
SYSTEM MANAGER'S REFERENCE

Accounting Utility

The Accounting Utility (ACCOUNTING) processes system accounting files to produce reports and summaries of system usage.

format

ACCOUNTING [*file-spec*[,...]]

parameter

***file-spec*[,...]**

Specifies one or more accounting files as input to be processed by ACCOUNTING. If you specify more than one file name, separate them with commas. If you omit the file-spec parameter, data is processed from the current accounting file, SYS\$MANAGER:ACCOUNTNG.DAT.

Wildcard characters are allowed in the file specification.

usage summary

The following DCL command invokes ACCOUNTING:

```
$ ACCOUNTING [file-spec[,...]]
```

Each ACCOUNTING request runs until it completes. To terminate an ACCOUNTING request before completion, press CTRL/Y.

You can direct ACCOUNTING output to any supported terminal device or to a disk or tape file by specifying the /OUTPUT qualifier.

Use of ACCOUNTING requires read access to the input accounting file.

ACC-2 ACCOUNTING /ADDRESS

ACCOUNTING Qualifiers

This section explains ACCOUNTING qualifiers and provides examples of their use. The qualifiers follow the standard rules of DCL grammar.

/ACCOUNT

Controls whether only those records matching the specified account name are selected. If you omit the qualifier or specify /NOACCOUNT, the account name is not used to select records.

format

```
/ACCOUNT=(["-",]account-name[,...])  
/NOACCOUNT
```

keywords

“-”

Specifies that all records are selected except those matching any specified account name.

account name[,...]

Specifies the account name used to select records. The account name matches the account name specified in the user authorization file.

When you specify the /ACCOUNT qualifier, specify at least one account name. If you specify more than one account name, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /ACCOUNT=(MISHA,MARCO)
```

The command in this example selects records matching the accounts MISHA and MARCO.

/ADDRESS

Controls whether only those records matching the specified remote node-address are selected. If you omit the qualifier or specify /NOADDRESS, the node-address is not used to select records.

format

```
/ADDRESS=(["-",]node-address[,...])  
/NOADDRESS
```

keywords

“_”

Specifies that all records are selected except those matching any specified node address.

node address[,...]

Specifies the node address used to select records.

The node address is a unique numeric identifier for DECnet nodes. Use the following formula to calculate the node address:

$\text{node address} = (\text{area-number} * 1024) + \text{node-number}$

When you specify the /ADDRESS qualifier, specify at least one node address. If you specify more than one node address, separate them with commas, and enclose the list in parentheses.

example

\$ ACCOUNTING /ADDRESS=19656

The command in this example selects records that have remote node address fields that are equivalent to the DECnet address 19656 or DECnet node address 19.200.

/BEFORE

Controls whether only those records dated earlier than the specified time are selected. If you specify /NOBEFORE or omit the qualifier, time is not used to select records.

format

/BEFORE[=time]

/NOBEFORE

keyword

time

Specifies the time used to select records. Records dated earlier than the specified time are selected. You can specify an absolute time, delta time, or a combination of the two.

example

\$ ACCOUNTING /BEFORE=31-DEC-1988

The command in this example selects all records dated earlier than December 31, 1988.

ACC-4 ACCOUNTING

/BRIEF

/BINARY

Controls whether output is a binary accounting file.

format

/BINARY
/NOBINARY

description

When **/BINARY** is specified, the output file, specified using the **/OUTPUT** qualifier, contains image copies of the selected input records. If you specify **/NOBINARY** or omit the qualifier, the output file contains formatted ASCII records.

The **/BINARY**, **/BRIEF**, **/FULL**, and **/SUMMARY** qualifiers cannot be used in combination with each other.

example

```
$ ACCOUNTING /BINARY /OUTPUT=MYACC.DAT
```

The command in this example writes accounting data in binary format to the file MYACC.DAT.

/BRIEF

Controls whether a brief format is used in ASCII displays.

format

/BRIEF
/NOBRIEF

description

By default, records are displayed in the brief format. You must specify **/FULL** to have the full contents of each selected record displayed.

The **/BINARY**, **/BRIEF**, **/FULL**, and **/SUMMARY** qualifiers cannot be used in combination with each other.

example

```
$ ACCOUNTING /OUTPUT=MYACC.DAT
```

The command in this example produces an ASCII file in brief format. The file is written to MYACC.DAT.

/ENTRY

Controls whether only those records matching the specified queue entry are selected. If you specify **/NOENTRY** or omit the qualifier, the queue entry is not used to select records.

format

/ENTRY=(["-",]queue-entry[,...])
/NOENTRY

keywords

"-"

Specifies that all records are selected except those matching any specified queue entry.

queue-entry[,...]

Specifies the queue entry identifier used to select records. The queue entry is a unique numeric identifier assigned to entries in device and batch queues.

When you specify the **/ENTRY** qualifier, specify at least one queue entry. If you specify more than one queue entry, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /ENTRY=("-",25)
```

The command in this example selects records for all queue entries except number 25.

/FULL

Controls whether a full format is used in ASCII displays. If you specify **/NOFULL** or omit the qualifier, records are displayed in the brief format.

format

/FULL
/NOFULL

description

By default, records are displayed in the brief format. You must specify **/FULL** to have the full contents of each selected record displayed.

The **/BINARY**, **/BRIEF**, **/FULL**, and **/SUMMARY** qualifiers cannot be used in combination with each other.

ACC-6 ACCOUNTING /IMAGE

example

⌘ ACCOUNTING /FULL

The command in this example displays the full contents of each selected record.

/IDENT

Controls whether only those records matching the specified process ID are selected. If you specify /NOIDENT or omit the qualifier, the process ID is not used to select records.

format

/IDENT=([“-”,]process-id[,...])
/NOIDENT

keywords

“-”

Specifies that all records are selected except those matching the specified process ID.

process-id[,...]

Specifies the process ID used to select records. When you specify /IDENT, specify at least one process ID. If you specify more than one process ID, separate them with commas, and enclose the list in parentheses.

example

⌘ ACCOUNTING /IDENT=(25634,045A6B)

The command in this example selects records matching the process IDs 25634 and 045A6B.

/IMAGE

Controls whether only those records matching the specified image name are selected. If you specify /NOIMAGE or omit the qualifier, the image name is not used to select records.

format

/IMAGE=([“-”,]image-name[,...])
/NOIMAGE

keywords

“_”

Specifies that all records are selected except those that match the specified image name.

image-name[,...]

Specifies the image name used to select records. Specify only the file name portion of the image file specification, such as EDT.

When you specify /IMAGE, specify at least one image name. If you specify more than one image name, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /IMAGE=("-" ,SYSGEN)
```

The command in this example selects records for all images except SYSGEN.

/JOB

Controls whether only those records matching the specified job name are selected. A job name is assigned to an entry in a device or batch queue. If you specify /NOJOB or omit the qualifier, the job name is not used to select records.

format

/JOB=([“-”,]job-name[,...])

/NOJOB

keywords

“_”

Specifies that all records are selected except those matching any specified job name.

job-name[,...]

Specifies the job name used to select records. When you specify /JOB, specify at least one job name. If you specify more than one job name, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /JOB=(MYJOB1 ,MYJOB2)
```

The command in this example selects all records that match the job names MYJOB1 and MYJOB2.

ACC-8 ACCOUNTING /NODE

/LOG

Controls whether informational messages (input file names, selected record counts, rejected record counts) are displayed to SYS\$OUTPUT.

format

/LOG
/NOLOG

description

By default, messages are not displayed. If more than one input file is specified in an ACCOUNTING command with the /LOG qualifier, there is one logging message for each file, and a total is provided.

example

```
$ ACCOUNTING /LOG
```

Date / Time	Type	Subtype	Username	ID	Source	Status
31-DEC-1988 13:42:44	FILE			00000000		00000000
31-DEC-1988 13:53:29	PROCESS	BATCH	SYSTEM	20800116		10030001
31-DEC-1988 13:53:38	SYSINIT		SYSTEM	20800104		107781AB
31-DEC-1988 13:58:04	PROCESS	INTERACTIVE	MATTHEWS	20800128	TTF5:	00000001
31-DEC-1988 14:10:29	PROCESS	NETWORK	ROBIN_NET	20800132	AXEL	10000004
31-DEC-1988 14:28:56	PROCESS	SUBPROCESS	SMITH	2080013E		10000001
31-DEC-1988 14:33:31	PRINT		JONES	21400117		00040001

```
%ACC-I-INPUT, SYS$SYSROOT:[SYSMGR]ACCOUNTNG.DAT;1, 33 selected, 0 rejected
```

The command in this example displays accounting records informational messages such as selected and rejected record counts.

/NODE

Controls whether only those records matching the specified remote DECnet node name are selected. If you specify /NONODE or omit the qualifier, the node name is not used to select records.

format

/NODE=(["-",]node-name[,...])
/NONODE

keywords

“_”

Specifies that all records are selected except those matching any specified remote node name.

node-name[,...]

Specifies the remote node name used to select records. Colons (:) are not allowed in the node name specification.

When you specify /NODE, you must specify at least one node name. If you specify more than one node name, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /NODE=("-" ,NOROT ,ROBERT ,SEESHA)
```

The command in this example selects records for all remote node names except those named in the list.

/OUTPUT

Specifies where to direct accounting output. If you omit the qualifier, selected records are output to SYS\$OUTPUT.

format

/OUTPUT[=file-spec]

/NOOUTPUT

keyword

file-spec[,...]

Specifies the name of the file that is to contain the selected records.

If you omit the device or directory specification, the current device and default directory are used. If you omit the file name, the file name of the input file is used. If you omit the file type and the output is ASCII, the default file type is LIS. If you omit the file type and the output is binary (/BINARY), the default file type is DAT.

example

```
$ ACCOUNTING /BINARY /OUTPUT=STAT.DAT
```

The command in this example selects accounting records and outputs them in binary to the file STAT.DAT.

ACC-10 ACCOUNTING /PRIORITY

/OWNER

Controls whether only those records matching the specified owner process ID are selected. If you specify /NOOWNER or omit the qualifier, the owner process ID is not used to select records.

format

/OWNER=(["-",]*owner-process-id*[,...])

/NOOWNER

keywords

"_"

Specifies that all records are selected except those matching any specified owner process ID.

***owner-process-id*[,...]**

Specifies the owner process identification number used to select records. Owner process IDs are present only in subprocesses to specify the process id of their owner process.

When you specify /OWNER, specify at least one owner process ID. If you specify more than one, separate them with commas and enclose the list in parentheses.

/PRIORITY

Controls whether only those records matching the specified base process priority are selected. If you specify /NOPRIORITY or omit the qualifier, the priority is not used to select records.

format

/PRIORITY=(["-",]*priority*[,...])

/NOPRIORITY

keywords

"_"

Specifies that all records are selected except those matching any specified base process priority.

***priority*[,...]**

Specifies the base process priority used to select records.

When you specify /PRIORITY, specify at least one priority. If you specify more than one priority, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /PRIORITY=3
```

The command in this example selects records that match a base process priority of 3.

/PROCESS

Controls whether only those process-termination records matching the specified process type are selected. If you specify /NOPROCESS or omit the qualifier, the process type is not used to select records.

To produce records for interactive processes, you must enable both PROCESS and INTERACTIVE logging using the SET ACCOUNTING command.

format

```
/PROCESS=(["-"]process-type[,...])  
/NOPROCESS
```

keywords

"-"

Specifies that all records are selected except those matching any specified process type.

***process-type*[,...]**

Specifies the process type used to select records.

When you specify /PROCESS, specify at least one process type. If you specify more than one process type, separate them with commas and enclose the list in parentheses.

You can specify any of the following process types: BATCH, DETACHED, INTERACTIVE, NETWORK, and SUBPROCESS.

example

```
$ ACCOUNTING /PROCESS=("-",INTERACTIVE,DETACHED)
```

The command in this example selects all records except those that match the process types INTERACTIVE or DETACHED.

ACC-12 ACCOUNTING /REJECTED

/QUEUE

Controls whether only those records matching the specified queue name are selected. If you specify /NOQUEUE or omit the qualifier, the queue name is not used to select records.

format

/QUEUE=(["_",]queue-name[,...])

/NOQUEUE

keywords

“_”

Specifies that all records are selected except those matching any specified queue name.

queue-name[,...]

Specifies the queue name used to select records. A queue name is a unique identifier for a device or batch queue.

When you specify /QUEUE, specify at least one queue name. If you specify more than one queue name, separate them with commas, and enclose the list in parentheses.

/REJECTED

Controls whether records that do not match the selection criteria are output to a specified file. Unselected records are always in binary format. If you specify /NOREJECTED or omit the qualifier, unselected records are not output.

format

/REJECTED[=*file-spec*]

/NOREJECTED

keyword

file-spec

Specifies the name of the file to contain unselected records. If you omit the device or directory specification, the current device and default directory are used. If you omit the file name, the file name of the input file is used. If you omit the file type, REJ is used.

example

```
$ ACCOUNTING /REJECTED=ACCOUNTING
```

The command in this example outputs all unselected records to the file ACCOUNTING.REJ.

/REMOTE_ID

Controls whether only those records matching the specified remote ID are selected. The remote ID identifies the process or user on a remote node. If you specify /REMOTE_ID or omit the qualifier, the remote ID is not used to select records.

format

```
/REMOTE_ID=(["-"],remote-id[,...])  
/NOREMOTE_ID
```

keywords

"-"

Specifies that all records are selected except those matching any specified remote ID.

remote-id

Specifies the remote process identification code used to select records. The exact format of a remote ID varies with the context and DECnet implementation. For VMS systems, the remote ID is always the user name.

When you specify /REMOTE_ID, specify at least one remote ID. If you specify more than one remote ID, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /REMOTE_ID=ROBIN
```

The command in this example requests accounting information for the remote user ROBIN.

/REPORT

Controls whether a specified item is included in a summary report. One column is generated on the summarization report for each item specified. Items are summarized either as totals or maximum values. The /REPORT qualifier requires the /SUMMARY qualifier.

format

/REPORT[(*report-item*[,...])]]

/NOREPORT

keyword

report-item[,...]

Specifies the report item used to select records.

You can specify any of the following items:

Keyword	Meaning	How Summarized
BUFFERED_IO	Buffered IOs	Total
DIRECT_IO	Direct IOs	Total
ELAPSED	Elapsed time	Total
EXECUTION	Image execution count	Total
FAULTS	Page faults	Total
GETS	VAX RMS gets issued by symbiont	Total
PAGE_FILE	Page file usage	Maximum
PAGE_READS	Page read IOs	Total
PAGES	Pages printed	Total
PROCESSOR	Processor time consumed	Total
QIOS	Printer QIOs issued by symbiont	Total
RECORDS	Records in file (default)	Total
VOLUMES	Volumes mounted	Total
WORKING_SET	Working set size	Maximum

If you specify more than one report item, separate them with commas, and enclose the list in parentheses.

description

If you specify /REPORT without a keyword (or if you specify /SUMMARY and do not specify /REPORT), /REPORT=RECORDS is assumed.

To obtain a summary by image (when image accounting is enabled) showing the number of times individual images were executed, specify /SUMMARY=IMAGE/REPORT=RECORDS. These qualifiers will display the total number of termination records for each image.

Many report items are present in only a few types of accounting records. If records are selected that do not contain a report value that has been requested, a default value, usually 0, is used.

example

```
$ ACCOUNTING /SUMMARY /REPORT=(DIRECT_IO,BUFFERED_IO)
```

The command in this example produces a summary report of direct I/O and buffered I/O records.

/SINCE

Controls whether only those records dated the same or later than a specified time are selected. If you specify /NOSINCE or omit the qualifier, time is not used to select records.

format

/SINCE[=time]
/NOSINCE

keyword

time

Specifies the time used to select records. Records dated the same or later than the specified time are selected. You can specify an absolute time, delta time, or a combination of the two.

If you specify /SINCE without the time, midnight of the current day is used.

example

```
$ ACCOUNTING /SINCE=31-DEC-1988
```

The command in this example selects records dated later than December 31, 1988.

/SORT

Specifies the sequence of records in the brief or full listing. The /SORT qualifier can be used with the /BINARY, /BRIEF, and /FULL qualifiers but not with /SUMMARY.

format

/SORT=[(-)]*sort-item*[,...]]
/NOSORT

keywords

-

Specifies that the sort field is used as a descending key. By default, keys are assumed to be ascending.

***sort-item*[,...]**

Specifies the sort item used to select records.

When you specify /SORT, specify at least one sort item. If you specify more than one sort item, separate the items with commas, and enclose the list in parentheses.

You can specify any of the following sort items:

Keyword	Meaning
ACCOUNT	User's account name
ADDRESS	Remote node address
BUFFERED_IO	Buffered IO count
DIRECT_IO	Direct IO count
ELAPSED	Elapsed time
ENTRY	Number of batch or print job queue entry
EXECUTION	Image execution count
FAULTS	Page faults
FINISHED	Termination time or time record was written
GETS	Number of gets from the file to be printed
IDENT	Process identification
IMAGE	Image name
JOB	Name of batch or print job
NODE	Remote node name
OWNER	Owner process identification

Keyword	Meaning
PAGES	Number of pages printed
PAGE_FILE	Peak page file usage
PAGE_READS	Page read IOs
PRIORITY	Process base priority
PROCESS	Process type
PROCESSOR	Processor time
QIOS	Number of QIOs to the printer
QUEUE	Name of queue
QUEUED	Time batch or print job was queued
STARTED	Start time
STATUS	Exit status
TERMINAL	Terminal name
TYPE	Record type
UIC	User identification code
USER	User's name
VOLUMES	Number of volumes mounted
WORKING_SET	Peak working set size

description

If a sort item is preceded by a minus sign (-), that field is used as a descending key. By default, keys are assumed to be ascending.

The selected records are sorted according to the sequence specified by the sort items given with the /SORT qualifier prior to writing the records to the designated output file. Unselected records are not sorted. The ordering of sort items determines the relative ranking of the keys.

If a sort item specifies a field that is not present in a record, that record becomes unselected and will be reflected as such in the counts of selected and rejected records. For example, /SORT=IMAGE would cause nonimage-termination records to be excluded, since image-termination records are the only record types that contain image names. Similarly, /SORT=PAGES would exclude nonprint-termination records.

example

\$ ACCOUNTING /SORT=(PROCESS,FAULTS,IMAGE)

The command in this example sorts the selected records in the sequence specified by the /SORT qualifier.

ACC-18 ACCOUNTING /SUMMARY

/STATUS

Controls whether only those records matching the specified exit status are selected. The exit status refers to the final completion status of the process or image. If you specify /NOSTATUS or omit the qualifier, the exit status is not used to select records.

format

/STATUS=(["-",]*exit-status*[,...])
/NOSTATUS

keywords

"_"

Specifies that all records are selected except those matching any specified exit status.

exit-status[,...]

Specifies the exit status used to select records.

When you specify /STATUS, specify at least one exit status. If you specify more than one exit status, separate them with commas, and enclose the list in parentheses. Specify each status as a character string of hexadecimal numerals.

example

\$ ACCOUNTING /STATUS=10D38064

The command in this example selects all records that have a status field value of 10D38064 in hexadecimal.

/SUMMARY

Specifies that a summary of the selected records, grouped by the list of summary keys, be produced. Use the /REPORT qualifier to control what information is summarized. If you omit the /REPORT qualifier, /REPORT=RECORDS is assumed. The /SUMMARY qualifier is required with the /REPORT qualifier.

If you specify /NOSUMMARY or omit the qualifier, no summarization occurs.

format

/SUMMARY=(*summary-item*[,...])
/NOSUMMARY

keyword

summary-item[,...]

Specifies the summary item used to select records. You can specify any of the following summary items:

Summary Item	Outputs
ACCOUNT	Account name from the UAF
DATE	YYYY MMM DD
DAY	Day of month (1-31)
HOUR	Hour of day (0-23)
IMAGE	Image name
JOB	Name of batch job or print job
MONTH	Month of year (1-12)
NODE	Remote node name
PROCESS	Process type
QUEUE	Batch or device queue name
TERMINAL	Terminal name
TYPE	Type of record (logout, batch)
UIC	User identification code
USER	User name from UAF
WEEKDAY	Day of week (0=Sunday, 1=Monday, and so on)
YEAR	Year

If you specify /SUMMARY without a value, /SUMMARY=USER is assumed.

If you specify more than one summary item, separate them with commas, and enclose the list in parentheses.

description

The summarized items are sorted in ascending order and listed in the same left-to-right sequence given in the list of summary items. The output is sent to SYS\$OUTPUT unless specifically directed elsewhere by the /OUTPUT qualifier.

The /BINARY, /BRIEF, /FULL, and /SUMMARY qualifiers cannot be used in combination with each other.

NOTE: Report item totals on summary reports can be misleading if you do not know the number of records that were added together to produce the totals. Use the /REPORT=RECORDS qualifier to show the number of records that were added to produce each total.

ACC-20 ACCOUNTING /TERMINAL

example

```
$ ACCOUNTING /SUMMARY=IMAGE
```

The command in this example generates a summary report of all image records.

/TERMINAL

Controls whether only those records matching the specified terminal names are selected. Terminal names are associated with interactive processes. If you specify /NOTERMINAL or omit the qualifier, the terminal name is not used to select records.

format

```
/TERMINAL=(["-"]terminal-name[,...])  
/NOTERMINAL
```

keywords

"_"

Specifies that all records are selected except those matching any specified terminal name.

***terminal-name*[,...]**

Specifies the terminal name used to select records.

When you specify /TERMINAL, specify at least one terminal name. Specify terminal names as standard device names and include the colon (:) (for example, TTA6:).

If you specify more than one terminal name, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /TERMINAL=TTB3:
```

The command in this example selects records that match the terminal name TTB3.

/TITLE

Specifies the title to be printed in the center of the first line of summary reports. The title line includes the beginning and ending times for the data summary at the left and right margins, respectively.

format

/TITLE=*title*
/NOTITLE

keyword

title

Specifies the title to be printed on the summary report. If the title includes spaces or special characters, you must enclose it in quotation marks ("").

example

```
$ ACCOUNTING /SUMMARY=IMAGE /TITLE="JUNE ACCOUNTING REPORT"
```

The command in this example selects image records for a summary report and writes the title "JUNE ACCOUNTING REPORT" at the top of the report.

/TYPE

Controls whether only those records matching the specified record type are selected. If you specify /NOTYPE or omit the qualifier, the record type is not used to select records.

format

/TYPE=([*"-"*],*record-type*[,...])
/NOTYPE

keywords

"-"

Specifies that all records are selected except those matching any specified record type.

***record-type*[,...]**

Specifies the record type used to select records. You can specify any of the following record types:

ACC-22 ACCOUNTING /UIC

Record Type	Meaning
FILE	Accounting file forward and backward pointers
IMAGE	Termination of image
LOGFAIL	Unsuccessful conclusion of a login attempt
PRINT	Termination of print job
PROCESS	Termination of process
SYSINIT	System initialization
UNKNOWN	Any record not recognized as one of the other specified record types
USER	Arbitrary user messages

When you specify /TYPE, specify at least one record type. If you specify more than one record type, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /TYPE=PRINT
```

The command in this example selects records that match the record type PRINT.

/UIC

Controls whether only those records matching the specified user identification code (UIC) are selected. If you specify /NOUIC or omit the qualifier, the UIC is not used to select records.

format

```
/UIC=(["-",]uic[,...])
```

```
/NOUIC
```

keywords

“-”

Specifies that all records are selected except those matching any specified UIC.

uic[,...]

Specifies the user identification code (UIC) used to select records.

When you specify /UIC, specify at least one UIC. If you specify more than one UIC, separate them with commas, and enclose the list in parentheses. You may specify the UIC in numeric or alphanumeric format. You may use the asterisk (*) as a wildcard character.

example

```
$ ACCOUNTING /UIC=[360,*]
```

The command in this example selects records that match UICs having a group number of 360.

/USER

Controls whether only those records matching the specified user name are selected. The user name matches the user name in the user authorization file. If you specify /NOUSER or omit the qualifier, the user name is not used to select records.

format

```
/USER=(["-",]username[,...])  
/NOUSER
```

keywords

"-"

Specifies that all records are selected except those matching any specified user name.

username[,...]

Specifies the user name used to select records.

When you specify /USER, specify at least one user name. If you specify more than one user name, separate them with commas, and enclose the list in parentheses.

example

```
$ ACCOUNTING /USER=("-", SASHA)
```

The command in this example selects all records except those that match the user name SASHA.

Analyze/Disk_Structure Utility

The Analyze/Disk_Structure Utility checks the readability and validity of Files-11 Structure Level 1 and Structure Level 2 disk volumes, and reports errors and inconsistencies.

You can detect most classes of errors by invoking the utility once and using its defaults.

format

ANALYZE/DISK_STRUCTURE *device-name:[/qualifier]*

parameter

device-name

Specifies the disk volume or volume set to be verified. If you specify a volume set, all volumes of the volume set must be mounted as Files-11 volumes. (For information on the Mount Utility, refer to the *VMS Mount Utility Manual*.)

usage summary

Use the following command to invoke the utility:

```
$ ANALYZE/DISK_STRUCTURE device-name: /qualifiers
```

You can terminate an ANALYZE/DISK_STRUCTURE session by entering CTRL/C or CTRL/Y while the utility executes. You cannot resume operation by using the DCL command CONTINUE.

By default, ANALYZE/DISK_STRUCTURE directs all output to your terminal. Use the /USAGE or /LIST qualifiers to direct output to a file.

To invoke the Analyze/Disk_Structure Utility, you must have BYPASS privilege.

Do not use ANALYZE/DISK_STRUCTURE on a disk that is currently being used for other file operations. This can produce error messages that incorrectly indicate severe file damage.

ADSK-2 ANALYZE/DISK_STRUCTURE /[NO]LIST[=filespec]

ANALYZE/DISK_STRUCTURE Qualifiers

This section explains ANALYZE/DISK_STRUCTURE qualifiers and provides examples of their use. The qualifiers follow the standard rules of DCL grammar.

/[NO]CONFIRM

Determines whether the Analyze/Disk_Structure Utility prompts you to confirm each repair. If you respond with Y or YES, the utility performs the repair. Otherwise, the repair is not performed.

format

/[NO]CONFIRM

description

You can only use the /CONFIRM qualifier with the /REPAIR qualifier. The default is /NOCONFIRM.

example

```
$ ANALYZE/DISK_STRUCTURE DBAO:/REPAIR/CONFIRM
%VERIFY-I-BACKLINK, incorrect directory back link [SYS0]SYSMAINT.DIR;1
Repair this error? (Y or N): Y
%VERIFY-I-BACKLINK, incorrect directory back link [SYSEXE]SYSBOOT.EXE;1
Repair this error? (Y or N): N
```

The command in this example causes the Analyze/Disk_Structure Utility to prompt you for confirmation before performing the indicated repair operation.

/[NO]LIST[=filespec]

Determines whether the Analyze/Disk_Structure Utility produces a listing of the index file.

format

/LIST[=filespec]
/NOLIST

description

If you specify /LIST, the utility produces a file that contains a listing of all FIDs, file names, and file owners. If you omit the file specification, the default is SYS\$OUTPUT. If you include a file specification without a file type, the default type is LIS. You cannot use wildcard characters in the file specification.

The default is /NOLIST.

example

```
$ ANALYZE/DISK_STRUCTURE DLA2:/LIST=INDEX
$ TYPE INDEX
Listing of index file on DLA2:
31-DEC-1988 20:54:42.22

(00000001,00001,001)  INDEFX.SYS;1
                        [1,1]
(00000002,00002,001)  BITMAP.SYS;1
                        [1,1]
(00000003,00003,001)  BADBLK.SYS;1
                        [1,1]
(00000004,00004,001)  000000.DIR;1
                        [1,1]
(00000005,00005,001)  CORIMG.SYS;1
                        [1,1]
```

\$

In this example, ANALYZE/DISK_STRUCTURE did not find errors on the device DLA2. Since the file INDEX was specified without a file type, the system assumes a default file type of LIS. The subsequent TYPE command displays the contents of the file INDEX.LIS.

/[NO]READ_CHECK

Determines whether the Analyze/Disk_Structure Utility performs a read check of all allocated blocks on the specified disk. When the Analyze/Disk_Structure Utility performs a read check, it reads the disk twice; this ensures that it reads the disk correctly. The default is /NOREAD_CHECK.

format

/[NO]READ_CHECK

ADSK-4 ANALYZE/DISK_STRUCTURE /USAGE[=filespec]

example

\$ ANALYZE/DISK_STRUCTURE DMA1: /READ_CHECK

The command in this example directs ANALYZE/DISK_STRUCTURE to perform a read check on all allocated blocks on the device DMA1.

/[NO]REPAIR

Determines whether the Analyze/Disk_Structure Utility repairs errors that are detected in the file structure of the specified device.

format

/[NO]REPAIR

description

The Analyze/Disk_Structure Utility does not perform any repair operation unless you specify the /REPAIR qualifier. The file structure is software write-locked during a repair operation. The default is /NOREPAIR.

example

\$ ANALYZE/DISK_STRUCTURE DBA1: /REPAIR

The command in this example causes ANALYZE/DISK_STRUCTURE to perform a repair on all errors found in the file structure of device DBA1.

/USAGE[=filespec]

Specifies that a disk usage accounting file should be produced, in addition to the other specified functions of the Analyze/Disk_Structure Utility.

format

/USAGE[=filespec]

description

If all or part of the file specification is omitted, ANALYZE/DISK_STRUCTURE assumes a default file specification of USAGE.DAT. The file is placed in the default directory [ACCOUNT].

ANALYZE/DISK_STRUCTURE ADSK-5
/USAGE[=filespec]

example

```
$ ANALYZE/DISK_STRUCTURE DBA1:/USAGE  
$ DIRECTORY USAGE
```

```
Directory DISK$DEFAULT: [ACCOUNT]
```

```
USAGE.DAT;3
```

```
Total of 1 file.
```

The first command in this example causes ANALYZE/DISK_STRUCTURE to produce a disk usage accounting file. Since a file specification was not provided in the command line, ANALYZE/DISK_STRUCTURE uses both the default file name and directory [ACCOUNT]USAGE.DAT. The DIRECTORY command instructs the system to display all default information.

Authorize Utility

The Authorize Utility (AUTHORIZE) is a system management tool that allows you to control access to the system and to allocate user resources.

format

RUN AUTHORIZE

usage summary

To invoke AUTHORIZE, set your process default device and directory to SYS\$SYSTEM, and type RUN AUTHORIZE. To terminate AUTHORIZE, enter the EXIT command at the UAF> prompt, or press CTRL/Z.

To create a listing file of reports for selected UAF records, enter the LIST command at the UAF> prompt. For more information on listing reports, see the description of the LIST command.

NOTE: Use of the Authorize Utility requires write access to SYSUAF.DAT, NETPROXY.DAT, or RIGHTSLIST.DAT in the SYS\$SYSTEM directory. Write access to these files is normally restricted to users with the system UIC or the SYSPRV or BYPASS privilege.

AUTH-2 AUTHORIZE AUTHORIZE Qualifiers

AUTHORIZE Qualifiers

This section describes the qualifiers that are common to the ADD, COPY, DEFAULT, and MODIFY qualifiers.

Table AUTH-1: Summary of Qualifiers for the ADD, COPY, DEFAULT, and MODIFY Commands

Qualifier	Function
/ACCESS [=(range[,...])]	<p>Specifies hours of access for all modes of access. Syntax for range specification is:</p> <p>/[NO]ACCESS=([PRIMARY], [n-m], [n], [...], [SECONDARY], [n-m], [n], [...])</p> <p>Specify hours as integers from 0 to 23, inclusive. Hours may be specified as single hours (n), or as ranges of hours (n-m). If the ending hour of a range is earlier than the starting hour, the range extends from the starting hour through midnight to the ending hour. The first set of hours after the keyword PRIMARY specifies hours on primary days; the second set of hours after the keyword SECONDARY specifies hours on secondary days. Note that hours are <i>inclusive</i>; that is, if you grant access during a given hour, access extends to the end of that hour.</p>
/ACCOUNT=account-name	<p>Specifies a 1 through 8 alphanumeric character string that is the default name for the account (for example, a billing name or number). By default, a blank account name is assigned.</p>
/ADD_IDENTIFIER /NOADD_IDENTIFIER	<p>Adds identifiers for the user name and account name to the rights database.</p>
/ASTLM=value	<p>An integer with a minimum value of 2 specifying the number of ASTs the user can have queued at one time.</p>
/BATCH[=(range[,...])]	<p>Specifies hours of access permitted for batch jobs. For a description of the range specification, see the /ACCESS qualifier.</p>
/BIOLM=value	<p>Specifies a buffered I/O count limit for the BIOLM field of the UAF record. The buffered I/O count limit is the maximum number of buffered I/O operations, such as terminal I/O, that can be outstanding at one time.</p>
/BYTLM=value	<p>Specifies the buffered I/O byte limit for the BYTLM field of the UAF record. The buffered I/O byte limit is the maximum number of bytes of nonpaged system dynamic memory that a user's job may consume at one time. Nonpaged dynamic memory is used for operations such as I/O buffering, mailboxes, file-access windows.</p>
/CLI=cli-name	<p>Specifies the name of the default command language interpreter (CLI) for the CLI field of the UAF record. The cli-name is 1 through 12 alphanumeric characters and should be either DCL or MCR. By default, the DCL CLI is used.</p>

AUTHORIZE AUTH-3
AUTHORIZE Qualifiers

Table AUTH-1 (Cont.): Summary of Qualifiers for the ADD, COPY, DEFAULT, and MODIFY Commands

Qualifier	Function
/CLITABLES	Specifies user-defined CLI tables for the account, from 1 to 31 characters. If none is specified, LOGINOUT uses the default CLI.
/CPUTIME=time	Specifies the maximum process CPU time for the CPU field of the UAF record. The maximum process CPU time is the maximum CPU time a user's process can take per session. You must specify a delta-time value. The default of 0 means infinite time.
/DEFPRIVILEGES =([NO]privname[....])	Specifies default privileges for the user; that is, those enabled at login time. A NO prefix removes a privilege from the user. The keyword [NO]ALL specified with the /DEFPRIVILEGES qualifier disables or enables all user privileges.
/DEVICE=device-name	Specifies the name of the user's default device at login. The device-name is a 1 through 31 alphanumeric character string. If you omit the colon from the device-name value, a colon is appended. The default blank value is interpreted as SYS\$SYSDISK.
/DIALUP [=(range[....])]	Specifies hours of access permitted for dial-up logins. For a description of the range specification, see the /ACCESS qualifier.
/DIOLM=value	Specifies the direct I/O count limit for the DIOLM field of the UAF record. The direct I/O count limit is the maximum number of direct I/O operations (usually disk) that can be outstanding at one time. The value is an integer of at least 2 and has a default of 18.
/DIRECTORY =directory-name	Specifies the default directory-name for the DIRECTORY field of the UAF record. The directory-name is 1 through 63 alphanumeric characters. Brackets are added to the directory name if omitted. By default, the directory-name [USER] is assigned.
/ENQLM=value	Specifies the lock queue limit for the ENQLM field of the UAF record. The lock queue limit is the maximum number of locks that can be queued at one time.
/EXPIRATION=time	Expiration date and time of the account. Default is 180 days for nonprivileged users.
/FILLM=value	Specifies the open file limit for the FILLM field of the UAF record. The open file limit is the maximum number of files that can be open at one time, including active network logical links.

AUTH-4 AUTHORIZE

AUTHORIZE Qualifiers

Table AUTH-1 (Cont.): Summary of Qualifiers for the ADD, COPY, DEFAULT, and MODIFY Commands

Qualifier	Function
/FLAGS =([NO]option[,...])	Specifies login flags for the user. A NO in front of the flag clears the flag. The following are valid options:
AUDIT	Audits all security-related actions.
AUTOLOGIN	Restricts the account to the autologin mechanism.
CAPTIVE	Places user under the control of the login command procedure; implies DISCTLY and DEFCLI.
DEFCLI	Restricts the user to using the default command language interpreter and CLI tables.
DISCTLY	Disables the CTRL/Y function.
DISMAIL	Prevents mail delivery to the user.
DISNEWMAIL	Suppresses announcements of new mail at login time.
DISRECONNECT	Disables automated reconnection to an existing process when a terminal connection has been interrupted.
DISREPORT	Suppresses time of last login and other security reports.
DISUSER	Prevents the user from logging in.
DISWELCOME	Suppresses the system login message.
FORCE_EXP_PWD_CHANGE	Requires the user to change expired passwords at login.
GENPWD	Requires the user to use generated passwords.
LOCKPWD	Prevents the user from changing the password for the account.
PWD_EXPIRED	Marks password as expired.
PWD2_EXPIRED	Marks second password as expired.

AUTHORIZE AUTH-5

AUTHORIZE Qualifiers

Table AUTH-1 (Cont.): Summary of Qualifiers for the ADD, COPY, DEFAULT, and MODIFY Commands

Qualifier	Function
/GENERATE_PASSWORD [=keyword]	<p>Invokes the password generator to generate user passwords. Specify one of the following keywords:</p> <p>ALL Generate primary and secondary passwords.</p> <p>BOTH Generate primary and secondary passwords.</p> <p>CURRENT Generate primary, secondary, or both passwords as specified for the DEFAULT account.</p> <p>PRIMARY Generate primary password only.</p> <p>SECONDARY Generate secondary password only.</p> <p>Note that the /GENERATE_PASSWORD and /PASSWORD qualifiers are mutually exclusive.</p>
/INTERACTIVE [=(range[...])]	Specifies hours of access for interactive logins. For a description of the range specification, see the /ACCESS qualifier.
/JTQUOTA=value	Specifies the initial byte quota with which the job-wide logical name table is to be created.
/LGICMD=file-spec	Specifies the name of the default login command file. Defaults to the device specified for /DEVICE, the directory specified for /DIRECTORY, a file name of LOGIN, and a file type of COM.
/LOCAL[=(range[...])]	Specifies hours of access for interactive logins via local terminals. For a description of the range specification, see the /ACCESS qualifier.
/MAXACCTJOBS=value	Specifies the maximum number of batch, interactive, and detached processes which may be active at one time for all users of the same account. The default value of 0 represents an unlimited number.
/MAXDETACH=value	Specifies the active process limit for the MAXDETACH field of the UAF record. The active process limit is the total number of detached processes permitted at one time. The keyword NONE indicates that the user cannot create detached processes. The default value of 0 represents an unlimited number.
/MAXJOBS=value	Specifies the maximum number of processes (interactive, batch, detached, and network) which may be active at one time for the specified user. The first four network jobs are not counted. The default value of 0 represents an unlimited number.
/MODIFY_IDENTIFIER	Specifies whether the identifier associated with a user record is to be modified in the rights database. The qualifier only applies if the UIC or user name qualifier field in the UAF is modified. The default is /MODIFY_IDENTIFIER.
/NETWORK [=(range[...])]	Specifies hours of access for network batch jobs. For a description of the range specification, see the /ACCESS qualifier.
/OWNER=owner-name	The owner-name specifies the name of the owner of the account. This name can be used, for example, for billing purposes. The owner-name is 1 through 31 characters and has a blank name for its default.

AUTH-6 AUTHORIZE

AUTHORIZE Qualifiers

Table AUTH-1 (Cont.): Summary of Qualifiers for the ADD, COPY, DEFAULT, and MODIFY Commands

Qualifier	Function
<code>/PASSWORD=(password1 [,password2])</code>	Specifies up to two passwords for login. Passwords can be from 0 to 31 characters in length, and can include alphanumeric characters, dollar signs, and underscores. If omitted, password defaults to USER. To set only the first password, specify <code>/PASSWORD=password1</code> ; to set both the first and second password, specify <code>/PASSWORD=(password1,password2)</code> . To change the first password without affecting the second, specify <code>/PASSWORD=(password,"")</code> . To change the second password without affecting the first, specify <code>/PASSWORD=""password</code> . To set both passwords to null, specify <code>/NOPASSWORD</code> .
<code>/PGFLQUOTA=value</code>	Specifies the paging file limit for the PGFLQUOTA field of the UAF record. The paging file limit is the maximum number of pages that the user's process can use in the system paging file. The minimum value is 2048 pages for typical interactive processes.
<code>/PRCLM=value</code>	Specifies the subprocess creation limit for the PRCLM field of the UAF record. The subprocess creation limit is the maximum number of subprocesses that can exist at one time for the user's process.
<code>/PRIMEDAYS =([NO]day[,...])</code>	Defines the primary and secondary days of the week for logging in. Specify primary days as MON, TUE, WED, THU, FRI, SAT, and SUN. Specify secondary days as NOMON, NOTUE, NOWED, NOTHU, NOFRI, NOSAT, and NOSUN. Defaults to MON, TUE, WED, THU, FRI, NOSAT, NOSUN. Any days omitted from the list take their default value.
<code>/PRIORITY=value</code>	Specifies the default base priority for the PRIO field of the UAF record. The value is an integer in the range of 0 through 31 with a default value of 4 for timesharing users.
<code>/PRIVILEGES =([NO]privname[,...])</code>	Specifies a list of privileges that the user is granted at login. NO in front of a privilege removes the privilege. A specification of ALL means all privileges. Defaults to NETMBX and TMPMBX.
<code>/[NO]PWDEXPIRED</code>	Specifies whether a password is valid only for the first login. In order to log in to the account after the first session, the user must specify a new password during this session with the DCL command SET PASSWORD. The <code>/PWDEXPIRED</code> qualifier only affects accounts having a nonzero password lifetime.
<code>/[NO]PWLIFETIME=time</code>	Specifies or negates the length of time a password is valid. You must specify a delta-time value. If a period longer than the specified time has elapsed when the user logs in, a warning message is displayed, and the password is marked as expired. The default is 180 00:00.
<code>/PWDMINIMUM=value</code>	Specifies minimum password length in characters (default is 6). Note that this value is enforced only by the DCL command SET PASSWORD. Passwords in violation of this value may be specified to AUTHORIZE.

AUTHORIZE AUTH-7
AUTHORIZE Qualifiers

Table AUTH-1 (Cont.): Summary of Qualifiers for the ADD, COPY, DEFAULT, and MODIFY Commands

Qualifier	Function
<code>/REMOTE</code> <code>[=(range[,...])]</code>	Specifies hours of access permitted for interactive login via network remote terminals (that is, SET HOST). For a description of the range specification, see the /ACCESS qualifier.
<code>/REMOVE_IDENTIFIER</code>	Specifies whether the user name and account name identifiers should be removed from the rights database when a UAF record is removed from SYSUAF.DAT. This qualifier is used only with the REMOVE command. The account name identifier is removed only if there are no remaining UAF records with the same group as the deleted record. If identifiers should not be removed, specify /NOREMOVE_IDENTIFIER. The default is /REMOVE_IDENTIFIER.
<code>/SHRFILLM=value</code>	Specifies the maximum number of shared files the user may have open at one time. The default value of 0 represents an infinite number.
<code>/TQELM</code>	Specifies the total number of entries in the timer queue, plus the number of temporary common event flag clusters that the user can have at one time.
<code>/UIC=uic</code>	Specifies the user identification code (UIC) for the UIC field of the UAF record. The UIC value, specified in octal, is a group and member number separated by a comma and enclosed in brackets. The group number must be in the range 1 to 37776 (octal), the member number in the range 0 to 177776 (octal). The default UIC value is [200,200].
<code>/WSDEFAULT=value</code>	Specifies the size in pages of the user's default working set. The minimum size is 50 pages.
<code>/WSEXTENT=value</code>	Specifies the size in pages of the user's working set extent. The minimum size is 50 pages.
<code>/WSQUOTA=value</code>	Specifies the size in pages of the user's working set quota. The minimum size is 50 pages.

AUTH-8 AUTHORIZE ADD

AUTHORIZE Commands

This section describes the AUTHORIZE commands and provides examples of their use. You can abbreviate any command, keyword, or qualifier as long as the abbreviation is not ambiguous. The asterisk and the percent sign can be used as wildcard characters in the specification of user names, node names, and UICs.

ADD

Adds a user record to the system UAF and corresponding identifiers to the rights database.

format

ADD *newusername*

parameter

newusername

Specifies the name of the user record to be included in the system UAF. The **newusername** parameter is a string of 1 through 12 alphanumeric characters and may contain underscores. Although dollar signs are permitted, they are usually reserved for system names.

While fully numeric **newusernames** are permitted, fully numeric identifiers are not. Numeric **newusernames** do not receive corresponding identifiers and should be avoided.

qualifiers

See Table AUTH-1.

Qualifiers not specified take their values from the DEFAULT record, except that the default password is always USER. Typically, you take defaults on the limits, priority, privileges, command interpreter, and sometimes device; as a result, you type only the password, UIC, directory, owner, account, and sometimes device.

NOTE: When you add a new record to the UAF and a rights database exists, an identifier with the user name is added to the rights database (unless you specify the /NOADD_IDENTIFIER qualifier). If the record is the first member of a new UIC group, and you specify an account name with the record, a group identifier corresponding to the account name is also added to the rights database.

example

```
UAF> ADD ROBIN /PASSWORD=SP0152/UIC=[014,006] -  
_/_DEVICE=SYS$USER/DIRECTORY=[ROBIN]/CLITABLES=DCLTABLES -  
_/_OWNER="JOSEPH ROBIN" /ACCOUNT=INV  
%UAF-I-ADDMSG, user record successfully added  
%UAF-I-RDBADDMSGU, identifier ROBIN value: [000014,000006] added to RIGHTSLLIST.DAT  
%UAF-I-RDBADDMSGU, identifier INV value: [000014,177777] added to RIGHTSLLIST.DAT
```

This example illustrates the typical ADD command and qualifiers. The record that results from this command appears in the description of the SHOW command.

ADD/IDENTIFIER

Adds an identifier to the rights database.

format

ADD/IDENTIFIER [*id-name*]

parameter

id-name

Specifies the name of the identifier to be added to the rights database. If you omit the name, you must specify the /USER qualifier. The identifier name is a string of 1 through 31 alphanumeric characters that may contain underscores and dollar signs. The name must contain at least one nonnumeric character.

qualifiers

/ATTRIBUTES=(keyword[,...])

Specifies attributes to be associated with the new identifier. The following are valid keywords:

- | | |
|--------------|--|
| [NO]RESOURCE | Determines whether holders of the identifier may charge resources to it. The default is NORESOURCE. |
| [NO]DYNAMIC | Determines whether unprivileged holders of the identifier may add or remove it from the process rights list. The default is NODYNAMIC. |

/USER=user-spec

Scans the UAF record for the specified user and creates the corresponding identifier. Specify **user-spec** by user name or UIC. You can use the asterisk wildcard to specify multiple user names or UICs. Full use of the asterisk and percent wildcards is permitted for user names; UICs must be in the form [*,*], [n,*], [*], or [n,n]. A wildcard user name specification (*) creates identifiers alphabetically by user name; a wildcard UIC specification ([*,*]) creates them in numerical order by UIC.

AUTH-10 AUTHORIZE ADD/PROXY

/VALUE=value-specifier

Specifies the value to be attached to the identifier. The following are valid formats for the value-specifier:

IDENTIFIER:integer An integer value in the range of 65,536 to 268,435,455. You may also specify the value in hexadecimal (precede the value with %X) or octal (precede the value with %O).

Note that %X80000000 is added to the value you specify in order to differentiate general identifiers from UIC identifiers.

UIC:uic A UIC value in the standard UIC format.

If the */VALUE* qualifier is not specified, AUTHORIZE assigns an unused identifier value.

example

```
UAF> ADD/IDENTIFIER/VALUE=UIC: [300,011] INVENTORY
%UAF-I-RDBADDMMSGU, identifier INVENTORY value: [000300,000011] added to RIGHTSLLIST.DAT
```

The command in this example adds an identifier named INVENTORY to the rights database. By default, the identifier is not marked as a resource.

ADD/PROXY

Adds user entries to the network proxy authorization file.

format

ADD/PROXY *node::remote-user local-user[,...]*

parameters

node

Specifies a node name (1 through 6 alphanumeric characters). If you specify an asterisk, the specified remote user on all nodes is served by the account specified as **local-user**.

remote-user

Specifies the user name or UIC of a user at a remote node. If you specify an asterisk, all users at the specified node are served by the local user. You can also specify a wildcard asterisk in the group and member fields of the UIC.

local-user

Specifies the user names of from 1 to 16 users on the local node. If you specify an asterisk, a local-user name equal to remote-user name will be used.

positional qualifier

/DEFAULT

Establishes the specified user name as the default proxy account. The remote user can request proxy access to an authorized account other than the default proxy account by specifying the name of the proxy account in the access control string of the network operation.

example

```
UAF> ADD/PROXY MISHA::* MARCO/DEFAULT, OSCAR  
%UAF-I-NAFADDMSG, record successfully added to NETPROXY.DAT
```

The command in this example specifies that any user on the remote node MISHA can, by default, use the MARCO account on the local node for DECnet tasks such as remote file access. Remote users can also access the OSCAR proxy account by specifying the user name OSCAR in the access control string when remote node access is attempted.

COPY

Creates a new system UAF record that duplicates an existing UAF record.

format

COPY *oldusername newusername*

parameters

oldusername

Old user name for an existing user record.

newusername

New user name for a new user record. The user name is a string of 1 through 12 alphanumeric characters.

qualifiers

See Table AUTH-1.

Qualifiers not specified in the command remain unchanged. However, since password verification includes the user name as well as the password, it will generally fail when you attempt to use a new user name with an old password. (Only null passwords can be effectively transferred from one user record to another by the COPY command.) Include the password whenever you use the COPY command.

AUTH-12 AUTHORIZE CREATE/RIGHTS

example

```
UAF> COPY ROBIN SPARROW /PASSWORD=SP0152
%UAF-I-COPMSG, user record copied
%UAF-E-RDBADDERRU, unable to add SPARROW value: [000014,00006] to RIGHTSLIST.DAT
-SYSTEM-F-DUPIDENT, duplicate identifier
```

The command in this example adds a record for Thomas Sparrow that is identical, except for the password, to that of Joseph Robin. Note that since there is no change in the UIC value, no identifier is added to RIGHTSLIST.DAT. AUTHORIZE issues a "duplicate identifier" error message.

CREATE/PROXY

Creates and initializes the network proxy authorization file, NETPROXY.DAT.

format

CREATE/PROXY

CREATE/RIGHTS

Creates and initializes the rights database, RIGHTSLIST.DAT.

format

CREATE/RIGHTS

example

```
UAF> CREATE/RIGHTS
%UAF-E-RDBCREERR, unable to create RIGHTSLIST.DAT
-RMS-E-FEX, file already exists, not superseded
```

You can use the command in this example to create and initialize a new rights database. Note, however, that RIGHTSLIST.DAT is created automatically during the installation process. Thus, you must delete or rename the existing file before creating a new one.

DEFAULT

Modifies the system UAF's DEFAULT record.

format

DEFAULT

qualifiers

See Table AUTH-1.

Qualifiers not specified in the command remain unchanged.

example

```
UAF> DEFAULT /DEVICE=SYS$USER/LGICMD=SYS$MANAGER:SECURELGN -  
_/_PRIVILEGES=(TMPMBX, GRPNAM, GROUP)  
%-UAF-MDFYMSG, user record(s) updated
```

The command in this example modifies the DEFAULT record, changing the default device, default login command file, and default privileges.

EXIT

Enables you to exit from AUTHORIZE and return to DCL command level. You can also return to command level by pressing CTRL/Z.

format

EXIT

GRANT/IDENTIFIER

Grants the specified identifier to the user.

format

GRANT/IDENTIFIER *id-name user-spec*

parameters

id-name

Specifies the identifier name. Specify the name in identifier ID format (see the ADD/IDENTIFIER command).

user-spec

Specifies the UIC identifier corresponding to the user (see the ADD/IDENTIFIER command).

AUTH-14 AUTHORIZE HELP

qualifier

/ATTRIBUTES=(keyword[,...])

Specifies attributes to be associated with the identifier. The following are valid keywords:

- | | |
|--------------|--|
| [NO]RESOURCE | Determines whether holders of the identifier may charge resources to it. The default is NORESOURCE. |
| [NO]DYNAMIC | Determines whether unprivileged holders of the identifier can add or remove it from the process rights list. The default is NODYNAMIC. |

example

```
UAF> GRANT/IDENTIFIER INVENTORY [300,015]
%UAF-I-GRANTMSG, identifier INVENTORY granted to CRAMER
```

The command in this example grants the identifier `INVENTORY` to a user with the UIC `[300,015]`. The user Cramer becomes the holder of the identifier and any resources associated with it. The following command produces the same result:

```
UAF> GRANT/IDENTIFIER INVENTORY CRAMER
```

HELP

Lists and explains AUTHORIZE commands and qualifiers.

format

HELP *[command-name]*

parameter

command-name

Specifies the name of an AUTHORIZE command .

example

```
UAF> HELP MODIFY/WSDEFAULT
```

The command in this example displays information about the `/WSDEFAULT` qualifier:

```
MODIFY
```

```
/WSDEFAULT=n
```

```
Initial limit of a working set for the user process.
```

LIST

Writes reports for selected UAF records to a listing file, SYSUAF.LIS.

format

LIST [*user-spec*]

parameter

user-spec

Specifies the user name or UIC of the desired UAF record. If you omit the user-spec parameter, the user records of all users are listed. The asterisk and percent sign wildcards are permitted in the user name.

qualifiers

/BRIEF

Specifies that a brief report be written to SYSUAF.LIS. */BRIEF* is the default qualifier.

/FULL

Specifies that a full report be written to SYSUAF.LIS, including identifiers held by the user.

example

```
UAF> LIST ROBIN/FULL
%UAF-I-LSTMSG1, writing listing file
%UAF-I-LSTMSG2, listing file SYSUAF.LIS complete
```

This command lists a full report for the user record ROBIN.

LIST/IDENTIFIER

Creates a listing file (RIGHTSLIST.LIS) to which identifier information is written.

format

LIST/IDENTIFIER [*id-name*]

parameter

id-name

Specifies an identifier name. You can specify the wildcard character * to list all identifiers. If you omit the identifier name, you must specify */USER* or */VALUE*.

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LIST/IDENTIFIER**

qualifiers

/BRIEF

Specifies a brief listing in which only the identifier name, value and attributes appear.

/FULL

Specifies a full listing, in which the names of the identifier's holders are displayed along with the identifier's name, value, and attributes. */FULL* is the default listing format.

/USER=user-spec

Specifies one or more users whose identifiers are to be listed. **User-spec** may be a user name or UIC. You can use the asterisk wildcard to specify multiple user names or UICs. Full use of the asterisk and percent wildcards is permitted for user names; UICs must be in the form *[*,*]*, *[n,*]*, *[*,n]*, or *[n,n]*. A wildcard user name specification (***) lists identifiers alphabetically by user name; a wildcard UIC specification (*[*,*]*) lists them numerically by UIC.

/VALUE=value-specifier

Specifies the value of the identifier to be listed. The following are valid formats for the value-specifier:

IDENTIFIER:integer

An integer value in the range of 65,536 to 268,435,455. You may also specify the value in hexadecimal (precede the value with *%X*) or octal (precede the value with *%O*).

Note that *%X80000000* is added to the value you specify in order to differentiate general identifiers from UIC identifiers.

UIC:uic

A UIC value in the standard UIC format.

example

```
UAF> LIST/IDENTIFIER INVENTORY
%UAF-I-LSTMSG1, writing listing file
%UAF-I-RLSTMSG, listing file RIGHTSLIST LIS complete
```

The command in this example generates a full listing for the identifier **INVENTORY**, including its value (in hexadecimal), holders, and attributes.

LIST/PROXY

Creates a listing file of the network proxy database entries.

format

LIST/PROXY

LIST/RIGHTS

Lists identifiers held by the specified identifier or, if /USER is specified, all identifiers held by the specified users.

format

LIST/RIGHTS [*id-name*]

parameter

[*id-name*]

Specifies the name of the identifier associated with the user. Specify the identifier in UIC format. If you omit the identifier name, you must specify the /USER qualifier.

qualifier

/USER=user-spec

Specifies a user whose identifiers are to be listed. **User-spec** may be a user name or UIC. You can use the asterisk wildcard to specify multiple user names or UICs. Full use of the asterisk and percent wildcards is permitted for user names; UICs must be in the form [**,**], [*n,**], [**,n*], or [*n,n*]. A wildcard user name specification (***) or wildcard UIC specification (*[*,*]*) lists all identifiers held by users. The wildcard user name specification lists holders' user names alphabetically; the wildcard UIC specification lists them in the numerical order of their UICs.

MODIFY

Changes values in a system UAF user record.

format

MODIFY *username* /*qualifier*[,...]

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parameter

username

Specifies the name of a user in the system UAF. The asterisk and percent sign wildcard characters are permitted in the user name. When you specify a single asterisk for the user name, you modify the records of all users.

qualifiers

See Table AUTH-1.

Qualifiers not specified in the command remain unchanged.

example

```
UAF> MODIFY ROBIN /PASSWORD=SP0172
%UAF-I-MDFYMSG, user record(s) updated
```

The command in this example changes the password for user ROBIN without altering any other values in the record.

MODIFY/IDENTIFIER

Modifies an identifier in the rights database.

format

MODIFY/IDENTIFIER *id-name*

parameter

id-name

Specifies the name of an identifier to be modified.

qualifiers

/ATTRIBUTES=(keyword[,...])

Specifies attributes to be associated with the modified identifier. The following are valid keywords:

- | | |
|--------------|---|
| [NO]RESOURCE | Determines whether holders of the identifier can charge resources to it.

If you specify RESOURCE, a holder named with the /HOLDER qualifier gains the right to charge resources to the identifier. If you specify NORESOURCE, the holder loses the right to charge resources. If you specify NORESOURCE and do not name any holder (if /HOLDER is not specified), all holders lose the right to charge resources. The default is NORESOURCE. |
| [NO]DYNAMIC | Determines whether unprivileged holders of the identifier can add or remove it from the process rights list. The default is NODYNAMIC. |

/HOLDER=username

Specifies the holder of an identifier whose attributes are to be modified. The */HOLDER* qualifier is used only in conjunction with the */ATTRIBUTES* qualifier. If you specify */HOLDER*, the */NAME* and */VALUE* qualifiers are ignored.

/NAME=id-name

Specifies a new identifier name to be associated with the identifier.

/VALUE=value-specifier

Specifies a new identifier value. Note that an identifier value cannot be modified from a UIC to a non-UIC format or vice versa. The following are valid formats for the value-specifier:

IDENTIFIER:integer

An integer value in the range of 65,536 to 268,435,455. You can also specify the value in hexadecimal (precede the value with %X) or octal (precede the value with %O).

Note that %X80000000 is added to the value you specify in order to differentiate general identifiers from UIC identifiers.

UIC:uic

A UIC value in the standard UIC format.

example

```
UAF> MODIFY/IDENTIFIER/VALUE=UIC:[300,21] ACCOUNTING
%UAF-I-RDBMDFYMSG, identifier ACCOUNTING modified
```

The command in this example changes the old UIC value of the identifier ACCOUNTING to a new value.

MODIFY/PROXY

Modifies an entry in the network proxy authorization file (NETPROXY.DAT).

format

MODIFY/PROXY *node::remote-user*

parameters

node

Specifies a node name (1 through 6 alphanumeric characters). If you specify an asterisk, the specified remote user on all nodes is served by the local user.

remote-user

Specifies the user name of a user at a remote node. If you specify an asterisk, all users at the specified node are served by the local-user.

For non-VMS systems which implement DECnet Phase IV+, specifies the UIC of a user at a remote node. You can specify a wildcard asterisk in the group and member fields of the UIC.

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qualifier

/DEFAULT[=local-user]
/NODEFAULT

Designates the default user name on the local node through which proxy access from the remote user is directed. If */NODEFAULT* is specified, removes the default designation.

example

```
UAF> MODIFY/PROXY MISHA::MARCO /DEFAULT=JOHNSON
%UAF-I-NAFADMSG, record successfully modified in NETPROXY.DAT
```

The command in this example changes the default proxy account for user MARCO on the remote node MISHA to the JOHNSON account.

MODIFY/SYSTEM_PASSWORD

Changes the system password.

format

MODIFY/SYSTEM_PASSWORD=*system-password*

parameter

system-password

Specifies the new system password.

example

```
UAF> MODIFY/SYSTEM_PASSWORD=ABRACADABRA
UAF>
```

This command changes the system password to ABRACADABRA.

REMOVE

Deletes a system UAF user record and corresponding identifiers in the rights database. The DEFAULT and SYSTEM records cannot be deleted.

format

REMOVE *username*

parameter

username

Specifies the name of a user in the system UAF.

qualifier

[/NO]REMOVE_IDENTIFIER

Specifies whether the user name and account name identifiers should be removed from the rights database when a record is removed from the UAF. If there are two UAF records with the same UIC, the user name identifier is removed only when the second record is deleted. Similarly, the account name identifier is removed only if there are no remaining UAF records with the same group as the deleted record.

example

```
UAF> REMOVE ROBIN
%UAF-I-REMSG, record removed from SYSUAF.DAT
%UAF-I-RDBREMSGU, identifier ROBIN value: [000014,000006] removed from RIGHTSLIST.DAT
```

The command in this example deletes the record for user ROBIN from the system UAF and ROBIN's UIC identifier from RIGHTSLIST.DAT.

REMOVE/IDENTIFIER

Removes an identifier from the rights database.

format

REMOVE/IDENTIFIER *id-name*

parameter

id-name

Specifies the name of an identifier in the rights database.

example

```
UAF> REMOVE/IDENTIFIER Q1SALES
%UAF-I-RDBREMSGU, identifier Q1SALES value %X80010024 removed from RIGHTSLIST.DAT
```

The command in this example removes the identifier Q1SALES from the rights database. All of its holder records are removed with it.

REMOVE/PROXY

Deletes network proxy access for the specified remote user. The /PROXY qualifier is required.

format

REMOVE/PROXY *node::remote-user [local-user,...]*

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parameters

node

Specifies the name of a network node in the network UAF.

remote-user

Specifies the user name or UIC of a user on a remote node. The asterisk wildcard character is permitted in the remote-user specification.

local-user

Specifies the user name of from 1 to 16 users on the local node. If no local user is specified, proxy access to all local accounts is removed.

example

```
UAF> REMOVE/PROXY MISHA::MARCO
%UAF-I-NAFDONEMSG, record removed from NETPROXY.DAT
```

The command in this example deletes the record for MISHA::MARCO from the network proxy authorization file, removing all proxy access to the local node for user MARCO on node MISHA.

RENAME

Renames a system UAF record.

format

RENAME *oldusername newusername*

parameters

oldusername

Specifies the name of a user currently in the system UAF.

newusername

Specifies the new user name.

qualifiers

/[NO]MODIFY_IDENTIFIER

Specifies whether the corresponding identifier is renamed.

/[NO]PASSWORD[=(password[,password2])]

See Table AUTH-1.

Because password verification includes the user name as well as the password, it will generally fail when you attempt to use a new user name with an old password. You must include a new password whenever you use the RENAME command unless you specify a null password with /NOPASSWORD.

/GENERATE_PASSWORD

See Table AUTH-1.

example

```
UAF> RENAME HAWKES KRAMERDOVE/PASSWORD=MARANNKRA
%UAF-I-ZZPRACREN, proxies to HAWKES renamed
%UAF-I-RENSMSG, user record renamed
%UAF-I-RDBMDFMSG, identifier HAWKES modified
```

The command in this example changes the name of the account Hawkes to Kramerdove, modifies the user name identifier for the account, and renames all proxies to the account.

RENAME/IDENTIFIER

Renames an identifier in the rights database.

format

RENAME/IDENTIFIER *old-id-name new-id-name*

parameters

old-id-name

Specifies the name of an identifier to be renamed.

new-id-name

Specifies the new identifier name.

example

```
UAF> RENAME/IDENTIFIER Q1SALES Q2SALES
%UAF-I-RDBMDFMSG, identifier Q1SALES modified
```

The command in this example renames the identifier Q1SALES to Q2SALES.

REVOKE/IDENTIFIER

Revokes an identifier held by a user.

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format

REVOKE/IDENTIFIER *id-name user-spec*

parameters

id-name

The identifier name. Specify the name in identifier ID format (see the ADD /IDENTIFIER command).

user-spec

An identifier (UIC or non-UIC format) that specifies the user (see the ADD /IDENTIFIER command).

example

```
UAF> REVOKE/IDENTIFIER INVENTORY CRAMER
%UAF-I-REVOKEMSG, identifier INVENTORY revoked from CRAMER
```

The command in this example revokes the identifier INVENTORY from the user Cramer. Cramer loses the identifier and any resources associated with it.

Note that, since rights identifiers are stored in numeric format, it is not necessary to change records for users holding a renamed identifier.

SHOW

Displays reports for selected UAF records on the current SYS\$OUTPUT device.

format

SHOW *user-spec*

parameter

user-spec

Specifies the user name or UIC of the desired UAF record. If you omit the user-spec parameter, the UAF records of all users are listed. The asterisk and percent sign wildcard characters are permitted in the user name.

qualifiers

/BRIEF

Specifies that a brief report be displayed. If you omit the /BRIEF qualifier, a full report is displayed.

/FULL

Specifies that a full report be displayed, including identifiers held by the user.

example

UAF> SHOW ROBIN

The command in this example displays a full report for the user ROBIN. The display corresponds to the first example in the description of the ADD command. Note that most defaults are in effect.

