TOPS–10
User Utilities Manual

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This manual contains descriptions of the TOPS–10 utilities, their formats, and their usage.

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PREFACE

This manual describes the user utilities available with TOPS-10. The program descriptions are arranged alphabetically.

Before you read this manual, you should be familiar with TOPS-10 command usage, file specifications, and terminology. If you need to refer to any of the elements of the TOPS-10 command environment, read Chapter 1 of the TOPS-10 Operating System Commands Manual. Before you attempt to use the programs described in this User Utilities Manual, you must be familiar with the following concepts:

- monitor and user levels
- special control characters
- switches and arguments
- file specifications
- device names
- wildcard constructions
- search lists and directory paths

CONVENTIONS USED IN THIS MANUAL

The following conventions are used in this manual:

Convention	Meaning
addr	Program or location address.
arg	An argument to a command.
core	Referring to main (processor) memory.
CTRL/x	A control character.
date	A date in the form of two digits for the day, three letters for the month, and two digits for the year. (For example, 22-AUG-86 represents August 22, 1986.)
date-time	The date and time in the standard format. For example, 13-SEP-86:13:00:00 represents September 13, 1986 at one p.m..
density	The density of a magnetic tape.

Convention	Meaning
dev: device-name devnn devnnu devu	Any logical or physical device name. (You must include a colon (:) when a device name is part of a file specification.)
[directory] [dir]	A directory name. This can be either a UFD or an SFD.
expression	A numeric expression.
file.ext	A file name and a file extension, separated by a period.
file name	A name of a file.
file-spec	A file specification written in the format: dev:file.ext[directory].
fs	File structure.
hh:mm:ss	The time of day using a 24-hour clock, where hh is hours, mm is minutes, and ss is seconds.
id	An identifier.
job	A job number.
jobname	The name of the job.
letter	An alphabetic character.
line-number	Referring to the number of the line.
list	A list of arguments.
logical-name log-name log	A logical device name, chosen by the user.
memory	The decimal number of memory words measured in K or P. (1K is equal to 1Ø24 words; 1P (page) is equal to 512 words.)
MFD	A master file directory.
<nnn>	A protection code.
nnnn	A tape density.
n	A decimal number, such as a unit number.
^name^	A DECtape identifier.
nodelist	A list of all the systems in a network environment.
PPN	A project-programmer number.
program	A program name.
proj,prog	A project-programmer number.

Convention	Meaning
[proj,prog]	The name of a user-file directory.
SFD	A sub-file directory .
spec	A specification of a file.
str	A file structure name.
/switch	A command line modifier.
time	Referring to a time of day.
UFD	A user-file directory.
v	Version number.
x	A numeric or text variable.
$	The symbol printed on your terminal when you press the ESCape (or ALTmode) key.
^x	A character that is printed when you press the CONTROL key while you type a character key. (For example, typing a CTRL/C prints ^C at your terminal.)
<CTRL/x>	Indicates that you should press the CONTROL key at the same time as the key indicated here by "x".
<DEL>	Indicates when you should press the DELETE or RUBOUT key.
<RET>	Indicates when you should press the RETURN key.
<ESC>	Indicates when you should press the ESCape (or ALTmode) key.

All examples, commands, switches, values, and arguments are shown in uppercase. This is for the sake of distinction. Examples are shown as they would appear on a terminal that does not have lowercase ability.

CHAPTER 1

SAVING AND RESTORING FILES USING BACKUP

Function

The BACKUP program saves disk files on magnetic tape and places all or some of these files back onto the disk. You can save your disk area on magnetic tape and restore all of your files or a subset of your files back to your area. You can also use this program to move your files from one system to another. Please refer to the TOPS-10 Operator's Guide for detailed information about the BACKUP program.

Format

```
R BACKUP
/command
```

where: command is one of the BACKUP commands, which are in verb form. BACKUP prompts with a slash (/), after which you respond with one of three command types:

- o Action command
- o Status-setting command
- o Tape-positioning command

Action Commands

Action commands perform I/O on the tape specified in the last TAPE command. You must specify a tape using the TAPE command before you use an action command. TAPE is described under the status-setting commands for BACKUP.

SAVE file-spec	Saves the specified disk files on tape.
RESTORE file-spec	Restores the specified tape files to disk.
CHECK file-spec	Verifies that the tape and the disk files are the same.
[N]PRINT file-spec	Prints a directory of the entire tape specified by file-spec. N is an optional prefix indicating narrow. PRINT implies a NODIRECTORIES command; that is, no user directory names are printed.

The file-spec arguments are optional. File specifications may have wildcards. You can specify input and output files in the form output=input, or you can specify input alone. Use commas to separate file-spec entries in a list.

If you do not supply an argument with an action command, BACKUP defaults to a file-spec as follows:

- For anyone logged-in under [1,2], the default file spec is ALL:*.* [*,*,*,*,*,*,*]. This specifies all files on all UFDs, and all SFDs of all file structures, with no renaming.
- For all other users, the default file spec is ALL:*.* [PPN,*,*,*,*,*] where PPN is the user's PPN. This specifies all files in the user's areas should be saved with a disk structure specified, and restored to the appropriate structure.

Action Command Switches

You can use the following switches in the file specification list for the action commands. These switches can be either permanent or temporary. Input files are those being transferred from disk to tape. Output files are those being transferred from tape to disk.

/ABEFORE date	On input file, includes only files accessed before the specified date.
/ASINCE date	On input file, includes only files accessed since the specified date.
/BEFORE date-time	On input file, includes only files created before the specified date-time.
/ERNONE	On input file, gives an error if no files match.
/ERPROTECTION	On input file, gives an error if there is a protection failure.
/ERSUPERSEDE	On output file, does not restore a file from tape if it already exists on disk.
/ESTIMATE n	On output file, estimates output size (n).
/LENGTH low:high	On input file, includes the file only if file length is between low (minimum file size) and high (maximum file size).
/MBEFORE nD:hh:mm:ss	On input file, includes only files modified before date-time. nD represents the number of days.
/MSINCE nD:hh:mm:ss	On input file, includes only files modified since date-time. nD represents the number of days.
/NOPHYSICAL	On input or output file, uses the logical names.

/OKNONE	On input file, does not give an error if no files match your file specification.
/OKPROTECTION	On input file, does not give an error if there is a protection failure.
/OKSUPERSEDE	On output file, always restores the file, even if the file is already on disk.
/PHYSICAL	On input or output file, ignores any logical names.
/PROTECTION nnn	On output file, sets the protection code.
/SINCE date-time	On input file, includes only those files created since the specified date-time.
/STRS	On input file, examines all structures for the file.
/VERSION v	On output file, sets the version number of the file.

Runtime Commands

You can issue the following runtime commands during the execution of any action commands. BACKUP prompts with an exclamation point (!) when ready to accept a runtime command.

DIRECTORIES	Prints every directory processed.
EXIT	Exits from BACKUP when done.
FILES	Prints every file and directory processed.
GO	Continues after a STOP.
HELP	Lists BACKUP commands and explanations.
KILL	Aborts execution of the current action verb.
NODIRECTORIES	Does not print every directory processed.
NOFILES	Does not print every file in every directory processed.
PAUSE	Does not exit from BACKUP when done.
RESET	Resets all status settings to their original defaults when done.
SILENCE	Stops printing every directory or file.

STOP	Stops action temporarily; can be continued by GO.
WHAT	Displays current file name and status.

Status-Setting Commands

Status-setting commands specify one or more parameters that affect future action commands.

ABEFORE date	Includes only files accessed before the specified date.
APPEND	Appends to the existing list file.
ASINCE date	Includes only the files accessed since the specified date.
BEFORE date-time	Includes only the files created and modified before the specified date-time.
CPOINT	Uses checkpoints.
DATE75	Always accepts files with possible DATE75 problems.
DELETE	Deletes disk files after saving them.
DENSITY nnnn	Sets the tape density. The density, expressed in bits per inch (bpi), can be 200, 556, 800, 1600, or 6250.
DIRECTORIES	Prints each user's directory while running.
ENCRYPT	Encrypts (codes) the files. This makes the files impossible to read without the keyword.
ERRMAX n	Set maximum number of recoverable tape errors. Default is 100.
EXEMPT	Exempts project-programmer numbers of the form [A,*] and [*,B], where A and B are less than 7, from date, time, and length restrictions.
FILES	Prints each file name while running.
INITIAL file	Starts processing at the specified file.
INTERCHANGE	Runs in interchange mode. Interchange is used to copy files from one installation to another with no directory dependencies.

LENGTH low:high	Includes only files whose length is between low (minimum file size) and high (maximum file size).
LIST file-spec	While running, creates a listing file on file-spec. LIST produces the effect of a NODIRECTORIES command; that is, no user directories will be printed.
MBEFORE date-time	Includes only files that were moved or modified before the specified time.
MESSAGE [NO]PREFIX	Suppresses the error message prefix.
MESSAGE [NO]FIRST	Suppresses the first line of the error message text.
MSINCE date-time	Includes only files that have been moved or modified since the specified time.
MULTIREEL	Allows multiple reels during a save.
NOAPPEND	Does not append to the existing list file.
NOCPOINT	Does not use checkpoints.
NODATE75	Does not accept files with possible DATE75 problems.
NODELETE	Does not delete disk files after saving them.
NODIRECTORIES	Does not print each user's directory while running.
NOENCRYPT	Does not encrypt (code) the files.
NOEXEMPT	Does not exempt PPNs of [A,*] and [*,B] from restrictions.
NOFILES	Does not print each file while running.
NOINTERCHANGE	Does not run in interchange mode.
NOLIST file	Does not make a listing file.
NOMULTIREEL	Does not allow multiple reels during the save.
NOREPEAT	Does not repeat a split file on the continuation tape.
NOUSETI	Does not run in USETI mode.
NOWRITE	Suppresses disk writing during a restore.

OPTION name	Uses line BACKUP:name from a SWITCH.INI file.
PARITY (EVEN,ODD)	Sets the tape parity.
REPEAT	Repeats a split file on the continuation tape.
RESUME n	Sets a checkpoint block number where processing resumes after a crash that occurred during a checkpointed SAVE or RESTORE.
SILENCE	Does not print file names or directories while running.
SINCE date-time	Includes only those files created or modified since the specified date-time.
SORT DIRECTORIES x	Sorts directories within each file structure in order of x when saving. x is ALPHABETICAL, LOCATION, or NONE.
SORT FILES x	Sorts files within each directory in the order of x. x is ALPHABETICAL, LOCATION, or NONE.
SSNAME name	Specifies the save-set name. Use ALL to include all save-sets.
SUPERSEDE ALWAYS	Restores all files from tape, superseding files on disk that have the same file name.
SUPERSEDE NEVER	Does not restore files that have the same name as an existing file.
SUPERSEDE OLDER	Restores only the files that are newer than the files on disk of the same name.
TAPE MTxn:	Uses tape unit MTxn:. If a magnetic tape drive has the logical name BACKUP, then the TAPE verb need not be specified.
TPNUM x	Sets the number of the tape to x (decimal).
UPROTECTION nnn	Sets the protection code for the created directories.
WRITE	Writes onto disk during a RESTORE. This is the default action.

