Using HP E2080A LIF Utilities for the PC

HEWLETT PACKARD

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Contents

1

Introduction

HP E2080A, LIF Utilities for the PC, consists of eight LIF file-handling utilities, all of which are provided by a single MS-DOS application program named "LIFUTIL.EXE." This program enables you to access LIF (Logical Interchange Format) disks from your PC. The program is menu driven, and all eight utilities are accessible from the Main Menu. The utilities are: "LIF to DOS Copy," "DOS to LIF Copy," "LIF Catalog," "LIF Purge File," "Zero LIF Disk," "LIF Disk Status," "LIF Hex Dump," and "LIF Initialize." These utilities are also accessible from the DOS command line using batch-mode syntax (refer to appendix A).

The LIFUTIL program is provided on both a 3.5-inch and a 5.25-inch flexible disk. Just use the disk that fits in your PC disk drive. A "README" file is included on each program disk. Read this file for additional information. (Execute `TYPE A:README` from the command line.)

Equipment Required

You can run the LIFUTIL program on any of the HP Vectra PCs, an IBM PC XT or AT, or an equivalent compatible PC. Your PC must have at least 256 KB of RAM (random access memory), and must have MS-DOS (version 3.0 or later) installed.

You will need to have at least two disk drives (source and destination) in order to use the copy commands. A typical setup would be one flexible disk drive (drive A:) and one hard disk drive (drive C:). Your PC's internal 5.25-inch and 3.5-inch flexible disk drives are fully supported for LIF disk access. With LIFUTIL, you can access 5.25-inch LIF disks using either a 360 KB or 1.2 MB 5.25-inch flexible disk drive. You can also access 3.5-inch LIF disks using either a 720 KB or 1.44 MB 3.5-inch flexible disk drive.

In addition, you can access 3.5-inch LIF disks (but not 5.25-inch LIF disks) using an external HP-IB flexible disk drive that uses the CS80 or SS80 protocol (for example, the HP 9122C or the HP 9153C). The LIFUTIL program does not support older disk drives that use the Amigo protocol (for example, the HP 9121A). The external disk drive must be connected using an HP 82335A HP-IB Interface, an HP 82990A HP-IB Interface, or an HP 88500A Disk/Tape Interface. (Non-HP IEEE-488 "GPIB" cards are not supported.) The program also allows you to access external hard disk volumes (CS80/SS80 only) through the HP-IB.

Note

If you are using an HP-IB disk drive for LIF disk access, you cannot use that same drive for DOS disk access.

The LIFUTIL program provides a driver that supports LIF disk access through the HP 82335A HP-IB Interface. *However, you cannot otherwise access disk drives using the HP 82335A.* Use the HP 88500A Disk/Tape Interface if you need general purpose access to an HP-IB disk drive.

If your PC is equipped with a mouse, you can use it with LIFUTIL. You can use either a Vectra HP-HIL mouse or a Microsoft compatible mouse with the LIFUTIL program in interactive mode, but no mouse is required.

Supported LIF Media

The following LIF disk media are supported by the LIFUTIL program. (Note that Hewlett-Packard 3.5-inch media are color coded as to capacity.)

- 5.25-inch.
- 3.5-inch SSDD (single-sided, double-density) — the "blue" HP media.
- 3.5-inch DSDD (double-sided, double-density) — the "gray" HP media.
- 3.5-inch DSQD (double-sided, quad-density) — the "black" HP media.

All 5.25-inch LIF disks may be accessed using any 5.25-inch internal PC flexible disk drive (360 KB or 1.2 MB).

All 3.5-inch LIF disks may be accessed using the 1.44 MB internal PC flexible disk drive, including the DSQD ("black") disks. However, for the 720 KB internal PC disk drive, only the SSDD ("blue") and DSDD ("gray") 3.5-inch flexible disks are supported.

If you have connected an external, CS80/SS80-protocol HP-IB disk drive using an HP-IB Interface, the LIFUTIL program will support any LIF media supported by the disk drive itself. For example, The HP 9122C and HP 9153C Disk Drives support all 3.5-inch flexible disk types, including the DSQD ("black") disks. *You can also access hard disk volumes on the HP 9153C.* For information about the media types supported by other CS80/SS80 HP-IB disk drives, refer to your disk drive owner's manual. Note that 5.25-inch disk media are supported only for the internal PC drives, *not* for external HP-IB disk drives.

The 5.25-inch and single-sided 3.5-inch media are supported only for 256-byte sectors. The double-sided 3.5-inch media are supported for both 256-byte and 1024-byte sectors. The following table shows the capacities of each type:

LIF Disk Type	Capacity at 256 bytes/sector	Capacity at 1024 bytes/sector
5.25-inch	264 KB	Not supported
3.5-inch SSDD (blue)	264 KB	Not supported
3.5-inch DSDD (gray)	616 KB	770 KB
3.5-inch DSQD (black)	1232 KB	1540 KB

Note

Single-sided 3.5-inch flexible disks (the blue HP disks) can be read and written to using an internal PC 3.5-inch disk drive. However, formatting (initializing) such disks in an internal drive is not recommended. If you must format single-sided 3.5-inch flexible disks, an external HP-IB disk drive is recommended. *There is no problem, however, in formatting double-sided flexible disks in the internal PC drives.*

Installing the Program

To install the LIFUTIL program on a hard disk, just copy the program from the program flexible disk to the appropriate directory. If the directory doesn't exist, you'll need to create it first with the MS-DOS "MKDIR" command. For example, the following commands create the directory "C:\LIF" and copy the program from drive A: to that directory:

```
MKDIR  C:\LIF
COPY  A:\LIFUTIL.EXE  C:\LIF
```

You don't have to install the LIFUTIL program since you can execute the program directly from flexible disk. However, you should make a "working" copy to use for that purpose and store your master disk in a safe place.

Starting the Program

Once you have copied the program to your hard disk (or "working" disk), you can run the program either in interactive (menu-driven) mode or in batch mode. In either case, you should run the LIFUTIL program under MS-DOS, not under Microsoft Windows. *If you are using Windows, you should exit to MS-DOS and reboot your PC before starting LIFUTIL.*

To start the program in interactive mode, just change to the appropriate directory and execute the LIFUTIL program without parameters. For example:

```
CD  C:\LIF
LIFUTIL
```

The Main Menu will appear. The Main Menu offers eight interactive LIF utilities, which are described in chapter 2.

If you want to run the program from a flexible disk in drive A:, execute:

```
A:LIFUTIL
```

Once the Main Menu appears you can remove the program disk and use drive A: either for LIF disks or for MS-DOS disks.

If you want to run the program in batch mode, you will need to follow the program name "LIFUTIL" with a command name and a list of parameters. The syntax and functionality of the batch mode commands are described in appendix A.

File Name Considerations

The LIFUTIL program copies files from one file system to another, converting file formats as required. But file names must also be converted in many cases because the MS-DOS file system uses different file name rules than the LIF file system. Also, wild card characters can be used in file names for many of the LIF utilities.

MS-DOS and LIF File Names

MS-DOS file names consist of up to eight alphanumeric characters followed by an optional "dot-extension" of up to three alphanumeric characters. The extension, if present, is separated from the prefix by a period. All alpha characters are "case-folded" into uppercase characters.

LIF file names consist of up to 10 characters, with no file name extensions. LIF file names are "case-sensitive." That is, both uppercase and lowercase characters may be used to make different file names.

These different file name conventions present a challenge when you are copying files from one file system to the other. For example, the following are all valid LIF file names. (They are all unique and may exist in the same volume):

```
DATAFILE
Datafile
DATAFILE01
DATAFILE02
```

The LIFUTIL program can convert file names automatically (the options are described later). Using the default options, LIFUTIL will modify the previous four LIF file names to provide the following DOS file names:

```
DATAFILE
DATAFILE.A
```

```
DATAFILE.01
DATAFILE.02
```

Note that the file name "Datafile" is case-folded to "DATAFILE", but the letter "A" is added to make the DOS file name unique.

Wild Card Characters and Range Specifications

For most commands, if you specify a file name in the *source* parameter, you can include wild card characters and range specifiers in the file name. However, you cannot include wild card characters or range specifiers in *destination* file names.