```

Username: ROBIN                               Owner: JOSEPH ROBIN
Account: VMS                                  UIC: [14,6] ([INV,ROBIN])
CLI: DCL                                       Tables: DCLTABLES
Default: SYS$USER: [ROBIN]
LGICMD:
Login Flags:
Primary days:  Mon Tue Wed Thu Fri
Secondary days:                               Sat Sun
No access restrictions
Expiration:      (none)   Pwdminimum: 6   Login Fails: 0
Pwdlifetime:    (none)   Pwdchange: 15-APR-1987 14:08
Last Login:     (none) (interactive),          (none) (non-interactive)
Maxjobs:        0   Fillm: 20   Byt1m: 12480
Maxacctjobs:    0   Shrfillm: 0   Pbyt1m: 0
Maxdetach:      0   BI01m: 6   JTquota: 1024
Prclm:          2   DI01m: 6   WSdef: 300
Prio:           4   AST1m: 10  WSquo: 350
Queprio:        0   TQE1m: 10  WSextent: 700
CPU:            (none) Enqlm: 30  Pgflquo: 12480
Authorized Privileges:
  TMPMBX NETMBX
Default Privileges:
  TMPMBX NETMBX
Identifier      Value      Attributes
CLASS_CA101    %X80010032  NORESOURCE NODYNAMIC
CLASS_PY102    %X80010049  NORESOURCE NODYNAMIC

```

NOTE: The quotas Pbyt1m and Queprio are not implemented for Version 5.0 and thus are not documented in this manual.

SHOW/IDENTIFIER

Displays information about the identifier on the current SYS\$OUTPUT device.

format

SHOW/IDENTIFIER [*id-name*]

parameter

id-name

Specifies an identifier name. If you omit the identifier name, you must specify /USER or /VALUE.

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SHOW/PROXY

qualifiers

/BRIEF

Specifies a brief listing, in which only the identifier name, value, and attributes are displayed. */BRIEF* is the default format for the *SHOW/IDENTIFIER* command.

/FULL

Specifies a full listing in which the names of the identifier's holders are displayed along with the identifier's name, value, and attributes.

/USER=user-spec

Specifies one or more users whose identifiers are to be displayed. **User-spec** can be a user name or UIC. You can use the asterisk wildcard to specify multiple user names or UICs. Full use of the asterisk and percent wildcards is permitted for user names; UICs must be in the form *[*,*]*, *[n,*]*, *[*,n]*, or *[n,n]*. A wildcard user name specification (***) displays identifiers alphabetically by user name; a wildcard UIC specification (*[*,*]*) displays them numerically by UIC.

/VALUE=value-specifier

Specifies a value in any valid format (see the *LIST/IDENTIFIER* command).

example

UAF> SHOW/IDENTIFIER/FULL INVENTORY

The command in this example would produce output similar to the following:

Name	Value	Attributes
INVENTORY	%X80010006	NORESOURCE NODYNAMIC
Holder	Attributes	
ANDERSON	NORESOURCE	NODYNAMIC
BROWN	NORESOURCE	NODYNAMIC
CRAMER	NORESOURCE	NODYNAMIC

SHOW/PROXY

Displays all authorized proxy access for the specified remote user. The */PROXY* qualifier is required.

format

SHOW/PROXY *node::remote-user*

parameters

node

Specifies the name of a network node in the network UAF. The asterisk wildcard is permitted in the node specification.

remote-user

Specifies the user name or UIC of a user on a remote node. The asterisk wildcard is permitted in the remote-user specification.

example

```
UAF> SHOW/PROXY SAMPLE::[200,100]
```

Default proxies are flagged with an *

```
SAMPLE::[200,100]
```

```
MARCO *
```

```
PROXY3
```

```
PROXY2
```

The command in this example displays all authorized proxy access for the user on node SAMPLE with a UIC of [200,100]. The default proxy account can be changed from MARCO to PROXY2 or PROXY3 with the MODIFY /PROXY command.

SHOW/RIGHTS

Displays the identifiers held by the specified identifiers or, if /USER is specified, all identifiers held by the specified users.

format

SHOW/RIGHTS [*user-spec*]

parameter

[*user-spec*]

The name of the identifier associated with the user. Specify the identifier in UIC format. If you omit the identifier name, you must specify the /USER qualifier.

qualifier

/USER=*user-spec*

Specifies one or more users whose identifiers are to be listed. **User-spec** can be a user name or UIC. You can use the asterisk wildcard to specify multiple user names or UICs. Full use of the asterisk and percent wildcards is permitted for user names; UICs must be in the form [*,*], [n,*], [*,n], or [n,n]. A wildcard user name specification (*) or wildcard UIC specification ([*,*])

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displays all identifiers held by users. The wildcard user name specification displays holders' user names alphabetically; the wildcard UIC specification displays them in the numerical order of their UICs.

example

UAF> SHOW/RIGHTS ANDERSON

This command displays all identifiers held by the user ANDERSON. For example:

Name	Value	Attributes
INVENTORY	%X80010006	NORESOURCE NODYNAMIC
PAYROLL	%X80010022	NORESOURCE NODYNAMIC

Note that the following formats of the command produce the same result:

SHOW/RIGHTS/USER=ANDERSON
SHOW/RIGHTS/USER=[300,015]

SYSTEM MANAGER'S REFERENCE

Backup Utility

By duplicating files or volumes of files, the Backup Utility (BACKUP) protects data from loss or corruption.

BACKUP is intended for use primarily by system managers and operators to protect public media. However, anyone can use BACKUP to make personal BACKUP copies and to transport files between VMS systems.

Standalone BACKUP is a version of the Backup Utility that is bootstrapped into main memory instead of running under the control of the VMS operating system. Standalone BACKUP uses a subset of BACKUP qualifiers to perform image and physical BACKUP operations.

format

BACKUP *input-specifier output-specifier*

parameters

input specifier

Specifies the input for the BACKUP operation. The input specifier can be a standard VMS file specification, a BACKUP save-set specification, or a device name. If the input specifier is a save-set specification on disk, it must include the input save-set qualifier /SAVE_SET.

DECnet-VAX node names are allowed only in save-set specifications.

Wildcards are permitted in standard VMS file specifications and in save-set specifications if they are on magnetic tape.

output specifier

Specifies the output for the BACKUP operation. The output specifier, like the input specifier, can be either a standard VMS file specification, a BACKUP save-set specification, or a device name. If the output specifier is a save set on disk, it must include the output save-set qualifier /SAVE_SET.

DECnet-VAX node names are allowed only in save-set specifications.

You can use wildcard characters if the output specifier is a Files-11 volume. You cannot use wildcard characters if the output specifier is a BACKUP save set or a volume created by a BACKUP/PHYSICAL or BACKUP/IMAGE operation.

BCK-2 Backup Utility

usage summary

To invoke online BACKUP, enter an appropriate BACKUP command at the DCL prompt.

When you enter a BACKUP command, BACKUP evaluates the input and output specifier and qualifiers to determine the type of operation to perform. BACKUP uses the input specifier to locate the input to the utility and directs output to the output specifier, which can be a file or a save set on disk or a save set on magnetic tape.

After executing the command, BACKUP returns to DCL command level. If you want to halt the execution of a BACKUP command prematurely, press CTRL/Y. If BACKUP is creating a file when you press CTRL/Y, the file is closed immediately and only partially created.

You need the user privilege TMPMBX to send messages to operator terminals when using BACKUP in batch mode. If you are performing a save operation to a volume set of sequential disks, you must have the user privilege PHY_IO or LOG_IO to write to a continuation volume. The use of several BACKUP qualifiers also requires privileges; these are noted in the appropriate qualifier descriptions.

BACKUP Qualifiers

This section provides detailed descriptions of each BACKUP qualifier and includes examples. Each qualifier description identifies the qualifier type.

BACKUP has five types of qualifiers: command qualifiers, input file-selection qualifiers, input save-set qualifiers, output file qualifiers, and output save-set qualifiers, as follows:

- **Command qualifiers** allow you to modify the default action of a BACKUP command. You can place command qualifiers anywhere in the command line. Command qualifiers act upon every file in the input or output specifier.
- **Input file-selection qualifiers** select files from the input specifier. Place them immediately after the input specifier.
- **Input save-set qualifiers** affect the way BACKUP handles an input save set during a restore operation. Place them immediately after the input specifier.
- **Output file qualifiers** change the way output files are restored. Place them immediately after the output specifier.
- **Output save-set qualifiers** affect the way BACKUP processes an output save set during a save operation. Place them immediately after the output specifier.

NOTE: You cannot use input and output qualifiers in image operations.

/ASSIST

Command Qualifier

Allows operator or user intervention if a request to mount a magnetic tape fails during a BACKUP operation.

format

[/[NO]ASSIST input-specifier output-specifier

description

The /ASSIST qualifier causes BACKUP to send messages to operator terminals when a failure occurs during a BACKUP mount request for a magnetic tape. BACKUP sends messages to operator terminals enabled to receive TAPES and CENTRAL messages. (See the description of the REPLY command for information about enabling and disabling operator terminals.) If a failure occurs, the operator can either abort the operation or correct the error condition and allow the operation to continue.

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If no operator terminal is enabled to receive TAPES and CENTRAL messages and to respond to a mount assist request, a message is displayed informing the user of the situation. If a volume is placed in the requested drive, no additional operator response is necessary. Any operator reply to a mount request is written to SYS\$OUTPUT. When BACKUP is run interactively, SYS\$OUTPUT is the user's terminal. When BACKUP is run in batch mode, SYS\$OUTPUT is the batch job log file.

If you specify /NOASSIST, mount messages appear on your terminal and are not sent to the operator.

The default is /ASSIST. Specifying /NOASSIST when BACKUP is run in batch mode has no effect.

example

```
$ BACKUP/NOASSIST [PAYROLL]*.*;* MTA1:PAYROLL.BCK/LABEL=WKY101
```

This command mounts the volume labeled WKY101 on the MTA1 tape drive and copies all files in the [PAYROLL] directory to a save set named PAYROLL.BCK. The /NOASSIST qualifier directs BACKUP to send mount messages to your terminal rather than to the operator terminal. The WKY101 label indicates that WKY101 is a weekly BACKUP tape in group 1, volume number 01. (If the volume label of the tape is not WKY101, you can direct BACKUP to write the save set to the tape by choosing the OVERWRITE option at the BACKUP> prompt.)

/BACKUP

Input File-Selection Qualifier

Selects files according to the BACKUP date written in the file header record by the BACKUP/RECORD command.

format

input-specifier/BEFORE=*time*/BACKUP *output-specifier*
input-specifier/SINCE=*time*/BACKUP *output-specifier*

description

The /BACKUP qualifier is valid with Files-11 Structure Level 2 volumes only and must be used with either the /BEFORE or /SINCE qualifier. You cannot use /BACKUP with the /CREATED, /MODIFIED, or /EXPIRED qualifiers, in an image operation or in a physical operation.

/BACKUP selects files by comparing the date and time recorded in the BACKUP field of the file header record with the date and time specified with the /BEFORE or /SINCE qualifier. The date and time recorded in the file header record is the date and time the file was last saved or copied using the /RECORD command qualifier.

When you use /BACKUP with /BEFORE, files with a BACKUP date prior to the specified date or time are selected. Files with no BACKUP date (/RECORD was not specified when the file was saved or copied) are also selected.

When you use /BACKUP with /SINCE, files with a BACKUP date equal to or later than the specified date or time are selected. Files with no BACKUP date (/RECORD was not specified when the file was saved or copied) are also selected.

example

```
$ BACKUP/RECORD  
_FROM: [PAYROLL]*.*;*/BEFORE=01-SEP-1988/BACKUP  
_TO: MTA1:SEP01.BCK
```

In this command, the /BACKUP qualifier combined with the /BEFORE qualifier saves all versions of all files in the directory [PAYROLL] that have a BACKUP date written before September 1, 1988. The command qualifier /RECORD writes the date and time of the save operation to the file header record of each saved file.

/BEFORE

Input File-Selection Qualifier

Selects files dated earlier than the date and time you specify.

format

input-specifier/BEFORE=time output-specifier

BCK-6 BACKUP /BLOCK_SIZE

description

The /BEFORE qualifier selects files by comparing the date and time in the specified field of each file header record with the date and time you specify in the command line. The following list shows the other input file-selection qualifiers you can use with /BEFORE and their functions. Use only one of these other qualifiers at a time in your command line.

/BACKUP	Selects files last saved or copied by BACKUP/RECORD before the date specified. Also selects files with no BACKUP date.
/CREATED	Selects files created before the date specified.
/EXPIRED	Selects files that have expired as of the date specified.
/MODIFIED	Selects files last modified before the date specified. If you specify /BEFORE without another qualifier, /MODIFIED is used by default.

Specify the date and time as a delta time or as an absolute time using the format [dd-mmm-yyyy[:]][hh:mm:ss.cc]. You can also use one of the following reserved words to specify the date and time:

BACKUP	The BACKUP date of the file written by a previous BACKUP/RECORD operation (available only on Files-11 Structure Level 2 volumes)
TODAY	The current day, month, and year at 00:00:00.0 o'clock
TOMORROW	24 hours after midnight last night
YESTERDAY	24 hours before midnight last night

The /BEFORE qualifier is not valid in incremental restore operations.

example

```
$ BACKUP [POLICIES]*.*;*/BEFORE=TODAY/EXPIRED DMA1:OLDPOL.BCK/SAVE_SET
```

This command saves all files in the directory [POLICIES] that have expiration dates preceding today's date.

/BLOCK_SIZE

Output Save-Set Qualifier

Specifies the output block size in bytes for data records in a BACKUP save set.

format

input-specifier output-save-set-spec/BLOCK_SIZE=*n*

description

The minimum block size is 2048 bytes; the maximum block size is 65,024 bytes. The actual block size written is adjusted using the constraints of the BACKUP format. The block size cannot be rounded up over the maximum block size.

If you specify /BLOCK_SIZE in a magnetic tape save operation, BACKUP ignores any block size defined by the /BLOCK_SIZE qualifier to the DCL command MOUNT.

If the block size is set to a large value for a save set on magnetic tape, it is possible for the magnetic tape to run off its reel or for a large number of write errors to be logged. If this occurs, avoid using large block sizes. If the problem recurs with the same magnetic tape, avoid using that tape for future BACKUP operations.

The default block size for magnetic tape is 8192 bytes; the default for disk is 32,256 bytes.

example

```
$ BACKUP/RECORD DRA2:[LEE...]/SINCE=BACKUP MTA0:SAVEWORK.BCK/BLOCK_SIZE=10000
```

This command saves a directory tree on DRA2 to a magnetic tape mounted on drive MTA0. The input file-selection qualifiers /SINCE and /BACKUP instruct BACKUP to process only those files in the specified directory tree that have been modified since the last BACKUP/RECORD operation. The output save-set qualifier /BLOCK_SIZE directs BACKUP to assign a block size of 10,240 (BACKUP rounds the specified block size of 10,000 up to the next multiple of 512).

/BRIEF

Command Qualifier

Lists the file specification, size, and creation date for each file in the save set. (The size listed is the actual size of the file saved, rather than the number of blocks allocated to the file.) The /BRIEF qualifier is valid only with the /LIST qualifier and is the default format for BACKUP listings. Specify the /FULL qualifier to list information provided by the DCL command DIRECTORY/FULL.

format

/LIST/BRIEF *save-set-spec*

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/BUFFER_COUNT=n

example

```
$ BACKUP/LIST/BRIEF DBA2:[SAVE]23MAR88.BCK/SAVE_SET
```

Listing of save set(s)

```
Save set:          23MAR88.BCK
Written by:        MOROCI
UIC:               [000200,000200]
Date:              23-MAR-1988 14:18:16.96
Command:           BACKUP [SAVE] DBA2:[SAVE]23MAR88.BCK/SAVE_SET
Operating system:  VAX/VMS version 5.0
BACKUP version:    V5.0
CPU ID register:   08000000
Node name:         _SUZI::
Written on:        _DBA2:
Block size:        32,256
Group size:        10
Buffer count:      3
```

```
[SAVE]LAST.DAT;1          1 18-AUG-1987 14:11
[SAVE]INFO.TXT;4         5  4-FEB-1988 13:12
[SAVE]WORK.DAT;3        33  1-DEC-1987 10:02
```

```
Total of 3 files, 39 blocks
End of save set
```

This command lists the BACKUP summary information and the file name, size, and creation date for each file in the save set. Note that the input save-set qualifier `/SAVE_SET` is required to identify the input specifier as a save set on a Files-11 medium.

/BUFFER_COUNT=n

Command Qualifier

Specifies the number of I/O buffers to be used in the BACKUP operation.

format

/BUFFER_COUNT=n input-specifier output-specifier

description

The `/BUFFER_COUNT` qualifier is supported for save, compare, and restore operations that use streaming tape drives. The default value for this qualifier is 3; the maximum valid buffer count is 5. A buffer count larger than the default may improve performance when you are working with streaming tape drives.

example

```
$ BACKUP/BUFFER_COUNT=4/IMAGE DBAO: MUAO:SAVE.BCK
```

This command performs an image save operation using a pool of four I/O buffers.

/BY_OWNER

Input File-Selection Qualifier

Selects files for processing according to the user identification code (UIC).

format

input-specifier/BY_OWNER[=*uic*] *output-specifier*

description

If you specify /BY_OWNER without a UIC, BACKUP selects all files whose UIC matches that of the current process.

Specify either a numeric UIC as octal numbers or an alphanumeric UIC in the form [g,m]. Wildcards are permitted. Note that the brackets are required.

[g,m]

- g An octal number in the range 0 through 37776 representing the group number or an alphanumeric group name
- m An octal number in the range 0 through 177776 representing the member number or an alphanumeric member name

If you do not specify /BY_OWNER, BACKUP processes all files specified by the input specifier.

example

```
$ BACKUP [SNOW...]/BY_OWNER MT$DRIVE:SNOW.BCK/LABEL=TAPE01
```

In this example, BACKUP mounts the tape with the label TAPE01 on drive MT\$DRIVE and saves all files in the directory and subdirectories of [SNOW] with the UIC of the current default process to the save set SNOW.BCK.

BCK-10 BACKUP /BY_OWNER

/BY_OWNER

Output File Qualifier

Redefines the owner user identification code (UIC) for restored files.

format

input-specifier output-specifier/BY_OWNER[=*option*]

description

The following are available options:

default	Sets the owner UIC to the user's current default UIC. This option is the default if the /BY_OWNER qualifier is not specified, except in image and incremental restore operations, when ORIGINAL is the default option.
ORIGINAL	Retains the owner UIC of the file being restored. This option is the default if the /BY_OWNER qualifier is specified, but no option is selected. This option is also the default for incremental restore operations. To use this option, the UIC must be yours, or you must have the SYSPRV user privilege or be the owner of the output volume.
PARENT	Sets the owner UIC to the owner UIC of the directory to which the file is being restored or copied. To use this option, the parent UIC must be yours, or you must have the SYSPRV user privilege or be the owner of the output volume.
[uic]	Sets the owner UIC to the UIC specified. Use the [g,m] format (as described in the input file-selection qualifier /BY_OWNER). To use this option, the UIC must be yours, or you must have the SYSPRV user privilege or be the owner of the output volume.

In restore operations where the command qualifier /IMAGE or /INCREMENTAL is specified, the default is /BY_OWNER=ORIGINAL.

example

```
$ BACKUP DBA2:ACCOUNTS.BCK/SAVE_SET [CLEAVER...]/BY_OWNER=PARENT
```

In this example, the sequential-disk save set ACCOUNTS.BCK is restored to the directory tree [CLEAVER...], assigning each restored file the owner UIC of the [CLEAVER] directory.

/BY_OWNER

Output Save-Set Qualifier

Specifies the owner user identification code (UIC) of the save set.

format

input-specifier output-save-set-spec/BY_OWNER=*uic*

description

If the /BY_OWNER qualifier is omitted, the UIC of the current process is used. To use this qualifier on Files-11 save sets, you need the user privilege SYSPRV, or the UIC must be your own.

Specify either a numeric UIC as octal numbers or an alphanumeric UIC in the form [g,m]. Wildcards are permitted. Note that the brackets are required.

[g,m]

g An octal number in the range 0 through 37776 representing the group number or alphanumeric group name

m An octal number in the range 0 through 177776 representing the member number or alphanumeric member name

example

```
$ BACKUP [CLEAVER...] MFA2:ACCOUNTS.BCK/BY_OWNER=[3,3]/LABEL=TAPE01
```

In this example, BACKUP mounts the tape with the label TAPE01 on drive MFA2. Next, BACKUP saves the directory tree [CLEAVER...] to a save set named ACCOUNTS.BCK. The output save-set qualifier /BY_OWNER assigns an owner UIC of [3,3] to the save set.

/COMMENT

Output Save-Set Qualifier

Places a comment in an output save set. If the comment string is longer than one word or if it contains nonalphanumeric characters, it must be enclosed in quotation marks ("). A comment can contain up to 1024 characters.

format

input-specifier output-save-set-spec /COMMENT=*string*

BCK-12 BACKUP /COMPARE

example

```
$ MOUNT/FOREIGN DMA1:  
$ BACKUP [REMARKS] DMA1:20JULREM.BCK/SAVE_SET -  
_$ /COMMENT="Remote operations for July 20, 1988"  
$ BACKUP/LIST DMA1:20JULREM.BCK/SAVE_SET
```

```
Save set:          20JULREM.BCK  
Written by:       WALRUS  
UIC:              [360,054]  
Date:             20-JUL-1988 14:22:06.62  
Command:          BACKUP [REMARKS] DMA1:20JULREM.BCK/SAVE_SET/COMMENT=Remote  
operations for July 20, 1988  
Operating system: VMS Version V5.0  
BACKUP version:   V4  
CPU ID register:  0138084C  
Node name:        _ABBEY::  
Written on:        _ABBEY$DMA1:  
Block size:       32256  
Group size:       10  
Buffer count:     3
```

```
[REMARKS]BAC.RES;1          2 30-JUL-1988 14:13  
[REMARKS]COM.LIS;1         1 30-JUL-1988 14:04  
[REMARKS]DTOP.DIR;1       1 30-JUL-1988 14:18
```

```
Total of 40 files, 535 blocks  
End of save set
```

The first BACKUP command saves the directory [REMARKS] to a sequential-disk save set and records a comment. The BACKUP/LIST command displays the contents of the newly created save set. Note that the /SAVE_SET qualifier is required when creating a save set on disk.

/COMPARE

Command Qualifier

Compares the save set, device, file, or files specified by the first parameter with the contents of the Files-11 device, file, or files specified by the second parameter and displays an error message if it finds a difference.

format

```
/COMPARE file-spec file-spec  
/COMPARE save-set-spec file-spec  
/IMAGE/COMPARE device-spec device-spec  
/PHYSICAL/COMPARE device-spec device-spec
```

description

In a BACKUP compare operation, the first parameter can be a Files-11 file or a wildcard character representing a set of files, a BACKUP save set on disk or magnetic tape, a tape device, or a disk device. The second parameter must be a Files-11 disk file, a wildcard character representing a set of files or a Files-11 disk device, unless you specify the command qualifier /PHYSICAL. When you specify /PHYSICAL, and the first parameter specifies a disk device, both disks in the compare operation must be mounted with the /FOREIGN qualifier.

BACKUP displays the following error message if it encounters a difference between files it compares:

```
%BACKUP-E-VERIFYERR, verification error for . . .
```

Use the /COMPARE qualifier to compare a save set with original files or to compare files or volumes copied using BACKUP with original files. Because BACKUP processes files by blocks, comparing files not produced by BACKUP is likely to cause mismatch errors in files that are apparently identical.

If you do not specify a version number with the file specification, the default is ;* (the asterisk wildcard character), which processes all versions of the file.

Both parameters in a compare operation are input specifiers.

If you are comparing two entire Files-11 volumes, use an image compare operation, as follows:

```
$ BACKUP/IMAGE/COMPARE DBA1: DBA2:
```

You cannot use the command qualifier /DELETE or /RECORD in compare operations.

Do not perform compare operations on files that were restored or copied using the output file qualifier /NEW_VERSION because this qualifier causes version numbers to change.

example

```
$ BACKUP/COMPARE JAZZ.DAT BLUES.DAT
```

This example compares two Files-11 files. Since no version number is specified, BACKUP compares all versions of each file.

BCK-14 BACKUP /CRC

/CONFIRM

Input File-Selection Qualifier

Displays prompts on your terminal for confirmation before processing each file. If you want the file to be processed, enter Y or YES and press RETURN.

format

input specifier/CONFIRM output specifier

example

```
$ BACKUP *.LIS/CONFIRM/LOG DLA2:LIST.BCK/SAVE_SET
DISK$DEFAULT:[WONDER]CRE.LIS;1, copy? (Y or N): Y
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]CRE.LIS;1
DISK$DEFAULT:[WONDER]CRETIME.LIS;1, copy? (Y or N): Y
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]CRETIME.LIS;1
DISK$DEFAULT:[WONDER]EXC.LIS;1, copy? (Y or N): Y
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]EXC.LIS;1
DISK$DEFAULT:[WONDER]REB.LIS;1, copy? (Y or N): N
DISK$DEFAULT:[WONDER]SETREB.LIS;1, copy? (Y or N): Y
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]SETREB.LIS;1
DISK$DEFAULT:[WONDER]VERS.LIS;1, copy? (Y or N): N
```

\$

This command locates all files with a file type of LIS and prompts for confirmation before saving each file to LIST.BCK on DLA2. The command qualifier /LOG displays information about each file as it is processed. Note that the output save-set qualifier SAVE_SET qualifier is required when creating a save set on disk.

/CRC

Input Save-Set Qualifier

Specifies that the software Cyclic Redundancy Check (CRC) is to be performed.

format

input-save-set-spec/[NO]CRC output-specifier

description

The default is /CRC. To disable CRC checking, specify /NOCRC; note that use of /NOCRC reduces processing time but increases the risk of data error.

example

```
$ BACKUP MTA2:928SAVE.BCK/NOCRC []
```

This command restores the save set 928SAVE.BCK to the current default directory, indicated by ([]); the input save-set qualifier /NOCRC disables Cyclic Redundancy Checking.

/CRC

Output Save-Set Qualifier

Specifies whether the software Cyclic Redundancy Check (CRC) is to be computed and stored in the data blocks of the output save set.

format

input-specifier output-save-set-spec/[NO]CRC

description

The default is /CRC. To disable checking, use /NOCRC; note that use of /NOCRC reduces processing time but increases the risk of data error.

example

```
$ BACKUP/RECORD []/SINCE=BACKUP MTA2:928SAVE.BCK/NOCRC
```

This command saves all files in the current default directory that have been created or modified since the last BACKUP/RECORD operation to the save set 928SAVE.BCK; the output save-set qualifier /NOCRC disables Cyclic Redundancy Checking.

/CREATED

Input File-Selection Qualifier

Selects files according to the value of the creation date field in each file header record.

format

input-specifier/BEFORE=time/CREATED output-specifier
input-specifier/SINCE=time/CREATED output-specifier

BCK-16 BACKUP /DELETE

description

You must use either the /BEFORE qualifier or the /SINCE qualifier with /CREATED. The date and time you specify to /BEFORE or /SINCE determine which files should be processed.

You cannot use /CREATED with the /BACKUP, /MODIFIED, or /EXPIRED qualifiers.

example

```
$ BACKUP *.GNC/SINCE=YESTERDAY/CREATED DLA2:[SAVEDIR]/SAVE_SET
```

The command in this example saves all files with a file type of GNC created since yesterday (24 hours before midnight last night).

/DELETE

Command Qualifier

Specifies that a BACKUP save or copy operation is to delete the selected input files from the input volume after all files have been processed.

format

```
/DELETE file-spec save-set-spec
```

description

The /DELETE qualifier is valid only when used in a BACKUP save or copy operation. You must have sufficient privilege to delete files; if you do not, files protected against deletion are not deleted. If you use the command qualifier /VERIFY with /DELETE, files that fail verification are not deleted.

You cannot use /DELETE with the /RECORD or /COMPARE command qualifiers.

example

```
$ BACKUP/DELETE BOP.DAT MTA0:BOP.BCK/LABEL=DANCE
```

In this example, the file BOP.DAT will be deleted after the save set BOP.BCK is successfully created on MTA0.

/DENSITY

Output Save-Set Qualifier

Specifies the recording density of the output magnetic tape in bits per inch (bpi). The output save-set qualifier /REWIND is required if you specify /DENSITY.

format

input-specifier output-save-set-spec/DENSITY=n

description

The value you specify must be supported by your magnetic tape hardware. If you omit this qualifier, the default density is the current density on the output tape drive.

The /DENSITY qualifier is incompatible with the output save-set qualifier /NOREWIND. You must specify the output save-set qualifier /REWIND to initialize the magnetic tape when using the /DENSITY qualifier. When you specify /DENSITY/REWIND, BACKUP rewinds the tape to the beginning-of-tape. Then BACKUP initializes the tape with the new density, removing access to all data that previously resided on the tape.

example

```
$ BACKUP *.PAS MTA2:SAVEPAS.BCK/DENSITY=1600/REWIND/LABEL=PASCAL
```

The magnetic tape on drive MTA2 is initialized. All files with a file type of PAS in the current default directory are saved to the save set SAVEPAS.BCK. The /DENSITY qualifier sets the recording density to 1600 bpi.

/EXCLUDE

Input File-Selection Qualifier

Excludes files that otherwise meet the selection criteria for a save operation. The excluded files are not processed.

format

input-specifier/EXCLUDE=(file-spec[,...]) output-specifier

BCK-18 BACKUP /EXPIRED

description

If you specify more than one file, separate the file specifications with commas and enclose the list in parentheses. Do not use a device specification when you define the files to be selected. You can use most standard wildcard characters, but you cannot use wildcard characters denoting latest versions of files (;) or relative versions of files (;-n).

Note that BACKUP does not apply temporary file specification defaults within the list. Each file specification independently takes its defaults from the file specification [000000 . . .]*.*;*

If you specify directory files (files with the file type DIR), your command is processed but the directory files are not excluded (they are processed). BACKUP uses directory files to facilitate incremental restore operations.

example

```
$ BACKUP  
_FROM: DRA2:[CONTRACTS]/BEFORE=TODAY/EXCLUDE=(*.OBJ,*.MAI)  
_TO: MFA0:CONTRACT.BCK/LABEL=DLY102
```

All files in the directory [CONTRACTS] that have a modification date prior to today (the current day, month, and year at 00:00:00.0 o'clock) are saved to the save set CONTRACT.BCK on drive MFA0, except for those with a file type of OBJ or MAI.

/EXPIRED

Input File-Selection Qualifier

Selects files according to the value of the expiration date field in each file header record.

format

input-specifier/BEFORE=*time* /EXPIRED *output-specifier*
input-specifier/SINCE=*time* /EXPIRED *output-specifier*

description

You must use the input file-selection qualifier /BEFORE or /SINCE with /EXPIRED. The date and time you specify to /BEFORE or /SINCE determines which files are processed.

You cannot use /EXPIRED with the input file-selection qualifiers /BACKUP, /MODIFIED, or /CREATED.

example

```
$ BACKUP [CONTRACTS]/BEFORE=TOMORROW/EXPIRED MTA1:30DEC.BCK/LABEL=WK04
```

This command saves all files in the directory [CONTRACTS] that have an expiration date prior to tomorrow (24 hours after midnight last night) to a save set named 30DEC.BCK.

/FAST

Command Qualifier

Processes the input specifier using a fast file scan to reduce processing time. The input specifier must be a Files-11 disk.

format

/FAST input-specifier output-specifier

description

The fast file scan reads the index file on the Files-11 disk specified by the input specifier and creates a table of files that match the qualifiers you specified.

To perform a fast file scan, you need write access to the INDEXF.SYS file on the input medium, or the input medium must be write-locked. This requirement is necessary because BACKUP opens the index file to synchronize with the file system, whether or not any update is made.

A fast file scan is most useful when the input specifier includes most of the files on the volume, and file-selection qualifiers (such as those that pertain to date or owner) specify a relatively small set of the files named. Because image operations implicitly use the fast file scan, the /FAST qualifier is ignored if used with the command qualifier /IMAGE.

You cannot use /FAST in restore operations.

example

```
$ BACKUP/FAST  
_FROM: DBA1:[*...]/MODIFIED/SINCE=TODAY  
_TO: MTAO:13NOVBAK.BCK,MTA1:
```

In this example, all files on the disk DBA1 that have been modified today are saved to a multireel tape save set named 13NOVBAK.BCK. The /FAST qualifier is used to reduce processing time.

BCK-20 BACKUP

/FULL

/FULL

Command Qualifier

Lists the file information produced by the command qualifier /LIST in the format provided by the DCL command DIRECTORY/FULL.

format

/LIST/FULL input-specifier [output-specifier]

description

The /FULL qualifier is valid only with the command qualifier /LIST.

If you do not specify /FULL with /LIST, the /LIST qualifier uses the default command qualifier /BRIEF and lists only the file specification, size, and creation date of each file. When you specify /FULL, the list includes more information from the file header records, such as the BACKUP date, date of last modification, number of blocks allocated to the file, file protection and organization, and record attributes.

example

```
$ BACKUP/LIST/FULL MTA1:ROCK.BCK
Listing of save set(s)
```

```
Save set:          ROCK.BCK
Written by:        RINGO
UIC:               [000200,000300]
Date:             20-AUG-1988 15:39:38.89
Command:          BACKUP [.STONES] MTA0:ROCK.BCK/LABEL=BACKUP
Operating system: VAX/VMS version 5.0
BACKUP version:   V5.0
CPU ID register:  08000000
Node name:        _SUZI:
Written on:       _MTAO:
Block size:       8192
Group size:       10
Buffer count:     30
```

```
[RINGO.STONES]GRAPHITE.DAT;1
      Size:          1/1          Created: 18-AUG-1988 14:10
      Owner: [000200,000200]      Revised: 18-AUG-1988 14:10 (2)
      File ID: (91,7,1)          Expires: [None specified]
                                   Backup: [No backup done]
```

```
File protection:   System:RWED, Owner:RWED, Group:RE, World:
File organization: Sequential
File attributes:   Allocation = 1, Extend = 0
                   Global Buffer Count = 0
Record format:     Variable length, maximum 255 bytes
Record attributes: Carriage return
```

```
[RINGO.STONES]GRANITE.DAT;1
      Size:    1/1            Created: 18-AUG-1988 14:11
      Owner: [000200,000200]   Revised: 18-AUG-1988 14:11 (2)
      File ID: (92,9,1)       Expires: [None specified]
                               Backup: [No backup done]
File protection:    System:RWED, Owner:RWED, Group:RE, World:
File organization: Sequential
File attributes:    Allocation = 1, Extend = 0
                   Global Buffer Count = 0
Record format:     Variable length, maximum 255 bytes
Record attributes: Carriage return
```

Total of 4 files, 16 blocks
End of save set

The command in this example lists in full format the files in save set
MTA1:ROCK.BCK.

/GROUP_SIZE

Output Save-Set Qualifier

Defines the number of blocks BACKUP places in each redundancy group.

format

input-specifier output-save-set-spec/GROUP_SIZE=*n*

description

BACKUP writes redundant information to output save sets to protect against data loss. Using the redundant information, BACKUP can correct one "uncorrectable" read error in each redundancy group. The /GROUP_SIZE qualifier specifies the number of output blocks written to each redundancy group. The value of *n* can be from 0 through 100. The default value is 10.

If you define a value of 0 for /GROUP_SIZE, no redundancy groups are created for the save set.

example

```
$ BACKUP/RECORD DBA1:[*...]/SINCE=BACKUP TAPE:SAVEWORK.BCK/GROUP_SIZE=5
```

This BACKUP command saves all files in the current default directory tree that have been modified since the last BACKUP/RECORD operation; the /GROUP_SIZE defines the redundancy group size as 5 blocks.

BCK-22 BACKUP

/IGNORE=option

/IGNORE=option

Command Qualifier

Specifies that a BACKUP save or copy operation is to override restrictions placed on files or not perform tape label processing checks.

format

/IGNORE=option input-specifier output-specifier

description

The /IGNORE=option qualifier has three options:

INTERLOCK	Processes files that otherwise could not be processed because of file access conflicts. This option can be used to save or copy files currently open for writing. Note that no synchronization is made with the process writing the file, so the file data that is copied might be inconsistent with the input file, depending on the circumstances (for example, if another user is editing the file, the contents might change). When a file open for writing is processed, BACKUP issues the message: %BACKUP-W-ACCONFLICT, 'filename' is open for write by another user. The INTERLOCK option is especially useful if you have files that are open so much of the time that they might not otherwise be saved. The use of this option requires the user privilege SYSPRV, a system UIC, or ownership of the volume.
LABEL_PROCESSING	Saves or copies the contents of files to the specified magnetic tape volume regardless of the information contained in the volume header record. BACKUP will not verify the volume label or expiration date before writing information to the tape volume.
NOBACKUP	Causes BACKUP to save both the file header record and the contents of files marked with the NOBACKUP flag by the /NOBACKUP qualifier of the DCL command SET FILE. If you do not specify this option, BACKUP saves only the file header record of files marked with the NOBACKUP flag.

example

```
$ BACKUP/IGNORE=INTERLOCK  
_FROM: [SUSAN...]  
_TO: MTAO:SONGBIRD.BCK/LABEL=TAPE01
```

This command saves an entire directory tree and the files in all subdirectories, including any files that are open.

```
$ BACKUP/IGNORE=LABEL_PROCESSING *.*;* MFA1:MYFILES.BCK/REWIND
```

This command rewinds the tape in drive MFA1 to the beginning-of-tape marker, initializes the tape, and creates a save set containing all files in the user's current directory. The command qualifier /IGNORE=LABEL_PROCESSING specifies that no tape label processing checks are done before BACKUP initializes the tape. When the tape is initialized, access to data that previously resided on the tape is lost.

/IMAGE

Command Qualifier

Directs BACKUP to process an entire volume or volume set.

format

/IMAGE input-specifier output-specifier

description

To use the /IMAGE qualifier, you need write access to the volume index file (INDEXF.SYS) and the bit map file (BITMAP.SYS), or the input medium must be write-locked. BACKUP opens the index file to synchronize with the file system (no update is made). Finally, you must have read access to all files on the input medium.

NOTE: The input and output devices in an image operation must be different except in an image save operation when the output device is a Files-11 disk save set.

If the output volume is a disk, all files on the output volume are stored contiguously. Contiguous storage of files eliminates disk fragmentation and creates contiguous free blocks of disk space.

Because all files on the input volume are processed, you cannot use input file-selection qualifiers in image copy or save operations. You can, however, restore files and directories selectively from an image save set.

When performing image operations on volume sets (more than one volume), the number of volumes specified by the output specifier must be equal to the number of volumes in the input volume set.

In an image save or copy operation, BACKUP attempts to save or copy all files on the input disk volume including files marked for deletion and lost files (files without a directory entry). However, there are two types of files that a BACKUP image operation does not save or copy by default. These are files that are flagged as NOBACKUP by the DCL command SET FILE /NOBACKUP and files that are open for write access by another user at the time of the image save operation. If you want these files to be included, specify the command qualifier /IGNORE in the BACKUP command line. The command qualifier /IGNORE=NOBACKUP directs BACKUP to save or copy files flagged as NOBACKUP. The command qualifier /IGNORE=INTERLOCK directs BACKUP to save or copy files open for write access by another user.

An image restore or copy operation initializes the output volume or volume set. The initialization data comes from the save-volume summary record of the input volume unless the command qualifier /NOINITIALIZE is specified. Specifying /NOINITIALIZE directs BACKUP to initialize the output volume using volume initialization data that already exists on the output volume.

BCK-24 BACKUP /INCREMENTAL

In image restore and copy operations, every file is restored or copied. The output volume must be mounted using the /FOREIGN qualifier. The new volume is a functionally equivalent copy of the input volume; however, file placement will change. Files are stored contiguously on the output volume.

You cannot change the structure level of the output volume in an image restore or copy operation.

example

```
$ MOUNT/FOREIGN DMA1:  
%MOUNT-I-MOUNTED, mounted on NODE$DMA1:  
$ BACKUP/IMAGE/LOG DLA2: DMA1:  
%BACKUP-S-CREATED, created DMA1: [000000]000000.DIR;1  
%BACKUP-S-CREATED, created DMA1: [000000]BACKUP.SYS;1  
%BACKUP-S-CREATED, created DMA1: [000000]CONTIN.SYS;1  
%BACKUP-S-CREATED, created DMA1: [000000]CORIMG.SYS;1  
%BACKUP-S-CREATED, created DMA1: [000000]ELLA.DIR;1  
%BACKUP-S-CREATED, created DMA1: [ELLA]SCAT.DAT;1  
%BACKUP-S-CREATED, created DMA1: [000000]JOE.DIR;1  
%BACKUP-S-CREATED, created DMA1: [JOE]STRINGS.DAT;1  
%BACKUP-S-CREATED, created DMA1: [000000]OSCAR.DIR;1  
%BACKUP-S-CREATED, created DMA1: [OSCAR]KEYS.DAT;1  
%BACKUP-S-CREATED, created DMA1: [000000]VOLSET.SYS;1
```

\$

The MOUNT command prepares the target disk for the image copy operation. The command qualifier /LOG directs BACKUP to display information about each file copied on your terminal. The BACKUP command initializes DMA1 and copies the disk volume DLA2 to DMA1. All files on DMA1 are stored contiguously.

/INCREMENTAL

Command Qualifier

Allows you to restore an incremental save set.

format

/INCREMENTAL *save-set-spec disk-device-name*

description

Use /INCREMENTAL only in restore operations that restore incremental save sets. When you use /INCREMENTAL, the output specifier must specify a device only; file specifications are not allowed. Also, input save-set qualifiers are not allowed in incremental restore operations.

You can create incremental save sets with the command qualifier /RECORD and the file-selection qualifier /SINCE=BACKUP or /SINCE=date. Most sites perform daily incremental save operations to keep copies of files created or modified that day, and periodic full backups to keep a copy of all files on the disk volume. (DIGITAL recommends that you use the command qualifier /IMAGE to perform full backups.)

If a disk volume is lost, corrupted, or destroyed, its contents can be recreated by performing the following tasks:

1. Restore the latest full backup using the command qualifiers /IMAGE and /RECORD.
2. Restore any incremental save sets since the last full backup, in reverse chronological order, using the /INCREMENTAL qualifier.

After you restore the save sets in this order, the output disk volume contains the same files it contained when the most recent incremental save operation was performed.

When the /INCREMENTAL qualifier is used, the /BY_OWNER=ORIGINAL qualifier is assumed; therefore, you do not need to specify /BY_OWNER unless you want to change the original UICs. The /INCREMENTAL qualifier can be used only on Files-11 Structure Level 2 volumes.

example

If you have been performing a combination of full backups and incremental save operations on a public volume, and the public volume is lost, corrupted, or destroyed, use a procedure like the following to create a new copy of the public volume. First, restore the volume from the latest full backup with an image restore operation. Note that the /RECORD qualifier is necessary to perform the operation correctly.

```
$ MOUNT/FOREIGN DRAO:  
%MOUNT-I-MOUNTED, mounted on _DRAO:  
$ BACKUP/IMAGE/RECORD MTAO:FULLJUN88,MTA1 DRAO:  
%BACKUP-I-RESUME, resuming operation on volume 2  
%BACKUP-I-RESUME, resuming operation on volume 3  
%BACKUP-I-RESUME, resuming operation on volume 4  
.  
.  
.  
$ DISMOUNT/NOUNLOAD DRAO:
```

BCK-26 BACKUP /INITIALIZE

Next, mount the disk as a file-structured volume and restore the incremental save sets in reverse chronological order. Finally, restore the weekly incremental save sets. The /INCREMENTAL qualifier must be used where shown in the following example to obtain the correct results.