Tape-Positioning Commands

Use these commands before action commands or after action commands are finished processing.

EOT volid-list	Skips to the end-of-tape mark for each tape in the list. The volid-list is a list of the volume-identifications of each tape.
REWIND volid-list	Rewinds to the beginning of the tape for each tape in the list.
SKIP n volid-list	Skips the specified number of save sets forward for each tape in the list.
SKIP Ø volid-list	Backs up to the start of the current save set for each tape in the list.
SKIP -n volid-list	Skips the specified number of save sets backward for each tape in the list.
UNLOAD volid-list	Unloads each tape in the list from its drive.

Characteristics

The BACKUP program:

Places your terminal at user level.

Destroys your core image.

Examples

1. To save the entire contents of DSKB: on magnetic tape and at the same time produce a directory listing, run BACKUP while logged in under [1,2].

```
.R BACKUP<RET>
/TAPE MTAØ<RET>
/LIST DSK:BACKUP.LOG<RET>
/SAVE DSKB:<RET>
!1,2 DSKB
 1,3
 1,4
.
.
.

.
```

BACKUP prints each UFD as it begins to save files from that area. If the tape becomes full before the save is complete, BACKUP stops, types out the full file specification and block number of the current file being saved, unloads the magnetic tape and prints the following message:

```
$BKPEOT REACHED EOT -- MOUNT NEW TAPE THEN TYPE "GO"
```

When you type GO, BACKUP continues the save on the new tape. A file can be split across tapes.

2. Copy the file FILE.MAC from tape to disk.

```
.R BACKUP<RET>
/TAPE MTBØ<RET>
/REWIND<RET>
/RESTORE FILEB.MAC=FILEA.MAC<RET>
!1Ø,123 DSKB
DONE
/UNLOAD<RET>
/^C

.
```

CHAPTER 2

CREATING DIRECTORIES AND SUB-FILE DIRECTORIES USING CREDIR

Function

The CREDIR program creates directories and sub-file directories. CREDIR creates sub-file directories (SFDs) on any specified structures, and it automatically creates any necessary higher-level directories. If you do not specify a structure, CREDIR creates the SFD on every structure in your search list.

You can use CREDIR to create ersatz device directories. CREDIR allows you to create directories on all structures associated with a specified ersatz device. As it creates each directory, CREDIR tells you the name of the unit and the protection code associated with the directory.

Format

```
R CREDIR
Create directory:  dev:[dir]/switch
```

where: dev:[dir] is the device name and the directory specification. You can specify an ersatz device name. /switch can be any of the switches listed below.

By default, CREDIR creates the directory on device DSK:. The system assigns the default protection code defined by the system manager. If no code was defined, <775> is the default.

You can use the following switches to modify the CREDIR program:

/ALLOCATE:nnnn	Specifies the number of blocks allocated for the SFD.
/ERNONE	Prints an error message if there are no files in the request.
/ERPROTECTION	Prints an error message if the request fails due to a protection code violation.
/HELP:arg	Prints the HELP text for the CREDIR program. You can specify S as the argument to get a list of the switches to the program.
/IN:nnnn	Specifies the logged-in quota.

/NAME:name	Specifies a mnemonic name for the directory.
/NOOPTION	Suppresses processing of the defaults from your SWITCH.INI file.
/OKNONE	Does not print an error message if there are no files that match a wildcard specification.
/OKPROTECTION	Does not print an error message if the SFD cannot be accessed because of a file protection violation.
/OPTION:name	Uses any lines in your SWITCH.INI file that are specified as CREDIR:name.
/OUT:nnnn	Specifies the logged-out quota for the SFD.
/PHYSICAL	Specifies that the device name is physical, and to ignore logical names.
/PROTECTION:nnn	Gives the SFD the protection you specify in nnn.
/RUN:file-spec	Runs the program you specified when CREDIR has finished running.
/RUNCOR:n	Runs the program you specified with /RUN in nK of memory when CREDIR has finished running.
/RUNOFFSET:n	Runs the program you specified with /RUN with an offset of n. If you omit the switch, the default is Ø. If you specify the switch, but omit a value for n, the default is 1. If the offset is 1, the file uses an indirect command file.
/STRS	Searches for the SFD in all structures in your job's search list, and uses every occurrence.

Characteristics

The CREDIR program:

Destroys your core image.

Requires LOGIN.

Places your terminal at user level.

Examples

1. The following example shows the creation and use of an SFD and directory paths.

   Show a list of all the files in your UFD with a file extension .TST.

```
.DIRECT *.TST<RET>

NUMB  TST   Ø   <Ø55>   dd-mmm-yy    DSKC:   [27,5434]
1Ø9   TST   5   <Ø55>   dd-mmm-yy
FILL  TST   1   <Ø55>   dd-mmm-yy
PAY3  TST   1   <Ø55>   dd-mmm-yy
   TOTAL OF 7 BLOCKS IN 4 FILES ON DSKC: [27,5434]
```

   Run the CREDIR program. Create a sub-file directory called TEST. Use the /EXIT switch to exit from CREDIR.

```
.R CREDIR<RET>

Create directory:  [27,5434,TEST]<RET>
        CREATED DSKC:[27,5434,TEST].SFD/PROTECTION:775

Create directory: /EXIT
```

   Request a list of all your files named TEST.

```
.DIR TEST.*<RET>

TEST  FOR   1   <Ø55>   dd-mmm-yy    DSKC: [27,5434]
TEST  SFD   1   <775>   dd-mmm-yy
   TOTAL OF 2 BLOCKS IN 2 FILES ON DSKC: [27,5434]
```

   The directory shows an SFD named TEST.

   Use RENAME to transfer all files with the extension .TST from your UFD to your SFD.

```
.RENAME [27,5434,TEST]=*.TST<RET>
FILES RENAMED:
DSKC:NUMB.TST
DSKC:1Ø9.TST
DSKC:FILL.TST
DSKC:PAY3.TST
```

   Show that your UFD no longer contains the files with the extension .TST.

```
.DIR *.TST<RET>

%WLDNSF No such files as DSKC:*.TST[27,5434]
```

   Show that the files have been transferred to the SFD [27,5434,TEST].

```
.DIR [27,5434,TEST]<RET>

NUMB TST  Ø   <Ø55>  dd-mmm-yy    DSKC:[27,5434,TEST]
1Ø9  TST  5   <Ø55>  dd-mmm-yy
FILL TST  1   <Ø55>  dd-mmm-yy
PAY3 TST  1   <Ø55>  dd-mmm-yy
   TOTAL OF 7 BLOCKS IN 4 FILES ON DSKC:  [27,5434,TEST]
```

2. The following example shows the use of CREDIR with the SCAN switch /PROTECTION.

```
.R CREDIR<RET>

Create directory:   DSKB:[,,A,B,C]/PROTECTION:755<RET>
   CREATED DSKB:[27,4072,A].SFD/PROTECTION:755
   CREATED DSKB:[27,4072,A,B].SFD/PROTECTION:755
   CREATED DSKB:[27,4072,A,B,C].SFD/PROTECTION:755
Create directory: /EXIT

.
```

CHAPTER 3

GETTING CROSS-REFERENCE LISTINGS USING CREF

Function

The CREF program produces a sequentially numbered assembly listing of a program, and one or more of the following tables:

- Cross reference table for all operands, such as labels and assignments
- Cross reference table for all user-defined operators, such as macro calls and OPDEFs
- Cross reference table for all op codes and pseudo-ops. You must specify the /O switch to produce this table.

The cross-reference files are printed on the line printer if you have generated such files using the /CREF switch with a COMPILE, LOAD, DEBUG, or EXECUTE command. The file containing the names of these CREF files is then deleted so that subsequent CREF commands will not process them again.

When the logical device name LPT: is assigned to a device other than the line printer, the CREF files are stored on that device with the same file name and the extension .LST. If output to the line printer is not currently spooled, you must set spooling before running CREF (see the SET SPOOL command in the TOPS-10 Operating System Commands Manual).

Formats

```
R CREF/switch
* file spec

CREF  file-spec/switch
```

where: **file-spec** is a valid file specification. When you supply a file specification, CREF produces a cross-referenced listing file for the specified file. If you do not give an argument to the command, CREF uses the argument saved from a previous COMPILE-class command. CREF prompts with an asterisk (*) when you use the R CREF command or if there is no stored argument. /switch is one or more of the following switches:

/A Advances magtape by one file (may be repeated).

/B Backspaces magtape by one file (may be repeated).

/C Cancels SWITCH.INI switch defaulting.

/D Permits default switches you specified in your SWITCH.INI file.

/H Types the HELP text for CREF.

/K Does not list user-defined symbol tables.

/M Suppresses user macros, OPDEFs, and symbol table.

/O Lists the opcodes.

/P Preserves (does not delete) input files.

/R Restarts listing and prompts for line number.

/S Suppresses program listing and lists only symbol tables.

/W Rewinds tape.

/Z Deletes the current contents of the DECtape directory.

Characteristics

The CREF program:

Leaves your terminal at monitor level.

Destroys your core image.

Requires LOGIN.

Examples

1. Compile the files contained in the command file PROMAC and produce CREF listing files on the disk.

```
.COMPILE/CREF@PROMAC<RET>
FORTRAN:  INPUT1
MAIN.
FORTRAN:  INPUT2
MAIN.
```

Process and list the cross-referenced listing files produced by the COMPILE command. The argument is the stored argument that was used in the COMPILE command.

```
.SET SPOOL LPT<RET>
.CREF<RET>
CREF:INPUT1
CREF:INPUT2
.
```

2. Compile and load the files contained in the command file CONALL. Produce a loader map with the file name NAME and CREF files on disk.

```
.LOAD/CREF/MAP:NAME@CONALL<RET>
MACRO:  HIGH
MACRO:  SHARE
EXIT
```

Assign the logical name LPT to magnetic tape unit 1. Store the CREF files on MTA1: to be output at a later time.

```
.ASSIGN MTA1 LPT<RET>
MTA261 ASSIGNED

.CREF<RET>
CREF:  HIGH
CREF:  SHARE
.
```

CHAPTER 4

COMPARING FILES USING FILCOM

Function

The FILCOM program compares two files and displays any differences. Generally, this comparison is line-by-line for ASCII files and word-by-word for binary files. FILCOM determines the type of comparison to use by examining either the switches specified in the command string or the extensions of the files. Switches always take precedence over file extensions.

