving time during the year. (This option does *not* adjust whether the built-in clock considers daylight saving time; the built-in clock's time is affected only by VCP commands.)
>
> *start_date* indicates when local time will be offset from standard local time. The format for *start_date* is *mmddyy hhmm*. *start_date* must be earlier in time than *end_date*.
>
> *end_date* indicates when local time will return to standard local time. The format for *end_date* is *mmddyy hhmm*.
>
> *dlst_offset* is the offset from standard local time used to calculate local time during the period defined by *start_date* and *end_date*. Local time is adjusted backward (-) or forward (+) when the period is entered. *dlst_offset* is expressed in HHMM or -HHMM from standard local time.
>
> The defaults for these three arguments are the U.S. standard: *start_date* is the first Sunday in April, at 2:00 a.m.; *end_date* is the last Sunday of October, at 2:00 a.m.; *dlst_offset* is 0100.

> **Note**
>
> It is very important that you specify the -DLST YES option if daylight saving time is in effect where the system is located. Otherwise, the system will not be able to establish the correct Universal time.

-DLST NO

> Turns off DLST if it was previously turned on; that is, specifies that daylight saving time is not to be considered.

-HELP

> Displays a list of options and the syntax for this command.

SETIME

SETIME sets the system date and time.

Format:

   SETIME *-mmddyy -hhmm*

mmddyy are digits that represent the month, day, and last two digits of the year.

hhmm are digits that represent the time in hours and minutes, in 24-hour format.

The two arguments to SETIME must be separated by spaces, and must have a hyphen as the first character. For example, to set the date and time as November 2, 1989 4:30 p.m., type

```
OK, SETIME -110289 -1630
```

Note
Following a system cold start on systems without a battery clock, you must issue the SETIME command before you can use the MAXUSR command to allow users to log in. See the handbook for your CPU for details.

SETMOD

SETMOD sets the mode for magnetic tape assignments. It can only be issued from the supervisor terminal.

Format:

$$\text{SETMOD} \quad \begin{Bmatrix} \text{-OPERATOR} \\ \text{-NOASSIGN} \\ \text{-USER} \end{Bmatrix}$$

Options:

-NOASSIGN   Forbids the assignment of any tape drive unit from user terminals. Any attempt to assign a drive results in the following message:

```
No magtape assignments permitted.  (asnmt$)
ER!
```

In environments that restrict user access to tape drives, this message informs users that the operator is not available for request handling.

-OPERATOR   Requires operator intervention in all tape drive assignment operations. All ASSIGN commands issued by users are displayed with user numbers at the supervisor terminal. Answer each ASSIGN request with the REPLY command. When the user makes a request using the ASSIGN command, that user's terminal is hung until you respond to the request.

-USER   Permits user assignment of tape drives either by physical device number (pdn) alone or by pdn and options that do not require operator intervention, such as -ALIAS *ldn*, -WAIT, -RETENSION, and -SPEED. (See the ASSIGN command.) This is the default mode. Users who successfully assign tape drives in this mode receive the message

```
Device MTpdn assigned.
```

All other options to ASSIGN (such as MTX and -RINGON) require operator intervention. Commands using these options are displayed at the supervisor terminal. You must use the REPLY command to respond.

See also ASSIGN and REPLY, earlier in this chapter. See the *Operator's System Overview* for a full discussion of user tape assignment requests.

SHARE

SHARE is used to install a command or static-mode library into a supervisor segment. The primary use of the SHARE command is to place a program into shared memory so that many users can use the program at the same time.

The SHARE command can be issued only at the supervisor terminal. Prior to Rev. 21.0, you were required to use the OPRPRI command with the SHARE command. At Rev. 21.0, this is no longer necessary.

WARNING

It is possible to overwrite the operating system and the shared utilities with this command. Do *not* share into segments 0 through 1777_8, because these segments are reserved for PRIMOS. Other segments that may contain system utility programs are described in the *System Administrator's Guide, Volume I: System Configuration*.

Format:

SHARE [*pathname*] *segment-number* [*access-rights*]

Arguments:

pathname   An optional parameter naming a runfile. If you specify *pathname*, the named file is restored into *segment-number*. If you do not specify *pathname*, the command changes the access rights of the specified segment, but does not modify the contents of the segments.

segment-number   The number of the segment to be shared. Valid *segment-numbers* range from 1_8 through 3777_8, inclusive. However, you should specify *only* segments 2000_8-2665_8. Specifying a segment number outside this range may cause unpredictable results.

Caution

The gate segment, segment 5, should not be specified in a SHARE command. If this segment is shared, direct-entrance calls from user space will cause ACCESS_VIOLATION$ messages.

---

access-rights   The access rights to be given *segment-number*. Possible values are

0   No access

200_8 Read access

600_8 Read and Execute access (default)

700_8 Read, Write, and Execute access

Segments 2000_8 through 2665_8 are available for holding shared programs. Any user can execute shared programs stored in these segments. For a list of shared segment assignments, see the *System Administrator's Guide, Volume I: System Configuration.*

WARNING

Do not change the access rights of supervisor segments 1_8 through 40_8. By changing access rights of specific supervisor segments, you can either monitor or patch the supervisor segment from a user terminal. This feature is intended for PRIMOS development and debugging; for users, it is dangerous and its use is not recommended.

SHUTDN

SHUTDN is used to shut down the system, shut down local disk partitions, or disconnect remote disk partitions. It can be issued only from the supervisor terminal. The procedures and command formats for each type of shutdown are described below.

Shutting Down the System

Format:

SHUTDN ALL [-FORCE]

This command performs a complete PRIMOS system shutdown. To verify that a complete shutdown is what you want, the system asks REALLY?.

Answer YES for the shutdown to occur. (The abbreviation Y does not work.) All user files are closed, disk partitions are shut down, network communication with the system is halted, and input from user terminals is turned off. When PRIMOS completes this process, it halts the CPU.

For the best results in shutting down PRIMOS, follow the procedures described in the handbook for your CPU.

Before Rev. 20.2, partitions on a malfunctioning disk drive could be shut down only by shutting down the entire system with the SHUTDN ALL command. At Rev. 20.2, the -FORCE option for the SHUTDN command was introduced. By implementing -FORCE, PRIMOS is able to shut down any partition or all partitions on a particular disk drive under any circumstances. The -FORCE option is effective with Rev. 20.2 and later versions of PRIMOS.

When you use the -FORCE option, PRIMOS attempts an orderly shutdown. If an orderly shutdown is not possible, PRIMOS continues with the shutdown procedure and reports any problems at the supervisor terminal. However, the integrity of the file system cannot be guaranteed if an orderly shutdown does not take place; in that case, it may be necessary to run FIX_DISK.

The -FORCE option identifies and acts on all recognizable errors. If an error occurs, the event causing the error is retried until PRIMOS determines that it is impossible to continue with the event. Appropriate error messages are displayed at the supervisor terminal so that you can identify the malfunctioning partitions.

Use the -FORCE option only if there are known problems with a partition or a disk drive, or if the partition cannot be shut down in the normal manner. Problems are indicated by disk or file system read-errors when you attempt to add the partition using the ADDISK command. A problem is also indicated when you shut down the partition (using the SHUTDN command) and a subsequent STATUS DISKS command shows that the partition

was not shut down. In these cases, you must use the -FORCE option to shut down the disk.

Shutting Down Local Partitions

Shutting down a local partition closes all currently open files on the partition, logs out all users who are attached to directories residing on the partition, and causes all attempts to use the partition from either the local system or a remote system to be rejected. The specified partition is unavailable until it is added back to the system in a subsequent ADDISK command. Until then, users whose origin directories reside on the partition will be unable to log in. See the *Data Backup and Recovery Guide* for more information on closing down partitions for backups.

Format:

$$\text{SHUTDN} \quad \begin{cases} pdev\text{-}1 \; [pdev\text{-}2 \; ... \; pdev\text{-}9] \; [\text{-FORCE}] \\ pdev \; \text{-RENAME} \; diskname \end{cases}$$

Arguments and Options:

pdev-1 ... pdev-9

Shuts down the disk partitions indicated by *pdev-1...*

-FORCE

Forcibly shuts down from one to nine malfunctioning partitions. Attempts an orderly shutdown. If an orderly shutdown is not possible, PRIMOS continues with the shutdown procedure and reports any problems to the supervisor terminal. Refer to the discussion of the -FORCE option in SHUTDN ALL above.

The -FORCE option may be used with all other SHUTDN options, except -RENAME. If you attempt to use the -FORCE option with the -RENAME option, the following error message is displayed:

```
Cannot rename partitions with -FORCE option. (shutdn)
```

pdev -RENAME *diskname*

Allows you to supply a new *diskname* for a partition when shutting it down.

Only one physical device number (*pdev*) can be specified each time this option is used. For example,

```
OK, SHUTDN 461 -RENAME B3.BAK
```

Aside from renaming the partition, this command has the same effect as SHUTDN *pdev* without the -RENAME option.

Caution

Do not shut down the physical device associated with the command device, or PRIMOS will be unable to access the command directory. To recover, use the ADDISK command.

Shutting Down Remote Partitions

Shutting down a remote partition removes it from the list of known partitions on the local system (the system from which the command is issued).

Shutting down a remote partition closes all files on the partition that are currently in use by local users. Also, all local users who are attached to directories residing on the partition are logged out, and all further attempts to use the partition from the local system are rejected. The specified disk partition is unavailable to users logged in to the local system until it is made available once again with a subsequent ADDISK command. Shutting down a remote disk partition does not affect access to the partition from any other system, including the system on which the partition resides.

