

Support Tape User's Manual

**HP 3000 Series 900 Computers
HP 9000 Series 800 Computers**



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FOR HP INTERNAL USE ONLY**

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Printing History

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The software code printed alongside the date indicates the version level of the software product at the time the manual or update was issued. Many product updates and fixes do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one-to-one correspondence between product updates and manual updates.

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Safety and Regulatory Information

For your protection this product has been tested to various national and international regulations and standards. The scope of this regulatory testing includes electrical/mechanical safety, radio frequency interference, ergonomics, acoustics, and hazardous materials. Where required, approvals obtained from third-party test agencies are shown on the product label. In addition, various regulatory bodies require some of the information under the following headings.

USA Radio Frequency Interference

The United States Federal Communications Commission (in 47CFR Subpart J, of Part 15) has specified that the following notice be brought to the attention of the users of this product:

Warning



This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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取扱説明書に従って正しい取り扱いをして下さい。

Japanese Radio Frequency Notice

Safety Considerations

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. The following figure shows some of the safety symbols used on the product to indicate various safety considerations.

SAFETY SYMBOLS



Instruction manual symbol: the product will be marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect the product against damage.



Indicates hazardous voltages.



Indicates earth (ground) terminal (sometimes used in manual to indicate circuit common connected to grounded chassis).

Warning



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not done correctly or adhered to, could result in injury. Do not proceed beyond a **WARNING** sign until the indicated conditions are fully understood and met.

Caution



The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not done correctly or adhered to, could damage or destroy part or all of the product. Do not proceed beyond a **CAUTION** sign until the indicated conditions are fully understood and met.

Preface

The *Support Tape User's Manual* provides the information needed to use the Support Tape in recovering HP 9000 Series 800 Computer Systems, and in troubleshooting HP 3000 Series 900 and HP 9000 Series 800 Computer Systems.

Note



The Support Tape is intended for use by trained HP support personnel only. It is not intended for direct use by customers. HP shall not be liable for any damages resulting from unauthorized use of the Support Tape.

The following is a summary of the contents of the chapters in this manual:

- | | |
|-------------------|---|
| Chapter 1 | Purpose and design of the Support Tape, minimum system requirements, how to boot and load the Support Tape operating system, plus a description of the menu interface |
| Chapter 2 | How to deal with a damaged operating system, and how to recover using the Support Tape (HP-UX systems only) |
| Chapter 3 | How to run offline ISL-based diagnostics and utilities |
| Chapter 4 | How to run online subsystem diagnostics using the Support Tape kernel |
| Appendix A | A listing of tape resident files by tape section and directory |
| Appendix B | A list of differences between the 8.0 version of the Support Tape and previous versions |

Note



This manual assumes that the user has a working knowledge of the HP-UX operating system. It only applies to the HP-UX 8.0 release and above.

Additional documentation, which the user may find useful, includes the following titles:

- *Backup and Recovery Reference Manual* (32650-90039)
- *Offline Diagnostics System Manual* (30190-90010, Edition 6, E0391)
- *Online Diagnostics Subsystem Utilities Manual* (09740-90021, Edition 5, E0391)
- *Online Diagnostics Subsystem Manual, Volume 1: SPU* (09740-90028, Edition 4, E0391)
- *Online Diagnostics Subsystem Manual, Volume 2: Device Adapters* (09740-90031, Edition 4, E0391)
- *Online Diagnostics Subsystem Manual, Volume 3: LAN/SCSI/MUX* (09740-90034, Edition 2, E0391)
- *Online Diagnostics Subsystem Manual, Volume 4: Disks/Printers* (09740-90040, Edition 1, E0391)
- *Online Diagnostics Subsystem Manual, Volume 5: Tapes* (09740-90042, Edition 1, E0391)

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Introduction

Purpose of the Support Tape

The Support Tape allows you to diagnose and fix problems when the operating system cannot be booted from the system disk. The Support Tape runs on minimal hardware, with or without the system disk.

The Support Tape is intended to:

- Provide a means to recover an unbootable HP-UX operating system.
- Provide a vehicle for distributing ISL-based support tools.
- Host the Online Diagnostics Subsystem environment.

The Support Tape may be used on both MPE XL and HP-UX computer systems, but it is based on HP-UX.

Note

The Support Tape is intended for use by trained HP support personnel only. It is not intended for direct use by customers. HP shall not be liable for any damages resulting from unauthorized use of the Support Tape.