Format

```
R FILCOM
*output-file-spec=input-file-spec,input-file-spec/switch
```

where: * is the FILCOM prompt, file-spec is a valid file specification, output-file-spec specifies the name and area on which the results should be stored, and input-file-spec is a list of the files to be compared.

The FILCOM program takes the following defaults if you omit some of the above information:

- If you omit the output specification, the output device is assumed to be TTY:. If you omit the output file specification, you must still type the equal sign.
- If you specify only the output file name, the default output device is DSK:.
- If you omit the output file name, the second input file name is used, unless it is null. In this case, the file name FILCOM is used.
- If you omit the output file extension, .SCM is used on a source compare and .BCM is used on a binary compare.
- If you omit the [directory] in either the input or output file specifications, your default directory is assumed.
- If you omit an input device name, it is assumed to be DSK:.
- If you omit the file name of the second input file, it is taken from the first input file.

- You must place a dot following the file name of the second input file to explicitly indicate a null extension if the extension of the first input file is not null. For example, to compare FILE.MAC and FILE. (that is, with null extension), use the following command string:

```
R FILCOM<RET>
*=FILE.MAC,FILE.
```

- The second input file specification cannot be null unless a binary compare is being performed. In a binary compare, if the first input file is not followed by a comma and a second input file descriptor, the input file is compared to a zero file and is output in its entirety. This gives you a method of listing a binary file. (Refer to Example 4.)

/switch is one of the options listed below. A switch can follow the input file-specs. The following switches are used for a binary file comparison:

/E	Creates file in executable format.
/H	Prints a list of switches available (help text from device HLP:).
/nL	Specifies the lower limit for a partial binary compare (n is an octal number). This switch, when used with the /nU switch, allows a binary file to be compared only within the specified limits.
/Q	Prints the message ?FILES ARE DIFFERENT when the files are different, but does not list the differences. This switch is useful when you test batch control files for differences but do not want a log file of these differences.
/nU	Specifies the upper limit for a partial binary compare (n is an octal number). This switch, when used with the /nL switch, allows a binary file to be compared only within the specified limits.
/W	Compares files in binary mode without expanding the files first. This switch is used to compare two binary files with ASCII extensions.
/X	Expands .SAV files before comparing them in binary mode. This action removes differences resulting from zero compression.

If you did not specify any switches in the command string, FILCOM compares the files in the mode the extension implies. FILCOM recognizes the following extensions as binary:

.APL	.ATR	.BAC	.BIN
.BUG	.CAL	.CHN	.DAE
.DBS	.DCR	.DMP	.EXE
.HGH	.LOW	.MSB	.OVL
.QUC	.QUD	.QUE	.QUF
.REL	.RIM	.RMT	.RTB
.SAV	.SCH	.SFD	.SHR
.SVE	.SYM	.SYS	.UFD
.UNV	.XPN		

Binary files are compared word by word, starting at word 0, except for the following cases:

- Files with extensions .SHR and .HGH are assumed to be high-segment files. Because the word count starts at 400000, upper and lower limits, if used, must be greater than (or equal to in the case of the lower limit) 400000.
- Files with extensions .SAV, .LOW, and .SVE are assumed to be compressed core image files and are expanded before comparing.
- Files with the extension .EXE are assumed to be in .EXE format.

Conflicts are resolved by switches or defaults. If a conflict arises in the absence of switches, the files are assumed to be ordinary binary files.

The following switches are used for an ASCII source file comparison:

/A	Compares files in ASCII mode. This switch is used to force comparison of two files to be done in ASCII.
/B	Compares blank lines. Without this switch, blank lines are ignored.
/C	Ignores comments (all text on a line following a semicolon) and spacing (spaces and tabs). A line consisting entirely of comments or spacing is not treated as if it were a blank line; differences in such lines are not ignored.
/H	Prints a list of switches available (help text from device HLP:).
/nL	Specifies the number of lines that determine a match (n is an octal number). A match means that n successive lines in each input file have been found to be identical. When a match is found, all differences occurring before the match and after the previous match are listed. In addition, the first line of the current match is listed after the differences, to help you locate the place within each file at which the differences occurred. The default value for n is 3.

/O

Instructs FILCOM to include a label and offset in the differences listing for ASCII files. There are three types of messages. One message is:

```
[;At top of file + nL]
```

nL, a decimal number, represents the number of lines from the top of the file that the difference occurs. If a difference occurs at the top of the file, nL is not listed. Another message is:

```
[;At Label + nL]
```

Label is the MACRO label closest to the difference and nL represents the decimal number of lines away from the label that the difference occurs. If the difference occurs at the label, nL is not listed. The message for PDP-11 files is:

```
[;At Label + nL + following label name]
```

Label is the local label name in the form nn$, nL represents the decimal number of lines from the local label where the difference occurs, and following label name is the name of the block label. The block label name is listed as further help in locating the difference, since local label names are not always unique. If the difference occurs at the label, nL + following label name are not listed. The label name for all labels must be in the first ten characters of the line. Label name refers to file 1.

/Q

Prints the message ?FILES ARE DIFFERENT, when the files are different, but does not list the differences.

/S

Ignores spaces and tabs.

/T

Instructs FILCOM to generate output even if no differences are found. Ordinarily, FILCOM does not produce a list of differences if there are no differences in the files.

/U

Compares in update mode. This means that the output file consists of the second input file with vertical bars (or backslashes for 64-character printers) next to the lines that differ from the first input file. Any lines found in the first input file but not in the second are designated by a bullet (o). This feature is useful when updating a document because the changes made to the latest edition are flagged with change bars in the left margin. The latest edition of the document is the second input file.

FILCOM Output

In most cases, headers consisting of the device, file name, extension, and creation date of each input file are listed before the differences are listed. However, headers do not appear on output from the /U switch (update mode on source compare).

Output from a source compare has the following notation in the left column of the output after the headers:

```
n)m
```

n is the number of the input file, and m is the page number of the input file (refer to the examples).

The right column lists the differences occurring between matches in the input files. Following the list of differences, a line identical in each file is listed for reference purposes.

The output from the /U switch differs from the above-described output in that the output file created is the second input file with vertical bars in the left column next to the lines that are different from the first input file.

The output from a binary compare prints the following line on the output device when FILCOM encounters a difference between the two input files:

```
octal loc 1st file-word  2nd file-word XOR of both words
```

If the exclusive OR (XOR) of the two words differs only in the right half, the third word listed is the absolute value of the difference of the two right halves. This usually indicates an address that changed.

If one input file is shorter than the other, after the end of file is encountered on the shorter file, the remainder of the longer file is listed.

Characteristics

The FILCOM program:

Places your terminal at user level.

Destroys your core image.

Requires LOGIN.

Examples

1. You have the following two ASCII files on disk:

```
.TYPE FILE1.TST<RET>
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z


.TYPE FILE2.TST<RET>
A
B
C
G
H
I
1
2
3
N
O
P
Q
R
S
T
U
V
4
5
W
X
Y
Z
```

To compare the two files and print the differences on your terminal, use the following sequence.

Run the FILCOM program.

```
.R FILCOM<RET>
```

Compare the two files on disk and output the differences on your terminal. By default, three consecutive identical lines determine a match.

```
*=FILE1.TST,FILE2.TST<RET>

FILE 1) DSKC:FILE1.TST[27,5434] CREATED: Ø825 dd-mmm-yyyy
FILE 2) DSKC:FILE2.TST[27,5434] CREATED: Ø826 dd-mmm-yyyy

1)1       D
1         E
1)        F
1)        G
****
2)1       G
**************
1)1       J
1)        K
1)        L
1)        M
1)        N
****
2)1       1
2)        2
2)        3
2)        N
**************
1)1       W
****
2)1       4
2)        5
2)        W
**************

%FILES ARE DIFFERENT
```

2. To compare the two files and print the differences on the line printer, use the following command. In this example the number of successive lines that determines a match has been set to four with the /4L switch.

```
*/4L = FILE1.TST,FILE2.TST<RET>
FILE 1) DSKC:FILE1.TST[27,5434] CREATED Ø825 dd-mmm-yyyy
FILE 2) DSKC:FILE2.TST[27,5434] CREATED Ø826 dd-mmm-yyyy

1)1       D
1)        E
1)        F
1)        G
1)        H
1)        I
1)        J
1)        K
1)        L
1)        M
1)        N
****
2)1       G
2)        H
2)        I
2)        1
2)        2
2)        3
2)        N
**************
1)1       W
****
2)1       4
2)        5
2)        W
**************

%FILES ARE DIFFERENT
```

3. To compare the two files so that the second input file is output with vertical bars in the left column next to the lines that differ from the first input file, use the following command sequence:

```
.R FILCOM<RET>

*/U=FILE1.TST,FILE2.TST<RET>
          A
          B
          C
|         G
          H
          I
|         1
|         2
|         3
          N
          O
          P
          Q
          R
          S
          T
          U
          V
|         4
|         5
          W
          X
          Y
          Z

%FILES ARE DIFFERENT
```

File number two is displayed. The lines with vertical bars indicate the differences between the two files.

CHAPTER 5

LISTING GLOBAL SYMBOLS USING GLOB

Function

The GLOB program reads multiple binary files and produces an alphabetical cross-referenced list of all the global symbols (symbols accessible to other programs) that it encounters. This program also searches files in library search mode, checking for global symbols, if the program file was loaded by LINK in library search mode. (See the LINK manual.)

The GLOB program has two phases of operation:

1. Phase one scans the input files and builds an internal symbol table.

2. Phase two produces output based on the symbol table.

Because of these phases, you can enter commands to GLOB in one of two ways. The first way is to specify one command string containing both the output and input specifications. (This is the command string format most system programs accept.) The second is to separate the command string into a series of input commands and output commands.

Formats

R GLOB

*output file-spec=input file-spec(/switch,/switch)<ESC>

where: * is the GLOB prompt, and /switch is one or more of the switches listed below.

R GLOB

followed by one or more input commands in the form:

file-spec, file-spec,...<RET>

and then one or more output commands in the form:

output file-spec=<ESC>

When you separate your input to GLOB into input commands and output commands, the input commands contain only input specifications. The output commands contain only output specifications. Each output command causes a listing to be generated; any number of listings can be printed from the symbol table generated from the current input files, as long as no input commands occur after the first output command. When GLOB encounters an input command after output has been generated, it destroys the current symbol table and begins a new one.

An ESCape (or ALTmode) terminates the command input and signals GLOB to print the cross-referenced listing. A listing is not printed until GLOB encounters an ESCape. Press ESCape at the end of the command string shown in command format 1 or at the end of each output command shown in command format 2.