```
$ MOUNT DRAO: PUBLIC
%MOUNT-I-MOUNTED, PUBLIC mounted on _DRAO:
$ BACKUP/INCREMENTAL MTAO: INCD17JUN DRAO:
$ BACKUP/INCREMENTAL MTAO: INCD16JUN DRAO:
$ BACKUP/INCREMENTAL MTAO: INCD15JUN DRAO:
$ BACKUP/INCREMENTAL MTAO: INCW14JUN DRAO:
$ BACKUP/INCREMENTAL MTAO: INCW7JUN DRAO:
```

Note that BACKUP restores the volume correctly regardless of the order in which the incremental save sets are applied; using reverse chronological order is most efficient.

/INITIALIZE

Command Qualifier

Initializes an output disk volume, making its entire previous contents unavailable.

format

/[NO]INITIALIZE input-specifier output-specifier

description

The /[NO]INITIALIZE qualifier is valid only when used with the command qualifier /IMAGE during restore or copy operations or when saving files to a sequential-disk save set.

When used with the command qualifier /IMAGE in a restore or copy operation, the /INITIALIZE qualifier directs BACKUP to initialize the output volume using volume initialization data from the save-volume summary record on the input volume.

The /NOINITIALIZE qualifier directs BACKUP to reinitialize the output volume using the existing initialization data on that volume; the output volume must have been previously initialized as a Files-11 volume. When the output volume is initialized, existing data on the volume is lost. The structure level of the output volume must be the same as the structure level of the save set being restored.

For image restore and copy operations on Files-11 volumes, the default is /INITIALIZE.

If you use the /INITIALIZE qualifier when creating sequential-disk save sets, BACKUP initializes the first output volume in the sequential-disk save set, as well as subsequent volumes. By default, BACKUP does not initialize the first volume of a sequential-disk save set but does initialize subsequent volumes of a multivolume sequential-disk save set.

example

```
$ BACKUP/IMAGE/NOINITIALIZE DBA0: DBA2:
```

This command causes the output volume DBA2 to be reinitialized using the volume initialization data that exists on DBA2. The contents of DBA0 are then copied to DBA2.

/INTERCHANGE

Command Qualifier

Directs BACKUP to process files in a manner suitable for data interchange (software distribution) by excluding information that would prevent other utilities or sites from reading the BACKUP save set.

format

/INTERCHANGE *input-specifier output-specifier*

description

The effects of the /INTERCHANGE qualifier are as follows:

- Directories not selected as files are not copied.
- Access control lists are not copied.
- Block size on magnetic tape is limited to 8,192 bytes.
- Normal error recovery is used to write magnetic tapes so that there are no bad records on the resulting magnetic tape.

example

```
$ BACKUP/RECORD/INTERCHANGE [ACCOUNTS]/SINCE=BACKUP MFA0:SAVACC.BCK
```

The command in this example saves all files in the directory [ACCOUNTS] that have been modified since the last BACKUP/RECORD operation. The /INTERCHANGE qualifier ensures that the processed files are suitable for data interchange.

/JOURNAL

Command Qualifier

Specifies that a BACKUP save operation is to create a BACKUP journal file or append information to a BACKUP journal file. Lists the contents of a BACKUP journal file when combined with the command qualifier */LIST*.

format

/JOURNAL[=*file-spec*] *input-specifier* *output-specifier*
/JOURNAL[=*file-spec*]/*LIST*[=*file-spec*]

description

A BACKUP journal file contains records of BACKUP save operations and the file specifications of saved files. Use the command qualifier */JOURNAL*[=*file-spec*] in a BACKUP save operation to create a journal file.

If you do not include a file specification with the command qualifier */JOURNAL*, the name of the BACKUP journal file defaults to *SYS\$DISK:]BACKUP.BJL*. You can specify another file name, however. (The file specification of a journal file cannot include a node name; the default file type for a journal file is *BJL*.) If the specified journal file does not exist, it is created; if the journal file does exist, the new journal information is appended to the existing journal file.

Start a new version of a journal file by creating a zero-length file using the DCL command *CREATE* or a text editor.

To list the contents of a BACKUP journal file, use the */JOURNAL*[=*file-spec*] qualifier with the */LIST* qualifier, but do not specify an input or output specifier. By default, the list is displayed on *SYS\$OUTPUT*, but it is written to an output file if you specify a file with */LIST*.

When listing a journal file, you can use the file-selection qualifiers */BEFORE*, */SINCE*, and */EXCLUDE* to search for specific files. (In this context, the */BEFORE* and */SINCE* qualifiers refer to the time when the save set was created, not the time when the files in the save set were created.) Also, by specifying a file in a multivolume save set, you can search the journal file to find which volume the file is in. You can then mount that volume and restore the file.

Journal files are not created for physical save operations (save operations performed with the command qualifier */PHYSICAL*).

example

```
$ BACKUP/JOURNAL=LAR.BJL [LARRY]*.*;* MFA0:YET.BCK
```

This command saves all versions of all files in the directory [LARRY] to the save set YET.BCK on MFA0. The /JOURNAL qualifier creates a record of the saved files in a journal file named LAR.BJL in the current default directory.

/LABEL

Output Save-Set Qualifier

Specifies the one- to six-character volume labels for the magnetic tapes to which the save set is written.

format

input-specifier output-save-set-spec/LABEL=(string[,...])

description

You can specify a single label or a list of labels with the /LABEL qualifier. (If you do not specify the /LABEL qualifier, BACKUP uses the first six characters of the save-set name as the volume label of the first tape.) If the save set continues to another tape, and you did not specify a volume label for the tape, BACKUP uses the first four characters of the previous tape's volume label followed by the volume number of the tape. For example, if the first tape in a save set is labeled AAAABB, the second tape in a save set is labeled AAAA02, and the third tape is labeled AAAA03.

Before writing a save set to magnetic tape, BACKUP compares the label specified in the command line to the volume label of the tape. (If the tape has no volume label and you specified the output save-set qualifier /REWIND, BACKUP writes the label you specified to the volume header record of the tape.) If the volume label is less than six characters long, BACKUP pads the volume label with the blank character to six characters. The first four characters of the volume label must either match the first four characters of the label specified in the BACKUP command line exactly, or the first four characters of the volume label must end with one or more underscore characters. If the first four characters of the volume label end with one or more underscore characters, and the label specified in the command line matches the part of the volume label that appears before the underscore characters, BACKUP accepts the match. (For example, the volume label ABN_ matches the command line label ABN but does not match the command line label ABNE.) If either the fifth or sixth characters of the volume label is a number between zero and nine, BACKUP does not compare these characters with corresponding characters in the label specified in the BACKUP command line. Otherwise, the fifth and sixth characters in the volume label must match the corresponding characters in the label specified in the BACKUP command line exactly. The following

BCK-30 BACKUP /LABEL

table illustrates volume labels that match labels specified in the BACKUP command line:

Label Specified in Command Line	Matching Volume Labels
MAR	MAR, MAR_, MAR_nn
MAR_	MAR_, MAR_nn
MARK	MARK, MARKnn
MARKER	MARKER, MARKnn

If the label you specify matches the tape's volume label, the BACKUP save operation proceeds.

If the label you specified does not match the tape's volume label, BACKUP displays the following messages and prompt on your terminal if you specified the command qualifier /NOASSIST or on the operator terminal if you did not specify /NOASSIST:

```
%BACKUP-W-MOUNTERR, volume 'number' on 'device' was not mounted because  
  its label does not match the one requested  
Specify option (QUIT, NEW tape or OVERWRITE tape)  
BACKUP>
```

Specify QUIT to abort the BACKUP operation and unload the magnetic tape. Specify NEW to direct BACKUP to prompt for a new tape. Specify OVERWRITE to direct BACKUP to ignore the label mismatch, mount the tape, initialize the tape if you specified the output save-set qualifier /REWIND, and write the save set to the tape.

You can specify the command qualifier /IGNORE=LABEL_PROCESSING to prevent BACKUP from verifying the volume label of the tape.

example

```
$ BACKUP [PAYROLL] MTA0:30NOV.BCK/LABEL=PAY
```

This command causes BACKUP to check the volume label of the tape mounted on drive MTA0. If the volume label is PAY, BACKUP saves the directory [PAYROLL] to a save set named 30NOV.BCK.

/LIST

Command Qualifier

Lists information about a BACKUP save set and about the files in a save set. The list can be displayed on your terminal or written to a file.

format

/LIST[=file-spec] save-set-spec

description

Use the /LIST qualifier by itself or in conjunction with any other operation (save, restore, copy, compare, or journal). If /LIST is specified by itself (not with a save, restore, copy, compare or journal operation), the input specifier must refer to a save set, and the output specifier must be omitted.

Before you can list the contents of a save set, the media containing the save set must be inserted into an appropriate drive. If the save set is stored on a disk, the disk must be mounted as a Files-11 volume or as a foreign volume. BACKUP mounts magnetic tapes automatically as part of the list operation.

By default, the list information is displayed on your terminal; however, you can specify a file to which to write the list information.

When you use the /LIST qualifier with standalone BACKUP and you direct output to a file (/LIST=file-spec), the file specification must refer to either a terminal or a printer.

You can use either the command qualifier /BRIEF or /FULL with the /LIST qualifier. The /BRIEF qualifier directs BACKUP to list each file's size in blocks and its creation date. The /FULL qualifier directs BACKUP to list additional information about each file in the same format as the information provided by the DCL command DIRECTORY/FULL. The default is /BRIEF.

Do not use the command qualifier /LOG with /LIST when the output for /LIST is directed to the terminal; if you do, you will receive confusing output.

BCK-32 BACKUP /LOG

example

```
$ BACKUP/LIST DBA2:[SAVE]23MAR88.BCK/SAVE_SET
```

Listing of save set(s)

```
Save set:      23MAR88.BCK
Written by:    MOROCI
UIC:          [000200,000200]
Date:         23-MAR-1988 14:18:16.96
Command:      BACKUP [SAVE] DBA2:[SAVE]23MAR88.BCK/SAVE_SET
Operating system: VAX/VMS version 5.0
BACKUP version: V5.0
CPU ID register: 08000000
Node name:    _SUZI::
Written on:   _DBA2:
Block size:  32,256
Group size:  10
Buffer count: 3
```

```
[SAVE]LAST.DAT;1          1 18-AUG-1987 14:11
[SAVE]INFO.TXT;4         5  4-FEB-1988 13:12
[SAVE]WORK.DAT;3        33  1-DEC-1987 10:02
```

```
Total of 3 files, 39 blocks
End of save set
```

This command lists the BACKUP summary information and the file name, size, and creation date for each file in the save set. Note that the /SAVE_SET qualifier is required to identify the input specifier as a save set on a Files-11 disk.

/LOG

Command Qualifier

Determines whether the file specification of each file processed is displayed on SYS\$OUTPUT during the operation. The default is /NOLOG.

format

/[NO]LOG input-specifier output-specifier

example

```
$ BACKUP/LOG [SAVE]23MAR88.BCK/SAVE_SET DBA2:[PLI.WORK]
%BACKUP-S-CREATED, created DBA2:[PLI.WORK]ANOTHER.DAT;1
%BACKUP-S-CREATED, created DBA2:[PLI.WORK]LAST.DAT;1
%BACKUP-S-CREATED, created DBA2:[PLI.WORK]THAT.DAT;1
%BACKUP-S-CREATED, created DBA2:[PLI.WORK]THIS.DAT;2
```

In this example, the file specifications of the files restored to the directory named [PLI.WORK] on DBA2 are logged to SYS\$OUTPUT.

/MODIFIED

Input File-Selection Qualifier

Selects files according to the value of the modified date field (the date the file was last modified) in each file header record.

format

input-specifier/BEFORE=*time* /MODIFIED *output-specifier*

input-specifier/SINCE=*time* /MODIFIED *output-specifier*

description

You must use the /MODIFIED qualifier with either the input file-selection qualifier /BEFORE or /SINCE. The date and time you specify with /BEFORE or /SINCE determines which files are processed.

You cannot use /MODIFIED with the input file-selection qualifiers /BACKUP, /CREATED, or /EXPIRED.

example

```
$ BACKUP [SUNDANCE...]/BEFORE=TODAY/MODIFIED MFA1:MOD.BCK
```

This command saves all files in the directory tree of the root [SUNDANCE], whose modification dates precede today (00:00:00.0 o'clock of the current day, month, and year).

/NEW_VERSION

Output File Qualifier

Creates a new version of a file if a file with an identical specification already exists at the location to which the file is being restored or copied.

format

input-specifier *output-specifier*/NEW_VERSION

BCK-34 BACKUP /OVERLAY

description

If BACKUP attempts to copy or restore a file when a file with an identical directory name, file name, type, and equal or higher version number already exists, a new file is created with the same name and type and a version number one higher than the highest existing version.

If you do not use `/NEW_VERSION`, `/REPLACE`, or `/OVERLAY`, and the version number of the file being restored is identical or less than the version number of the existing file, BACKUP reports an error in copying or restoring the file.

Note that when copying or restoring files using the `/NEW_VERSION` qualifier, files are processed in decreasing version number order and are created in ascending order. The result is that the version numbers are inverted.

Because this qualifier causes version numbers to change, using it with the `/COMPARE` or `/VERIFY` qualifiers will cause unpredictable results. DIGITAL recommends that you do not use the `/NEW_VERSION` qualifier with the `/COMPARE` or `/VERIFY` qualifiers.

example

```
$ BACKUP MTA1:NOV30REC.BCK/SELECT=*.DAT [RECORDS...]/NEW_VERSION
```

This example restores all files with the file type of DAT from the magnetic-tape save set NOV30REC.BCK to the directory [RECORDS]. The `/NEW_VERSION` qualifier instructs BACKUP to restore each file with the file type DAT regardless of whether a file with the same file specification already exists.

/OVERLAY

Output File Qualifier

Writes the input file over a file with an identical specification at the output location.

format

input-specifier *output-specifier***/OVERLAY**

description

If BACKUP attempts to copy or restore a file when a file with an identical directory name, file name, type, and version number already exists, the new version of the file is written over the existing version. The file identification of the new version is the same as the file identification of the file that is overwritten.

The physical location of the file on disk does not change. If /OVERLAY is specified, and the new file is larger than the one already present, BACKUP allocates more blocks on the disk and extends the file.

When you do not use /OVERLAY, /REPLACE, or /NEW_VERSION, and the version number of the file being restored is identical to the version number of the existing file, BACKUP reports an error in copying or restoring the file.

example

```
$ BACKUP DRA1:MAR30SAV.BCK/SAVE_SET [RECORDS...]/OVERLAY
```

The sequential-disk save set MAR30SAV.BCK is restored to the directory tree [RECORDS...]. If a file from the save set has a specification that is identical to a file that already exists in [RECORDS...], the /OVERLAY qualifier directs BACKUP to write over the existing version.

/OWNER_UIC

Input File-Selection Qualifier

Selects files for processing according to the specified user identification code (UIC).

The /OWNER_UIC qualifier has been superseded by /BY_OWNER. DIGITAL recommends that you substitute /BY_OWNER for /OWNER_UIC in command procedures and operator instructions. See the description of /BY_OWNER for more information.

/OWNER_UIC

Output File Qualifier

Redefines the owner user identification code (UIC) for restored files.

The /OWNER_UIC qualifier has been superseded by /BY_OWNER. DIGITAL recommends that you substitute /BY_OWNER for /OWNER_UIC in command procedures and operator instructions. See the description of /BY_OWNER for more information.

/OWNER_UIC

Output Save-Set Qualifier

Specifies the owner user identification code (UIC) of the save set.

format

input-specifier output-save-set-spec/OWNER_UIC=[uic]

description

If the `/OWNER_UIC` qualifier is omitted in a save operation, the UIC of the current process is used. To use this qualifier on Files-11 save sets, you need the user privilege `SYSPRV`, or the UIC must be your own.

Specify either a numeric UIC as octal numbers or an alphanumeric UIC in the form `[g,m]`. Wildcards are permitted. A UIC must be specified as octal numbers, in the form `[g,m]`. Note that the brackets are required.

`[g,m]`

- `g` An octal number in the range 0 through 37776 representing the group number or an alphanumeric group name
- `m` An octal number in the range 0 through 177776 representing the member number or an alphanumeric member name

example

```
$ BACKUP [CLEAVER...] MFA2:ACCOUNTS.BCK/OWNER_UIC=[3,3]/LABEL=TAPE01
```

In this example, `BACKUP` mounts the tape with the label `TAPE01` on drive `MFA2`. Next, `BACKUP` saves the directory tree `[CLEAVER...]` to a save set named `ACCOUNTS.BCK`. The output save-set qualifier `/OWNER_UIC` assigns an owner UIC of `[3,3]` to the save set.

/PHYSICAL

Command Qualifier

Specifies that a `BACKUP` operation is to ignore any file structure on the input volume and to process the volume in terms of logical blocks.

format

/PHYSICAL input-specifier output-specifier

description

In a physical operation, BACKUP saves, restores, copies, or compares the entire volume in terms of logical blocks.

The input and output specifiers for physical volumes must be device names, and they cannot be the same device. Also, the following qualifiers are ignored if specified with /PHYSICAL: /DELETE, /IMAGE, /INCREMENTAL, /JOURNAL, and /RECORD.

For physical copy operations between disks, the output disk must be the same type of device as the input disk; for example, a BACKUP/PHYSICAL operation cannot be performed between an RP05 input disk and an RP06 output disk. The output disk must not have a bad block in any location that corresponds to a good block on the input disk. (This restriction does not apply to RA-series disks.)

For physical save operations between disks, the output disk must be the same type of disk as the input disk or a larger-capacity disk. The output disk must not have a bad block in any location that corresponds to a good block on the input disk. (This restriction does not apply to RA-series disks.)

For physical restore operations between disks, the output disk must be the same type of device as the disk from which the save set was created. The output disk must not have a bad block in any location that corresponds to a good block on the disk from which the save set was created. (This restriction does not apply to RA-series disks.)

An output disk of a physical operation must be mounted using the DCL command MOUNT/FOREIGN. An input disk of a physical operation must either be mounted using the DCL command MOUNT/FOREIGN, or the user must have the user privilege LOG_IO or PHY_IO.

You can perform physical save and restore operations using magnetic tapes. BACKUP mounts magnetic tapes automatically as foreign devices.

A save set written using the /PHYSICAL qualifier can only be read as a physical save set; conversely, a file-structured save set can only be read with file-structured restore or compare operations.

NOTE: BACKUP/PHYSICAL does not copy the first track (track 0) of RX01 and RX02 diskettes; DIGITAL does not support track 0.

example

```
$ MOUNT/FOREIGN DYAO:  
$ MOUNT/FOREIGN DYA1:  
$ BACKUP/PHYSICAL DYAO: DYA1:
```

This example mounts RX02 diskettes in DYAO and DYA1 as foreign devices and copies the contents of the diskette mounted in DYAO to the diskette mounted in DYA1.

/PROTECTION

Output Save-Set Qualifier

When you create a save set on disk, this qualifier defines the protection to be applied to an output save set. When you create a save set on magnetic tape, this qualifier defines the protection to be applied to the magnetic tape volume. (All save sets created subsequently on the tape will receive this same protection until the tape is initialized.)

format

*input-specifier output-save-set-spec***/PROTECTION**[=(code)]

description

Because the file system treats a BACKUP save set as a single file, it is crucial that you protect save sets adequately. If you do not specify adequate protection, anyone who has access to a save set can access any file in the save set.

The protection code indicates the type of access (read, write, execute, and delete) available to the four categories of users (system, owner, group, and world).

If the save set is written to either a Files-11 disk or a sequential disk and **/PROTECTION** is not specified, BACKUP applies the process default protection to the save set. If **/PROTECTION** is specified, any protection categories not specified default to your default process protection.

Protection information is written to the volume header record of a magnetic tape, and applies to all save sets stored on the tape. Therefore, you must specify the output save-set qualifier **/REWIND** in order to specify the **/PROTECTION** qualifier for a magnetic tape. (If you do not specify **/REWIND** with **/PROTECTION**, the protection information, if any, in the volume header record is not changed.) If the save set is written to magnetic tape and **/PROTECTION** is not specified, BACKUP applies *no* protection to the tape. If you specify **/PROTECTION**, any protection categories that you do not specify default to your default process protection.

In order to initialize a magnetic tape volume that was previously initialized with the **/PROTECTION** qualifier, you must own the volume (your UIC matches the UIC of the volume) or have the VOLPRO privilege.

example

```
$ BACKUP  
_FROM: [CLEAVER...]  
_TO: MFA2:ACCOUNTS.BCK/BY_OWNER=[3,3]/REWIND/LABEL=BANK01/PROTECTION=(S:RWE,O:RWED,G:RE,W)
```

This command saves the directory tree [CLEAVER...] to a save set named ACCOUNTS.BCK on the magnetic tape labeled BANK01. The output save-set qualifier /REWIND directs BACKUP to rewind the tape and initialize it before performing the save operation. The output save-set qualifier /BY_OWNER assigns an owner UIC of [3,3] to the magnetic tape. The /PROTECTION qualifier assigns the owner of the magnetic tape read, write, execute, and delete access. SYSTEM users are assigned read, write, and execute access; GROUP users are assigned read and execute access; WORLD users are assigned no access.

/RECORD

Command Qualifier

Records the current date and time in the BACKUP date field of each file header record once a file is successfully saved or copied.

format

/RECORD input-specifier output-specifier

description

The /RECORD qualifier can be used only on Files-11 Structure Level 2 volumes. The user privilege SYSPRV is required to use the /RECORD qualifier on files other than those owned by your UIC.

When you use /RECORD in a copy or save operation, BACKUP writes the date and time that the copy or save set was created in the BACKUP date field of each file header record.

When you use /RECORD to perform incremental save operations on a disk volume, do not allow other users to use /RECORD in their BACKUP operations on the same disk volume. If other users specify /RECORD, the dates in the BACKUP date fields of file header records will change. This will make it impossible for you to save all files created or modified since you last performed a save operation.

If you use the command qualifier /VERIFY with /RECORD, files that fail verification are not recorded.

If /RECORD is not specified, the BACKUP date field of each processed file is not changed.

You cannot use the /RECORD qualifier with the command qualifier /DELETE or /COMPARE.

BCK-40 BACKUP /REPLACE

example

```
$ BACKUP/RECORD DBA1:[*...]/SINCE=BACKUP MTAO:13MAY.BCK
```

This command saves all files on DBA1 that have been created or modified since the last save operation and records the current date and time in each file header record.

/REPLACE

Output File Qualifier

Replaces a file on the output specifier with an identically-named file from the input specifier.

format

input-specifier output-specifier/REPLACE

description

When you use /REPLACE in a copy or restore operation, and an identically-named file exists in both the input and output specifier, BACKUP does the following:

- Copies or restores a new version of the file with the same directory specification, file name, type, and version number
- Deletes the copy of the file that previously existed on the output disk

In this way, the previous copy of the file is replaced with the restored version. Note that the version number is not incremented because the old copy of the file is deleted. If you want to keep the versions from both the input and the output specifiers, use the output file qualifier /NEW_VERSION.

If you do not use /REPLACE, /OVERLAY, or /NEW_VERSION, and the version number of the file being restored is identical to the version number of the existing file, BACKUP reports an error and does not restore the file.

example

```
$ BACKUP MUAO:SAVEWORK.BCK/SELECT=[LEE...] DUAO:[LEE...]/REPLACE
```

The command in this example restores the directory tree [LEE...] (and all files in the directory tree) from a magnetic-tape save set to disk. The input save-set qualifier /SELECT specifies the directory tree to be selected from the save set, and the output file qualifier /REPLACE instructs BACKUP to first create a new version of an input file if there is a file on the output medium with the same file specification and then to delete the file that originally existed on the output medium.

/REWIND

Input Save-Set Qualifier

Rewinds the input tape reel to the beginning-of-tape marker before reading the input volume.

format

input-save-set-spec/[NO]REWIND *output-specifier*

description

The /[NO]REWIND qualifier is for magnetic tape volumes only.

/REWIND directs BACKUP to rewind the input magnetic tape to the beginning-of-tape marker before reading the input volume. Then BACKUP locates the input save set. In this way, BACKUP can find the input save set if it is located before the current tape position.

/NOREWIND indicates that BACKUP should not rewind the input volume before processing the command. Instead, BACKUP proceeds toward the logical end-of-tape (the end of the last save set stored on the tape). Therefore, if the specified save set is located before the current position of the tape, BACKUP is unable to find it.

The default is /NOREWIND. You must specify /REWIND to rewind the tape.

example

```
$ BACKUP MFA1:CONTRACTS.BCK/REWIND/NOCRC DBA2:[*...]/BY_OWNER=ORIGINAL
```

In this example, the save set CONTRACTS.BCK is restored to the disk volume mounted on DBA2. The /REWIND qualifier rewinds the magnetic tape to the beginning-of-tape marker before reading the input volume to search for CONTRACTS.BCK. The input save-set qualifier /NOCRC disables CRC checking. The output file qualifier /BY_OWNER restores the original owner UICs.

/REWIND

Output Save-Set Qualifier

Rewinds the output tape to the beginning-of-tape marker and initializes the output tape. The /NOREWIND qualifier causes the tape to wind forward to the logical end-of-tape (the end of the last save set stored on the tape) and to begin writing the save set there.

BCK-42 BACKUP /REWIND

format

input-specifier output-save-set-spec/[NO]REWIND

description

The */[NO]REWIND* qualifier is for magnetic tape volumes only.

If you specify */REWIND*, BACKUP rewinds to the beginning of the magnetic tape and searches the volume header record for a volume label. If the volume header record contains no volume label, BACKUP writes the label specified in the BACKUP command to the volume header record, initializes the tape, and creates the save set on the tape.

If no label is specified explicitly in the command line, BACKUP uses the first six characters of the save-set name as the volume label of the first tape in a multivolume save set and the first four characters of the save-set name followed by the volume number of the tape as the volume label of subsequent tapes. You can also specify a label or list of labels explicitly with the */LABEL* qualifier. If you do not specify enough labels with the */LABEL* qualifier, BACKUP uses the first four characters of the final label in the list followed by the volume number of the tape as the volume label of subsequent tapes.

If BACKUP finds a volume label on the tape, it compares the volume label with the label you specified in the BACKUP command line (either explicitly with the */LABEL* qualifier or implicitly through the save set name) and ensures that the tape is expired. If the volume label is less than six characters long, BACKUP pads the volume label with the blank character to six characters. The first four characters of the volume label must either match the first four characters of the label specified in the BACKUP command line exactly, or the first four characters of the volume label must end with one or more underscore characters. If the first four characters of the volume label end with one or more underscore characters, and the label specified in the command line matches the part of the volume label that appears before the underscore characters, BACKUP accepts the match. (For example, the volume label *ABN_* matches the command line label *ABN* but does not match the command line label *ABNE*.) If either the fifth or sixth character of the volume label is a number between zero and nine, BACKUP does not compare these characters with corresponding characters in the label specified in the BACKUP command line. Otherwise, the fifth and sixth characters in the volume label must match the corresponding characters in the label specified in the BACKUP command line exactly. The following

table illustrates volume labels that match labels specified in the BACKUP command line:

Label Specified in the Command Line	Matching Volume Labels
MAR	MAR, MAR_, MAR_nn
MAR_	MAR_, MAR_nn
MARK	MARK, MARKnn
MARKER	MARKER, MARKnn

If the label in the BACKUP command line matches the volume label of the tape and the tape is expired, BACKUP overwrites the volume label of the tape with the same volume label.

By overwriting the tape's volume label, BACKUP initializes the tape, removing access to any data that previously resided on the tape and preparing the tape to receive new data. During the initialization process, BACKUP writes the values specified with the output save-set qualifiers /TAPE_EXPIRATION, /PROTECTION, and /OWNER_UIC to the volume header record. (If these qualifiers are not specified, the default tape expiration date is today, the default protection is none, and the owner UIC of the tape is the UIC of the current process.) After initializing the tape, BACKUP writes the save set to the tape.

If the label in the BACKUP command line did not match the volume label of the tape, BACKUP displays the following message and prompt on your terminal if you specified the command qualifier /NOASSIST or on the operator terminal if you did not specify /NOASSIST:

```
%BACKUP-W-MOUNTERR, volume 'number' on 'device' was not mounted because
  its label does not match the one requested
Specify option (QUIT, NEW tape or OVERWRITE tape)
BACKUP>
```

If you enter QUIT at the BACKUP> prompt, BACKUP aborts, unloads the magnetic tape, and issues the following message:

```
%BACKUP-F-ABORT, operator requested abort on fatal error
```

If you enter NEW at the BACKUP> prompt, BACKUP unloads the magnetic tape and issues the following prompt for a new tape:

```
%BACKUP-I-READYWRITE, mount volume 'volume-number' on '_device-name': for writing
Enter "YES" when ready:
```

If you enter OVERWRITE at the BACKUP> prompt, BACKUP overwrites the old volume label with the new volume label. (OVERWRITE instructs BACKUP to ignore the fact that either the tape has not expired or that the labels do not match.) By overwriting the tape's volume label, BACKUP initializes the tape, removing access to any data that previously resided on

BCK-44 **BACKUP** **/REWIND**

the tape and preparing the tape to receive new data. During the initialization process, BACKUP writes the values specified with the output save-set qualifiers /TAPE_EXPIRATION, /PROTECTION, and /OWNER_UIC to the volume header record. After initializing the tape, BACKUP writes the save set to the tape.

If the tape is not expired, BACKUP displays the following message and prompt on your terminal if you specified the command qualifier /NOASSIST or on the operator terminal if you did not specify /NOASSIST:

```
%BACKUP-W-MOUNTERR, volume 'number' on 'device' was not mounted because  
  its expiration date is in the future  
Specify option (QUIT, NEW tape or OVERWRITE tape)  
BACKUP>
```

Always specify /REWIND when the output tape has a non-ANSI or non-ISO label or when the output tape has never been initialized

The /NOREWIND qualifier directs BACKUP to compare the volume label of the tape with the label you specified in the BACKUP command before performing the save operation. You can specify a label explicitly with the /LABEL qualifier; otherwise, BACKUP uses the first six characters of the save-set name as the volume label. If the volume label does not match the label you specified, BACKUP displays the following message and prompt on your terminal if you specified the command qualifier /NOASSIST or on the operator terminal if you did not specify /NOASSIST:

```
%BACKUP-W-MOUNTERR, volume 'number' on 'device' was not mounted because  
  its label does not match the one requested  
Specify option (QUIT, NEW tape or OVERWRITE tape)  
BACKUP>
```

If you choose the OVERWRITE option, BACKUP ignores the fact that the volume labels do not match. If the labels match, or if you choose the OVERWRITE option, BACKUP winds the tape forward to the logical end-of-tape (the end of the last save set stored on the tape) and writes the save set to the tape. If the logical end-of-tape is also the physical end of the tape, BACKUP requests a new tape. Because BACKUP searches for the end of data on the tape, you cannot write a new save set to a tape if it ends with a save set that is continued onto another tape.

Although the /NOREWIND qualifier does not initialize the first tape in a multivolume save set, BACKUP initializes subsequent tapes in a multivolume save set. BACKUP ensures that the tape is expired and that the tape labels match before initializing subsequent volumes in a multivolume save set.

The default is /NOREWIND. You must specify /REWIND to rewind and initialize a magnetic tape volume.

example

```
$ BACKUP  
_FROM: *.RNO  
_TO: MTAO:DSRSAVE.BCK/REWIND/LABEL=DSR01/TAPE_EXPIRATION=29-DEC-1989
```

The command in this example initializes a new magnetic tape and writes the volume label DSR01 and a tape expiration date of December 29, 1989, to the tape's volume header record. Then this command saves all files in the current default directory with a file type of RNO to the magnetic tape save set named DSRSAVE.BCK.

/SAVE_SET

Input Save-Set Qualifier

Directs BACKUP to treat the input file as a BACKUP save set. You must specify /SAVE_SET when the input specifier refers to a BACKUP save set on disk.

format

input-save-set-spec/SAVE_SET *output-specifier*

description

The /SAVE_SET qualifier allows you to refer to a BACKUP save set on a local Files-11 disk, a remote Files-11 disk, or a sequential disk. If you do not specify /SAVE_SET, an input specifier that refers to a disk is treated as a Files-11 file. An input specifier that refers to tape is always treated as a BACKUP save set.

example

```
$ BACKUP DBA2: [BACKUP] 1212MAR3.BCK/SAVE_SET DBA1: [*...]
```

This command restores a save set named 1212MAR3.BCK from DBA2 to DBA1.

/SAVE_SET

Output Save-Set Qualifier

Directs BACKUP to treat the output file as a BACKUP save set. You must specify the /SAVE_SET qualifier when the output specifier refers to a BACKUP save set on disk.

BCK-46 BACKUP /SELECT

format

input-specifier output-save-set-spec/SAVE_SET

description

The /SAVE_SET qualifier allows you to create a BACKUP save set on a local Files-11 disk, a remote Files-11 disk, or a sequential disk. If you do not specify /SAVE_SET, an output specifier that refers to disk is treated as a Files-11 file. An output specifier that refers to tape is always treated as a BACKUP save set.

example

```
$ BACKUP [HILL] DBA1:[BACKUP]SEP28.BCK/SAVE_SET
```

This command saves the directory [HILL] to a save set named SEP28.BCK on a Files-11 disk.

/SELECT

Input Save-Set Qualifier

Selects the specified files for processing.

format

input-save-set-spec/SELECT=(file-spec[,...]) output-specifier

description

If you specify more than one file, separate the file specifications with commas and enclose the list in parentheses. Do not use a device specification when you define the files to be selected. You can use most standard wildcard characters, but you cannot use wildcard characters denoting latest version of files (;) and relative versions of files (;-n).

Note that BACKUP does not apply temporary file specification defaults within the list. Each file specification independently takes its defaults from the file specification [000000 . . .]*.*.*.

You cannot use /SELECT in image restore operations.

example

```
$ BACKUP DBA1:JUL20.BCK/SAVE_SET/SELECT=[SNOW]BALL.PAS [WINTER.GAME]BALL.PAS
```

This command selects a file named [SNOW]BALL.PAS from a sequential-disk save set and restores it to the directory [WINTER.GAME] on the current default device.

/SINCE

Input File-Selection Qualifier

Selects files dated equal to or later than the specified date and time.

format

input-specifier/SINCE=time output-specifier

description

The /SINCE qualifier selects files by comparing the date and time in the specified field of each file header record with the date and time you specify in the command line. The following table shows the input file-selection qualifiers you can use with /SINCE and their functions. Use only one of these qualifiers at a time in your command line.

/BACKUP	Selects files last saved or copied by BACKUP/RECORD since the date specified. Also selects files with no BACKUP date.
/CREATED	Selects files created since the date specified.
/EXPIRED	Selects files that have expired since the date specified.
/MODIFIED	Selects files last modified since the date specified. If you specify /SINCE without another qualifier, /MODIFIED is used by default.

Specify the date and time as a delta time or as an absolute time using the format [dd-mmm-yyyy:][hh:mm:ss.cc]. You can also use one of the following reserved words to specify the date and time:

BACKUP	The BACKUP/RECORD operation (available only on Files-11 Structure Level 2 volumes)
TODAY	The current day, month, and year at 00:00:00.0 o'clock
TOMORROW	24 hours after midnight last night
YESTERDAY	24 hours before midnight last night

example

\$ BACKUP [PLI.WORK]/SINCE=YESTERDAY/MODIFIED [PLI.SAV]

This command copies selected files in the directory [PLI.WORK] to the directory [PLI.SAV]. Only those files that have been modified since 24 hours preceding midnight last night are processed. Note that the /MODIFIED qualifier is not required because its action is the default when the /SINCE qualifier is specified.

BCK-48 BACKUP /TAPE_EXPIRATION

/TAPE_EXPIRATION

Output Save-Set Qualifier

Writes the date on which the tape will expire to the volume header record. The output save-set qualifier /REWIND must be specified with the /TAPE_EXPIRATION qualifier.

format

input-specifier output-save-set-spec/TAPE_EXPIRATION[=date]

description

When you specify the output save-set qualifier /REWIND during a save operation to magnetic tape, BACKUP checks that the tape has expired before initializing the tape. Initializing the tape removes access to data previously stored on the tape.

DIGITAL recommends that you specify an expiration date whenever you create a BACKUP save set on magnetic tape using /REWIND. Daily BACKUP tapes should expire in seven days, weekly BACKUP tapes should expire in one month, and monthly BACKUP tapes should expire in one year.

Specify the date in the following format:

dd:mmm:yyyy

where:

dd is the date.

mmm is a three-letter abbreviation of the month.

yyyy is the year.

If you do not specify an expiration date, today's date is written to the volume header record when you perform a save operation using /REWIND.

example

\$ BACKUP DBA1: MTAO:13NOVBAK.BCK/REWIND/TAPE_EXPIRATION=20-NOV-1988

In this example, the entire contents of the disk DBA1 are saved to a save set named 13NOVBAK.BCK. The tape will expire in seven days on November 20, 1988.

/TRUNCATE

Command Qualifier

Controls whether a copy or restore operation truncates a sequential output file at the end-of-file (EOF) when restoring it.

format

/[NO]TRUNCATE *input-specifier output-specifier*

description

By default, a copy or restore operation uses the allocation of the input file to determine the size of the output file. Specify **/TRUNCATE** if you want the output files to be truncated at the end-of-file (EOF).

example

```
$ DIRECTORY/SIZE [FRANKIE]ORIGINAL.DAT
Directory DMA0: [FRANKIE]
ORIGINAL.DAT          35
Total of 1 file, 35 blocks
$ COPY ORIGINAL.DAT EXTENDED.DAT/ALLOCATION=500
$ BACKUP [FRANKIE]EXTENDED.DAT MFA0:20JUL.BCK/LABEL=WKLYO3
$ BACKUP/TRUNCATE MFA0:20JUL.BCK/LABEL=WKLYO3 DMA0: [FRANKIE]
```

This sequence of commands does the following:

- Determines that the file ORIGINAL.DAT is 35 blocks long
- Copies ORIGINAL.DAT to EXTENDED.DAT, allocating 500 blocks for EXTENDED.DAT
- Saves the file EXTENDED.DAT to a save set named 20JUL.BCK on MFA0. BACKUP writes the file allocation size in the file header record of the saved file but saves only 35 blocks in the save set.
- Restores the save set file on MFA0 to a volume mounted on DMA0 and truncates the output files at the EOF. The restored file is 35 blocks long.

/VERIFY

Command Qualifier

Specifies that the contents of the output specifier be compared with the contents of the input specifier after a save, restore, or copy operation is completed.

format

/VERIFY input-specifier output-specifier

description

The /VERIFY qualifier is different from the command qualifier /COMPARE. Unlike the /VERIFY qualifier, the command qualifier /COMPARE cannot be used in a save, restore, copy, or list operation. The /VERIFY qualifier directs BACKUP to perform the copy, save, or restore operation first and then to perform the compare operation.

On file-structured copy operations, each file is compared after it is copied. On physical copy operations, the volume is compared after it is copied. For a save or restore operation, the verification is performed in a separate pass and is preceded by the following informational message:

`%BACKUP-I-STARTVERIFY, starting verification pass`

If a file does not compare successfully, BACKUP displays the following error message:

`%BACKUP-E-VERIFYERR, verification error for block 'block-number'
of 'disk:[directory]file_name.file_type;version_number'`

The /VERIFY qualifier does not work on a restore or copy operation when the /NEW_VERSION output file qualifier is also used. Because the /NEW_VERSION qualifier reassigns output file versions, it is not possible to correctly associate the created output files with the input files from which they were copied.

example

```
$ BACKUP/VERIFY/LOG *.LIS MFA0:LIST.BCK
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]CRE.LIS;1
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]CRETIME.LIS;1
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]EXC.LIS;1
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]NOREB.LIS;1
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]REB.LIS;1
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]SETREB.LIS;1
%BACKUP-S-COPIED, copied DISK$DEFAULT:[WONDER]VERS.LIS;1
%BACKUP-I-STARTVERIFY, starting verification pass
%BACKUP-S-COMPARED, compared DISK$DEFAULT:[WONDER]CRE.LIS;1
%BACKUP-S-COMPARED, compared DISK$DEFAULT:[WONDER]CRETIME.LIS;1
%BACKUP-S-COMPARED, compared DISK$DEFAULT:[WONDER]EXC.LIS;1
%BACKUP-S-COMPARED, compared DISK$DEFAULT:[WONDER]NOREB.LIS;1
%BACKUP-S-COMPARED, compared DISK$DEFAULT:[WONDER]REB.LIS;1
%BACKUP-S-COMPARED, compared DISK$DEFAULT:[WONDER]SETREB.LIS;1
%BACKUP-S-COMPARED, compared DISK$DEFAULT:[WONDER]VERS.LIS;1
```

This example creates a magnetic-tape save set on MFA0 and starts the verification pass after the save operation is completed. The /LOG qualifier displays the file names as they are processed.

/VOLUME

Command Qualifier

Indicates that a specific disk volume in a disk volume set is to be processed. The /VOLUME qualifier is valid only when used with the /IMAGE qualifier.

format

/IMAGE/VOLUME=n input-specifier output-specifier

description

The /VOLUME qualifier allows you to perform an image save, restore, or copy operation using one more disk drive than the number of disks in the input volume set. When you use /VOLUME, you must write-lock the entire input volume set.

When performing an image copy or save operation with the /VOLUME qualifier, all disks in the input volume set must be mounted. Mount the volumes of the target volume set one at a time. Enter a separate BACKUP command for each disk in the input volume set. A save set created with the /VOLUME qualifier must be restored using the /VOLUME qualifier.

You can restore any image save set with the /VOLUME qualifier. All disks in the output volume set must be mounted. Mount the disks in the input volume set one at a time. You cannot use the command qualifier /NOINITIALIZE in the restore operation with the command qualifier /VOLUME.

BCK-52 BACKUP /VOLUME

In a compare operation that uses the /VOLUME qualifier to compare two disk volume sets, all disks in both volume sets must be mounted. In a selected-volume compare operation between a save set on tape and a disk volume set, all disks in the disk volume set must be mounted.

example

```
$ BACKUP/IMAGE/VOLUME=3 DISK$PUBLIC DRA1:
```

This command creates a functionally equivalent copy of the third volume of a volume set named DISK\$PUBLIC to DRA1. The disk mounted in DRA1 becomes the third volume of the image-copy volume set.

SYSTEM MANAGER'S REFERENCE

Bad Block Locator Utility

The Bad Block Locator Utility (BAD) analyzes block-addressable devices and records the locations of blocks that cannot store data reliably.

format

ANALYZE/MEDIA *device*

parameter

device

Specifies the device containing the volume that BAD will analyze. The device name has the form ddcu: or logical-name.

usage summary

To invoke BAD, enter the command ANALYZE/MEDIA at the DCL prompt along with any parameters or qualifiers. Once invoked, BAD runs until completion. When BAD terminates, control is returned to the DCL command level.

To write the contents of the Detected Bad Block File (DBBF) to an output file, specify the /OUTPUT qualifier, as described in the following section.

BAD-2 BAD BLOCK LOCATOR

/BAD_BLOCKS

BAD BLOCK LOCATOR Qualifiers

This section presents qualifiers for the ANALYZE/MEDIA command in alphabetical order. The qualifiers follow the standard rules of DCL syntax. Thus, you can abbreviate any qualifier or keyword as long as the abbreviation is not ambiguous. The asterisk and the percent sign can be used as wildcard characters unless otherwise noted.

/BAD_BLOCKS

Adds the specified bad blocks to the Detected Bad Block File (DBBF). If the /BAD_BLOCKS qualifier is specified along with the /EXERCISE qualifier, the medium is tested and the bad blocks are added to the DBBF.

format

/BAD_BLOCKS [(=*list*)]

keyword

list

Specifies codes for the bad block locations to be added to the DBBF.

If you do not specify a value for the /BAD_BLOCKS qualifier, BAD prompts as follows:

BAD_BLOCKS =

When it prompts, BAD reports any duplicate bad blocks. To terminate the prompting session, type CTRL/Z.

NOTE: The term *block* denotes a standard unit of 512 bytes, whereas the term "sector" denotes the physical size of the device sector, which is not always the same for all devices. For example, an RL02 has a sector size of 256 bytes, while an RK07 has a standard sector size of 512 bytes.

Valid bad block location codes follow. You can specify them in any integer combination or radix combination.

BAD BLOCK LOCATOR **BAD-3**

/EXERCISE

Code	Meaning
lbn	Specifies the logical block number (LBN) of a single bad block.
lbn:count	Specifies a range of contiguous bad blocks starting at the logical block number (LBN) and continuing for "count" blocks.
sec.trk.cyl	Specifies the physical disk address (sector, track, and cylinder) of a single bad sector. This code is valid only for last-track devices.
sec.trk.cyl:count	Specifies a range of bad sectors starting at the specified physical disk address (sector, track, and cylinder) and continuing for "count" sectors. This code is valid only for last-track devices.

example

\$ ANALYZE/MEDIA/EXERCISE/BAD_BLOCKS=(2) DB1:

The command in this example adds the bad block specification to the DBBF and then tests the medium. The bad block in this example is located at logical block number (LBN) 2.

/EXERCISE

Controls whether the medium should actually be tested. The default is /NOEXERCISE.

format

/EXERCISE [=keyword[...]]
/NOEXERCISE

keywords

FULL

Causes BAD to test the medium using three test patterns (0's, 1's, and "worst case") instead of the default single "worst case" pattern. The FULL keyword can be used only with /EXERCISE. Note that the "worst case" pattern always remains on media tested with the /EXERCISE qualifier.

KEEP

Ensures the preservation of the current SDBBF. The KEEP keyword is the default when /NOEXERCISE is specified.

BAD-4 BAD BLOCK LOCATOR

/OUTPUT

NOKEEP

Causes BAD to create a new SDBBF. The NOKEEP keyword is the default when /EXERCISE is specified. This keyword cannot be used with the /NOEXERCISE qualifier.

PATTERN=(longword[,...])

Allows users to specify the value of a test pattern to be used as "worst case." Up to an octaword of test pattern data may be specified in decimal (%D), hexadecimal (%X), or octal (%O) radices. The default radix is decimal.

The pattern is specified in longwords. If two or more longwords are specified, they must be enclosed in parentheses and separated by commas.

example

```
$ ANALYZE/MEDIA/NOEXERCISE/BAD_BLOCKS DB1:
```

The command in this example updates the DBBF without erasing the volume's contents.

/LOG

Specifies whether a message is sent to SYS\$OUTPUT and to SYS\$ERROR indicating the total number of bad blocks detected by BAD. The default is /NOLOG.

format

/[NO]LOG

example

```
$ ANALYZE/MEDIA /LOG DBB1:
```

```
Device DBB1: contains a total of 340670 blocks; 11 defective blocks detected.
```

The command in this example requests BAD to report the total number of bad blocks it detected on the device DBB1.

/OUTPUT

Specifies whether the contents of the DBBF are written to the specified file. If you omit the /OUTPUT qualifier, no output is generated.

When you specify /OUTPUT in conjunction with the /SHOW qualifier, the default keyword for the /SHOW qualifier is AFTER.

format

/OUTPUT *=[file-spec]*

keyword

file-spec

Identifies the output file for storing the results of the medium analysis. If you specify a file type and omit the file name, the default file name ANALYZE is used. The default file type is ANL. If you omit the file-spec, the results are output to SYS\$OUTPUT.

In place of the file-spec, you may specify an output device. In this case, BAD writes the contents of the volume's DBBF to a file called ANALYZE.ANL and queues the file to the output device.

No wildcard characters are allowed in the file specification.

example

\$ ANALYZE/MEDIA/OUTPUT=BADDBBF.DAT DBA2:

The command in this example writes the contents of the DBBF from DBA2 to the output file BADDBBF.DAT. Note that because /NOEXERCISE is the default, the medium is not tested.

/RETRY

Enables the device driver to retry soft errors. The /RETRY qualifier is used only in conjunction with the /EXERCISE qualifier. The default is /NORETRY.

format

/EXERCISE /NORETRY

/EXERCISE /RETRY

example

\$ ANALYZE/MEDIA /EXERCISE /RETRY DBA0:

The command in this example directs the device driver to retry soft errors.

BAD-6 BAD BLOCK LOCATOR

/SHOW

/SHOW

Lists the contents of the DBBF before and after the medium is exercised (tested).

format

/SHOW *[(keyword[,...])]*

keywords

[NO]BEFORE,[NO]AFTER

Specifies whether the contents of the DBBF is listed before, after, or before and after the medium is exercised (tested). AFTER is the default.

example

\$ ANALYZE/MEDIA/EXERCISE/OUTPUT/SHOW=(BEFORE,AFTER) DBA3:

The command in this example lists the contents of the DBBF both before and after the disk DBA3 is exercised and directs the data to the current SYS\$OUTPUT device.

SYSTEM MANAGER'S REFERENCE

Error Log Utility

The Error Log Utility (ERROR LOG) selectively reports the contents of an error log file.

format

ANALYZE/ERROR_LOG [/qualifier(s)] [file-spec[,...]]

parameters

/qualifier(s)

The function to be performed by the ANALYZE/ERROR_LOG command.

file-spec[,...]

Specifies one or more files that contain binary error information to be interpreted for the error log report. You can include wildcard characters in the file specification. If you omit the file specification, the default file is SYS\$ERRORLOG:ERRLOG.SYS

usage summary

To invoke ERROR LOG, enter the following DCL command:

```
ANALYZE/ERROR_LOG [/qualifier(s)] [file-spec][,...]
```

ERROR LOG does not prompt you. To exit from ERROR LOG, press CTRL/C. You also exit the utility when end-of-file (EOF) is detected. To direct output, use the /OUTPUT, /BINARY, and /REJECTED qualifiers with the ANALYZE/ERROR_LOG command.

You must have SYSPRV privilege to run ERROR LOG. However, only read access is required to access the file ERRORLOG.SYS. (It is not necessary to rename the file ERRORLOG.SYS to ERRORLOG.OLD before using ERROR LOG.) Do not use the /BINARY qualifier with the /FULL, /BRIEF, /OUTPUT, /REGISTER_DUMP, or /SUMMARY qualifiers.

ERR-2 ERROR LOG /BINARY

ERROR LOG Qualifiers

The qualifiers for the ANALYZE/ERROR_LOG command are described in this section.

/BEFORE

Specifies that only those entries dated earlier than the stated date and time are to be selected for the error report.

format

/BEFORE [=date-time]

parameter

date-time

Limits the error report to those entries dated earlier than the specified time.

description

You can specify an absolute time, a delta time, or a combination of absolute and delta times.

If you omit the /BEFORE qualifier or specify /BEFORE without a date or time, all entries are processed.

example

```
§ ANALYZE/ERROR_LOG/BEFORE=31-DEC-1988:10:00 ERRLOG.OLD;5
```

In this example, the error log report generated for ERRLOG.OLD;5 contains entries that were logged before 10:00 A.M. on December 31, 1988.

/BINARY

Used to control whether the binary error log records are converted to ASCII text or copied to the specified output file.

format

/BINARY [=file-spec]

/NOBINARY

parameter

file-spec

Specifies the output file selected to contain image copies of the input records.

description

The /BINARY qualifier creates a binary file that contains copies of the original binary error log entry if the command line also specifies an interval (/SINCE, /BEFORE, or /ENTRY qualifier) or a filter (/INCLUDE or /EXCLUDE qualifier). If no interval or filter is specified, all error log entries are copied.

If you specify /BINARY=file-spec, the selected output file contains image copies of the binary input records (the records are not translated to ASCII). If you omit the device or directory specification, the current device and the default directory are used. If you omit the file name, the file name of the input file is used. If you omit the file type, the default file type is DAT.

Do not use /BINARY with the /FULL, /BRIEF, /OUTPUT, /REGISTER_DUMP, or /SUMMARY qualifiers. These qualifiers generate an ASCII report; /BINARY generates a binary file.

example

```
$ ANALYZE/ERROR_LOG/INCLUDE=DBA1/BINARY=DBA1_ERR.DAT ERRLOG.OLD;5
```

In this example, the output file DBA1_ERR.DAT contains image copies of the entries that apply to DBA1.

/BRIEF

Generates a brief report.

format

/BRIEF

description

Do not use /BRIEF with the /BINARY qualifier.

The Examples section shows the format of a typical brief error log report.

example

```
$ ANALYZE/ERROR_LOG/BRIEF ERRLOG.OLD;97
```

In this example, the error log report generated from ERRLOG.OLD;97 contains minimal information.

ERR-4 ERROR LOG /EXCLUDE

/ENTRY

Generates an error log report that includes the specified entry range or starts at the specified entry number.

format

/ENTRY [= (START:decimal-value[,END:decimal-value])]

parameters

(START:decimal-value[,END:decimal-value])

The range of entries to be included in the error log report.

description

If you specify **/ENTRY** without the entry range or omit the qualifier, the entry range defaults to START:1,END:end-of-file.

example

```
$ ANALYZE/ERROR_LOG/ENTRY=(START:1,END:18) ERRLOG.SYS
```

In this example, the entry range for the error log report generated from file ERRLOG.SYS is limited to entry numbers 1 through 18.

/EXCLUDE

Excludes errors generated by the specified device and error log entry type from the error log report.

format

/EXCLUDE =(device-or-entry-type[,...])

parameter

device-or-entry-type[,...]

The device and entry type to be excluded from the error log report.

description

You can specify one or more devices by device class, device name, or one or more keywords that identify entry types.

Device Class Keywords

BUSES
DISKS
LINE_PRINTER
REALTIME
SYNC_COMMUNICATIONS
TAPES
WORKSTATION

Examples of Device Name Constructs

DB	Group of devices
DBA1	Specific device/unit number
(DBA1,HSC1\$DUA1,DYA0)	List of devices
(DB,DR,XF)	List of device groups

Entry Type Keywords

ATTENTIONS	Exclude device attention entries from the output report.
BUGCHECKS	Exclude all types of bugcheck entries from the report.
CONTROL_ENTRIES	Exclude control entries from the report. Control entries include the following entry types: <ul style="list-style-type: none">• System power-fail restarts• Time stamps• System startups• \$SENDERR messages (system service to send messages to error log)• Operator messages• Network messages• ERRLOG.SYS created

ERR-6 ERROR LOG /FULL

CPU_ENTRIES	Exclude CPU-related entries from the report. CPU entries include the following entry types: <ul style="list-style-type: none">• SBI alerts/faults• Undefined interrupts• MBA/UBA adapter errors• Asynchronous write errors• UBA errors
DEVICE_ERRORS	Exclude device error entries from the report.
ENVIRONMENTAL_ENTRIES	Exclude environmental entries from the report.
MACHINE_CHECKS	Exclude machine check entries from the report.
MEMORY	Exclude memory errors from the report.
SNAPSHOT_ENTRIES	Exclude snapshot entries from the report.
TIMEOUTS	Exclude device timeout entries from the report.
UNKNOWN_ENTRIES	Exclude any entry that had either an unknown entry type or an unknown device type/class.
UNSOLICITED_MSCP	Exclude unsolicited MSCP entries from the output report.
VOLUME_CHANGES	Exclude volume mount and dismount entries from the report.

example

```
$ ANALYZE/ERROR_LOG/EXCLUDE=(MTA0,DRA5) ERRLOG.OLD
```

In this example, the devices MTA0 and DRA5 are excluded from the error log report for the file ERRLOG.OLD.

/FULL

Generates a full report, which provides all available information for an error log entry. This is the default report format.

format

/[NO]FULL

description

Do not use /FULL with the /BINARY qualifier.

example

```
$ ANALYZE/ERROR_LOG ERRLOG.OLD;72
```

The command in this example produces a full report. The default report type is /FULL; it is not necessary to specify it in the command line.

/INCLUDE

Includes errors generated by the specified device and error log entry type in the error log report.

format

```
/INCLUDE=(device-or-entry-type[,...])
```

parameter

```
device-or-entry-type[,...]
```

The device and entry type to be included in the error log report.

description

You can specify one or more devices by device class, device name, or one or more keywords that identify entry types.

Device Class Keywords

BUSES
DISKS
LINE_PRINTER
REALTIME
SYNC_COMMUNICATIONS
TAPES
WORKSTATION

Examples of Device Name Constructs

DB	Group of devices
DBA1	Specific device/unit number
(DBA1,HSC1\$DUA1,DYA0)	List of devices
(DB,DR,XF)	List of device groups

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Entry Type Keywords

ATTENTIONS	Include device attention entries in the output report.
BUGCHECKS	Include all types of bugcheck errors in the report.
CONTROL_ENTRIES	Include control entries in the report. Control entries include the following entry types: <ul style="list-style-type: none">• System power-fail restarts• Time stamps• System startups• \$NDERR messages (system service to send messages to error log)• Operator messages• Network messages• ERRLOG.SYS created
CPU_ENTRIES	Include CPU-related entries in the report. CPU entries include the following entry types: <ul style="list-style-type: none">• SBI alerts/faults• Undefined interrupts• MBA/UBA adapter errors• Asynchronous write errors• UBA errors
DEVICE_ERRORS	Include device errors in the report.
ENVIRONMENTAL_ENTRIES	Include environmental entries in the report.
MACHINE_CHECKS	Include machine check errors in the report.
SNAPSHOT_ENTRIES	Include snapshot entries in the report.
MEMORY	Include memory errors in the report.
TIMEOUTS	Include device timeout errors in the report.
UNKNOWN_ENTRIES	Include any entry that had either an unknown entry type or an unknown device type/class.
UNSOLICITED_MSCP	Include unsolicited MSCP entries in the output report.
VOLUME_CHANGES	Include volume mount and dismount entries in the report.

example

```
$ ANALYZE/ERROR_LOG/INCLUDE=(DISK,VOLUME_CHANGES,DEVICE_ERROR)
```

In this example, the report consists of error log entries for volume and device error information on disks, which are in the default error log file ERRLOG.SYS.

/LOG

Controls whether informational messages that specify the number of entries selected and rejected for each input file are sent to SYS\$OUTPUT. By default, these messages are not displayed.

format

```
/[NO]LOG
```

example

```
$ ANALYZE/ERROR_LOG/LOG ERRLOG.OLD;5
```

In this example, informational messages generated about ERRLOG.OLD;5 are sent to SYS\$OUTPUT.

/OUTPUT

Specifies the output file for the error log report.

format

```
/OUTPUT [=file-spec]
```

parameter

file-spec

The output file selected for the error log report.

description

If you omit the /OUTPUT qualifier, output is directed to SYS\$OUTPUT. If you specify /OUTPUT=file-spec, the selected output file contains the error log report. If you omit the device or directory specification, the current device and default directory are used. If you omit the file name, the file name of the input file is used. If you omit the file type, the default file type is .LIS.

Do not use /OUTPUT with the /BINARY qualifier.

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example

```
$ ANALYZE/ERROR_LOG/OUTPUT=ERROR_LOG.LIS ERRLOG.OLD;72
```

In this example, the output file `ERROR_LOG.LIS` contains entries generated from `ERRLOG.OLD;72`.

/REGISTER_DUMP

Used in conjunction with the `/INCLUDE` qualifier to generate, in a hexadecimal longword format, a report that consists of device register information.

format

```
/REGISTER_DUMP
```

description

Use the `/REGISTER_DUMP` qualifier to get a report that lists the hexadecimal contents of the device registers for the device specified by the `/INCLUDE` qualifier. The `/INCLUDE` qualifier must be used with the `/REGISTER_DUMP` qualifier.

`/REGISTER_DUMP` reports register contents for memory, device error, and device timeout entries. There is no translation of any of the device register information.

Do not use `/REGISTER_DUMP` with the `/BINARY` qualifier.

example

```
$ ANALYZE/ERROR_LOG/INCLUDE=DB/REGISTER_DUMP ERRLOG.OLD;72
```

In this example, the output is in the format of a `REGISTER_DUMP` report containing entries that apply only to the `DB` device.

/REJECTED

Allows you to specify the name of a file that will contain binary records for rejected entries.

format

```
/REJECTED [=file-spec]
```

parameter

file-spec

Specifies the name of the file that is to contain the rejected entries.

description

The /REJECTED qualifier creates a binary file that contains copies of the original binary error log entry. If the error log entry is rejected because the command line also specifies an interval (/SINCE, /BEFORE, or /ENTRY qualifier) or a filter (/INCLUDE or /EXCLUDE qualifier), the entry is written to the specified file.

Rejected entries are those entries that are not translated because they fall into one of the following categories:

- All entries specified with the /EXCLUDE qualifier
- All entries not specified with the /INCLUDE qualifier
- Any entry that does not occur within the period specified by the /SINCE and /BEFORE qualifiers
- Any entry that is not in the range of entries specified by the /ENTRY qualifier

If you specify /REJECTED=file-spec, the output file contains image copies of the rejected records. If you omit the device or directory specification, the current device and default directory are used. If you omit the file name, the file name of the input file is used. If you omit the file type, the default file type is .REJ.

example

```
$ ANALYZE/ERROR_LOG/INCLUDE=MTAO/REJECTED=REAL_ERRS.DAT ERRLOG.OLD;5
```

In this example, the output file REAL_ERRS.DAT contains image copies of all entries from ERRLOG.OLD;5, with the exception of those entries that apply to the MTA0 device.

/SID_REGISTER

Generates a report consisting of error log entries that occurred on the specified CPU.

format

/SID_REGISTER [= %Xhexadecimal-value]

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parameter

%Xhexadecimal-value

Specifies the value obtained from the system ID register. Use the \$GETSYI system service to obtain this value, which is unique to each system.

example

```
$ ANALYZE/ERROR_LOG/SID_REGISTER=%X02006148 ERRLOG.OLD;72
```

In this example, the output consists of only those entries that were logged for the system with the system ID of 02006148 (hexadecimal).

/SINCE

Specifies that only those entries dated later than the stated date and time are to be selected for the report.

format

/SINCE [=date-time]

parameter

date-time

Limits the error report to those entries dated later than the specified time.

description

Only absolute date and time specifications are valid.

If you omit the /SINCE qualifier, all entries are processed. If you specify /SINCE without a date and time, the default is TODAY.

example

```
$ ANALYZE/ERROR_LOG/SINCE=31-DEC-1988:15:00 ERRLOG.OLD;56
```

In this example, the error log report generated from ERRLOG.OLD;56 contains entries that have been logged since 15:00 on December 31, 1988.

/STATISTICS

Generates run-time statistical information.

format

/STATISTICS

description

Use the /STATISTICS qualifier to generate a report that consists of the page faults, buffered I/O, direct I/O, and CPU time used in the execution of the ANALYZE/ERROR_LOG command.

example

```
$ ANALYZE/ERROR_LOG/STATISTICS ERRLOG.OLD;4
```

In this example, the output generated by this command consists of a full report of all entries in ERRLOG.OLD;4 and the run-time statistics for the execution of the command.

/SUMMARY

Generates an error log report that consists of a statistical summary.

The Examples section shows the format of several error log summary reports.

format

/SUMMARY [=summary-type[,...]]

/NOSUMMARY

qualifier parameter

summary-type

The keyword for the selected type of summary.

parameters

Keywords

DEVICE	Include the device summary section in the report.
ENTRY	Include the summary of entries logged section in the report.
HISTOGRAM	Include the processed entries hour of day histogram in the report.

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/SUMMARY

MEMORY	Include the summary of memory errors section in the report.
VOLUME	Include the volume label section in the report.

description

Select the type of summary by specifying one or more keywords.

NOTE: If you specify /SUMMARY without a summary type, the report contains all of the summary types listed above. If you want only a summary report, specify both the /NOFULL and the /SUMMARY qualifiers in the command line.

Do not attempt to correlate the error counts reported by the DCL command SHOW ERROR and the /SUMMARY qualifier. A discrepancy in these figures could be due to several system events and would be difficult to track.

Do not use the /BINARY qualifier with /SUMMARY.

example