Wild Card Characters

The standard MS-DOS wild card characters ("?" and "*") are used for both LIF and DOS file names. The question mark ("?") matches any single character. For example, "700,1:DATAFILE??" would match the LIF files named "DATAFILE01", "DATAFILE02", and "DATAFILEAB" (but not "DATAFILE" or "DATAFILEA") on the disk in drive "700,1:". The asterisk ("*") matches any number of characters, including no characters at all. For example, "A:\DATAFILE.*" would match the DOS files named "DATAFILE.01", "DATAFILE.02", "DATAFILE.A", and "DATAFILE" on the disk in drive A:.

Range Specifiers

You can specify a range by including [*lower_limit-upper_limit*] in a file specifier, where *lower_limit* and *upper_limit* are single ASCII characters indicating the lower and upper limits of the range. Any character that falls within the limits matches, but the range is inclusive and consecutive. For example, the file specifier "B:DATA[0-9][0-9]" matches all files named "DATA00" through "DATA99" on the disk in drive B:. The file specifier "A:FILE[W-Z]" matches "FILEW" through "FILEZ", inclusive, on the disk in drive A: (but not "FILEA"). If the disk in drive A: is a DOS disk, "FILEw" would also match due to case-folding. However, for a LIF disk "FILEw" would not match.

2

The User-Interactive LIF Utilities

In the user-interactive, menu-driven mode the LIFUTIL program allows you to access eight LIF utilities from the Main Menu. This chapter describes what each utility does. But first, let's look at how the user interface works.

Using the Menu-Driven User Interface

The Main Menu appears when you execute "LIFUTIL" from the MS-DOS command line with no parameters. From the appropriate directory, execute:

`LIFUTIL` (Enter)

and the following screen will appear:

```
Hewlett-Packard LIF Utilities for the PC  Version A.00.00
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                              MAIN MENU

   LIF to DOS Copy
          Copy LIF file(s) or an entire LIF disk to a DOS disk/directory.
   DOS to LIF Copy
          Copy DOS file(s) or an entire DOS directory to a LIF disk.
   LIF Catalog
          Catalog a LIF disk or selected files in HP BASIC format.
   LIF Purge File
          Purge LIF file(s) from a LIF disk.
   Zero LIF Disk
          Reinitialize a LIF directory without reformatting the disk.
   LIF Disk Status
          Display LIF disk type/characteristics and disk usage statistics.
   LIF Hex Dump
          Perform hexadecimal dump/edit of a LIF disk or file.
   LIF Initialize
          Initialize disk in HP LIF format.

Move the highlight to the desired function using the cursor keys or a mouse.
Press [Enter] to select the function or press [Esc] to exit this program.
```
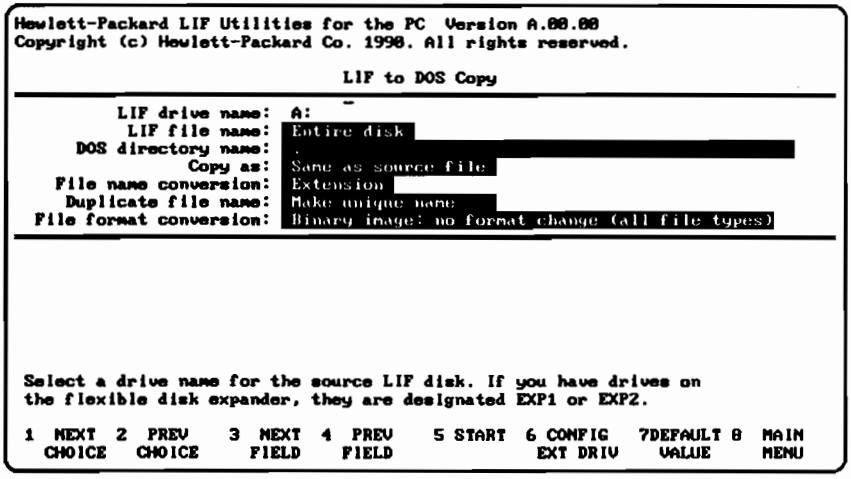

To select a utility, move the highlight to the appropriate field using the ▲ and ▼ cursor-control keys. Then press Enter to start the utility. If you are using a mouse, move the mouse cursor to the appropriate field and press either mouse button once to select the utility, a second time to start the utility.

To exit the LIFUTIL program from the Main Menu, press the Esc key.

Filing Out Forms

Each of the eight utilities displays a menu-driven **form,** which you can fill out using the cursor-control keys, the function keys (F1 through F8), and optionally, a mouse. To see how this works, let's look at the first utility, "LIF to DOS Copy." When the Main Menu appears, the "LIF to DOS Copy" field is already highlighted, so just press Enter to start the utility. The following form will appear:



You can fill out the "LIF to DOS Copy" form by using a menu-driven user interface, which is consistent from one utility to the next. For each utility, the form consists of several **fields.** You can move from field to field using either the ▲ and ▼ cursor-control keys or a mouse, just as in the Main Menu. You can also use the NEXT FIELD and PREV FIELD function keys (F3 and F4).

To return to the Main Menu, press MAIN MENU (F8).

There are two types of fields in the LIF utility forms:

Multiple Choice: If the NEXT CHOICE and PREV CHOICE (F1 and F2) function key labels appear when you highlight a field, that field is multiple choice. *You cannot enter a new value from the keyboard in a multiple choice field.* You can select one of a list of choices using the NEXT CHOICE and PREV CHOICE keys, or you can accept the default.

Keyboard Entry: If the the NEXT CHOICE and PREV CHOICE function key labels don't appear when you highlight a field, that field is a keyboard entry field. You can type in an appropriate value, or accept the default value.

For both types of fields, you can press DEFAULT VALUE (F7) at any time to return to the original value. When you have filled out all fields (or accepted default values), you can start the utility ("LIF to DOS Copy" in this case) by pressing START (F5).

Note

If you have connected any external disk drives to HP-IB interfaces, press CONFIG EXT DRIV (F6) to configure the external drives. Once configured, you can select these drives by highlighting the "LIF drive name" field and pressing NEXT CHOICE and PREV CHOICE. You only need to configure the external drives once (unless you connect additional drives, or disconnect them) during a LIFUTIL session.

Mouse Hints

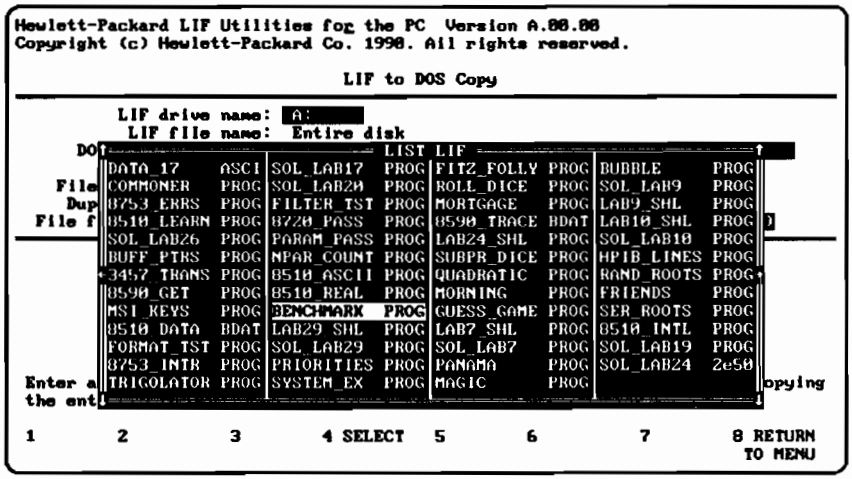
If you are using a mouse, you can select a field by moving the mouse cursor to that field. Press either mouse button once to select the field. If the field is a multiple choice field (NEXT CHOICE and PREV CHOICE are present), you can press the left mouse button for NEXT CHOICE and the right mouse button for PREV CHOICE. You can also execute function keys by moving the mouse cursor to the function key label, and then pressing either mouse button.

Note that using a mouse does not in any way interfere with the other aspects of the user interface. You can use the cursor-control keys and function keys, whether or not you are using a mouse.