If you omit some of the information in a GLOB command, the program takes the following defaults:

- If the device is omitted, it is assumed to be DSK:. However, if the entire output specification is omitted, the output device is TTY:.
- If the output file name is omitted, it is the name of the last input file on the line (Command Format 1) or is GLOB if the line contains only output commands (Command Format 2). The input file names are required.
- If the output extension is omitted, .GLB is used. If the input extension is omitted, it is assumed to be .REL, unless the null extension is explicitly specified by a dot following the file name.
- If the directory area [directory] is omitted, your default directory is used.

Switches to GLOB control the type of global listings to be printed. If you issue several switches, enclose them in parentheses. Only the most recently specified switch (except for L, M, P, Q, and X, which are always in effect) is in effect at any given time. If you do not specify any switches, GLOB prints all global symbols. The switches and their functions are:

/A Prints all global symbols. This is the default if no switches are specified.

/E Prints only erroneous (multiply defined or undefined) symbols.

/F Prints nonrelocatable (fixed) symbols only.

/H Prints a list of the switches available from HLP:GLOB.HLP.

/L Scans programs only if they contain globals previously defined and not yet satisfied (library search mode).

/M Turns off scanning mode resulting from the /L switch.

/N Prints only symbols that are never referenced.

/P Prints all routines that define a symbol to have the same value. The routine that defines the symbol first is printed, followed by a plus (+) sign. Subsequent routines that define the symbol are printed, preceded by a plus sign.

/Q Suppresses the printing of subsequent defining routines, which result from the /P switch.

/R Prints only relocatable symbols.

/S Prints symbols with nonconflicting values that are defined in more than one program.

/X Suppresses the header page when the output device is not your terminal, and includes the header when it is your terminal. Without this switch, the header is printed on all devices except your terminal.

Output from GLOB

The listing header is in the format:

Flags Symbol Octal Value Defined Referenced

The flags are:

Flags	Meaning
M	Multiply-defined symbol (shows all values).
N	Never referred to (was not declared external in any of the binary programs).
S	Multiply specified symbol (that is, defined in more than one program but with nonconflicting values). The name of the first program in which the symbol was encountered is followed by a plus sign.
U	Undefined symbol.

Symbols are listed in alphabetical order according to their ASCII collating sequence. An apostrophe (') follows the octal value of a relocatable symbol. The value is then relative to the beginning of the program in which the symbol is defined.

Characteristics

The GLOB program:

Requires LOGIN.

Places your terminal at user level.

Destroys your core image.

Example

Run the GLOB program, and print all global symbols in the program MAIN (on DSK:), and SUB40 and SUB50 (on DTA2:) on the line printer. Each symbol is printed with its value, the program in which it is defined, all programs in which it is referenced, and any error flags.

```
.R GLOB<RET>

*LPT:=MAIN.REL,DTA2:SUB40,SUB50<ESC>
```

The programs to be scanned are BATCH.REL and DATA.REL on DTA4, NUMBER.REL and CLASS.REL on DTA6:, and MATH.REL and LIBRAR.REL on DSK:.

```
*DTA4:BATCH.REL,DATA.REL,DTA6:NUMBER.REL,CLASS.REL<RET>
*DSK:MATH.REL,LIBRAR.REL<RET>
```

Print only nonrelocatable symbols on the line printer.

```
*LPT:=/F4<ESC>
```

Print only relocatable symbols in the file named SYMBOL in your default directory.

```
*DSK:SYMBOL=/R<ESC>
```

Print all erroneous symbols on the terminal. EXTSYM is an undefined symbol appearing in the program SUBRTE.

```
*TTY:=/E<ESC>

U EXTSYM SUBRTE
```

Return to monitor level.

```
*^C

.
```

CHAPTER 6

NETWORK FILE TRANSFER USING NFT

Function

The Network File Transfer (NFT) utility allows you to access files residing on DECnet hosts that provide network file access capabilities. By using NFT, you can perform a variety of operations such as copying, deleting, renaming, or listing files; listing directories; and submitting files to a batch system. NFT allows you to perform operations at the local host as well as at a remote host. You may also use NFT to copy a file from one remote host to another.

NFT processes text files, programs, data files, control files, or any other sequential file. However, only ASCII file transfers are supported between a TOPS-1Ø host and a non-TOPS-1Ø host.

Format

```
R NFT
* command output-file-spec = input-file-spec/switches
```

where: **command** is one of the NFT commands described below. **file-spec** is one or more standard file specifications. Depending on the command, either the output-file-spec or both file-specs may be omitted. **/switch** is one or more of the switches described below.

/ASCII	Transfers in ASCII mode. Use the /ASCII switch for all ASCII file transfers to or from a non-TOPS-1Ø host.
/[NO]BAUD	Does [not] print the baud rate of data transfer in the totals summary. This switch applies to the COPY and TYPE commands only. The default for network transfers is /BAUD, /NOBAUD is the default for local transfers.
/BINARY	Transfers in binary mode. Use the /BINARY switch for all file transfers between TOPS-1Ø hosts.
/[NO]MOAN	Does [not] issue general warning complaints. Use the /MOAN switch to instruct NFT to issue warnings when it encounters a dubious condition. Such a condition typically requires NFT to make a guess (for example, in a file copy operation, the data type or data byte size) in order to complete the command. The default is /NOMOAN.

/[NO]OKERROR

Use the /[NO]OKERROR switch to control whether NFT aborts the command if an error occurs. /OKERROR directs NFT to ignore file access and I/O errors, issuing warning messages. /NOOKERROR instructs NFT to abort the current command on the first occurrence of a file access or I/O error. The default setting is /NOOKERROR.

/TOTALS[:list]

Use the /TOTALS switch to control the totals summary displayed at the end of the command execution. The various TOTALS quantities (files, errors, baud rate, and so on) can be individually controlled by specifying the :list argument. If a quantity-name is preceded with a NO, that quantity will not be listed. If more than one quantity is specified, separate them with commas, and enclose the list with parentheses. /TOTALS or /TOTALS:ALL directs NFT to print a totals summary of all applicable quantities at the completion (successful or otherwise) of the current command. /TOTALS:NONE instructs NFT to omit the summary. The /TOTALS quantities are:

- BITS - List the total number of data bits.
- BYTES - List the total number of data bytes.
- WORDS - List the total number of 36-bit words.
- RECORDS - List the total number of records.
- BLOCKS - List the total number of 128-word blocks.
- PAGES - List the total number of 512-word pages.
- FILES - List the total number of files.
- BAUD - List the effective data transfer rate (bits per second).
- ERRORS - List the total number of execution errors.

The default quantities are WORDS, BLOCKS, FILES, and BAUD. NFT ignores inappropriate arguments.

/USERID:id

Use this switch to specify the access information (userid, account, and password) when using NFT for a non-TOPS-10 host. You include the /USERID switch with the file specification of the remote file. If you omit an argument from the switch, NFT prompts you for that argument. If the remote host does not require the information, you can press the <RET> key. The form of the /USERID switch is:

```
/USERID:uid:acct:psw
```

where uid is user-name, acct is an account string, and psw is a password. If you omit the account or password argument, you must still include its preceding colon (:). For example, if you omit the password:

```
/USERID:smith:1776:
```

NFT prompts you for it. You then supply a password, which NFT does not echo.

NFT automatically prompts you for access information if you include /USERID without arguments in the form:

```
NFT   /USERID
```

You can include this command and switch in your SWITCH.INI file. If you include arguments with the /USERID switch in SWITCH.INI, you are specifying a particular userid. You can override this switch setting by including an explicit /USERID:uid switch on a command line to NFT. You can also use the SET DEFAULT command to specify access information for one or all remote nodes. Defaults set this way apply for the duration of the current NFT session.

For a TOPS-10 remote file, you can omit the PPN if the userid and the project-programmer number are identical. For example, you can enter:

```
*DIRECT IRIS::[27,777]/USERID:27,777::FOO
```

as:

```
*DIRECT IRIS::/USERID:27,777::FOO
```

The NFT commands are:

Command	Action
COPY [output file-spec=] input file-spec	Copies files from: local node to remote node; local node to local node; remote node to local node; remote node to remote node
DELETE file-spec(s)	Deletes files from a local or remote node.
DIRECT [output file-spec=] input file-spec	Lists the directory from the specified node.
EXIT	Exits from NFT.
HELP	Displays a list of NFT commands.
PRINT file-spec	Prints a file at the specified node. NFT does not check that the file is actually printed at a remote node. The file must be located at the node in an acceptable format; and print spooling must be available at the node.
RENAME output file-spec(s)= input file-spec	Changes the name or attributes of a file. Valid only for nodes that support remote renaming.
SET DEFAULT [node::=] /USERID[:uid[:acct[:psw]]]	Sets the defaults for the access information for one or more remote nodes. The defaults remain in effect until you change them using another SET DEFAULT command or exit from NFT. NFT applies the defaults in SWITCH.INI after it sets the defaults from the SET DEFAULT command.
SUBMIT file-spec	Submits a batch control file or a command file on a local or remote node. NFT does not check that the file is actually submitted. The control/command file must be at the node in an acceptable format; and the batch or command file facility must be supported and available at the node.
TYPE [output file-spec=] input file-spec	Displays the specified file on your terminal.

In addition to the standard commands, commands called DAP-mode commands are available. They are the DDELET (delete), DDIREC (direct), DRENAM (rename), and DSUBMI (submit) commands. You can use these commands to quickly manipulate a single file on a single host, or if the remote host does not appear to accept the standard NFT command. If you use these commands, you can include only one input file specification. These commands may execute faster than the standard commands because they do not have the same command scanning and checking as the standard commands. In some cases, they may not give the same amount or type of information as the standard commands.

All NFT and DAP-mode commands described above work between TOPS-10 hosts, and with your files on the local host. However, a command works on a non-TOPS-10 host only if that host has also implemented that facility. For example, you can copy files between a TOPS-10 host and a VMS host because both hosts have implemented the COPY facility.

For those commands with input and/or output file specifications, the defaults for the command string are listed below. Though most of the defaults are the same for all the commands, some commands have different defaults. The exceptions are noted with each field's default.

Field	Default
node	local node all remote nodes for SET DEFAULT unchanged for RENAME output
device	DSK: for local node, none for remote node TTY: for DIRECT and TYPE output unchanged for RENAME output
directory	no explicit directory unchanged for RENAME output
file name	output - input file name - generated name for DIRECT - unchanged for RENAME input - * - must be specified for DELETE
file type	output - input file type - DIR for DIRECT - unchanged for RENAME input - * - must be specified for DELETE - CTL for SUBMIT - none for PRINT
I/O mode	file creation mode, assumed to be ASCII ASCII for DIRECT and TYPE

Characteristics

The NFT program:

Requires LOGIN.

Destroys your core image.

Leaves your terminal at user level.