```
$ ANALYZE/ERROR_LOG/NOFULL/SUMMARY ERRLOG.OLD;5
```

The output generated by the command in this example consists of a summary report of all entries in ERRLOG.OLD;5.

Exchange Utility

The Exchange Utility (EXCHANGE) allows you to manipulate mass storage volumes written in formats other than those normally recognized by VMS.

format

EXCHANGE *command* [*file-spec*] [*file-spec*]

EXCHANGE> *command* [*file-spec*] [*file-spec*]

parameters

command

Defines the specific operation to be performed.

file-spec

Specifies the device name, directory, and file name for the EXCHANGE input or output device. It has the following general form:

device:[directory]filename.filetype;version

device:	The device name can be either a standard VMS device name of the form ddcu: or a logical name that translates to a VMS device name. If the device field is omitted for a reference, the current default device is assumed. When a virtual device is mounted, a name is created for the virtual device and is used as the device name in subsequent EXCHANGE commands.
[directory]	The syntax of the directory subfield is volume specific.
filename	The name field file specification for an input or output file. The exact format allowed for the filename is dependent on the volume format qualifier used.
filetype	The extension field of the file specification.
version	The version number of the file, if supported by the volume type.

usage summary

You can use EXCHANGE in two ways. You can work interactively (within the utility) by entering "EXCHANGE" at the DCL prompt. This invokes the utility, which responds with the EXCHANGE> prompt. You can then enter any EXCHANGE command. You must invoke the utility and use it interactively if you want to execute more than one EXCHANGE command. However, you can enter a single EXCHANGE command at DCL level.

When you use EXCHANGE at the DCL level, the utility returns you to the DCL prompt after it completes its task. If you are using EXCHANGE interactively, you can return to DCL at any time by typing EXIT or CTRL/Z.

You can direct output from EXCHANGE operations in several ways. The command qualifier /[NO]MESSAGE allows you to control the default display of information from EXCHANGE MOUNT, INITIALIZE, and DISMOUNT operations. When you use the EXCHANGE commands COPY, DELETE, RENAME, or TYPE, include the /LOG qualifier to send information about

EXCH-2 Exchange Utility

the files being processed to SYS\$OUTPUT. When you use the EXCHANGE command DIRECTORY, use the /OUTPUT[=file-spec] qualifier to direct the output to a specified file. If you specify the /OUTPUT qualifier without a file specification, the output is directed to SYS\$OUTPUT. To send the output to a printer, use the /PRINTER qualifier with the DIRECTORY command.

EXCHANGE Commands

The syntax of each of the EXCHANGE commands is similar to that of the corresponding DCL command. This section describes the functions and provides examples of the EXCHANGE commands.

COPY

Transfers a file or files from an input volume to an output volume. You can use the COPY command to do any of the following:

- Copy a file from a foreign volume to a native volume
- Copy a file from a native volume to a foreign volume
- Copy a file from one foreign volume to another foreign volume
- Convert the format of the file during the transfer
- Copy groups of files from volume to volume
- Give the output file a different name from the input file

format

COPY *input-file-spec*, . . .] *output-file-spec*

parameter

***input-file-spec*, . . .]**

Specifies the names of one or more input files to be copied. If you specify more than one input file, separate them with commas or plus signs. The syntax for input file names depends on the volume format option. You can specify standard VMS wildcards in both Files-11 and foreign file names. COPY supports wildcard directories for Files-11 and DOS-11 input.

output-file-spec

Specifies the name of the output file, directory, or device to which the input files are to be copied. If the input is a single file, you can specify an explicit output name (which is equivalent to a rename on a copy operation). If the input is more than one file, the output specifier must be one of the following:

- Wildcards (*, *.* or *.*;*) specifying current default device and directory
- An explicit device and/or directory for Files-11 output, such as BB:[EXCHANGE.TMP], with or without wildcards for the file name
- An explicit device for RT-11 as in DLA2:/VOLUME=RT11
- An explicit device or directory for DOS-11 output, such as TAPE:/VOLUME=DOS11 or TAPE:[11,132]/VOLUME=DOS11

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The output file names are constructed according to rules implied by the input and output volume qualifiers. COPY does not concatenate multiple input files into a single output file. Wildcard directories are not permitted. The syntax for input file names depends on the volume format option.

You must specify at least one field in the output file specification; COPY replaces missing fields with the corresponding field of the related input file specification. If the input file has no corresponding field, COPY substitutes null text fields and maximizes version numbers.

The UIC of the output file is the UIC of the current process. For DOS-11 output in UIC format, EXCHANGE uses the current default directory; otherwise, it uses the current process UIC as a directory. You can specify an alternate directory for DOS-11 output in the command.

qualifiers

/BOOT[=nn]

Copies bootstrap information from a monitor and the handler files to blocks 0 and 2 through 5 of an RT-11 volume, permitting you to use that volume as a system volume. The COPY/BOOT operation does not create any files on the volume; it is intended only to create bootable RT-11 systems.

The /BOOT qualifier implies /VOLUME_FORMAT=RT11 for both input and output specifications. The output device can be omitted, as it is assumed to be identical to the input device. You cannot combine the /BOOT qualifier with qualifiers other than /LOG. The COPY/BOOT command requires that both the input and output devices be the same volume or virtual device. The file name of the desired monitor must be specified as the input specification.

RT-11 Version 1.0 through Version 3.0 monitors had the system device handler linked into the monitor image. For Version 4.0 of RT-11, the system device handler uses the standard device handler, and the COPY/BOOT command must dynamically link the handler into the bootstrap area. COPY/BOOT finds the default handler for the specific device type and merges the handler with the monitor as it is copied to the boot area.

You can use the two-letter argument *nn* to override the default system device handler. The most frequent use of this option occurs when a diskette is mounted in an RX02 drive, and you want to create a diskette bootable from an RX01 drive. (The diskette must be single density.) The default handler for the RX02 is DY.SYS, and the handler for the RX01 is DX.SYS; therefore, you would use the command COPY/BOOT=DX to create the bootable RX01 system diskette. Do not specify /BOOT=nn for Version 3.0 RT-11 and earlier systems; instead, choose the monitor file DYMNXx.SYS or DXMNxx.SYS as the source file.

/[NO]LOG

Controls whether the EXCHANGE command COPY displays the file specifications of each file copied. If you specify /LOG, the system displays the following data for each copy operation: the file specifications of the input and output files, and the number of blocks or the number of records copied (depending on whether the file is copied on a block-by-block or record-by-record basis). The default is /NOLOG.

file qualifiers

/ALLOCATION=n

Forces the initial allocation of the output file to the number of 512-byte blocks that you specified as n. The /ALLOCATION qualifier is valid only for Files-11 and RT-11 output files.

By default, COPY determines the initial allocation of the output file by the size of the input file. Typically, /ALLOCATION is needed only when you are creating a contiguous file on Files-11 (using /BEST_TRY_CONTIGUOUS or /CONTIGUOUS), when the input file is on magnetic tape, or when you want additional space at the end of the file.

If you specify /ALLOCATION, the file's allocated size does not change, unless you also specify /TRUNCATE. When you are unsure of the output size, you might want to specify both /ALLOCATION and /TRUNCATE.

/[NO]BEST_TRY_CONTIGUOUS

Indicates whether the Files-11 output file is to be allocated contiguously on a "best effort" basis; that is, whether EXCHANGE will attempt to place the file on consecutive physical disk blocks. If insufficient contiguous space is available, the file occupies the largest available contiguous space plus additional extents as necessary for the rest of the allocation. You can apply this qualifier only to a Files-11 output file.

The /BEST_TRY_CONTIGUOUS qualifier has no effect when you copy files to magnetic tape volumes. When you would like a file from a magnetic tape to be copied contiguously, use both the /ALLOCATION and the /BEST_TRY_CONTIGUOUS qualifiers, because the size of the file on magnetic tape cannot be determined until after it is copied to the disk. If you do not know the exact size of the file, you can overestimate the size and specify /TRUNCATE (along with /ALLOCATION and /BEST_TRY_CONTIGUOUS) to avoid wasted space.

The default is /NOBEST_TRY_CONTIGUOUS.

/CARRIAGE_CONTROL=option

Defines the carriage control attributes of a file, as well as other attributes of the records. The carriage control options are: CARRIAGE_RETURN, which implies carriage return/line-feed control; FORTRAN, which indicates that the first character of each record is to be interpreted as the carriage control specifier; and NONE, which indicates that carriage control is not implied.

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The default is /CARRIAGE_CONTROL=CARRIAGE_RETURN.

/[NO]CONTIGUOUS

Indicates whether the copied file is to be contiguous; that is, stored on consecutive physical blocks on an output disk volume. The /CONTIGUOUS qualifier is valid only for Files-11 output files.

The /CONTIGUOUS qualifier has no effect when you copy files to magnetic tape volumes. When you would like a file from a magnetic tape to be copied contiguously, use both the /ALLOCATION and /CONTIGUOUS qualifiers because the size of the file on magnetic tape cannot be determined until after it is copied to the disk. If you do not know the exact size of the file, you can overestimate the size and specify the /TRUNCATE qualifier (along with /ALLOCATION and /CONTIGUOUS) to avoid wasted space.

The default is /NOCONTIGUOUS.

/[NO]DELETE

Controls whether COPY deletes existing files of the same name during the copy operation. This qualifier is valid for RT-11 output only; it is equivalent to the RT-11 COPY command qualifier /REPLACE. In fact, you can use the EXCHANGE COPY command qualifier /REPLACE to control file deletion, although its function differs from that of /DELETE (see the description of the /REPLACE qualifier for details on its function).

If you want a message displayed when you delete a file, include the /LOG qualifier in your command. To prevent automatic file deletion, use /NODELETE.

The default is /DELETE. Files with the same name as the output file name are deleted *after* the new file has been copied.

/EXTENSION=n

Specifies the number of blocks to be added to the output file each time the file is extended. This qualifier is valid for Files-11 output files only.

EXCHANGE determines the default extension according to the following hierarchy:

1. An explicit value specified on the /EXTENSION qualifier
2. The current process default extension value set by the command SET RMS_DEFAULT
3. The current system default extension value set at system generation or with the SET RMS_DEFAULT/SYSTEM command

Use the /EXTENSION qualifier to set an extension quantity with magnetic tape input; EXCHANGE preallocates a file of the correct size when the input is on a directory-structured-device.

/[NO]PROTECT

Determines whether protection is set for an RT-11 output file. The owner UIC of the output file is the UIC of the current process. This qualifier is not valid for Files-11 or DOS-11 output files. Protection attributes for Files-11 output are taken from the current process default protection.

EXCHANGE does not attempt to transfer protection attributes from the input file to the output file, because protection mechanisms of various operating systems do not readily translate to one another.

The default is /NOPROTECT.

/RECORD_FORMAT=(option[, . . .])

Defines the internal record structure of a file, as well as other attributes of the records.

/[NO]REPLACE

Requests that if an RT-11 output file already exists with the same file specification as that entered for the output file, the existing file is to be deleted *before* the copy proceeds. COPY allocates new space for the output file. The /REPLACE qualifier is valid for RT-11 output only; it is equivalent to the RT-11 COPY command qualifier /PREDELETE.

By default, COPY creates the new file first and then, after the copy operation is done, deletes the previous file. However, when you use /REPLACE, COPY deletes the previous file *before* it copies the new file. This can be a problem if the input file has been corrupted because the previous version of the file will have been deleted. Therefore, you should use /REPLACE only when there is insufficient room for two copies of the file.

/[NO]REWIND

Determines whether a DOS-11 input magnetic tape reel logically rewinds to the beginning-of-tape mark (BOT) before EXCHANGE searches for the file name specified in the input specifier. This qualifier is valid for DOS-11 magnetic tape only. The default is /NOREWIND.

Use the /REWIND qualifier when you want COPY to search for a file from the logical beginning of the magnetic tape, instead of from the current physical position of the tape.

/START_BLOCK=[n]

For RT-11 volumes, specifies the logical block number where the file is to be placed. This qualifier is especially useful with TU58 tape cassettes, because performance can be significantly enhanced by careful placement of files.

/[NO]SYSTEM

Controls whether the COPY command copies files that have the file type SYS. Files with a file type of SYS are usually necessary for the operation of an RT-11 system. Only RT-11 volumes handle SYS files in this manner.

EXCH-8 EXCHANGE COPY

The default is /NOSYSTEM; the COPY command does not copy an RT-11 file with the type SYS, whether matched by a wildcard specification or explicitly named. EXCHANGE displays a message whenever it skips over a SYS file during a copy operation.

/TRANSFER_MODE=option

Specifies the I/O method to be used in a transfer. This qualifier is useful for all volume formats.

Option	Function
AUTO	Select BLOCK transfer for efficiency if possible
BLOCK	Transfer block by block without looking at records
RECORD	Transfer record by record

The default is the AUTOMATIC transfer mode. In AUTOMATIC mode, EXCHANGE attempts to use a BLOCK transfer whenever possible. BLOCK transfers are possible between RT-11 volumes or between RT-11 and DOS-11 volumes, since the internal file structures are identical. AUTOMATIC does not use the BLOCK transfer if either file specification contains a /RECORD_FORMAT qualifier.

A BLOCK transfer moves data between devices. Since no interpretation is done on the data, BLOCK transfers are more efficient than RECORD transfers. The block sizes on both devices must be identical. Both input and output must be in BLOCK format. Specifying BLOCK on one parameter implies BLOCK for the other file or device specification.

A BLOCK transfer produces an exact copy of the file. If the output device is Files-11, the file will be a sequential file with fixed-length 512-byte records. This feature is used primarily to avoid any interpretation of the data during the transfer. If the Files-11 file is a sequential file with 512-byte fixed-length records, there is no difference between a /TRANSFER_MODE=BLOCK transfer and a /RECORD=FIXED=512 transfer.

A RECORD transfer moves the data record by record. A RECORD transfer requires more time than a BLOCK transfer, but it must be used if the input and output record structures differ.

When the /LOG qualifier is used in a COPY command, EXCHANGE displays the size of the file that was transferred. If BLOCK mode was used, the message gives the file size as the number of blocks transferred. If RECORD mode was used, the message displays the number of records.

/[NO]TRUNCATE

Controls whether COPY truncates an output file at the end-of-file when copying it. The default is /NOTRUNCATE; COPY uses the allocation of the input file to determine the size of the output file.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. The default format qualifier is dependent on the device type.

If used, volume format qualifiers must be attached to one or both of the file specification parameters; you cannot attach them directly to the command. A volume format qualifier determines the format of the file name and directory specifications, and often implies certain defaults.

description

COPY transfers a file or files from an input volume to an output volume.

You can create multiple output files by specifying multiple input files. When multiple output files are created, the corresponding field from each input file is used in the output file name.

If you do not specify a version number for Files-11 output, COPY applies a version number as follows:

- The same version number as that of the input file, if the input volume structure supports version numbers and no file exists with the same name and type
- A version number that is one greater than the highest version number of an existing file with the same file name and file type
- Version 1 if neither of the above applies

If you use an asterisk (*) wildcard character to specify the output file version number, COPY uses the version numbers of the associated input files (if any) as the version numbers of the output files.

Note that ANSI-formatted magnetic tapes do not handle version numbers in the same manner as disks.

EXCHANGE might reformat files during the copy operation. The defaults for reformatting are dependent on the record and volume format qualifiers that are attached to both the input and output file specifications, as well as the type fields of the file specifications.

The COPY command does not copy a file with the SYS type unless you specify the /SYSTEM qualifier. EXCHANGE displays a message if it passes over one or more SYS files during a copy operation.

EXCHANGE does not copy files with the type BAD if the file specification contains wildcards. EXCHANGE does not display a message when it passes over one or more BAD files during a copy operation. Therefore, to copy a file with the type BAD, specify the file name explicitly instead of using wildcards.

EXCH-10 EXCHANGE DELETE

example

```
EXCHANGE> COPY TEST.DAT DYAO:NEWST.DAT/VOLUME=RT11
```

The command in this example copies the contents of the file TEST.DAT from the default disk and directory into a file named NEWST.DAT on an RT-11 diskette (mounted on DYAO). If a file named NEWST.DAT already exists, the COPY command replaces it. The record formats are variable length on the Files-11 input and ASCII stream on the RT-11 output.

DELETE

Deletes one or more files from a foreign block-addressable mass storage volume. EXCHANGE does not delete files from Files-11 volumes; the DELETE command is supported only on RT-11 volumes.

format

```
DELETE file-spec[, ... ]
```

parameter

***file-spec*[, ...]**

Specifies the names of one or more files to be deleted. You can specify wildcard characters in any of the file specification fields.

To delete more than one file, separate the file specifications with commas or plus signs.

The DELETE command does not delete a file with the SYS type unless you specify the /SYSTEM qualifier. EXCHANGE displays a message if it passes over one or more SYS files during a delete operation.

EXCHANGE does not delete files with the type BAD if the file specification contains wildcards. When this happens, you will not receive a warning. Therefore, to delete files with the type BAD, enter their file specifications explicitly.

qualifiers

[/NO]LOG

Controls whether the DELETE command displays the file specification of each deleted file. The default is /NOLOG.

[/NO]SYSTEM

Controls whether the DELETE command deletes files with the file type SYS. Files with the type SYS are usually necessary for the operation of an RT-11 system. Only RT-11 volumes handle SYS files in this manner.

The default is /NOSYSTEM; the DELETE command does not delete an RT-11 file with the SYS type, whether matched by a wildcard specification or explicitly named. EXCHANGE displays a message whenever it skips a SYS file during a delete operation.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. RT-11 volumes are the only volumes on which DELETE is currently supported.

example

EXCHANGE> DELETE DMA0:COMMON.SUM/VOLUME=RT11

The command in this example deletes the file COMMON.SUM from the RT-11 device DMA0.

DIRECTORY

Provides a list of files or information about a file or group of files. The files must reside on a foreign volume; EXCHANGE does not list directories of Files-11 volumes.

format

DIRECTORY [*file-spec* [, ...]]

parameter

***file-spec* [, ...]**

Specifies one or more files to be listed. The /VOLUME_FORMAT qualifier determines the syntax of a file specification.

To specify more than one file, separate the file specifications with either commas or plus signs. You can use wildcard characters in the directory specification, file name, file type, or version number fields of a file specification.

qualifiers

/[NO]ALL

Lists all deleted or unused files on an RT-11 volume, in addition to other files selected by the command.

/[NO]BADBLOCKS

Scans the volume to find any blocks that return read errors. The data on the volume is not modified. If a bad block replacement table is present, the contents of the table are displayed. This is valid for RT-11 volumes only.

/[NO]BLOCKS

Lists the starting block number of the file. This qualifier is valid only for directories of RT-11 devices. The first block of the device is block number 0. The default is /NOBLOCKS.

EXCH-12 EXCHANGE DIRECTORY

/[NO]BRIEF

Includes only the file name of each file to be listed. Specifying the */BRIEF* qualifier is equivalent to specifying */NODATE/NOSIZE*. The default is */BRIEF*.

/COLUMNS=n

Lists the files, using the specified number of columns on each line of the display. This qualifier is used in conjunction with the */BRIEF* qualifier (either explicitly or by default). The default number of columns is dependent on the volume format and the information requested. The *DIRECTORY* command attempts to use as many columns as possible. If you request too many columns, *DIRECTORY* displays a message and reduces the number of columns to the number that fits on the listing.

/[NO]DATE

Includes the date for each file listed. If you omit this qualifier, the default is */DATE*.

/[NO]DELETED

Lists a directory of files that have been deleted from an RT-11 device, but whose file name information has not been destroyed. The listing includes the file names, types, sizes, creation dates, and starting block numbers (in decimal, unless you also specify the */OCTAL* qualifier) of the deleted files. The */DELETED* qualifier is valid only with block-addressable volumes in RT-11 format. The default is */NODELETED*.

/[NO]FREE

Includes unused areas in the directory listing. The */FREE* qualifier is valid only with RT-11 formatted volumes.

/FULL

Lists all the available information for each file. The format of the listing depends on the format of the volume. The */FULL* qualifier overrides the default brief listing format.

/[NO]OCTAL

Controls whether numeric information is displayed in decimal or octal format. The default is */NOOCTAL*; numbers are displayed in decimal radix. Dates are always displayed in decimal format.

/OUTPUT[=file-spec]

Writes the *DIRECTORY* output to a specified file, rather than to the current *SY\$OUTPUT* device. If you specify the */OUTPUT* qualifier without a file specification, the output is directed to *SY\$OUTPUT*. If you omit the file type in the file specification, the default file type is *LIS*. If you specify a file type and omit the file name, the default file name is *EXCHDIRE*. No wildcard characters are allowed in the file specification.

/OWNER

Displays information about the owner of a volume and the files on the volume. For RT-11, the volume owner is shown. For DOS-11, the UIC of the file owner is shown.

/PRINTER

Queues the command output for printing under the name specified by the */OUTPUT* qualifier. If you specify */PRINTER* without the */OUTPUT* qualifier, the output is directed to a file named EXCHDIRE.LIS, which is spooled for printing and then deleted.

/[NO]SIZE

Displays the file size in blocks for each file listed. The default is */SIZE*.

/[NO]SUMMARY

Lists a summary of the usage of the directory segments for an RT-11 volume. If a bad block replacement table is present, the contents of the table are displayed.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. The default format is dependent on the device type.

The EXCHANGE command DIRECTORY is not valid for Files-11 devices.

description

The output of the DIRECTORY command depends on the volume format and on certain formatting qualifiers and defaults. The following are the formatting qualifiers:

<i>/ALL</i>	<i>/BLOCKS</i>	<i>/BRIEF</i>
<i>/COLUMNS</i>	<i>/DATE</i>	<i>/FULL</i>
<i>/OCTAL</i>	<i>/OWNER</i>	<i>/SIZE</i>

The files that are listed always appear in the order in which they appear in the volume directory or the order in which they reside on a magnetic tape.

example

```
EXCHANGE> DIRECTORY DLA2: .OBJ/VOLUME=RT11/FULL
```

The command in this example lists all files with the type OBJ on the RT-11 volume mounted on DLA2. The */FULL* qualifier causes the file sizes and dates to be listed along with the names.

EXCH-14 EXCHANGE DISMOUNT

DISMOUNT

Releases a volume previously accessed by the EXCHANGE command MOUNT.

format

DISMOUNT *device-name[:]*

parameter

device-name[:]

Specifies the name of the device to be dismounted. You can specify a physical device name or a logical name assigned to a physical device name. If you omit a controller designation or a unit number, the defaults are controller A and unit 0, respectively. You can also specify the name of a virtual device.

qualifier

/[NO]MESSAGE

Controls whether or not EXCHANGE displays a message that the volume was dismounted. The default is determined by the /MESSAGE qualifier on the EXCHANGE command when EXCHANGE was activated.

description

The DISMOUNT command closes all connections that EXCHANGE maintains to the device. This command does not affect the state of the operating system mount; the device remains accessible to VMS. If you do not use the DISMOUNT command, an implicit DISMOUNT is automatically executed when you exit EXCHANGE.

The DISMOUNT command is valid only with foreign devices.

example

```
EXCHANGE> MOUNT/FOREIGN MTAO:  
EXCHANGE> COPY MTAO:AVERAGE.FOR/VOLUME=DOS11 *  
EXCHANGE> DISMOUNT MTAO:
```

The first command in this example mounts the tape on the device MTA0. The second command in this example transfers a file from the magnetic tape to the current default directory. The last command releases EXCHANGE's access to the volume; however, the volume is still mounted on the operating system and is accessible to VMS.

EXIT

Terminates execution of EXCHANGE. Control is returned to the DCL command level. You can also use CTRL/Z to exit EXCHANGE.

format

EXIT

HELP

Displays information about EXCHANGE commands and qualifiers.

format

HELP [*command* [*qualifier* [*option* [*option*]]]]

parameters

command

Specifies the name of the EXCHANGE command that you want information about. If you omit the command, HELP displays general information listing all commands recognized by EXCHANGE.

qualifier

Gives the name of the qualifier to be explained.

option

Gives the name of the option to be explained.

description

For an overview of EXCHANGE and a listing of the EXCHANGE command names, enter the HELP command with no arguments.

If you enter HELP and the name of an EXCHANGE command, HELP displays a description of the command followed by a list of related qualifiers. For information on any of the related qualifiers, enter the qualifier name at the prompt.

You can also obtain information on any EXCHANGE command qualifier by entering HELP, the command, and the qualifier at the EXCHANGE prompt, as follows:

```
EXCHANGE> HELP COPY /CONTIGUOUS
```

For information on a qualifier with options, enter HELP, the command, the qualifier, and the option at the EXCHANGE prompt.

If you specify an asterisk (*) in place of any keyword, the HELP command displays all information available at that level.

EXCH-16 EXCHANGE INITIALIZE

If you specify an ellipsis (. . .) after any keyword, the HELP command displays all information relating to that keyword.

You can specify percent signs and asterisks in the keyword as wildcard characters.

example

```
EXCHANGE> HELP COPY/VOLUME . . .
```

The command in this example displays all the help that is available for the COPY qualifier /VOLUME_FORMAT, including descriptions of each of the options.

INITIALIZE

Formats and writes a label on a foreign mass storage volume. For directory-structured devices, the device directory is also initialized.

format

INITIALIZE *device-name* [*volume-label*]

INITIALIZE/CREATE *file-name* [*volume-label*]

parameters

device-name

Specifies the name of the device on which the volume to be initialized is physically mounted.

The device name can also refer to the name of a mounted virtual device to be reinitialized.

file-name

For INITIALIZE/CREATE, *file-name* refers to the name of a file to be created and initialized as a virtual device.

volume-label

Specifies the identification to be written onto the volume header for RT-11 volumes only. The volume label can contain up to a maximum of 12 alphanumeric characters. The default is *VMS Exchange*. Use quotation marks to specify a volume label with lowercase letters.

qualifiers

/ALLOCATION=n

Specifies the allocation of a new virtual device file in terms of 512-byte blocks. The allocation specified is the number you entered as *n*. If you do not specify the /ALLOCATION qualifier when you create a new virtual device file, the default allocation is 494 blocks, the size of a single-density diskette. The maximum allocation is 65,536 blocks.

EXCHANGE EXCH-17
INITIALIZE

A virtual device file is usually the size of a standard device supported by both RT-11 and VMS. These sizes are as follows:

Device	Blocks
TU58	512
RX01	494
RX02	494 (single density)
RX50	800
RX02	988 (double density)
RX33	2400
RL02	20480
RK06	27126
RK07	53790

You can also use the `/ALLOCATION` qualifier to reduce the size of a physical device. For example, if you want to prepare an RL02 disk but have only an RK07 device available, you can initialize the RK07 to a volume of 20,480 blocks. When the RL02 is available, you can transfer the files to the RL02 knowing they will fit on the smaller device.

`/BADBLOCKS[=RETAIN]`

Performs a bad block scan of the volume before initialization. A file named `FILE.BAD` is created on top of each bad block or group of bad blocks encountered on the device, preventing any future use of the bad areas.

If a bad block is found in either the boot block or the volume directory, the volume is not usable and EXCHANGE displays an error message. If the bad block is in a directory segment other than the first, you might be able to use the volume by reinitializing it with a smaller number of segments (see the `/SEGMENTS` qualifier description).

If you specify `/BADBLOCKS=RETAIN`, EXCHANGE uses the device's existing bad block information, instead of performing a bad block scan. Therefore, initializing takes less time. If you do not specify `RETAIN`, EXCHANGE writes a pattern on each block of the volume, then reads each block to verify that the block is usable. EXCHANGE prints a list of the bad blocks found on the device.

RK06, RK07, and RL02 disk volumes support bad block replacement. Therefore, DIGITAL recommends that you use the `/REPLACE=RETAIN` qualifier for these volumes. If you use the `/BADBLOCKS` qualifier with a volume initialized previously with the `/REPLACE` qualifier, EXCHANGE deletes the bad block replacement table and performs a new bad block scan. If you use `/BADBLOCKS=RETAIN` with such a volume, EXCHANGE uses the `FILE.BAD` files created during the volume initialization.

EXCH-18 EXCHANGE INITIALIZE

/CREATE

Specifies that a virtual device is to be created and initialized. The specification is a file name; if a file type is not given, EXCHANGE applies the default type of DSK.

/DENSITY=density-value

Specifies, for magnetic tape volumes, the density in bytes per inch (bpi) at which the tape is to be written.

For magnetic tape volumes, the density value specified can be 800 or 1600, as long as the density is supported by the magnetic tape drive. If you do not specify a density value for a blank tape, the system uses a default of the lowest density supported by the tape drive.

For the RX02 dual-density diskette drive, use the DCL command INITIALIZE /DENSITY=SINGLE or INITIALIZE/DENSITY=DOUBLE to reformat the diskettes to a different density; then use the EXCHANGE command INITIALIZE to create the RT-11 directory structure.

NOTE: Diskettes formatted in double density cannot be read or written by the console block storage device (an RX01 drive) of a VAX-11/780 until they have been reformatted in single density.

/EXTRA_WORDS=n

Specifies, for RT-11 volumes, the number of extra words to add to each directory entry, in addition to the required seven words. The ability to increase the length of directory entries is useful for some RT-11 applications. Increasing the size of the directory entries reduces the number of entries that fit in each directory segment.

/[NO]MESSAGE

Controls whether or not EXCHANGE displays a message that the volume was initialized. The default is determined by the /MESSAGE qualifier entered with the EXCHANGE command when EXCHANGE was activated.

/REPLACE=RETAIN

Retains, when an RT-11 volume is initialized, the bad block replacement table and any existing FILE.BAD files.

The RETAIN option is required; EXCHANGE cannot build a replacement table for a volume. The RT-11 system builds and uses the table based on specific hardware error conditions. The VMS I/O system is different, and cannot be relied upon to generate exactly the same error conditions. Therefore, it is not possible for EXCHANGE to generate the same replacement table that would be generated by RT-11.

If no replacement table is present, the qualifier /REPLACE=RETAIN is equivalent to /BADBLOCKS=RETAIN.

/SEGMENTS=*n*

Defines, for RT-11 volumes, the number of 2-block directory segments to allocate for the directory. The number of segments in the directory establishes the number of files that can be stored on a device. The system allows a maximum of 72 files per directory segment and 31 directory segments per device. The argument *n* represents the number of segments; the valid range for *n* is from 1 to 31 (decimal). The default values for *n* depend on the device type, as follows:

Device	Segments
TU58	1
RX01	1
RX02	1 (single density)
RX02	4 (double density)
RX50	4
RX33	16
RL02	16
RK06	16
RK07	31

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed.

The EXCHANGE command INITIALIZE is not valid for Files-11 devices.

description

The EXCHANGE command INITIALIZE erases all files from a volume. After initialization, the volume directory contains no files. DOS-11 magnetic tapes and RT-11 block-addressable devices can be initialized.

The device must be mounted with the /FOREIGN qualifier.

example

```
$ MOUNT/FOREIGN DLA2:
%MOUNT-I-MOUNTED,          mounted on DLA2
$ EXCHANGE
EXCHANGE> INITIALIZE DLA2:
%EXCHANGE-S-INITIALIZED, the RT-11 volume _DLA2: has been initialized
```

The command in this example initializes the volume mounted on the RL02 drive DLA2. Since DLA2 is a block-addressable device mounted with the /FOREIGN qualifier, RT-11 is the default format. EXCHANGE physically scans all blocks of the volume, builds a bad block replacement table, and displays a message indicating that it failed to turn up any bad blocks.

EXCH-20 EXCHANGE MOUNT

MOUNT

Makes a foreign volume and the files or data it contains available for processing by EXCHANGE. The EXCHANGE command MOUNT enters the device into internal tables maintained by EXCHANGE.

format

MOUNT *device-name*

MOUNT/VIRTUAL *device-name file-name*

parameters

device-name

Specifies the physical device name or logical name of the device on which the volume is to be mounted. For MOUNT/VIRTUAL, the device-name parameter supplies a name for the virtual device.

file-name

For MOUNT/VIRTUAL only, the file-name parameter gives the name of the file containing the image of the foreign volume.

qualifiers

/[NO]DATA_CHECK[=(READ,WRITE)]

Determines whether EXCHANGE performs a second operation after every I/O operation to verify that the data was correctly transferred. If you specify /DATA_CHECK=WRITE, after every write operation EXCHANGE rereads the data that was just written and compares it with the original data. If you specify /DATA_CHECK=READ, EXCHANGE reads each block of data twice and verifies that both read operations received identical data.

It is usually more efficient to use the /DATA_CHECK option on the DCL command MOUNT than to use the option on the EXCHANGE command MOUNT. If you mount a device with the DCL command MOUNT /FOREIGN/DATA_CHECK, VMS can use features in the device hardware and device driver to perform the redundant I/O operations.

The RX01 and RX02 diskette drives do not contain the necessary features for the operating system to perform data checking. If you use the DCL command MOUNT/DATA_CHECK with a diskette, the system is unable to perform data checking (no warning message is displayed). EXCHANGE is able to recognize, however, that a diskette was mounted with the data checking option; in this case, EXCHANGE performs the software data checking internally, even if you have not specified an explicit MOUNT /DATA_CHECK command.

If you specify the /DATA_CHECK qualifier without an option, the default is /DATA_CHECK=WRITE.

/FOREIGN

Indicates that the volume is not in the standard format used by the VMS operating system; that is, a magnetic tape volume is not in the standard ANSI format, or a disk volume is not in Files-11 format. The EXCHANGE command MOUNT mounts only foreign volumes. The /FOREIGN qualifier is the default. You must use the DCL command MOUNT to mount VMS volumes.

The default protection applied to foreign volumes is RWLP (Read, Write, Logical I/O, Physical I/O) for the system and owner. If you mount a volume currently in Files-11 format with the /FOREIGN qualifier, you must have the user privilege to override volume protection (VOLPRO), or your UIC must match the UIC on the volume.

/[NO]MESSAGE

Controls whether EXCHANGE displays a message indicating that the volume was mounted. The default is determined by the /MESSAGE qualifier specified with the EXCHANGE command when EXCHANGE was invoked.

/VIRTUAL

Mounts a Files-11 file as a virtual device. When you specify /VIRTUAL, the MOUNT command requires two parameters. The first parameter is a device name assigned as the name of the virtual device. The second parameter is the name of the Files-11 file that is the image of a foreign volume.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed.

/[NO]WRITE

Controls whether the volume can be written. You can specify /NOWRITE to protect files by providing read-only access. Specifying /NOWRITE is equivalent to write-locking the device.

The default is /WRITE. If /WRITE is specified (either explicitly or by default) and the volume itself is write-locked, EXCHANGE displays a message to inform you that the volume is write-locked.

description

The EXCHANGE command MOUNT enters the description of the foreign volume in internal tables maintained by EXCHANGE. This command is different from the DCL command MOUNT, which enters the device in tables maintained by the VMS operating system.

A virtual volume must be explicitly mounted with the MOUNT/VIRTUAL command.

If an EXCHANGE command is given on an unmounted foreign volume, EXCHANGE attempts to execute an implied MOUNT/FOREIGN/WRITE /NODATACHECK on the device. This feature enables EXCHANGE to operate in the single-command DCL mode.

EXCH-22 EXCHANGE RENAME

If a MOUNT/FOREIGN (either implied or explicit) command is given for a foreign device that has not been mounted on the VMS system, EXCHANGE issues the equivalent of the DCL command MOUNT/FOREIGN and attempts to make the volume known to the operating system. Any volume mounted in this way remains mounted after EXCHANGE exits.

When EXCHANGE issues the MOUNT/FOREIGN command, the system checks the following:

- That the device has not been allocated to another user
- That a volume is physically loaded on the specified device
- For magnetic tapes, the volume accessibility field of the VOL1 label

example

```
EXCHANGE> MOUNT MT:  
%EXCHANGE-I-MOUNTED, MATH06 mounted on _MTA0:
```

The command in this example requests that the magnetic tape loaded on the device MTA0 be mounted as a foreign volume. The tape label is displayed, since the tape has been previously initialized as an ANSI-labeled tape with the label MATH06. This tape cannot be accessed as a Files-11 tape; it should be reinitialized as a DOS-11 tape during the current EXCHANGE session.

RENAME

Changes the file specification of an existing file on an RT-11 volume.

format

RENAME *input-file-spec output-file-spec*

parameters

input-file-spec

Specifies the names of one or more files whose specifications are to be changed.

You can use wildcard characters in the file name and file type specification; if you do, all files that satisfy the specified fields are renamed.

output-file-spec

Provides the new file specification to be applied to the input file. The RENAME command uses the file name and file type of the input file specification to provide defaults for nonspecified fields in the output file.

You can specify an asterisk (*) in place of the file name or file type of the output file; the RENAME command uses the corresponding field in the input file specification to name the output file. Specifying wildcard characters in corresponding fields of the input and output file specifications results in multiple rename operations.

You can omit the device name from the output specification. EXCHANGE uses the device name specified for the input, since it is not possible to rename a file from one device to another.

qualifiers

/[NO]LOG

Controls whether the RENAME command displays the file specification of each file that it renames. The default is /NOLOG.

/[NO]PROTECT

Determines whether protection is set for an RT-11 output file. The default is /NOPROTECT.

This qualifier is not valid for Files-11 or DOS-11 output files. Protection attributes for Files-11 output are taken from the current process default protection.

EXCHANGE does not attempt to transfer protection attributes from the input file to the output file. Protection mechanisms of various operating systems do not readily translate to one another.

The owner UIC of the output file is the UIC of the current process.

/[NO]SYSTEM

Controls whether the RENAME command renames files that have the file type SYS. These files are usually files necessary for the operation of an RT-11 system. Only RT-11 volumes handle SYS files in this manner.

The default is /NOSYSTEM; the RENAME command does not rename an RT-11 file with the type SYS, whether it is matched by a wildcard specification or is named explicitly. EXCHANGE displays a message when it skips an SYS file during a rename operation.

EXCHANGE handles files with the file type BAD in a similar manner; that is, the rename operation skips BAD files. However, EXCHANGE does not warn that BAD files are being skipped, and the /SYSTEM qualifier has no effect on BAD files. To rename a file with the type BAD, specify the file explicitly instead of using wildcards.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. EXCHANGE supports the RENAME command on RT-11 volumes only.

EXCH-24 EXCHANGE SHOW

example

```
EXCHANGE> RENAME DMAO:AVERAG.OBJ MEAN
```

The command in this example changes the file name of the file AVERAG.OBJ to MEAN.OBJ.

SHOW

Displays the devices currently mounted by EXCHANGE.

format

SHOW

example

```
EXCHANGE> MOUNT DBAO:
%EXCHANGE-I-VM SMOUNT, a "$ MOUNT /FOREIGN DBAO:" command was done by Exchange
%EXCHANGE-S-MOUNTED, the RT-11 volume _DBAO: has been mounted
EXCHANGE> MOUNT DLA2:
%EXCHANGE-I-VM SMOUNT, a "$ MOUNT /FOREIGN DLA2:" command was done by Exchange
%EXCHANGE-S-MOUNTED, the RT-11 volume _DLA2: has been mounted
EXCHANGE> INITIALIZE/CREATE WRKD:[USER]VIRT.DSK
%EXCHANGE-S-INITIALIZED, the RT-11 volume WRKD:[USER]VIRT.DSK;1 has been
initialized
EXCHANGE> MOUNT/VIRTUAL DISK: VIRT.DSK
%EXCHANGE-S-MOUNTVER, the RT-11 volume DISK: has been mounted
          using the file WRKD:[USER]VIRT.DSK;1
```

```
EXCHANGE> SHOW
```

```
Mounted volumes:
          volume format:          RT-11
          volume class:           disk (virtual volume)
          virtual file name:      WRKD:[USER]VIRT.DSK;1
          volume size:            494 blocks

_DLA2:
          volume format:          RT-11
          volume class:           disk
          physical device name:   _DLA2:
          volume size:            20480 blocks

_DBAO:
          volume format:          RT-11
          volume class:           disk
          physical device name:   _DBAO:
          volume size:            65535 blocks
```

```
EXCHANGE>
```

The MOUNT commands in this example mount foreign devices on drives DBAO and DLA2. The SHOW command displays all devices currently mounted by EXCHANGE.

TYPE

Displays the contents of a file or group of files on the current output device.

format

TYPE *file-spec[, ...]*

parameters

file-spec[, ...]

Specifies the names of one or more input files to be copied. If you specify more than one input file, separate them with either commas or plus signs. You can specify standard VMS wildcards in file names, both Files-11 and foreign. You can use wildcard directories with Files-11 and DOS-11 input.

The syntax for the file names is dependent on the particular volume format option present or implied.

qualifiers

/[NO]LOG

Controls whether TYPE displays the file specifications of each file displayed.

If you specify /LOG, the TYPE command displays the following for each copy operation:

- File specifications of the input and output files
- Number of blocks or the number of records copied (depending on whether the file is copied on a block-by-block or record-by-record basis)

/RECORD_FORMAT=(option[, ...])

Defines the internal record structure of a file and other attributes of the records.

/[NO]REWIND

Controls whether the DOS-11 input magnetic tape reel logically rewinds to the beginning-of-tape mark before EXCHANGE searches for the file name given in the input specifier.

Use this qualifier only for DOS-11 magnetic tape devices. The default is /NOREWIND; you should use /REWIND when you want TYPE to start searching for a file at the beginning of the magnetic tape rather than at the current position.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. The default format qualifier is dependent on the device type.

**EXCH-26 EXCHANGE
 TYPE**

example

EXCHANGE> TYPE DYAO:BEAM.RAT/VOLUME=RT11/RECORD=STREAM

The command in this example copies the RT-11 file to the current SYS\$OUTPUT device. The two qualifiers are actually the defaults if DYAO was mounted as a foreign volume.

Install Utility

Use the Install Utility (INSTALL) to enhance the performance of selected executable and shareable images, to assign enhanced privileges to images, and to support user-written system services. The system stores the name and attributes of installed images on known file lists.

format

INSTALL *[command]*

parameter

command

Specifies an INSTALL command. This parameter is optional. If no command is specified, the utility displays its prompt and waits for command input.

usage summary

To invoke INSTALL, enter the DCL command INSTALL at the DCL prompt as follows:

```
$ INSTALL
```

The utility responds with the following prompt:

```
INSTALL>
```

You can then perform INSTALL operations by entering the appropriate INSTALL commands. Alternatively, you can enter a single INSTALL command on the same line as the command that invokes the utility, for example:

```
$ INSTALL LIST/FULL SYS$SYSTEM:LOGINOUT
```

To exit from the Install Utility, enter the EXIT command at the INSTALL> prompt or press CTRL/Z. Either method returns control to the DCL command level.

The Install Utility requires that you have the CMKRNL privilege to invoke it. It requires the SYSGBL privilege to create system global sections and the PRMGBL privilege to create permanent global sections.

INS-2 INSTALL ADD

INSTALL Commands

This section describes the INSTALL commands and provides examples of their use.

ADD

Installs the specified image file as a known image.

format

ADD *file-spec*

parameter

file-spec

Names the file specification of an image to be installed as a known image. The file specification must name an existing executable or shareable image. If you omit the device and directory specification, the default SYS\$SYSTEM is used. The default file type is EXE. A version number must not be specified.

qualifiers

/[NO]ACCOUNTING

Allows you to enable image-level accounting for selected images when image accounting is disabled on the system (with the DCL command SET ACC /DISABLE=IMAGE). When image accounting is enabled on the system, it logs all images. The /NOACCOUNTING qualifier has no effect.

/[NO]EXECUTE_ONLY

The /EXECUTE_ONLY qualifier is only meaningful to main programs. It allows the image to activate shareable images to which the user has EXECUTE access but has no READ access. All shareable images referenced by the program must be installed, and VMS RMS uses "trusted" logical names, those created for use in EXEC or KERNEL mode.

You may not specify this qualifier for an executable image linked with the /TRACEBACK qualifier.

/[NO]HEADER_RESIDENT

Installs the file as a known image with a permanently resident header (native mode images only). The image is made permanently open even if /OPEN is not specified.

/[NO]LOG

Lists the newly added known file entry along with any associated global sections created by the installation.

/[NO]OPEN

Installs the file as a permanently open known image.

/PRIVILEGED[=(priv-name[,...])]

Installs the file as a known image with the privileges specified (executable images only). Then, if the image is not located on the system volume, the image is made permanently open even if /OPEN is not specified.

You can specify one or more of the following privilege names:

ACNT	ALLSPOOL	ALTPRI
BUGCHK	BYPASS	CMEXEC
CMKRNL	DETACH	DIAGNOSE
EXQUOTA	GROUP	GRPNAM
GRPPRV	LOG_IO	MOUNT
NETMBX	OPER	PFNMAP
PHY_IO	PRMCEB	PRMGBL
PRMMBX	PSWAPM	READALL
SECURITY	SETPRV	SHARE
SHMEM	SYSGBL	SYSLCK
SYSNAM	SYSPRV	TMPMBX
VOLPRO	WORLD	

You may not specify this qualifier for an executable image linked with the /TRACEBACK qualifier.

/[NO]PROTECTED

Installs the file as a known image that is protected from user-mode and supervisor-mode write access. You can only write into the image from EXEC or KERNEL mode. The /PROTECTED qualifier together with the /SHARE qualifier are used to implement user-written services, which become privileged shareable images.

/[NO]PURGE

Specifies that the image can be removed by a PURGE operation; if you do not specify /PURGE, it can be removed only by a DELETE or REMOVE operation. /NOPURGE is the default form of the qualifier.

/[NO]SHARED

Installs the file as a shared known image and causes creation of global sections for the image. The image is made permanently open even if /OPEN is not specified.

/[NO]WRITABLE

Installs the file as a writable known image as long as you also specify the /SHARED qualifier. The /WRITABLE qualifier is automatically negated if the /NOSHARED qualifier is specified.

INS-4 INSTALL DELETE

example

```
INSTALL> ADD /OPEN/PRIVILEGED=(GROUP,GRPNAM) GRPCOMM
```

The command in this example installs the image file GRPCOMM as a permanently open known image with the privileges GROUP and GRPNAM.

Any process running GRPCOMM receives the GROUP and GRPNAM privileges for the duration of the execution of GRPCOMM. The full name of GRPCOMM is assumed to be SYS\$SYSTEM:GRPCOMM.EXE.

CREATE

Installs the specified image file as a known image. The CREATE command is synonymous with the ADD command.

DELETE

Deletes a known image.

format

```
DELETE    file-spec
```

parameter

file-spec

Names the file specification of an image installed as a known image.

description

The DELETE command deletes an entry from the known image file list. The image's entry on the known file list and any global sections created for the image are deleted. The image itself (that is, the image file) remains unaffected. Writable global sections are written back to disk upon their removal as known images.

If a process is accessing global sections when the DELETE command is entered, the global sections are deleted only after the operation initiated by the process completes. However, once the command is entered, no additional processes can access the global sections because they are "marked for deletion."

The DELETE command is identical to the REMOVE command.

example

```
INSTALL> DELETE WRKD$: [MAIN]STATSHR
```

The command in this example deletes the entry for the image STATSHR from the known file list.

EXIT

Terminates INSTALL and returns control to the DCL command level. You can also exit from INSTALL by pressing CTRL/Z.

format

EXIT

HELP

Interactively displays information about how to use INSTALL.

format

HELP [*command*]

parameter

command

Specifies the name of a command for which help information is to be displayed. If you omit a command name, a list of commands is displayed, and you are prompted for a command name.

LIST

Displays a description of each specified known image or (if no file is specified) all known images.

format

LIST [*file-spec*]

parameter

file-spec

Names the file specification of an image installed as a known image. If you omit the file specification, INSTALL displays all known file entries.

INS-6 INSTALL LIST

qualifiers

/FULL

Displays a multiline description of the specified known image, including the number of accesses, the number of concurrent accesses, and the number of global sections created. The /FULL qualifier with the /GLOBAL qualifier shows information on global sections, plus owner and protection codes and access control entries, if set.

/GLOBAL

Lists global sections for any specified shared image, or if you omit the file specification, lists all global sections.

/STRUCTURE

Lists addresses of known file entry data structures.

/SUMMARY

Used with the /GLOBAL qualifier; displays a summary of global section and global page usage on the system, for local and shared memory global sections.

description

You can use the LIST command with the /FULL qualifier to display information that is useful in "tuning" the known file database. For example, a high entry access count for an image may indicate that system performance could benefit if the image were installed /OPEN. Similarly, high entry access counts for an image may indicate that installing the image /SHARED—that is, with global sections—could improve performance.

example

```
INSTALL> LIST/FULL LOGINOUT
```

The command in this example displays a multiline description of the known image LOGINOUT.

```
DISK$VAXVMSRL5:<SYSO.SYSEXE>.EXE
```

```
LOGINOUT;3      Open Hdr   Shar Priv
Entry access count      = 44 ①
Current / Maximum shared = 3 / 5 ②
Global section count    = 2 ③
Privileges = CMKRNL SYSNAM TMPMBX EXQUOTA SYSPRV ④
```

- ① Number of times known file entry has been accessed by this node since it became known.
- ② The first number indicates the current count of concurrent accesses of the known file. The second number indicates the highest count of concurrent accesses of the file since it was installed. This number appears only if the image is installed with the /OPEN qualifier.

- ③ Number of global sections created for the known file; appears only if the image is installed with the /SHARED qualifier.
- ④ Translation of the privilege mask; appears only if the image is installed with privileges.

PURGE

Deletes all known file entries for images installed without the /NOPURGE qualifier.

format

PURGE

description

The PURGE command deletes all known file entries for images installed without the /NOPURGE qualifier.

If a process is accessing global sections when the PURGE command is entered, the global sections are deleted only after the operation initiated by the process completes. However, once the command is entered, no additional processes can access the global sections because they are "marked for deletion."

REMOVE

Removes an entry from the known image file list. The REMOVE command is synonymous with the DELETE command.

REPLACE

Associates a known image with the latest version of the image file, or modifies the attributes of an installed image.

format

REPLACE *file-spec*

parameter

file-spec

Names the file specification of an image installed as a known image.

INS-8 INSTALL REPLACE

qualifiers

[/[NO]ACCOUNTING

Allows you to enable image-level accounting for selected images when image accounting is disabled on the system (with the DCL command SET ACC /DISABLE=IMAGE). When image accounting is enabled on the system, it logs all images. The /NOACCOUNTING qualifier has no effect.

[/[NO]EXECUTE_ONLY

The /EXECUTE_ONLY qualifier is meaningful only to main programs. It allows the image to activate shareable images to which the user has EXECUTE access but has no READ access. All shareable images referenced by the program must be installed, and VMS RMS uses "trusted" logical names, those created for use in EXEC or KERNEL mode.

You may not specify this qualifier for an executable image linked with the /TRACEBACK qualifier.

[/[NO]HEADER_RESIDENT

Installs the file as a known image with a permanently resident header (native mode images only). The image is made permanently open even if /OPEN is not specified.

[/[NO]LOG

Lists the newly created known file entry along with any associated global sections created by the installation.

[/[NO]OPEN

Installs the file as a permanently open known image.

[/[NO]PRIVILEGED[=(priv-name[,...])]

Installs the file as a known image with the privileges specified (executable images only). Then, if the image is not located on the system volume, the image is made permanently open even if /OPEN is not specified. For a complete listing of privileges, see the ADD command.

You may not specify this qualifier for an executable image linked with the /TRACEBACK qualifier.

[/[NO]PROTECTED

Installs the file as a known image that is protected from user-mode and supervisor-mode write access. You can only write into the image from EXEC or KERNEL mode. The /PROTECTED qualifier together with the /SHARE qualifier are used to implement user-written services, which become privileged shareable images.

[/[NO]PURGE

Specifies that the image can be removed by a PURGE operation; if you do not specify /PURGE, it can be removed only by a DELETE or REMOVE operation. (/NOPURGE is the default form of the qualifier.)

[/NO]SHARED

Installs the file as a shared known image and causes creation of global sections for the image. The image is made permanently open even if /OPEN is not specified.

[/NO]WRITABLE

Installs the file as a writable known image as long as you also specify the /SHARED qualifier. The /WRITABLE qualifier is automatically negated if the /NOSHARED qualifier is specified.

description

The REPLACE command updates a known file to the latest version found in the specified directory.

You can use the REPLACE command to modify the attributes of currently installed images. Either specify new qualifiers, or change the value of qualifiers used when installing the image with the ADD (or CREATE) command. If you specify no qualifiers, the new image retains the same attributes as the old one. If the old image was installed with the /SHARED qualifier, the global sections are re-created, probably with new identifiers.

If a process is accessing global sections when the REPLACE command is entered, the global sections are deleted only after the operation initiated by the process completes. However, once the command is entered, no additional processes can access the global sections because they are "marked for deletion."

example

```
INSTALL> REPLACE GRPCOMM /ACCOUNTING/NOOPEN
```

The command in this example replaces the known image GRPCOMM with the latest version of the image, while enabling image accounting and removing the OPEN attribute for this version.

The full name of the file specification is assumed to be SYS\$SYSTEM:GRPCOMM.EXE.

LAT Control Program Utility

The LAT Control Program (LATCP) allows you to control and obtain information from the LAT port driver (LTDRIVER) on a VMS node.

format

RUN SYS\$SYSTEM:LATCP

usage summary

To invoke LATCP, type RUN SYS\$SYSTEM:LATCP at the DCL command prompt. At the LCP> prompt, you can enter any of the LATCP commands described in the following section.

To exit from LATCP, enter the LATCP command EXIT at the LCP> prompt or press CTRL/Z.

Use of LATCP requires the CMKRNL privilege.

LAT-2 LATCP CREATE LINK

LATCP Commands

This section describes the following LATCP commands and provides examples of their use.

CREATE LINK

Creates the Ethernet links that you want a VMS service node to use.

format

CREATE LINK *link-name*

parameter

link-name

Specifies a name for an Ethernet link. A link name can have up to 16 ASCII characters. (See the CREATE SERVICE command for a list of legal characters.) You can create a maximum of two links on your node. Use the SHOW CHARACTERISTICS command for a list of the link names that are defined for your node.

qualifiers

/[NO]DECNET

Directs LAT protocol to use the DECnet Ethernet address (/DECNET) or the hardware address (/NODECNET) when starting the Ethernet controller. The default is /DECNET.

/DEVICE=device-name

Specifies the Ethernet controller device name for an Ethernet link; for example, XEB0. Only one Ethernet link can be associated with an Ethernet controller. If you enter the CREATE LINK command without the /DEVICE qualifier, LATCP attempts to find an available controller. You can specify a default device name by defining the LAT\$DEVICE logical name.

/ENABLE=(group-code[,...])

Specifies the service groups that can be used on the link. There can be up to 256 groups, numbered from 0 through 255. If you specify only one group, you can omit the parentheses.

By default, no groups are enabled for a link. In this case, the groups that you enabled for the service node with SET NODE or START NODE apply to the link.

If you enable groups with this qualifier, only the specified groups apply to the link; the groups enabled for your service node do not apply.

/[NO]LOG

Specifies whether the link characteristics are displayed when this command is executed. The default is */LOG*.

example

```
LCP> CREATE LINK Network_A /DEVICE=XEBO: /ENABLE=(1,2)
```

The CREATE LINK command in this example creates a link to the Ethernet network named Network_A. It specifies the Ethernet controller device XEBO for that link. The command enables groups 1 and 2 for the Network_A Ethernet link.

CREATE PORT

Creates a logical port on a VMS service node that connects with either a remote device on a terminal server or an application program.

format

CREATE PORT *port-name*

parameter

port-name

Specifies the port name in the form *LTAn:*, where *n* is a unique number from 1 through 9999. If the port you specify already exists, LATCP returns an error message.

qualifiers

/APPLICATION

Specifies that a logical port on a VMS service node will be used to connect to a remote device (typically a printer) on a terminal server. The default port type is */APPLICATION*.

/DEDICATED

Specifies that a logical port on a VMS node is reserved for an application service. When terminal server users request a connection to this service name, they are connected to the dedicated port, provided the application program has assigned a channel to the port. See the *VMS I/O User's Reference Volume* for a description of programming an application service.

After creating a dedicated port on a VMS service node, use the SET PORT */DEDICATED /SERVICE* command to map this port to a service.

/[NO]LOG

Specifies whether characteristics of the ports on your service node are displayed when this command is executed. The default is */LOG*.

LAT-4 LATCP CREATE SERVICE

example

```
LCP> CREATE PORT LTA27: /APPLICATION
```

The CREATE PORT command in this example creates an applications port named LTA27 on a VMS service node. It is mapped to a remote device on a terminal server.

CREATE SERVICE

Creates a service on a VMS service node.

format

```
CREATE SERVICE service-name
```

parameter

service-name

Specifies a LAT service name. You can specify as many as eight service names for your node. By default, a service name is the translation of the SYS\$NODE logical name.

The service name can be from 1 to 16 ASCII characters.

qualifiers

/IDENTIFICATION="identification-string"

Describes a VMS service offered or delivers a message to terminal servers on the Ethernet. By default, the identification string is a translation of SYS\$ANNOUNCE. A VMS service node advertises its services at regular intervals, established in the SET NODE command.

An identification string can have up to 64 ASCII characters but cannot begin with an ampersand (&). Nonprintable characters are translated as spaces. Enclose the string in quotation marks ("").

/LINK=(link-name[,...])

Specifies the Ethernet link on which you want to offer the service. If you specify one link, you can omit the parentheses. This link must have been created, either explicitly with the CREATE LINK command or implicitly with the START NODE command. By default, a service is offered on all the Ethernet links defined for your node. In most cases, you should offer services over all of the Ethernet links. The SHOW CHARACTERISTICS command displays the links that are currently defined for your node.

You can use this qualifier to limit the users of a service to a particular Ethernet link.

[/NO]LOG

Specifies whether the characteristics for your service node are displayed when this command is executed. The default is /LOG.

[/NO]STATIC_RATING=*rating*

Enables or disables dynamic service ratings.

example

```
LCP> CREATE SERVICE SALES /LINK=(Network_A,Network_B) -  
_LCP> /STATIC_RATING=195
```

The CREATE SERVICE command in this example creates the service "SALES" on a VMS service node. The service will be offered on the Ethernet links named Network_A and Network_B. This command also assigns a static rating of 195 so terminal servers can assess the availability of services on the node.

DELETE PORT

Deletes a logical port from a VMS service node.

format

DELETE PORT *port-name*

parameter

port-name

Specifies the name of the applications port or the dedicated port that you want to delete. An applications port connects to a remote device on a terminal server, whereas a dedicated port connects to a special VMS service.

The port must have been created with the CREATE PORT command. Use the SHOW PORTS command for a list of the applications ports and the dedicated ports that are defined for your service node.

example

```
LCP> DELETE PORT LTA27:
```

The DELETE PORT command in this example deletes the applications port LTA27. The port was created with the CREATE PORT command.

DELETE SERVICE

Deletes a service that your VMS service node currently offers.

format

DELETE SERVICE *service-name*

parameter

service-name

Specifies the name of the service, as displayed by the SHOW CHARACTERISTICS command. By default, the service name is the translation of SYS\$NODE.

qualifiers

[/NO]LOG

Specifies whether the characteristics for your service node are displayed when this command is executed. The default is /LOG.

example

LCP> DELETE SERVICE SALES

The DELETE SERVICE command in this example removes the service SALES from your service node. The service is no longer available to server users.

EXIT

Stops execution of LATCP and returns control to the DCL command level. You can also type CTRL/Z to exit at any time.

format

EXIT

HELP

Provides online help information for using the LATCP commands.

format

HELP [*command-name*]

SET COUNTERS/ZERO

The SET COUNTERS/ZERO command resets the service node counters. The /ZERO qualifier is required.

format

SET COUNTERS/ZERO

SET LINK

Changes the characteristics of Ethernet links.

format

SET LINK *link-name*

parameter

link-name

Specifies the name for an Ethernet link. A link name can have up to 16 ASCII characters. (See the CREATE SERVICE command for a list of legal characters.) The SHOW CHARACTERISTICS command displays the names of the links defined for a VMS service node.

command qualifiers

/[NO]DECNET

Directs LAT protocol to use the DECnet Ethernet address (/DECNET) or the hardware address (/NODECNET) when starting the Ethernet controller. The default is /DECNET. Note that you cannot change the characteristics of an active link.

/DEVICE=device-name

Specifies the Ethernet controller device name for the link; for example, XEA0. Only one link can be associated with any Ethernet controller and its related Ethernet cable. You cannot change the device for an active link.

/DISABLE=(group-code[,...])

Removes previously enabled groups associated with a link.

/ENABLE=(group-code[,...])

Specifies additional groups that you want enabled for a link. If there is only one group, you can omit the parentheses. There are 256 groups, numbered from 0 through 255. See the SET NODE command for more information on groups.

/[NO]LOG

Specifies whether to display link characteristics when the command executes. The default is /LOG.

LAT-8 LATCP SET NODE

example