Design of the Support Tape

The following subsections discuss the physical layout of the Support Tape, along with the support kernel and its limitations.

Tape Layout

The Support Tape includes files that contain HP-UX commands, utilities, and tools. Only some of these files can fit into the file system at any given time. Files that must be loaded explicitly are listed in Appendix A.

Caution



You should not, however, remove any of the directories which were present on the tape on initial boot.

The Support Tape is distributed in three types of media:

1/4" Cartridge Tape	B2436-13308
1/2" 1600 BPI Open Reel Tape	B2436-13508
Digital Data Storage (DDS or DAT)	B2436-13408

Because of the memory requirements of 8.0, the Support Tape functionality could not be implemented on a single 1/2" 1600 BPI tape reel; it is, therefore, implemented on two reels. The 1/4" cartridge tape and the DAT versions of the Support Tape, however, continue to be implemented as single tapes.

Note



Tape layout is a factor subject to change on a per release basis; the following discussion pertains only to the 8.0 release version of the Support Tape.

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The open reel version of the Support Tape is organized as follows:

LIF	Kernel	EOT EOT EOT EOT EOT
SOT SOT Sec 0 Sec 1 Sec 2 Sec 3 Sec 4 Sec 5 Sec 6 Sec 7		

The following is a brief description of the contents of these sections of the tape:

LIF	Logical Interchange Format, containing all offline diagnostics (ISL and HP-UX)
Kernel	The HP-UX support kernel.
EOT	Section denoting the End-of-Tape
SOT	Section denoting the Start-of-Tape
Sec 0	Contains files used during initialization
Sec 1	/etc
Sec 2	/bin
Sec 3	/usr/bin
Sec 4	/usr/contrib (useful, nonproduct tools)
Sec 5	/usr/diag/bin (online diagnostics)
Sec 6	/usr/lib/terminfo/h
Sec 7	/manual (man pages for analyze and disked)

The cartridge tape and DAT versions of the Support Tape are organized as follows:

LIF	Kernel	Sec 1 Sec 2 Sec 3 Sec 4 Sec 5 Sec 6 Sec 7
-----	--------	---

Cartridge tapes are CS80 direct access devices. HP-UX partitions such devices according to a scheme described in the *HP 9000/800 System Administrator's Manual*. Therefore, the physical organization of the cartridge version differs from that of the open reel version. Most of these differences are hidden by the user interface.

The cartridge and DAT versions of the Support Tape are organized as follows:

Section *6, 0:	Bootable LIF Volume.
Section *1:	Support kernel, embedded in a mountable file system.
Section *8:	Mountable file system that contains all the files contained in Sections 1 through 7 of the open reel version.

Note	These "*" sections correspond to specific physical areas of the cartridge tape. they are defined by the CS80 driver, and bear no relationship to sections 1-7 of the open reel Support Tape.
-------------	--

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The Support Tape does not contain all of the files that are standard for these directories. It only contains commands related to:

- File system operations
- Media backup or transfers
- Online Diagnostic Subsystem
- Troubleshooting

Commands related to program development (compilers, linkers, libraries, and so forth), and to operating system generation, are excluded.

Furthermore, even the commands which are included in these directories, may not be the standard HP-UX commands. Any command you invoke from the Support Tape may possess a more limited functionality than its corresponding command in the standard HP-UX command set. Unless you load a command directly from a backup tape, you have no assurance when you invoke a command, that you are invoking the standard HP-UX command with its full range of functionality.

For example, some of the non-standard commands available on the Support Tape can be identified by their `st_` prefix:

- `st_egrep`
- `st_chmod`
- `st_cat`
- `st_cp`
- `st_ln`
- `st_more`
- `st_mv`
- `st_rm`

These `st_` commands implement only a small subset of the functionality of the HP-UX commands that they replace.

1-4 Introduction

Support Kernel Limitations

The Support Tape contains a special version of the HP-UX operating system, called the support kernel.

Note



The support kernel contains a memory-based file system and functions independently of the system disk. This sets the support kernel apart from the standard HP-UX kernel.