Examples

1. Copy a file from the local node to a remote VMS host. Override the /USERID specified in your SWITCH.INI file.

```
.R NFT
*COPY ROSE::/USER=PLANNI
For remote ROSE::*.*
 User-id: BARSTOW
 Account:
 Password:
 ROSE::COMMUNITY:[BARSTOW]PLANNI..2 <=
DSKC:[52,654]PLANNI
Total of 398 words in 4 blocks in 1 file at 20395 baud
```

2. Copy a file from a TOPS-20 host to a RSTS host while logged in on a TOPS-10 host. You must specify a /USERID switch for each remote host.

```
.R NFT
*COPY LILY::/USER=DAISY::PLANNING-GUIDE/USER
For remote DAISY::PLANNING-GUIDE.*
 User-id: THRING
 Account:
 Password:
For remote LILY::*.*
 User-id: 15,177
 Account:
 Password:
 LILY::SY:[15,177]PLANNI <=
DAISY::PS:[THRING]PLANNING-GUIDE..5
Total of 483 words in 4 blocks in 1 file at 5851 baud
```

3. Delete all the files with name UUOSYM from a directory on a TOPS-20 host. You must include the /USERID switch, but need not explicitly specify the directory because it is the same as the userid.

```
.R NFT
*DELETE DAISY::UUOSYM.*/USER
For remote DAISY::UUOSYM.*
 User-id: THRING
 Account:
 Password:
DAISY::PS:[THRING]UUOSYM.REL.1
 DAISY::PS:[THRING]UUOSYM.UNV.1
Total of 33 blocks in 2 files
```

4. Access a directory not your own on a remote TOPS-10 host called IRIS. Since your account on the system allows you read access to the directory, you can specify the other directory and your userid and read the directory.

```
.R NFT
*DIRECT IRIS::[17,353]/USER
For remote IRIS::[17,353]*.*
 User-id: 27,777
 Account:
 Password:
IRIS::DSKA:[1,2]DSKA.BAK
IRIS::DSKA:[1,2]DSKA1.FUL
IRIS::DSKA:[1,2]INC.BAK
IRIS::DSKA:[1,2]FUL.BAK
IRIS::DSKA:[1,2]DSKA.INC
IRIS::DSKA:[1,2]INC.MIC
IRIS::DSKA:[1,2]FUL.MIC
Total of 7 files
```

5. To access accounts with different access information on several remote nodes, set the default access information for all of them.

```
.R NFT
*SET DEFAULT ROSE::=/USER:BARSTOW:HAHA:HOHUM
*SET DEFAULT IRIS::=/USER:27,777:WRITER:FOFUM
*SET DEFAULT LILY::=/USER:15,177:SCHOLAR:FEEFI
*SET DEFAULT DAISY::=/USER
*COPY ROSE::=DAISY::FCC.ASC
For remote DAISY::FCC.ASC,*
 User-id:thing
 Account:
 Password:
                .
                .
                .
```

6. Submit a command file to the VMS command file processor on host ROSE:. You have included a /USERID switch for that host in your SWITCH.INI file so you do not have to include that switch in the command string.

```
.R NFT
*SUBMIT ROSE::ABVAX.CTL
 ROSE::COMMUNITY:[BARSTOW]ABVAX.CTL.1
Total of 1 file
```

CHAPTER 7

CONTROLLING SUBJOBS USING OPSER

Function

The OPSER program allows you to control up to 14 subjobs from your terminal. OPSER acts as the supervisor of the subjobs by passing monitor-level or user-level commands to all or to selected subjobs. OPSER can retrieve output from the various subjobs.

OPSER subjobs run on pseudo-terminals (PTYs). It performs all pseudo-terminal initialization. You provide the subjob name and either an OPSER-provided subjob number or a user-assigned name. System programs or your programs that require a dedicated terminal can be run as subjobs of OPSER. By running jobs on PTYs, OPSER maintains an I/O link between you and the running jobs.

Format

```
R OPSER
*:command
```

where: An asterisk (*) is the OPSER prompt if no subjobs are in use or if subjobs are waiting for commands. OPSER responds with an exclamation point when a subjob is running. You can enter commands whenever OPSER is operating. Each command must be preceded by a colon and may be abbreviated to a unique set of characters.

Commands to OPSER and their functions are:

Command	Function
:AUTO/hh:mm filename	Processes the named file as a list of interactive commands. The AUTO file is terminated by either an end-of-file or the operator typing a line on the console. AUTO files may call other files, including themselves. The optional /hh:mm switch sets the time to run the auto file. If this time has passed, the AUTO file runs immediately.
:AUTO/+hh:mm filename	Processes the AUTO file after the amount of time specified by the +hh:mm has elapsed.
:AUTO/>hh:mm filename	Processes the AUTO file at the next occurrence of hh:mm.

Command	Function
:AUTO/<hh:mm filename	Does not process the AUTO file if time has already gone past hh:mm.
^B	Sends ^O (CTRL/O) to the subjob.
^C	Returns you to monitor level even if you have active subjobs running. Use the :EXIT command (described below) in most cases.
:CLOSE	Closes the log file without opening a new one.
:CONTINUE	Continues processing the AUTO file after it has been interrupted by a CTRL/C. This allows you to gain control of a subjob during AUTO file processing.
:CURRENT	Displays the name of the current subjob, if defined; otherwise, displays the number of the current subjob. Output from another subjob does not affect the definition of the current subjob.
:DAYTIME	Displays the current date and time.
:DEFINE xxx=n	Associates the symbol xxx as the name for subjob n. The symbol B is reserved for the subjob running BATCON.
:DEVICE dev:log:n	Assigns the device (dev:), and logical name (log) to subjob n. The logical name is optional, but you must include a null field if the logical name is omitted, for example, :DEVICE CDR::3. The REENTER command aborts the request.
:ERROR n,m,p	Displays only error messages. (That is, ignores nonerror messages from subjob n.) Printing resumes with the :REVIVE command.
:EXIT	Exits to the monitor if subjobs are not in use; otherwise, give a list of those that are running. This should be used instead of CTRL/C, because :EXIT does not return your job to monitor level if there are any active subjobs. (Also refer to :MONITOR.)
:FREE	Displays the first free subjob number.
:HELP	Displays text that briefly explains OPSER commands.
:JCONT n	Continues the specified currently halted job.
:KILL n,m,p	Logs out the specified subjobs. This is identical to :KJOB.

Command	Function
:KJOB n,m,p	Logs out the specified subjobs, saving all files.
:LOGIN proj,prog	Logs in a new subjob. If you do not type a project-programmer number, OPSER assumes your project-programmer number.
:MONITOR	Exits to the monitor, even if subjobs are running.
:MSGLVL n	Determines whether the response to the :WHAT command includes the JOBSTS bits. If n=Ø, the bits are included. If n=1, they are eliminated. If you do not specify n, the JOBSTS bits are not included.
:QUEUE <line>	Initiates the first free subjob and sends the typed-in line to the system queue manager.
:RESOURCES	Displays the list of the available system resources.
:REVIVE n	Resumes normal echoing of output from subjob n (that is, clears the effects of :SILENCE, :TSILENCE, and :ERROR for subjob n).
:SCHED	Displays the schedule bits as set by the operator.

Bit	Meaning
Ø	Regular timesharing.
1	No further LOGINs except from CTY.
2	No further LOGINs from remote terminals, and no answering of data sets.
4	Batch jobs only.
1ØØ	Device MOUNTs can be done without operator intervention.
2ØØ	Unspooling allowed.
4ØØ	No operator coverage.
1ØØØ	No automatic down-line loading of nodes.

:SEND	Simulates the SEND command, sending a line of text to the operator's terminal.
:SILENCE n	Suppresses all output from subjob n.
:SLOGIN proj,prog	Logs one subjob in but suppresses its response. If you omit the project-programmer number, OPSER uses yours.

Command	Function
:STOP n	Puts the specified subjob at monitor level. This is equivalent to typing two CTRL/Cs in interactive mode.
:SYSTAT x	Runs SYSTAT with argument x over the first free subjob. The argument can be any valid SYSTAT argument. (Refer to the TOPS-10 Operating System Commands Manual.) The argument is optional.
:TIME	Displays the total running time since the last :TIME command, followed by the integrated product of running time and core size.
:TLOG file-spec	Creates a log file with the specified name. If the file already exists, a message is printed to determine whether the existing file should be superseded. If not, OPSER appends the file to the existing one. Default for file-spec is OPSER.LOG on DSK:.
:TSILENCE n	Suppresses all output from subjob n (same as the :SILENCE command) but places entries into the log file.
:TTYTST	Tests this terminal by printing all the ASCII characters between octal 40 and 174, inclusive.
:WHAT n,m,p	Prints the status of the specified subjobs on the terminal. The status includes a SYSTAT with the time, the time of the last input and the last output, a listing of the JOBSTS bits depending upon the value of :MSGLVL, and the time of the next timed AUTO file.
:WHERE devn:	Prints the node number of the device's physical location.

When a subjob number or name is required in a command string (indicated by n, m, p), you can specify the subjob in any of the following ways:

- Omit it, in which case the last subjob typed into is used.
- Specify ALL, in which case all active subjobs are implied.
- Specify a decimal number, or a list of numbers separated by commas, from 0 to the OPSER limit, which designates that particular subjob number.
- Specify a name, or a list of names separated by commas, previously assigned to a particular subjob with the :DEFINE command.

Characteristics

The OPSER program:

Requires LOGIN.

Destroys your core image.

Places your terminal at user level.

Example

The following is an example of an automatic startup file.

```
.TYPE SYS:TTY4.ATO<RET>
:TLOG DSKN:OPSER4.LOG
:SLOG
:DEF L1=
:SLOG
:DEF LØ=
:SLOG
:DEF M=
:SLOG
:DEF B=
:TSILEN ALL
L1-AS LPT1
L1-R LPTSPL
L1-FREEZ
L1-MLIMIT 5ØØØ

.
```

CHAPTER 8

LOCAL FILE TRANSFER USING PIP

Function

The PIP program transfers files between standard I/O devices at the local system. It can perform simple editing and magnetic tape control operations during transfer operations.

Format

```
R PIP
* output file-spec(s)/switches = input file-spec(s)/switches
```

where: * is the PIP prompt; output file-spec and input file-spec are file specifications which may include wildcards; and = (equals sign) separates the output from the input files. You must include this, even if you omit either file specification. /switch is one or more of the options described below. Each description includes any restrictions on combining that switch with other switches.

Switch	Meaning
/A	Does not split lines between output buffers; starts each line with a new word. Used for FORTRAN ASCII input. This switch may be used with /C, /E, /G, /M, /N, /O, /Q, /S, /V, and /Z.
/B	Copies in binary mode. This switch is legal with /G, /M, /P, /Q, and /X.
/C	Deletes trailing spaces and converts multiple spaces to tabs. You can use this switch with /A, /E, /G, /J, /M, /N, /O, /Q, /S, /T, /V, /W, /X, and /Z.
/D	Deletes one or more files from the destination device. You can only specify a destination device in the command string. You may use the /X switch with /D.
/E	For card reader input, ignores card sequence numbers. In other words, this switch replaces characters in columns 73-80 with spaces. This switch can be used with the /A, /C, /G, /J, /M, /N, /O, /Q, /S, /X, and /Z switches.
/F	Gives a limited (fast) version of the directory for the specified device. You may not use any other switches with this one.