Format:

> SHUTDN *diskname-1* [*diskname-2 ... diskname-9*] [-FORCE] -ON *nodename*

Arguments and Options:

diskname-n Specifies which remote disk partitions available to the local system are to be shut down.

-FORCE Forcibly shuts down from one to nine malfunctioning remote partitions from your system. Refer to the -FORCE option description in SHUTDN ALL above.

-ON *nodename* Specifies the network name of the system on which the devices are physically mounted.

Note

If a device is shut down at its local system, it is no longer available for use on any other system in the network.

SHUTDN Messages

SHUTDN may display one or more of the messages listed below. Warning messages are indicated by *Warning* in the text below; the word *Warning* does not appear as part of the message. If more than one device is specified on the command line, SHUTDN continues after printing a warning message for one of the devices. Other messages indicate that SHUTDN has not performed the requested operation.

Auditing must be stopped before shutting down.
Your SHUTDOWN ALL command attempted to shut down the disk containing the security audit file. You should stop the Security Auditor before shutting down all your disks. This message applies only to sites that have the Security Audit facility (that is, C2 sites).

Cannot rename partitions with -FORCE option. (shutdn)
You supplied both the -RENAME and -FORCE options to SHUTDN; the two may not be used together.

Circular Quota parent thread. (q_updt)
An internal error has occurred during the SHUTDN. Contact your Customer Service Representative.

Conflicting PDEVs *pdev1* **and** *pdev2*. **(shutdn)**
Two of the *pdevs* given in the list specify overlapping partitions of the same disk. Check to make sure that you typed the *pdevs* correctly.

Disk *diskname* **is local. (shutdn)**
Warning The partition named *diskname* is a local device, and must be shut down by specifying its physical device number, without the -ON option.

Disk *diskname* **is not currently added. (shutdn)**
Warning The specified remote partition is not in the local disk list. Check to make sure that you typed its name correctly.

Disk *diskname* **not on system** *nodename*. **(shutdn)**
Warning The specified remote partition exists in the local disk list but does not belong to the remote system specified in the -ON option.

Disk *pdev* **is not currently added. (shutdn)**
Warning The specified physical device is not in the list of started devices. Check to be sure that you typed the pdev correctly.

diskname **is not a valid partition name. (shutdn)**
The specified *diskname* does not conform to remote partition name syntax. Either it contains an invalid character or it is more than 6 characters long.

Duplicate partition name *diskname*. **(shutdn)**
You specified partition name *diskname* more than once in the SHUTDN command when you were attempting to disconnect a remote partition.

Duplicate PDEV *pdev*. **(shutdn)**
You specified the same *pdev* more than once in the SHUTDN command.

More instances of "*option_name***" than are supported. (shutdn_)**
You specified some option more than once. Enter the command again, giving each option and argument only once.

Must specify at least one PDEV. (shutdn)
The SHUTDN command requires at least one argument.

Must supply at least one partition name. (shutdn)
The -ON option of the SHUTDN command requires at least one argument.

Must use MIRROR_OFF to shut down mirrored disk *pdev*. **(shutdn)**
The partition is currently in use in a mirrored pair. Use MIRROR__OFF to shut down the mirrored partition.

No directory block for unit. (q_updt)
An internal error has occurred during the SHUTDN. Contact your Customer Service Representative.

Node "*nodename***" not configured in network. (shutdn)**
The node specified as *nodename* is not currently RFA-enabled. Check whether you typed the nodename correctly.

***nodename* is not a valid system name. (shutdn)**
The specified remote system name is invalid. Either it contains invalid characters or it is more than 6 characters long. Check whether you typed the nodename correctly.

***nodename* is the local system!**
Do not use the name of your local system with the -ON option. The -ON option may be used only to shut down remote disks.

Only one disk may be RENAMEd at a time. (SHUTDN)
Only one pdev may be specified when you use the -RENAME option.

Option "*option__name***" not recognized by this command. (shutdn_)**
You have entered an option which SHUTDN does not recognize. Check to be sure that you did not mistype a valid option name.

"PRIORITY_SELECT" is not a valid option. (shutdn)
Unlike ADDISK, SHUTDN has no PRIORITY__SELECT argument. Resubmit the command without this argument.

"PROTECT" is not a valid PDEV. (shutdn)
You have tried to supply a PROTECT argument to SHUTDN; since SHUTDN, unlike ADDISK, has no such option, you receive this error message.

***pdev* is not a valid PDEV. (shutdn)**
The *pdev* specified is not a valid physical device number. Either it contains decimal numbers or nondigits, or it is simply an invalid *pdev*. Check that you entered the pdev correctly.

Remote partitions may not be RENAMEd. (shutdn)
The -RENAME option may be used only for local disks.

Rename failed. (trwrat)
Your attempt to RENAME the disk failed. Check to be sure that you specified a legal disk name (6 alphanumeric characters). If the disk name you gave was legal, the rename probably failed because the disk is too badly damaged to be used.

System console command only. (shutdn)
  The SHUTDN command may be used only from the supervisor terminal.

System name must be specified with -ON option. (shutdn)
  The -ON option was not followed by a remote system name.

The disk *pdev* contains the security audit file.
Stop auditing or switch log files before shutting down the disk.
  You should shut down the security auditor before you shut down this PDEV.

Unable to update disk quota.
  The section of the disk which holds quota information has been damaged. You can use
  the disk temporarily without the quotas, but you should plan to run FIX_DISK as soon
  as possible.

Unit not open. (q_updt)
  An internal error has occurred during the SHUTDN. Contact your Customer Service
  Representative.

Write-protected disks may not be RENAMEd. (shutdn)
  The -RENAME option may not be used on a disk added with the -PROTECT option.

SPOOL

SPOOL enables a privileged user who is a member of the .SPOOL__ADMINISTRATOR$ group, to perform any of the following tasks:

- Place requests in the spool queue

- Modify spool requests

- Move one print request ahead of others

- List details of requests in the spool queue

- Cancel the printing of a file

Terminal users can also send print requests to the spool queue. However, they can modify, list, and cancel only their own files. Ordinary terminal users cannot move their print requests ahead of others in the spool queue.

The SPOOL command and the Spooler environment changed substantially at Rev. 21.0. For information related to the Spooler subsystem and the PROP command, see the *Operator's Guide to the Spooler Subsystem*. See also the PROP command earlier in this chapter.

Format:

SPOOL $\begin{Bmatrix} pathname\ [print\_options] \\ options \end{Bmatrix}$

Some installations may have a network in which some nodes are using a later (at or after Rev. 21.0) version of the Spooler and some nodes are using pre-Rev. 21.0 versions. In this situation, you can send a print request from a Rev. 21.0 or later system to a pre-Rev. 21.0 spool queue by using the -DISK option. However, you cannot send a print request to a Rev. 21.0 or later spool queue from a pre-Rev. 21.0 system.

In addition, a Rev. 21.0 system will print files from a pre-Rev. 21.0 spool queue. However a pre-Rev. 21.0 system cannot print files in a Rev. 21.0 spool queue.

Sending Print Requests to the Spool Queue

Both terminal users and privileged users may send files to the spool queue.

Format:

SPOOL *pathname* [*options*]

Arguments and Options:

-ALIAS *name*   Allows you to replace the name on the header with an alternative string, such as the name of another user. This option is typically used in distribution of printed output. This option may not be used if you are sending print requests to a pre-Rev. 21.0 spool queue.

-AS *name*   Allows you to replace the filename on the header with an alternative string.

-ATTRIBUTE *name-1* [*...name-n*]
        Enables you to specify environment attributes when sending files to a Rev. 21.0 queue. One -ATTRIBUTE option may be followed by one or more attribute names.

        If you are sending files to a pre-Rev. 21.0 queue, the older -AT option specifies the destination name of the printer.

-COBOL   Specifies that printing should follow COBOL format.

-COPIES *n*   Specifies the number of copies of the file to be printed. The default is one. If the despooler fails, subsequent despooling reduces the number of copies to be printed by the number completed before the failure.

-DEFER *hh:mm*   Specifies the earliest time at which a request is to be printed. You may give the time with or without the colon between the hours and minutes. If you omit the time, midnight is assumed. In a network that crosses time zones, the time is based on the host machine for the queue.

-DISK *diskname* Specifies the disk partition name of a pre-Rev. 21.0-format queue to which the request is sent. This option allows existing programs to run unchanged on Rev. 21.0 systems, because SPOOL ignores the -DISK option that references a local system.

-FROM *m*   Specifies a range of pages to be printed. If you do not specify -FROM, SPOOL begins printing at page 1. If you specify both -FROM and the -TO *n* option, *n* must be greater than *m*. You can use -FROM and -TO with the -COPIES *n* option.

-FTN   Specifies FORTRAN format.

-HEADER *text* Allows you to change the page header from the default, which is the first line of the data file, to a specified string. The keyword FILE may be given to cause the despooler to use the name of the file as the page header. This option applies only to files that are normally printed in a paginated mode. For example, it does not work with FORTRAN or COBOL files.

-HELP   Lists the SPOOL command's options.

-LNUMBERS   Prefixes each line in the file with a line number. Data file lines occupying more than one line on the printed output will have a number on the first printed line only. Data file lines that overprint the previous line are not numbered.