Some consequences of the structure of the support kernel are:

- The memory-based file system is much smaller than the typical disk-based file system.
- Because the memory-based file system is much smaller than disk, you can rapidly exhaust the available memory space. When the memory file system is full, you must remove some of the existing files before you can load any new files.
- The total memory used by HP-UX and the file system varies, depending upon the amount of configured physical memory. You can use the remaining memory to run programs. Remember that the HP-UX kernel itself requires some of this space to run. Subject to space limitations and some other factors (discussed below), you should be able to run any program that runs on a standard HP-UX operating system. If you find any programs that *do* run on a standard HP-UX operating system, but *do not* run on the support kernel, please log an entry on the Software Tracking and Reporting System II (STARS II) against one of the following part numbers:

1/4" Cartridge Tape B2436-13308

1/2" 1600 BPI Open Reel Tape B2436-13508

Digital Data Storage (DDS or DAT) B2436-13408

- There is no swap device on the support kernel. A program that attempts to swap can cause the support kernel to crash. For the same reason, you should always make sure the sticky bit is clear before running a command.

Note



To clear the sticky bit, enter the following command at the prompt:

```
chmod -t path/filename
```

If you load a program from the tape into the memory-based file system using the menu interface (explained below), the sticky bit is cleared automatically. No program that inherently relies on the existence of a swap device should be run on the support kernel.

- The file `/hp-ux` in the memory-based file system is not a real kernel. It just contains symbol table information needed by programs such as `ps` and `dui`.

Minimum System Requirements

The following are the minimum system requirements necessary to load and use the Support Tape:

- An HP 9000 Series 800 or HP 3000 Series 900 SPU
- The minimum amount of memory for a given SPU

Note



The Online Diagnostics Subsystem will not run from the Support Tape, unless the system has 16 Mbytes or more of memory.

- A system console
- A tape drive
- Input/output paths to the console and tape drive (or equivalent device)
- A Support Tape



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Booting To Support Tape's ISL Prompt

This section describes how to boot from the Support Tape.

It is assumed that the system has halted and cannot be booted from the system disk.

Note



For IIP-UX systems, if the system has not halted, you should enter the following command at the system prompt:

```
/etc/shutdown -h 0
```

For MPE XL systems, if the system has not halted, you should enter the following command at the system console:

Ctrl-A

The system will respond with the = prompt; you need to enter the following:

```
= SHUTDOWN
```

To boot from the Support Tape:

1. Load the Support Tape (Reel #1, if you are using the open reel version of the Support Tape).
2. Reset the System Processor Unit (SPU) using the reset button, or key switch, as appropriate.

The console will display boot path information. If Autoboot is enabled, the system console will eventually display the following or similar messages:

```
Autoboot from primary path enabled  
To override, press any key within 10 seconds.
```

3. Press any key before the 10 seconds elapse. The system console will display the following prompt:

```
Boot from primary boot path (Y or N)?>
```

4. Enter **n** at the prompt.

The console will then display the following:

```
Boot from alternate boot path (Y or N)?>
```

5. If the alternate boot path specifies the address of the tape device where the Support Tape is mounted, enter **y** at the prompt.

If the alternate boot path does not specify the address of the address of the tape device where the Support Tape is mounted, enter **n** at the prompt. If **n** is entered at the prompt, the following message will be displayed on the system console:

```
Enter boot Path or ?>
```

6. Enter the address of the tape device where the Support Tape is mounted.

The system console will display the following:

```
Interact with IPL (Y or N)>
```

7. Enter **y** at the prompt.

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The console will then display the following prompt:

ISL>

From this point, the operator can choose to recover an unbootable IIP-UX operating system (see chapter 2), to run offline diagnostics or utilities (see chapter 3), or boot the Support Tape kernel to run online diagnostics (see chapter 4).

Loading the Support Tape Operating System

After successfully booting to the Support Tape ISL> prompt, you load the Support Tape operating system and login to the Support Tape, using the following procedure:

1. Type the word **support** at the prompt.

ISL>support

The tape will load and begin execution. A disclaimer and a warning will appear on the system console; and you will be prompted to press **(Return)** to continue. You are automatically logged on as superuser.

2. Press **(Return)** and the SUPPORT TAPE MAIN MENU will be displayed.

Menu Interface

This subsection presents and describes the various menus which comprise the Support Tape user interface.

Tape sections zero through seven and the menu driven user interface have been provided as an attempt to centralize our support tools and make them easy to use. However, once you have booted and logged in, you are not forced to use the other features of the tape. If you prefer, you may unload the support tape and use the tape drive in other ways. For example, you may wish to load a different tape that contains your own private collection of tools. When you do this, the menu system will be useless, but it can be re-initialized if you reload the support tape.

Note



In general, if you wish to return to a previous menu, you can do so by entering **m** one or more times from a submenu, as necessary.