Switch	Meaning
/G	Ignores I/O errors and continue processing after issuing an error message. This switch is always legal.
/H	Copies in image binary mode. You can use /H with /G, /M, /X, and /Z.
/I	Copies in image mode. You can use this switch with /G, /M, /X, and /Z.
/J	Converts non-printing control characters to control-character format for terminal output. That is, ØØ1, <CTRL/A>, is output as ^A. /A, /C, /E, /M, /W, and /X are permitted with this switch.
/L	Lists the directory for the specified device. You may only use /Z with this switch.
(Mx)	Magnetic tape switches, enclosed in parentheses. They are listed below. You may not use /D, /F, or /U with this switch.

Switch	Meaning
(M8)	8ØØ bpi density (default value)
(M5)	556 bpi density
(M2)	2ØØ bpi density
(ME)	Even parity (odd parity is default)
(M#nA)	Advance tape reel n files. #n omitted means one file.
(M#nB)	Backspace tape reel n files. #n omitted means one file.
(M#nD)	Advance tape reel n records. #n omitted means one record.
(M#nP)	Backspace tape reel n records. #n omitted means one record.
(MW)	Rewind tape reel.
(MT)	Skip to logical end-of-tape.
(MU)	Rewind and unload.
(MF)	Mark end-of-file.

/N	Deletes line sequence numbers from an ASCII file. If tab follows the sequence number, deletes the tab also. You may use /A, /C, /E, /G, /M, /Q, /X, and /Z with this switch.
/O	Resequences or adds line sequence numbers to an ASCII file, incrementing by 1. You may use /A, /C, /E, /G, /M, /X, and /Z with this switch.
/P	Converts FORTRAN format control characters for line printer listing. You may use /B and /Z with this switch.
/Q	Lists a summary of switches on the specified device. You may not use /Q with /D, /F, /R, and /V.
/R	Renames the source file to the name of the destination file. /X may be used with /R.

Switch	Meaning
/S	Resequences or adds line sequence numbers to an ASCII file, incrementing by 1Ø. /A, /C, /T, and /Z are all valid with /S.
/T	Deletes trailing spaces from the transferred file. Keeps one space and the line termintor for an all-space line. You may use /C, /S, and /Z with this switch.
/U	Obsolete.
/V	Matches angle brackets. If there is an unmatched angle bracket, creates a file listing those lines with unmatched angle brackets. You may use /G, /M, and /Z with /V.
/W	Converts tabs to spaces. /C and /Z are legal with this switch.
/X and /DX	Copies the specified files without concatenating the files. /DX copies all but the specified files. If you omit the /X switch, PIP concatenates the files while copying. You may not use /F or /L with this switch.
/Y	Obsolete.
/Z	Zeroes the directory of the destination device. PIP attempts to delete all the files named in the directory, depending on the protection codes. You may not use this switch with /D or /R.

PIP can transfer files in either ASCII or binary mode. PIP uses the file extension in the file specification to determine which mode to use. Whenever possible, PIP transfers files in a binary mode since it is faster. The binary modes are: binary, image, and image binary.

PIP performs a specific series of tests on a file extension in order to determine the mode to use during a transfer operation. PIP looks for:

- The presence of a data mode switch. If no switch is found, PIP goes to the next test.
- The presence of a known (standard) file extension that specifies a binary mode of transfer. If no binary extensions are found, PIP goes to the next test.
- The input and the output devices specified, to determine if they are capable of handling binary data. If either of the devices cannot handle binary, the transfer is made in ASCII mode. If both devices can handle binary data, PIP goes to the next test.
- The presence of the /X switch in the command string; if it is found, the transfer is made in binary mode. If an X option is not found, PIP goes to the next test.
- The presence of commas (non-delimiters) in the command string; if commas are found, ASCII mode is indicated. If no commas are found, the transfer is made in binary mode.

Characteristics

The PIP program:

Requires LOGIN.

Destroys your core image.

Places your terminal at user level

Examples

1. Run PIP, and list your directory on your terminal.

```
.R PIP
*TTY:/L=
```

2. Transfer files from area [11,7] to your directory without concatenation.

```
*DSK:/X=DSK:[11,7]filea.rel,filea.mac
```

3. Combine all the files on the tape on MTAØ: into one file in your directory.

```
*DSK:TAPE.MAC=MTAØ:*
```

4. Rename the file MONI.MAC to MONI.CBL

```
*DSK:MONI.CBL/R=MONI.MAC
```

5. Change the directory access code of [57,123] to <222>.

```
*DSKA:[57,123].UFD<222>/R=[57,123].UFD
```

6. Transfer a file from MTA1: to MTA2: at 2ØØ bpi with even parity.

```
*MTA2:(M2E)=MTA1:(ME2)
```

7. Backspace MTAØ: to the start of the previous file. (MB) is equivalent to (M#1B).

```
*MTAØ:(MB)=
```

8. Backspace MTA2: to the start of the current file.

```
*MTA2:(M#ØB)=
```

CHAPTER 9

LISTING DISK QUOTAS USING QUOLST

Function

The QUOLST program prints the amount of disk space used and the amount left on each file structure in your search list. In addition, it prints the amount of space the file structures have left for all users. The information printed on your terminal is:

- The structure name.
- The number of blocks allocated.
- The number of blocks left in the logged-in quota, in the logged-out quota, and on the structure.

Format

```
R QUOLST
```

Characteristics

The QUOLST program:

Destroys your core image.

Leaves your terminal at monitor level.

Example

```
.R QUOLST<RET>

USER:  27,5434
STR     USED     LEFT:(IN)    (OUT)    (SYS)
DSKC:   1355      8645         3645     61995
DSKB:     Ø      10000         5000     96870

.
```

CHAPTER 10

FORMATTING TEXT FILES USING RUNOFF

Function

The RUNOFF program formats text files using commands you insert into a file. You create the file and insert the RUNOFF commands using one of the standard TOPS-10 text editors.

Format

```
R RUNOFF
*file-spec
```

where: * is the RUNOFF prompt; file-spec is a file specification with standard defaults and wildcard features. The normal extension for a file that RUNOFF processes is .RNO. The processed file has an extension of .MEM. You can queue this file to a line printer, or display it on your terminal.

The commands listed below are inserted into the text file to cause RUNOFF to perform some action. All RUNOFF commands begin with a period (.). You can abbreviate all commands.

Some commands require either numeric or text arguments. In either instance, you type the command, one space, and then the argument. When you have several commands to input, you can list all of them on one line, separating them with periods. However, if the first command has a comment or takes text as its argument, you must use a semicolon to separate the commands. Comments must be preceded by an exclamation point (!).

Command	Function
.APPENDIX "text"	Starts appendix with "text" as its name.
.AUTOPARAGRAPH	Treats leading spaces as new paragraph.
.AUTOTABLE	Treats lines without leading spaces as new paragraph.
.BEGIN BAR	Starts a change bar, which appears in the left hand margin.
.BLANK n	Skips n lines.
.BREAK	Starts a new output line.
.CENTER n	Centers the next line around column n/2.
.CHAPTER "text"	Starts chapter with text as name.

Command	Function
.COMMENT	Ignores this command.
.CONTROL CHARACTERS	Allows control characters to print in the text.
.DISABLE BAR	Ignores change bars.
.DO INDEX "title"	Outputs index with rest of line as title.
.ELSE	Changes sense of IF/IFNOT.
.ENABLE BAR	Allows change bars.
.ENDIF name	Ends conditional input.
.END BAR	Ends change bar.
.END FOOTNOTE	Ends a footnote definition.
.END LIST	Ends a list.
.END LITERAL	Ends a literal block of text.
.END NOTE	Ends a NOTE command.
.END SELECTION	Stops selection until single line prefix.
.END SUBPAGE	Stops subpage numbering (resumes page).
.FIGURE n	Makes space for n-line figure.
.FIGURE DEFERRED n	Same as FIGURE except the figure may be on next page.
.FILL	Resumes filling and justifying each line.
.FIRST TITLE	Includes title on first page.
.FLAGS ALL	Enables existing flag characters.
.FLAGS type "ch"	Changes flag character of the specified type to "ch".
.FOOTNOTE n	Starts n-line footnote.
.HEADER x	Issues "page" in case x, where x is UPPER, LOWER, or MIXED case.
.HEADER LEVEL n	Starts section at level n (1-5); rest is name.
.IF	Starts conditional input if VARIANT name.
.IFNOT name	Starts conditional input if not VARIANT name.
.INDENT n	Indents next line n spaces.

Command	Function
.INDEX	Inserts rest of this line in index.
.JUSTIFY	Resumes justifying text.
.LEFT n	Starts next line n columns from left margin.
.LEFT MARGIN n	Sets left margin.
.LIST n	Starts list of items with spacing n.
.LIST ELEMENT	Starts of item in a list.
.LITERAL n	Starts a literal block of text n lines long.
.LOWER CASE	Starts footnotes and text in lower case.
.NO AUTOPARAGRAPH	Stops autoparagraph mode.
.NO AUTOTABLE	Stops autotable mode.
.NO CONTROL CHARACTERS	Does not allow control characters.
.NO FILL	Stops fill and justify.
.NO FLAGS ALL	Disables existing flag characters except . and !.
.NO FLAGS type	Does not use flag characters of the specified type.
.NO HEADER	Suppresses page headers.
.NO JUSTIFY	Stops justifying.
.NO NUMBER	Stops page numbering.
.NO PAGING	Stops splitting into pages.
.NO PERIOD	Stops double spacing after period, exclamation point, semicolon, colon, and question mark.
.NO SELECTION	Accepts all text as input.
.NO SPACE	Suppresses space on this end of line.
.NO SUBTITLE	Suppresses subtitles.
.NOTE text	Starts indented note with heading "text" centered. If you omit "text," RUNOFF uses the heading NOTE.
.NUMBER n	Resumes page numbering at page n.
.NUMBER APPENDIX n	Sets appendix number to n.
.NUMBER CHAPTER n	Sets chapter number to n.
.NUMBER INDEX	Sets chapter number to "INDEX".