Listing and Selecting Files from a Window

In several of the utilities you can list all of the files on the source disk or directory using a "pop-up" window. You can then select one of the files.

For example, "LIF file name" is a keyboard entry field. However, when this field is highlighted you can press LIST DIR or DISK ((F6)) to display the contents of the LIF disk. The "pop-up" window appears with instructions. Press NEW DISK ((F6) again) to read the contents of the disk and display them in the window. (You can save a little time by pressing SAME DISK, (F4), if you have previously displayed the contents of that disk.) The following screen is typical:



You can use the cursor keys or a mouse to select a file from the list. For example, move the highlight to the program named "BENCHMARK" and press SELECT ((F4)). The file name "BENCHMARK" will appear in the "LIF file name" field.

If you are using a mouse, you can move the mouse cursor to the desired file name and press either mouse button once to move the highlight, and a second time to select the file. You can also move the mouse cursor to any of the "arrows" around the perimeter of the window, and then press a mouse button to move the highlight in the direction of the arrow.

Note

There may be more than four columns in the list of files. If there are, you can "scroll" the list to the left and right within the window by using the cursor-control keys or a mouse.

LIF to DOS Copy

To start this utility from the Main Menu, press Enter with the highlight on the "LIF to DOS Copy" field. The following screen will appear:

```
Hewlett-Packard LIF Utilities for the PC  Version A.00.00
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                          LIF to DOS Copy

          LIF drive name:  A:
           LIF file name:  Entire disk
      DOS directory name:  .
                 Copy as:  Same as source file
  File name conversion:    Extension
  Duplicate file name:     Make unique name
  File format conversion:  Binary image: no format change (all file types)




Select a drive name for the source LIF disk. If you have drives on
the flexible disk expander, they are designated EXP1 or EXP2.

1 NEXT CHOICE  2 PREV CHOICE  3 NEXT FIELD  4 PREV FIELD  5 START  6 CONFIG EXT DRIV  7DEFAULT VALUE  8 MAIN MENU
```

The "LIF to DOS Copy" utility form has seven fields. Let's look at these fields and the choices you have.

LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

LIF file name: This is a keyboard entry field that allows you to type in a file name or accept the default ("Entire disk"). You can include wild card characters and range specifiers in the file name — all files that match will be copied. In addition, you can list all files on a LIF disk in a "pop-up" window and select an individual file. Press `LIST DIR or DISK` (F6) and follow the instructions in the window.

DOS directory name: This is a keyboard entry field that allows you to type in the destination directory for the copy operation, or accept the "current directory" (the one where LIFUTIL is installed).

Copy as: This is a keyboard entry field that allows you to type in the name for the DOS copied file, provided that you are copying a single file. Otherwise, the DOS file name is made from the LIF file name. You can use "COM1", "COM2", "LPT1", or "LPT2" in the "Copy as" field, but only if the output is a DOS text file.

File name conversion: This is a multiple choice field that allows you to choose either "Extension" (the default) or "Truncate." The former causes the ninth and tenth characters in the LIF file name, if present, to be used as a DOS file name extension. The latter option truncates all characters past the eighth.

Duplicate file name: This multiple choice field gives you three options:

Make unique name — The default. — A letter from "A" through "Z" is appended to the name when necessary to avoid duplicate names.

Skip duplicate file — If the proposed file name already exists in the destination directory, the current file is not copied.

Overwrite file — If the proposed file name already exists in the destination directory, the current file overwrites the existing file with that name.

File format conversion:

This multiple choice field gives you five options:

Binary image: no format change (all file types) — The default. — Each source file is copied byte-by-byte without any file format change. The source file can be any LIF file type.

Binary image: DFS file type header (all types) — Each source file is copied byte-by-byte without any file format change, except that a header consisting of two 256-byte blocks is added at the beginning of the file. The header contains file type and other information to make the resulting file compatible with the HP BASIC Language Processor DFS binary. The source file can be any LIF file type. (HP BASIC HP-UX type files are copied without any header.)

DOS text (ASCII, HP-UX, S80 DATA, Pascal TEXT) — Each source file is copied in the MS-DOS text file format. Each string is terminated with a carriage return/line feed (CR/LF) sequence. The resulting files can be accessed from MS-DOS applications that expect text files. The source file must be an HP BASIC ASCII or HP-UX file, a Series 80 DATA file, or a Pascal Workstation TEXT file.

Null-terminated text (ASCII, HP-UX, S80 DATA) — This option copies each source file in the MS-DOS text file format, but each string is terminated with a null character. The source file must be an HP BASIC ASCII or HP-UX file, or a Series 80 DATA file. This option results in a text file that is compatible with the HP-UX operating system.

DOS text (BDAT written with FORMAT ON) — This option converts the data from an HP BASIC BDAT file (written with FORMAT ON) to the standard MS-DOS

text file format. The source file must be of the HP BASIC BDAT file type and must have been written with the FORMAT ON option.

Note

If a source file is not of the appropriate LIF file type for the selected file format conversion option, that file will be skipped and will not be copied. An appropriate message will appear on the screen.

DOS to LIF Copy

To start this utility, move the highlight on the Main Menu to the "DOS to LIF Copy" field and press Enter. The following screen will appear:

```
Hewlett-Packard LIF Utilities for the PC  Version A.00.00
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                          DOS to LIF Copy

      DOS directory name:
           DOS file name:  Entire directory
           LIF drive name:  A:
                 Copy as:  Same as source file
    File name conversion:  Prefix & Extension
     Duplicate file name:  Make unique name
  File format conversion:  Binary image: no format change as BASIC HP-UX
     How to use LIF disk:  Append to end of disk

Enter the source DOS drive/directory name or use default if the source is
the current directory. The source directory must exist.

1       2          3 NEXT  4 PREV    5 START  6          7DEFAULT 8 MAIN
                    FIELD   FIELD                         VALUE     MENU
```

The "DOS to LIF Copy" form has eight fields. Let's look at these fields and the choices you have:

DOS directory name: This is a keyboard entry field that allows you to specify the source DOS disk or directory to copy files from. You

can type in a valid DOS directory name (for example: "A:" or "C:\BLP") or you can accept the default ("." or *current directory*).

DOS file name: This a keyboard entry field that allows you to type in a DOS file name or accept the default ("Entire directory"). You can include wild card characters and range specifiers in the DOS file name — all files that match will be copied. In addition, you can list all files and subdirectories in the current directory using a "pop-up" window. Press `LIST DIR or DISK` (F6) and follow the instructions in the window.

File names and subdirectories are listed in the "pop-up" window, with subdirectory names enclosed in brackets "[ ]". You can select either a file or subdirectory from the list. If you select a subdirectory, the "DOS file name" field will remain "Entire directory," but the "DOS directory name" field will change accordingly.

LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

Copy as: This is a keyboard entry field that allows you to type in a name for the destination (LIF) file, provided that you are copying a single file. Otherwise, the LIF file name is created from the DOS file name.

File name conversion: This is a multiple choice field that allows you to select a method to convert DOS file names to LIF file names. The following choices are available:

Prefix & Extension — The default. — This option creates a LIF file name for the destination file by concatenating the DOS file name extension characters to the prefix characters. (A period is not a legal character in a LIF file name.) If the resulting name is longer than 10 characters, only the first 10 characters are used.

Truncate — This option creates a LIF file name by truncating any extension characters present in the DOS file name.

Duplicate file name: Truncation may result in a file name that already exists on the destination disk. This field gives three choices for handling duplicate file names:

Make name unique — The default. — If the proposed file name already exists, the program attempts to generate a unique name by appending a character ("A" through "Z"). If the program fails to find a unique file name after 26 attempts, the file is skipped (not copied).

Skip duplicate file — If the proposed file name already exists, the new file is skipped (not copied).

Overwrite file — If the proposed file name already exists, the new file overwrites the one on the destination disk.

File format conversion This multiple choice field gives you eight choices for converting the data format in the destination file:

Binary image: no format change as BASIC HP-UX — The default. — Each DOS source file is copied byte-by-byte without any format change as an HP BASIC HP-UX file. The source file can be any DOS file except those that have header blocks (for example, a DFS file).