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SUPPORT TAPE MAIN MENU

The SUPPORT TAPE MAIN MENU, as mentioned above, is the menu which is displayed on login:

SUPPORT TAPE MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- d. On-line Diagnostics
 - Note: only for systems with 16 or more Megabytes of memory
- m. Display Manual page for a specific command
- r. Recover an HP-UX unbootable system (a contributed utility)
- u. Utilities
- x. Exit to shell

This menu is for listing and loading the tools contained on the support tape. Once a tool is loaded, it may be run from the shell.

Select one of the above:

The following list describes these menu options in more detail:

- | | |
|---|--|
| l | Loads a file into the memory-based file system. When you select l, the system will prompt you for the name of the file you want to load. |
| d | Goes to the ON LINE DIAGNOSTICS MENU. |
| m | Displays the man pages for either analyze or disked, depending upon which you specify. |
| r | Goes to the HP-UX Recovery MAIN MENU. |
| u | Goes to the SUPPORT TAPE UTILITIES MENU |
| x | Exits the menu system to the Bourne shell |

Note

When you select the man page for analyze or disked, you will go into more, and consequently, will need to use the space bar to page through long listings.

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ON LINE DIAGNOSTICS MENU

If you select d from the SUPPORT TAPE MAIN MENU, the following menu will be displayed:

ON LINE DIAGNOSTICS MENU (TAPE SECTION 5: /usr/diag)

(Note: Any program with X won't run from the Support Tape Environment.)

0. AFIDAD	1. CARTDIAG	2. CENTPBA	3. CIPERLPD(X)
4. CS8ODIAG	5. DASSDIAG	6. DIAG7478	7. FLEXDIAG
8. GPIODAD	9. HPFLDIAG	10. HPIBDAD(X)	11. HPIBDDS
12. HPIBDIAG(X)	13. LANDAD(X)	14. MEMDIAG(X)	15. MUXDIAG
16. OPDIAG	17. OSI4DAD	18. PMUXDIAG	19. PSIDAD
20. REELDIAG	21. SCSICD	22. SCSICIO	23. SCSIDDS
24. SCSIDISK	25. SCSIPBA	26. SCSIREEL	27. SS8ODIAG
28. SYSMAP	D. Run DUI		
a. Report available space	p. Purge diags from memory		
r. Return previous menu	x. Exit to shell		

The diagnostic user interface "DUI" is loaded automatically with each diagnostic. Select one of the above:

The ON LINE DIAGNOSTICS MENU provides a special interface for Section 5 (/usr/diag) of the Support Tape. When you make a selection, the selected diagnostic, the diagnostic user interface (DUI), and their associated files are automatically loaded. Due to space limitations, you may only load one diagnostic at a time. If you attempt to load a second one, the first one will be removed.

The following options are selectable from the ON LINE DIAGNOSTICS MENU:

- a** Makes it convenient to determine how much space is left in the file system. This is important because the Online Diagnostics Subsystem is large.
- p** Allows you to purge all files associated with a particular diagnostics from the memory-based file system, in order to deallocate space needed to run other diagnostics, or to perform other Support Tape functions.
- D** After loading a diagnostic, by selecting from options 0-28, you need to select this option in order to run the DUI, so the diagnostic you have selected can be executed.

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HP-UX Recovery MAIN MENU

If you select **r** from the SUPPORT TAPE MAIN MENU, the following menu will be displayed:

HP-UX Recovery

MAIN MENU

Select one of the following:

- a. Rebuild the boot partition (section 6). Install all 'critical' files required to boot HP-UX on a customer root file system.
- b. Do not rebuild the boot partition (section 6). Install 'critical' files required to boot HP-UX on a customer root file system.
- m. Return to the 'Support Tape Main Menu'.
- x. Exit to the shell.

This menu aids in the recovery of an HP-UX system which will not boot.

Selection:

The following options are selectable from this menu:

- a** Goes to the File System Check MENU
- b** Goes to the File System Check MENU

Caution



You should only attempt to recover HP-UX systems that match the revision of the Support Tape you are using; e.g., you should only use an 8.0 Support Tape to attempt to recover an 8.0 file system. Data corruption could occur if you attempt to mix revisions; e.g., if you attempt to recover a 7.06 file system with an 8.0 Support Tape.

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File System Check MENU

If you select either a or b from the HP-UX Recovery MAIN MENU, the system will display the following menu:

File System Check MENU

Select one of the following:

- a. Run 'fsck'. Device file to use is known.
- b. Examine customer disk(s). If possible, determine last mount information by scanning customer disk superblock(s).
- c. Display logical unit (lu) number(s) and addresses that the Support Tape uses to communicate with customer disk(s).
NOTE: Cartridge tape and CDRom are considered disks.
- m. Return to 'HP-UX Recovery MAIN MENU.'
- x. Exit to the shell.