Command	Function
.NUMBER LEVEL a, b, c,...	Sets next HEADER LEVEL to a, b, c,...
.NUMBER LIST d, c	Sets list counter depth d to c.
.NUMBER PAGE n	Resumes page numbering at page n.
.NUMBER SUBPAGE ch	Sets subpage number to ch (A-Z).
.PAGE	Starts new page.
.PAGE SIZE n,m .PAPER SIZE n,m	Sets page size to n lines by m columns Sets paper size to n lines by m columns.
.PAGING	Resumes breaking into pages.
.PARAGRAPH n, v, t	Starts a new paragraph, indented n spaces, starting v blank lines below the previous paragraph, and having t as the TEST PAGE value.
.PERIOD	Double spaces after period, exclamation point, semicolon, colon, and question mark.
.PRINT INDEX	Starts printing index.
.RIGHT n	Right adjusts next line n columns left of the margin.
.RIGHT MARGIN n	Sets right margin to n.
.SELECTION string	Sets selection string.
.SKIP n	Skips n*spacing lines.
.SPACING n	Sets spacing (default=1).
.STANDARD n	Sets standard setup of width n.
.SUBINDEX	Indexes with "#" used to delimit sub-indices.
.SUBPAGE	Starts subpage numbering.
.SUBTITLE or .SUBTTL	Uses rest of line as subtitle.

While inputting your text, you have the option of including special characters to alter the case and mode operations. You type these characters immediately before the word or group of words you want to arrange. Just like RUNOFF commands, these special characters do not appear in your output after running RUNOFF. Special text characters include:

Flag Character	Function
Underscore (_)	Takes next character as text.
Circumflex (^)	Uppercases next character.
Back-slash (\)	Lowercases next character.
Number sign (#)	Treats as an expandable space.
Ampersand (&)	Underlines next character.
Less-than (<)	Capitalizes the following word.
Greater-than (>)	Indexes the following word.
Exclamation point (!)	Ends footnote or begins comment.
Period (.)	Treats what follows as a RUNOFF command.
Semicolon (;)	Used to separate multiple commands.

Characteristics

The RUNOFF program:

Requires LOGIN.

Destroys your core image.

Places your terminal at user level.

Examples

1. Use the .LIST and .LIST ELEMENT commands to create a list.

```
.NF.LS
.LE;Page numbers on every page except the first,
.LE;Spacing 1 between lines,
.LE;Fill and justify,
.LE;Tab stops 9,17,25,33,41,49,57,65,
.LE;Left margin Ø,
.LE;Right margin 6Ø,
.LE;Page size - Width 6Ø characters, Length 58 lines.
.ELS
```

   Your output would look like the following:

   1. Page numbers on every page except the first,
   2. Spacing 1 between lines,
   3. Fill and justify,
   4. Tab stops 9,17,25,33,41,49,57,65,
   5. Left margin Ø,
   6. Right margin 6Ø,
   7. Page size - Width 6Ø characters, Length 58 lines.

2. To get header levels in your text, you can insert commands in your text as follows:

```
.FLAG CAPITALIZE
.CHAPTER EXAMPLE 5
.HL 1 FIRST LEVEL OF SECTION 1
The command .<HEADER <LEVEL starts a section at the level
specified and takes the following text as the header.##The
n can be in the range from 1 to 5.
.HL 1 SECOND LEVEL OF SECTION 1
The sections are incremented by 1, and the number is
output in the form i.j.k.l.m.##If this is a chapter
oriented document, the i is the chapter number;#otherwise, the
i is the number of the .<HI 1 level.
.HL 1 THIRD LEVEL OF SECTION 1
This command acts as
.SKIP 3;.NOFILL
        .<BREAK .<TEST <PAGE 9;.<BLANK 3
.SKIP 3;.FILL
followed by the section number.##<HEADER <LEVEL<S 1 AND 2
end with a .<BREAK.##<HEADER <LEVEL<S 3, 4, AND 5 end with
a space dash space combination (_#-_#).
```

Your output would look like:

CHAPTER 1

EXAMPLE 5

1.1 FIRST LEVEL OF SECTION 1

The command .HEADER LEVEL starts a section at the level specified and takes the following text as the header. The n can be in the range from 1 to 5.

1.2 SECOND LEVEL OF SECTION 1

The sections are incremented by 1, and the number is output in the form i.j.k.l.m. If this is a chapter oriented document, the i is the chapter number; otherwise, the i is the number of the .HL 1 level.

1.3 THIRD LEVEL OF SECTION 1

This command acts as

```
.BREAK .TEST PAGE 9;.BLANK 3
```

followed by the section number. HEADER LEVELs 1 and 2 end with a .BREAK. HEADER LEVELS 3, 4, and 5 end with a space dash space combination (#-#).

CHAPTER 11

SETTING SEARCH LISTS USING SETSRC

Function

You can use the SETSRC program to change your job search list or the system search list. You must be logged in under [1,2] to create a new system search list. A search list is the order of the file structures that are to be searched whenever you implicitly or explicitly specify the generic device DSK:. The system manager originally defines the search list to include the file structures that you can access. With the SETSRC program, you can alter the search list by adding or deleting file structures.

The search list is of the form:

```
fs1:, fs2:, fs3:, FENCE, fs4:
```

where: fs is the name of the file structure.

The file structures on the left of the FENCE form the active search list and represent the generic device DSK: for your job. The active search list is a list of the file structures that the monitor searches, and the order in which the file structures are to be searched. The search goes from left to right.

The files to the right of the FENCE compose the passive search list and represent the file structures that were once in the active search list. File structures are kept in the passive search list so that quotas can be checked on a DISMOUNT or KJOB command; these structures are not searched. The FENCE is the boundary between the active and passive search lists.

You can change the job's search list by adding or deleting file structures, using the MOUNT and DISMOUNT commands. Because the SETSRC program does not create a UFD if one does not exist, use the MOUNT command to create a UFD. Refer to the TOPS-10 Operating System Commands Manual for a description of the MOUNT and DISMOUNT commands.

Format

```
R SETSRC
*command/switch
```

When the program prompt (*) appears, you can respond with any of the following commands:

Command	Function
A fs1, fs2,...	Adds one or more file structures to the existing active search list. The file structures (with any switches) are appended to the beginning or the end of the active search list according to the following specifications: o If no asterisk appears in the specifications (for example, fs1, fs2) or if an asterisk appears before the file structure names (for example, *,fs1, fs2), the file structures are added to the end of the search list. o If an asterisk follows the file structure names (for example, fs1, fs2, *,), the file structures are added to the beginning of the search list. o If the asterisk appears in the middle of the file structures (for example, fs1, *, fs2), the file structures before the asterisk are added to the beginning of the search list and the file structures after the asterisk are added to the end.
C fs1,fs2,...	Creates a new search list for this job. Any file structures in the current search list that are not in the new list are moved to the passive search list.
CP[dir]	Creates a new default directory path. You must specify the new path with this command.
CS fs1,fs2,...	Creates a new system search list (that is, the file structure search list for device SYS:). You must be logged in under [1,2] to use this command.
H	Prints information (HELP) about the available commands.
M/switch	Modifies the current search list and DSK: specification by altering the switch settings for individual file structures. This command does not add or remove file structures from the search list.
R fs1,fs2,...	Removes file structures from the search list. They are placed into the passive search list, so that on subsequent LOGOUTs or DISMOUNTs, quota limits can be checked. This command does not affect ersatz devices.

Command	Function
T	Prints the job search list.
TP	Prints the default directory path.
TS	Prints the system search list.

You can use the following switches in the SETSRC command string. Switches that modify file structures must appear immediately after the file structure name that they modify. Other switches can appear anywhere in the command string. The switches can be abbreviated as long as the abbreviation is unique.

Switch	Function
/CREATE	Allows new files to be created on the file structure. This is the default.
/LIB:[proj,prog]	Used with the C or M command only, /LIB sets the job's library directory to the UFD [proj,prog] and adds it to your DSK: specification. This means that if a file is not found in your directories in your search list, the library directory will then be searched for the file. If you only type LIB:[PPN] to SETSRC, it interprets this as M/LIB.
/NEW	Adds the directory [1,5] to your SYS: specification. This means that when the system directory is searched, the directory [1,5] will be searched before the directory [1,4]. This switch can be typed in directly as a command by omitting the C or M command and the slash (NEW is equivalent to M/NEW).
/NOCREATE	Does not allow new files to be created on the file structure when you specify DSK:, but allows files to be superseded. Files can be created on the file structure if you specify the file structure name explicitly. You may specify this switch as /N.
/NOLIB	Removes the library directory from your DSK: specification. This switch is only valid with the C or M command.
/NONEW	Removes the [1,5] directory from your SYS: specification. This switch is only valid with the C or M command.
/NOSCAN	Cancels the scan switch for the directory path. You can use this switch only with the CP command. If you type NOSCAN at the prompt, SETSRC interprets it as CP[dir]/NOSCAN.
/NOSYS	Removes the SYS: specification from your DSK: specification. This switch is only valid with the C or M command.

Switch	Function
/NOWRITE	Does not allow writing on the file structure for this job (that is, the file structure is read-only). You may specify this switch as /R.
/SCAN	Sets the scan switch for the directory path. When you search for a file, scanning allows the search to include higher-level SFDs and the UFD. You can use this switch only with the CP command. If you type SCAN at the prompt, SETSRC interprets it as CP[dir]/SCAN.
/SYS	Adds the SYS: specification to your DSK: specification. If a file cannot be found in your directories in your search list or in your library directory (if /LIB:[proj,prog] has been specified), the system directory [1,4] will then be searched for the file. This switch can be typed in directly as a command by omitting the C or M command and the slash. For example, SYS is equivalent to M/SYS.
/WRITE	Allows writing on the file structure. This is the default.

Characteristics

The SETSRC program:

Places your terminal at user level.

Destroys your core image.

Example

Your search list is defined as DSKB:.

```
.R SETSRC<RET>
*T<RET>
*DSKB:, FENCE
```

Add DSKA: to the end of the search list.

```
*A DSKA:<RET>
```

Your search list is now defined as DSKB:,DSKA:.

```
*T<RET>
DSKB:,DSKA:,FENCE
```

Add DSKC: to the beginning of the search list.

```
*A DSKC:,*<RET>

*T<RET>

DSKC:,DSKB:,DSKA:,FENCE
```

Remove DSKA: from the search list.

```
*R DSKA:<RET>

*T<RET>

DSKC:,DSKB:,FENCE,DSKA:
```

Disable writing on DSKB:.

```
*M DSKB:/NOWRITE<RET>
```

Set your library directory to [27,500] and add it to your DSK: specification.

```
*M/LIB:[27,500]<RET>
```

Add SYS: to your search list.

```
*SYS<RET>

*T<RET>
/LIB:[27,500]/SYS DSKC:,DSKB:/NOWRITE,FENCE,DSKA:
```

Your DSK: and SYS: specifications are listed first, followed by your search list.

```
*TS<RET>
```

The system search list is defined as DSKA:,DSKB:,DSKC:.

```
*DSKA:,DSKB:,DSKC:

.
```

CHAPTER 12

DISPLAYING SYSTEM STATISTICS USING SYSDPY

Function

The SYSDPY program allows you to display system status and the status of network links and user jobs, formatted for your particular type of terminal. SYSDPY features a display-oriented output format with many commands for controlling the types of information to include in the display.