DFS to LIF: file type preserved — Files with DFS file type headers are copied as LIF files of the HP BASIC file type indicated by the header. Headerless files are copied byte-by-byte, without format change, as HP BASIC HP-UX files.

DOS text as HP BASIC HP-UX (CR/LF terminated) — This option copies the source DOS text file data to an HP BASIC HP-UX file with strings terminated by a carriage-return/line-feed (CR/LF) sequence. The resulting file format is the same as you would obtain if

you open an HP-UX file in HP BASIC with FORMAT ON and OUTPUT data to the open file.

DOS text as HP BASIC HP-UX (LF terminated) — This option copies the source DOS text file data to an HP BASIC HP-UX file with strings terminated by a line-feed (LF). This format is compatible with the GET statement in HP BASIC.

DOS text as HP BASIC HP-UX (null terminated) — This option copies the source DOS text file data to an HP BASIC HP-UX file with strings terminated by a null character. This option results in a text file that is compatible with the HP-UX operating system.

DOS text as HP BASIC ASCII — This option copies the source DOS text file data to an HP BASIC ASCII file.

DOS text as HP BASIC BDAT (with FORMAT ON) — This option copies the source DOS text file data to an HP BASIC BDAT file. The resulting format is equivalent to that obtained by writing data to a BDAT file using FORMAT ON in HP BASIC.

Binary image: no format change, user-def. type — Each DOS source file is copied byte-by-byte without any format change as an HP BASIC file of a user-defined file type. If you select this option, [F6] becomes the `DEFINE LIF TYPE` function key. When you press it, a "pop-up" window prompts you to enter the file type and implementation specific field in hexadecimal. The default file type entry corresponds to the HP-UX file type. If you change the file type entry, you must also enter an implementation specific field.

How to use LIF disk: This multiple choice field gives you three options:

Append to end of disk — The default. — Each file is copied to the current end of the destination LIF disk.

Zero disk and copy — All files are deleted from the destination disk and then files are copied starting at the beginning of the disk.

Use empty holes — Each file is copied to an empty LIF directory entry if, and only if, there is an empty space large enough to hold the contents of the source file. Otherwise the file is appended to the end of the disk.

Note

Regardless of the conversion option chosen, if the source file is an HP BASIC DFS compatible file with a file type header, the file is copied as a LIF file of the file type indicated by that header. Also, any DOS file with a ".EXE", ".COM", or ".SYS" extension is copied unchanged (a binary image copy), regardless of the conversion option.

LIF Catalog

To start this utility, move the highlight on the Main Menu to the "LIF Catalog" field and press Enter. The following screen will appear:

```
Hewlett-Packard LIF Utilities for the PC  Version A.00.00
Copyright (c) Hewlett-Packard Co. 1990. All rights reserved.

                          LIF Catalog

        LIF drive name:  A:
         LIF file name:  Entire disk
    Show deleted files:  No
         Output device:  CRT
```

The "LIF Catalog" form has four fields:

LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

LIF file name: This is a keyboard entry field that allows you to type in a file name or accept the default ("Entire disk"). You can include wild card characters and range specifiers in the file name to do a selective catalog. In addition, you can list all files on a LIF disk in a "pop-up" window and select an individual file. Press `LIST DIR or DISK` (f6) and follow the instructions in the window.

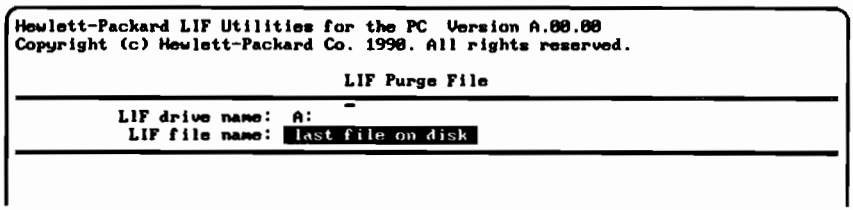
Show deleted files: If you want to show deleted (purged) files in the catalog listing, select "Yes." Otherwise, use "No" (the default).

Output device: The CRT screen is the default, but you can redirect the output to PRN, LPT1, LPT2, COM1, COM2, or a file. If you select "File" a small "pop-up" window comes up prompting you for a file name ("lifutil.out" is the default). If the file does not already exist, it will be created. If the file exists, the output is appended to the end of the file. If you select a device other than the CRT, make sure it is ready before you press `START`.

The catalog display follows the standard HP BASIC format, except that only one page at a time is displayed. Press `MORE` (f5) to list the next page, or `LIF CAT MENU` (f8) to return to the menu.

LIF Purge File

To start this utility, move the highlight on the Main Menu to the "LIF Purge File" field and press Enter. The following screen will appear:



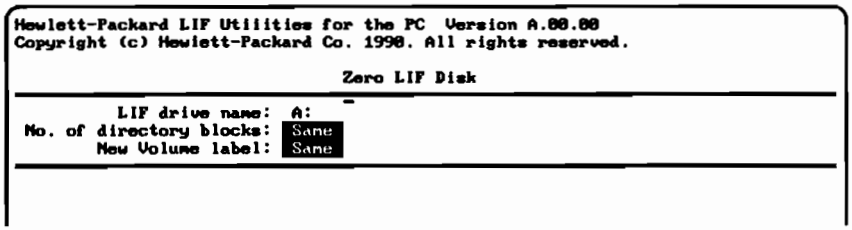
The "LIF Purge File" form has two fields:

LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

LIF file name: This is a keyboard entry field that allows you to type in a file name or accept the default ("Entire disk"). You can include wild card characters and range specifiers in the file name — all files that match will be purged. In addition, you can list all files on a LIF disk in a "pop-up" window and select an individual file. Press `LIST DIR or DISK` (F6) and follow the instructions in the window.

Zero LIF Disk

To start this utility, move the highlight on the Main Menu to the "Zero LIF Disk" field and press Enter. The following screen will appear:



This utility erases all files in the LIF directory, but the disk is not reformatted. This saves time over running the LIF Initialize utility and preserves the original initialization parameters. (You can, however, change the LIF directory size and volume label.)

The "Zero LIF Disk" form has three fields:

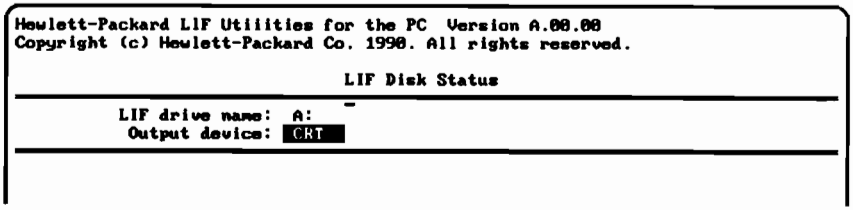
LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

No. of directory blocks: This keyboard entry field allows you to change the number of 256-byte blocks allocated to the LIF directory. The default is "Same" meaning the original value is retained. You can enter any value from 1 through 256.

New volume label: This keyboard entry field allows you to change the volume label on the LIF disk you are zeroing. The default is "Same" meaning the original volume label is retained.

LIF Disk Status

To start this utility, move the highlight on the Main Menu to the "LIF Disk Status" field and press (Enter). The following screen will appear:



The "LIF Disk Status" form has two fields:

LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

Output device: The CRT screen is the default, but you can redirect the output to PRN, LPT1, LPT2, COM1, COM2, or a file. If you select "File" a small "pop-up" window comes up prompting you for a file name ("lifutil.out"

is the default). If the file does not already exist, it will be created. If the file exists, the output is appended to the end of the file. If you select a device other than the CRT, make sure it is ready before you press START.