-NO_COPY   Inhibits the SPOOL command action of taking a copy of the file to be printed. The despooler prints the data from its original file system location. The file that is sent to the spool queue with this option must

reside on the same node as the spool queue to which the request is sent. You cannot use this option with password directories unless the non-owner password is blank. You cannot use this option for pre-Rev 21.0 queues.

-NO_EJECT   Causes the despooler to suppress the normal form feed after the final page of a file is printed.

-NO_FORMAT   Causes the despooler to begin printing without formatting output (that is, without adding page-breaks or otherwise altering the appearance of the output file.) Use this option when printing text-formatter output files, formatted program listings, and so on.

-NO_HEADER   Causes the despooler to print the file without the normal header.

-NOP   Inhibits overprinting, whether required by a FORTRAN or COBOL format + control character or through the use of a trailing carriage return. The Prime convention for line terminators is a line feed only. The -NOP option is useful with output that uses a carriage return and a line feed as the line terminator.

-NOTIFY   Causes the despooler to send you a message when your file has finished printing.

-NPH   Prints the file with no header and no page number.

-ON *node*   Allows you to send a spool request to a Rev. 21.0 or later spool queue on a specific network node. Note that you cannot send spool requests from pre-Rev. 21.0 systems to Rev. 21.0 and later queues.

-OPEN   Opens a data file in the spool queue directory and submits a request to the queue where the data is to be generated by a program. Unless otherwise specified (see the -TUNIT option), the file is opened on unit 2.

-PLOT *n*   Specifies the plot raster size (in words per scan) for a plotter output file. The default value is 128.

-PROC *name*   Specifies the name of the PostScript® procedure to be used when printing a document on a laser printer that runs PostScript. You must load the PostScript procedure when you initialize the printer. If the procedure is not currently loaded in the printer, as could occur if the printer power had been switched off, then on again, then it is reloaded.

-RUSH   Marks a request as having priority over nonrush requests in the same spool queue. Such a request is selected for printing by a despooler without regard to size and defer time restrictions. This option is limited to privileged users who are members of the .SPOOL_ADMINISTRATOR$ ACL group.

-SET_FONT *fontname*
     Specifies the use of a particular typeface for printing the document. *fontname* may be up to 32 characters long.

-SET_LANDSCAPE

> Specifies that the printout be oriented with the text appearing across the longest dimension of the paper.

-SET_PAPER_BIN $\left\{ \begin{matrix} \text{MANUAL} \\ n \end{matrix} \right\}$

> Chooses which of the printer's paper bins should be used to print out the document. *n*, a number from 1 through 9 inclusive, selects a particular paper bin; MANUAL specifies that the paper will be fed manually.

-SET_PORTRAIT

> Specifies that the printout be oriented with the text appearing across the shortest dimension of the paper.

-SFI   Suppresses file information by preventing the file pathname and date/time last modified from appearing in the header or trailer of the listing.

-SPOOL_WHILE_OPEN

> Allows a file to be printed while it is still held open for writing by some program. If you specify -SWO, the file is not copied into the SPOOL_DATA* directory.

-TO *n*   Specifies the end of a range of pages to be printed. If you do not specify -TO, SPOOL stops printing after the last line in the file is printed. If you specify -FROM *m* as well, *n* must be greater than *m*. -FROM and -TO can be used with the -COPIES *n* option.

-TRUNCATE   Causes the despooler to truncate lines longer than the width of the printer, as defined in the environment file. The default is to split long lines into two or more lines. When you use this option with FORTRAN or COBOL-formatted files, a request to overprint a line that has been split is ignored and the overprint data prints as a separate line.

-TUNIT *n*   Specifies the file unit associated with an -OPEN option. The default is file unit 2.

-XLATE *mapping*

> Asks that characters in the file be mapped into an alternate character set. *mapping* is a character string from 1 through 32 characters long. *mapping* must begin with a letter; the remaining characters may be letters, numbers or the symbols . $ or _.

Modifying Spool Queue Requests

The -MODIFY option to the SPOOL command allows you to modify an existing entry in the spool queue. Privileged users can modify any spool request in the queue. Other users can modify only their own requests.

Format:

SPOOL -MODIFY *request__number* [*options*]

You can use all the spool options except -NO__COPY, -OPEN, -SPOOL__WHILE__OPEN, and -TUNIT with the -MODIFY option. You usually use -MODIFY to add an option, but you can also use it to override a previously specified option. For example, specifying -FTN would cancel any existing -NO__FORMAT option in the original request.

The additional options -NO__DEFER (abbreviated -NOD), -NO__RUSH (abbreviated -NOR), -NO__SWO (abbreviated -NOS), and -NO__XLATE (abbreviated -NOX) allow users to cancel previously specified -DEFER, -RUSH, -SPOOL__WHILE__OPEN, and -XLATE options.

Viewing the Spool Queue

Privileged users see the entire queue when they use the -LIST option of SPOOL on Rev. 21.0 systems; other users see only their own requests unless the System Administrator has modified the Spooler to enable users to view the entire queue.

Format:

SPOOL -LIST [*options*]

Options and Arguments:

-ALL
Lists all queues that the System Administrator has placed in the file SPOOL*>QUEUES.

-ATTRIBUTE
Lists only those entries with the specified attributes. This option allows you to specify one or more attributes.

-BRIEF
Produces a brief report with a single line per request, as in the following example:

```
OK, SPOOL -LIST -BRIEF
[SPOOL Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]

System SARA
Request Time  User         File                        No Size  State
-------- ----- ------------ --------------------------- -- ----- -----
24       23:11 SMITH        LOGIN.CPL                   1  1     Defer
```

This is the default.

-DETAIL
Produces a report that includes any device attributes specified by the user or supplied by default; any options given in the SPOOL command; the pathname of the file to be printed; and a defer time, if specified, in addition to the information displayed with the -BRIEF option. An example of detailed SPOOL -LIST output follows.

```
OK, SPOOL -LIST -DETAIL
[SPOOL Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]

System SARA
Request   Time         User                                    Copies  Size  State
--------  ----------   -------------------------------------   ------  ----- -------
24           23:11:56   SMITH                                   1       1
   File name    <SPOOLA>SMITH>LOGIN.CPL
   Attributes   DISK
   Deferred until 06:00:00 on 17 May 88
```

-DISK *name*   Gives a queue report for a pre-Rev. 21.0 queue on a named partition.

-FULL   Adds a line identifying the spool queue to which the spool request has been sent, in addition to the information displayed with the -DETAIL option.

-NO_WAIT   Suppresses the --More-- prompt.

-ON *node*   Gives a queue report for a Rev. 21.0 spool queue on a specific network node.

request_number   Refers to the place in the queue of an individual Spooler request. This number appears when you send a file to the spool queue to be printed. The *request_number* is also included in the display that appears under Request when you issue the SPOOL -LIST command. See SPOOL -LIST -BRIEF, discussed earlier.

-USER *name*   Restricts the queue report to *name* and defaults to the current user if no name is given. Unless the System Administrator allows terminal users to see requests in the spool queue other than their own, only privileged users can use this option to view print requests of other users.

Canceling Spool Queue Requests

The -CANCEL option of the SPOOL command allows you to remove print requests from the spool queue.

Format:

$$\text{SPOOL -CANCEL} \quad \begin{bmatrix} request\_number \\ \text{-ALL} \end{bmatrix} \quad \begin{bmatrix} \begin{Bmatrix} \text{-ON } node\_name \\ \text{-DISK } disk\_name \end{Bmatrix} \end{bmatrix}$$

Nonprivileged terminal users can use the -ALL option to cancel all their own spool requests. However, only privileged users may cancel other users' spool requests and then only if they specify the request number of the request they want to cancel. Privileged users cannot cancel the entire queue with the -ALL option.

This option works only on Rev. 21.0 systems. Use this option with the -ON option to cancel files that are on remote queues and that have not yet begun to print. Once a file on a remote queue has begun to print, it may be canceled only by a privileged user on that remote system.

To cancel spool files on pre-Rev. 21.0 systems, use -DISK with the request number. The -ALL option does not work with the -DISK option.

The *request_number*, -DISK, and -ON options are described above. You cannot use -CANCEL with the other SPOOL command formats.

START_DSM

START_DSM activates the Distributed Systems Management (DSM) subsystem, which is an integrated set of products and services to support the administration and operation of single and networked Prime systems. Refer to the *DSM User's Guide* for information on DSM.

Format:

   START_DSM [*options*]

Options:

-HELP [-NO_WAIT]

Explains how to use the command and its options. If you specify -NO_WAIT, the display is not paginated at your terminal.

-MULTI_NODE

This option is no longer supported at Rev. 22.0; instead, START_NET starts the ISC Network server, which provides multi-node DSM support.

-USAGE   Provides a brief example of the command syntax.

Commands That Operate Under DSM

All of the DSM commands are completely documented in the *DSM User's Guide*. This book summarizes nine DSM commands which are of particular interest to a system operator:

- ADMIN_LOG
- LIST_ASSIGNED_DEVICES
- LIST_ASYNC
- LIST_DISKS
- LIST_PROCESS
- RESUS
- START_DSM
- STOP_DSM
- DISPLAY_LOG

Here is a list of the commands that are available to the user after DSM has been activated with the START_DSM command. For a detailed description of these commands see the *DSM User's Guide*.