```
LCP> SET LINK Network_A /ENABLE=(8,11)
```

The SET LINK command in this example assigns the groups 8 and 11 to the Ethernet link, Network_A.

SET NODE

Specifies the LAT characteristics of a VMS service node.

format

```
SET NODE node-name
```

parameter

node-name

Specifies a name for a VMS service node. By default, the node name is the translation of SYS\$NODE. A LAT service node name should be the same as the DECnet node name. If the VMS service node is not running DECnet but will be in the future, it is recommended that you define SYS\$NODE and use it for both DECnet and LAT node names.

A node name can be from 1 to 16 ASCII characters.

qualifiers

/DISABLE=(group-code[,...])

Removes previously enabled groups associated with your service node. If you enter one group code, you can omit the parentheses. The SHOW CHARACTERISTICS command displays the groups enabled for your service node.

/ENABLE=(group-code[,...])

Gives the listed groups access to your service node. A network manager organizes terminal server nodes into groups, based on the number of terminal server nodes in the LAT network. Groups subdivide the LAT network, limiting the number of terminal server nodes that can connect with a given VMS service node.

There can be as many as 256 groups, numbered 0 through 255. By default all terminal server nodes belong to group 0. If you enter one group code, you can omit the parentheses. Use the SHOW CHARACTERISTICS command for a list of the groups enabled for your service node.

/IDENTIFICATION="identification-string"

Describes a service offered by a VMS service node or delivers a message to terminal servers on the Ethernet. By default, the identification string is the translation of SYS\$ANNOUNCE. A VMS service node advertises its services at regular intervals, established in the SET NODE command.

An identification string can have up to 64 ASCII characters but cannot begin with an ampersand (&). Nonprintable characters are translated as spaces. Enclose the string in quotation marks ("").

/[NO]LOG

Specifies whether your service node characteristics are displayed when this command is executed. The default is /LOG.

/MULTICAST_TIMER=seconds

Specifies the time, in seconds, between multicast messages sent by a VMS service node. A multicast message, established with the /IDENTIFICATION qualifier, advertises the services offered by a VMS service node. The minimum value is 10 seconds; the maximum is 255 seconds. The default value is 60.

example

```
LCP> SET NODE DUKE /IDENT="NODE DUKE, SALES VAXCLUSTER"
```

The SET NODE command in this example specifies that the announcement "NODE DUKE, SALES VAXCLUSTER" is multicast from node DUKE.

SET PORT

Logically associates an applications port on a VMS service node with a remote port on a terminal server that supports a device. Alternatively, it creates a logical port on a VMS service node that is dedicated to a specific service.

format

SET PORT *port-name*

parameter

port-name

Specifies the name of the port. A port name must be in the form LTA*n*;, where *n* is a unique number from 1 through 9999.

qualifiers

/APPLICATION

Specifies that a port on a VMS service node is an applications port, logically associated with a port on a remote terminal server. The terminal server port supports a device, for example, a printer. If the port is used to support a printer, the print queue is established in a startup command procedure, as described in *Guide to Maintaining a VMS System*.

The port must have been created with the CREATE PORT command.

LAT-10 LATCP SET PORT

/DEDICATED

Specifies that a port on a VMS service node functions as a dedicated logical port through which terminal server users connect with a special service. The */DEDICATED* qualifier requires the */SERVICE* qualifier.

To create a special service, create the service and define the dedicated port (CREATE PORT/*DEDICATED*) in LTLOAD.COM, which is executed in SYSTARTUP_V5.COM. Then run the application program. Within the program, allocate dedicated ports with the same name as those defined in LTLOAD.COM. See *Guide to Setting Up a VMS System* and *VMS I/O User's Reference Volume* for further information.

/LINK=(link-name[,...])

Specifies the name of the Ethernet link that the applications port uses. If you use the SET PORT command and do not specify a link name, and no link has been defined, LATCP creates a default link name called LAT\$LINK and assigns an Ethernet controller device to this link. To look at the links defined for your node, use the SHOW CHARACTERISTICS command.

/[NO]LOG

Specifies whether or not to display the characteristics of the ports on your service node when this command is executed. The default is */LOG*.

/NODE=remote-node-name

Specifies the name of a terminal server that supports a remote device and is logically associated with an applications port on your VMS service node.

/PORT=remote-port-name

Specifies the name of the remote port on a terminal server that supports a remote device and is logically associated (mapped) with an applications port on a VMS service node.

/[NO]QUEUED

Specifies queued or nonqueued access to the server port. The default is */QUEUED*.

/SERVICE=service-name

Specifies either: (1) the name of the remote service offered at the terminal server port that is to be associated with an applications port (*/APPLICATION*) for a device, or (2) a service name for an application program being offered on a dedicated port (*/DEDICATED*) on a VMS service node.

example

```
LCP> SET PORT LTA28: /NODE=TLAT2 /PORT=PORT_7 /LINK=Network_B
```

The SET PORT command in this example associates the applications port LTA28 with the port named PORT_7 on the terminal server named TLAT2. The applications port uses the Ethernet named Network_B.

SET SERVICE

Dynamically changes the characteristics of a service.

format

SET SERVICE *service-name*

parameter

service-name

Specifies the service whose characteristics are to be modified. If a service name is omitted, the default service name is the translation of SYS\$NODE.

qualifiers

/IDENTIFICATION="identification-string"

Provides a new description of a VMS service or delivers a message to terminal servers on the Ethernet. By default, the identification string is the translation of SYS\$ANNOUNCE. A VMS service node advertises its services at regular intervals, established in the SET NODE command.

An identification string can have up to 64 ASCII characters but cannot begin with an ampersand (&). Nonprintable characters are translated as spaces. Enclose the string in quotation marks.

/LINK=(link-name[,...])

Specifies which links offer the service. Unless you specify a link name for a service, the service is offered on all active Ethernet links. The SHOW CHARACTERISTICS command displays links that are defined for a VMS service node.

/[NO]LOG

Specifies whether or not to display the qualifier values used in this command when this command is executed. The default is /LOG.

/[NO]STATIC_RATING=rating

Enables or disables dynamic service ratings. The default is /NOSTATIC_RATING.

example

```
LCP> SET SERVICE SALES /IDENT="SALES FORCE TIMESHARING SERVICES"
```

The SET SERVICE command in this example specifies a new announcement "SALES FORCE TIMESHARING SERVICES" for the service SALES. This string is announced with the service SALES in the multicast messages sent by a VMS service node.

LAT-12 LATCP SHOW COUNTERS

SHOW CHARACTERISTICS

Displays the characteristics of a VMS service node.

format

SHOW CHARACTERISTICS

example

LCP> SHOW CHARACTERISTICS

The SHOW CHARACTERISTICS command in this example provides the following description of your VMS service node:

LCP Characteristics

Node name = \REDWOD\
Node identification = \REDWOD (VAX 8800) -- A member of the FOREST VAXcluster\
Groups = (0,73,74,127)
Multicast timer = 60 seconds
LAT Version = 5.1 LAT Protocol is active

Service name : \REDWOD\ rating : <AUTO>
 ID : \REDWOD (VAX 8800) -- A member of the FOREST VAXcluster\

Service name : \FOREST\ rating : <AUTO>
 ID : \FOREST -- The accounting department VAXcluster\

Node Links:

Link name = \LAT\$LINK\
Link device = \XQAO\
Groups = ()
Link-specific services:
Status = Active

Link name = \2ND_ETHERNET\
Link device = \XQBO\
Groups = ()
Link-specific services:
Status = Inactive

SHOW COUNTERS

Displays performance and error statistics for a VMS service node.

format

SHOW COUNTERS

qualifier

/DEVICE

Displays the Ethernet device counters. This information is the sum of all Ethernet counters for a particular controller on your node, including LAT and DECnet. If you have more than one Ethernet controller device on your node, use the */LINK* qualifier to specify the link name of the controller device for which you want the counters.

/INACTIVE

In conjunction with the */SYSTEMS* qualifier, displays the cumulative LAT counters for all terminal servers known to a VMS service node. To obtain a display of the current counters for the servers, use the */SERVERS* qualifier.

/LINK=link-name

Used with the */DEVICE* qualifier to specify the particular Ethernet link for which you want device counters displayed. Use the *SHOW CHARACTERISTICS* command for a list of the links that are defined for your service node. The default link is the first one that is defined for your service node.

/NODE

Displays LAT counters for a VMS service node. (It excludes DECnet counters.) This is the default if no qualifiers are specified with the *SHOW COUNTERS* command.

/SERVERS

Displays current LAT counters for all terminal servers currently connected to a VMS service node. To obtain a display of the cumulative counters for previous server connections, include the */INACTIVE* qualifier with the */SERVERS* qualifier.

example

```
LCP> SHOW COUNTERS /NODE
```

The *SHOW COUNTERS* command in this example generates the following type of display:

```
LCP Node Counters
```


LAT-14 LATCP

SHOW PORTS

```
127597 Receive frames
      0 Receive errors
      3 Receive duplicates
161885 Transmit frames
      0 Transmit errors
00000000 Last transmit failure code
      28 Retransmissions
      6 Circuit timeouts
      0 Protocol errors
00000000 Protocol bit mask
      0 Resource errors
      0 No transmit buffer
      0 Unit timeouts
      0 Solicitation failures
      0 Discarded output bytes
```

SHOW PORTS

Displays the characteristics of ports on a VMS service node.

format

SHOW PORTS [*port-name*]

parameter

port-name

Specifies the name of the port for which information is displayed. The SHOW PORTS command without a port name displays the characteristics for all LTA n ports on a service node.

Do not use the /APPLICATION, /DEDICATED, or /INTERACTIVE qualifiers with a specific port name.

qualifiers

/APPLICATION

Generates a display of all applications ports.

/DEDICATED

Generates a display of all dedicated ports.

/INTERACTIVE

Generates a display of all LAT interactive ports.

example

LCP> SHOW PORTS

The SHOW PORTS command in this example produces the following type of display:

```
Local Port Name = LTA27:    <interactive>
```

```
Actual Remote Node Name = TLAT1  
Actual Remote Port Name = PORT_7  
Link Name = Network_A
```

```
Local Port Name = LTA28:    <application>
```

```
Specified Remote Node Name = TLAT2  
Specified Remote Port Name = PORT_7  
Specified Remote Service Name = PRINTER  
Actual Remote Node Name = TLAT2  
Actual Remote Port Name = PORT_7  
Link Name = Network_B
```

```
Local Port Name = LTA29:    <dedicated>
```

```
Specified Service Name = GRAPHICS  
Link Name = Network_A
```

The first port the example displays is the interactive port LTA27, which is connected via LAT Port_7 on the TLAT1 server. The Ethernet link is Network_A. In this display the presence of the actual values indicates an established connection.

The second port the example displays is the LTA28 applications port. This port is mapped to the following:

- The remote server TLAT2
- The remote port 7
- The remote service PRINTER

The presence of the actual values in the display indicates an established connection. The Ethernet link is Network_B.

The third port the example displays is LTA29, a dedicated port on a VMS service node that offers the service GRAPHICS to terminal server users on the Network_A Ethernet.

LAT-16 LATCP
START NODE

SHOW SERVERS

Displays the characteristics of terminal servers known to a VMS service node, and indicates which Ethernet link the servers use to access the VMS node.

format

SHOW SERVERS

qualifier

/INACTIVE

Displays the cumulative counters for all servers known to your service node. To obtain a display of the current counters, enter the SHOW COUNTERS /SERVER command.

example

LCP> SHOW SERVERS

The SHOW SERVERS command in this example produces the following display:

```
LCP Server Characteristics for TLAT1
Ethernet address = 08-00-2B-02-F2-EC
Server is active
Link Name = Network_A            Active users = 1
```

START NODE

Starts the LAT port driver and sets service node characteristics. This command also activates specific links on a VMS service node.

format

START NODE *[node-name]*

parameter

node-name

Specifies the name you choose for a VMS service node. The default is the translation of SYS\$NODE. A node name should be the same as the DECnet node name. The node name can be from 1 to 16 characters long.

qualifiers

/[NO]DECNET

Directs the LAT protocol to use the DECnet Ethernet address (/DECNET) or the hardware address (/NODECNET) when starting the Ethernet controller. The default is /DECNET.

The `/NODECNET` qualifier can help improve performance when you have two Ethernet controllers on a VAX processor. You can restrict LAT traffic to one Ethernet controller and DECnet traffic to the other. Note that once you start the LAT protocol using the `/NODECNET` qualifier, you cannot start DECnet on the same Ethernet link without stopping the LAT port driver and restarting it.

`/DISABLE=(group-code[,...])`

Removes previously enabled groups associated with a VMS service node.

`/ENABLE=(group-code[,...])`

Gives listed groups access to a VMS service node. There are 256 groups, numbered from 0 through 255. By default, group 0 is enabled. If you enter only one group code, you can omit the parentheses.

`/IDENTIFICATION="identification-string"`

Describes a VMS service offered or delivers a message to terminal servers on the Ethernet. By default, the identification string is the translation of `SYS$ANNOUNCE`. A VMS service node advertises its services at regular intervals, established in the `SET NODE` command.

An identification string can have up to 64 ASCII characters but cannot begin with an ampersand (&). Nonprintable characters are translated as spaces. Enclose the string in quotation marks.

`/LINK=(link-name[,...])`

Specifies the name(s) of the link(s) that you want activated on a VMS service node. If you do not specify a link name, all defined links on your node are started. If you supply only one link name, you can omit the parentheses.

`/[NO]LOG`

Specifies whether to display your service node characteristics when this command is executed. `/NOLOG` prevents the display. The default is `/LOG`.

`/MULTICAST_TIMER=seconds`

Specifies the time, in seconds, between the multicast messages sent by your service node. The minimum value is 10 seconds; the maximum is 255 seconds. The default value is 60.

example

```
LCP> START NODE DUKE /LINK=Network_A
```

The `START NODE` command in this example starts node `DUKE` and activates the `Network_A` Ethernet link on node `DUKE`.

LAT-18 LATCP
STOP NODE

STOP NODE

Deactivates a specific Ethernet link on a VMS service node, or shuts down the LAT port driver on a VMS node, terminating sessions for all links.

format

STOP NODE

qualifiers

/LINK=(link-name[,...])

Specifies the name of the Ethernet link that you want to stop. Use this qualifier only if you want to stop a specific link.

/[NO]LOG

Specifies whether to display a confirmation message on the user's terminal when you shut down the LAT port driver. (Note that the actual shutdown takes a few seconds if the driver has to terminate active sessions.) The default is /LOG.

example

LCP> STOP NODE /LINK=Network_A

The STOP NODE command in this example deactivates the Network_A Ethernet link on a VMS service node.

Mount Utility

The Mount Utility (MOUNT) allows you to make a disk or magnetic tape volume available for processing.

format

```
MOUNT device-name[:][,...] [volume-label[,...]] [logical-name[:]]
```

command parameters

device-name[:][,...]

Specifies the physical device name or logical name of the device on which the volume is to be mounted. On a system where volumes are not connected to Hierarchical Storage Controllers (HSCs), use the following format:

ddcu:

The **dd** describes the device type of the physical devices used. For example, an RA60 disk drive is device type **DJ**, and an RA80 or RA81 disk drive is device type **DU**. The **c** identifies the controller, and the **u** identifies the unit number of the device.

On a system with Hierarchical Storage Controllers (HSCs), use one of the following formats:

node\$ddcu:

allocation-class\$ddcu:

If your devices are dual ported to HSCs, use the allocation-class format. For example, \$125\$DUA23 represents an RA80 or RA81 disk with unit number 23. The disk's allocation class is \$125\$. The **c** part of the format is always **A** for HSC disks. TROLL\$DJA12 represents an RA60 disk with unit number 12. The device is connected to an HSC named TROLL.

Device names can be generic so that if no controller or unit number is specified, the system attempts to mount the first available device that satisfies those specified components of the device name(s). If no volume is physically mounted on the specified device, MOUNT displays a message requesting that you place the volume in the device; after you place the volume in the named drive, MOUNT then completes the operation.

If you specify more than one device name for a disk or magnetic tape volume set, separate the device names with either commas or plus signs. For a magnetic tape volume set, you can specify more volume labels than device names or more device names than volumes.

MOUNT-2 Mount Utility

volume-label[,...]

Specifies the label on the volume. For disk volumes, labels can have from 1 through 12 characters; for magnetic tape volumes, labels can have from 0 through 6 characters.

If you specify more than one volume label, separate the labels with either commas or plus signs. The volumes must be in the same volume set and the labels must be specified in ascending order according to relative volume number.

When you mount a magnetic tape volume set, the number of volume labels need not equal the number of device names specified. When a magnetic tape reaches the end-of-tape (EOT) mark, the system requests the operator to mount the next volume on one of the devices. The user is not informed of this request; only the operator is informed.

When you mount a disk volume set, each volume label specified in the list must correspond to a device name in the same position in the device name list.

The volume-label parameter is not required when you mount a volume with the /FOREIGN or /NOLABEL qualifier or when you specify /OVERRIDE=IDENTIFICATION. To specify a logical name when you enter either of these qualifiers, type any alphanumeric characters in the volume-label parameter position.

logical-name[:]

Defines a 1- through 255-alphanumeric character string logical name to be associated with the volume.

If you do not specify a logical name, the MOUNT command assigns the default logical name DISK\$volume-label to individual disk drives; it assigns the default logical name DISK\$volume-set-name to the device on which the root volume of a disk volume set is mounted. Note that if you specify a logical name in the mount request that is different from DISK\$volume-label or DISK\$volume-set-name, then two logical names are associated with the device.

If you do not specify a logical name for a magnetic tape drive, the MOUNT command assigns only one logical name, TAPE\$volume-label, to the first magnetic tape device in the list. No default logical volume set name is assigned in this case.

The MOUNT command places the name in the process logical name table, unless you specify /GROUP or /SYSTEM. In the latter cases, it places the logical names in the group or system logical name table.

NOTE: Avoid assigning a logical name that matches the file name of an executable image in SYS\$SYSTEM. Such an assignment prohibits you from invoking that image.

If the logical name of a volume is in a process-private table, then the name is not deleted when the volume is dismounted.

usage summary

To invoke the Mount Utility, enter the command MOUNT at the DCL prompt, followed by the device name, volume label, and logical name. If you omit a parameter, MOUNT prompts you for it. You must include a device name and a volume label (unless you specify /OVERRIDE=IDENTIFICATION or use the /FOREIGN or /NOLABEL qualifier); the logical name is optional.

The Mount Utility returns you to the DCL level after it either successfully completes the operation or fails, generating an error message. If you press CTRL/Y or CTRL/C, MOUNT aborts the operation and returns you to the DCL prompt.

You can direct output from MOUNT operations with the /COMMENT and /MESSAGE qualifiers. When the mount operation requires operator assistance, use /COMMENT to specify additional information to be included with the operator request. The /COMMENT text string is sent to the operator log file and to SYS\$OUTPUT. The string must contain no more than 78 characters.

Use the /MESSAGE qualifier (this is the default) to send mount request messages to your current SYS\$OUTPUT device. If you specify /NOMESSAGE during an operator-assisted mount, messages are not sent to SYS\$OUTPUT; the operator sees them, however, if an operator terminal is enabled to receive messages.

Many MOUNT qualifiers require special privileges. Some qualifiers require different privileges according to which qualifier keyword you specify. See the individual qualifiers for details.

MOUNT-4 MOUNT /ASSIST

MOUNT Qualifiers

The following pages describe the Mount Utility qualifiers. The qualifiers are listed alphabetically and include examples, as needed. There are no subcommands for the Mount Utility.

/ACCESSED

Specifies, for disk volumes, the approximate number of directories that will be in use concurrently on the volume.

format

/ACCESSED=*n device-name*

qualifier value

n

Specifies the approximate number of directories that will be in use concurrently on the volume. Specify a value from 0 through 255 to override the default that was specified when the volume was initialized.

You need the user privilege OPER to use /ACCESSED.

example

```
$ MOUNT/ACCESSED=150 DBA1 WORK
```

This command requests the volume labeled WORK to be mounted on DBA1, specifying 150 as the number of active directories on the volume.

/ASSIST

Directs the mount operation to allow operator or user intervention if the mount request fails.

format

/ASSIST *device-name*

/NOASSIST *device-name*

description

When you specify the /ASSIST qualifier, MOUNT notifies the user and certain classes of operator if a failure occurs during the mount operation. If a failure occurs, the operator or user can either abort the operation or correct the error condition to allow the operation to continue.

The operator-assist messages are sent to all operator terminals that are enabled to receive messages; magnetic tape mount requests go to TAPE and DEVICE operators, and disk mount requests go to DISK and DEVICE operators. Thus, if you need operator assistance while mounting a disk device, a message is sent to DISK operators.

Any operator reply to a mount request is written to SYS\$OUTPUT to be displayed on the user's terminal or written in a batch job log.

If no operator terminal is enabled to receive and respond to a mount assist request, a message is displayed informing the user of the situation. If a volume is placed in the requested drive, no additional operator response is necessary. If the mount request originates from a batch job and no operator terminal is enabled to receive messages, the mount is aborted.

The default is /ASSIST and can be overridden by /NOASSIST.

example

```
$ MOUNT/NOASSIST DMAO: DOC WORK  
%MOUNT-I-MOUNTED, DOC          mounted on _NODE$DMAO:
```

This command mounts an RK07 volume labeled DOC and assigns the logical name WORK. The /NOASSIST qualifier signals MOUNT that no operator intervention is necessary.

/AUTOMATIC

Determines whether MOUNT enables or disables automatic volume switching and labeling for magnetic tape.

format

```
/AUTOMATIC device-name  
/NOAUTOMATIC device-name
```

MOUNT-6 MOUNT /BIND

description

The default is /AUTOMATIC. If you have multiple magnetic tape drives allocated to a volume set, the Magnetic Tape Ancillary Control Process (MTAACP) performs the volume switch by sequentially selecting the next available drive allocated to the volume set. The MTAACP expects the next reel of the volume set to be loaded on that drive.

If the MTAACP is writing to the volume set, it creates a label and initializes the magnetic tape with that label and the protections established for the first magnetic tape of the volume set. If it is reading from the volume set, the MTAACP generates the label and attempts to mount the next magnetic tape with that label. If the drive has the wrong magnetic tape (or no magnetic tape) loaded, the MTAACP sends a message to the operator's console to prompt for the correct magnetic tape.

The label generated by the MTAACP fills the 6-character volume identifier field. The first four characters of the field contain the first four characters of the label specified in the MOUNT command, padded with an underscore when the label is not at least four characters. The fifth and sixth characters contain the relative volume number for this reel in the volume set.

If you specify /NOAUTOMATIC, the MTAACP requires operator intervention to switch to the next drive during end-of-tape processing, and requires that the operator specify a label for each new reel added to a volume set.

example

```
$ MOUNT/NOAUTOMATIC MTAO: ABCD,EFGH
```

This command instructs MOUNT not to generate its own label for the second volume, but to use the ones supplied with the MOUNT command. If the second volume is not already labeled, then the operator must use REPLY /INIT and supply the second label.

/BIND

Creates a volume set of one or more disk volumes or adds one or more volumes to an existing volume set.

format

/BIND=volume-set-name device-name[,...] volume-label[,...]

keyword

volume-set-name

Specifies a 1- through 12-alphanumeric-character name identifying the volume set.

description

You must specify the /BIND qualifier when you first create the volume set or each time you add a volume to the set. To dismount an individual volume of the volume set, you must use the DISMOUNT qualifier /UNIT. Otherwise, dismounting an individual volume dismounts the entire volume set.

When you create a volume set, the volumes specified in the volume-label list are assigned relative volume numbers based on their position in the label list. The first volume specified becomes the root volume of the set.

When you add a volume or volumes to a volume set, the first volume label specified must be that of the root volume, or the root volume must already be on line.

Note that if you attempt to create a volume set from two or more volumes that already contain files and data, the file system does not issue an error message when you issue the MOUNT/BIND command. However, the volumes are unusable as a volume set because the directory structures are not properly bound.

example

```
$ MOUNT/BIND=LIBRARY DMA0: ,DMA1: ,DMA2: BOOK1,BOOK2,BOOK3
```

This command creates a volume set named LIBRARY. This volume set consists of the volumes labeled BOOK1, BOOK2, and BOOK3, which are mounted physically on devices DMA0, DMA1, and DMA2, respectively.

/BLOCKSIZE

Specifies the default block size for magnetic tape volumes.

format

/BLOCKSIZE=n device-name

qualifier value

n

Specifies the default block size value for magnetic tape volumes. Valid values are in the range 20 through 65,532 for VMS RMS operations, and 18 through 65,534 for non-VMS RMS operations. By default, records are written to magnetic tape volumes in 2048-byte blocks. For foreign or unlabeled magnetic tapes, the default is 512 bytes.

MOUNT-8 MOUNT /CACHE

description

You must specify `/BLOCKSIZE` in two situations:

- When mounting magnetic tapes that do not have HDR2 labels. For these magnetic tapes, you must specify the block size. For example, you must specify `/BLOCKSIZE=512` to mount an RT-11 magnetic tape.
- When mounting magnetic tapes that contain blocks whose size exceeds the default block size (2048 bytes). In this case, specify the size of the largest block for the block size.

example

```
$ MOUNT/FOREIGN/BLOCKSIZE=1000 MTA1:
```

In this example, the `/BLOCKSIZE` qualifier specifies a block size of 1000 bytes; the default for a magnetic tape mounted with the `/FOREIGN` qualifier is 512.

/CACHE

For disks, controls whether caching limits established at system generation time are disabled or overridden. With the `TAPE_DATA` option, enables write caching for the tape controller specified (if the tape controller supports write caching).

format

```
/CACHE=(keyword[,...])  
/NOCACHE
```

keywords

```
EXTENT[=n]  
NOEXTENT
```

Enables or disables extent caching. To enable extent caching, you must have the operator user privilege (OPER) and you must specify *n*, the number of entries in the extent cache. Note that `NOEXTENT` is equivalent to `EXTENT=0`; both disable extent caching.

```
FILE_ID[=n]  
NOFILE_ID
```

Enables or disables file identification caching. To enable file identification caching, you must have the operator user privilege (OPER) and you must specify *n*, the number of entries, as a value greater than 1. Note that `NOFILE_ID` is equivalent to `FILE_ID=1`; both disable file identification caching.

LIMIT=*n*

Specifies the maximum amount of free space in the extent cache in one-thousandths of the currently available free space on the disk.

QUOTA[=*n*]

NOQUOTA

Enables or disables quota caching. To enable quota caching, you must have the operator user privilege (OPER) and you must specify *n*, the number of entries in the quota cache. Normally *n* is set to the maximum number of active users expected for a disk with quotas enabled. Both NOQUOTA and QUOTA=0 disable quota file caching.

TAPE_DATA

Enables write caching for a magnetic tape device if the tape controller supports write caching. /NOCACHE is the default for mounting tape devices. You must specify TAPE_DATA to enable write caching. If the tape controller does not support write caching, the keyword is ignored.

WRITETHROUGH

Disables writeback caching, which writes only the file headers of files open for write when the files are closed. Thus, if you specify the WRITETHROUGH keyword, file headers are written to the disk on every file header operation.

description

Used with the disk options, the /CACHE qualifier overrides one or more of the present disk caching limits established at system generation time. Used with the TAPE_DATA option, the /CACHE qualifier enables write caching for the tape controller specified.

If you specify more than one option, separate them by commas and enclose the list in parentheses. The options [NO]EXTENT, [NO]FILE_ID, LIMIT, and [NO]QUOTA apply only to a disk device. The option TAPE_DATA applies only to a tape device.

If you specify /NOCACHE for a disk device, all caching is disabled for this volume. Note that the /NOCACHE qualifier is equivalent to /CACHE=(NOEXTENT,NOFILE_ID,NOQUOTA,WRITETHROUGH).

If you specify /NOCACHE for a magnetic tape device, the tape controller's write cache is disabled for this volume. This is the default for the TAPE_DATA option.

MOUNT-10 MOUNT /CLUSTER

example

```
$ MOUNT/CACHE=(EXTENT=60,FILE_ID=60,QUOTA=20,WRITETHROUGH) -  
_ $ DMAO: FILES WORK  
%MOUNT-I-MOUNTED, FILES          mounted on _NODE$DMAO:
```

This command mounts an RK07 device labeled FILES and assigns the logical name WORK. The /CACHE qualifier enables an extent cache of 60 entries, a file identification cache of 60 entries, and a quota cache of 20; it disables writeback caching.

/CLUSTER

Specifies that after the volume is successfully mounted on the local node, or if it is already mounted /SYSTEM on the local node, it is to be mounted on every other node in the existing VAXcluster (that is, the volume is mounted clusterwide).

format

/CLUSTER *device-name*

description

Only system or group volumes can be mounted clusterwide. If you specify the /CLUSTER qualifier with neither the /SYSTEM nor the /GROUP qualifier, the default is /SYSTEM. Note that you must use a cluster device-naming convention. Use either *node\$device-name* or *allocation-class\$device-name* as required by your configuration.

You need the user privileges GRPNAM and SYSNAM, respectively, to mount group and system volumes clusterwide.

If the system is not a member of a VAXcluster, the /CLUSTER qualifier has no effect.

example

```
$ MOUNT/CLUSTER DOPEY$DMA1: SNOWWHITE DWARFDISK  
%MOUNT-I-MOUNTED, SNOWWHITE          mounted on _DOPEY$DMA1:  
$ SHOW DEVICE/FULL DWARFDISK:
```

Disk **\$2\$DMA1:** (DOPEY), device type RK07, is online, mounted, file-oriented device, shareable, served to cluster via MSCP Server, error logging is enabled.

Error count	0	Operations completed	159
Owner process	""	Owner UIC	[928,49]
Owner process ID	00000000	Dev Prot	S:RWED,O:RWED,G:RW,W:R
Reference count	1	Default buffer size	512
Total blocks	53790	Sectors per track	22
Total cylinders	815	Tracks per cylinder	3
Allocation class	2		

MOUNT MOUNT-11
/COMMENT

Volume label	"SNOWWHITE"	Relative volume number	0
Cluster size	3	Transaction count	1
Free blocks	51720	Maximum files allowed	6723
Extend quantity	5	Mount count	7
Mount status	System	Cache name	"_\$255\$DWARF1:XQPCACHE"
Extent cache size	64	Maximum blocks in extent cache	5172
File ID cache size	64	Blocks currently in extent cache	0
Quota cache size	25	Maximum buffers in FCP cache	349

Volume status: subject to mount verification, file high-water marking, write-through caching enabled.

Volume is also mounted on DOC, HAPPY, GRUMPY, SLEEPY, SNEEZY, BASHFUL.

This MOUNT/CLUSTER command mounts the volume SNOWWHITE on DOPEY\$DMA1, then proceeds to mount the volume clusterwide. The SHOW DEVICE/FULL command displays information about the volume, including the other nodes on which it is mounted.

/COMMENT

Specifies additional information to be included with the operator request when the mount operation requires operator assistance.

format

/COMMENT="string" device-name

keyword

string

Specifies the text string that is output to the operator log file and the current SYS\$OUTPUT device. The string must contain no more than 78 characters.

example

```
$ MOUNT DY1: TESTSYS/COMMENT="Volume in cabinet 6."  
%MOUNT-I-OPRQST, Please mount volume TESTSYS in device _DYA1:  
Volume in cabinet 6.  
%MOUNT-I-MOUNTED TESTSYS    mounted on _DYA1:  
%MOUNT-I-OPRQSTDON, operator request canceled - mount  
completed successfully
```

This command requests the operator to mount the disk volume TESTSYS on the device DY1. Notice that the /COMMENT qualifier is used to inform the operator of the location of the volume. After the operator places the volume in DY1, MOUNT retries the operation. After the operation completes, the operator request is canceled.

MOUNT-12 MOUNT /DATA_CHECK

/CONFIRM

Applicable only if you have the volume shadowing option.

/COPY

Applicable only if you have the volume shadowing option.

/DATA_CHECK

Overrides the read-check or write-check option (or both) specified for a volume when it was initialized.

format

/DATA_CHECK[=(keyword[,...])] device-name

keywords

READ

Performs checks following all read operations.

WRITE

Performs checks following all write operations.

description

You can specify either or both of the keywords. If you specify more than one keyword, separate them by commas and enclose the list in parentheses.

If you specify the /DATA_CHECK qualifier without specifying a keyword, MOUNT defaults to /DATA_CHECK=WRITE.

example

```
$ MOUNT/DATA_CHECK=READ CLEMENS$DBA2: SAM BOOK
```

This command mounts a volume labeled SAM on CLEMENS\$DBA2 and assigns the logical name BOOK. The /DATA_CHECK=READ qualifier overrides a previous INITIALIZE/DATA_CHECK=WRITE specification, so that subsequent read operations on BOOK are subject to data-checking operations.

/DENSITY

Specifies the density (in bpi) at which a foreign or unlabeled magnetic tape is to be written.

format

[/FOREIGN][/NOLABEL]/DENSITY=*n device-name*

qualifier value

n

Specifies a density of 800 bpi, 1600 bpi, or 6250 bpi, if supported by the magnetic tape drive. If you do not specify a density for a magnetic tape that was previously written, the density defaults to that of the first record on the volume.

description

The specified density is used only if you specify /FOREIGN or /NOLABEL and the first operation performed on the magnetic tape is a write.

If you specify /LABEL, or if the first operation on the magnetic tape is a read, the magnetic tape is read or written at the density at which the first record on the magnetic tape is recorded. The default is /LABEL.

example

\$ MOUNT/FOREIGN/DENSITY=1600 MFA0: TAPE

This command mounts a foreign magnetic tape on drive MFA0 and assigns the logical name TAPE. The /DENSITY qualifier specifies that the magnetic tape is to be written at a density of 1600 bpi.

/EXTENSION

Specifies the number of blocks by which disk files are to be extended on the volume unless otherwise specified by an individual command or program request.

format

/EXTENSION=*n device-name*

qualifier value

n

Specifies a value from 0 through 65,535 to override the value specified when the volume was initialized.

MOUNT-14 MOUNT /FOREIGN

example

\$ MOUNT/EXTENSION=64 DBA0: DOC WORK

This command mounts a volume labeled DOC on DBA0, assigns the logical name WORK, and specifies a default block extent of 64 for the files on WORK.

/FOREIGN

Indicates that the volume is not in the standard format used by the VMS operating system.

format

/FOREIGN *device-name*

description

You should use the /FOREIGN qualifier when a magnetic tape volume is not in the standard ANSI format, or when a disk volume is not in Files-11 format.

If you mount a volume with the /FOREIGN qualifier, the program you use to read the volume must be able to process the labels on the volume, if any. The VMS operating system does not provide an ancillary control process (ACP) to process the volume.

You must mount DOS-11 and RT-11 volumes with the /FOREIGN qualifier and process them with the Exchange Utility (EXCHANGE).

The default protection applied to foreign volumes is RWLP (Read, Write, Logical I/O, Physical I/O) for the system and owner. If you also specify /GROUP, group members are also given RWLP access. If you specify /SYSTEM or /SHARE, the group and world are both given RWLP access. If you mount a volume currently in Files-11 format with the /FOREIGN qualifier, you must have the user privilege VOLPRO, or your UIC must match the UIC on the volume.

example

\$ MOUNT/FOREIGN MTA1: TAPE

This command mounts a foreign magnetic tape on drive MTA1.

/GROUP

Makes the volume available to other users with the same group number in their UICs as the user entering the MOUNT command.

format

/GROUP *device-name*

description

The logical name for the volume is placed in the group logical name table. You must have the user privilege GRPNAM to use the /GROUP qualifier.

Note that if the volume is owned by a group other than yours, access may be denied because of the volume protection.

example

```
$ MOUNT/GROUP DB1:, DB2:, DB3: -  
_ $ PAYVOL1,PAYVOL2,PAYVOL3 PAY
```

This command mounts and makes available on a group basis the volume set consisting of volumes labeled PAYVOL1, PAYVOL2, and PAYVOL3. The logical name PAY is assigned to the set; anyone wanting to access files on these volumes can refer to the set as PAY.

```
$ MOUNT/GROUP/BIND=MASTER_PAY -  
_ $ DB4: PAYVOL4
```

This command adds the volume labeled PAYVOL4 to the existing volume set MASTER_PAY. The root volume for the volume set must be on line when you enter this command.

/HDR3

Controls whether ANSI standard header label 3 is written on a magnetic tape volume.

format

/HDR3 *device-name*
/NOHDR3 *device-name*

description

By default, header label 3 is written. You can specify the /NOHDR3 qualifier to write magnetic tapes that are to be used on other systems that do not process HDR3 labels correctly.

MOUNT-16 MOUNT /LABEL

example

```
$ INITIALIZE MTAO: ABCD  
$ MOUNT/NOHDR3 MTAO: ABCD
```

The INITIALIZE and MOUNT commands prepare an ANSI-formatted magnetic tape for processing. The /NOHDR3 qualifier specifies that no HDR3 labels are to be written, thus creating a magnetic tape that can be transported to systems that do not process implementation-dependent labels correctly.

/INITIALIZE=CONTINUATION

Specifies that any volume added to the magnetic tape volume set is initialized before you can write to the volume.

format

```
/INITIALIZE=CONTINUATION device-name
```

example

```
$ MOUNT/INITIALIZE=CONTINUATION MTAO: ABCD
```

This /INITIALIZE=CONTINUATION qualifier instructs the MOUNT command to assign its own continuation label. In this case, the operator can enter the command REPLY/TO=n, and the system assigns a label derived from the original. It uses the label specified in the MOUNT command and adds the appropriate number (ABCD02, ABCD03, and so forth).

/LABEL

Indicates that the volume is in the standard format used by the VMS operating system; that is, a magnetic tape volume is in the standard ANSI format, or a disk volume is in Files-11 format.

format

```
/LABEL device-name  
/NOLABEL device-name
```

description

The default is /LABEL.

Note that /NOLABEL is equivalent to /FOREIGN.

example

```
$ MOUNT/LABEL MFA1: TAPE
```

This command mounts an ANSI-labeled magnetic tape on MFA1 and assigns the logical name TAPE.

/MESSAGE

Causes mount request messages to be sent to your current SYS\$OUTPUT device.

format

```
/MESSAGE device-name  
/NOMESSAGE device-name
```

description

If you specify */NOMESSAGE* during an operator-assisted mount, messages are not output to SYS\$OUTPUT; the operator sees them, however, provided an operator terminal is enabled.

The default is */MESSAGE*.

example

```
$ MOUNT/NOMESSAGE DLA0: SLIP DISC
```

In this example an RL02 device labeled SLIP is mounted on drive DLA0 and is assigned the logical name DISC. The */NOMESSAGE* qualifier disables the broadcast of mount request messages to the user terminal.

/MOUNT_VERIFICATION

Specifies that the device is a candidate for mount verification.

format

```
/MOUNT_VERIFICATION device-name  
/NOMOUNT_VERIFICATION device-name
```

description

The */MOUNT_VERIFICATION* qualifier affects Files-11 Structure Level 2 disks, and as of VMS Version 5.0 affects foreign and ANSI-labeled magnetic tape volumes. The default is */MOUNT_VERIFICATION*.

MOUNT-18 MOUNT /MULTI_VOLUME

example

```
$ MOUNT/CACHE=(NOEXTENT,NOFILE_ID,NOQUOTA,WRITETHROUGH) -  
_ $ /NOMOUNT_VERIFICATION DMAO: FILES WORK  
%MOUNT-I-MOUNTED, FILES          mounted on _NODE$DMAO:
```

This command mounts an RK06 or RK07 device labeled FILES and assigns the logical name WORK. The /CACHE qualifier disables extent caching, file identification caching, quota caching, and writeback caching; the /NOMOUNT_VERIFICATION qualifier disables mount verification.

/MULTI_VOLUME

For foreign or unlabeled magnetic tape volumes, determines whether you override MOUNT volume-access checks. Use /MULTI_VOLUME to override access checks on volumes that do not contain labels that MOUNT can interpret. If you have software produced before VMS Version 5.0 that processes multiple-volume, foreign-mounted tape volumes without specifically mounting and dismounting each reel, you may now need to mount the first volume with the /MULTI_VOLUME qualifier.

format

```
/MULTI_VOLUME device-name  
/NOMULTI_VOLUME device-name
```

description

Use this qualifier when a utility that supports multiple-volume, foreign-mounted magnetic tape sets needs to process subsequent volumes, and these volumes do not contain labels that the VMS Mount Utility can interpret.

As of VMS Version 5.0, by default, all tape volumes are subject to the complete access checks of the VMS Mount Utility (MOUNT). Some user-written and vendor-supplied utilities used prior to VMS Version 5.0 may mount only the first tape in a foreign tape set. To make these utilities compatible with VMS Version 5.0, you should alter them to perform explicit calls to the \$MOUNT and \$DISMOU system services for each reel in the set. As an alternative, you can now mount the magnetic tape sets to be used by these utilities with the /MULTI_VOLUME qualifier.

You must specify the /FOREIGN qualifier with the /MULTI_VOLUME qualifier and you must have the user privilege VOLPRO. The default is /NOMULTI_VOLUME.

NOTE: The VMS Backup Utility has been modified for VMS Version 5.0 to explicitly perform calls to the \$MOUNT and \$DISMOU system services on each reel of a foreign-mounted magnetic tape set.

example

\$ MOUNT/FOREIGN/MULTI_VOLUME MUAO:

This command mounts a tape volume set. MOUNT performs an access check on the first volume in the set and proceeds without checks to subsequent reels as they are needed for processing.

/OVERRIDE

Inhibits one or more protection checks that the MOUNT command performs.

format

/OVERRIDE=(keyword[,...]) device-name

keywords

ACCESSIBILITY

For magnetic tapes only. If the installation allows, this keyword overrides any character in the Accessibility Field of the volume. The necessity of this keyword is defined by the installation. That is, each installation has the option of specifying a routine that the magnetic tape file system will use to process this field. By default, VMS provides a routine that checks this field in the following manner:

- If the magnetic tape was created on a version of VMS that conforms to Version 3 of ANSI, then you must use this keyword to override any character other than an ASCII space.
- If a VMS protection is specified and the magnetic tape conforms to an ANSI standard that is higher than Version 3, then you must use this keyword to override any character other than an ASCII 1.

To use the ACCESSIBILITY keyword, you must have the user privilege VOLPRO or own the volume.

EXPIRATION

For magnetic tapes only. Allows you to override the expiration dates of a volume and its files. Use this keyword when the expiration date in the first file header label of any file that you want to overwrite has not been reached. You must have the user privilege VOLPRO or your UIC must match the UIC written on the volume.

IDENTIFICATION

Overrides processing of the volume identifier in the volume label. Use this keyword to mount a volume for which you do not know the label. Only the volume identifier field is overridden. Volume protection, if any, is preserved. The volume must be mounted /NOSHARE (either explicitly or by default).

MOUNT-20 MOUNT **/OWNER_UIC**

LOCK

Directs MOUNT not to write-lock the volume as a consequence of certain errors encountered while mounting it. Use this keyword when you are mounting a damaged volume to be repaired using the Verify Utility. You must have VOLPRO privilege or own the volume to use the LOCK keyword.

OWNER_IDENTIFIER

For magnetic tapes only. Overrides the processing of the owner identifier field. Use this keyword to interchange protected magnetic tapes between VMS and other DIGITAL operating systems.

SETID

For magnetic tapes only. Prevents MOUNT from checking the file-set identifier in the first file header label of the first file on a continuation volume. Use this keyword only for ANSI-labeled volumes on which the file-set identifier of the first file on a continuation volume differs from the file-set identifier of the first file of the first volume that was mounted.

SHADOW_MEMBERSHIP

Applicable only if you have the volume shadowing option.

If you specify more than one keyword, separate them with commas and enclose the list in parentheses.

You need the user privileges OPER and VOLPRO to specify /OVERRIDE=(ACCESSIBILITY, EXPIRATION) along with the /FOREIGN qualifier; otherwise, the magnetic tape is not read.

example

```
$ MOUNT/OVERRIDE=IDENTIFICATION MFA0:
```

This command overrides the volume identification field, thus mounting a magnetic tape on MFA0 without a label specification.

/OWNER_UIC

Requests that the specified UIC be assigned ownership of the volume while it is mounted, overriding the ownership recorded on the volume. Or, if you are mounting a volume using the /FOREIGN qualifier, requests an owner UIC other than your current UIC.

format

```
/OWNER_UIC=uic device-name
```

keyword

UIC

Specifies the User Identification Code (UIC) in the following format:

[group,member]

You must use brackets in the UIC specification. The group number is an octal number in the range 0 through 37776; the member number is an octal number in the range 0 through 17776.

To use the /OWNER_UIC qualifier for a Files-11 volume you must have the user privilege VOLPRO, or your UIC must match the UIC written on the volume.

example

```
$ MOUNT/OWNER_UIC=[016,360] DRA3: WORK
```

This command mounts a disk device labeled WORK on DRA3 and assigns an owner UIC of [016,360].

/PROCESSOR

For magnetic tapes and Files-11 Structure Level 1 disks, requests that the MOUNT command associate an Ancillary Control Process (ACP) to process the volume. The /PROCESSOR qualifier causes MOUNT to override the default manner in which ACPs are associated with devices.

For Files-11 Structure Level 2 disks, controls block cache allocation.

format

/PROCESSOR=keyword device-name

keywords

UNIQUE

For magnetic tape and Files-11 Structure Level 1 disks, creates a new process to execute a copy of the default ACP image for the specified device type or controller.

For Files-11 Structure Level 2 disks, allocates a separate block cache.

SAME:device

For magnetic tape and Files-11 Structure Level 1 disks, uses the same ACP process currently being used by the device specified.

For Files-11 Structure Level 2 disks, takes the block cache allocation from the specified device.

MOUNT-22 MOUNT /PROTECTION

filespec

Creates a new process to execute the ACP image specified by the file specification (for example, a modified or a user-written ACP). You cannot use wildcard characters, or node and directory names in the file specification.

To use this keyword, you need CMKRNL and OPER privilege.

You must have the operator user privilege OPER to use the /PROCESSOR qualifier.

example

```
$ MOUNT/PROCESSOR=SAME:MTA1: MFAO:
```

This command directs MOUNT to mount a magnetic tape on MFA0 using the same ACP process currently associated with MTA1.

/PROTECTION

Specifies the protection code to be assigned to the volume.

format

/PROTECTION=code device-name

keyword

code

Specifies the protection code according to the standard syntax rules for specifying protection. If you omit a protection category, that category of user is denied all access.

If you do not specify a protection code, the default is the protection that was assigned to the volume when it was initialized.

description

If you specify the /PROTECTION qualifier when you mount a volume with the /SYSTEM or /GROUP qualifier, the specified protection code overrides any access rights implied by the other qualifiers.

If you specify the /FOREIGN qualifier, the Execute and Delete access codes are synonyms for Logical and Physical. You can, however, specify the access codes P (Physical I/O) or L (Logical I/O), or both, to restrict the nature of input/output operations that different user categories can perform.

To use the /PROTECTION qualifier on a Files-11 volume, you must have the user privilege VOLPRO or your UIC must match the UIC written on the volume.

example

```
$ MOUNT/PROTECTION=(SYSTEM:RWE,O:RWED,G:RE,W:R) DBA1: WORKDISK
```

This command mounts a device labeled WORKDISK on DBA1 and assigns a protection code. Access to the volume will be READ, WRITE, and EXECUTE for SYSTEM users; READ, WRITE, EXECUTE, and DELETE for OWNER; READ and EXECUTE for GROUP users; and READ-only for users in the WORLD category.

/QUOTA

Controls whether or not quotas are to be enforced on the specified disk volume.

format

```
/QUOTA device-name  
/NOQUOTA device-name
```

description

The default is /QUOTA, which enforces the quotas for each user. The /NOQUOTA qualifier inhibits this checking. To specify the /QUOTA qualifier, you must have the user privilege VOLPRO or your UIC must match the UIC written on the volume.

example

```
$ MOUNT/OWNER_UIC=[016,360]/NOQUOTA DRA3: WORK
```

This command specifies that the disk volume labeled WORK on DRA3 has an owner UIC of [016,360] and no quotas enforced.

/REBUILD

Controls whether or not MOUNT performs a rebuild operation on a disk volume.

format

```
/REBUILD device-name  
/NOREBUILD device-name
```

MOUNT-24 MOUNT /REBUILD

description

If a disk volume is improperly dismounted (such as during a system failure), you must rebuild it to recover any caching limits that were enabled on the volume at the time of the dismount. By default, MOUNT attempts the rebuild. For a successful rebuild operation that includes reclaiming all of the available free space, you must mount *all* of the volume set members.

The rebuild may consume a considerable amount of time, depending on the number of files on the volume and, if quotas are in use, on the number of different file owners.

The following caches may have been in effect on the volume before it was dismounted:

- Preallocated free space (EXTENT cache)
- Preallocated file numbers (FILE_ID cache)
- Disk quota usage caching (QUOTA cache)

If caching was in effect for preallocated free space or file numbers, the rebuild time is directly proportional to the greatest number of files that ever existed on the volume at one time. If disk quota caching was in effect, you can expect additional time that is proportional to the square of the number of entries in the disk quota file.

If none of these items were in effect, the rebuild is not necessary and does not occur.

If you use the /NOREBUILD qualifier, devices can be returned to active use immediately. You can then perform the rebuild later with the DCL command SET VOLUME/REBUILD .

example

```
$ MOUNT/REBUILD NODE$DBA2: WORKDISK
%MOUNT-I-MOUNTED, WORKDISK          mounted on _NODE$DBA2:
%MOUNT-I-REBUILD, volume was improperly dismounted; rebuild in progress
```

In this example, the volume WORKDISK is mounted on NODE\$DBA2. Because the volume is found to have been improperly dismounted and the /REBUILD qualifier is in effect, MOUNT displays a message and proceeds to rebuild the volume.

/RECORDSIZE=n

Specifies the number of characters in each record of a magnetic tape volume.

format

/RECORDSIZE=n *device-name*

qualifier value

n

Specifies the block size in the range 20 through 65,532 bytes if you are using VMS RMS, or 18 through 65,534 bytes if you are not using VMS RMS.

description

You typically use this qualifier with the /FOREIGN and /BLOCKSIZE qualifiers to read or write fixed-length records on a block structured device. In this case, the record size must be less than or equal to the block size specified or used by default.

Use the /RECORDSIZE qualifier when mounting magnetic tapes without HDR2 labels (such as RT-11 magnetic tapes) to provide VMS RMS with default values for the maximum record size.

example

\$ MOUNT/FOREIGN/BLOCKSIZE=512/RECORDSIZE=512 MTA0:

In this example the magnetic tape is mounted on MTA0 with a default block size and record size of 512 characters.

/SHADOW

Applicable only if you have the volume shadowing option.

/SHARE

Specifies, for a disk volume, that the volume is shareable.

format

/SHARE *device-name*

/NOSHARE *device-name*

MOUNT-26 MOUNT /SYSTEM

description

If another user has already mounted the volume shareable, and you request it to be mounted with the /SHARE qualifier, any other qualifiers you enter are ignored.

By default, a volume is not shareable, and the MOUNT command allocates the device on which it is mounted.

If you previously allocated the device and specify the /SHARE qualifier, the MOUNT command deallocates the device so that other users can access it.

example

```
$ MOUNT/NOMESSAGE/SHARE DLA0: SLIP DISC
```

This command mounts the device labeled SLIP on DLA0, disables broadcasting of MOUNT messages, specifies that the volume is shareable, and assigns the logical name DISC.

/SYSTEM

Makes the volume public, that is, available to all users of the system, as long as the UIC-based volume protection allows them access.

format

/SYSTEM *device-name*

description

The logical name for the device is placed in the system logical name table. You must have the user privilege SYSNAM to use the /SYSTEM qualifier.

When you mount a volume with the /SYSTEM qualifier in a VAXcluster, you must use a volume label that is unique clusterwide, even if the specified volume is not mounted clusterwide.

example

```
$ MOUNT/NOMESSAGE/SYSTEM DUA1: SLIP SACH
```

This command mounts the volume labeled SLIP on DUA1 with mount messages disabled. The volume is made available systemwide. MOUNT also assigns the logical name SACH.

/UNLOAD

Controls whether or not the disk or magnetic tape volume or volumes specified in the MOUNT command are unloaded when they are dismounted. The default is /UNLOAD.

format

/UNLOAD *device-name*
/NOUNLOAD *device-name*

example

```
$ MOUNT/NOUNLOAD DBA1: OFFENS STRAT
```

In this example, the volume labeled OFFENS is mounted on DBA1 with the /NOUNLOAD qualifier so that it can be dismounted without being physically unloaded. MOUNT also assigns the logical name STRAT.

/WINDOWS

Specifies the number of mapping pointers to be allocated for file windows.

format

/WINDOWS=*n* *device-name*

qualifier value

n

Specifies a value from 7 through 80 that overrides the default value specified when the volume was initialized.

description

When a file is opened, the file system uses the mapping pointers to access data in the file. Use MOUNT/WINDOWS to override the default value specified when the volume was initialized. If no value was specified at volume initialization, the default number of mapping pointers is 7.

You must have the operator user privilege (OPER) to use the /WINDOWS qualifier.

example

```
$ MOUNT/SYSTEM/WINDOWS=25 DBA2: GONWITH THE_WINDOW
```

This command makes the volume labeled GONWITH on DBA2 available systemwide and assigns the logical name THE_WINDOW. You override the default number of mapping pointers by specifying a value of 25 for the /WINDOWS qualifier.

MOUNT-28 MOUNT
/WRITE

/WRITE

Controls whether the volume can be written.

format

/WRITE *device-name*
/NOWRITE *device-name*

description

By default, a volume is considered read/write when it is mounted. You can specify **/NOWRITE** to provide read-only access to protect files. This is equivalent to write-locking the device.

example

```
$ MOUNT/CLUSTER/NOWRITE NODE$DBA1: BOOKS
```

This command mounts a volume labeled **BOOKS** on **NODE\$DBA1** and then proceeds to mount it on each node in the existing **VAXcluster**. The **/NOWRITE** qualifier makes the volume available for read-only access.

NCP Utility

The Network Control Program (NCP) is a DECnet-VAX utility that accepts terminal commands to configure, control, monitor, and test a DECnet network.

format

RUN SYS\$SYSTEM:NCP

To invoke NCP, enter the following DCL command:

```
$ RUN SYS$SYSTEM:NCP
```

NCP returns the following prompt:

```
NCP>
```

Alternatively, you can execute a single NCP command by using a DCL string assignment statement. For example:

```
$ NCP=="$NCP"  
$ NCP SHOW STATUS KNOWN LINES
```

NCP executes the SHOW KNOWN LINES command and returns control to DCL.

To exit from an NCP session, type EXIT or press CTRL/Z after the NCP> prompt.

Output for the SHOW and LIST commands is normally displayed on the default output device, SYS\$OUTPUT. Alternatively, you may direct output to a specified file using the TO qualifier with the SHOW or LIST command.

You can use the asterisk (*) and the percent sign (%) as wildcard characters in an NCP command line to refer to a group of NCP components by a general name, rather than specifying each component name individually.

The wildcard characters can be used to represent the following component names:

- Node name
- Node address
- Circuit name
- Line name
- Object name
- Events

The asterisk wildcard represents one or more characters, while the percent sign represents a single character.

NCP-2 NCP Utility

You need certain privileges to use most NCP commands. The SET and DEFINE commands require the operator privilege (OPER), and the LIST command requires the system privilege (SYSPRV). The SHOW command does not require any privileges.

NCP Commands

The following section presents the NCP commands in alphabetical order.

NOTE: The following section contains only a subset of the complete set of NCP commands. Also, this section includes only the most commonly used command parameters and qualifiers for the commands listed.

You can abbreviate any command verb, component, parameter, or qualifier as long as the abbreviation is not ambiguous. Certain words provide syntactic clarity but are optional. If omission of a word in an NCP command line produces an unambiguous result, that word is optional.

For convenience, commands that have the same components and parameters, yet different command verbs—depending upon whether they access the volatile or the permanent database—are listed together. Examples of commands listed together are SET and DEFINE, and SHOW and LIST, where SET and SHOW verbs apply to the volatile database and DEFINE and LIST verbs apply to the permanent database. When two commands are grouped together, components and parameters are described for the command that accesses the volatile database. Typically, the actions described for the volatile database also apply to the permanent database.

When you issue NCP commands, many components, parameters, and qualifiers require you to supply additional information. For the most part, their syntax follows a standard set of rules. Exceptions to these rules are documented in the description of the component, parameter, or qualifier to which they apply.

The syntax of the various component-name, parameter, and qualifier values is summarized in the following list. In this list, all numeric values are in decimal and have a range of 0 to 65,535 unless otherwise specified.

area-number

A decimal value in the range 1 to 63 to be specified in the beginning of the *node-address* and separated from the *node number* by a period. If you do not specify an area number, the area number of the executor is used. The default area number for the executor is 1.

NCP-4 NCP NCP Commands

circuit-id A string of characters whose exact syntax is that for a DECnet circuit identification.

Circuit identification takes one of the following formats:

```
dev-c
dev-c-u
```

dev Is a device name. Refer to the description of device-type for a list of device mnemonic names.

c Is a decimal number (0 or a positive integer) designating the device's hardware controller.

u Is a decimal unit or circuit number (0 or a positive integer) included only if more than one unit is associated with the controller.

count A decimal numeric value.

device-type A string of characters representing the mnemonic name for the device. Devices supported by DECnet-VAX include the following:

```
BNA      DMF      TT
CI       DMP      TX
DMB      QNA
DMC      SVA
```

E-address A string of 12 hexadecimal digits, represented by 6 bytes separated by hyphens (for example, AA-00-04-00-AB-04). The string indicates an Ethernet address. The bytes are ordered from left to right as transmitted and received on the Ethernet.

event-list A list of event types for a given class in the format class.type. When specifying an event list, you may specify only one class; however, you can specify a range of types by using commas and hyphens, for example, 4.3-5,7-10. The following table provides examples of these formats.

Event List	Meaning
4.4	Identifies event class 4, type 4.
4.5-7	Identifies event class 4, types 5 through 7.
4.5,7-9,11	Identifies event class 4, types 5, 7 through 9, and 11. Note that types must be specified in ascending order.

filespec A VMS file specification string in the following general format:

```
node-spec::device:[directory]filename.type;version
```

Logical names are permitted. For a file in your current directory, you need specify only a file name of up to 39 alphanumeric characters, optionally followed by a period and a file type of up to 39 alphanumeric characters.

hex-password A string of up to 8 hexadecimal digits.

NCP NCP-5
NCP Commands

id-string	A string of up to 32 characters. If the string includes spaces or tabs, enclose it within quotation marks.
line-id	A string of characters whose exact syntax is that for a DECnet line identification. For VMS operating systems, <i>line-id</i> takes one of the following formats: dev-c dev-c-u dev Is a device name. Refer to the description of <i>device-type</i> for a list of device mnemonic names. c Is a decimal number (0 or a positive integer) designating the device's hardware controller. u Is a decimal unit or line number (0 or a positive integer) included if the device is a multiple unit line controller.
milliseconds	A decimal numeric value.
node-address	A numeric value in the range 1.1 to 63.1023, composed of an area number to the left of the period followed by a node number to the right of the period. (The node number indicates the address of the node within the specified area.) If the area number is not supplied, the area number of the executor node is used. The default area number for the executor is 1.
node-id	Either a <i>node-name</i> or a <i>node-address</i> .
node-name	A string of up to six alphanumeric characters containing at least one alphabetic character.
node-spec	A <i>node-id</i> followed by optional access control information as specified for VMS operating systems in the following format: node-id"user password account"
node-type	A string of characters consisting of one of the following: Routing III Nonrouting III Routing IV Nonrouting IV Area
number	A decimal numeric value.
object-name	A string of up to 12 printable characters.
password	A string of up to 39 printable characters.
privilege-list	A list of VMS privilege names delimited by space characters.
seconds	A decimal numeric value.
user-id	A string of up to 39 alphanumeric and hyphen characters.

Quotation mark delimiters are valid for the *node-spec* format. In addition, you can use quotation marks as delimiters when providing receive and transmit passwords for the SET NODE and DEFINE NODE commands. For example:

```
NCP> SET NODE TRANSMIT PASSWORD "HI VAX"
```

NCP-6 NCP

COPY KNOWN NODES

Also, use quotation marks to delimit the software identification string specified for the IDENTIFICATION parameter of the SET EXECUTOR command. For example:

```
NCP> SET EXECUTOR IDENTIFICATION "VMS HOST SYSTEM"
```

COPY KNOWN NODES

The COPY KNOWN NODES command updates the node database on the local node. You can copy the volatile or permanent node database from a remote node to either or both the volatile and permanent node databases on the local node. You also have the option of clearing or purging the node database on the local node before beginning the copy operation.

Only the node name and node address are copied. A node entry will not be copied into the node database if it would result in the association of two names with one address or two addresses with one name.

The TELL prefix cannot be used with this command.

format

COPY *node-component parameter [qualifier] [...]*

node component

KNOWN NODES

Indicates that names and addresses of all known nodes stored in the database of the specified remote node are to be copied.

command parameter

FROM node-id

Specifies the remote node from which node database information is to be copied. The remote node can be any node in the network to which you have access. The word FROM is optional.

qualifiers

USING option

Specifies the node database on the remote node from which the information is to be copied. There are two possible options:

- | | |
|-----------|---|
| VOLATILE | Indicates that the volatile database on the remote node is to be copied. |
| PERMANENT | Indicates that the permanent database on the remote node is to be copied. |

The default is VOLATILE.

TO option

Specifies the node database on the local node to which the information is to be copied. There are three possible options:

NCP NCP-7
COPY KNOWN NODES

VOLATILE Indicates that the information is to be copied to the volatile database on the local node.

PERMANENT Indicates that the information is to be copied to the permanent database on the local node.

BOTH Indicates that the information is to be copied to both the volatile and permanent databases on the local node.

The default is VOLATILE.

WITH option

Clears or purges the node database on the local node before the copy operation is performed. Retains the executor node characteristics and the name and address of the remote node from which the node information is to be copied. The node database to be cleared or purged is the local database to which the information will be copied. There are two options:

CLEAR Clears the volatile node database at the local node.

PURGE Purges the permanent node database at the local node.

Note that you can actually specify either CLEAR or PURGE for either database or for both databases.

If you do not specify the WITH qualifier, the node entries copied are added to the existing node database(s).

example

NCP> LIST KNOWN NODES

Known Node Permanent Summary as of 30-DEC-1988 13:50:20

Executor node = 2.20 (ROBIN)
State = on

Remote node = 2.21 (THRUSH)
No information available

Remote node = 2.22 (LARK)
No information available

NCP> TELL LARK LIST KNOWN NODES

Known Node Permanent Summary as of 30-DEC-1988 13:50:20

Executor node = 2.22 (LARK)
State = on

Remote node = 2.20 (ROBIN)
No information available

Remote node = 2.23 (DOVE)
No information available

NCP> COPY KNOWN NODES FROM LARK USING PERMANENT -
_ TO PERMANENT WITH PURGE

NCP-8 NCP

SET/DEFINE CIRCUIT

```
%NCP-I-SUCCESS - Success
Remote node = 2.21 (THRUSH)
%NCP-I-RECDELET, Database entry deleted
%NCP-I-SUCCESS - Success
Remote node = 2.22 (LARK)
%NCP-I-RECDELET, Database entry deleted
%NCP-I-SUCCESS - Success
Executor node = 2.20 (ROBIN)
%NCP-I-RECDELET, Database entry deleted
```

NCP> LIST KNOWN NODES

Known Node Permanent Summary as of 30-DEC-1988 14:01:05

```
Executor node = 2.20 (ROBIN)
State          = on
```

```
Remote node = 2.22 (LARK)
No information available
```

```
Remote node = 2.23 (DOVE)
No information available
```

This copy command copies the node information from the permanent node database on node LARK into the permanent node database on the local node (ROBIN). The node database is purged before the copy operation is begun.

SET/DEFINE CIRCUIT

The SET CIRCUIT command creates or modifies circuit parameters in the volatile database on the local node. The DEFINE CIRCUIT command creates or modifies circuit parameters in the permanent database on the local node. The circuit must be in the OFF state before you modify any parameters other than COST, COUNTER TIMER, STATE, or VERIFICATION.

format

```
SET circuit-component parameter [...]
DEFINE circuit-component parameter [...]
```

circuit components

CIRCUIT circuit-id

Identifies the circuit whose parameters are to be updated.

KNOWN CIRCUITS

Indicates that parameters for all known circuits are to be updated.

command parameters

COST cost

Specifies the routing cost of the circuit. Messages travel between nodes along the path with the smallest total cost. The *cost* value must be a decimal integer in the range 1 to 25. The default value is 10.

COUNTER TIMER seconds

Specifies the number of seconds that the circuit counter timer will run. When the counter timer expires, a circuit counter logging event occurs. The *seconds* value must be a decimal integer in the range 0 to 65,535. If no value is set for COUNTER TIMER, the circuit counters are not logged automatically.

HELLO TIMER seconds

Specifies the frequency of Routing Hello messages sent to adjacent nodes on the circuit. The *seconds* value must be a decimal integer in the range 0 to 8191. The default value is 15. The value of the read-only circuit parameter LISTEN TIMER is three times the value of the HELLO TIMER parameter.

MAXIMUM ROUTERS number

Applies only to Ethernet circuits. Specifies the maximum number of routers (other than the executor node) allowed by the Routing layer on this circuit. Use a number in the range 1 to 33. The default value is 33.

ROUTER PRIORITY number

Applies only to Ethernet circuits. Specifies the priority this router (the executor node on this circuit) is to have in the selection of a designated router for this circuit. Use a value in the range 0 to 127. The default is 64.

SERVICE service-mode

Specifies whether service operations (loading and loop testing) are allowed for the circuit. There are two possible modes:

- | | |
|----------|--|
| DISABLED | The circuit cannot be put into service state and cannot perform service functions. The default mode is DISABLED. |
| ENABLED | The circuit can be put into service state and perform service functions. |

STATE circuit-state

Specifies the circuit's operational state. There are three possible states:

- | | |
|---------|---|
| OFF | The circuit is not in use. |
| ON | The circuit is available for normal use or service functions. |
| SERVICE | The circuit is available for service functions only. |

TRANSMIT TIMER milliseconds

Defines the number of milliseconds to delay between data message transmits. The *milliseconds* value must be a decimal integer up to 65,535. The default is 0.

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SET/DEFINE EXECUTOR

VERIFICATION option

Applies only to synchronous and asynchronous circuits. Requires the remote node to send its routing initialization password. There are three options:

DISABLED	Does not require the remote node to send its routing initialization password. This is the default.
ENABLED	Requires the remote node to send its routing initialization password.
INBOUND	Applies to any DDCMP point-to-point circuit. Specifies that the executor node expects to receive a routing initialization password for verification from a remote node before a connection is made between the nodes. The executor is prohibited from sending its routing initialization password to the remote node. This parameter is specified automatically for dynamic asynchronous DDCMP circuits. If you specify the VERIFICATION INBOUND parameter for a circuit, you must specify the INBOUND node parameter (by using the SET/DEFINE NODE command) for the remote node.

example

```
NCP> SET CIRCUIT UNA-0 STATE ON MAXIMUM ROUTERS 5
```

This command sets Ethernet circuit UNA-0 to ON and sets the maximum number of routers permitted on the circuit to 5.

SET/DEFINE EXECUTOR

The SET EXECUTOR command creates or modifies parameters in the volatile database that controls the network on the local node. The DEFINE EXECUTOR command creates or modifies parameters in the permanent database that controls the network on the local node.

After the local node's state is set to ON, you cannot change the ADDRESS, ALIAS NODE, ALIAS INCOMING, BUFFER SIZE, NAME, or TYPE parameter for the local node. If the local node whose state is ON is connected to an Ethernet circuit whose state is ON, you cannot change the MAXIMUM CIRCUITS parameter for the local node.

The SET EXECUTOR command cannot be used with the TELL prefix.

format

```
SET EXECUTOR parameter [...]  
DEFINE EXECUTOR parameter [...]
```

command parameters

ADDRESS node-address

Establishes a node address for the local node, in the following format:

area-number.node-number

where:

area-number Is in the range 1 to 63.
node-number Is in the range 1 to 1023.

If you do not specify *area-number*, the default value is 1. You need not supply the area number in the *node-address* if your node is in area 1. When you configure the local node, this parameter is required.

ALIAS INCOMING option

Specifies whether the local node accepts incoming connect requests directed to the alias node identifier specified for the local node. The alias node identifier is described under the ALIAS NODE parameter. There are two options for ALIAS INCOMING:

DISABLED Specifies that the local node will not accept incoming connect requests directed to the alias node identifier.
ENABLED Specifies that the local node will accept incoming connect requests directed to the alias node identifier. This is the default if an alias node identifier has been specified.

ALIAS MAXIMUM LINKS number

Specifies the maximum number of logical links for the local node that can use the alias node identifier. The alias node identifier is described under the ALIAS NODE parameter. The maximum value for ALIAS MAXIMUM LINKS is 200. The default value is 32. If you specify this parameter, the maximum value permitted for the MAXIMUM LINKS parameter for the local node is reduced.

ALIAS NODE node-id

Establishes a cluster alias node identifier for use by the local node. The *node-id* is a DECnet node identifier that can be either a node name or a node address. This alias permits the local node to be associated with a cluster node identifier common to some or all nodes in the cluster, in addition to its own unique *node-id*. If you do not specify this parameter, the local node is not associated with a cluster alias node identifier. If a node name is to be used as the alias *node-id*, the node name must previously have been defined in the database.

AREA MAXIMUM COST number

Applies only to an executor node whose type is AREA. Specifies the maximum total path cost allowed from the executor to any other level 2 routing node (area router). You can specify a decimal value in the range 1 to 1022. The default is 1022.

AREA MAXIMUM HOPS number

Applies only to an executor node whose type is AREA. Specifies the maximum number of routing hops allowable from the executor to any other level 2 routing node. You can specify a decimal value in the range 1 to 30. The default is 30.

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SET/DEFINE EXECUTOR

BROADCAST ROUTING TIMER seconds

Specifies the maximum amount of time allowed between routing updates on Ethernet circuits. When the timer expires before a routing update occurs, a routing update is forced. The routing update produces a routing configuration message for each adjacent node. You can specify a number in the range 1 to 65,535. The default is 40.

BUFFER SIZE number

Specifies in bytes the size of the receive buffers, thereby controlling the maximum size of NSP message segments that can be received and forwarded. (The size includes protocol overhead down to and including the End Communication layer, but does not include Data Link layer overhead.) This buffer size applies to all circuits known to the executor. Use a value up to a maximum of 65,535. The default value is equal to the value of the SEGMENT BUFFER SIZE, if specified; otherwise the default is 576.

COUNTER TIMER seconds

Specifies a timer whose expiration causes a node counter logging event.

DEFAULT ACCESS option

Assigns the default access to all nodes that do not have a specific node ACCESS entry in the volatile database. There are four options:

BOTH	Allows incoming and outgoing logical link connections. This is the default.
INCOMING	Allows logical link connections from the remote node.
NONE	Does not allow incoming or outgoing logical link connections to this node.
OUTGOING	Allows the local node to initiate connections to the remote node, but does not allow connections from the remote node.

If you have OPER privilege on the local system, you can override the default access restriction specified in this parameter.

DELAY FACTOR number

Specifies the number by which to multiply one-sixteenth of the estimated round trip delay to a node to set the retransmission timer to that node. Use a number up to a maximum of 255. If you do not set this parameter, the default value is 80.

DELAY WEIGHT number

Specifies the weight to apply to a new round-trip delay data point when updating the estimated round-trip delay to a node. Use a number in the range up to a maximum of 255. If you do not set this parameter, the default value is 5.

IDENTIFICATION id-string

Specifies a text string that describes the executor node (for example, "VMS Host System"). The string can be a maximum of 32 characters. If it contains blanks or tabs, you must enclose the string in quotation marks. If you do not set this parameter, the default value is DECnet-VAX V5.n VMS X5.n.

INACTIVITY TIMER seconds

Specifies the maximum duration of inactivity (no data in either direction) on a logical link before the node checks to see if the logical link still works. If you do not set this parameter, the default value is 60.

INCOMING PROXY option

Indicates whether proxy login requests present on incoming logical links are to be honored. There are two options for INCOMING PROXY:

DISABLED	Ignores all incoming proxy requests and instead relies exclusively on access control information supplied in the connect requests to validate the logical link.
ENABLED	Invokes the appropriate proxy, based on the source user, source node, and supplied access control information (if any). This is the default.

Note that proxy access characteristics established in the object database take preference over the proxy access characteristics established in the executor database.

INCOMING TIMER seconds

Specifies the maximum amount of elapsed time between the time a connection is received for a process and the time that process accepts or rejects the connection. For very busy systems, use a value in the range of 45 to 60 seconds. Otherwise use a value of 30 seconds. The default value is 45.

MAXIMUM ADDRESS number

Defines the largest node address and, consequently, the greatest number of nodes that can be addressed by the local node. Use as small a number as possible. The default value is 1023.

MAXIMUM AREA number

Applies only to an executor node whose type is AREA. Specifies the largest area number and, therefore, the greatest number of areas that can be known about by the executor node's Routing layer. You can specify a decimal value up to a maximum of 63. The default is 63.

MAXIMUM BROADCAST NONROUTERS number

Specifies the maximum total number of nonrouting nodes (end nodes) the executor node can have on its Ethernet circuits. Use a number up to a maximum of 65,535. The default value is 64.

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SET/DEFINE EXECUTOR

MAXIMUM BROADCAST ROUTERS number

Specifies the maximum total number of routers the executor node can have on its Ethernet circuits. Use a number up to a maximum of 65,535. The default value is 32.

MAXIMUM BUFFERS number

Specifies the maximum number of buffers in the transmit buffer pool. DECnet normally allocates only what it needs. At minimum, use a value that is 15 times the square root of the number of lines. Increase this value if you experience congestion loss. The default value is 100.

MAXIMUM CIRCUITS number

Defines the maximum number of routing circuits that the local node can use. The number must be in the range 1 to 127. The default value is 16.

MAXIMUM COST number

Specifies the maximum total path cost allowed from the local node to any node. The path cost is the sum of the circuit costs along a path between two nodes. Use as small a number as possible in the range of 1 to 1022. The default is 1022.

MAXIMUM HOPS number

Specifies the maximum routing hops from the local node to any other reachable node. A hop is the logical distance over a circuit between two adjacent nodes. Use as small a number as possible in the range of 1 to 30, and be sure that this value is less than or equal to the MAXIMUM VISITS parameter. The default value is 30.

MAXIMUM LINKS number

Specifies the maximum logical link count for the local node. A reasonable range for most networks is 25 to 50. The maximum value for MAXIMUM LINKS is 960; this value is reduced to 512, however, if the ALIAS MAXIMUM LINKS parameter is also specified. The default value of MAXIMUM LINKS is 32.

MAXIMUM PATH SPLITS number

Indicates the maximum number of equal cost paths to a given destination node among which the packet load may be split. The default value is 1.

MAXIMUM VISITS number

Specifies the maximum number of nodes a message can visit before it is received by the destination node. Use a number in the range of the value of the MAXIMUM HOPS parameter to 63. You should specify a number that is twice the MAXIMUM HOPS value. The default value is 63.

NAME node-name

Specifies the node name to be associated with the executor node identification. You can assign only one name to a node address or node identification.

NONPRIVILEGED item

Specifies nonprivileged inbound access control information for the node. Associate any of the following parameters with the NONPRIVILEGED parameter:

ACCOUNT account	Identifies the account for the default nonprivileged DECnet account on the executor node.
PASSWORD password	Identifies the password for the default nonprivileged DECnet account on the executor node.
USER user-id	Identifies the user name for the default nonprivileged DECnet account on the executor node.

OUTGOING PROXY option

Indicates whether proxy login may be used on outgoing connect requests. There are two options for OUTGOING PROXY.

DISABLED	Specifies that proxy login is not requested on any outgoing logical links.
ENABLED	Specifies that proxy login is requested on outgoing logical links. This is the default.

Note that proxy access characteristics established in the object database take preference over the proxy access characteristics established in the executor database.

OUTGOING TIMER seconds

Specifies the timeout value for the elapsed time between the moment a connection is requested and the moment that connection is acknowledged by the destination node. A value in the range of 30 to 60 seconds is recommended. The default is 45.

PATH SPLIT POLICY policy

Specifies the policy for equal cost path splitting of network traffic. There are two values for PATH SPLIT POLICY:

INTERIM	Specifies that traffic will be split over all equal cost paths while forcing packets for individual network sessions to follow the same paths in order to guarantee that packets will be received by the destination node in the correct order. The INTERIM value should be set if some of the nodes in the network do not support out-of-order packet caching. (DECnet-VAX Version 4.5 and lower DECnet-VAX versions do not support out-of-order packet caching.)
NORMAL	Specifies that all traffic will be split equally over all equal cost paths to a destination node. All destination nodes must support out-of-order packet caching (supported by DECnet-VAX Version 4.6 or higher); otherwise, network performance may suffer. This is the default.

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SET/DEFINE EXECUTOR

PIPELINE QUOTA quota

Specifies the maximum number of bytes of nonpaged pool that DECnet will use for transmission over logical links. Use this parameter for multibuffering at the NSP level. The default value is 3000 bytes. For satellite communications, a value of 6000 or greater is recommended.

PRIVILEGED item

Specifies privileged inbound access control information for the node. Associate any of the following parameters with the PRIVILEGED parameter:

ACCOUNT account	Identifies the account for the default privileged DECnet account on the executor node.
PASSWORD password	Identifies the password for the default privileged DECnet account on the executor node.
USER user-id	Identifies the user name for the default privileged DECnet account on the executor node.

These parameters are not needed unless the PRIVILEGES parameter is used explicitly in the object database.

RETRANSMIT FACTOR number

Defines the maximum number of times any given message (except a connect initiate message) will be retransmitted before the logical link is disconnected. If you do not set this parameter, the default value is 10.

ROUTING TIMER seconds

Specifies the maximum amount of elapsed time before a routing update is forced on non-Ethernet circuits. The routing update produces a routing configuration message for each adjacent node. You can use a number up to a maximum of 65,535. If you do not set this parameter, the default value is 600.

SEGMENT BUFFER SIZE number

Specifies in bytes the maximum size of transmit buffers, thereby controlling the maximum size NSP message segment that can be transmitted. (This value is the maximum size message the End Communications layer can transmit; it does not include Data Link layer overhead.) Use a value up to a maximum of 65,535. The default value is equal to the value of BUFFER SIZE, if specified; otherwise, the default is 576.

The SEGMENT BUFFER SIZE is always less than or equal to the BUFFER SIZE. The two values are normally equal but may differ to permit the network manager to alter buffer sizes on all nodes without interruption of service.

STATE node-state

Specifies the operational state of the local node. There are four possible states:

OFF	Allows no new logical links, terminates existing links, and stops route-through traffic.
ON	Allows logical links.
RESTRICTED	Allows no new inbound links from other nodes.
SHUT	Allows no new logical links, does not destroy existing links, and goes to the OFF state when all logical links are disconnected.

If you have OPER privilege, you can override the state value specified in this parameter.

TYPE node-type

Indicates the type of the executor node. There are three possible node types:

AREA
NONROUTING IV
ROUTING IV

The default depends upon the DECnet-VAX license registered. If the full function kit is installed, the default is ROUTING IV; if the end node kit is installed, the default (and only possible value) is NONROUTING IV.

A routing node has full routing capability. A nonrouting node (or end node) can deliver packets to or receive them from any node, but cannot route packets from other source nodes through to destination nodes.

An area node is a level 2 router that can route packets between areas.

example

```
NCP> SET NODE 2.13 NAME CLUSTR
```

```
·  
·  
·
```

```
NCP> SET EXECUTOR ALIAS NODE CLUSTR
```

The SET NODE command establishes a node address 2.13 with the associated node name CLUSTR. The SET EXECUTOR ALIAS NODE command then establishes the node name CLUSTR as the alias node identifier.

SET/DEFINE LINE

The SET LINE command creates or modifies line parameters in the volatile database on the local node. The DEFINE LINE command creates or modifies line parameters in the permanent database on the local node. A line must be in the OFF state in order for all but the COUNTER TIMER, SERVICE TIMER, and STATE parameters to be changed.

format

SET *line-component parameter [...]*
DEFINE *line-component parameter [...]*

line components

LINE *line-id*

Identifies the line for which specified parameters are to be created or modified in the volatile database.

KNOWN LINES

Indicates that the specified parameters for all known lines are to be created or modified in the volatile database.

command parameters

BUFFER SIZE *number*

Specifies in bytes the size of receive buffers for the specified line, thereby controlling the maximum size of NSP message segments that can be received from or forwarded to an adjacent node that has accepted the line buffer size. Use a value up to a maximum of 65,535. For Ethernet lines, a default value of 1498 bytes is provided. For all other types of line, the default is the executor BUFFER SIZE value (as specified in the SET EXECUTOR command).

You can use the line parameter BUFFER SIZE to increase the size of NSP messages for logical links over this line.

CLOCK *clock-mode*

Applies only to synchronous DDCMP lines. Specifies the hardware clock mode for the line. There are two values for *clock-mode*:

- | | |
|----------|--|
| EXTERNAL | For normal clock operating mode. The clock signal is supplied externally to the controller. |
| INTERNAL | For use of the clock in test mode. Setting this value causes the line device to supply a clock signal that will allow all transmitted messages to be looped back from outside the device. Note that, in order to use this parameter, the operator may have to connect a loopback plug in place of the normal line. |

CONTROLLER mode

Specifies the controller mode for the line. There are two possible modes:

LOOPBACK Internal device loopback mode
NORMAL Normal operating mode, which is the default

COUNTER TIMER seconds

Specifies a timer whose expiration causes a line counter logging event. Specify a decimal integer up to a maximum of 65,535.

DUPLEX mode

Does not apply to Ethernet lines. Specifies the hardware duplex mode of the line. There are two possible modes:

FULL Full-duplex (default)
HALF Half-duplex

HANGUP option

Applies only to asynchronous DDCMP lines. Indicates whether the modem signals are dropped when the line is shut down. There are two possible options:

DISABLED Indicates that modem signals should not be dropped when the line is shut down. This is the default for static asynchronous DDCMP lines.
ENABLED Indicates that modem signals should be dropped when the line is shut down.

This parameter is supplied automatically for dynamic asynchronous DDCMP lines. The default is HANGUP ENABLED if the /HANGUP qualifier was specified for the DCL command SET TERMINAL, and HANGUP DISABLED if /NOHANGUP was specified.

LINE SPEED number

Applies only to asynchronous DDCMP lines. Specifies the speed of the line in baud. This parameter must be set to the same value on both sides of an asynchronous DDCMP connection. It is specified automatically for dynamic asynchronous DDCMP lines. If not specified, the value of this parameter is equal to the current speed of the line.

PROTOCOL protocol-name

Defines the Data Link protocol to be used on this line. The following values can be used for *protocol-name*:

SET/DEFINE LINE

DDCMP CONTROL	Specifies this line as a multipoint control station. You can specify multiple circuits for CONTROL lines, but each circuit must have a unique physical tributary address.
DDCMP DMC	Specifies that this line is in DMC emulator mode. DMC is similar to POINT, except that DMC uses an older version of DDCMP (Version 3.2). This protocol should be set for the local line when the remote line is a DMC. Note that this protocol is valid only when a DMP11 or DMV11 is being used.
DDCMP POINT	Defines this line as one end of a point-to-point DDCMP connection. You may specify only one circuit per POINT line.
DDCMP TRIBUTARY	Specifies that this line is a tributary end of a DDCMP multipoint group. You may specify only one circuit per TRIBUTARY line.
ETHERNET	Specifies that this line uses the Ethernet protocol.

Default line protocols based on line names are as follows:

BNA	ETHERNET
CI	No protocol specified
DMB	DDCMP POINT
DMC/DMR	DDCMP POINT
DMF	DDCMP POINT
DMP/DMV	DDCMP POINT
DPV	LAPB
QNA	ETHERNET
SVA	ETHERNET
UNA	ETHERNET

RECEIVE BUFFERS number

Specifies the length of the line's receive queue. Use a value in the range 1 to 32. A value in the range 2 to 4 is adequate for line speeds of less than 56 kilobits/second. Line speeds of 1 megabit/second may require eight or more buffers depending on the observed error rate.

STATE line-state

Specifies the line's operational state. The possible states include the following:

OFF	The line is not in use.
ON	The line is available for normal use or service functions.

SWITCH option

Applies only to asynchronous DDCMP lines. Forces the line currently being used as a DECnet asynchronous communications line to be converted back to a terminal line. There are two values for *option*:

DISABLED The line is not switched to a terminal line. This is the default for static lines.
ENABLED The line is switched to a terminal line after it is disconnected from the network (when the channel to the network is deassigned). This is the default for dynamic lines.

TRANSMIT PIPELINE count

Applies only to DMR11 lines. Specifies the maximum number of DDCMP messages for which outstanding acknowledgments are allowed. Specify a value in the range 1 to 32. By default, the value for outstanding DDCMP messages is 7. To avoid excessive use of system memory, do not arbitrarily set this value higher than necessary.

example

NCP> SET LINE UNA-0 STATE ON

This command sets Ethernet line UNA-0 to the ON state.

SET/DEFINE NODE

The SET NODE command creates or modifies node parameters in the volatile database on the local node. The DEFINE NODE command creates or modifies node parameters in the permanent database on the local node.

format

SET *node-component parameter [...]*

DEFINE *node-component parameter [...]*

node components

NODE node-id

Identifies the node (local or remote) for which specified parameters are to be created or modified in the database.

KNOWN NODES

Indicates that the specified parameters for all known nodes are to be created or modified in the database.

command parameters

ACCESS option

Specifies the allowed logical link connections for the node. There are four options:

SET/DEFINE NODE

BOTH	Allows incoming and outgoing logical link connections. This is the default.
INCOMING	Allows logical link connections from the remote node.
NONE	Does not allow incoming or outgoing logical link connections to this node.
OUTGOING	Allows the local node to initiate connections to the remote node, but does not allow connections from the remote node.

If you have OPER privilege, you can override the access restriction specified in this parameter.

ADDRESS node-address

Specifies the address of the node to which you want the database entry to refer.

COUNTER TIMER seconds

Specifies a timer whose expiration causes a node counter logging event.

CPU cpu-type

Identifies the node's CPU type. There are four possibilities:

DECSYSTEM1020
PDP11
PDP8
VAX

HARDWARE ADDRESS E-address

Identifies the Ethernet address originally assigned to the Ethernet controller for the system on the adjacent node. Used during operations to communicate with the system before the system has set up its physical address.

INBOUND node-type

Required for nodes when the VERIFICATION INBOUND parameter is specified for the circuit over which the connection is to be made. Specifies the type of the node. The *node-type* is checked by the executor node if the specified node attempts to form a dynamic connection with the executor node. If VERIFICATION INBOUND is not specified for the circuit, the INBOUND parameter for the node is ignored. There are two possible node types:

ENDNODE	Allows the remote node to be connected only if it is configured as an end node.
ROUTER	Allows the remote node to be connected whether it is configured as an end node or a router.

NAME node-name

Specifies the node name to be associated with the node identification. You can assign only one name to a node address or line identification.

NONPRIVILEGED item

Specifies nonprivileged inbound access control information for the node. Associate any of the following parameters with the NONPRIVILEGED parameter:

ACCOUNT account	Identifies the account for the default nonprivileged DECnet account on the designated node.
PASSWORD password	Identifies the password for the default nonprivileged DECnet account on the designated node.
USER user-id	Identifies the user name for the default nonprivileged DECnet account on the designated node.

PRIVILEGED item

Specifies privileged inbound access control information for the node. Associate any of the following parameters with the PRIVILEGED parameter:

ACCOUNT account	Identifies the account for the default privileged DECnet account on the designated node.
PASSWORD password	Identifies the password for the default privileged DECnet account on the designated node.
USER user-id	Identifies the user name for the default privileged DECnet account on the designated node.

RECEIVE PASSWORD password

Does not apply to nodes on an Ethernet circuit. Defines the password (1 to 8 characters) that is expected from the remote node during a routing initialization sequence. You use this parameter only if verification is enabled or set to INBOUND for the circuit.

TRANSMIT PASSWORD password

Does not apply to nodes on an Ethernet circuit. Specifies a password (1 to 8 characters) sent to the remote node during a routing initialization sequence. This parameter is used only if the VERIFICATION parameter has been set to ENABLED or INBOUND for the circuit.

example

```
NCP> SET NODE 14 ADDRESS 2
```

This command associates the information for node 1.14 with a new node whose address is 1.2. The executor is assumed to be in area 1.

SET/DEFINE OBJECT

The SET OBJECT command creates or modifies object parameters in the volatile database on the local node. The DEFINE OBJECT command creates or modifies object parameters in the permanent database on the local node.

format

SET *object-component parameter [...]*
DEFINE *object-component parameter [...]*

object component

OBJECT *object-name*

Identifies the object for which specified parameters are to be created or modified in the database.

command parameters

ACCOUNT *account*

Identifies the default user's account for access control on inbound connects to the object when no access control is specified by the remote node.

ALIAS INCOMING *option*

Specifies how a particular object responds to incoming connect requests directed to the alias node address. You establish the alias node address using the SET EXECUTOR command. There are two options for ALIAS INCOMING.

- | | |
|----------|--|
| DISABLED | Does not allow a specified object to receive incoming connect requests that have been directed to the alias node address. An object whose resources are not accessible clusterwide should have ALIAS INCOMING disabled. If an attempt is made to connect to an object that does not have ALIAS INCOMING enabled, the status message NO SUCH OBJECT is returned. |
| ENABLED | Allows a specified object to receive incoming connect requests that have been directed to the alias node address. An object such as PHONE, which uses a protocol that depends on multiple links, should not be enabled for ALIAS INCOMING. By default, if an alias node identifier has been specified, ALIAS INCOMING is enabled for all objects except for PHONE. |

ALIAS OUTGOING *option*

Specifies whether a particular object uses the alias node identifier specified in the SET EXECUTOR command in its outgoing connect requests and other protocols. Specify either of the following two options:

NCP NCP-25
SET/DEFINE OBJECT

DISABLED	Does not allow a specified object to use the alias node address in its outgoing connect requests.
ENABLED	Allows a specified object to use the alias node address in its outgoing connect requests. An object such as PHONE, which uses a protocol that depends on multiple links, should not have the ALIAS OUTGOING parameter enabled. By default, only the object MAIL has ALIAS OUTGOING enabled.

FILE filespec

Specifies the command file containing the command procedure used to start the indicated object. If not specified, the default is SYS\$SYSTEM:object-name.COM. When you specify an object for the first time, this parameter is mandatory.

NUMBER number

Specifies the object number. Use a number up to a maximum of 255, except for those reserved. See Table NCP-1 for a list of reserved object numbers. When you specify an object for the first time, this parameter is mandatory.

PASSWORD password

Identifies the default user's password for access control on inbound connects to the object when no access control is specified by the remote node. This password must match the password established for the account.

PRIVILEGES privilege-list

Specifies those privileges normally required by the object. A user with those privileges may be supplied with default outbound privileged access control information when connecting to the object.

PROXY option

Assigns the proxy login access defaults to individual objects. Specify one of the following four options:

BOTH	Allow both incoming and outgoing proxy login access. This is the default option.
INCOMING	Allows proxy login to the object.
NONE	Does not allow incoming or outgoing proxy login access.
OUTGOING	Allows the object to initiate proxy login.

USER user-id

Identifies the default user's identification for access control on inbound connects to the object when no access control is specified by the remote node.

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description

A DECnet object is identified by object name and object type. (The type is specified in the NUMBER parameter.)

The privilege list in the SET/DEFINE OBJECT command is used to validate the user privileges for outbound connections to that object. The access control information is used as the default access control for inbound connections.

Table NCP-1 lists the object type codes used with the SET OBJECT and DEFINE OBJECT commands. All values in Table NCP-1 are expressed in decimal.

Table NCP-1: Object Type Codes

Code	Object Type Mnemonic	Description
0	TASK	User program
1-16		Reserved for DIGITAL use
17	FAL	File Access Listener for remote file and record access
18	HLD	Host loader for RSX-11S downline task loading requests
19	NML	Network Management Listener object
20		RSTS/E media transfer program (NETCPY)
21-22		Reserved for DIGITAL use
23	REMACP	Network terminal handler (host side)
24		Network terminal handler (terminal side)
25	MIRROR	Loopback mirror
26	EVL	Event receiver
27	MAIL	VMS Mail Utility
28		Reserved for DIGITAL use
29	PHONE	VMS Phone Utility and RSX-11M/M-PLUS Phone Utility
30-41		Reserved for DIGITAL use
42	CTERM	Network terminal handler

Table NCP-1 (Cont.): Object Type Codes

Code	Object Type Mnemonic	Description
43-62		Reserved for DIGITAL use
63	DTR	DECnet Test Receiver object
64-127		Reserved for DIGITAL use
128-255		Reserved for customer use

example

```
NCP> SET OBJECT NML -
_ PRIVILEGES OPER DIAGNOSE -
_ USER NET_NONPRIV -
_ PASSWORD NET_NONPRIV
```

This command establishes default access control information for the NML object and sets those privileges required to connect to this object.

SHOW/LIST CIRCUIT

The SHOW CIRCUIT command displays circuit information from the volatile database available to the local node or DTE. The LIST CIRCUIT command displays circuit information from the permanent database available to the local node or DTE.

format

```
SHOW  circuit-component parameter [qualifier] [...]
LIST  circuit-component parameter [qualifier] [...]
```

circuit components

ACTIVE CIRCUITS

Indicates that information for all active circuits is to be displayed.

CIRCUIT circuit-id

Identifies a particular circuit for which information is to be displayed.

KNOWN CIRCUITS

Indicates that information for all known circuits is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static circuit information is to be displayed.

COUNTERS

Indicates that circuit error and performance statistics are to be displayed.

STATUS

Indicates that dynamic circuit information is to be displayed, including end node adjacencies and routing node adjacencies.

SUMMARY

Indicates that dynamic circuit information is to be displayed, including the routing adjacencies available to this circuit. SUMMARY is the default display type.

qualifiers

ADJACENT NODE *node-id*

Indicates that the display of a list of circuits is to be restricted to those circuits leading to the specified adjacent node.

TO *filespec*

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

Adjacent node node-id

This read-only parameter indicates an adjacent node on the circuit. There can be many adjacent nodes on an Ethernet circuit.

Block size number

This read-only parameter is the block size in bytes for the adjacent node, as negotiated with the adjacent Routing layer during routing initialization over the circuit.

Designated router node-id

This read-only value is the Routing layer identification of the node that is to be used for routing to nonrouting nodes (end nodes) on this circuit.

Listen timer seconds

This read-only parameter determines the maximum time allowed to elapse before a message (a Routing Hello message or a user message) is received from an adjacent node on the circuit. The value can be up to a maximum of 65,535. Note that the LISTEN TIMER value is three times that of the HELLO TIMER circuit parameter.

Loopback name

This read-only parameter is the node name associated with a circuit for loopback testing. It identifies the circuit to be used for all traffic to the loop node.

Substate

This read-only value is the operational substate of the circuit. The substate is displayed as a tag on the STATE parameter (for example, ON-SYNCHRONIZING). Possible substate values are as follows:

- Synchronizing
- Starting
- Reflecting
- Looping
- Loading
- Dumping
- Triggering
- Autoservice
- Autoloading
- Autodumping
- Autotriggering
- Failed

example

NCP> SHOW ACTIVE CIRCUITS CHARACTERISTICS

Active Circuit Volatile Characteristics as of 30-DEC-1988 15:39:21

Circuit = DMC-0

State	= on
Service	= enabled
Cost	= 12
Hello timer	= 15
Listen timer	= 30
Maximum buffers	= 255
Verification	= disabled
Adjacent node	= 3.5 (TRNTO)
Listen timer	= 30

Circuit = UNA-0

State	= on
Designated router	= 2.20 (ROBIN)
Cost	= 1
Maximum routers allowed	= 33
Router priority	= 64
Hello timer	= 15
Verification	= disabled
Adjacent node	= 2.22 (LARK)
Listen timer	= 45

NCP-30 NCP

SHOW/LIST EXECUTOR

```
Circuit = UNA-0
Adjacent node      = 2.23 (DOVE)
Listen timer       = 45
Circuit = UNA-0
Adjacent node      = 2.20 (ROBIN)
Listen timer       = 45
Circuit = UNA-0
```

This command displays circuit characteristics for all circuits whose states are ON.

SHOW/LIST EXECUTOR

The SHOW EXECUTOR command displays local node information from the volatile database. The LIST EXECUTOR command displays local node information from the permanent database.

format

```
SHOW EXECUTOR parameter [qualifier]
LIST EXECUTOR parameter [qualifier]
```

command parameters

CHARACTERISTICS

Indicates that static local node information is to be displayed.

COUNTERS

Indicates that local node error and performance statistics are to be displayed.

STATUS

Indicates that dynamic local node information is to be displayed.

SUMMARY

Indicates that only the most useful local node information is to be displayed. This is the default display type.

qualifier

TO filespec

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

Active links number

This read-only parameter represents the number of active logical links from the executor to the destination node.

Delay seconds

This read-only parameter is the average round-trip delay in seconds from the executor to the destination node.

Management version n.n.n

This read-only parameter identifies the version number of the Network Management layer. The format of the number consists of the version number, the Engineering Change Order (ECO) number, and the user ECO number (for example, V3.0.0).

NSP version n.n.n

This read-only parameter identifies the version number of the End Communication layer. The format for the number is the same as for the management version number.

Physical address E-address

This read-only parameter is the Ethernet address that identifies the executor node.

Routing version n.n.n

This read-only parameter identifies the version number of the Routing layer. The format for the number is the same as for the management version number.

example

```
NCP> SHOW EXECUTOR CHARACTERISTICS
```

```
Node Volatile Characteristics as of 30-DEC-1988 15:37:32
```

```
Executor node = 2.11 (BOSTON)
```

```
Identification           = DECnet-VAX V5.0, VMS V5.0
Management version      = V4.0.0
Incoming timer          = 45
Outgoing timer          = 45
Incoming Proxy          = Enabled
Outgoing Proxy          = Enabled
NSP version             = V4.0.0
Maximum links           = 128
Delay factor            = 80
Delay weight            = 5
Inactivity timer        = 60
Retransmit factor       = 10
Routing version         = V2.0.0
Type                    = routing IV
Routing timer           = 600
Broadcast routing timer = 40
Maximum address         = 1023
Maximum circuits        = 16
Maximum cost            = 1022
Maximum hops            = 15
Maximum visits         = 63
Maximum area            = 63
Max broadcast nonrouters = 64
Max broadcast routers   = 32
Maximum path splits     = 1
Area maximum cost       = 1022
Area maximum hops       = 30
Maximum buffers         = 100
Buffer size             = 576
```


NCP-32 NCP

SHOW/LIST LINE

Default access = incoming and outgoing
Pipeline quota = 1500
Alias incoming = Enabled
Alias maximum links = 32
Alias node = 2.10 (CLUSTR)
Path split policy = Normal

This command displays local node characteristics. This display shows values that you have set for the local node. In addition, it provides supplemental information about the software versions of NML, NSP, and Routing.

SHOW/LIST LINE

The SHOW LINE command displays line information from the volatile database available to the local node. The LIST LINE command displays line information from the permanent database available to the local node.

format

SHOW *line-component parameter [qualifier]*

LIST *line-component parameter [qualifier]*

line components

ACTIVE LINES

Indicates that information for all active lines is to be displayed.

KNOWN LINES

Indicates that information for all known lines is to be displayed.

LINE line-id

Identifies a particular line for which information is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static line information is to be displayed.

COUNTERS

Indicates that line error and performance statistics are to be displayed.

STATUS

Indicates that dynamic line information is to be displayed.

SUMMARY

Indicates that only the most useful line information is to be displayed. This is the default display type.

qualifier

TO filespec

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

Hardware address E-address

This read-only parameter is the Ethernet address associated with the line device hardware.

Substate

This read-only value is the operational substate of the line. The substate is displayed as a tag on the STATE parameter (for example, ON-SYNCHRONIZING). Possible substate values are as follows:

- Synchronizing
- Starting
- Reflecting
- Looping
- Loading
- Dumping
- Triggering
- Autoservice
- Autoloading
- Autodumping
- Autotriggering
- Failed

example

```
NCP> SHOW KNOWN LINES STATUS
```

```
Known Line Volatile Status as of 30-DEC-1988 10:21:27
```

Line	State
DMC-0	on
DMC-1	on
DUP-0	on
UNA-0	on

This command displays status information for all known lines connected to the local node. This display shows the current state of the line.

SHOW/LIST NODE

The SHOW NODE command displays node information from the volatile database available to the local node. The LIST NODE command displays node information from the permanent database available to the local node.

format

SHOW *node-component parameter [qualifier]*

LIST *node-component parameter [qualifier]*

node components

ACTIVE NODES

For a routing node, indicates that information about all reachable nodes is to be displayed. For a nonrouting node (end node), indicates that information about the executor is to be displayed. Optionally, you can associate the following CIRCUIT parameter with this parameter:

CIRCUIT circuit-id Specifies that the display of a list of nodes is to be restricted to those nodes adjacent to the specified circuit.

ADJACENT NODES

Indicates that information about all adjacent nodes is to be displayed. Adjacent nodes are those the executor perceives Routing can reach that are separated from the executor by a single circuit. Each occurrence of a node on a different circuit appears as a separate adjacent node. Optionally, you can associate the following CIRCUIT parameter with this parameter:

CIRCUIT circuit-id Specifies that the display of a list of nodes is to be restricted to those nodes adjacent to the specified circuit.

KNOWN NODES

Indicates that information about all known nodes is to be displayed. Optionally, you can associate the following CIRCUIT parameter with this parameter:

CIRCUIT circuit-id Specifies that the display of a list of nodes is to be restricted to those nodes adjacent to the specified circuit.

LOOP NODES

Indicates that information about all loop nodes is to be displayed.

NODE node-id

Identifies a particular node about which information is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static node information is to be displayed.

COUNTERS

Indicates that node error and performance statistics are to be displayed.

STATUS

Indicates that dynamic node information is to be displayed.

SUMMARY

Indicates that only the most useful node information is to be displayed. This is the default display type.

qualifier

TO filespec

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

Active links number

This read-only parameter represents the number of active logical links from the executor to the destination node.

Circuit circuit-id

This read-only parameter identifies the circuit used to get to a remote node.

Cost number

This read-only parameter represents the total cost over the current path to the destination node. The DECnet Routing layer routes messages (data) along the path between two nodes with the smallest cost. Cost is a positive integer value.

Delay seconds

This read-only parameter is the average round-trip delay in seconds from the executor to the destination node.

Hops number

This read-only parameter indicates the number of hops from the executor node to a destination node. A hop is a value assigned by the Routing layer that represents the logical distance between two nodes on a network.

Management version n.n.n

This read-only parameter identifies the version number of the Network Management layer. The format of the number consists of the version number, the Engineering Change Order (ECO) number, and the user ECO number (for example, V3.0.0).

NCP-36 NCP
SHOW/LIST NODE

Next node node-id

This read-only parameter indicates the address and name of the next node on the circuit used to get to the node whose status is being displayed. Knowing which node is the partner on the next hop of the path to the destination node aids in tracing the path to that destination over a large number of hops.

NSP version n.n.n

This read-only parameter identifies the version number of the End Communication layer. The format for the number is the same as for the management version number.

Physical address E-address

This read-only parameter is the Ethernet address that identifies the executor node.

Routing version n.n.n

This read-only parameter identifies the version number of the Routing layer. The format for the number is the same as for the Management version number.

Type node-type

This read-only parameter indicates the type of the specified node. The values of *node-type* are as follows:

- Phase II
- Routing III
- Nonrouting III
- Routing IV
- Nonrouting IV
- Area

If the specified node is not adjacent to the local node, the *node-type* will be blank.

example

```
NCP> SHOW ACTIVE NODES CHARACTERISTICS
```

```
Active Node Volatile Characteristics as of 30-DEC-1988 13:38:34
```

```
Executor node = 2.11 (BOSTON)
```

NCP NCP-37
SHOW/LIST NODE

Identification = DECnet-VAX V5.0, VMS V5.0
Management version = V4.0.0
Incoming timer = 45
Outgoing timer = 45
Incoming Proxy = Enabled
Outgoing Proxy = Enabled
NSP version = V3.2.0
Maximum links = 128
Delay factor = 80
Delay weight = 5
Inactivity timer = 60
Retransmit factor = 10
Routing version = V2.0.0
Type = routing IV
Routing timer = 600
Maximum address = 1023
Maximum circuits = 16
Maximum cost = 1022
Maximum hops = 15
Maximum visits = 63
Maximum area = 63
Max broadcast nonrouters = 64
Max broadcast routers = 32
Maximum path splits = 1
Area maximum cost = 1022
Area maximum hops = 30
Maximum buffers = 100
Buffer size = 576
Default access = incoming and outgoing
Pipeline quota = 1500
Alias incoming = Enabled
Alias maximum links = 32
Alias node = 2.10 (CLUSTR)
Path split policy = Normal

Remote node = 3.5 (TRNTO)

Nonprivileged user id = NETNONPRIV

Remote node = 11.9 (DALLAS)

Nonprivileged user id = NETNONPRIV

Remote node = 12.34 (MYNODE)

Inbound = router

Remote node = 2.13 (KANSAS)

Nonprivileged user id = NETNONPRIV

Remote node = 2.17 (NYC)

Nonprivileged user id = NETNONPRIV

Loop node = 0 (TESTER)

This command displays characteristics for all active nodes. This display shows values that you have set for both the local node and remote nodes.

SHOW/LIST OBJECT

The SHOW OBJECT command displays object information from the volatile database available to the local node. The LIST OBJECT command displays object information from the permanent database available to the local node.

format

SHOW *object-component parameter [qualifier]*

LIST *object-component parameter [qualifier]*

object components

KNOWN OBJECTS

Indicates that information about all known objects is to be displayed.

OBJECT *object-name*

Identifies a particular object about which information is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static object information is to be displayed. The SHOW OBJECT CHARACTERISTICS command displays only those parameters that you have defined.

STATUS

Indicates that dynamic object information is to be displayed.

SUMMARY

Indicates that only the most useful object information is to be displayed. This is the default display type.

qualifier

TO *filespec*

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

comments

This command is a system-specific network management command; therefore, an error occurs if you execute this command at a node other than a DECnet-VAX node, because objects may have different characteristics on different nodes.

example

NCP> SHOW OBJECT MAIL CHARACTERISTICS

Object Volatile Characteristics as of 30-DEC-1988 13:46:22

Object =	MAIL	
Number		= 27
File id		= MAIL.EXE
User id		= NETNONPRIV
Proxy access		= outgoing
Alias outgoing		= Enabled
Alias incoming		= Enabled

This command displays object characteristics for the MAIL object. This display shows values that you have set for the object.

System Generation Utility

The System Generation Utility (SYSGEN) is a system management tool that performs certain privileged system configuration functions. With SYSGEN, you can create and modify system parameters, load device drivers, and create additional page and swap files.

format

RUN SYS\$SYSTEM:SYSGEN

usage summary

To invoke SYSGEN, type `RUN SYS$SYSTEM:SYSGEN` at the DCL command prompt. At the `SYSGEN>` prompt, enter any of the SYSGEN commands described in the following section.

To exit from SYSGEN, enter the SYSGEN command `EXIT` at the `SYSGEN>` prompt or press `CTRL/Z`. You can direct output from a SYSGEN session to an output file using the `SET/OUTPUT` command. By default, output is written to `SYS$OUTPUT`.

NOTE: DIGITAL recommends the use of the AUTOGEN command procedure when modifying system parameters, loading device drivers, or creating additional page and swap files. Refer to the *Guide to Setting Up a VMS System* for a description of AUTOGEN.

SGN-2 SYSGEN AUTOCONFIGURE

SYSGEN Commands

This section explains SYSGEN commands and provides examples of their use.

AUTOCONFIGURE

Automatically connects devices that are physically attached to the system and loads their drivers.

Use of the AUTOCONFIGURE command requires the CMKRNL privilege.

format

AUTOCONFIGURE *adapter-spec*
AUTOCONFIGURE ALL

parameter

adapter-spec

Specifies the adapter specification (backplane interconnect arbitration line) or slot number of the single UNIBUS or MASSBUS adapter that is to be configured. The adapter specification can be expressed as an integer or with one of the names listed by the SYSGEN command SHOW/ADAPTER.

You can specify AUTOCONFIGURE ALL to configure all standard devices attached to the system.

qualifiers

/EXCLUDE=(device-name[,...])

Specifies the device types that you do not want automatically configured.

You can specify a device-type code as shown in Table SGN-1 or a standard device name as shown in Table SGN-2. You can include a controller designation but not a unit number. If the controller designation is omitted, all devices of the specified type are excluded. The device-name specification defaults to all devices on the adapter.

Do not use this qualifier with the /SELECT qualifier.

/LOG

Produces a display of the controller and its units on the current SYS\$OUTPUT device after they have been successfully autoconfigured. Each controller and its associated units are displayed only after AUTOCONFIGURE has found the next controller. Therefore, the error message displays precede the display of the controller and units that caused the error.

/SELECT=(device-name[,...])

Specifies the device types that you want automatically configured.

You can specify a device-type code as shown in Table SGN-1 or a standard device name as shown in Table SGN-2. You can include a controller designation but not a unit number. If the controller designation is omitted, all devices of the specified type are selected. The device-name specification defaults to all devices on the adapter.

Do not use /SELECT with the /EXCLUDE qualifier.

Table SGN-1: Device Type Codes

Code	Device Type
CR	Card Reader
CS	Console Storage Device
DB	RP05, RP06 Disk
DD	TU58 Cartridge Tape
DJ	RA 60 Disk
DL	RL02 Cartridge Disk
DM	RK06, RK07 Cartridge Disk
DQ	RL02 Cartridge Disk, R80 Disk
DR	RM03, RM05, RM80, RP07 Disk
DU	UDA Disk
DX	RX01 Floppy Diskette
DY	RX02 Floppy Diskette
LA	LPA11-K Laboratory Peripheral Accelerator
LC	Line Printer on DMF32
LP	Line Printer on LP11
MB	Mailbox
MF	TU78 Magnetic Tape
MS	TS11 Magnetic Tape
MT	TE16, TU45, TU77 Magnetic Tape
MU	Tape Class Driver
NET	Network Communications Logical Device
NL	System "Null" Device
OP	Operator's Console
PA	Computer Interconnect (CI)
PT	TU81 Magnetic Tape
PU	UDA-50
RT	Remote Terminal

SGN-4 SYSGEN CONFIGURE

Table SGN-1 (Cont.): Device Type Codes

Code	Device Type
TT	Interactive Terminal on DZ11
TX	Interactive Terminal on DMF32, DMZ32, DHU11, or DMB32
XA	DR11-W General Purpose DMA Interface
XD	DMP-11 Synchronous Communications Line
XF	DR32 Interface Adapter
XG	DMF32 Synchronous Communications Line
XI	DR Interface on DMF-32
XJ	DUP11 Synchronous Communications Line
XM	DMC11 Synchronous Communications Line

example

```
SYSGEN> AUTOCONFIGURE ALL/SELECT=(TT,MTA,LP)
```

The command in this example automatically configures all terminals, all magnetic tape units on controller A, and all line printers.

CONFIGURE

Requests UNIBUS device names and issues the set of CSR and vector addresses that AUTOCONFIGURE will use.

format

CONFIGURE

qualifiers

/INPUT=file-spec

Specifies the name of an input file from which previously prepared data is read. By default, input data is read from SYS\$INPUT.

/OUTPUT=file-spec

Specifies the name of an output file to which output from CONFIGURE is written. By default, output is directed to SYS\$OUTPUT. The default file type is LIS.

/[NO]RESET

Controls whether controller names are reset. The /NORESET qualifier is useful with multiple UNIBUS systems. When you specify /NORESET, it is not necessary to specify the second parameter (p) on subsequent CONFIGURE commands, since the controller names are not reset. By default, if you omit /NORESET, the controller names are reset.

example

```
SYSGEN> CONFIGURE  
DEVICE> DZ11,3,2  
DEVICE> LP11  
DEVICE> DMC11,2  
DEVICE> CTRL/Z
```

The system displays the following data:

Device:	RK611	Name:	DMA	CSR:	777440	Vector:	210	Support:	yes
Device:	LP11	Name:	LPA	CSR:	777514	Vector:	200	Support:	yes
Device:	DMC11	Name:	XMA	CSR:	760070*	Vector:	300*	Support:	yes
Device:	DMC11	Name:	XMB	CSR:	760100*	Vector:	310*	Support:	yes
Device:	DZ11	Name:	TTC	CSR:	760120*	Vector:	320*	Support:	yes
Device:	DZ11	Name:	TTD	CSR:	760130*	Vector:	330*	Support:	yes
Device:	DZ11	Name:	TTE	CSR:	760140*	Vector:	340*	Support:	yes

* Indicates a floating address

This example illustrates the use of the CONFIGURE command to calculate the UNIBUS CSR and vector addresses. The support field in the display indicates whether DIGITAL provides a supported driver for this device with the VMS operating system.

CONNECT/ADAPTER=adapter-spec

Connects a hardware device and loads its driver if the driver is not already loaded. The adapter specification is the name of the UNIBUS or MASSBUS adapter to which the device is attached. The value can be expressed as an integer or as one of the names listed by the SYSGEN command SHOW /ADAPTER.

Use of the CONNECT/ADAPTER=adapter-spec command requires the CMKRNL privilege.

format

CONNECT/ADAPTER=adapter-spec *device*

parameter

device

Specifies the name of the hardware device to be connected. It should be specified in the following form: device-type, controller, unit. For example, LPA0 specifies the line printer (LP) on controller A at unit number 0. When specifying the device name, do *not* follow it with a colon (:).

SGN-6 SYSGEN
CONNECT/ADAPTER=adapter-spec

qualifiers

/ADPUNIT=unit-number

Unit number of a device on the MASSBUS adapter. The unit number for a disk drive is the number of the plug on the drive. For magnetic tape drives, the unit number corresponds to the tape controller's number.

/CSR=csr-addr

Specifies the UNIBUS address of the first addressable location on the controller (usually the status register) for the device. This qualifier must be specified for UNIBUS devices. For devices on multiple device boards (for example, the DMF32), the address must be the CSR address specified in the output of the CONFIGURE command. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

/CSR_OFFSET=value

For devices on multiple device boards, specifies the offset from the CSR address of the multiple device board to the CSR address for the specific device being connected. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

/DRIVERNAME=driver

Specifies the name of the driver as recorded in the prolog table. If the driver has not been loaded, the system acts as if the driver name is also the name of an executable image (file type of EXE) in the SYS\$LOADABLE_IMAGES directory and loads the driver. The driver name defaults to the first two characters of the device name concatenated with "DRIVER" (for example, LPDRIVER).

/MAXUNITS=max-unit-cnt

Specifies the maximum number of units the controller can support (that is, the number of UCB slots in the IDB). The default is the number specified in the prolog table of the driver, or 8 if the number is not specified in the prolog table.

/NUMVEC=vector-cnt

Specifies the number of interrupt vectors for the device. By default, the vector count is 1.

/SYSIDHIGH=value

Specifies the high-order 16 bits of the 48-bit system identification number and must be 0. To specify the value in octal or hexadecimal, precede the value with %O or %X, respectively.

/SYSIDLOW=value

Specifies the low-order 32 bits of the 48-bit system identification number. The value must be identical to the DECnet-VAX node number. To specify the value in octal or hexadecimal, precede the value with %O or %X, respectively.

/VECTOR=vector-addr

Specifies the UNIBUS address of the interrupt vector for the device or the lowest vector, if there is more than one. This qualifier must be specified for UNIBUS devices. For devices on multiple device boards (for example, the DMF32), the address must be the interrupt vector address for the multiple device board specified in the output of the CONFIGURE command. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

/VECTOR_OFFSET=value

For devices on multiple device boards, specifies the offset from the interrupt vector address of the multiple device board to the interrupt vector address for the specific device being connected. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

example