The following is a typical LIF Disk Status output to the CRT:

```
Hewlett-Packard LIF Utilities for the PC  Version A.00.00
Copyright (c) Hewlett-Packard Co. 1990. All rights reserved.

                              LIF Disk Status

Statistics for the disk in drive A:

[Device type] PC drive [Format] LIF
[Volume label] B9826
[Number of directory pages] 24 (space for 192 files)
[Number of sides] 2  [Sectors/Track] 16
[Bytes/Sector] 256  [Total Capacity] 264KB (1KB = 1024bytes)
[Number of files] 51  [Number of null files] 2
[Total available directory entries] 139
[Total used] 588 blocks (256 bytes)  [Total unused] 468 blocks
[Total null blocks] 1  [Trailing free blocks] 467
[Largest free] 467 blocks
```

LIF Hex Dump

To start this utility, move the highlight on the Main Menu to the "LIF Hex Dump" field and press Enter. The following screen will appear:

```
Hewlett-Packard LIF Utilities for the PC  Version A.00.00
Copyright (c) Hewlett-Packard Co. 1990. All rights reserved.

                              LIF Hex Dump

          LIF drive name:  A:
          LIF file name:  Entire disk
        Dump start block:  0
   No. of blocks to dump:  all
          Output device:  CRT
```

The "LIF Hex Dump" form has five fields:

LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

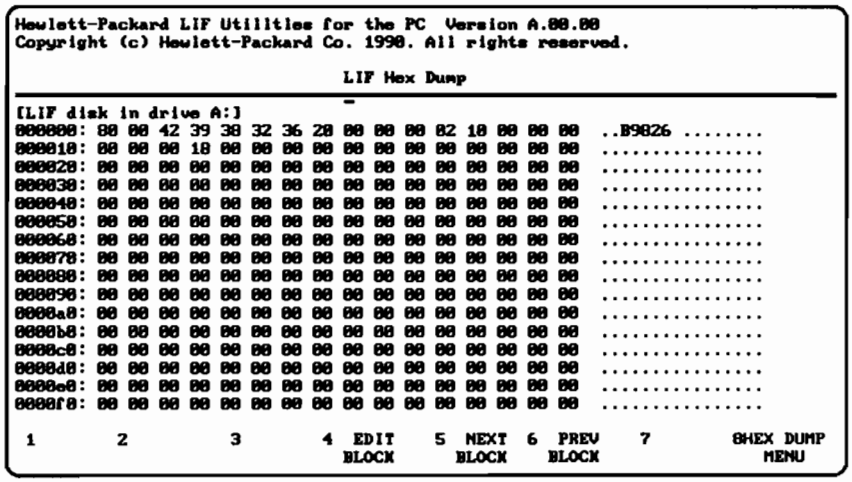
LIF file name: This is a keyboard entry field that allows you to type in a file name or accept the default ("Entire disk"). Wild card characters and range specifiers are *not* allowed. In addition, you can list all files on a LIF disk in a "pop-up" window and select an individual file. Press `LIST DIR or DISK` (f6) and follow the instructions in the window.

Dump start block: This field specifies the block offset of the start address. If you are dumping the entire disk, the number in this field is the absolute block number. If the dump is of a particular file, the number in this field is an offset from the beginning of the file. The default is 0, that is absolute block 0 of a disk or the first block of a file.

No. of blocks to dump: This field specifies the number of 256-byte blocks to dump. If the number in this field is greater than the entire disk or the size of the chosen file, the utility terminates when the end is reached.

Output device: The CRT screen is the default, but you can redirect the output to PRN, LPT1, LPT2, COM1, COM2, or a file. If you select "File" a small "pop-up" window comes up prompting you for a file name ("lifutil.out" is the default). If the file does not already exist, it will be created. If the file exists, the output is appended to the end of the file. If you select a device other than the CRT, make sure it is ready before you press `START`.

Each hex dump screen represents a 256-byte block of a file or disk. The following screen shows the LIF Hex Dump output for the first block of a typical LIF disk.



The six-digit base addresses are displayed at the left of the screen. These are absolute addresses if the entire disk is being dumped, or offsets if a file is being dumped. The entire 256-byte block is represented as a 16-by-16 matrix of hexadecimal values in the middle columns of the screen. The corresponding ASCII character data is represented in the right columns of the screen.

You can scroll through the blocks with the NEXT BLOCK and PREV BLOCK keys (f5 and f6). Press HEX DUMP MENU (f8) to return to the menu.

You can edit blocks in LIF files and disks using **edit** mode. To enter edit mode press EDIT BLOCK (f4). You can then type in new hexadecimal values in the middle columns, or new ASCII characters in the right columns. When you change a hexadecimal value, the corresponding ASCII character changes, and vice versa. To change a hexadecimal value or ASCII character, move the blinking cursor to the appropriate location and type in the new value. The cursor-control keys allow you to move the cursor to any location in either the middle columns or the right columns of the screen. The Home and End keys move the cursor to the upper left and lower right corners of the screen. The Enter and Backspace keys move the cursor within the current area of the screen (middle or right columns). The Enter key advances the cursor to the next line. The backspace key moves the cursor to the left, and returns it to the right side of the previous line on reaching the left edge of the current line.

Caution

In edit mode you can write any arbitrary values (hexadecimal or ASCII) to a block. *Be very careful in using this feature. You can easily disrupt the integrity of the LIF file structure, and LIFUTIL may then be unable to interpret the disk.* It is particularly dangerous to make changes in the LIF directory. Edit mode is primarily intended for the advanced programmer.

Once you have made changes to the values in a block of data, press WRITE CHANGES (F1) if you want to save the modified data, or UNDO CHANGES (F4) if you want to return the block to its original values. When you are finished, press HEX DUMP MENU to return directly to the menu.

LIF Initialize

To start this utility, move the highlight on the Main Menu to the "LIF Initialize" field and press Enter. The following screen will appear:

```
Hewlett-Packard LIF Utilities for the PC  Version A.00.00
Copyright (c) Hewlett-Packard Co. 1990. All rights reserved.

                          LIF Initialize

          LIF drive name:  A:
               Disk type:  5 1/4" flexible
             Sector size:  256 bytes    (disk capacity =    264 KB)
              Interleave:  2
          Directory size:  112 files
            Volume label:  IPLIF

 Flexible disk drive in which disk will be initialized.

 1 NEXT CHOICE  2 PREV CHOICE  3 NEXT FIELD  4 PREV FIELD  5 START  6 CONFIG EXT DRIV  7DEFAULT VALUE  8 MAIN MENU
```

The LIF Initialize utility is functionally equivalent to the HP BASIC INITIALIZE statement, but is menu driven. LIF Initialize destroys all files on a disk.

The "LIF Initialize" form has six fields:

LIF drive name: This is a multiple choice field that allows you to select any valid internal PC drive ("A:", "B:", "EXP1:", or "EXP2") or external drive (for example, "700,0:").

Disk type: This field gives you four choices: 5.25-inch, 3.5-inch single-sided, 3.5-inch double-sided, or 3.5-inch high-density. Note that the disk type automatically affects the sector size, disk capacity, and directory size values.

Sector size: For double-sided and high-density 3.5-inch flexible disks, you can select either 256 (the default) or 1024 bytes per sector. However, for 5.25-inch and single sided 3.5-inch flexible disks, only 256-byte sectors are allowed. Note that the disk capacity is reported to the right of the sector size field. You cannot change the disk capacity field — its value reflects the other parameters chosen.

Interleave: The default value (2) should be used unless the optimum for your disk drive is known to be a different value. You can specify values from 1 to n-1 where n is the number of sectors per track.

Directory size: This field specifies the size of the LIF directory as the number of file entries. The range is 8 (1 directory block) to 1024 (128 directory blocks) in multiples of 8. The default value for this field depends on the capacity of the LIF disk. The larger the capacity, the larger the directory size.

Volume label: This is a keyboard entry field that allows you to enter a volume label for the disk to be initialized. The default is "HPLIF".

A

Batch Mode Operations and Syntax

Most LIF file handling operations can be done most conveniently using the interactive, or menu-driven mode of operation. However, you can also use the LIFUTIL program in batch mode. To run a LIFUTIL command in batch mode you specify a command name and parameters, which follow the program name "LIFUTIL" on the MS-DOS command line. This appendix explains the syntax to invoke each batch mode command, and what each command does. However, let's begin by looking at the disk drive specifiers and file specifiers used in batch mode.

The following syntax conventions are used throughout this appendix:

- Parameters are represented in italics, for example: *source.*
- Optional parameters are enclosed in brackets: "[ ]".