This menu must be used to run 'fsck' on the target file system to be recovered.
Selection:

The following options are selectable from this menu:

- a** Prompts the user for the device file name associated with the file system to be checked, runs **fsck** on the associated device, and then prompts the user to run **fsck** again to correct any errors encountered.
- b** Probes customer disk(s), and provides information about mount devices; i.e., which devices were last mounted, where they were mounted, and whether or not there are any section conflicts.
- c** Displays the class, logical unit (LU), hardware path, driver name, hardware status, and software status information used by the Support Tape to communicate with the customer disk(s).

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Boot Partition MENU

If you select option a (Rebuild the boot partition ...) at the IIP-UX Recovery MAIN MENU, and the critical files have been installed, the following menu will be displayed:

Boot Partition MENU

Select one of the following:

- a. Ready to specify the device file to use to rebuild the boot partition (example: c0d0s6)
- b. Examine customer disk(s). If possible, determine last mount information by scanning customer disk superblock(s).
NOTE: the file systems displayed MUST NOT be used as the boot partition. The address and disk type information MIGHT be of assistance.
- c. Display logical unit (lu) number(s) and addresses that the Support Tape uses to communicate with customer disk(s).
NOTE: Cartridge tape and CDROM are considered disks.
- m. Return to 'HP-UX Recovery MAIN MENU.'
- x. Exit to the shell.

This menu is for assistance in determining the device file to use for boot partition. Once the device file has been determined select 'a'.

Selection:

The following options are selectable from this menu:

- a. Prompts the user to enter the boot partition device file's name, for example, c0d0s6.
- b. Probes customer disk(s), and provides information about mount devices; i.e., which devices were last mounted, where they were mounted, and whether or not there are any section conflicts.
- c. Displays the class, logical unit (LU), hardware path, driver name, hardware status, and software status information used by the Support Tape to communicate with the customer disk(s).

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Auto File Information MENU

If you select option a from the Boot Partition MENU, once you select the boot partition device file's name, the following menu will be displayed:

Auto File Information MENU

Select one of the following.

- a. Place: 'hpux (8.0.0;13)/hp-ux'
into the 'auto' file of the bootlif and install bootlif
using the device file '/dev/rsk/c0d0s6' .
- b. Examine the customer disk(s). If possible, determine last
mount information by scanning customer disk superblock(s).
- c. Display logical unit (lu) number(s) and addresses that the Support
Tape uses to communicate with customer disk(s).
NOTE: Cartridge tape and CDROM are considered disks.
- p. Prompt user to enter the 'auto' file boot string.
- m. Return to 'HP-UX Recovery MAIN MENU.'
- x. Exit to the shell.

This menu is for assistance in determining the contents of the 'auto file' in
the boot partition. Once 'a' is correct, select it to install the bootlif.

CAUTION: Selecting 'a' will result in overwriting '/dev/rdisk/c0d0s6'.
All data associated with this device file will be lost!

Selection:

The following options are selectable from this menu:

- a** Installs the bootlif, and then places the auto file boot string specified by the
user into the bootlif auto file
- b** Probes customer disk(s), and provides information about mount devices; i.e.,
which devices were last mounted, where they were mounted, and whether or
not there are any section conflicts.
- c** Displays the class, logical unit (LU), hardware path, driver name, hardware
status, and software status information used by the Support Tape to
communicate with the customer disk(s).
- p** Prompts user to enter boot string to be placed in auto file of bootlif

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SUPPORT TAPE UTILITIES MENU

After you have selected u from the Main Menu, the system responds by displaying the Support Tape Utilities Menu.

SUPPORT TAPE UTILITIES MENU

- p. Try to resynchronize position on tape
- t. Table of contents of a tape section
- r. Return to previous Menu
- x. Exit to shell

Select one of the above:

The following options are selectable from this menu:

- p** Resynchronize the tape position. If the system appears to lose track of the true tape position, the situation may be remedied by selecting p. While this was a fairly common occurrence on early versions of the tape, it should never happen on the current version. This utility has been retained only as a precaution.
- t** Prints a table of contents for a particular tape section.

Note When you using the SUPPORT TAPE UTILITIES MENU to list the contents of a section of the tape, you will find yourself in more, and will consequently need to use the space bar to page through long listings.