```
SYSGEN> CONNECT LPA0/ADAPTER=3/CSR=%0777514 -  
SYSGEN> /DRIVERNAME=LP2DRIVER/VECTOR=%0200
```

The command in this example connects the device named LPA0 to the driver named LP2DRIVER and loads the driver if it is not already loaded.

CONNECT/NOADAPTER

Connects a software device and loads its driver if it is not already loaded.

Use of the CONNECT/NOADAPTER command requires the CMKRNL privilege.

format

CONNECT/NOADAPTER *device*

parameter

device

Specifies the name of the software device to be connected.

qualifier

/DRIVERNAME=driver

Specifies the name of the driver as recorded in the prolog table. If the driver has not been loaded, the system acts as if the driver name is also the name of an executable image (file type of EXE) in the SYS\$LOADABLE_IMAGES directory and loads the driver. The default is the first two characters of the device name concatenated with "DRIVER" (for example, LPDRIVER). The driver prolog table must specify ADAPTER=NULL for this command to work.

SGN-8 SYSGEN CREATE

example

SYSGEN> CONNECT NET/NOADAPTER/DRIVER=NETDRIVER

The command in this example connects the device NET to the driver NETDRIVER and loads the driver if it is not already loaded.

CONNECT CONSOLE

The CONNECT CONSOLE command connects the console block storage devices and loads the driver. The console block storage device driver is CSDRIVER.EXE.

Use of the CONNECT CONSOLE command requires the CMKRNL privilege.

format

CONNECT CONSOLE

qualifiers

/NI

Enables a port for a console connected through the NI.

/REMOTE

Enables a remote diagnostic port for a second console or terminal connected to a VAX 8600 or VAX 8650 system.

/USER

Enables a port for a system user terminal connected to a VAX 8800 system.

CREATE

Creates or extends a file that can be used as a page, swap, or dump file.

format

CREATE *file-spec*

parameter

file-spec

Specifies the name of the page, swap, or dump file. The default file type is SYS. Primary page and swap files have the names SYS\$SYSTEM:PAGEFILE.SYS and SYS\$SYSTEM:SWAPFILE.SYS.

The dump file name is SYS\$SYSTEM:SYSDUMP.DMP. When you create a new SYSDUMP.DMP file, you must explicitly specify the file type DMP.

qualifiers

/[NO]CONTIGUOUS

Controls whether CREATE creates a contiguous file. The default is /NOCONTIGUOUS, which implies a contiguous-best-try file. If /NOCONTIGUOUS is specified, the following logic is used:

1. If the file does not exist, SYSGEN creates it.
2. If the file does exist, and the size specified by the /SIZE qualifier is smaller than the current size, SYSGEN creates a new file of the new size.
3. If the file does exist, and the size specified by the /SIZE qualifier is larger than the current size, SYSGEN extends the current file to the new size.

The /CONTIGUOUS qualifier forces the creation of a new file and guarantees that the file will be contiguous.

/SIZE=block-count

Specifies the number of blocks to be allocated to the file when the operation is complete.

example

```
SYSGEN> CREATE SYS$SYSTEM:PAGEFILE/SIZE=95000/CONTIGUOUS  
%SYSGEN-I-CREATED, SYS$SYSROOT:[SYSEXE]PAGEFILE.SYS;2 created
```

The command in this example creates a contiguous page file of 95,000 blocks.

DISABLE CHECKS

Inhibits range checks on parameter values specified in SET commands.

format

DISABLE CHECKS

example

```
SYSGEN> SET WSMAX 20  
%SYSGEN-W-SETMIN, Value set to minimum for parameter WSMAX  
SYSGEN> DISABLE CHECKS  
SYSGEN> SET WSMAX 20
```

In this example, the initial attempt to set WSMAX below the minimum fails because range checks are enabled. However, once the user disables range checks, the SET WSMAX command succeeds.

SGN-10 SYSGEN HELP

ENABLE CHECKS

Ensures that range checks are in effect.

Initially, range checks are enabled. Use ENABLE CHECKS only after you enter a DISABLE CHECKS command.

format

ENABLE CHECKS

example

```
SYSGEN> DISABLE CHECKS
SYSGEN> SET WSMAX 20
SYSGEN> ENABLE CHECKS
SYSGEN> SET WSMAX 30
%SYSGEN-W-SETMIN, Value set to minimum for parameter WSMAX
```

This example illustrates the use of the ENABLE CHECKS command to reenables parameter value checks.

EXIT

Returns you to command level. You can also return to command level by pressing CTRL/Z.

format

EXIT

HELP

Lists and explains the SYSGEN commands.

format

HELP [*command-name*]

parameter

command-name

Specifies the name of a SYSGEN command or the keyword PARAMETERS. The command HELP PARAMETERS displays a list of all parameters and prompts for a parameter name.

example

```
SYSGEN> HELP AUTOCONFIGURE
```

AUTOCONFIGURE

Automatically configures the device driver database. It locates each device unit physically attached to the system, loads the appropriate driver, creates the appropriate data structures, and connects the driver to the device's interrupt.

Format

```
AUTOCONFIGURE ALL
```

```
AUTOCONFIGURE adapter-spec
```

CMKRNL privilege required

Additional information available:

```
adapter-spec            ALL            qualifiers
/SELECT    /EXCLUDE    /LOG
```

```
AUTOCONFIGURE Suptopic?
```

The HELP command in this example displays information about the AUTOCONFIGURE command.

INSTALL

Activates a secondary page or swap file. The new page or swap file is effective until system shutdown.

Use of the INSTALL command requires the CMKRNL privilege.

format

```
INSTALL file-spec
```

parameter

file-spec

Specifies the name of the secondary page or swap file created with the SYSGEN command CREATE. The default file type is SYS.

qualifiers

/PAGEFILE

Specifies that the file is to be installed as an additional page file. All processes created after the page file is installed use the page file with the most available free space; processes created before the additional page file is installed continue to use the page file to which they are assigned.

/SWAPFILE

Specifies that the file is to be installed as an additional swap file. This swap file augments the swap file installed during the bootstrap process.

SGN-12 SYSGEN MSCP

example

```
SYSGEN> INSTALL SYS$SYSTEM:PAGEFILE.SYS/PAGEFILE
```

The command in this example installs a secondary page file.

LOAD

Loads an I/O driver.

Use of the LOAD command requires the CMKRNL privilege.

format

LOAD *file-spec*

parameter

file-spec

Specifies the file specification of the driver image to be loaded. The default file type is EXE.

If the entire file specification is the same as that of a driver already loaded, no load takes place. If only the file name is the same as that of a driver that is already loaded (but the file specification is different), the specified driver replaces the existing driver.

example

```
SYSGEN> LOAD SYS$SYSTEM:RTTDRIVER
```

The command in this example loads the standard driver for a remote terminal.

MSCP

Loads and starts the MSCP server.

This method of loading the MSCP server has been superseded for VMS Version 5.0 by the SYSGEN parameter MSCP_LOAD. To load the MSCP server, set the MSCP_LOAD parameter to 1. Define the disks to be served with the MSCP_SERVE_ALL parameter.

format

MSCP

RELOAD

Replaces a loaded device driver with a new version.

Use of the RELOAD command requires the CMKRNL privilege.

format

RELOAD *file-spec*

parameter

file-spec

The file specification of the new driver image. The default file type is EXE. The specified image is loaded and replaces any existing driver with the same file specification.

example

```
SYSGEN> RELOAD SYS$SYSTEM:RTTDRIVER
```

The command in this example reloads the remote terminal driver.

SET/OUTPUT

Establishes a file to be used for output during the session. By default the output is written to SYS\$OUTPUT, but you can use the SET/OUTPUT command to designate a disk file.

At any time you can direct the output back to SYS\$OUTPUT by using the SET/OUTPUT=SYS\$OUTPUT command.

format

SET/OUTPUT[=] *file-spec*

parameter

file-spec

The name of the output file. The default file type is LIS. The equal sign (=) is optional.

example

```
SYSGEN> SET/OUTPUT=PARAMS.LIS  
SYSGEN> SHOW/ALL  
SYSGEN> SHOW/SPECIAL  
SYSGEN> EXIT
```

In this example, output is directed to the file PARAMS.LIS to capture a complete list of all the system parameters (including the SPECIAL parameters reserved for DIGITAL use) and their values.

SET parameter-name

Assigns a value to a system parameter in the SYSGEN work area.

This command does not modify parameter files, the current system parameter file on disk, or the active system; for information on performing these modifications, see the WRITE command.

format

SET parameter-name *value*

parameters

parameter-name

Specifies the name of a system parameter. If you enter a period (.), it is interpreted as a request for the system parameter specified in the last SET or SHOW command. See the description of the SHOW [parameter] command for an example of the use of the period in place of a parameter name.

You can display the system parameters and request information on them with the SYSGEN command HELP PARAMETERS.

value

Usually specifies an integer or the keyword DEFAULT. Integer values must be within the defined minimum and maximum values for the parameter unless the SYSGEN command DISABLE CHECKS was specified.

The keyword DEFAULT specifies the default value for the parameter. You can display the maximum, minimum, and default values for any parameter with the SYSGEN command SHOW [parameter].

example

```
SYSGEN> SET PFCDEFAULT 20
```

The command in this example assigns a value of 20 to the PFCDEFAULT parameter.

SET/STARTUP

Names the site-independent startup command procedure to be associated with a parameter file for subsequent bootstrap operations.

format

SET/STARTUP *file-spec*

parameter

file-spec

The file specification of a startup command procedure on the system disk (maximum of 31 characters). The initial site-independent startup command procedure (as named in the software distribution kit) is SYS\$SYSTEM:STARTUP.COM.

example

```
SYSGEN> SET/STARTUP SYS$SYSTEM:XSTARTUP.COM
```

The command in this example assigns SYS\$SYSTEM:XSTARTUP.COM as the current site-independent startup command procedure.

SHARE

Connects a processor to a multiport memory unit already initialized by this or another processor. The number and name of the specified multiport memory unit must be those of an initialized unit, or an error condition results.

Use of the SHARE command requires the CMKRNL privilege.

format

SHARE *MPMn* *MPM-name*

parameters

MPMn

Specifies the number on the front panel of the multiport memory unit being connected.

MPM-name

The name of the multiport memory unit as specified in a previous SHARE /INITIALIZE command.

example

```
SYSGEN> SHARE MPM1 SHR_MEM_1
```

The command in this example connects a multiport memory unit. Since no qualifiers are specified, defaults apply to all the parameters.

The unit with a 1 on the front panel must be initialized with the name SHR_MEM_1 for the command to work.

SHARE/INITIALIZE

Initializes a multiport memory unit and connects it to the processor on which SYSGEN is running.

Use of the SHARE/INITIALIZE command requires the CMKRNL privilege.

format

SHARE/INITIALIZE *MPMn MPM-name*

parameters

MPMn

Specifies the number on the front panel of the multiport memory unit being connected.

MPM-name

Specifies the name by which the multiport memory unit is to be known to systems using it. The MPM-name is a 1 through 15 alphanumeric character string that may contain dollar signs (\$) and underscores (_).

qualifiers

/CEFCLUSTERS=cef

Specifies the total number of common event flag clusters permitted in the multiport memory unit. The cef value is an integer with a default of 32.

/GBLSECTIONS=gbl

Specifies the total number of global sections permitted in the multiport memory unit. The gbl value is an integer with a default of 32.

/MAILBOXES=mail

Specifies the total number of mailboxes permitted in the multiport memory unit. The mail value is an integer with a default of 32.

/MAXCEFCLUSTERS=max-cef

Specifies the maximum number of common event flag clusters that the processor can create in the multiport memory unit. The default is no limit.

/MAXGBLSECTIONS=max-gbl

Specifies the maximum number of global sections that the processor can create in the multiport memory unit. The default is no limit.

/MAXMAILBOXES=max-mail

Specifies the maximum number of mailboxes the processor can create in the multiport memory unit. The default is no limit.

/POOLBCOUNT=block-cnt

Specifies the number of blocks allocated to the multiport memory unit's dynamic pool. The block-cnt value is an integer with a default of 128.

/POOLBSIZE=block-size

Specifies the size of each block in the dynamic pool. The block-size value is an integer with a default of 128 bytes.

/PRQCOUNT=prq-cnt

Specifies the number of interprocessor request blocks (PRQs) allocated. The prq-cnt value is an integer with a default of 64.

example

```
SYSGEN> SHARE MPM1 SHR_MEM_1/INITIALIZE -  
SYSGEN> /GBLSECTIONS=128/MAILBOXES=64/CEFCLUSTERS=0
```

The command in this example initializes a multiport memory unit with defaults on all but the gbl, mail, and cef parameters. In this example, assume that the number of the multiport memory unit as it appears on the front panel is 1, and the unit name is SHR_MEM_1.

SHOW/ADAPTER

Lists all the nexus numbers and generic names on the adapter.

Use of the SHOW/ADAPTER command requires the CMEXEC privilege.

format

SHOW/ADAPTER

example

```
SYSGEN> SHOW/ADAPTER
```

The following is a sample display produced by the SHOW/ADAPTER command:

```
CPU Type: 11/780
```

Nexus	Generic Name or Description
1	16K memory, non-interleaved
3	UBO
8	MBO
9	MB1

SHOW/CONFIGURATION

Displays information on the device configuration.

Use of the SHOW/CONFIGURATION command requires the CMEXEC privilege.

format

SHOW/CONFIGURATION

qualifiers

/ADAPTER=nexus

Specifies the number of MASSBUS or UNIBUS adapters to be displayed. The nexus value can be expressed as an integer or with one of the generic names listed by the SYSGEN command SHOW/ADAPTER.

/COMMAND_FILE

Specifies that SYSGEN formats all the device data into CONNECT /ADAPTER=adapter-spec commands and writes the commands in an output file you specify. In this way, you can completely reconfigure a system for UNIBUS devices without the use of the SYSGEN command AUTOCONFIGURE.

/OUTPUT=file-spec

Specifies the file specification of an optional output file. If you specify the /OUTPUT qualifier but omit the file type, the default is LIS. However, if you specify /COMMAND_FILE and /OUTPUT qualifiers together, the default file type for the output file is COM.

example

SYSGEN> SHOW/CONFIGURATION

The command in this example displays the current system I/O database. The following illustrates a typical display produced by this command:

System CSR and Vectors on 15-NOV-1988 13:49:26.84

SHOW/DEVICE=device-driver

```
Name: DRA Units: 3 Nexus:4 (MBA)
Name: DBA Units: 1 Nexus:4 (MBA)
Name: DBB Units: 2 Nexus:5 (MBA)
Name: DRB Units: 1 Nexus:5 (MBA)
Name: MTA Units: 2 Nexus:5 (MBA)
Name: DMA Units: 2 Nexus:8 (UBA) CSR: 777440 Vector1: 210 Vector2: 000
Name: LPA Units: 1 Nexus:8 (UBA) CSR: 777514 Vector1: 200 Vector2: 000
Name: DYA Units: 2 Nexus:8 (UBA) CSR: 777170 Vector1: 264 Vector2: 000
Name: XMA Units: 1 Nexus:8 (UBA) CSR: 760070 Vector1: 300 Vector2: 304
Name: XMB Units: 1 Nexus:8 (UBA) CSR: 760100 Vector1: 310 Vector2: 314
Name: XMC Units: 1 Nexus:8 (UBA) CSR: 760110 Vector1: 320 Vector2: 324
Name: TTA Units: 8 Nexus:8 (UBA) CSR: 760130 Vector1: 330 Vector2: 334
Name: TTB Units: 8 Nexus:8 (UBA) CSR: 760140 Vector1: 340 Vector2: 344
Name: TTC Units: 8 Nexus:8 (UBA) CSR: 760150 Vector1: 350 Vector2: 354
Name: TTD Units: 8 Nexus:8 (UBA) CSR: 760160 Vector1: 360 Vector2: 364
Name: TTE Units: 8 Nexus:8 (UBA) CSR: 760170 Vector1: 370 Vector2: 374
Name: TTF Units: 8 Nexus:8 (UBA) CSR: 760200 Vector1: 400 Vector2: 404
```

SHOW/DEVICE=device-driver

Displays full information on device drivers loaded into the system, the devices connected to them, and their I/O databases. All addresses are in hexadecimal and are virtual.

Use of the SHOW/DEVICE=device-driver command requires the CMEXEC privilege.

format

SHOW/DEVICE=device-driver

example

SYSGEN> SHOW/DEVICE=DBDRIVER

The command in this example displays the following information about the DBDRIVER:

```
__Driver__ __Start__ __End__ __Dev__ __DDB__ __CRB__ __IDB__ __Unit__ __UCB__
DBDRIVER 80082390 80082A7E
                DBA 80000848 800988C0 80098920
                                0 8000087C
                                1 8008A4F0
                                2 8008A590
                                5 8008A630
                                7 8008A6D00
```

SGN-20 **SYSGEN**
SHOW [parameter]

SHOW/DRIVER=device-driver

Displays the starting and ending address of the specified device driver loaded into the system. If you omit the driver name, SHOW/DRIVER displays the starting and ending address of all device drivers loaded into the system. All addresses are in hexadecimal and are virtual.

Use of the SHOW/DRIVER command requires the CMEXEC privilege.

format

SHOW/DRIVER=device-driver

example

SYSGEN> SHOW/DRIVER

The command in this example displays the starting and ending addresses of all drivers, as follows:

__Driver__	Start	End
RTTDRIVER	800C1060	800C1960
NETDRIVER	800BAFDO	800BD4B0
TMDRIVER	800B3950	800B4BF0
DRDRIVER	800B2950	800B3290
DDDRIIVER	800B1740	800B2060
DLDRIVER	800B0D10	800B15A0
DMDRIVER	800B0070	800B0990
LCDRIVER	800AFC50	800AFFB0
YCDRIVER	800AED20	800AF3E0
XGDRIVER	800AC3F0	800AE9E0
XDDRIVER	800AA5A0	800AC380
DZDRIVER	800A4F30	800A59B0
XMDRIVER	800A3E10	800A4A50
DYDRIVER	800A3300	800A3C30
LPDRIVER	800A2E90	800A3300
DBDRIVER	800DE7A0	800DEFB7
TTDRIVER	800DC770	800DE79B
OPERATOR	80001650	80001F8B
NLDRIVER	80001626	80001D20
MBDRIVER	800015FC	80001CBE

SHOW [parameter]

Displays the values of system parameters in the SYSGEN work area, plus the default, minimum, and maximum values of the parameters and their units of measure.

format

SHOW [*parameter-name*]

parameter

parameter-name

Specifies the name of a system parameter. If you enter a period (.), it is interpreted as a request for the system parameter specified in the last SET parameter-name or SHOW [parameter] command.

qualifiers

/ACP

Specifies that all ACP parameter values are displayed.

/ALL

Specifies that all parameter values other than SPECIAL parameter values are displayed.

/CLUSTER

Specifies that all CLUSTER parameter values are displayed.

/DYNAMIC

Specifies that all DYNAMIC parameter values are displayed.

/GEN

Specifies that all GEN parameter values are displayed.

/HEX

Specifies that the values of parameters be displayed in hexadecimal representation. Specify the /HEX system parameter name or the parameter type. If you specify the /HEX qualifier with the /NAMES qualifier, /HEX is ignored.

/JOB

Specifies that all JOB parameter values are displayed.

/LGI

Specifies that all LGI parameter values are displayed.

/MAJOR

Specifies that all MAJOR parameter values are displayed.

/MULTIPROCESSING

Specifies that all MULTIPROCESSING parameters are displayed.

/NAMES

Specifies that the names of all parameters are displayed.

/PQL

Specifies that all PQL parameter values are displayed.

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/RMS

Specifies that all VAX RMS parameter values are displayed.

/SCS

Specifies that all SCS parameter values are displayed.

/SPECIAL

Specifies that all parameter values reserved for DIGITAL use are displayed.

/SYS

Specifies that all SYS parameter values are displayed.

/TTY

Specifies that all terminal parameter values are displayed.

example

```
SYSGEN> SHOW GBLSECTIONS
GBLSECTIONS      100      40      20      -1 Sections
SYSGEN> SET . 110
SYSGEN> SHOW .
GBLSECTIONS      110      40      20      -1 Sections
```

In this example, the user first displays the values of the GBLSECTIONS parameter and then refers to the parameter with a period to set its current value to 110. The next SHOW command also uses the period notation to obtain confirmation that the change occurred.

SHOW/STARTUP

Displays the name of the current site-independent startup command procedure.

format

SHOW/STARTUP

example

```
SYSGEN> SHOW/STARTUP
Startup command file = SYS$SYSTEM:STARTUP.COM
```

The command in this example displays the name of the site-independent startup command procedure.

SHOW/UNIBUS

Displays the addresses in UNIBUS I/O space that can be addressed.

Use of the SHOW/UNIBUS command requires the CMKRNL privilege.

format

SHOW/UNIBUS

qualifier

/ADAPTER[=*nexus*]

Specifies that the address of the specified UNIBUS adapter is to be displayed. The *nexus* value specifies the number of the UNIBUS. It can be expressed as an integer or as one of the names listed by the SYSGEN command SHOW /ADAPTER. If you do not specify a particular adapter, every UNIBUS is displayed.

example

SYSGEN> SHOW/UNIBUS/ADAPTER=4

The command in this example displays the available addresses for nexus 4, as follows:

```
**UNIBUS map for nexus #4 on 30-DEC-1988 14:19:38.00 **
Address 760070 (8001F838) responds with value 9B6E (hex)
Address 760072 (8001F83A) responds with value 0340 (hex)
Address 760074 (8001F83C) responds with value 403C (hex)
Address 760076 (8001F83E) responds with value 0240 (hex)
Address 760100 (8001F840) responds with value 8000 (hex)
Address 760102 (8001F842) responds with value 0340 (hex)
Address 760104 (8001F844) responds with value 7DAC (hex)
Address 760106 (8001F846) responds with value 000A (hex)
Address 760110 (8001F848) responds with value 8000 (hex)
Address 760112 (8001F84A) responds with value 0340 (hex)
Address 760114 (8001F84C) responds with value AD5C (hex)
Address 760116 (8001F84E) responds with value 000A (hex)

Address 760130 (8001F858) responds with value 9B6E (hex)
Address 760132 (8001F85A) responds with value 030D (hex)
Address 760134 (8001F85C) responds with value FF00 (hex)
Address 760136 (8001F85E) responds with value CECE (hex)
Address 760140 (8001F860) responds with value 4060 (hex)
Address 760142 (8001F862) responds with value 0761 (hex)
Address 760144 (8001F864) responds with value FF00 (hex)
```


TERMINAL/ECHO

Modifies the CTRL/C, CTRL/O, CTRL/Y, and CTRL/Z echo strings on a systemwide basis.

format

TERMINAL/ECHO

USE

Initializes the SYSGEN work area with system parameter values and the name of the site-independent startup command procedure. You specify the source for both the parameter values and the procedure name. They can be retrieved from a parameter file, the current system parameter file on disk, the active system in memory, or the default list.

Existing values in the SYSGEN work area are overwritten.

format

USE *file-spec*

parameter

file-spec

The file specification of a system parameter file from which data is to be retrieved. The parameter file is either SYS\$SYSTEM:AUTOGEN.PAR or the name of a parameter file you created with the SYSGEN command WRITE. The default file type is PAR.

example

SYSGEN> USE DEFAULT

The command in this example initializes the SYSGEN work area with parameter values that should allow VMS to boot on any standard configuration. The initial values of the SYSGEN work area when the utility is invoked are the active values.

WRITE

Writes the system parameter values and the name of the site-independent startup command procedure from the SYSGEN work area to either a parameter file, the current system parameter file on disk, or the active system in memory. (Only the dynamic parameter values are written to the active system.)

Use of the WRITE ACTIVE command requires the CMKRNL privilege. Use of the WRITE CURRENT command requires the SYSPRV privilege.

format

WRITE *file-spec*

parameter

file-spec

The file specification of a new parameter file to be created. The default file type is PAR.

example

SYSGEN> WRITE CURRENT

The command in this example modifies the current system parameter file on disk (SYS\$SYSTEM:VAXVMSSYS.PAR).

Supplemental SYSGEN Information

This section contains the following information:

- The SYSGEN device table
- Tables of the VMS system parameters.

The SYSGEN Device Table

The SYSGEN device table lists the characteristics of all DIGITAL devices. This table indicates the following information for each device type:

- Device name
- Device controller name
- Interrupt vector
- Number of interrupt vectors per controller
- Vector alignment factor
- Address of the first device register for each controller recognized by SYSGEN (the first register is usually, but not always, the CSR)
- Number of registers per controller
- Device driver name
- Indication of whether the driver is or is not supported

Devices not listed in the SYSGEN device table include:

- Non-DIGITAL-supplied devices with fixed CSR and vector addresses. These devices have no effect on autoconfiguration. Customer-built devices should be assigned CSR and vector addresses beyond the floating address space reserved for DIGITAL-supplied devices.
- Those DIGITAL-supplied, floating-vector devices that the AUTOCONFIGURE command does not recognize. Use the CONNECT command to attach these devices to the system.

Supplemental SYSGEN Information

Table SGN-2: SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
CR	CR11	230	1	—	777160	—	CRDRIVER	Yes
DM	RK611	210	1	—	777440	—	DMDRIVER	Yes
LP	LP11	200 170 174 270 274	—	—	777514 764004 764014 764024 764034	—	LPDRIVER	Yes
DL	RL11	160	1	—	774400	—	DLDRIVER	Yes
MS	TS11	224	1	—	772520	—	TSDRIVER	Yes
DY	RX211	264	1	—	777170	—	DYDRIVER	Yes
DQ	RB730	250	1	—	775606	—	DQDRIVER	Yes
PU	UDA	154	1	—	772150	—	PUDRIVER	Yes
PT	TU81	260	1	—	774500	—	PUDRIVER	Yes
XE	UNA	120	1	—	774510	—	XEDRIVER	Yes
XQ	QNA	120	1	—	774440	—	XQDRIVER	Yes
OM	DC11	Float	2	8	774000 774010 774020 774030 32 units maximum	—	OMDRIVER	No
DD	TU58	Float	2	8	776500 776510 776520 776530 16 units maximum	—	DDRIVER	Yes
OB	DN11	Float	1	4	775200 775210 775220 775230 16 units maximum	—	OBDRIVER	No

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Supplemental SYSGEN Information

Table SGN-2 (Cont.): SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
YM	DM11B	Float	1	4	770500 770510 770520 770530 . . . 16 units maximum	—	YMDRIVER	No
OA	DR11C	Float	2	8	767600 767570 767560 767550 . . . 16 units maximum	—	OADRIVER	No
PR	PR611	Float	1	8	772600 772604 772610 772614 . . . 8 units maximum	—	PRDRIVER	No
PP	PP611	Float	1	8	772700 772704 772710 772714 . . . 8 units maximum	—	PPDRIVER	No
OC	DT11	Float	2	8	777420 777422 777424 777426 . . . 8 units maximum	—	OCDRIVER	No
OD	DX11	Float	2	8	776200 776240	—	ODDRIVER	No

Supplemental SYSGEN Information

Table SGN-2 (Cont.): SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
YL	DL11C	Float	2	8	775610 775620 775630 775640 31 units maximum	—	YLDRIVER	No
YJ	DJ11	Float	2	8	Float	8	YJDRIVER	No
YH	DH11	Float	2	8	Float	16	YHDRIVER	No
OE	GT40	Float	4	8	772000 772010	—	OEDRIVER	No
LS	LPS11	Float	6	8	770400	—	LSDRIVER	No
OR	DQ11	Float	2	8	Float	8	ORDRIVER	No
OF	KW11W	Float	2	8	772400	—	OFDRIVER	No
XU	DU11	Float	2	8	Float	8	XUDRIVER	No
XW	DUP11	Float	2	8	Float	8	OODRIVER	No
XV	DV11	Float	3	8	775000 775040 775100 775140	—	XVDRIVER	No
OG	LK11	Float	2	8	Float	8	OGDRIVER	No
XM	DMC11	Float	2	8	Float	8	XMDRIVER	Yes
TTA	DZ11	Float	2	8	Float	8	DZDRIVER	Yes
XK	KMC11	Float	2	8	Float	8	XKDRIVER	No
OH	LPP11	Float	2	8	Float	8	OHDRIVER	No
OI	VMV21	Float	2	8	Float	8	OIDRIVER	No
OJ	VMV31	Float	2	8	Float	16	OJDRIVER	No
OK	DWR70	Float	2	8	Float	8	OKDRIVER	No
DL	RL11	Float	1	4	Float	8	DLDRIVER	Yes
MS	TS11	Float	1	4	772524 772530 772534	—	TSDRIVER	Yes
LA	LPA11	Float	2	8	770460	—	LADRIVER	Yes
LA	LPA11	Float	2	8	Float	16	LADRIVER	Yes
OL	KW11C	Float	2	8	Float	8	OLDRIVER	No
RSV	RSV	Float	1	8	Float	8	RSVDRIVER	No

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Supplemental SYSGEN Information

Table SGN-2 (Cont.): SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
DY	RX211	Float	1	4	Float	8	DYDRIVER	Yes
XA	DR11W	Float	1	4	Float	8	XADRIVER	Yes
XB	DR11B	124	—	—	772410	—	XBDRIVER	No
XB	DR11B	Float	1	4	772430	—	XBDRIVER	No
XB	DR11B	Float	1	4	Float	8	XBDRIVER	No
XD	DMP11	Float	2	8	Float	8	XDDRIVER	Yes
ON	DPV11	Float	2	8	Float	8	ONDRIVER	No
IS	ISB11	Float	2	8	Float	8	ISDRIVER	No
XD	DMV11	Float	2	8	Float	16	XDDRIVER	No
XE	UNA	Float	1	4	Float	8	XEDRIVER	No
XQ	QNA	Float	1	4	774460	—	XQDRIVER	Yes
PU	UDA	Float	1	4	Float	4	PUDRIVER	Yes
XS	KMS11	Float	3	8	Float	16	XSDRIVER	No
XP	PCL11	Float	2	8	764200 764240 764300 764340	—	XPDRIVER	No
VB	VS100	Float	1	4	Float	16	VBDRIVER	No
PT	TU81	Float	1	4	Float	4	PUDRIVER	Yes
OQ	KMV11	Float	2	8	Float	16	OQDRIVER	No
UK	KCT32	Float	2	8	764400 764440 764500 764540	—	UKDRIVER	No
IX	IEQ11	Float	2	8	764100	—	IXDRIVER	No
TX	DHV11	Float	2	8	Float	16	YFDRIVER	Yes
DT	TC11	214	1	—	777340	—	DTDRIVER	No
VC	VCB01	Float	2	1	777200	—	VCDRIVER	Yes
VC	VCB01	Float	2	1	Float	64	VCDRIVER	Yes
OT	LNV11	Float	1	4	776200	—	OTDRIVER	No
LD	LNV21	Float	1	4	Float	16	LDDRIVER	No
ZQ	QTA	Float	1	4	772570	—	ZQDRIVER	No
ZQ	QTA	Float	1	4	Float	8	ZQDRIVER	No
SJ	DSV11	Float	1	4	Float	8	SJDRIVER	No
OU	ADV11C	Float	2	8	Float	8	OUDRIVER	No

Supplemental SYSGEN Information

Table SGN-2 (Cont.): SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
OV	AAV11C	Float	0	8	770440	—	OVDIVER	No
OV	AAV11C	Float	0	8	Float	8	OVDIVER	No
AX	AXV11C	140	2	—	776400	—	AXDRIVER	No
AX	AXV11C	Float	2	8	Float	8	AXDRIVER	No
KZ	KWV11C	Float	2	8	770420	—	KZDRIVER	No
KZ	KWV11C	Float	2	8	Float	4	KZDRIVER	No
AZ	ADV11D	Float	2	8	776410	—	AZDRIVER	No
AZ	ADV11D	Float	2	8	Float	4	AZDRIVER	No
AY	AAV11D	Float	2	8	776420	—	AYDRIVER	No
AY	AAV11D	Float	2	8	Float	4	AYDRIVER	No
VA	VCB02	Float	3	16	777400 777402 777404 777406 8 units maximum	—	VADRIVER	Yes
DN	DRV11J	Float	16	4	764160 764140 764120	—	DNDRIVER	No
HX	DRQ3B	Float	2	8	Float	16	HXDRIVER	No
VQ	VSV24	Float	1	4	Float	8	VQDRIVER	No
VV	VSV21	Float	1	4	Float	8	VVDRIVER	No
BQ	IBQ01	Float	1	4	Float	8	BQDRIVER	No
UT	MIRA	Float	2	8	Float	8	UTDRIVER	No
IX	IEQ11	Float	2	8	Float	16	IXDRIVER	No
AW	ADQ32	Float	2	8	Float	32	AWDRIVER	No
VX	DTC04	Float	2	8	Float	2	VXDRIVER	No

Parameter Categories

This section describes the functions of the VMS system parameters. The system parameters fall into eleven general categories:

- ACP—Parameters associated with file system caches and Files-11 ancillary control processes (ACPs).
- CLUSTER—Parameters that affect VAXcluster operation.

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Supplemental SYSGEN Information

- JOB—Job control parameters.
- LGI—Login security parameters.
- MULTIPROCESSING—Parameters associated with symmetric multiprocessing (SMP).
- PQL—Parameters associated with process creation limits and quotas.
- RMS—Parameters associated with VAX RMS.
- SCS—Parameters that control System Communication Services (SCS) and port driver operation. The parameters that affect SCS operation have the prefix SCS. The parameters that affect the CI780/CI750 port driver have the prefix PA.
- SPECIAL—Special parameters. These parameters should be used only by DIGITAL personnel.
- SYS—Parameters that affect overall system operation.
- TTY—Parameters associated with terminal behavior.

There are also four parameters that can be user-defined: USERD1, USERD2, USER3, and USER4. USERD1 and USERD2 are dynamic.

Parameters may have one or more of the following attributes:

- DYNAMIC—Active values can be modified.
- GEN—Affect the creation and initialization of data structures at bootstrap time.
- MAJOR—Most likely to require modification.

NOTE: Each parameter has associated default, minimum, and maximum values that define the scope of allowable values. To determine these values, invoke SYSGEN and issue a SHOW [parameter-name] command (with appropriate qualifiers). For example, to display the values for WSMAX, you can specify SHOW WSMAX; to display the values for the TTY parameters, you can specify SHOW/TTY. You can also display parameters grouped by attributes. To display DYNAMIC parameters, for example, specify SHOW/DYNAMIC.

Following is a list of system parameters grouped according to category. An asterisk indicates that a parameter is dynamic. Refer to the online SYSGEN Help for a description of each parameter.

ACP Parameters

ACP_BASEPRIO*	ACP_DATACHECK*	ACP_DINDXCACHE*
ACP_DIRCACHE*	DJTQUOTA*	ACP_EXTCACHE*
ACP_EXTLIMIT*	ACP_FIDCACHE*	ACP_HDRCACHE*

Supplemental SYSGEN Information

ACP Parameters

ACP_MAPCACHE*	ACP_MAXREAD*	MJTQUOTA
ACP_MULTIPLE*	ACP_QUOCACHE*	ACP_REBLDSYSD
ACP_SHARE*	ACP_SWAPFLGS*	ACP_SYSACC*
ACP_WINDOW*	ACP_WRITEBACK*	ACP_WORKSET*
ACP_XQP_RES*		

CLUSTER Parameters

ALLOCLASS*	DISK_QUORUM*	EXPECTED_VOTES
LOCKDIRWT	MSCP_BUFFER	MSCP_CREDITS
MSCP_LOAD	MSCP_SERVE_ALL	NISCS_CONV_BOOT
NISCS_LOAD_PEA0	NISCS_PORT_SERV	RECNXINTERVAL*
QDSKINTERVAL	QDKSVOTES	VAXCLUSTER
VOTES		

JOB Parameters

BJOBLIM*	DEFPRI*	DEFQUEPRI*
IJOBLIM*	MAXQUEPRI*	NJOBLIM*
RJOBLIM*		

LGI Parameters

LGI_BRK_DISUSER*	LGI_BRK_LIM*	LGI_BRK_TERM*
LGI_BRK_TMO*	LGI_HID_TIM*	LGI_RETRY_LIM*
LGI_RETRY_TMO*		

MULTIPROCESSING Parameters

MULTIPROCESSING	SMP_CPUS	SMP_LNGSPINWAIT
SMP_SANITY	SMP_SPINWAIT	

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PQL Parameters

PQL_DASTLM*	PQL_DBIOLM*	PQL_DBYTLM*
PQL_DCPULM*	PQL_DDIOLM*	PQL_DENQLM*
PQL_DFILLM*	PQL_DPGFLQUOTA*	PQL_DPRCLM*
PQL_DTQELM*	PQL_DWSDEFAULT	PQL_DWSEXTENT*
PQL_DWSQUOTA*	PQL_MASTLM*	PQL_MBIOLM*
PQL_MBYTLM*	PQL_MCPULM*	PQL_MDIOLM*
PQL_MENQLM*	PQL_MFILLM*	PQL_MPGFLQUOTA*
PQL_MPRCLM*	PQL_MTQELM*	PQL_MWSDEFAULT
PQL_MWSEXTENT*	PQL_MWSQUOTA*	

RMS Parameters

RMS_DFMBC*	RMS_DFMBFSDK*	RMS_DFMBFSMT*
RMS_DFMBFSUR*	RMS_DFMBFREL*	RMS_DFMBFIDX*
RMS_DFMBFHS*	RMS_DFNBC*	RMS_PROLOGUE*
RMS_EXTEND_SIZE*	RMS_FILEPROT	RMS_GBLBUFQUO*

SCS Parameters

SCSBUFFCNT	SCSCONNCNT	SCSRESPCNT
SCSMAXDG	SCSMAXMSG	SCSFLOWCUSH*
SCSSYSTEMID	SCSSYSTEMIDH	SCSNODE
PRCPOLINTERVAL*	PASTIMOUT*	PASTDGBUF
PANUMPOLL*	PAMAXPORT*	PAPOLLINTERVAL*
PAPOOLINTERVAL*	PASANITY*	PANOPOLL*
UDABURSTRATE		

Special Parameters

CHANNELCNT	CONCEAL_DEVICES	DLCKEXTRASTK
EXUSRSTK	IMGIOCNT	IOTA
LOCKRETRY	LPRMIN	MPW_PPIO
NOAUTOCONFIG	NOCLOCK	NOCLUSTER

Special Parameters

PAGTBLPFC	PFRATS	PHYSICALPAGES
PIXSCAN	PSEUDOLOA	QBUS_MULT_INTR
RESALLOC	S0_PAGING	SMP_TICK_CNT
SRPMIN	SSINHIBIT	SWP_PRIO
SWPALLOCINC	SWPFAIL	SWPRATE
SYSRFC	TBSKIPWSL	VMS
WRITABLESYS		

SYS Parameters

AWSMIN*	AWSTIME*	BALSETCNT
BORROWLIM*	BUGCHECKFATAL*	BUGREBOOT*
CLISYMTBL*	CRDENABLE	DEADLOCK_WAIT*
DEFMBXBUFQUO*	DEFMBXMXMSG*	DEFMBXNUMMSG*
DEFPRI*	DISMOUMSG*	DORMANTWAIT*
DUMPBUG	DUMPSTYLE	ERRORLOGBUFFERS
EXTRACPU*	FREGOAL	FRELIM
GBLPAGES	GBLPAGFIL	GBLSECTIONS
GROWLIM*	INTSTKPAGES	IRPCOUNT
IRPCOUNTV	LAMAPREGS	LNMPHASHTBL
LNMSHASHTBL	LOCKIDTBL	LOCKIDTBL_MAX*
LONGWAIT*	LRPCOUNT	LRPCOUNTV
LRPSIZE	MAXBUF*	MAXPROCESSCNT
MAXSYSGROUP*	MINWSCNT	MOUNTMSG*
MPW_HILIMIT	MPW_IOLIMIT	MPW_LOLIMIT
MPW_LOWAITLIMIT*	MPW_THRESH*	MPW_WAITLIMIT*
MPW_WRTCLUSTER	MVTIMEOUT*	NPAGEDYN
NPAGEVIR	PAGEDYN	PAGFILCNT
PFCDEFAULT*	PFRATH*	PFRATL*
PROCSECTCNT	QUANTUM*	REALTIME_SPTS
RESHASHTBL	SAVEDUMP	SETTIME
SPTREQ	SRPCOUNT	SRPCOUNTV
STARTUP_P1-8	SWPFILCNT	SWPOUTPGCNT*

Supplemental SYSGEN Information

SYS Parameters

SYSMWCNT	TAPE_MVTIMEOUT*	TIMEPROMPTWAIT
UAFALTERNATE	VIRTUALPAGECNT	WINDOW_SYSTEM
WSDEC*	WSINC*	WSMAX
XFMAXRATE*		

TTY Parameters

TTY_ALTYPAMD	TTY_ALTALARM	TTY_AUTOCHAR
TTY_BUF	TTY_CLASSNAME	TTY_DEFCHAR
TTY_DEFCHAR2	TTY_DIALTYPE	TTY_DMASIZE*
TTY_OWNER	TTY_PARITY	TTY_PROT
TTY_RSPEED	TTY_SCANDELTA	TTY_SILOTIME
TTY_SPEED	TTY_TIMEOUT	TTY_TYPAHDSZ

SYSMAN Utility

The System Management Utility (SYSMAN) centralizes system management so that you can manage nodes or clusters from one location.

format

RUN SYS\$SYSTEM:SYSMAN

parameters

None.

usage summary

To invoke SYSMAN, enter the following command at the DCL prompt:

```
$ RUN SYS$SYSTEM:SYSMAN
```

The utility responds with the following prompt:

```
SYSMAN>
```

You can then enter SYSMAN commands at the SYSMAN> prompt. These commands follow the standard rules of DCL syntax.

As an alternative, you can enter the RSX command MCR, which expands to RUN SYS\$SYSTEM:

```
$ MCR SYSMAN
```

With the MCR command, you can invoke SYSMAN and supply a command in one command string. With any SYSMAN command (except SET ENVIRONMENT), SYSMAN executes the command string and exits. After executing a SET ENVIRONMENT command, the utility returns the SYSMAN> prompt.

To exit from SYSMAN, enter the EXIT command at the SYSMAN> prompt or press CTRL/Z. Either method returns control to the DCL command level.

SYSMAN requires you to have the OPER privilege on the local node and authorization for the OPER or SETPRV privilege on any remote node in the management environment. You must also have the privileges required by individual commands, as documented in the Command Section. To determine which privileges are required for DCL commands or for system management utilities, refer to the *VMS DCL Dictionary* or the appropriate utility reference.

SYSMAN has the following restrictions:

- It cannot be run from a batch job in any environment that requires a password.

SM-2 **SYSMAN Utility**

- Some DCL commands, such as SET CLUSTER/QUORUM, MOUNT /CLUSTER, and some forms of the REPLY command, operate cluster-wide by design, so they should not be run in a SYSMAN environment defined as a cluster.

SYSMAN Commands

This section describes SYSMAN commands and provides examples of their use.

CONFIGURATION SET CLUSTER_AUTHORIZATION

Modifies security data in a local area cluster.

The command requires the SYSPRV privilege.

format

**CONFIGURATION
SET CLUSTER_AUTHORIZATION**

parameters

None.

qualifiers

/GROUP_NUMBER=[n]

Specifies the cluster group number that is recorded in SYS\$SYSTEM:CLUSTER_AUTHORIZE.DAT. A group number uniquely identifies each local area cluster configuration on a single Ethernet. This number must be in the range from 1 to 4095 or 61440 to 65535.

/PASSWORD=password

Specifies a password for cluster access. A password consists of 1 to 31 characters, including alphanumeric characters, the dollar sign, and underscore. A password provides a second level of validation to ensure the integrity of individual clusters on the same Ethernet that accidentally use identical group numbers. A password also prevents an intruder who discovers the group number from joining the cluster.

description

The CONFIGURATION SET CLUSTER_AUTHORIZATION command modifies the group number and password of a local area cluster, as recorded in SYS\$SYSTEM:CLUSTER_AUTHORIZE.DAT. If your configuration has multiple system disks, SYSMAN automatically updates each copy of CLUSTER_AUTHORIZE.DAT, provided the environment is defined as a cluster (SET ENVIRONMENT/CLUSTER).

CAUTION: If you change either the group number or the password, you must reboot the entire cluster.

SM-4 SYSMAN CONFIGURATION SET TIME

The file CLUSTER_AUTHORIZE.DAT is initialized during execution of CLUSTER_CONFIG.COM and maintained through the SYSMAN Utility. Under normal conditions, you do not need to alter records in the CLUSTER_AUTHORIZE.DAT file interactively. However, if you suspect a security breach, you use the CONFIGURATION commands in SYSMAN to make the change.

example

```
SYSMAN> SET ENVIRONMENT/CLUSTER/NODE=ASCONA
SYSMAN> SET PROFILE /PRIVILEGE=SYSPRV
SYSMAN> CONFIGURATION SET CLUSTER_AUTHORIZATION/PASSWORD=GILLIAN
Enter cluster group number [4027]: 
%SYSMAN-I-GRPNOCHG, Group number not changed
The cluster authorization file has been updated.
The entire cluster should be rebooted.
```

The CONFIGURATION SET CLUSTER_AUTHORIZATION command in this example sequence modifies the cluster password. Note that the environment is defined to be a cluster, and the SYSPRV privilege is established before entering the CONFIGURATION SET CLUSTER_AUTHORIZATION command.

CONFIGURATION SET TIME

Modifies the current system time.

The command requires the LOG_IO privilege; in a cluster environment it also requires the SYSLCK privilege.

format

CONFIGURATION SET TIME[=*time*]

parameters

None.

description

The CONFIGURATION SET TIME command allows you to reset the system time. Specify a time value using the following format:

[dd-mm-yyyy[:]] [hh:mm:ss.cc]

See the *VMS DCL Concepts Manual* for a discussion of acceptable time formats.

In an environment of individual nodes, SYSMAN sets the time to the specified value on each node. Without a time specification, SYSMAN sets the time according to the time-of-year clock on each node.

In a cluster environment, SYSMAN sets the time to the specified value on each node. However, if you do not specify a value, SYSMAN uses the time-of-year clock. In a local cluster, SYSMAN reads the clock on the node from which you are executing SYSMAN and assigns this value to all nodes in the cluster. In a remote cluster, SYSMAN reads the clock on the target node in the cluster and assigns that value to all nodes. Note that the time-of-year clock is optional for some processors; see the *VAX Hardware Handbook* for further information.

SYSMAN uses special processing in a cluster environment to ensure that all processors in the cluster are set to the same time. Because of communication and processing delays, it is not possible to synchronize clocks exactly. However, the variation is typically less than a few hundredths of a second. If SYSMAN cannot set the time to within one half second of the specified time, you receive a warning message that names the node that failed to respond quickly enough.

As a result of slight inaccuracies in each processor clock, times on various members of a cluster tend to drift apart. The following procedure synchronizes system times in a cluster environment:

```
$ SYNCH_CLOCKS:
$ RUN SYS$SYSTEM:SYSMAN
    SET ENVIRONMENT/CLUSTER
    CONFIGURATION SET TIME
    EXIT
$ WAIT 6:00:00
$ GOTO SYNCH_CLOCKS
```

The procedure sets the time on all cluster nodes to the value obtained from the local time-of-year clock, waits 6 hours, then resets the time for the cluster.

example

```
SYSMAN> SET ENVIRONMENT/NODE=(ASCONA,LUGANO,LUCERN)
SYSMAN> SET PROFILE /PRIVILEGE=LOG_IO
SYSMAN> CONFIGURATION SET TIME=12:38:00
```

The CONFIGURATION SET command in this example sequence modifies the system time on nodes ASCONA, LUGANO, and LUCERN.

SM-6 SYSMAN
CONFIGURATION SHOW CLUSTER_AUTHORIZATION

CONFIGURATION SHOW CLUSTER_AUTHORIZATION

Displays the group number of a local area cluster.

The command requires the SYSPRV privilege.

format

CONFIGURATION
SHOW CLUSTER_AUTHORIZATION

parameters

None.

qualifier

/OUTPUT[=file-spec]

Redirects output from SYS\$OUTPUT to the specified file. If no file specification is provided, SYSMAN writes the output to SYSMAN.LIS in the current directory.

description

The CONFIGURATION SHOW CLUSTER_AUTHORIZATION command displays the group number of a local area cluster, as recorded in SYS\$SYSTEM:CLUSTER_AUTHORIZE.DAT during the CLUSTER_CONFIG dialog. In a cluster or multinode environment, SYSMAN displays the group number of the first node and then displays the names of any nodes in the cluster whose group numbers, passwords, or both, are different.

example

```
SYSMAN> SET ENVIRONMENT/CLUSTER/NODE=ZENITH
```

```
SYSMAN> SET PROFILE /PRIVILEGE=SYSPRV  
SYSMAN> CONFIGURATION SHOW CLUSTER_AUTHORIZATION  
Node ZENITH: Cluster group number 65240
```

The CONFIGURATION SHOW CLUSTER_AUTHORIZATION command in this example displays the group number of node ZENITH. Because the group number and password on other nodes in the cluster are identical, no further information is displayed.

CONFIGURATION SHOW TIME

Displays the current date and system time to the hundredths of a second.

format

CONFIGURATION SHOW TIME

parameters

None.

qualifier

/OUTPUT[=file-spec]

Redirects output from SYS\$OUTPUT to the specified file. If no file specification is provided, SYSMAN writes the output to SYSMAN.LIS in the current directory.

example

```
SYSMAN> SET ENVIRONMENT/CLUSTER/NODE=ZENITH
```

```
SYSMAN> CONFIGURATION SHOW TIME
```

```
System time on node ZENITH: 1-APR-1988 13:32:19.45
```

```
System time on node HOSTA: 1-APR-1988 13:32:27.79
```

```
System time on node KEBBI: 1-APR-1988 13:32:58.66
```

The CONFIGURATION SHOW TIME command in this example displays the system time for all nodes in the cluster.

DISKQUOTA ADD

Adds an entry to a disk quota file and initializes the usage count to zero.

This command requires write access to the quota file.

format

```
DISKQUOTA ADD uic
```

parameter

uic

Specifies the user identification code (UIC) for which the quota entry is added. You can specify the UIC in numeric or alphanumeric format. For complete information on UIC specification, refer to the *VMS DCL Concepts Manual*.

SM-8 SYSMAN DISKQUOTA ADD

You can also add quota entries for rights identifiers. These are rights granted a user with the AUTHORIZE Utility. Rights identifiers use an ID format rather than a UIC format. See the *VMS System Services Reference Manual* for a complete description.

When working in nonlocal environments, be careful that the alphanumeric UIC or rights identifiers that you use are valid for the environment.

qualifiers

/DEVICE=device-spec

Specifies the location of the quota file. SYSMAN validates the device specification. A logical name may be specified for device-spec. If so, it is translated in the target environment.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

/OVERDRAFT=value

Specifies a positive integer that provides an overdraft value for the specified UIC. If omitted, the overdraft value defaults to the overdraft value in the entry for [0,0].

/PERMQUOTA=value

Specifies a positive integer that provides the quota for the specified UIC. If omitted, the permanent quota defaults to the value of the quota in the entry for [0,0].

description

The DISKQUOTA ADD command appends individual entries to a quota file on the specified disk. Note that the quota file must already exist and be enabled.

Unless you specify the permanent quota and overdraft values, the utility applies the default values from the UIC entry [0,0]. You adjust UIC [0,0] with the DISKQUOTA MODIFY command.

example

```
SYSMAN> SET ENVIRONMENT/NODE=(ZURICH,ASCONA)
%SYSMAN-I-ENV, Current command environment:
    Individual nodes: ZURICH,ASCONA
    Username ALEXIS will be used on nonlocal nodes.
SYSMAN> SET PROFILE /PRIVILEGE=SYSPRV
SYSMAN> DISKQUOTA ADD [MKT,MORSE] /DEVICE=WORK1 /PERMQUOTA=200 -
_SYSMAN> /OVERDRAFT=50
SYSMAN> DISKQUOTA ADD PAYROLL /DEVICE=WORK1 /PERMQUOTA=1000
```

The first command in this example defines the management environment to be nodes ZURICH and ASCONA. The second command adds the SYSPRV privilege to the user's current privileges in order to write to the quota file. The third command adds UIC [MKT,MORSE] to the quota file on the device named WORK1 on both nodes ZURICH and ASCONA, setting the permanent quota to 200 disk blocks and the overdraft limit to 50 disk blocks, for an absolute limit of 250 blocks. The final command adds an entry for the rights identifier PAYROLL. Any user holding the PAYROLL identifier can use this disk space.

DISKQUOTA CREATE

Creates and enables a quota file for a disk volume that does not currently contain one.

This command requires write access to the volume's master file directory (MFD), plus one of the following: the SYSPRV privilege, a system UIC, or ownership of the volume.

format

DISKQUOTA CREATE

parameters

None.

qualifier

/DEVICE=device-spec

Specifies the disk volume on which to create a quota file. SYSMAN validates the device specification. A logical name may be specified for device-spec. If so, it is translated in the target environment.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

SM-10 SYSMAN DISKQUOTA DISABLE

description

The DISKQUOTA CREATE command creates a quota file for a volume that does not currently have one.

Only one quota file, [000000]QUOTA.SYS, can be present on any volume or volume set. As soon as you create a quota file, establish default values for quotas and overdrafts by adjusting UIC [0,0] with the DISKQUOTA MODIFY command. When a disk has existing files, use the DISKQUOTA REBUILD command to have SYSMAN update the quota file to contain current usage values.

NOTE: DIGITAL recommends that you do not create and enable a quota file on the system volume.

example

```
SYSMAN> SHOW ENVIRONMENT
%SYSMAN-I-ENV, Current command environment:
  Node ATHENS of local cluster
  Username ALEXIS      will be used on nonlocal nodes

SYSMAN> DO SHOW DEVICES

SYSMAN> DISKQUOTA CREATE /DEVICE=DJA31:
SYSMAN> DISKQUOTA MODIFY /DEVICE=DJA31: [0,0] /PERMQUOTA=10000 -
_SYSMAN> /OVERDRAFT=100
```

The commands in this example sequence display the characteristics of the current management environment and verify the device name. Then they create a quota file on the disk DJA31 and set up default quota values.

DISKQUOTA DISABLE

Suspends the maintenance and enforcement of disk quotas on a volume.

This command requires the SYSPRV privilege, a system UIC, or ownership of the volume.

format

DISKQUOTA DISABLE

parameters

None.

qualifier

/DEVICE=device-spec

Specifies a disk volume on which to disable a quota file. SYSMAN validates the device specification. A logical name may be specified for device-spec. If so, it is translated in the target environment.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

description

The DISKQUOTA DISABLE command suspends quota operations on a volume. To permanently disable quotas on a device, disable the quotas with the DISKQUOTA DISABLE command and delete the file QUOTA.SYS. Otherwise, the system implicitly enables quotas when the disk is mounted, leaving invalid quota information.

If you enable the quota file later, enter the DISKQUOTA REBUILD command to update UIC entries and usage counts.

example

```
SYSMAN> SET ENVIRONMENT/NODE=AMANDA  
SYSMAN> DISKQUOTA DISABLE /DEVICE=DJA1:
```

The command in this example suspends quota enforcement on disk DJA1, located on node AMANDA.

DISKQUOTA ENABLE

Resumes quota enforcement on a disk volume.

This command requires the SYSPRV privilege, a system UIC, or ownership of the volume.

format

DISKQUOTA ENABLE

parameters

None.

SM-12 SYSMAN DISKQUOTA MODIFY

qualifier

/DEVICE=device-spec

Specifies a disk volume on which to enable the quota file. SYSMAN validates the device specification. A logical name may be specified for device-spec. If so, it is translated in the target environment.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

description

The DISKQUOTA ENABLE command reinstates the enforcement of quotas on a volume that had been suspended with the DISKQUOTA DISABLE command. Whenever you enable quotas on a volume, use the DISKQUOTA REBUILD command to update UIC entries and usage counts.

example

```
SYSMAN> SET ENVIRONMENT/NODE=BAXTER  
SYSMAN> SET PROFILE/DEFAULT=DJA12:[ALEXIS.MGR]  
SYSMAN> DISKQUOTA ENABLE  
SYSMAN> DISKQUOTA REBUILD
```

The command in this example resumes quota enforcement on the default disk DJA12, which is located on node BAXTER. The DISKQUOTA REBUILD command updates the quota file, correcting quotas and adding any new entries.

DISKQUOTA MODIFY

Changes an entry in a quota file or adjusts default values for quotas and overdrafts. If a new quota limit is less than the current usage count, the utility issues a warning message before it implements the new quota.

The command requires write access to the quota file.

format

DISKQUOTA MODIFY *uic*

parameter

uic

Specifies the user identification code (UIC). You can specify the UIC in numeric or alphanumeric format. For complete information on UIC specification, refer to the *VMS DCL Dictionary*.

You can also specify quota entries for rights identifiers. These are rights granted a user with the AUTHORIZE Utility. Rights identifiers use an ID format rather than a UIC format. See the *VMS System Services Reference Manual* for a complete description.

When working in nonlocal environments, make sure that the alphanumeric UIC or rights identifiers that you use are valid for the environment.

qualifiers

/DEVICE=device-spec

Specifies the disk volume that contains the quota file. SYSMAN validates the device specification. A logical name may be specified for device-spec. If so, it is translated in the target environment.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

/OVERDRAFT=value

Specifies a positive integer that provides an overdraft value for the specified UIC. If you omit a value, the overdraft value defaults to the overdraft value in the entry for [0,0].

/PERMQUOTA=value

Specifies a positive integer that provides the quota for the specified UIC. If you omit a value, the permanent quota defaults to the value of the quota in the entry for [0,0].

SM-14 SYSMAN DISKQUOTA REBUILD

description

The DISKQUOTA MODIFY command changes values in a quota file for the disk named in the device specification. If you establish a quota limit that is less than the current usage count, a user can still log in and out, but cannot create files.

After creating a quota file, use the DISKQUOTA MODIFY command to set default values for quotas and overdrafts. UIC [0,0] sets the default permanent quota and overdraft values for a quota file, so you must change the entry [0,0] to values appropriate for your installation. Unless you specify quota and overdraft values when adding a file entry, the utility applies these defaults to UIC entries.

example

```
SYSMAN> SET ENVIRONMENT/NODE=SIREN
SYSMAN> DISKQUOTA MODIFY /DEVICE=DUA12: [0,0] /PERMQUOTA=3000 -
_SYSMAN> /OVERDRAFT=300
```

The command in this example edits the entry for UIC [0,0] in the quota file on DUA12, which is located on node SIREN.