Disk Drive and File Specifiers

The internal PC flexible disk drives are specified using their MS-DOS designations "A:" and "B:". The Vectra RS flexible disk expander supports a third and fourth flexible disk drive. The LIFUTIL program supports using these extra drives for LIF media, but they must be accessed using the designations "EXP1:" and "EXP2:". (These drive specifications are used only when the drives contain LIF media.)

You can use these drive specifiers in conjunction with LIF file names to create file specifiers. For example, if you want to specify the LIF file named "Myfile", which is located on a LIF disk in drive B:, use the specifier "B:Myfile".

MS-DOS files may be specified with standard MS-DOS path names, for example: "A:\DATAFILE.01" or "C:\MYDIR\MYFILE".

External HP-IB disk drives are specified by *SSBB*[,*UU*[,*V*]]: where:

SS	Is the interface select code of the HP-IB card. Normally 1 through 10.
BB	Is the bus address of the external drive (00 through 07).
UU	Is the drive unit number (0 through 14). Set to 0 if none given.
V	Is the volume number (0 through 7). Set to 0 if none given.
:	The trailing colon is required if a file name follows directly after the drive specifier.

To specify an individual LIF file on an external drive, use the drive/volume specifier in conjunction with the file name, for example: "700,0:Myfile", "700,1:DATAFILE01", or "901,1,2:Lotsofdata".

LIF to DOS Copy (LIF2DOS)

This command, which is invoked with the command name "LIF2DOS", copies a single file or a group of files from a LIF disk to a DOS disk or directory. It can do so with or without changing the data format. By default, ASCII, HP-UX, Series 80 DATA, and Pascal TEXT files are copied as DOS text files with strings terminated by CR/LF. Other file types are copied as exact images of the original LIF files. NULL files are not copied.

LIF file names are case-sensitive and up to 10 characters long, while DOS file names are all uppercase and consist of up to 8 characters, plus an extension of up to 3 characters. Unless a destination DOS file name is specified on the command line, each DOS file name is derived from the original LIF file name. All alpha characters are case-folded to uppercase. By default, the portion of LIF name beyond the eighth character is made into an extension. For example, the LIF file name "abcdefghij" is converted to the DOS name "ABCDEFGH.IJ". If the DOS file name already exists in the destination directory, the default procedure is to append a single character ("A" through "Z") to make the name unique.

Syntax

The syntax of the "LIF2DOS" command is as follows:

LIFUTIL LIF2DOS *source destination* [*options*]

where the parameters are:

source	*LIF_drive_name*: (e.g. "A:"), or *LIF_drive_name*:*LIF_file_name* (e.g. "A:Myfile"). Uppercase and lowercase are significant in LIF file names. Wild card characters and range specifications are allowed in source file names.
destination	DOS drive/directory specifier or DOS file name specifier. Standard DOS path designations are used, for example: "B:", "A:\MY_FILE", or "C:\MY_DIR\DATAFILE.01". (Uppercase and lowercase are interchangeable.)
options	One or more options from the list that follows.

Options

There are two options for naming destination DOS files:

/EXTENSION	If the source LIF file name is longer than eight characters, the excess characters are used as an extension of the DOS file name (*the default*).
/TRUNCATE	The excess characters in the LIF file name, beyond the eighth, are truncated to make the DOS file name.

There are three options for handling duplicate file names in the destination DOS directory. Only one of the following three should be specified:

/UNIQUE	If a file name already exists in the destination DOS directory, a unique name is generated by appending a letter in the range "A" through "Z" (*the default*).
/SKIP	If a file already exists with the proposed file name, the current file to be copied is skipped.
/OVERWRITE	If a file already exists with the proposed file name, that file is overwritten with the current file to be copied.

The following data format conversion options are available:

Note

If either the /FORMATON or /FORMATOFF option is specified, or if no file type conversion option is explicitly given, only the ASCII, HP-UX, Series 80 DATA, and PASCAL TEXT file types will be copied. Other file types will not be copied to the destination DOS directory.

`/FORMATON`	If the source LIF file is of the ASCII, HP-UX, Series 80 DATA, or Pascal TEXT type, all strings are copied as DOS compatible strings terminated with CR/LF (*the default*).
`/FORMATOFF`	If the source LIF file is of the ASCII, HP-UX, Series 80 DATA, or PASCAL TEXT type, all strings copied to DOS are null-terminated.
`/TEXT`	This option (the default) copies ASCII, HP-UX, Series 80 DATA, and PASCAL TEXT files to DOS compatible text files. This option need not be specified.
`/DFS`	This option copies LIF files to DFS files. Such files are compatible with the HP BASIC Language Processor DFS (DOS file system) binary. For all file types except HP-UX the copied files are prefixed by a 512-byte header. If the source file is of the HP-UX type, no header is added — the contents are unchanged.
`/S80`	This option converts Series 80 DATA files to DOS text files, transforming all data items (strings, INTEGER, and REAL) into ASCII strings terminated with CR/LF.
`/IMAGE`	This option forces an "image" copy of all LIF files. The resulting DOS files are exact images of the source LIF files.
`/BFORMATON`	This option allows you to copy a BDAT file that was written with "FORMAT ON" to a DOS file. If the source BDAT file was written with "FORMAT OFF", the system sector is stripped and the contents of the file are copied in binary mode. When this option is set, only

BDAT files can be copied. Any files of other types will not be copied.

There are two options regarding the prompting for disk media:

/PAUSE	If this option is enabled, you will be prompted to insert source and destination disks in the drives, and to press a key to proceed.
/NOPAUSE	The "/NOPAUSE" option (the default) allows you to avoid the pause and immediately execute the command. However, you will need to make sure that both source and destination disks are in place before executing the command.

Examples

The command:

```
LIFUTIL lif2dos B: C:\fromlif /DFS /TRUNCATE
```

copies all files from a LIF disk in drive B: to the DOS directory "C:\fromlif" using the HP BASIC DFS compatible format. The resulting DOS names are truncated at the eighth character.

The command:

```
LIFUTIL lif2dos A:ABC* C:\mydir
```

copies all LIF files matching the pattern "ABC*" from drive A: to the DOS directory "C:\mydir" in the default format.

The command:

```
LIFUTIL lif2dos A:thisfile .\thatfile /PAUSE
```

copies a LIF file "thisfile" from drive A: to "thatfile" in the current working directory. You will be prompted to insert source and destination disks before starting.

DOS to LIF Copy (DOS2LIF)

This command, which is invoked with the command name "DOS2LIF", copies a single DOS file or a group of DOS files to a LIF disk. It can do so with or without changing the data format. By default, all source files that are not HP BASIC DFS files are assumed to be DOS text files and are copied as HP-UX type files — strings are terminated with CR/LF. HP BASIC DFS files are copied preserving the file types indicated in the headers. There is one exception. Any DOS file with a ".EXE", ".COM", or ".SYS" extension is copied unchanged (a binary image copy), regardless of the options specified.

By default files are added to the current end of the directory on the destination LIF disk (null holes are not used). The LIF file names are generated from the DOS file names, except when a destination file name is given on the command line. By default the LIF file name is created, using up to 10 characters, by concatenating the DOS file name and its extension characters.

Syntax

The syntax of the "DOS2LIF" command is as follows:

`LIFUTIL DOS2LIF` *source destination* [*options*]

where the parameters are:

source	DOS drive/directory specifier or DOS file name specifier. Standard DOS path designations are used, for example: "B:", "A:\MY_FILE", or "C:\MY_DIR\DATAFILE.01". (Uppercase and lowercase are interchangeable.) Wild card characters and range specifications are allowed in source file names.
destination	*LIF_drive_name*: (e.g. "A:"), or *LIF_drive_name*:*LIF_file_name* (e.g. "A:Myfile"). If a LIF file name is given, the source must be a single DOS file. Uppercase and lowercase are significant.
options	One or more options from the list that follows.

Options

The following options deal with the data format of the copied file:

/FORMATON With this option (the default), strings are terminated with CR/LF when copied to a LIF HP-UX file.

/FORMATOFF With this option, strings are null-terminated when copied to a LIF HP-UX file.