TABLE 2-6.   Commands That Operate Under DSM

Command	Description
ADMIN_LOG	Enables you to create and administer DSM logs.
CONFIG_DSM	Sets up the DSM configuration file.
CONFIG_UM	Defines unsolicited message handling selections on local or remote nodes.
DISPLAY_LOG	Allows you to display all or part of a log at your terminal, or to write it to a file.
DISTRIBUTE_DSM	Copies the DSM configuration file to all the nodes in the configuration group.
LIST_ASSIGNED_DEVICES	Displays all the devices that have been assigned on a system with the ASSIGN command.
LIST_ASYNC	Displays the status and configuration of any or all of the system's asynchronous lines.
LIST_COMM_CONTROLLERS	Displays information on communication controllers present in a system, including the LAN Host Controller (LHC), but excluding the Prime Node Controller (PNC).
LIST_CONFIG	Displays the cold-start values, default values, and current values of those system variables that can be set by configuration directives at cold start.
LIST_DISKS	Displays information for local or remote disks that have been added to the system. For local disks only, it can also display the disks' free record size and current user IDs.
LIST_LAN_NODES	Displays information about the configured LAN300 network.
LIST_MEMORY	Displays the memory usage in number of segments, resident pages, and wired pages per user process; names or numbers can be used to identify the user.
LIST_PRIMENET_LINKS	Displays the status of PRIMENET links, where a link can be a PRIMENET-configured SMLC line, a PRIMENET-configured node on a ring, or a LAN300 network.
LIST_PRIMENET_NODES	Displays all PRIMENET-configured remote nodes, the paths to those nodes, and the permitted access to those paths.
LIST_PRIMENET_PORTS	Displays a system's port assignments.
LIST_PROCESS	Displays the environment of a specified user process.

TABLE 2-6. *Commands That Operate Under DSM (Continued)*

Command	Description
LIST_SEMAPHORES	Displays the value of all semaphores in use on the system.
LIST_SYNC	Displays the configuration of all enabled synchronous lines.
LIST_UNITS	Displays open file units by user ID, user ID of all users with files open, and current attach points of all users on the system.
LIST_VCS	Displays the state of virtual circuits.
RESUS	Allows the System Administrator or operator to add disks, shut down devices, or share segments from any terminal on any node.
STATUS_DSM	Displays details of the restart and loaded configuration files on a node. Compares their ID and revision details with the current configuration on any other node.

START_LSR

START_LSR

START_LSR starts the Login server, which handles all login requests from local and remote terminal users. The Login server starts up automatically at cold start.

To find out if the Login server is running, use the STATUS USERS command. If running, the Login server is listed under the name LOGIN_SERVER with LSr as its process type.

If you attempt to issue the START_LSR command while the Login server is running, the system responds with a message that it cannot spawn the Login server.

The Login server is always started automatically at cold start. If it aborts or is shut down (with the STOP_LSR command), you can restart it with the START_LSR command. After you use START_LSR, the system attaches you to your origin directory, and users are again able to log in. START_LSR takes no command-line arguments or options.

2-182

START_NET

START_NET allows you to bring up PRIMENET on a system without interrupting local system activity.

Format:

$$
\text{START\_NET} \quad \left\{ \begin{array}{l} \text{-NODE } \textit{nodename} \left[\begin{array}{l} \text{-CACHE } \textit{cache\_path} \\ \text{-TRACING\_NODE} \\ \textit{config\_path} \end{array} \right] \\ \text{-HELP} \end{array} \right\}
$$

Options:

config_path   Specifies the pathname of the network configuration file. If *config_path* does not end with .CONFIG, START_NET appends .CONFIG (and thus searches for *config_path*.CONFIG). If that search is unsuccessful, START_NET searches for *config_path* without the suffix. If you omit this argument, START_NET uses the default pathname, PRIMENET*>PRIMENET.CONFIG.

-CACHE [*cache_path*]

Enables the cache file, which speeds up network initialization. If you do not specify *cache_path*, START_NET assumes the default pathname of *config_file_name.sysname*.NCACHE.

-NODE *nodename*

Prior to Rev. 21.0, it was necessary to use the -NODE option to specify the system name. At and after Rev. 21.0, each system has a system name specified at system startup. PRIMENET always adopts this system name as its local node name; it is no longer necessary to specify the name with the -NODE option. However, if you do specify *node_name*, PRIMENET checks this name against the system name known to PRIMOS and generates an error message if the two do not match.

-TRACING_NODE

This option is no longer needed after Rev. 21.0. It was used to direct PRIMENET to gather ring traffic information for the local node. This information is now gathered automatically.

-HELP   Displays the syntax and options for this command.

Be careful not to confuse this command with the START_NTS command, described next. See the *Operator's Guide to Prime Networks* for a complete explanation of the START_NET command.

START_NTS

START_NTS starts terminal activity for the Prime host node on the network. Normally part of the PRIMOS.COMI file, this command may also be issued from the supervisor terminal at any time. START_NTS initiates the LAN300 Network Management facility. If this facility is already initiated because PRIMENET over the LAN300 has been started by a previous START_NET command, START_NTS indicates that the network terminal function has been started.

Format:

START_NTS [*terminal_config_pathname*] [-HELP]

The *terminal_config_pathname* specifies the pathname of the terminal configuration file. If no pathname is given, the default pathname NTS>NTS.CONFIG is used. The -HELP option displays a brief description of the function of the START_NTS command.

Be careful not to confuse this command with the START_NET command listed above. For further information on the START_NTS command, refer to the *NTS User's Guide*.

STATUS

STATUS is an internal command for monitoring system usage. When you issue STATUS or STATUS ALL at the supervisor terminal, the following information is displayed:

- The version of PRIMOS your system is running, followed by a copyright notice

- The size, in kilobytes, of main memory

- Your user ID (SYSTEM), the network node name of your system, and the file units that you have open

- All currently assigned magnetic tape drives, including their physical and logical device numbers, and the user ID and user number of the assignees

- Information on communications controllers, including names, types, device addresses, and number of lines

- Information on all currently started partitions. For local partitions, this includes partition name, logical device number, physical device number, partition type (standard or robust) and mirroring status; for remote partitions, this includes only partition name, logical device number, and node name.

- System and user semaphores

- All configured network nodes and their status (up or down)

- All Network Terminal Service (NTS) information

- The physical device numbers of the command partition and paging partitions

- All logged-in users, including their user IDs, user numbers, terminal line numbers (in decimal), in-use partitions, and assigned devices

Format:

STATUS [*argument*]

Arguments:

ALL
: Displays network node names, main memory size, file units open, assigned magnetic tape devices, started disk partitions, semaphore information, status of network nodes, the paging and command devices, and logged-in users.

COMM
: Displays information on communications controllers (excluding the Prime Node Controller) present in a system. For each controller, the information includes the controller name, its type, its device address, the number of asynchronous lines, and the number of synchronous lines.

DEVICES
: Displays physical device numbers, user IDs, user numbers, and logical device numbers of all currently assigned magnetic tape devices.

DISKS
: Displays information on currently started disk partitions. For local partitions, this includes partition name, logical device number, physical device number, partition type (standard or robust) and mirroring status;

for remote partitions, this includes only partition name, logical device number, and node name.

ME Identical to STATUS USERS when used from the supervisor terminal. Displays information on all users. The line numbers are displayed in decimal as well as octal. For individual users, this option displays information on their own processes and devices only.

NETWORK Displays information regarding the status of the full-duplex, ring, public data networks, and Route-through network nodes.

NTS Displays information regarding the status of the Network Terminal Service (NTS).

PROJECTS Displays information regarding the project status and user number of all currently logged-in users.

SEMAPHORE Displays all semaphores, their values, and, for semaphore numbers larger than 64, their users.

SYSTEM Displays the version of PRIMOS in operation and, if the command is given from the supervisor terminal, the amount of physical memory being used.

UNITS Displays the user ID and system name, and then displays file unit information for each file unit currently open for the user at the supervisor terminal.

USERS Displays user numbers, line numbers (in decimal only), and all partitions and assigned devices in use by each user currently logged in to the system. Also displays the priority level of each user if the user's priority level is other than the default level. (See the CHAP command earlier in this chapter.)

See the *Operator's Guide to System Monitoring* for additional information about using the STATUS command.

STOP_DSM

STOP_DSM shuts down the Distributed Systems Management (DSM) facility at a node by logging out all the DSM server processes. This command may be issued only from the supervisor terminal.

Format:

$$\text{STOP\_DSM} \quad \left\{ \begin{array}{l} \text{-HELP } [\text{-NO\_WAIT}] \\ \text{-USAGE} \end{array} \right\}$$

The -HELP option displays information about the command and its options. If you specify -NO_WAIT, the display is not paginated at your terminal. -USAGE gives you a brief example of the command syntax.

STOP_LSR

STOP_LSR logs out the Login server.

Format:

   STOP_LSR

When it is running, the Login server runs under the name LOGIN_SERVER. To stop the Login server, you must use the STOP_LSR command from the supervisor terminal. The system confirms that you want to log out the Login server with the prompt Really?.

Any response other than YES, YE, or Y is interpreted as a NO response.

You cannot use the LOGOUT command to stop the Login server. STOP_LSR takes no command-line arguments or options.

STOP_NET

STOP_NET allows you to shut down PRIMENET without interrupting local system activity. You can issue this command only from the supervisor terminal. Before using the STOP_NET command, you should shut down the file servers and file manager with the FTOP -STOP_SRVR and FTOP -STOP_MNGR commands.

Format:

STOP_NET [-HELP]

The -HELP option describes the syntax of the STOP_NET command. For complete information on the STOP_NET command, see the *Operator's Guide to Prime Networks.*

Be careful not to confuse this command with the STOP_NTS command, described below.