```
SYSMAN> DISKQUOTA MODIFY /DEVICE=SYS$DISK1 [TTD,DAVIS] -
_SYSMAN> /PERMQUOTA=900
```

The command in this example sets the permanent quota for UIC [TTD,DAVIS] to 900 blocks, while making no change to the overdraft limit. SYSMAN modifies the quota file that is located on disk SYS\$DISK1 in the current environment.

DISKQUOTA REBUILD

Updates a quota file, adding new UICs and correcting usage counts for each user on the volume.

This command requires write access to the quota file, plus one of the following: the SYSPRV privilege, a system UIC, or ownership of the volume.

format

DISKQUOTA REBUILD

parameters

None.

qualifier

/DEVICE=device-spec

Specifies the disk volume that contains the quota file. SYSMAN validates the device specification and translates any logical name in the target environment before rebuilding the file.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

description

The DISKQUOTA REBUILD command reads the disk, and updates usage counts for all existing entries and adds new entries. It sets quota and overdraft values to the defaults set in UIC [0,0] if the entry did not previously exist. While the REBUILD command is executing, file activity on the volume is frozen. No files can be created, deleted, extended, or truncated.

Use the DISKQUOTA REBUILD command in the following circumstances:

- After creating a quota file on a volume with existing files.
- When the quota file has been enabled after a period of being disabled. The command corrects the usage counts and adds any new UICs.

example

```
SYSMAN> SET ENVIRONMENT /NODE=WEST  
SYSMAN> SET PROFILE /PRIVILEGE=SYSPRV  
SYSMAN> DISKQUOTA ENABLE /DEVICE=DUA226:  
SYSMAN> DISKQUOTA REBUILD /DEVICE=DUA226:
```

The command in this example enables the quota file and reconstructs the usage counts for all entries on disk DUA226, which is located on node WEST.

DISKQUOTA REMOVE

Deletes an entry from a quota file.

This command requires write access to the quota file.

format

```
DISKQUOTA REMOVE uic
```

SM-16 SYSMAN DISKQUOTA REMOVE

parameter

uic

Specifies the user identification code (UIC). You can specify the UIC in numeric or alphanumeric format. For complete information on UIC specification, refer to the *VMS DCL Concepts Manual*.

You can also specify quota entries for rights identifiers. These are rights granted a user with the AUTHORIZE Utility. Rights identifiers use an ID format rather than a UIC format. See the *VMS System Services Reference Manual* for a complete description.

When working in nonlocal environments, be careful that the alphanumeric UIC or rights identifiers that you use are valid for the environment.

qualifier

/DEVICE=device-spec

Specifies the disk volume containing the quota file. SYSMAN validates the device specification and translates any logical name in the target environment before deleting the UIC entry.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

description

The DISKQUOTA REMOVE command eliminates the specified UIC from the quota file on the named device.

If the usage count for the UIC is not zero, the utility issues a warning message before it removes the UIC. Files remain on disk, and the user can still log on; however, any attempt to create files will fail.

The UIC [0,0] entry cannot be removed.

example

```
SYSMAN> SET ENVIRONMENT/NODE=VACUUM
SYSMAN> SHOW PROFILE
%SYSMAN-I-DEFDIR, Default directory on node VACUUM -- WORK2:[CASEY]
%SYSMAN-I-DEFPRIV, Process privileges on node VACUUM --
    TMPGX
    OPER
    NETMBX
    SYSPRV
```

```
SYSMAN> DISKQUOTA REMOVE /DEVICE=DUA45: [TTD,DAVIS]
```

The command in this example deletes UIC [TTD,DAVIS] from the quota file for disk DUA45, which is located on node VACUUM.

DISKQUOTA SHOW

Displays quotas, overdrafts, and usage counts.

This command requires no additional privileges to show one's own quota, overdraft, and usage count, but otherwise it requires read access to the quota file.

format

DISKQUOTA SHOW *uic*

parameter

uic

Specifies the user identification code (UIC). You can specify the UIC in numeric or alphanumeric format. For complete information on UIC specification, refer to the *VMS DCL Concepts Manual*.

You can also specify quota entries for rights identifiers. These are rights granted a user with the AUTHORIZE Utility. Rights identifiers use an ID format rather than a UIC format. See the *VMS System Services Reference Manual* for a complete description.

You can use an asterisk wildcard character (*) to specify the quota entry as follows:

Command	Description
DISKQUOTA SHOW [TTD,CJ]	Show user CJ in group TTD
DISKQUOTA SHOW [TTD,*]	Show all users in group TTD
DISKQUOTA SHOW *	Show all entries

qualifiers

/DEVICE=device-spec

Specifies the disk volume containing the quota file. DISKQUOTA validates device specification and translates any logical name in the target environment before displaying UIC entries.

Without a device specification, SYSMAN uses the default disk on the target node. Unless you have set a default device with the SET PROFILE command, the default disk is the current device on the local node or the login default on another node, depending on the established environment.

/OUTPUT[=file-spec]

Directs output to the specified file. Without a file specification, /OUTPUT defaults to SYSMAN.LIS in the current directory on the local node where you are running SYSMAN.

SM-18 SYSMAN

DO

example

SYSMAN> DISKQUOTA SHOW [ACCT,*]

The command in this example displays quotas, overdrafts, and usage counts for all users in group ACCT on the default disk.

DO

Executes a DCL command or DCL command procedure on all nodes in the current environment.

The DO command requires the privileges of the DCL command being executed.

format

DO [*command-line*]

parameters

[*command-line*]

Specifies a command string that SYSMAN passes to the DCL for execution. For complete information on DCL command syntax, refer to the *VMS DCL Dictionary*.

qualifier

/OUTPUT[=file-spec]

Records output from the command in the specified file, which is located on the node from which you are executing SYSMAN. Position the qualifier immediately after the DO command. The default file specification is SYSMAN.LIS in the current device and directory. SYSMAN prefixes output with the message "%SYSMAN-I-OUTPUT Output From Node xxxxxx."

description

The DO command executes the accompanying DCL command or DCL command procedure on all nodes in the current environment. Each DO command executes as an independent process, so there is no process context retained between DO commands. For this reason, you must express all DCL commands in a single command string, and you cannot run a program that expects input.

In a cluster environment, SYSMAN executes the commands sequentially on all nodes in the cluster. Each command executes completely before SYSMAN sends it to the next node in the environment. Any node that is unable to execute the command returns an error message. The utility displays an error message if the timeout period expires before the node responds. Some DCL commands, such as MOUNT/CLUSTER, operate clusterwide by design. For

these commands to execute successfully in SYSMAN, define the environment to be a single node within the cluster.

Use the RSX command MCR to run programs located in SYS\$SYSTEM. The MCR command allows you to run a program and supply a command in a single command string.

example

```
SYSMAN> SET ENVIRONMENT/CLUSTER/NODE=NONAME
SYSMAN> DO/OUTPUT SHOW SYSTEM/BATCH
```

The first command in this example defines the management environment to be the cluster where NONAME is a member. The second command executes a DCL command on each node in the cluster. Output goes to the file SYSMAN.LIS rather than to the terminal.

```
SYSMAN> SET PROFILE /PRIVILEGES=(CMKRNL,SYSPRV) /DEFAULT=SYS$SYSTEM
SYSMAN> DO INSTALL ADD /OPEN/SHARED WRKD$: [MAIN]STATSHR
SYSMAN> DO MCR AUTHORIZE ADD JONES/PASSWORD=COLUMBINE/DEVICE=WORK1 -
_SYSMAN> /DIRECTORY=[JONES]
```

The first command in this example adds the CMKRNL and the SYSPRV privileges to the current privileges because they are required by the INSTALL and the AUTHORIZE utility. The next command installs the file STATSHR. The last command sets up an account for user JONES, specifying a password as well as a default device and directory.

The MCR command in the last line of the example allows you to invoke the Authorize Utility from SYS\$SYSTEM and add a record to the UAF in one command string.

```
SYSMAN> SET ENVIRONMENT/NODE=LONDON
SYSMAN> SET PROFILE /DEFAULT=[CJ.PROGRAMS] /PRIVILEGES=NOSYSPRIV
SYSMAN> DO/OUTPUT @PROCESS_INFO
```

The commands in this example define the environment to be a single node and adjust the current privileges and directory. The DO command executes the command procedure PROCESS_INFO.COM, located in directory [CJ.PROGRAMS] and writes any output to SYSMAN.LIS in the directory from which SYSMAN is running.

EXIT

Terminates the SYSMAN session and returns control to the DCL command level. Any profile changes, established on the local node with the command SET PROFILE, are restored to their values at the time SYSMAN was invoked. You can also press CTRL/Z to exit at any time.

SM-20 SYSMAN
PARAMETERS DISABLE CHECKS

format

EXIT

parameters

None.

qualifiers

None.

HELP

Provides online help information for using the SYSMAN commands, parameters, and qualifiers. Press CTRL/Z to exit.

format

HELP *[keyword...]*

parameter

[keyword]

Specifies the command, parameter, or qualifier for which help information is to be displayed. If you omit the keyword, the HELP command displays a list of available help topics and prompts you for a particular keyword.

qualifiers

None.

example

SYSMAN> HELP DO

The command in this example displays help information about the SYSMAN command, DO.

PARAMETERS DISABLE CHECKS

Bypasses validation of parameter values. SYSMAN typically checks parameters to ensure they fall within the defined minimum and maximum values specified in the PARAMETERS SET command.

format

PARAMETERS DISABLE CHECKS

parameters

None.

qualifiers

None.

description

The **PARAMETERS DISABLE CHECKS** command allows you to override maximum and minimum values established for system parameters. When you specify a value above the maximum or below the minimum, the VMS operating system sets the new parameter and displays an error message.

NOTE: Range checks are initially enabled because DIGITAL suggests that systems operate within these minimum and maximum values. Setting parameters outside these limits can result in system failures or hangs.

example

```
SYSMAN> SET ENVIRONMENT/CLUSTER
SYSMAN> SET PROFILE/DEFAULT=SYS$SYSTEM/PRIVILEGES=CMEEXEC
SYSMAN> PARAMETERS SET MAXPROCESSCNT 10
%SYSMAN-W-SETMIN. Value set to minimum for parameter MAXPROCESSCNT
SYSMAN> PARAMETERS DISABLE CHECKS
SYSMAN> PARAMETERS SET MAXPROCESSCNT 10
```

In this example, the initial attempt to set MAXPROCESSCNT below the minimum fails because range checks are enabled. However, once range checks are disabled, the **PARAMETERS SET MAXPROCESSCNT** command succeeds.

PARAMETERS ENABLE CHECKS

Validates all parameter values to ensure they fall within the defined minimum and maximum values.

Because range checks are enabled by default, use **PARAMETERS ENABLE CHECKS** after entering a **PARAMETERS DISABLE CHECKS** command.

format

PARAMETERS ENABLE CHECKS

parameters

None.

SM-22 SYSMAN PARAMETERS SET

qualifiers

None.

example

```
SYSMAN> PARAMETERS DISABLE CHECKS
SYSMAN> PARAMETERS SET WSMAX 20
SYSMAN> PARAMETERS ENABLE CHECKS
SYSMAN> PARAMETERS SET WSMAX 30
%SYSMAN-W-SETMIN, Value set to minimum for parameter WSMAX
SYSMAN> PARAMETERS SHOW WSMAX
Parameter Name    Current  Default  Minimum  Maximum Unit  Dynamic
WSMAX              2000    1024     60      6400 pages
```

The PARAMETERS ENABLE CHECKS command in this example illustrates that when range checking is disabled, the system accepts a working set value (WSMAX) of 20. However, once range checking is enabled with the PARAMETERS ENABLE CHECKS command, the system does not accept a WSMAX below the minimum, which is 60.

PARAMETERS SET

Changes the value of a specific parameter in the work area.

The PARAMETERS SET command does not modify parameter files, the current system parameter file on disk, or the active system. For information on performing these modifications, see the PARAMETERS WRITE command.

format

```
PARAMETERS SET parameter-name
                  value
                  /STARTUP[=][file-spec]
```

parameters

parameter-name

Specifies the name of the parameter to modify. Instead of a name, you can enter a period (.) to change the value of the most recently displayed or the most recently modified parameter. See the PARAMETERS SHOW command for an example of using the period in place of a parameter name.

For a list of system parameters and further information on them, use the command HELP PARAMETERS.

value

Specifies the new value for the parameter. Enclose values for ASCII parameters in quotation marks if they contain embedded spaces or other special characters.

Typically the value is an integer or the keyword DEFAULT. The keyword DEFAULT sets the parameter to its default value. The PARAMETERS SHOW command displays the defined minimum, maximum, and default values for the parameter, which are required unless range checking is disabled with the command PARAMETERS DISABLE CHECKS.

qualifier

/STARTUP[=] [file-spec]

Sets the name of the site-independent startup procedure to the given file specification. A file specification has a maximum length of 31 characters. The equal sign is optional. The initial startup command procedure is SYS\$SYSTEM:STARTUP.COM. The qualifier does not allow any parameters.

example

SYSMAN> PARAMETERS SET PFCDEFAULT 20

The PARAMETERS SET command in this example assigns a value of 20 to the PFCDEFAULT parameter.

SYSMAN> PARAMETERS SET GBLSECTIONS DEFAULT

The PARAMETERS SET command in this example assigns the default value (40) to the GBLSECTIONS parameter.

SYSMAN> PARAMETERS SET/STARTUP=SYS\$SYSTEM:XSTARTUP.COM

The command in this example assigns SYS\$SYSTEM:XSTARTUP.COM as the current site-independent startup command procedure.

PARAMETERS SHOW

Displays the value of a parameter or a group of parameters in the work area. In addition, the command shows the minimum, maximum, and default values of a parameter and its unit of measure.

format

PARAMETERS SHOW *[parameter-name]*

parameter

parameter-name

Specifies the name of a parameter or a period (.). A period is interpreted as a request for the parameter specified in the last PARAMETERS SET or PARAMETERS SHOW command. The parameter name can be abbreviated, but the abbreviation must be unique because SYSMAN selects the first parameter that matches.

**SM-24 SYSMAN
PARAMETERS SHOW**

qualifiers

/ACP

Displays all Files-11 ACP parameters.

/ALL

Displays the values of all active parameters.

/CLUSTER

Displays all parameters specific to clusters.

/DYNAMIC

Displays all parameters that would be in effect immediately after you enter a PARAMETERS WRITE ACTIVE command.

/GEN

Displays all general parameters.

/HEX

Displays numeric parameters in hexadecimal rather than decimal radix. Specify the /HEX system parameter name or the parameter type. If you specify the /HEX qualifier with the /NAMES qualifier, /HEX is ignored.

/JOB

Displays all Job Controller parameters.

/LGI

Displays all LOGIN security control parameters.

/MAJOR

Displays the most important parameters.

/MULTIPROCESSING

Displays parameters specific to multiprocessing.

/NAMES

Displays only parameter names. You can combine other qualifiers with this one.

/OUTPUT

Directs output to the specified file rather than SYS\$OUTPUT. Without a file specification, the output goes to SYSMAN.LIS in the current directory.

/PQL

Displays the parameters for all default process quotas.

/RMS

Displays all parameters specific to VMS Record Management Services (VMS RMS).

/SCS

Displays all parameters specific to cluster System Communication Subsystems.

/SPECIAL

Displays all special control parameters.

/STARTUP

Displays the name of the site-independent startup procedure.

/SYS

Displays all active system parameters.

/TTY

Displays all parameters for terminal drivers.

description

Parameters are displayed in decimal unless the /HEX qualifier is specified. Note that ASCII values are always displayed in ASCII.

Abbreviations for parameter names must be unique because the first parameter matching the abbreviation is selected for display. No ambiguity checks are made. For example, a specification of PARAMETERS SHOW GBL displays the GBLSECTIONS parameter. To display the GBLPAGFIL parameter, you must specify PARAMETERS SHOW GBLPAGF to avoid further ambiguity with the GBLPAGES parameter.

You can use a period (.) to indicate that you want to work with the system parameter that was specified in the last PARAMETERS SET or PARAMETERS SHOW command.

example

```

SYSMAN> PARAMETERS SHOW GBLSECTIONS
Parameter Name  Current  Default  Minimum  Maximum Unit  Dynamic
GBLSECTIONS    100      40       20       -1 Sections
SYSMAN> PARAMETERS SET . 110
SYSMAN> PARAMETERS SHOW .
Parameter Name  Current  Default  Minimum  Maximum Unit  Dynamic
GBLSECTIONS    110      40       20       -1 Sections

```

In this example, the user first displays the values of the GBLSECTIONS parameter and then refers to the parameter with a period to set its current value to 110. The next PARAMETERS SHOW command also uses the period notation to obtain confirmation that the change occurred.

SM-26 SYSMAN PARAMETERS SHOW

SYSMAN> PARAMETERS SHOW/ACP

The PARAMETERS SHOW command in this example produces the following output:

Parameters in use: Active

Parameter Name	Current	Default	Minimum	Maximum	Unit	Dynamic
ACP_MULTIPLE	0	1	0	1	Boolean	D
ACP_SHARE	1	1	0	1	Boolean	
ACP_MAPCACHE	52	8	1	-1	Pages	D
ACP_HDRCACHE	138	128	2	-1	Pages	D
ACP_DIRCACHE	138	80	2	-1	Pages	D
ACP_DINDXCACHE	37	25	2	-1	Pages	D
ACP_WORKSET	0	0	0	-1	Pages	D
ACP_FIDCACHE	64	64	0	-1	File-Ids	D
ACP_EXTCACHE	64	64	0	-1	Extents	D
ACP_EXTLIMIT	300	300	0	1000	Percent/10	D
ACP_QUOCACHE	130	64	0	-1	Users	D
ACP_SYSACC	4	8	0	-1	Directories	D
ACP_MAXREAD	32	32	1	64	Blocks	D
ACP_WINDOW	7	7	1	-1	Pointers	D
ACP_WRITEBACK	1	1	0	1	Boolean	D
ACP_DATACHECK	2	2	0	3	Bit-mask	D
ACP_BASEPRIO	8	8	4	31	Priority	D
ACP_SWAPFLGS	14	15	0	15	Bit-mask	D
ACP_XQP_RES	1	1	0	1	Boolean	
ACP_REBLDSYS	0	1	0	1	Boolean	

SYSMAN> PARAMETERS SHOW/ACP/HEX

The PARAMETERS SHOW command in this example produces a hexadecimal display of the values of the ACP system parameters.

Parameters in use: Active

Parameter Name	Current	Default	Minimum	Maximum	Unit	Dynamic
ACP_MULTIPLE	00000000	00000001	00000000	00000001	Boolean	D
ACP_SHARE	00000001	00000001	00000000	00000001	Boolean	
ACP_MAPCACHE	00000034	00000008	00000001	FFFFFFFF	Pages	D
ACP_HDRCACHE	0000008A	00000080	00000002	FFFFFFFF	Pages	D
ACP_DIRCACHE	0000008A	00000050	00000002	FFFFFFFF	Pages	D
ACP_DNDXCACHE	00000025	00000019	00000002	FFFFFFFF	Pages	D
ACP_WORKSET	00000000	00000000	00000000	FFFFFFFF	Pages	D
ACP_FIDCACHE	00000040	00000040	00000000	FFFFFFFF	File-Ids	D
ACP_EXTCACHE	00000040	00000040	00000000	FFFFFFFF	Extents	D
ACP_EXTLIMIT	0000012C	0000012C	00000000	000003E8	Percent/10	D
ACP_QUOCACHE	00000082	00000040	00000000	FFFFFFFF	Users	D
ACP_SYSACC	00000004	00000008	00000000	FFFFFFFF	Directories	D
ACP_MAXREAD	00000020	00000020	00000001	00000040	Blocks	D
ACP_WINDOW	00000007	00000007	00000001	FFFFFFFF	Pointers	D
ACP_WRITEBACK	00000001	00000001	00000000	00000001	Boolean	D
ACP_DATACHECK	00000002	00000002	00000000	00000003	Bit-mask	D
ACP_BASEPRIO	00000008	00000008	00000004	0000001F	Priority	D
ACP_SWAPFLGS	0000000E	0000000F	00000000	0000000F	Bit-mask	D
ACP_XQP_RES	00000001	00000001	00000000	00000001	Boolean	
ACP_REBLDSYS	00000000	00000001	00000000	00000001	Boolean	

```
SYSMAN> PARAMETERS SHOW/STARTUP
Startup command file = SYS$SYSTEM:STARTUP.COM
```

The PARAMETERS SHOW command in this example displays the name of the site-independent startup command procedure.

PARAMETERS USE

Reads a set of system parameters into the work area for inspection or manipulation.

format

PARAMETERS USE *source*

parameters

source

The source of a system parameter file for data to be read into the work area. The source can be any of the following:

ACTIVE

Read parameters from the currently running system. When the work area is empty, this is the default.

CURRENT

Read parameters from the disk image of the currently running system.

DEFAULT

Read a parameter set containing the default values for all parameters.

file-spec

Read parameters from a previously created system parameter file. The default file type is PAR.

qualifiers

None.

description

The PARAMETERS USE command initializes the work area to use the values of a new parameter file, the current system parameter file, or the default values, if the active values do not provide a suitable base for subsequent operations.

SM-28 **SYSMAN**
PARAMETERS WRITE

example

SYSMAN> PARAMETERS USE DEFAULT

The PARAMETERS USE command in this example initializes the work area with parameter values that should allow the VMS operating system to boot on any standard configuration. The initial values of the work area when the utility is invoked are the active values.

PARAMETERS WRITE

Writes the contents of the work area to the specified destination.

The command requires the SYSLCK privilege.

format

PARAMETERS WRITE *destination*

parameters

destination

The destination of a new parameter file can be any of the following:

ACTIVE

Write the parameter set to the currently running system. Use of the ACTIVE parameter requires the CMKRNL privilege.

CURRENT

Write the parameter set to the disk image of the currently running system. The disk image is the current system parameter file on disk. Use of the CURRENT parameter requires write access to SYS\$SYSTEM:VAXVMSSYS.PAR.

file-spec

Create the given file and write the parameter set to it. The default file type is PAR. Use of the parameter requires write access to the file.

qualifiers

None.

description

The PARAMETERS WRITE command writes the system parameter values and the name of the site-independent startup command procedure from the work area to your choice of a parameter file, the current system parameter file on disk, or the active system in memory. (Only the dynamic parameter values are written to the active system.)

Both the PARAMETERS WRITE ACTIVE and PARAMETERS WRITE CURRENT commands send a message to OPCOM to record the event.

example

SYSMAN> PARAMETERS WRITE SYS\$SYSTEM:SPECIAL

The command in this example creates a new parameter specification file.

SYSMAN> PARAMETERS WRITE CURRENT

The command in this example modifies the current system parameter file on disk (SYS\$SYSTEM:VAXVMSSYS.PAR).

SET ENVIRONMENT

Defines the node(s) or cluster to which subsequent commands apply.

The command requires OPER or SETPRV privilege on all nodes in the target environment.

format

SET ENVIRONMENT

parameters

None.

qualifiers

/CLUSTER

Directs SYSMAN to apply subsequent commands to all nodes in the cluster. By default, the management environment is the local cluster. Specify a nonlocal cluster by naming one cluster member with the /NODE qualifier.

/NODE=(node1,node2,...)

Specifies that SYSMAN execute subsequent commands on the given nodes. If accompanied by the /CLUSTER qualifier, the environment becomes the cluster where the given node is a member. A node name can be a system name or a cluster alias.

SM-30 SYSMAN SET ENVIRONMENT

/USERNAME=username

Specifies that this user name should be used for access control purposes on another node. SYSMAN uses the current user name if none is supplied. The utility prompts for a password whenever a new user name is specified.

description

The SET ENVIRONMENT command defines the target node(s) or cluster for subsequent commands. When invoked, the system management environment is the local node where you are running SYSMAN. You can change the environment to any other node(s) in the cluster, the entire cluster, or any node(s) or cluster available through DECnet.

Designate a cluster environment with the /CLUSTER qualifier. When specifying a nonlocal cluster, also include the /NODE qualifier to identify the cluster.

You can display the current environment with the command SHOW ENVIRONMENT. To adjust privileges and defaults for the current environment, use the SET PROFILE command.

An environment exists until you exit from SYSMAN or establish another command context with the SET ENVIRONMENT command.

example

```
SYSMAN> SET ENVIRONMENT/CLUSTER
%SYSMAN-I-ENV, Current command environment:
Clusterwide on local cluster
Username ALEXIS will be used on nonlocal nodes
```

The commands in this example define the command environment as the local cluster. SYSMAN confirms the new environment.

```
SYSMAN> SET ENVIRONMENT/NODE=CLACK/CLUSTER
Remote Password:
%SYSMAN-I-ENV, Current command environment:
Clusterwide on remote node CLACK
Username ALEXIS will be used on nonlocal nodes
```

The command in this example establishes a management environment on the cluster where node CLACK is a member. SYSMAN prompts for a password because it is a nonlocal environment.

```
SYSMAN> SET ENVIRONMENT/NODE=(LESETH,JOSHUA,TORIN)
%SYSMAN-I-ENV, Current command environment:
Individual nodes: LESETH,JOSHUA,TORIN
Username ALEXIS will be used on nonlocal nodes
```

The command in this example defines the management environment to be 3 individual nodes.

SET PROFILE

Temporarily modifies a user's current privileges and default device and directory.

format

SET PROFILE

parameters

None.

qualifiers

/DEFAULT=device:[directory]

Specifies the default disk device and directory name that the system should use in this environment to locate and catalog files.

/PRIVILEGES=(priv1,priv2...)

Specifies the privileges to add to the current privileges. Any enhanced privileges must be authorized.

description

You need to consider the privilege requirements of commands that you will enter in an environment. The SET PROFILE command modifies process attributes for the current management environment. SYSMAN can add or delete current privileges, if they are authorized. It can also set a new default device and directory. Other attributes of your process remain constant. The profile is in effect until you change it, reset the environment, or exit from the utility.

example

SYSMAN> SET PROFILE/DEFAULT=WORK1:[ALEXIS]

The command in this example changes the default device and directory in the user account to directory ALEXIS on device WORK1.

SYSMAN> SET PROFILE/PRIVILEGES=(SYSPRV,CMKRNL)

The command in this example makes the authorized privileges, SYSPRV and CMKRNL, part of the current privileges. The privileges remain in effect until the environment changes, you enter another SET PROFILE command, or you exit.

SM-32 **SYSMAN**
SHOW ENVIRONMENT

SET TIMEOUT

Establishes the amount of time SYSMAN waits for a node to respond. Once the time limit expires, SYSMAN proceeds to execute the command on the next node in the environment.

format

SET TIMEOUT *time*

parameter

time

Specifies a delta time value, which has the following format:

[dddd-] [hh:mm:ss.cc].

This is the amount of time that SYSMAN waits for a node to respond. By default, there is no timeout period, so SYSMAN waits indefinitely. See the *VMS DCL Concepts Manual* for a description of delta time values.

qualifiers

None.

example

```
SYSMAN> SET TIMEOUT 00:00:30
SYSMAN> CONFIGURATION SHOW TIME
System time on node ASCONA: 1-APR-1988 14:22:33
%SYSMAN-I-NODERR, error returned from node LUGANO
%SMI-E-TIMEOUT, remote operation has timed out
System time on node JOSHUA: 1-APR-1988 14:23:15
```

The command in this example establishes a timeout period of 30 seconds. Because node LUGANO did not respond within 30 seconds, SYSMAN displays an error message and proceeds to execute the command on the next node in the environment.

SHOW ENVIRONMENT

Displays the target node(s) or cluster where SYSMAN is executing commands.

format

SHOW ENVIRONMENT

parameters

None.

qualifiers

None.

description

The SHOW ENVIRONMENT command displays the current management environment. It can be the local cluster, local or remote nodes, or a nonlocal cluster. SYSMAN indicates if the environment is limited to individual nodes or if it is clusterwide. It also shows the current user name.

The environment exists until you exit from SYSMAN or enter another SET ENVIRONMENT command.

example

```
SYSMAN> SHOW ENVIRONMENT
```

```
%SYSMAN-I-ENV, Current command environment:
```

```
Clusterwide on local cluster
```

```
Username ALEXIS will be used on nonlocal nodes
```

The command in this example shows the current environment is the local cluster. User name ALEXIS will be used on other nodes in the cluster.

```
SYSMAN> SHOW ENVIRONMENT
```

```
%SYSMAN-I-ENV, Current command environment:
```

```
Clusterwide on remote cluster CLACK
```

```
Username ALEXIS will be used on nonlocal nodes
```

The command in this example shows that the command environment is a nonlocal cluster where node CLACK is a member.

```
SYSMAN> SHOW ENVIRONMENT
```

```
%SYSMAN-I-ENV, Current command environment:
```

```
Individual nodes: TURIN, JOSHUA
```

```
At least one node is not in local cluster
```

```
Username ALEXIS will be used on nonlocal nodes
```

The command in this example shows that the command environment consists of 2 nodes.

SM-34 **SYSMAN**
SHOW PROFILE

SHOW PROFILE

Displays the current privileges and the default device and directory being used in the current environment.

format

SHOW PROFILE

parameters

None.

qualifiers

/DEFAULT=device:[directory]

Specifies the default disk device and directory name that the system uses in this environment to locate and catalog files.

/PRIVILEGES=(priv1,priv2...)

Specifies privileges in effect for the current environment. Any enhanced privileges must be authorized.

description

The SHOW PROFILE command displays the current privileges and the default device and directory that is being used in the current environment. You can modify these attributes with the SET PROFILE command.

These values remain in effect until you change environments or enter another SET PROFILE command.

example

```
SYSMAN> SHOW PROFILE
%SYSMAN-I-DEFDIR, Default directory on node ATHENS -- WORK1:[YANI]
%SYSMAN-I-DEFPRIV, Process privileges on node ATHENS --
TMPMGX
OPER
NETMBX
SYSPRV
```

The command in this example shows the default device and directory as well as current privileges.

SHOW TIMEOUT

Displays the amount of time SYSMAN waits for a node to respond. By default, there is no timeout period.

format

SHOW TIMEOUT

parameter

None.

qualifiers

None.

example

```
SYSMAN> SHOW TIMEOUT  
%SYSMAN-I-TIMEVAL, timeout value is 00:00:04.00
```

The SHOW TIMEOUT command in this example displays the current timeout value, which is 4 seconds.

STARTUP ADD

Adds a component to the startup database.

The command requires read and write access to the startup database.

format

STARTUP ADD *FILE file-spec*

parameters

FILE

Directs SYSMAN to add a component to the startup database. SYSMAN modifies STARTUP\$STARTUP_LAYERED by default.

file-spec

Specifies which file to add to the startup database. Each component of the startup database must have a file type of COM or EXE and reside in SYS\$STARTUP.

qualifiers

/[NO]CONFIRM

Controls whether SYSMAN displays the file specification of each file before adding it to the startup database and requests you to confirm the addition. If you specify /CONFIRM, you must respond to the prompt with a Y (Yes) or a T (True) and press RETURN before the file is added. If you enter

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anything else, such as N or NO, the requested file is not added. The default is `/[NO]CONFIRM`.

/[NO]LOG

Controls whether the STARTUP ADD command displays the file specification of each file after it has been added.

/MODE=mode

Specifies the mode of execution for the file.

/NODE=(node1,node2,...,nodex)

Names the nodes within the cluster that run the file during startup. By default, a startup file executes on all nodes in the cluster.

/PARAMETER=(P1:arg1,P2:arg2,...,P8:arg8)

Specifies the parameters that are to be passed to the file during startup. Parameters that are omitted receive the default parameters defined by the system parameter STARTUP_Pn.

/PHASE=phase-name

Indicates the phase within system startup when the file is to be executed. Valid phases include LPBEGIN, LPMAIN, LPBETA, and END. LPMAIN is the default.

description

The STARTUP ADD command adds a component to the startup database. Startup components are the command procedures or executable files that perform actual startup work. Files from the startup database are used to start the VMS operating system, site-specific programs, and layered products. STARTUP\$STARTUP_VMS and STARTUP\$STARTUP_LAYERED list the components of the startup database.

Because a cluster shares one copy of the startup database, the SYSMAN environment can be defined as clustered or as a single node within the cluster.

example

```
SYSMAN> STARTUP ADD /MODE=DIRECT /PHASE=LPMAIN -  
_SYSMAN> FOR$LPMAIN_043_STARTUP.COM
```

The STARTUP ADD command in this example adds a record to the startup database that starts FORTRAN Version 4.3.

STARTUP DISABLE

Prevents a file in the startup database from executing.

The command requires read and write access to the startup database.

format

STARTUP DISABLE *FILE file-spec*

parameters

FILE

Directs SYSMAN to disable a component of the startup database. SYSMAN modifies STARTUP\$STARTUP_LAYERED by default.

file-spec

Specifies the name of a component in the startup database. The startup file must reside in SYS\$STARTUP and have a file type of COM or EXE. The wildcard characters % and * are permitted.

qualifiers

[/NO]CONFIRM

Controls whether the STARTUP DISABLE command displays the file specification of each file before disabling it in the startup database and requests you to confirm that the file should be disabled. If you specify /CONFIRM, you must respond to the prompt with a Y (Yes) or a T (True) and press RETURN before the file is disabled. If you enter anything else, such as N or NO, the requested file is not disabled. The default is /[/NO]CONFIRM.

[/NO]LOG

Controls whether the STARTUP DISABLE command displays the file specification of each file after it has been disabled.

/NODE=(node1,node2,...,nodex)

Identifies nodes within the cluster that do not run the file during startup. By default, the startup file is disabled on all nodes in the cluster.

/PHASE=phase-name

Indicates the phase of system startup in which the specified file normally executes. Valid phases include LPBEGIN, LPMAIN, LPBETA, and END. LPMAIN is the default.

description

The STARTUP DISABLE command prevents a file in the startup database from executing. The command edits a record in the startup database, temporarily disabling the file.

example

```
SYSMAN> STARTUP DISABLE FILE /NODE=ZURICH FOR$LPMAIN_043_STARTUP.COM
```

The command in this example modifies the startup database so that FORTRAN will not be installed on node ZURICH.

STARTUP ENABLE

Allows a previously disabled file in the startup database to execute during system startup.

The command requires read and write access to the startup database.

format

STARTUP ENABLE *FILE file-spec*

parameters

FILE

Directs SYSMAN to enable a component of the startup database. SYSMAN modifies STARTUP\$STARTUP_LAYERED by default.

file-spec

Specifies the name of the startup file that you are enabling. Wildcard characters are accepted.

qualifiers

/[NO]CONFIRM

Controls whether the STARTUP ENABLE command displays the file specification of each file before enabling it in the startup database and requests you to confirm that the file should be enabled. If you specify /CONFIRM, you must respond to the prompt with a Y (Yes) or a T (True) and press RETURN before the file is enabled. If you enter anything else, such as N or NO, the requested file is not enabled. The default is /[NO]CONFIRM.

/[NO]LOG

Controls whether the STARTUP ENABLE command displays the file specification of each file after it has been enabled.

/NODE=(node1,node2,...,nodex)

Names nodes within the cluster where the file should be enabled. By default, the startup file is enabled on all nodes.

/PHASE=phase-name

Indicates the phase within system startup when the specified file is to be enabled. Valid phases include LPBEGIN, LPMAIN, LPBETA, and END. LPMAIN is the default.

description

The STARTUP ENABLE command permits a file that was previously disabled to execute during system startup.

example

```
SYSMAN> STARTUP ENABLE FILE /NODE=ZURICH FOR$LPMAIN_043_STARTUP.COM
```

The command in this example modifies the startup database. Node ZURICH will have FORTRAN Version 4.3 installed at startup.

STARTUP MODIFY

Changes information associated with a startup file in the startup database.

The command requires read and write access to the startup database.

format

STARTUP MODIFY *FILE file-spec*

parameters

FILE

Directs SYSMAN to modify a record in the startup database. SYSMAN modifies STARTUP\$STARTUP_LAYERED by default.

file-spec

Selects a startup file for modification. Wildcard characters are accepted.

qualifiers

/[NO]CONFIRM

Controls whether the STARTUP MODIFY command displays the file specification of each file before modifying its startup characteristics in the startup data file and requests you to confirm that the file characteristics should be modified. If you specify /CONFIRM, you must respond to the prompt with a Y (Yes) or a T (True) and press RETURN before the file is modified. If you enter anything else, such as N or NO, the requested file is not modified. The default is /[NO]CONFIRM.

/[NO]LOG

Controls whether the STARTUP MODIFY command displays the file specification of each file after its startup characteristics have been modified.

/MODE=mode

Changes the mode of execution for a startup file.

/NAME=file-spec

Changes the name of the startup file. The file must reside in SYS\$STARTUP.

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/PARAMETER=(P1:arg1,P2:arg2,....,P8:arg8)

Changes the parameters that are to be passed to the file during startup. Parameters that are omitted receive the default parameters defined by the system parameter STARTUP_Pn.

/PHASE=phase-name

Selects startup files for modification based on the phase in which they run. Valid phases include LPBEGIN, LPMAIN, LPBETA, and END. LPMAIN is the default.

description

The STARTUP MODIFY command edits startup information associated with components in the startup database. For example, the command can rename a file or change the parameters that are passed to a file during startup. You can select a group of files for modification based on the phase in which they run.

example

```
SYSMAN> STARTUP MODIFY FILE FOR$LPMAIN_043_STARTUP.COM -  
_SYSMAN> /PARAM=(P3:TRUE,P4:FALSE) /CONFIRM
```

The command in this example changes two startup parameters for the command procedure FOR\$LPMAIN_043_STARTUP.COM.

STARTUP REMOVE

Deletes a record in the startup database, so the specified startup file no longer executes during system startup.

The command requires read and write access to the startup database.

format

STARTUP REMOVE *FILE file-spec*

parameters

FILE

Directs SYSMAN to remove a component from the startup database. SYSMAN modifies STARTUP\$STARTUP_LAYERED by default.

file-spec

Specifies the name of the file to remove from the startup database. Wildcard characters are accepted.

qualifiers

/[NO]CONFIRM

Controls whether the STARTUP REMOVE command displays the file specification of each file before deleting its record in the startup database and requests you to confirm that the file should be deleted. If you specify /CONFIRM, you must respond to the prompt with a Y (Yes) or a T (True) and press RETURN before the file is removed. If you enter anything else, such as N or NO, the requested file is not removed. The default is /[NO]CONFIRM.

/[NO]LOG

Controls whether SYSMAN displays the file specification of each file after it has been removed.

/PHASE=phase-name

Indicates the phase of system startup from which the file should be removed. Valid phases include LPBEGIN, LPMAIN, LPBETA, and END.

example

SYSMAN> STARTUP REMOVE FILE FOR\$LPMAIN_043_STARTUP.COM /LOG

The command in this example takes the file FOR\$LPMAIN_043_STARTUP.COM out of the startup database.

STARTUP SET DATABASE

Establishes the current startup database.

format

STARTUP SET DATABASE *database*

parameter

database

Specifies the name of the target database, which is STARTUP\$STARTUP_LAYERED by default. The second database, STARTUP\$STARTUP_VMS is available for viewing; however, DIGITAL recommends that you do not modify it.

qualifiers

None.

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example

```
SYSMAN> STARTUP SET DATABASE STARTUP$STARTUP_LAYERED
%SYSMAN-I-NEWCOMPFIL, current component file is now STARTUP$STARTUP_LAYERED
SYSMAN> STARTUP SHOW FILE
%SYSMAN-I-COMPFIL, contents of component database on node LUCERN
Phase   Mode   File
-----  -
LPBEGIN DIRECT VMS$LPBEGIN_050_STARTUP.COM
LPMAIN  DIRECT FOR$LPMAIN_043_STARTUP.COM
```

The commands in this example establish the layered products database as the default, so it can be displayed.

STARTUP SHOW

Displays the name of the current startup database or its components.

format

```
STARTUP SHOW  DATABASE
                  FILE
```

parameter

DATABASE

Directs SYSMAN to display the name of the current startup database. There are two startup databases: STARTUP\$STARTUP_LAYERED and STARTUP\$STARTUP_VMS. DIGITAL recommends that you do not modify the STARTUP\$STARTUP_VMS database.

FILE

Displays the contents of the current startup database. The display includes the file name, phase, and mode of execution for each component in the database.

qualifiers

/FULL

Displays full information about each component in the database. In addition to the phase, file name, and mode of execution for each startup component, SYSMAN displays the node(s) on which the file executes and the parameters passed to the file. Relevant with the FILE parameter.

/NODE

Displays the nodes within the cluster on which the file executes. By default, a startup file executes on all nodes in an environment. Relevant with the FILE parameter.

/OUTPUT=file-spec

Redirects command output from SYS\$OUTPUT to the file named with the qualifier. Without a file-spec, SYSMAN writes the output to SYSMAN.LIS in the current directory.

/PARAMETERS

Lists the parameters with which the startup file executes. Parameters that are not specified receive the defaults defined by the system parameter STARTUP_Pn. Relevant with the FILE parameter.

/PHASE=phase-name

Displays components that execute in a specific phase of system startup. Valid phases include LPBEGIN, LPMAIN, LPBETA, and END. LPMAIN is the default. Relevant with the FILE parameter.

example

```
SYSMAN> STARTUP SET DATABASE STARTUP$STARTUP_VMS
SYSMAN> STARTUP SHOW FILE
%SYSMAN-I-COMPFIL, contents of component database on node LUCERN
Phase      Mode      File
-----
BASEENVIRON  DIRECT  VMS$BASEENVIRON_050_LIB.COM
BASEENVIRON  CALLED  VMS$BASEENVIRON_050_SMISERVER.COM
BASEENVIRON  DIRECT  VMS$BASEENVIRON_050_VMS.COM
```

The commands in this example display the contents of the VMS startup database.

Terminal Fallback Utility

The VMS Terminal Fallback Utility (TFU) is the user interface to the VMS Terminal Fallback Facility (TFF). This facility provides character conversion for terminals and can perform character compose emulation on input from a terminal.

Use the Terminal Fallback Utility to set up the system to use TFF character conversion tables, and to set, change, and display TFF terminal-related parameters.

format

RUN SYS\$SYSTEM:TFU

usage summary

To use the Terminal Fallback Utility (TFU), enter the following command in response to the DCL prompt:

```
$ RUN SYS$SYSTEM:TFU
```

The utility responds with the following prompt:

```
VAX/VMS Terminal Fallback Facility (TFF)  
TFU>
```

After you invoke TFU, you can enter any of the TFU commands. These commands follow the standard rules for DCL commands.

To exit from TFU, enter the EXIT command at the TFU prompt:

```
TFU> EXIT
```

You can also exit from TFU by pressing CTRL/Z.

TFU-2 TFU DIRECTORY

TFU Commands

This section describes the Terminal Fallback Utility (TFU) commands.

DIRECTORY

Provides a directory of a TFF library file. You can specify selective, brief, or full directory listings.

If you specify a library name, that library becomes the current work library.

format

DIRECTORY [*library-name*]

parameter

library-name

Indicates the name of the library for which a directory listing is requested. If you have already established a work library, **library-name** is optional.

qualifiers

/ALL

Lists all tables in the target library.

/COMPOSE

Lists only compose sequence tables. You cannot use **/COMPOSE** simultaneously with **/ALL** or **/FALLBACK**.

/FALLBACK

Lists only fallback tables. This is the default for the **DIRECTORY** command. You cannot use **/FALLBACK** simultaneously with **/ALL** or **/COMPOSE**.

/FULL

Displays more detailed table information. By default, only one line of information is displayed about each table you select.

example

```
TFU> DIRECTORY
Directory of TFF library SYS$COMMON:[SYSEXE]TFF$MASTER.DAT;1
Name                   Type Base Description
-----
ASCII                   Fbk MCS   MCS for ASCII (US)
ASCII_OVST              Fbk MCS   MCS for hardcopy ASCII terminal (overstrike)
BRITISH                 Fbk MCS   MCS for British NRC (BS 4730 [ISO 646 variant])
CANADIAN                Fbk MCS   MCS for French-Canadian NRC (CSA Z243.4-1985)
.
.
.
SWEDISH_D47             Fbk MCS   MCS for Swedish NRC (old type D47)
SWEDISH_E47             Fbk MCS   MCS for Swedish NRC (SEN 85 02 00 - E47)
SWISS_VT102PY           Fbk MCS   MCS for Swiss VT102PY
TURKISH                 Fbk MCS   MCS for Turkish NRC (partial ISO 6937/2)
VT100_MCS               Fbk MCS   MCS for VT100s with DEC-Supp in ROM#1
YUGOSLAVIAN            Fbk MCS   MCS for Yugoslavian NRC (JUS I B1.002)
A total of 28 tables
TFU>
```

This example shows how to produce a brief directory listing of all the fallback tables in the current work library.

EXIT

Terminates the TFU session and returns you to the DCL command level. You can also type QUIT or press CTRL/Z or CTRL/C to exit from TFU.

format

EXIT

HELP

Allows you to obtain online information about the Terminal Fallback Utility.

format

HELP *[topic]*

parameter

topic

Indicates a topic about which you want information.

TFU-4 TFU QUIT

example

TFU> HELP *

This command provides information about all of the TFU commands. To obtain information about the individual commands or topics, enter HELP followed by the desired topic.

LOAD TABLE

Loads a table from the current work library into nonpaged dynamic memory pool. Before you use this command, the fallback driver, FBDRIVER, must be loaded into memory by means of the System Generation Utility (SYSGEN) or SYS\$MANAGER:TFF\$STARTUP.COM. A table must be loaded into nonpaged dynamic memory pool before it can be used.

The following tables are always present and cannot be loaded or unloaded:

- ASCII—Fallback
- LATIN_1—Compose sequence validation

format

LOAD TABLE *table-name*

parameter

table-name

Indicates the name of the table to be loaded.

example

TFU> LOAD TABLE HEBREW_VT100
TFU>

This example shows how to load table HEBREW_VT100 into nonpaged dynamic memory pool from the current work library.

QUIT

Terminates the TFU session and returns you to the DCL command level. You can also type EXIT or press CTRL/Z or CTRL/C to exit from TFU.

format

QUIT

SET DEFAULT_TABLE

Establishes a default table for the system. Before you specify a table as the system default, you must load the table into nonpaged dynamic memory pool using the LOAD command. The SET DEFAULT_TABLE command reads the table type (fallback or compose) from the specified table's header and makes the target table the default for its type.

Before you enable any defaults, the following defaults apply:

- ASCII—Fallback
- LATIN_1—Compose validation

format

SET DEFAULT_TABLE *table-name*

parameter

table-name

Indicates the name of the table to be the default table.

example

```
TFU> SET DEFAULT_TABLE HEBREW_VT100
```

```
TFU> SHOW DEFAULT_TABLE
```

System default TFF tables are:

```
HEBREW_VT100 (fallback)
```

```
LATIN_1 (compose sequence validation)
```

```
TFU>
```

The command in this example establishes HEBREW_VT100 as the default fallback table for the system. The table HEBREW_VT100 must be loaded before you enter this command.

SET LIBRARY

Allows you to declare a work library. Note that some commands implicitly declare a work library. If the library is located, it becomes the new work library.

format

SET LIBRARY *library-name*

parameter

library-name

Indicates the name of the library to be made the current library. You must specify a library with the SET LIBRARY command.

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SET TERMINAL/FALLBACK

example

```
TFU> SET LIBRARY SYS$SYSTEM:TFF$MASTER.DAT
TFU> LOAD HEBREW_VT100
TFU>
```

In this example, the first command sets the library to be `SYS$SYSTEM:TFF$MASTER.DAT` which is the default file name and location. This command directs TFF to use character conversion tables located in that file. The second command loads the table `HEBREW_VT100` into nonpaged dynamic memory pool.

SET TERMINAL/FALLBACK

Enables or modifies TFF terminal parameters. The `/FALLBACK` qualifier is required, but you can place it before or after the *terminal-name* parameter.

`SET TERMINAL/NOFALLBACK` takes no options and is equivalent to `SET TERMINAL/FALLBACK=TABLE:NONE`.

format

SET TERMINAL/FALLBACK *[(option,...)] [terminal-name]*

SET TERMINAL/NOFALLBACK *[terminal-name]*

parameters

terminal-name

Indicates the target terminal for the set operation. If not specified, your own terminal is used. Note that you can use TFF only from local terminals; you cannot use terminal fallback on a remote terminal (RTAx),¹ the fallback terminal device (FBA0), a Packet Switch Interface (PSI) terminal (NVA0), a disconnected virtual terminal, or a terminal set for dynamic switching (DYN SWITCH) with DECnet.

option

Modifies the terminal parameters. If you specify more than one, enclose them in parentheses, and separate each with commas. You can use the following options with the `FALLBACK=option` qualifier:

¹ You can use TFF locally and then use the DCL command `SET HOST` to access a remote system.

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SET TERMINAL/FALLBACK

Option	Definition
ACCEPT NOACCEPT	Enables input of 8-bit characters if the terminal is capable of generating 8-bit characters. The default is 7-bit character generation. 7-bit terminals, such as VT1xx and LA1xx, should have this feature turned off whereas VT2xx terminals may have it on (depending on the active table). The NOACCEPT option causes TFF to clear the eighth bit.
AUTOCOMPOSE NOAUTOCOMPOSE	Enables or disables all auto-compose keys available for the fallback table associated with a terminal. The AUTOCOMPOSE and NOAUTOCOMPOSE options override any keys specified with the ENABLE and DISABLE options.
DISABLE=(value[,...])	Disables one or more active auto-compose keys. Keys are chosen from the list of keys available for the fallback table associated with a terminal. The value argument is a list of the decimal values of the keys to disable. If you specify more than one value, separate the values with commas and place them in parentheses. SHOW TERMINAL/FALLBACK lists the currently active keys and their decimal values.
ENABLE=(value[,...])	Enables one or more auto-compose keys. Choose keys from the list of keys available for the fallback table associated with the specified terminal. The value argument is a list of the decimal values of the keys to enable. If you specify more than one value, separate the values with commas and place them in parentheses. SHOW TERMINAL/FALLBACK lists the currently active keys and their decimal values.
GX_DEFAULT:gx-name	<p>Defines as the default character set the name of a character set, previously defined and stored in Read Only Memory (ROM) of the specified terminal. For example, VT100LD specifies the line drawing alternate character set available on VT100 terminals, and DECSUPP specifies DIGITAL's supplemental character set.</p> <p>These options are available for a variety of incompatible terminals. For example, the ASCII option applies to a special class of older DIGITAL terminals that do not have an ASCII ROM that allows display of the full ASCII character set. These terminals have only the NRC set of characters.</p> <p>Currently you can specify any of the following character sets for the default: ASCII, CANADA, CANADA_2, DECSUPP, FINLAND, FINLAND_2, FRANCE, GERMANY, ITALY, JIS, NETHERLAND, NORDAN, NORWAY, NORWAY_2, SPAIN, SPECIAL1, SPECIAL2, SPECIAL3, SWEDEN, SWEDEN_2, SWISS, TCS, UK, or VT100LD.</p> <p>For more information about available default and alternate ROM-based character sets, see the documentation for your specific terminal.</p>

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Option	Definition
SIGNAL NOSIGNAL	Enables the output of a BELL character to sound a terminal bell when an invalid compose sequence is entered. This is the default. You can disable this feature for applications that split escape sequences (for output) into two or more QIOs, because the BELL character may destroy such a sequence.
SOFT NOSOFT_COMPOSE	Enables software emulated compose, using the terminal's compose sequence validation table. You can enter compose sequences either by pressing CTRL/K followed by the sequence, or by pressing an auto-compose key followed by the second character of the sequence.
SUSPEND NOSUSPEND	Suspends or resumes TFF intervention. In command procedures that perform data transfers over the terminal line, use the SUSPEND option to avoid having to remember which TFF parameters are to be reset. The SUSPEND option suspends TFF intervention until you specify NOSUSPEND.
TABLE:table-name	Indicates the name of the fallback table to enable. If you omit the table-name option and the terminal does not yet have fallback enabled, then the system default is used. Otherwise, no change is made to the terminal's table. Specify NONE for the table to disable fallback for the target terminal. This is equivalent to SET TERMINAL /NOFALLBACK. Before you can enable it, the target table must be present in nonpaged dynamic memory pool. Use the SHOW TABLES command for information about what tables are available.
TERMINAL:terminal_type	Specifies the terminal type, as seen by TFF. The terminal type controls part of the escape sequence parsing done by TFF. Thus, you should set this to the correct value. Use one of the following values: VT100, VT102, VT200, or AL_ARABI. VT102 also includes the terminals that are named VT100xy, for example, VT100WF.

example

```
TFU> SET TERMINAL/FALLBACK=(ACCEPT, NOSIGNAL)
TFU>
```

The command in this example enables fallback using system defaults, if they are not already enabled. The option ACCEPT enables input of 8-bit characters; NOSIGNAL disables the terminal bell that sounds when invalid compose sequences are entered.

SHOW DEFAULT_TABLE

Displays the default fallback tables for your system.

format

SHOW DEFAULT_TABLE

example

```
TFU> SHOW DEFAULT_TABLE
System default TFF tables are:
  CANADIAN                (fallback)
  LATIN_1                 (compose sequence validation)
TFU>
```

The command in this example displays the default fallback and compose tables as they were established before the command was entered. In this example, the table CANADIAN is the default fallback table, and the table LATIN_1 is the default compose sequence validation table.

SHOW LIBRARY

Provides information about the current work library.

format

SHOW LIBRARY

example

```
TFU> SHOW LIBRARY
%TFF-I-READIS, Current input library is SYS$COMMON:[SYSEXE]TFF$MASTER.DAT;1
TFU>
```

The command in this example lists the current work library. In this case, the default library TFF\$MASTER.DAT is listed.

SHOW STATISTICS

Displays memory and other statistical information related to TFF.

format

SHOW STATISTICS

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SHOW TABLES

example

```
TFU> SHOW STATISTICS
TFF system statistics:
  Memory (bytes) -
    Fixed memory:
      FBDRIVER                               5608
    Loaded tables:
      Compose tables (0)                      0
      Fallback tables (2)                    2288
    Memory allocated by fallback terminals (0):
      FBks                                     0
      Replaced vectors                        0
    Total memory used (bytes):                7896
  Misc -
    Total tables loaded since boot: 2
System default TFF tables are:
  CANADIAN                                  (fallback)
  LATIN_1                                  (compose sequence validation)
TFU>
```

The command in this example displays information about TFF use. From this display you can see that two fallback tables have been loaded (in addition to the default table), no new compose tables have been loaded, and no fallback terminals have memory allocated to them. Other information is also displayed.

SHOW TABLES

Displays information about all loaded TFF conversion tables.

format

SHOW TABLES

example

```
TFU> SHOW TABLES
The following TFF tables are currently loaded
Name                               Type Base Crefc Trefc
-----
ASCII                               Fbk  MCS  *  0  0
LATIN_1                             Cmp  MCS  *  0  0
HEBREW_VT100                        Fbk  Hebr  0  0
CANADIAN                            Fbk  MCS  0  0
%TFF-W-NOMORETAB, No more tables in wildcard scan
```

This example shows how to display a line of information about the tables currently loaded into nonpaged dynamic memory pool.

SHOW TERMINAL /FALLBACK

SHOW TERMINAL /FALLBACK

Displays TFF statistics about a specific terminal. The **/FALLBACK** qualifier is required, but you can place it before or after the **terminal-name** parameter.

format

SHOW TERMINAL/FALLBACK [*terminal-name*]

parameter***terminal-name***

Indicates the target terminal for the show operation. If excluded, your own terminal is used. Note that you can use TFF only from local terminals; you cannot use terminal fallback on a remote terminal (RTAx), the fallback terminal device (FBA0), a Packet Switch Interface (PSI) terminal (NVA0), a disconnected virtual terminal, or a terminal set for dynamic switching (DYN SWITCH) with DECnet.

qualifiers***/ESCAPE_STATE***

Displays information about escape sequence parsing and triggering Read Only Memories (ROMs). Use this information to debug your application.

/FLAGS

Displays which TFF terminal flags (options) you can set from the terminal, and displays any internal TFF flags.

/FULL

Displays full information about the terminal. You cannot use this qualifier with **/ESCAPE_STATE** or **/STATISTICS**.

/STATISTICS

Displays statistics about the specified terminal.

/TABLES

Displays the names of tables assigned to the specified terminal, including auto-compose keys for the fallback table.

TFU-12 TFU UNLOAD TABLE

example

```
TFU> SHOW TERMINAL/FALLBACK/FULL TXB0:  
TFF status for physical terminal _TXB0:  
  
Active tables:  
  ASCII          (FALLBACK)  
  LATIN_1        (compose sequence validation)  
  
Autocompose-keys (Parenthesized values are character's decimal value):  
  None  
  
Settable flags:  
  Nosuspend, Noaccept_8bit, Soft_compose, Signal, NoGR_terminal  
Internal state flags:  
  None  
  
Rom(s) that will trigger TFF I/O conversion:  
  ASCII  
  
Escape sequence parsing states:  
  Input_state: Off (0), Output_state: Off (0)  
  Terminal graphic registers for the next character (setup = VT00):  
    GO = ASCII, G1 = ASCII  
  Output mapping:  
    GL = GO (maps 7-bit; 8th bit is truncated)  
Output formatter expansion:  
  Received: 4579 Transmitted: 4579 Expansion rate: +0.0%  
  
Replaced vector sizes (bytes):  
  Port vector: 99, Class vector: 139  
TFU>
```

This example shows how to produce a full display of TFF information for terminal TXB0.

UNLOAD TABLE

Unloads a table from nonpaged dynamic memory pool, releasing all memory used by the specified table. You can only unload tables that are not currently referenced by users and that are not the system default table. You must log out or enter SET TERMINAL/NOFALLBACK from your terminal to release a table for unloading. Note that you cannot unload the ASCII and LATIN_1 tables.

format

UNLOAD TABLE *table-name*

parameter

table-name

Indicates the name of the table to be unloaded.

example

```
TFU> UNLOAD TABLE HEBREW_VT100  
TFU>
```

The command in this example unloads table HEBREW_VT100 from nonpaged dynamic memory pool.

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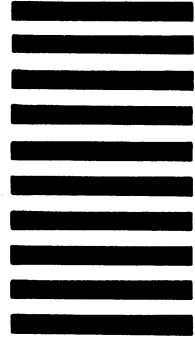
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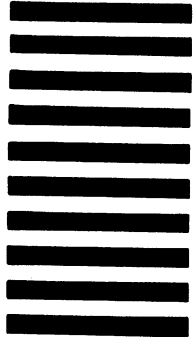
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