/BFORMATON With this option, the contents of a DOS text file are copied to a BDAT file with "FORMAT ON" option.

There are several options regarding the file type of the copied file.

Note

None of these file type options have any effect if the source DOS files are DFS compatible files with a header. Each DFS file is copied using the file type indicated by its header.

/HPUX With this option (the default), source files are copied to a LIF disk as the HP-UX file type, except if the source files are HP BASIC DFS files with headers.

/ASCII Source files are copied to a LIF disk as ASCII files, except if the source files are HP BASIC DFS files.

/BDAT Source files are copied unchanged and the file type of the resulting files is set to "BDAT". Optionally, you can specify the logical record size of the BDAT file by placing a number immediately following "/BDAT", with at least one space in between. For example:
`LIFUTIL DOS2LIF C:\DATA\BDATFILE B:mydata /BDAT 64`
will copy a DOS file "C:\DATA\BDATFILE" to a LIF disk in drive B:. The destination file will be a BDAT file "mydata" with a logical record size of 64. Note, however, that the original DOS file must have the internal structure of a valid HP BASIC BDAT file for this operation to be useful.

`/PROG`	Source files are copied unchanged and the file type of the resulting files is set to "PROG". Note that the original file must contain a valid HP BASIC program.
`/SYSTM execution_address`	The DOS file is copied unchanged as a SYSTEM file. The execution address of the SYSTEM file must be given as a hexadecimal number. The source file contents are unchanged in the destination file.
`/FTYPE file_type`	You can specify any arbitrary file type by giving a hexadecimal number following "/FTYPE". The source DOS file is copied unchanged (a binary image copy) and the file type of the resulting file is set to the given file type.
`/IMP implementation _specific_value`	You can specify the value of the implementation specific field in the LIF directory entry (the last four bytes) by entering up to eight hexadecimal digits. The file copy format must be "binary image" copy.
`/IMAGE`	All source DOS files, except HP BASIC DFS files, are copied unchanged as HP-UX files (a binary image copy) unless a particular file type is explicitly given.

There are two text string termination and formatting options:

`/CRLF`	When DOS text files are converted to the LIF HP-UX file type, strings are terminated by the CR/LF sequence (*the default*).
`/LF`	When DOS text files are converted to the LIF HP-UX file type, strings are terminated by a single LF character.

There are three options for using the destination LIF disk:

`/APPEND`	Copy files to the current end of the destination LIF medium (*the default*).
`/ZERO`	Delete all files from the destination disk and then copy files to the beginning of the disk.
`/USEHOLE`	Copy files to empty directory entries if, and only if, there are empty spaces big enough to hold the contents of the source files. Otherwise, the file is appended to the end of

the disk. Each source file is copied to the first available hole that is big enough for it.

There are two options for generating LIF file names from the source DOS file names:

`/EXTENSION` A LIF file name is generated by concatenating the DOS file name extension characters to the prefix characters. If the resulting name is longer than 10 characters, only the first 10 characters are used (*the default*).

`/TRUNCATE` A LIF file name is generated by using up to the first eight characters of the entire DOS file name.

There are three options for handling duplicate file names in the destination LIF disk or directory:

`/UNIQUE` If a file name already exists on the destination LIF disk, a unique name is generated by appending a letter in the range "A" through "Z" (*the default*).

`/SKIP` If a file already exists with the proposed file name, the current file to be copied is skipped.

`/OVERWRITE` If a file already exists with the proposed file name, that file is overwritten with the current file to be copied.

There are two options regarding the prompting for disk media:

`/PAUSE` If this option is enabled, you will be prompted to insert source and destination disks in the drives, and to press a key to proceed.

`/NOPAUSE` The "/NOPAUSE" option (the default) allows you to avoid the pause and immediately execute the command. However, you will need to make sure that both source and destination disks are in place before executing the command.

Examples

The command:

```
LIFUTIL dos2lif C:\XYZ\*.data A: /ASCII
```

will copy a group of DOS files as ASCII type files on the LIF disk in drive A:.

The command:

```
LIFUTIL dos2lif C:\SAVEDPRG B:myprog
```

will copy a DOS file as an HP-UX text file on the LIF disk in drive B:.

LIF Catalog (LIFCAT)

This command catalogs a LIF disk in the standard HP BASIC format.

Syntax

The syntax of the "LIFCAT" command is as follows:

`LIFUTIL LIFCAT` *LIF_drive:* [*options*]

or

`LIFUTIL LIFCAT` *LIF_drive:LIF_file_name* [*options*]

where the parameters are:

LIF_drive:	A LIF drive specifier, for example: "A:" or "700,0:".
LIF_drive:LIF_file_name	A LIF file specifier, for example: "A:Myfile". Uppercase and lowercase are significant in LIF file names. You can use wild card characters and range specifications to obtain a selective catalog.
options	The options are listed below.

Options

Three options apply:

`/PAUSE`	If this option is enabled, you will be prompted to insert a disk in the drive and press a key to proceed.
`/NOPAUSE`	The "/NOPAUSE" option (the default) allows you to avoid the pause and immediately execute the command.
`/NULL`	If you specify the "/NULL" option, deleted files are shown in the catalog.

Examples

The command:

```
LIFUTIL LIFCAT B: /NOPAUSE
```

will do catalog of a LIF disk in drive B: without issuing a prompt.

The command:

```
LIFUTIL LIFCAT B:DATA[0-9][0-9]
```

will do catalog of all LIF files named DATA00 through DATA99 on drive B:

LIF Purge File (LIFPURGE)

This command purges a single LIF file, or a group of LIF files, from a LIF directory.

Syntax

The syntax of the "LIFPURGE" command is as follows:

`LIFUTIL LIFPURGE` *LIF_drive:LIF_file_name* [*options*]

where the parameters are:

LIF_drive:LIF_file_name	A LIF file specifier, for example: "A:Myfile". Uppercase and lowercase are significant in LIF file

	names. You can use wild card characters and range specifications to purge all matching files.
options	The options are listed below.

Options

Only two options apply:

`/PAUSE`	If this option is enabled, you will be prompted to insert a disk in the drive and press a key to proceed. You are prompted for confirmation before each file is purged.
`/NOPAUSE`	The "/NOPAUSE" option (the default) allows you to avoid the pause and immediately execute the command. However, be careful. You have no protection against mistakenly purging a file unless you specify the "/PAUSE" option.

Example

The command:

```
LIFUTIL LIFPURGE B:A*
```

will purge all files on drive B: that start with "A" (but not "a").

Zero LIF Disk (ZERODISK)

This command will zero out a LIF disk — it will delete all files from a LIF directory. *Note that "ZERODISK" will destroy all contents of a LIF disk.*

Syntax

The syntax of the "ZERODISK" command is as follows:

`LIFUTIL ZERODISK` *LIF_drive:* [*options*]

where the parameters are:

LIF_drive:	A LIF drive specifier, for example: "A:" or "700,0:".
options	The options are listed below.

Options

The following options apply:

/Dnumber	You can change the directory size by specifying the number of directory pages. One page contains eight directory entries. There cannot be a space or any delimiter after "D".
/Lvolume_label	You can change the volume label of the disk by specifying the new volume label on the command line. A valid volume label is up to six alphanumeric characters without embedded blanks.
/PAUSE	If this option is enabled, you will be prompted to insert a disk in the drive and press a key to proceed.
/NOPAUSE	The "/NOPAUSE" option (the default) allows you to avoid the pause and immediately execute the command.

Examples

The command:

```
LIFUTIL ZERODISK A:
```

will zero out a LIF disk in drive A:. The number of pages allocated for the directory and volume label are unchanged.

The command:

```
LIFUTIL ZERODISK B: /D20 /LNEWDSK
```

will zero out a LIF disk in drive B: and sets the number of blocks allocated for the directory to 20 (160 entries). The volume label is changed to "NEWDSK".

LIF Disk Status (LIFSTATUS)

This command shows the disk statistics and format type of a LIF disk.

Syntax

The syntax of the "LIFSTATUS" command is as follows:

`LIFUTIL LIFSTATUS` *LIF_drive:* [*options*]

where the parameters are:

LIF_drive:	A LIF drive specifier, for example: "A:" or "700,0:".
options	The options are listed below.