STOP_NTS

STOP_NTS shuts down the Network Terminal Service activity on the local system. It affects all activity to and from this node on all Local Area Networks (LAN300s). However, this command has no effect on local asynchronous activity or on PRIMENET (over LAN300) activity.

Format:

STOP_NTS [-HELP]

The -HELP option provides a brief explanation of the function of this command. For further information, refer to the *NTS User's Guide.*

Be careful not to confuse this command with the STOP_NET command, explained earlier in this chapter.

TRANSFER_LOG

TRANSFER_LOG is not a PRIMOS command; rather it is a utility located with other C2 software utilities in the directory TOOLS. TRANSFER_LOG invokes a utility program which backs up or moves audit trail files. This utility must be part of a C2-secure system in order to transfer audit trail files to and from disks or tapes.

Format:

> **RESUME TOOLS>TRANSFER_LOG**
> **TOOLS>TLOG**

When you invoke the TRANSFER_LOG utility, you will see a set of messages similar to those in the following example.

```
OK, RESUME TOOLS>TRANSFER_LOG

[TRANSFER_LOG Rev. 22.0 Copyright (c) 1988, Prime Computer, Inc.]

File names may be described as :

A PRIMOS File or Tree/Pathname for disk files

@MTn for tape files, where "n" is the tape drive unit number.


Please enter the name of the Source File : SECURITY_LOG.860501
Please enter the name of the Destination File : @MT0:1

Transfer complete
OK,
```

@MTn is the magnetic tape unit number. (Valid unit numbers range from 0 through 7, inclusive.) The number following the colon represents the file number. The example given above specifies magnetic tape unit zero, file one. You have the option to specify a logical file on the tape by following the magnetic tape unit number with a colon and a logical file number, as in @MT0:4.

Refer to the *System Administrator's Guide, Volume III: System Access and Security* for information about using TRANSFER_LOG.

UNASSIGN

UNASSIGN revokes the assignment to a particular user of disks, asynchronous lines, or peripheral devices, thus freeing the devices for other use. The UNASSIGN command can be used only by the operator at the supervisor terminal.

The use of UNASSIGN is discussed in detail in the *Operator's System Overview*. See also the discussion of the ASSIGN command earlier in this chapter.

As a system operator, your primary use of the UNASSIGN command is to unassign disk partitions and tape drives as part of system maintenance (such as during backup procedures, when formatting disks, and when repairing file system partitions). You may also use UNASSIGN to release asynchronous lines that have been assigned to individual user terminals with the ASSIGN ASYNC command. Although the UNASSIGN command is fully described in the *PRIMOS Commands Reference Guide*, a description of how to unassign partitions and tape drives is included here for convenience.

Format for Partitions:

   UNASSIGN DISK *pdev*

Format for Tape Drives:

   UNASSIGN $\left\{ \begin{matrix} \text{-ALIAS MT}ldev \\ \text{MT}pdev \end{matrix} \right\}$

You can specify the -ALIAS option only if a logical device number was previously assigned to this particular drive.

Format for Asynchronous Lines:

   UNASSIGN ASYNC -LINE *n* [-TO *m*]

The -LINE option specifies the line number in decimal. The -TO option allows you to specify a range of lines, from *n* to *m*, inclusive.

USAGE

USAGE is a system metering tool that allows operators and users to monitor several performance factors of PRIMOS. Both manual and automatic sampling modes are available.

Format:

USAGE [*options*]

Options:

-ALL	Displays system, per-user, and disk metering information at each sample time.
-BRIEF	Specifies that a short form of output is to be displayed. This form presents an overview of which processes and users are consuming system resources. The default long form produces additional information.
-DEBUG	Displays a detailed USAGE version number.
-DISK	Displays system and disk metering information at each sample time.
-FREQ *n*	Selects automatic sampling every *n* seconds. (*n* must be an integer from 1 through 32,767, inclusive.) *n* should not be less than 30. If you do not specify -FREQ, manual sampling is selected. (See also -TIMES, below.)
-ON *nodename*	Displays information about a remote system. *nodename* is the name of the system you wish to monitor. The system must be running Rev. 19.3 or later PRIMOS, and must be RFA-enabled.
-TIMES *n*	Useful only with the -FREQ option. Specifies the total number of samples to be taken if automatic sampling is in effect. The command terminates after *n* sets of data have been printed. *n* must be an integer in the range 1 through 32,767, inclusive. If -TIMES is not specified with -FREQ, sampling continues indefinitely.
-USER	Displays system and per-user metering information at each sample time. This is the default.

See the *Operator's Guide to System Monitoring* for a discussion of USAGE, examples of its use, and interpretation of its output.

USERS

USERS displays the number of users currently logged in to the system; it has no options or arguments. This command displays the total number of system users. However, this total does not include the supervisor terminal, nor does it include users logged through from the local system to a remote system if they used the LOGIN -ON command.

USRASR

USRASR allows the supervisor terminal to act as a user terminal by associating it with a different process. After initiating USRASR, you can still invoke some supervisor commands.

Format:

USRASR *user-number*

user-number is a user number. For example,

```
OK, USRASR 4
```

The USRASR command works correctly only if the associated communications line is not enabled on the asynchronous controller. The communications line can be disabled with the SET_ASYNC command:

```
OK, SET_ASYNC -LINE 2 -PRO TTYNOP
OK, USRASR 4
```

The SET_ASYNC command shown above disconnects the user normally attached to asynchronous line 2. To return the terminal to operation as a normal supervisor terminal, type the following:

```
OK, USRASR 1
```

Caution

This command should be used only rarely because of the possibility that the terminal will no longer function in Supervisor Terminal mode.

For example, if you are running a process from the terminal and are unable to leave the process, you no longer have access to PRIMOS command level. Hence, you cannot execute USRASR 1 and so return the terminal to its supervisor terminal function.

UX_TAPE

The UX_TAPE command transfers data between PRIMOS and UNIX. UX_TAPE can read and write files in the formats used by the UNIX utilities CPIO and TAR.

Format:

$$
\text{UX\_TAPE } source\text{-}pathname \text{ -MT}n \quad \left\{ \begin{array}{l} \text{-LIST} \\ \left[\left[\left\{ \begin{array}{l} \text{-RESTORE} \\ \text{-SAVE} \end{array} \right\} \right] \right] \end{array} \right\} \quad [options]
$$

Notice that at least one of the three options -LIST, -RESTORE, and -SAVE *must* be supplied as part of the UX_TAPE command. -LIST may be supplied either alone or together with -RESTORE or -SAVE; -RESTORE and -SAVE cannot be supplied in the same UX_TAPE command.

Arguments:

source-pathname Identifies the objects you want to save or restore. *source-pathname* may include wildcards, treewalking, and iteration.

-MT *n* Specifies the unit number *n* of the tape drive on which the reel is mounted. The drive must be on line and assigned to you.

Some UX_TAPE options are valid only when writing to a tape using the -SAVE option; some are valid only when reading from a tape using the -RESTORE option; others are meaningful whether reading or writing. In the descriptions below, each option is marked (READ) (WRITE) or (READ/WRITE) accordingly.

Options:

-APPEND (WRITE) Appends the named files to the tape. The write format (CPIO-readable or TAR-readable) must be the same as was used for any files already on the tape.

-BLOCK_SIZE *n*
  (WRITE) Specifies the block size *n* in bytes to use when writing the tape. The default value for *n* is 10 Kbytes. This option is an alternative to the -BLOCKING_FACTOR option, which specifies block size in elements of 512 bytes. Thus, -BLOCK_SIZE 512 is the same as -BLOCKING_FACTOR 1. Since -BLOCK_SIZE and -BLOCKING_FACTOR specify the same information using different units, they cannot both be used on the same command line.

-BLOCKING_FACTOR *n*
  (WRITE) Specifies the blocking factor *n* to use when writing files to tape. *n* is an integer in the range 1 through 20, inclusive; the default value for *n* is 20. The blocking factor specifies how many 512-byte blocks of text should be written to the tape at once. -BLOCKING_FACTOR 1 has the same meaning as -BLOCK_SIZE 512;

since -BLOCKING_FACTOR and -BLOCK_SIZE specify the same information in different units, they cannot be used on the same command line.

-CPIO (READ/WRITE) Tells UX_TAPE that the tape being used is written in a format that the CPIO utility can read. If writing, the tape is written in CPIO-readable format; if reading, UX_TAPE uses CPIO format to decipher the tape.

-LCASE (READ/WRITE) Controls the conversion of filenames. When writing, -LCASE specifies that all PRIMOS filenames will be converted to lower case. When reading, -LCASE specifies that each uppercase character in a UNIX filename will be preceded by a slash (/), and that lowercase characters will be translated to uppercase. Other special characters in filenames have more elaborate translations applied; for full details, see the *Data Backup and Recovery Guide.*

Note

-LCASE is the default both when reading and when writing tapes.

-LIST (READ/WRITE) Makes UX_TAPE list at your terminal the name of each file that is successfully read from or written to tape. If neither -SAVE nor -RESTORE is specified, UX_TAPE lists the contents of the tape, but performs no other action.

-NO_QUERY (READ) Suppresses queries when a restored file has the same name as a file already in the current directory. By default, UX_TAPE asks users whether they really want to restore a file when restoring that file will destroy an existing file with the same name.

-NO_REWIND (READ/WRITE) Suppresses tape rewind after the save or restore has ended.

-NO_TRANSLATE
  (READ/WRITE) Suppresses the text translation function. Used when the data is in binary format.