HP-UX System Recovery (HP-UX Systems Only)

One of the most critical functions performed by the Support Tape is to provide a means of recovering a customer system which is so compromised or corrupt that it will not boot to the login prompt. However, it is also useful in those cases where the system will boot to the prompt, but in which critical files may be corrupted, adversely affecting overall system performance.

Before Using the Support Tape to Recover

Before you resort to the Support Tape as a tool for recovering a damaged or corrupt system, there are several commands you should try first. If one of the following commands boots the system, the Support Tape recovery process becomes unnecessary.

If The System Will Boot To The ISL Prompt

If the system will boot to the ISL prompt:

1. Try to boot using the following commands:

```
hpux (BC/X.Y.Z;S)/hp-ux
hpux (BC/X.Y.Z;S)/SYSBACKUP
hpux (BC/X.Y.Z;S)/etc/conf/S800/hp-ux
```

Where:

BC/	SMB Bus Converter address (usually '2/' or '6/'; required on 850, 855, 86X, 87X only)
X	Midbus or IIP-PB module number (4 x interface slot #)
Y	CIO interface slot number, or IIP-PB HP-IB or HP-PB SCSI device address
Z	HP-IB or HP-FL or SCSI device address (825, 834, 835, 845, 850, 855, 86X, 87X, 635, 645 only)
S	Disk section number of root (/) (usually 4 or 13)

2. If no kernel was found, attempt to locate a bootable kernel using the following command:

```
hpux ls (BC/X.Y.Z;S)/
```

This command will list the files at the highest level on the indicated section.

The command appends an asterisk (*) to the end of executable file names. Perhaps one of the files listed is a kernel which is not named with the standard naming conventions (**hp-ux** or **SYSBACKUP**). Look for files larger than 1.5 Mbytes.

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3. If a kernel loads and begins execution but hangs after the kernel is initialized, the following command may prove helpful:

```
hpux -is (BC/X.Y.Z;S)kernel_file_name
```

This command boots the kernel in single-user mode. If the system boots in this mode, chances are good that a problem exists in one of the HP-UX start-up scripts.

4. If the kernel hangs or panics during kernel initialization, the following command may prove helpful:

Caution



The following command will destroy file systems if improperly used! It should be used only when the device files for console, root, swap, and dump are known!

```
hpux -a[C|R|S|D]devicefile
```

This command takes a device file specification (BC/X.Y.Z;S) and passes it to the loaded kernel. The kernel will erase its predefined I/O configuration, and configure in the specified device file. When the C, R, S, or D option is specified, the kernel configures the device as the 'console', 'root', 'swap', or 'dump' device, respectively. Note that -a can be repeated multiple times.

If none of the above results in booting the unbootable HP-UX system, it is a good candidate for Support Tape recovery.

If The System Fails To Boot To The ISL Prompt

If the system fails to boot to the ISL prompt:

1. Load the Support Tape (Reel #1, if you are using the open reel version of the Support Tape).
2. Reset the System Processor Unit (SPU) using the reset button or key switch, as appropriate.
3. The console will display boot path information. If Autoboot is enabled, the system console will eventually display the following or similar messages:

```
Autoboot from primary path enabled  
To override, press any key within 10 seconds.
```

4. Press any key before the 10 seconds elapse. The console will display the following prompt:

```
Boot from primary boot path (Y or N)?>
```

Enter n at the prompt.

5. The console will then display the following:

```
Boot from alternate boot path (Y or N)?>
```

If the alternate boot path specifies the address of the tape device where the Support Tape is mounted, enter y at the prompt.

If the alternate boot path does not specify the address of the address of the tape device where the Support Tape is mounted, enter n at the prompt. If n was entered at the prompt, the following message will be displayed on the console:

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Enter boot path, command, or ?>

Enter the address of the tape device (where the Support Tape is mounted) at the prompt.

6. The console will display the following:

Interact with IPL (Y or N)>

Enter **y** at the prompt.

7. The console will then display the following prompt:

ISL>

Enter **iomap** at the prompt. The **IOMAP** utility will map all devices the system can communicate with. If the system disk does not appear in **IOMAP**'s output, a hardware problem exists and should be resolved before proceeding.

8. Once the Support Tape boots to the ISL prompt, the commands in steps 1 - 4 of the preceding section can be attempted. If the system boots from the Support Tape's ISL prompt, the customer's **bootlif** (section 6) will need to be replaced (see the section entitled "Manual Replacement of HP-UX **bootlif**" immediately following this section).