Options

Only two options apply:

`/PAUSE`	If this option is enabled, you will be prompted to insert a disk in the drive and press a key to proceed.
`/NOPAUSE`	The "/NOPAUSE" option (the default) allows you to avoid the pause and immediately execute the command.

Example

The command:

```
LIFUTIL LIFSTATUS A: /NOPAUSE
```

will access the disk in drive A: with no pause, and will display the disk statistics on the screen.

LIF Hex Dump (HEXDUMP)

This command performs a hexadecimal dump of the contents of a LIF disk or file. Both hexadecimal and ASCII representations of each file block are dumped to the screen.

Note that edit mode is available only in the interactive (menu-driven) LIF Hex Dump utility. You cannot access edit mode from the command line.

If you specify an entire LIF disk, you can specify the absolute address of the start block. If you specify a file, you can specify the relative address of the start block. One block is 256 bytes and the base of the start block address is 0. If you don't specify the number of blocks to dump, the entire disk or file will be dumped starting with the start address given. If you don't specify either the number of blocks or the start address, the entire disk or file will be dumped. You can exit "HEXDUMP" at any time by pressing the Esc key. If you include the "/PAUSE" option on the command line you are prompted to press a key to continue after the program displays each block of data. Otherwise the display will scroll without stopping.

Syntax

The syntax of the "HEXDUMP" command is as follows:

`LIFUTIL HEXDUMP` *LIF_drive:* [*begin_block* [*num_blocks*]] [*options*]

or

`LIFUTIL HEXDUMP` *LIF_drive:LIF_file_name* [*begin_block* [*num_blocks*]] [*options*]

where the parameters are:

LIF_drive:	A LIF drive specifier, for example: "A:" or "700,0:".
LIF_drive:LIF_file_name	A LIF file specifier, for example: "A:Myfile". Uppercase and lowercase are significant in LIF file names. Wild card characters and range specifications are not allowed in "HEXDUMP" commands.

begin_block	Absolute block address (if you specify a LIF disk) or relative block address (if you specify a LIF file) of the desired starting block.
num_blocks	Number of 256-byte blocks to dump.
options	The options are listed below.

Options

Only two options apply:

`/PAUSE`	If this option is enabled, you will be prompted to insert a disk in the drive and press a key to proceed.
`/NOPAUSE`	The "/NOPAUSE" option (the default) allows you to avoid the pause and immediately execute the command.

Examples

The command:

LIFUTIL Hexdump A: 2 64

does a hexadecimal dump of 64 blocks of data of a LIF disk in drive A: starting at absolute block address 2.

The command:

LIFUTIL hexdump B:This_file

does a hexadecimal dump of the entire contents of a LIF file named "This_file" in drive B:.

LIF Initialize (LIFINIT)

This function allows you to initialize LIF disks either in the internal PC disk drives, or in external HP-IB disk drives. Internal drives are identified with their DOS designations ("A:", "B:", "EXP1", or "EXP2"), while external drives are identified with a standard drive specifier (for example: "700,0:" or "700,1:"). To protect against accidentally initializing a disk, you will be prompted to press a key to start the initialization. Press the Esc key to exit.

Syntax

The syntax of the "LIFINIT" command is as follows:

`LIFUTIL LIFINIT` *LIF_drive:* `/Mn [/Sn] [/In] [/Dn] [/Vlabel]`

where the parameters are:

LIF_drive — A LIF drive specifier, for example: "A:" or "700,0:".

`/M` — The number following `/M` specifies the medium type. The valid range is 1 to 4:

1: 5.25-inch flexible disk.
2: 3.5-inch single-sided, double-density (SSDD) flexible disk.
3: 3.5-inch double-sided, double-density (DSDD) flexible disk.
4: 3.5-inch double-sided, quad-density (DSQD) flexible disk.

`/S` — The number following `/S` specifies the sector size. The valid range is 1 to 3:

1: 256 bytes/sector (the default).
2: 1024 bytes/sector.
3: 1024 bytes/sector.

Note that the only sector size supported for 5.25-inch flexible disks and single-sided 3.5-inch flexible disks is 256 bytes/sector. For these media the `/S` *parameter is ignored.*

`/I` — The number following `/I` specifies the interleave factor. You can specify any number from 1 through n-1, where n is the number of sectors per track. The default is 2. If you are not sure of the optimum value, use the default interleave factor for optimum performance.

`/D` The number following `/D` specifies the size of the LIF directory (the number of allowed file entries). Since directory pages are allocated in eight-entry units, the value specified will be rounded to the next multiple of eight. The maximum value is 1024.

The default values are: 112 for 5.25-inch flexible disks and single-sided 3.5-inch flexible disks, 180 for double-sided, double-density 3.5-inch flexible disks, and 240 for high-density 3.5-inch flexible disks.

`/V` You can specify a LIF volume label after `/V`. The volume label is an alphanumeric string of up to six characters, which must start with an alpha character and contain no embedded blanks. The default volume label is "HPLIF".

Examples

The command:

LIFUTIL LIFINIT A: /M3 /S3 /I3 /D200 /VMYDISC

initializes a double-sided, double-density disk in drive "A:" with a sector size of 1024 bytes (780 KB capacity), an interleave factor of 3, a directory with 200 entries, and a volume name of "MYDISC".

Scan Disk Drives (SCANDISK)

The SCANDISK command displays all available LIF disk drives. The internal PC flexible drives and any external HP-IB (CS80/SS80 protocol) drives that are present are listed. You can use any drives listed to access LIF-formatted disks from the program. (This command is not available in the menu-driven mode.)

There are no parameters for this command. Just execute:

```
LIFUTIL SCANDISK
```

Glossary

ASCII file
The HP BASIC "ASCII" file type uses an ASCII-character data representation. ASCII files are most efficient for string data.

BDAT file
For numeric data the HP BASIC "BDAT" ("binary data") file type provides more compact data storage than the ASCII type.

Case folding
The process by which lowercase letters are converted to uppercase, but uppercase letters are left unchanged, as with MS-DOS file names.

Catalog
A LIF catalog is a list of the files on a LIF disk. It includes the file name, file type, file size, and address of each file in the LIF directory.

CS80 protocol
The CS80 protocol, or its SS80 subset, is used by current Hewlett-Packard HP-IB disk drives such as the 9122C and 9153C. The older Amigo protocol, used by such drives as the 9121A, is not compatible.

DFS
The HP BASIC Language Processor DFS (DOS File System) binary provides compatibility between HP BASIC and the MS-DOS environment. Each DFS file of the BDAT, ASCII, or PROG type begins with a file-type header. The headerless "DOS" file type corresponds to a LIF "HP-UX" file.

DOS
The MS-DOS operating system, or something (for example, a file) pertaining to it.

Hex dump
In a hex dump the contents of a file or disk are output to the CRT (or a device or file) to be displayed in hexadecimal and in ASCII characters.

HP-IB
HP-IB (Hewlett-Packard Interface Bus) is HP's implementation of the IEEE 488 interface standard for instruments, disk drives, and peripherals.

HP-UX file
An "HP-UX" file is an "untyped" HP BASIC file that is compatible with the native format of the HP-UX operating system.

Initialize
The process of initializing a LIF disk consists of formatting the disk and creating the LIF directory. A LIF disk must be initialized before use.

LIF
LIF (Logical Interchange Format) is the standard disk drive format used by HP 9000 Series 200/300 computers and many HP instruments.

LIF directory
The LIF directory is an area of allocated space, located at the beginning of a LIF disk, that identifies the name, type, size, and address of every file.

MS-DOS
The standard disk operating system for PCs (often called "DOS").

Pascal TEXT file
The Pascal Workstation editor uses the "TEXT" file type to represent ASCII data. (Pascal also supports the "ASCII" file type.)

Purge
Purging a LIF file is analogous to deleting an MS-DOS file. The entry for the file in the LIF directory is modified to indicate the file has been purged. However, the data in the file itself is not changed unless it is overwritten.

Series 80 DATA file
The "DATA" file type is used by Series 80 BASIC, which is the operating system for the HP-85, HP-86, and HP-87 computers.

Index