-POS *n* (READ/WRITE) Positions the tape *n* filemarks from the beginning of the tape, before the save or restore begins. Not valid for 60Mb cartridge drives.

-RESTORE (READ) Tells UX_TAPE to read files from tape, rather than writing them to tape. -RESTORE cannot be specified on the same line as -SAVE; one of the options -SAVE, -RESTORE, and -LIST must be present in order for UX_TAPE to function.

-SAVE (WRITE) Tells UX_TAPE to write files to tape, instead of reading them from tape. -SAVE cannot be specified on the same line as -RESTORE; one of the options -SAVE, -RESTORE, and -LIST must be present in order for UX_TAPE to function.

-SWAP	(READ/WRITE) Reverses the order of the bytes in each word. Provides compatibility with systems on which data words have the least significant byte first.
-TAR	(READ/WRITE) Specifies that the tape being used is written in a format that the UNIX TAR utility can read. If you do not specify a format option (-TAR or -CPIO), UX_TAPE assumes that the tape is written in a TAR-compatible format.
-UPCASE	(READ/WRITE) Controls the conversion of filenames. When writing, -UPCASE translates all PRIMOS pathnames to uppercase UNIX pathnames. When reading, -UPCASE translates all UNIX pathnames to uppercase PRIMOS pathnames. For information on the translation of nonalphabetic characters, see the *Data Backup and Recovery Guide*.

Caution

Do not use the -UPCASE option unless all filenames concerned are unique regardless of case. For instance, if a TAR tape contained the two UNIX files README and ReadMe, the translated PRIMOS version of the filename would be README in both cases; as a result, one of the files would overwrite the other when they were being restored.

For complete information about UX_TAPE, see the *Data Backup and Recovery Guide*.

APPENDICES

FUTIL

This appendix describes the utility program FUTIL, which can be used on pre-Rev. 20.0 systems to copy and delete files and directories. You cannot use FUTIL with PRIMOS II on systems with Rev. 20.0 disk formats.

On pre-Rev. 20.0 systems, you may invoke FUTIL from either the PRIMOS operating system or from PRIMOS II. For operations under PRIMOS, use the COPY and DELETE commands, described in the *PRIMOS Commands Reference Guide.*

INVOKING FUTIL

To invoke FUTIL, type FUTIL. When invoked, FUTIL prints a right angle-bracket prompt (>) and awaits a subcommand:

```
OK: FUTIL
[FUTIL rev 19.4]
>
```

Restrictions

Do not use FUTIL on Rev. 20.0 or later systems. Instead, use the appropriate PRIMOS commands.

Use Under PRIMOS

When you use FUTIL under PRIMOS, certain operations may interfere with the work of other users. For example, a UFDCPY command may fail if it is used to copy all files from a directory currently used by another logged-in user. If any file in that directory is open for writing by that user, UFDCPY encounters the error message file in use and skips the file. If the user attempts to open a file for writing while UFDCPY is running, the user may encounter that error message. The FUTIL commands LISTF and TRECPY cause the same interaction problems.

FUTIL commands such as COPY and DELETE can also interfere with other users, but with these commands only one file is potentially involved in a conflict. To minimize conflicts, use the COPY command rather than FUTIL. If you use FUTIL under PRIMOS, use the PRIMOS LD command rather than FUTIL's LISTF subcommand.

Working in the MFD

A UFDCPY command to copy the MFD to the MFD of another disk merges the contents of two disks onto one disk. Be sure that there is enough room on the TO disk before attempting this operation or the merge will not be successfully completed. The names of segment directories on the two disks must not conflict. Files of the same name will be overwritten and directories of the same name will be merged.

To avoid conflict, it may be desirable to copy (using UFDCPY) the MFD of one disk into a user file directory on another disk. Each directory originally on the FROM disk becomes a subdirectory in that directory on the TO disk. A UFDCPY command to copy an MFD does not copy the DSKRAT, MFD, BOOT, or BADSPT file to the TO directory. If you wish to copy BOOT to the TO directory, use the COPY_DISK command. Never copy the DSKRAT and BADSPT files from one MFD to another.

A UFDCPY command to copy from the MFD of a disk in use to the MFD of a newly formatted disk reorganizes the disk files so that all files are compressed. That is, all files have their records close to each other on the new disk. After such compression, the access time to existing files on the new disk is less than the access time on the old disk. Furthermore, new files tend to be compact because all free disk records are also compressed. The use of compressed disks improves the performance of all PRIMOS systems.

WARNING

FUTIL operations affecting the MFD should be done carefully. Never give the command TREDEL MFD, which deletes every file on the disk except the MFD, the Disk Record Availability Table, BOOT, and BADSPT. When the system is operating under PRIMOS, use LISTF or UFDCPY in the MFD only if no files or directories on the disk are being used.

FUTIL SUBCOMMANDS DICTIONARY

FUTIL subcommands are briefly described below.

Caution

Do not abort copy or delete operations under PRIMOS II; allow them to run to completion. Aborting FUTIL while copying or deleting files may cause a pointer mismatch, bad file structure, or may leave a directory with a partial entry. PRIMOS II will not run correctly with a directory containing a partial entry. You should run FIX__DISK or FIXRAT immediately if these conditions occur.

Many FUTIL commands are significantly affected by the current value of the FROM and TO directories. For an explanation of FROM and TO directories, refer to the description of the FROM and TO subcommands below.

FUTIL Subcommands:

ATTACH *pathname*

Moves the current directory to the directory defined by *pathname*. The *pathname* may contain a maximum of 10 directories. The first directory in the *pathname* may be the current directory and may be indicated by an asterisk (*). All directories in the *pathname* must be directories or subdirectories.

CLEAN *prefix* [*level*]

Deletes all files in the FROM directory whose filenames begin with the characters specified as *prefix*. If you specify a *level* greater than 1, that many levels of subdirectories (including the FROM directory) are scanned for *prefix* matches. In no case does CLEAN delete a directory, a subdirectory, or a segment directory.

COPY *filea* [*fileb*] [*,filec* [*filed*]]...

Copies *filea* in the FROM directory into *fileb* in the TO directory and, optionally, copies *filec* in the FROM directory to *filed* in the TO directory, and so on. Filename pairs must be separated by commas. If you omit the second filename of a pair, the new file is given the same name as the old file. The files in the FROM directory must be SAM or DAM files and cannot be directories. If *fileb* exists prior to the copy, it must be a SAM or DAM file, and the user must have read, write, and delete/truncate access rights to the target file. If *fileb* exists, it is deleted; then *filea* is copied to *fileb*. The file type of *fileb* will be the same as *filea*.

COPYDAM *filea* [*fileb*] [*,filec* [*filed*]]...

Functions in the same way as COPY, but COPYDAM sets file type of *fileb* and *filed* to DAM, instead of copying the type of *filea* and *filec*.

COPYSAM *filea* [*fileb*] [*,filec* [*filed*]]...

Functions in the same way as COPY, but COPYSAM sets file type of *fileb* and *filed* to SAM, instead of copying the type of *filea* and *filec*.

CREATE *dirname* [*owner-password* [*nonowner-password*]]

Creates a directory in the TO directory and assigns any owner and

nonowner passwords specified. A subdirectory of the same name cannot already exist in the TO directory. If a password is not specified, it is set to six spaces (null). If a password longer than six characters is specified, only the first six characters are used. The access rights of the new subdirectory are the default access rights set by PRIMOS.

DELETE *filea* [*fileb*]...

Deletes specified files from the FROM directory. *filea* and *fileb* cannot be directories.

FORCE { **ON** / **OFF** }

FORCE ON causes read access rights to be forced on any files or subdirectories within the FROM directory. The option remains in operation until you specify the command FORCE OFF. UFDCPY never forces rights on the primary level of the FROM or TO directory.

Caution

Use of FORCE ON causes LISTF, LISTSAVE, SCAN, UFDCPY, and TRECPY to fail on write-protected disks.

FROM *pathname* Defines the FROM directory in which files are to be searched by FUTIL subcommands. *pathname* may contain a maximum of 10 directories that can be segment directories as well as User File Directories. If segment directories are specified, the user must have read access rights to them. If any error is encountered, the FROM directory is set to the current directory (*). The first directory in the *pathname* may be *, which refers to the current directory. The default FROM directory is the current directory.

Note

The FROM command never changes the current directory. If the FROM name is a relative pathname (that is, begins with *), any subsequent ATTACH commands reset the FROM name to *.

LISTF [*level*] [*filedata*]

Lists the FROM directory pathname, the TO directory pathname, and all files and directory trees in the FROM directory at the terminal. *level* specifies the depth of subdirectories to display. The *filedata* argument(s) specify additional information to be printed for each file. *filedata* can be zero or more of the following:

Argument	Information Printed
DATE	Date/time modified
FIRST	First line of file
LSTFIL	Sends the LISTF command's output to a file named LSTFIL in the currently attached directory

PASSWD	Owner and nonowner passwords
PROTEC	Protection attributes
RWLOCK	Read/write lock setting
SIZE	Size in disk records (2048 bytes/record)
TYPE	File type

LISTSAVE *filename* *[level]* *[filedata]*

Functions identically to the LISTF command with the LSTFIL option specified, except that the name of the output listing file is specified by *filename*. *filedata* are the same as for LISTF.

PROTECT *filename* *[owner-access[nonowner-access]]*

Protects *filename* in the FROM directory with the owner and nonowner protection attributes specified.

QUIT   Returns to PRIMOS or PRIMOS II command level.