If none of the above results in booting the unbootable HP-UX system, it is a good candidate for Support Tape recovery.

Manual Replacement of HP-UX **bootlif**

The following procedure can be used to replace the HP-UX **bootlif** section (section 6) of the boot disk.

It is assumed that the system has halted and cannot be booted from the system disk. It also assumes that the HP-UX operating system is intact, and would boot if **bootlif** were not corrupted or destroyed. To boot from the Support Tape:

1. Load the Support Tape (Reel #1, if you are using the open reel version of the Support Tape).
2. Reset the System Processor Unit (SPU), using the reset button or key switch, as appropriate.

The system console will display boot path information. If Autoboot is enabled, the system console will eventually display the following or similar messages:

Autoboot from primary path enabled
To override, press any key within 10 seconds.

3. Press any key before the 10 seconds elapse. The console will display the following prompt:

Boot from primary boot path (Y or N)?>

4. Enter **n** at the prompt.

The console will then display the following:

Boot from alternate boot path (Y or N)?>

5. Enter **n** at the prompt.

The console will then display the following:

Enter boot path, command, or ?>

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6. Enter the address of the Support Tape device (*BC/X.Y.Z*) at the prompt.

The console will display the following:

Interact with IPL (Y or N)?>

7. Enter **y** at the prompt.

The console will then display the following prompt:

ISL>

8. Enter the command string to boot the customer's HP-UX operating system at the prompt.

You should see the following or a similar message on the console:

Console login:

9. Enter **root** from the prompt to login as superuser.

The console will display the pound-sign (**#**) prompt:

#

Caution



The following command will destroy file systems if an incorrect device file is specified.

-
10. Enter **dd if=/usr/lib/uxbootlf of=/dev/rdisk/cXd0s6 bs=512k** at the prompt. The **X** in the output device file must be the logical unit (LU) number associated with the boot disk.

This step replaces **bootlif** on section 6 of the boot disk.

The console will display the following:

#

11. Enter **/etc/shutdown -h 0** at the prompt.

This will shut the system down and halt the System Processor Unit (SPU).

12. Reset the SPU, using the reset button or key switch, as appropriate.

The console will display boot path information. If Autoboot is enabled, the console will eventually display the following or similar messages:

**Autoboot from primary path enabled
To override, press any key within 10 seconds.**

13. Press any key before the 10 seconds elapse. The console will display the following prompt:

Boot from primary boot path (Y or N)?>

14. Enter **n** at the prompt.

The console will then display the following:

Boot from alternate boot path (Y or N)?>

15. Enter **n** at the prompt.

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The following message will be displayed on the console:

Enter boot path, command, or ?>

16. Enter the address of the **bootlif** device at the prompt.

The console will display the following:

Interact with IPL (Y or N)>

17. Enter **y** at the prompt.

The console should display the following prompt; if it does not, continue with step 20 of this procedure:

ISL>

18. Enter **hpux set autoboot "hpux (BC/X.Y.Z;S)/hp-ux"**

This will write the string delimited by double quotes (") into **bootlif**'s **AUTO** file.

Set **BC/X.Y.Z;S**, within the quoted string, to the values required for system boot.

The console will display the following:

ISL>

19. Enter the boot string required to boot the customer's IIP- UX operating system from the **ISL** prompt; the system should boot.

This completes the procedure. **bootlif** has been replaced.

20. If you are unable to obtain the **ISL** prompt in step 17 of this procedure, it is likely that **/usr/lib/uxbootlf** on the customer's system has been damaged. Repeat steps 1 through 9 of this procedure, and then proceed to step 21.

The console should display the following:

#

21. Using the appropriate customer file archive, restore **/usr/lib/uxbootlf** from the prompt. If no archive is available, this file can be extracted using **tar** in conjunction with the customer's product tapes.

After restoring **/usr/lib/uxbootlf**, the console should display the following:

#

22. Begin again at step 10 of this procedure.

System Recovery Using the Support Tape

Before you attempt to recover an IIP-UX system using the Support Tape, there is key information about the system disk that you should have at your disposal:

- Revision of the IIP-UX system which you are attempting to recover

Caution



You should only attempt to recover IIP-UX systems that match the revision of the Support Tape you are using; e.g., you should only use an 8.0 Support Tape to attempt to recover an 8.0 file system. Data corruption could occur if you attempt to mix revisions; e.g., if you attempt to recover a 7.06 file system with an 8.0 Support Tape.