When you first start the SYSDPY program, it displays the status of the user jobs and the system statistics. It is ready to receive user commands at any time. Your commands are not echoed on the screen, but are reflected in the changes in the display.

Format

To start the SYSDPY program, type the R command followed by the special version of SYSDPY that is designed for your type of terminal. The different version of SYSDPY and the terminal types for which they are designed are:

Version	Terminal
SYSDPA	DIGITAL VT05A
SYSDPB	DIGITAL VT05B (2400 baud)
SYSDPY	DIGITAL VT06 (Datapoint 3300)
SYSVBX	DIGITAL VB10C graphics display
SYSV50	DIGITAL VT50
SYSV52	DIGITAL VT52
SYSV61	DIGITAL VT61
SYSANS	DIGITAL VT100 or other ANSI terminal
SYSDLT	Delta Data Telterm
SYSHLZ	Hazeltine 2000

Any unprivileged user can run SYSDPY, but the output of certain system statistics is restricted to privileged jobs only. If you are logged in as [1,2], or your job has SPY privileges, you can use all available SYSDPY commands.

When SYSDPY first starts running, it displays the normal job and system status (equivalent to the N command). At any time, you can type any of the one-letter commands described below, which change either the type of information displayed, or allow you to control the display of information. The file DOC:SYSDPY.MAN contains a full description of the information in the various displays. You do not need to press RETURN after you type a SYSDPY command. To exit from SYSDPY, type <CTRL/Z> or <CTRL/C>.

If you need help, type H. This either lists a help file (SYS:SYSDPY.HLP, if it exists) or prints a short listing of available commands.

Commands to SYSDPY are:

A Changes SYSDPY's normal scroll setting to no-scroll. SYSDPY usually scrolls through the display, advancing one screenful each update pass. (Refer to the + and - commands.)

C Displays the DECnet link status for all open links on the system.

E Displays Ethernet status. This includes all Ethernet channels, all KLNI controllers, and enabled protocol types. The E command summarizes datagram traffic and the free queue errors.

F Lists file system statistics for each disk unit in the system. This information includes I/O counts, error summaries, structure membership, and a summary of swapping units.

H Lists the help text.

I Lists incremental statistics, which are changes in certain values since the last update cycle. The values incremented are: system uptime, job runtimes, disk reads and writes, CPU statistics, network I/O (byte) counts, TTY I/O counts, and network message counts. A + (plus sign) immediately preceding the uptime value indicates incremental mode.

J Lists jobs only, without any system statistics. The jobs are listed in columns.

K Displays CI network information, including open paths to nodes on the CI network, packet transmission and reception counts, and port recoverable error counts.

L Writes the contents of the screen to the file LPT:SYSDPY.LOG[-]. SYSDPY logs the screen each time it is updated. If this log file already exists, SYSDPY appends the new data to it. A form feed separates each screen. Typing <CTRL/Z> to SYSDPY closes the file.

M Lists normal job data and an expanded memory summary showing both virtual and physical job memory usage. The M job display does not show system statistics.

N Lists the default statistics, which include a column of job status information, and a column of system status information. Some of the system statistics listed are CPU idle and lost time, and available disk structures.

O Suppresses statistics from [1,2] jobs for the J, N, and M displays. A second O command resumes display of [1,2] jobs.

Q Lists the system queues, just as the QUEUE program does, but in DPY mode. This command requires GALAXY Version 4 or later.

R Refreshes the entire screen immediately. SYSDPY automatically refreshes the screen at various intervals, depending on the terminal in use. The R command resets the automatic refresh counter.

S — Changes the SYSDPY display from the default to the disk reads, disk writes, and the user name for all jobs listed in the N display. SYSDPY resumes displaying system statistics when you type the S command a second time.

T — Displays ANF network topology and the NCL numbers associated with each node. This display requires PEEK or SPY privileges.

V — Attempts to lock SYSDPY in memory and run it in a high priority run queue (HPQ). In addition, SYSDPY updates the screen once per second, unless you previously set the update time to another value (using the W command). A second V command clears the lock and HPQ setting, and restores the update time to ten seconds. If you issued a SET HPQ command before running SYSDPY, the V command locks the job, but doesn't change the HPQ.

SYSDPY automatically clears the V state after 1000 update cycles, or if you issue a Q command. The system does not issue an error message if SYSDPY fails to lock or run in HPQ. This command requires LOCK or HPQ privileges.

nW — Sets the wait time between screen updates to n seconds. The default update time is ten seconds, and one second for the V display. You may specify n as any number between 0 and 60. Zero means one clock tick. If you do not specify a time, SYSDPY assumes the default wait time of ten seconds.

Z — Lists all known LAT servers and some LAT traffic statistics.

\ — Displays ANF network statistics. This information includes the number of network messages sent and received according to message type (such as DATA or NEIGHBORS), a histogram of the data messages sent and received as a function (log base 2) of the data message size, and network free core usage.

* — Displays the DECnet node status for all nodes in the DECnet network. Use the A command to change the display from all network nodes to just those nodes with active links. Use the ^ command (described below) to change the display from all known nodes to only those nodes with which the local node has had contact.

n+ — Advances the screen by n lines or n jobs, depending on the current display. If you do not specify n, SYSDPY advances one screen. When you type the + command, you clear auto-scroll (refer to the A command).

n- — Scrolls the screen backwards by n lines or jobs, depending on the current display. If you do not specify n, SYSDPY reverses one screen. When you type the - command, you clear auto-scroll (refer to the A command).

! — Displays idle jobs or DECnet nodes, depending on the current display. Typing the ! command again stops display of idle jobs or nodes.

— Changes the listing in the "Where" column of the job display from the PTY number to the controlling job number of a job being controlled by another job.

% — Changes the listing in the "Runtime" column of the job display from the actual runtime to the percentage of the CPU that the runtime represents.

Eliminates certain statistics from the display. For the N display, the first part of the system statistics are eliminated, for a DECnet display, non-valid delay time nodes are not shown, and for the F display, error summary information is not included.

<ESC> Freezes the current screen until you type another command.

SPACE Updates the screen display immediately, but does not change any SYSDPY parameters.

Characteristics

The SYSDPY program:

Destroys your core image.

Requires LOGIN.

Places your terminal at user level.

Example

Run SYSDPY on a VT100 terminal to examine job and system statistics. SYSDPY continually scrolls through this information; you can type a command at any time to alter the display.

```
.R SYSANS<RET>

Job  Who  Where What  #P State Runtime  This is RN212A DEC10 TRISMP
17 10,6016 114 STECO  100 RN   00:00.80 dd-mmm-yy hh:mm:ss UP:01:04:29
18 [OPR]   J4  FAL    181 HS S 00:00.00  (+) ID OV LS  UPTIME   CTX UUO DBL CSH
19 [OPR]  D424 NML    157 HB V 00:00.00 CPU0  0 47  0 00:11.36   11 139   0  12
20 [OPR]  D424 NETMAI 58 ED    00:00.00 CPU1  0 16  0 00:11.35    4  54   0   4
21 [OPR]   31  OPR    96 HB S  00:00.00 CPU2 (Not Running)
22 [OPR]  D424 PSTHRU 14 HB S  00:00.00      DSKI DSKO SWPI SWPO MTAI MTAO
23 [OPR]  D424 MIC    21 HS    00:00.00 CPU0  103   21  260   58    0    0
24 [OPR]  D424 MIC    21 HS#   00:00.00 CPU1   47    0   78  317  144    0
25 30,5570 120 NETWOR 28 ^C S  00:00.00 ANF In:167  Out:787  Cor:2603
26 [OPR]  D424 DTELDR 17 HS    00:00.00 DCN In:248  Out:199  Blk:10/80=13%
27 [OPR]   J4  FAL    185 HS   00:00.00 ETH In:1178 Out:151  Dgm:12/2
28 10,6026 124 RL211A 505 ^C S 00:00.00 TTY In:6    Out:498  Cnk:1775/2660=67%
29 [SELF]  123 MS     326 HB   00:00.00 IPCF S:0    Out:3    W/P:0/0
30 [SELF]  126 SYSANS 24 RN+   00:00.20 Mem:512/1965 Shr:550 JRN:5/5/32
31 30,6003 125 D6TQ3  84 ^C S  00:00.00 Use:3052/4741 Swp:2756/39468 ASR:.24
32 10,6026 127 DIP    37 ^C S  00:00.00 KSYS:+1D10:45 HDE:19 POK:41/8
33 30,5730 32  DTECO 455 TINV  00:00.26 Job:39/100 Det:16
34 10,6062 121 DIRECT 66 ^C S  00:00.00 Struc  Mnt  Free    Struc  Mnt  Free
35 10,701  J13 MACRO  137 RN   00:04.88 BLKX   10  16905    RENG   2   142420
37 10,6062 132 DTECO  123 ^CNS 00:00.00 DSKA   12  7580     DSKP   3   205510
38 10,6036 4   STECO  171 RN   00:00.21 AP10   1   120165   DSKC   16  74240
52 [OPR]   115 SYSANS 19 HS+   00:00.25 BLKK   13  111930   DSKR   1   191120
53 [OPR]   116 OPR    96 HB S  00:00.00 DSKZ   0   554173   BLKY   8   101535
```

Now type the E command to SYSDPY to examine Ethernet status. When you type the command, it does not echo on your terminal.

```
E
```

```
Ethernet Status of RL226A DEC1Ø Development dd-mmm-yy hh:mm:ss UP:Ø5:ØØ:46

Chan/Kont      State       E-Net Address          DgmXmt      DgmRcv
ETH-Ø          Online    AA-ØØ-Ø4-ØØ-6E-1C         35Ø48      1Ø7327
  NI-Ø         Online    AA-ØØ-Ø3-Ø3-ØØ-22         34395      1ØØ269
  NI-1         Online    AA-ØØ-Ø3-Ø3-ØØ-13           653        7Ø58

Protocol          State     Kont      User          DgmXmt      DgmRcv     FQE
  6Ø-Ø4 LAT       Online    NI-Ø    System          34365       97Ø26       5
  9Ø-ØØ Loopback  Online    NI-Ø    System              Ø           2       Ø
  6Ø-Ø2 RmtCon    Online    NI-Ø    System             3Ø        3239       Ø
  -Inf-           Online            Job 17 Ctx 1        Ø           Ø       Ø
  6Ø-Ø1 DNA/MOP   Online    NI-Ø    Job 17 Ctx 1        Ø           2       Ø
  6Ø-Ø3 DECnet    Online    NI-1    System            653        7Ø58       3
  -Inf-           Online            Job 23 Ctx 1        Ø           Ø       Ø
```

Exit from SYSDPY by typing <CTRL/Z>.

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