SCAN *filename* *[level]* *[filedata]*

Searches the FROM directory tree for the occurrence of all files, subdirectories, and segment directories that are named with the name specified by *filename*. *Filedata* are the same as for LISTF.

If you specify *level* 1 (the default), only the *filename* followed by the information specified by the optional arguments is displayed. If you specify a *level* greater than 1, the pathname of the file or directory, starting from the FROM directory, is printed. In addition, the information specified by any optional arguments may be displayed after the treename. See LISTF above for a description.

SRWLOC *filename* *number*

Sets the per-file read/write lock for the file specified by *filename*. *number* specifies the read/write lock setting, as follows:

0	System default
1	n readers or 1 writer
2	n readers and 1 writer
3	n readers and n writers

TO *pathname*   Defines the TO directory in which files are searched. The TO directory is defined from *pathname*, which has a format similar to that of the directory pathname specified for the FROM command. The *pathname* may contain a maximum of 10 directories that may be segment directories as well as directories. If segment directories are specified, the user must have Read and Write access to them. The first directory in the *pathname* may be the current directory (*). The default TO directory is the current directory. If FUTIL encounters any error, the TO directory is set to the current directory (*).

Note

The TO command never changes the current directory. If the TO name is a relative pathname (that is, begins with *), any subsequent ATTACH commands reset the TO name to *.

TRECPY *dira* [*dirb*] [,*dirc* [*dird*]]

Copies the directory tree specified by directory *dira* to directory *dirb*, and optionally copies *dirc* to *dird*. *dirb* and *dird* must not exist prior to the TRECPY command. If you omit *dirb*, *dira* is taken as the name of the directory to be copied to. *dira* and *dirc* must be in the FROM directory; *dirb* and *dird* are created in the TO directory.

The directories *dirb* and *dird* are created with the same directory types and passwords as *dira* and *dirc*, and with default access rights. Also, the per-file read/write lock setting is copied by TRECPY. The names, access rights, and passwords of all files and subdirectories are also copied.

TREDEL *dira* [*dirb*]

Deletes the directory specified by directory *dira* and optionally deletes *dirb* from the FROM directory. (*dira* and *dirb* must be directories.)

TREPRO *directory* [*owner-access* [*nonowner-access*]]

TREPRO is almost identical to PROTECT, except that *directory* is a directory or segment directory in the FROM directory and it and all subdirectories under it are protected with the specified access rights. The default access rights are 1 0.

TRESRW *directory* *number*

Sets the per-file read/write locks for all files in the subtree beginning with the directory (segment directory or directory) specified by *directory*. The parameter *number* indicates the read/write lock settings, which are discussed in the description of the FUTIL command SRWLOC.

UFDCPY

Copies all files and directory trees from the FROM directory to the TO directory. Files existing in the TO directory with names identical to those in the FROM directory are replaced.

Segment directories existing in the TO directory with names identical to those in the FROM directory are not allowed and are not copied. Files and directories created in the TO directory have the same file types and access rights as those of the old files. When the copy is finished, the new file has the same protection attributes as the corresponding file in the FROM directory. The names, access rights, per-file read/write lock settings, and passwords of all files and subdirectories within directory trees being copied are also copied. Other existing files and directories in the TO directory are not affected. UFDCPY effectively merges two directories (including the merge of subdirectories). Both the FROM and the TO directories must be directories.

UFDDEL

Deletes all files and directory trees (specified by directories) within the FROM directory. The owner password must be given in the FROM

command to provide Read, Write, and Delete access to all files and directories within the FROM directory. These rights are not required for files and subdirectories nested within the directories in the FROM directory.

Note

Read and Write access rights to a subdirectory permit the deletion of the contents of that directory, but not deletion of the directory itself.

UFDPRO [*owner-access* [*nonowner-access* [*levels*]]]

Protects all files and directories within the FROM directory according to the specified access rights, traversing subdirectory trees to the specified number of levels. The default rights are 1 0 and the default number of levels is 1.

UFDSRW *number* [*levels*]

Sets the per-file read/write locks for levels of files in the FROM directory. The parameter *number* is the read/write lock setting, which is discussed in the description of the SRWLOC command earlier in this appendix. The default level is 1.

OBSOLETE AND RARELY USED COMMANDS

This appendix describes obsolete or rarely used commands, including

- AMLC
- EVENT_LOG
- LOOK
- NETCFG
- NUMSEMACL
- OPRPRI
- PRINT_NETLOG
- PRINT_SYSLOG

These commands are still valid for pre-Rev. 21.0 systems. However, the EVENT_LOG, PRINT_NETLOG, and PRINT_SYSLOG commands do not work on Rev. 21.0 or later versions of PRIMOS.

AMLC

AMLC configures an asynchronous line connected to an AMLC or ICS controller. The functions of this command have been replaced by the SET_ASYNC and LTS commands, which are fully explained in Chapter 2, PRIMOS Operator Commands.

Format:

AMLC [*protocol*] *line* [*config_word*][*lword*]

protocol is one of the following:

Protocol	Meaning
ASD	Auto Speed Detect; automatically detects terminal baud rates 110, 300, 1200, 2400, 4800, and 9600
TRAN	Transparent (no character conversion)
TT8BIT	Recognizes character sets that require the use of 8 bits to represent each character
TTY	Default terminal protocol
TTYNOP	All traffic ignored
TTYUPC	Lowercase alphabetic characters translated to uppercase for output; uses normal terminal protocol for input

In addition, there are three obsolete protocols that are used only with DMT AMLCs (Model 505x). These protocols slow down system performance if used with any other controller:

TRANHS	TRAN with per-character interrupt
TTYHS	Terminal with per-character interrupt
TTYHUP	Lowercase alphabetic characters translated to uppercase for high-speed output; uses normal terminal protocol for input

line is the asynchronous line number (in octal). The maximum value is 377_8 (255 decimal).

config_word is a 16-bit halfword (in octal) used to set the line configuration. Three common configuration values, and the baud rates they represent, follow:

Config_word	Baud Rate
2213	300
2313	1200 (default)
2413	9600 (typically; depends on AMLCLK setting)

lword is an obsolete argument to the AMLC command; it no longer has any effect, and its functions have been replaced by the CAB and LAB commands, described in Chapter 2.

The AMLC command and its error messages are described in detail in the *System Administrator's Guide, Volume II: Communication Lines and Controllers.*

EVENT_LOG

EVENT_LOG is used to turn system or network event logging on or off on pre-Rev. 21.0 systems. For Rev. 21.0 or later versions of PRIMOS, this command does not work. Refer to the DISPLAY_LOG command for information on system or network logging on Rev. 21.0 or later systems. Refer also to the *DSM User's Guide* for detailed information on the DISPLAY_LOG command.

Format:

$$\text{EVENT\_LOG } [\text{-NET}] \quad \begin{Bmatrix} \text{-ON} \\ \text{-OFF} \end{Bmatrix}$$

If you specify the -NET option, network logging is affected; otherwise, system logging is affected. If you specify neither -ON nor -OFF, -ON is assumed.

EVENT_LOG is discussed further in the *Operator's Guide to System Monitoring.*

LOOK

LOOK is an internal operator command that provides access to any user segment in the system. The LOOK command can be issued only at the supervisor terminal and must be preceded by an OPRPRI 1 command and followed by an OPRPRI 0 command.

Caution

This command is intended mainly as a debugging tool for the use of systems engineers and field analysts. The operator and System Administrator normally have no use for it.

Format:

LOOK [*-userno* [*segno* [*access* [*mapseg*]]]]

Arguments:

-userno   Number of the user owning the segment. The default is User 1.

segno   Number of the segment to be examined. The default is 6000 (the Ring 0 stack segment for the user).

access   Access rights to be granted (as in the SHARE command). The default is 200_8 (read only).

mapseg   Segment of User 1's address space into which the specified segment is to be mapped. The default is 4001_8.

WARNING

If you use the LOOK command to try to examine a segment that does not exist, to try to write to a segment that does exist, or to attempt to map either shared or stack segments with write permission, the command is considered risky or dangerous to system integrity. The REALLY? prompt is issued for any LOOK command whose request is considered to be dangerous to system integrity. If you respond YES, the operation proceeds. To override a LOOK command, specify 0 for *segno*.

NETCFG

NETCFG is a command for pre-Rev. 19 systems. Do not use this command on a Rev. 19 or later system. Instead, use the CONFIG_NET command, which is documented in the *PRIMENET Planning and Configuration Guide*.

NUMSEMACL

The NUMSEMACL command is useful only for systems that are maintaining strict C2 security. It forces all numbered semaphores used by PRIMOS to be ACL-protected.

If your system is not a C2-secure system, using ACL-protected numbered semaphores can cause some products to stop working, and will exact a substantial performance penalty. You should use the NUMSEMACL -ON command only if you are certain that your system is strictly C2-secure.

Format:

$$\text{NUMSEMACL} \quad \begin{Bmatrix} \text{-STATUS} \\ \text{-ON} \\ \text{-OFF} \end{Bmatrix}$$

For further details about the NUMSEMACL command, see the *System Administrator's Guide, Volume III: System Access and Security.*

OPRPRI

OPRPRI (operator privilege), an internal command issued from the supervisor terminal, is implemented as a check against inadvertent or unauthorized use of the LOOK command that might adversely affect the system.

Format:

OPRPRI *n*

The argument *n* can be either 0 or 1.

    0 Sets a safeguard against issuing the LOOK command.
       (This is the default.)

    1 Removes the safeguard and allows the LOOK command to be given.

OPRPRI 1 must precede, and OPRPRI 0 must follow, the LOOK command.

Pre-Rev. 21.0 systems required the use of the OPRPRI command before and after the SHARE command. At Rev. 21.0 and later, this is no longer necessary.

PRINT_NETLOG

Prior to Rev. 21.0, PRINT_NETLOG invoked a utility program that analyzed a pre-Rev. 21.0 network event log file, produced a formatted output file that chronicled the network events represented in the file, and then displayed a message giving the pathname of the output file. The *Operator's Guide to Prime Networks* explains how to use PRINT_NETLOG and describes the network event log messages output by PRINT_NETLOG. See also the discussion of EVENT_LOG and PRINT_SYSLOG in this appendix.

Refer to the discussion of the DSM command DISPLAY_LOG in Chapter 2 for information on viewing the network and system logs for Rev. 21.0 and later software. Refer also to the *DSM User's Guide* for detailed information on network logging with Distributed Systems Management (DSM).

PRINT_SYSLOG

Prior to Rev. 21.0, PRINT_SYSLOG invoked a utility program that analyzed a pre-Rev. 21.0 system event log file and produced a formatted output file that chronicled the system events represented in the event log file.

Refer to the DSM command DISPLAY_LOG for information on viewing the network and system logs for Rev. 21.0 and later software. Refer also to the *DSM User's Guide* for detailed information on system logging with Distributed Systems Management (DSM).

Format:

$$\text{PRINT\_SYSLOG} \quad \left\{ {pathname \atop \text{TTY}} \right\} \quad [options]$$

If you specify TTY, output is displayed at the user's terminal. If you specify neither TTY nor *pathname*, output is written to the file LOGLST in the current directory. Otherwise, output is written to the file *pathname*.

To specify the input file, which contains a binary-encoded log of system events, use the -INPUT option, which is described below. If you do not include the -INPUT option on the PRINT_SYSLOG command line, PRINT_SYSLOG uses the most recently created log file in the directory LOGREC*. System event log filenames are of the form LOG *mm dd yy*. If PRINT_SYSLOG is unable to find a system event log file, it prompts for an input filename.

Options:

-HELP   Displays a list of PRINT_SYSLOG options. You must reenter the PRINT_SYSLOG command after the options are displayed.

-INPUT   Specifies the pathname of the input log file to be processed. If you do not specify this option on the command line, PRINT_SYSLOG attempts to use the most recently created system event log file, as described above.

-FROM $\left\{ {mmddyy\ [hhmm] \atop \text{TODAY}} \right\}$

Processes only entries from the date the latest entry. Specify TODAY instead of *mmddyy* to refer to today's date. After you specify the date, you may enter an optional time specification of the form *hhmm* (hours, minutes). A time entry may be from 0000 through 2359, inclusive. Omitting the time specification is equivalent to specifying 0000. PRINT_SYSLOG checks each entry individually to see whether its date/time stamp indicates that it should be formatted. An entry that is out of sequence (for example, the operator entered the wrong date) will not turn on entry formatting prematurely.

-TYPE *entrytype* ...

Processes only entries of the indicated *entrytypes*. *entrytype* can be any of the following:

Type	System Event
COLD	Cold start
WARM	Warm start
TIMDAT	Time/date entry
CHECK	Machine check (including memory parity)
DISKER	Disk error
OVERFL	LOGBUF overflow entry
SHUTDN	Operator shutdown
CHK300	P300 machine check
PAR300	P300 memory parity check
MOD300	P300 missing memory module check
TYPE10	Entry for type 10
TYPE11	Entry for type 11
TYPE12	Entry for type 12
TYPE13	Entry for type 13
TYPE14	Entry for type 14
TYPE15	Entry for type 15
DSKNAM	ADDISK entry
POWERF	Power fail check
SETIME	Operator issued a SETIME command
QUIET	Machine check mode now quiet
REMARK	Operator remark
PACL	Priority ACL set
SENSOR	Sensor check

ECCULO   ECCU error, process logged out

BADENT   Bad entry

Note that the time/date stamps associated with the selected entries are not processed unless you select TIMDAT explicitly. For example, -TYPE DISKER TIMDAT processes all disk errors and their associated time/date stamps. If you specify TIMDAT alone, all time/date stamps are processed. If you specify TIMDAT in conjunction with one or more other *entrytypes*, only the time/dates of the selected *entrytypes* are processed. If you do not specify the -TYPE option, all entries are processed.

-SPOOL   Spools the output file when done. PRINT_SYSLOG displays the name of the output spool file.

-DELETE   Deletes the output file when done.

Note

This option should be specified only when the -SPOOL option is also specified.

-PURGE   Empties, but does not delete, the event-log input file when event-log processing is complete. Write access is required on the input file.

-CENSUS   Totals the entries for each event in the input file and writes the totals to the output file or to the terminal. Only nonzero totals are displayed.

-CONTINUE   Continues after a bad entry is found. PRINT_SYSLOG normally halts if it encounters an invalid entry. If you specify this option, PRINT_SYSLOG continues processing in an attempt to find the next valid entry.

-DEBUG   Causes PRINT_SYSLOG to read entries from the terminal; used for testing PRINT_SYSLOG's formatting for entry types. Enter each entry as a series of tokens (using rules for RDTK$$). Octal tokens are converted to binary; all others are taken as ASCII strings. PRINT_SYSLOG leaves this mode of operation whenever you enter QUIT, Q, q, or a null line. (See the *Subroutines Reference III: Operating System*, DOC10082-1LA, and its update packages, UPD10082-11A and UPD10082-12A, for information on RDTK$$.)

-REMARK   Enters an event of type REMARK directly into the input file. This option can be used, for example, by an operator who wishes to record an observation on some event that might affect the subsequent operation of the system. All text after the -REMARK option is entered into the input file. Consequently, the -REMARK option must be the last option specified on the command line. The message can contain a maximum of 80 characters and need not be surrounded by apostrophes. Write access is required on the input file.

-DUMP   In addition to its normal formatting, PRINT_SYSLOG dumps each entry processed in octal. -DUMP is an additional aid to sites which define their own event types. Only those entries that have been selected for processing are dumped.

System event logging is controlled by the EVENT_LOG command. EVENT_LOG and PRINT_SYSLOG are discussed in the *Operator's Guide to System Monitoring*, which also contains a list of system event log messages displayed by PRINT_SYSLOG. See also EVENT_LOG and PRINT_NETLOG, described earlier in this appendix.

INDEX

INDEX

F

N

V

VCP commands,
not documented in this book, 1-4

W

W (Write) access right, 2-73
Warnings,
do not change the access rights on
segments 1 through 40$_8$, 2-165
do not place COMDEV on dual-ported
disks, 2-4, 2-115
do not priority select dual-ported disks,
2-4, 2-13, 2-115
do not put COMDEV on dual-ported
disks, 2-13
do not share into segments 0 through
1777$_8$, 2-164
do not TREDEL MFD under FUTIL,
A-2
do not use MAKE -FORMAT on first
partitions of disks, 2-103
FIX__DISK -FAST is used only on
robust partitions, 2-57
LOOK command dangerous to system
integrity, B-4
Write-protecting,
partitions with ADDISK command, 2-3

X

X (Execute) access right, 2-73

Y

YTSMAN,
name of File Transfer Service manager,
2-61

SURVEYS

READER RESPONSE FORM

Operator's Guide to System Commands
DOC9304–4LA

Your feedback will help us continue to improve the quality, accuracy, and organization of our publications.

1. How do you rate this document for overall usefulness?

   ☐ *excellent*   ☐ *very good*   ☐ *good*   ☐ *fair*   ☐ *poor*

2. What features of this manual did you find most useful?

   _____
   _____
   _____
   _____
   _____
   _____

3. What faults or errors in this manual gave you problems?

   _____
   _____
   _____
   _____
   _____

4. How does this manual compare to equivalent manuals produced by other computer companies?

   ☐ *Much better*   ☐ *Slightly better*   ☐ *About the same*
   ☐ *Much worse*   ☐ *Slightly worse*   ☐ *Can't judge*

5. Which other companies' manuals have you read?

   _____
   _____

Name:_____Position:_____

Company:_____

Address:_____

_____

_____Postal Code:_____

First Class Permit #531 Natick, Massachusetts 01760

BUSINESS REPLY MAIL

Postage will be paid by:

PR1ME

Attention: Technical Publications
Bldg 10B
Prime Park, Natick, MA 01760

READER RESPONSE FORM

Operator's Guide to System Commands
DOC9304–4LA

Your feedback will help us continue to improve the quality, accuracy, and organization of our publications.

1. How do you rate this document for overall usefulness?

   ☐ *excellent*   ☐ *very good*   ☐ *good*   ☐ *fair*   ☐ *poor*

2. What features of this manual did you find most useful?

   _____
   _____
   _____
   _____
   _____
   _____
   _____

3. What faults or errors in this manual gave you problems?

   _____
   _____
   _____
   _____
   _____
   _____

4. How does this manual compare to equivalent manuals produced by other computer companies?

   ☐ *Much better*   ☐ *Slightly better*   ☐ *About the same*
   ☐ *Much worse*   ☐ *Slightly worse*   ☐ *Can't judge*

5. Which other companies' manuals have you read?

   _____
   _____

Name:_____ Position:_____

Company:_____

Address:_____

_____

_____Postal Code:_____

BUSINESS REPLY MAIL

Postage will be paid by:

PR1ME

Attention: Technical Publications
Bldg 10B
Prime Park, Natick, MA 01760