- The location of the root filesystem on the disk (i.e., what filesystem you will be checking/repairing using `fsck`)
- The location of the boot partition path of that disk
- What the autofile in the boot partition should contain

Some of this information can be deduced with the help of the Support Tape, but it is not a trivial effort. The more you know about the system disk and its partitioning scheme, *before you encounter major damage or corruption*, the easier it will be for you to recover, especially if you have to rely on the Support Tape as your primary (or only) recovery tool.

The procedures which follow assume that both `fsck` and `mount` can be run successfully on the system disk; otherwise, the following procedures are not applicable.

Note



If `fsck` doesn't work, you can use `disked`, an interactive editor located under `/usr/contrib/bin` on Section 4 of the Support Tape. In general, however, if you can't `fsck` the system disk, you would probably be better off running the appropriate disk diagnostic, and if the drive is good, doing a re-install and update of the operating system.

The Two Automated Recovery Paths

There are two possible automated recovery paths:

- If you can't get the system to the ISL> prompt from the system disk, and you cannot boot the system from the Support Tape's ISL prompt, you will want to rebuild the boot partition on the system disk, and install all critical files required to boot on the customer root filesystem.
- If you can get the system to the ISL> prompt, but cannot boot IIP-UX, the system disk is damaged or corrupted; you will want to install *only* the critical files required to boot on the customer root file system.

The following two subsections will describe both of these procedures in detail.

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Rebuilding bootlif and Installing Critical Files

Following is the detailed procedure for rebuilding the boot partition of the system disk, and for installing all the critical files necessary to boot on the customer root filesystem:

1. Load the Support Tape (Reel #1, if you are using the open reel version of the Support Tape).
2. Reset the System Processor Unit (SPU) using the reset button, or key switch, as appropriate.

The console will display boot path information. If Autoboot is enabled, the system console will eventually display the following or similar messages:

Autoboot from primary path enabled
To override, press any key within 10 seconds.

3. Press any key before the 10 seconds elapse. The system console will display the following prompt:

Boot from primary boot path (Y or N)?>

4. Enter n at the prompt.

The console will then display the following:

Boot from alternate boot path (Y or N)?>

5. If the alternate boot path specifies the address of the tape device where the Support Tape is mounted, enter y at the prompt.

If the alternate boot path does not specify the address of the address of the tape device where the Support Tape is mounted, enter n at the prompt. If n is entered at the prompt, the following message will be displayed on the system console:

Enter boot Path or ?>

6. Enter the address of the tape device where the Support Tape is mounted.

The system console will display the following:

Interact with IPL (Y or N)>

7. Enter y at the prompt.

The console will then display the following prompt:

ISL>

8. Type the word support at the ISL> prompt:

ISL>support

9. After several minutes (approximately), and after displaying several screens of status information, the following will be displayed:

***** Creating device files! *****

/ on /dev/root read/write on day:month:day:hour:minutes:seconds:year
Press <return> to continue.

10. Press **Return**.

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11. The following menu is displayed on the system console:

SUPPORT TAPE MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- d. On-line Diagnostics
 - Note: only for systems with 16 or more Megabytes of memory
- m. Display Manual page for a specific command
- r. Recover an HP-UX unbootable system (a contributed utility)
- u. Utilities
- x. Exit to shell

This menu is for listing and loading the tools contained on the support tape. Once a tool is loaded, it may be run from the shell.

Select one of the above:

Enter r at the message prompt.

12. The console then displays the following menu:

HP-UX Recovery MAIN MENU

Select one of the following:

- a. Rebuild the boot partition (section 6). Install all 'critical' files required to boot HP-UX on a customer root file system.
- b. Do not rebuild the boot partition (section 6). Install 'critical' files required to boot HP-UX on a customer root file system.
- m. Return to the 'Support Tape Main Menu'.
- x. Exit to the shell.

This menu aids in the recovery of an HP-UX system which will not boot.
Selection:

Note



If the system disk will not boot to the ISL> prompt, then you should select option a from the HP-UX Recovery MAIN MENU; if the system disk will boot to the ISL> prompt, then you should select option b.

Enter a at the message prompt (assuming a worst case scenario).

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13. The console then displays the following menu:

```
File System Check      MENU

Select one of the following:
a. Run 'fsck'. Device file to use is known.
b. Examine customer disk(s). If possible, determine last
   mount information by scanning customer disk superblock(s).
c. Display logical unit (lu) number(s) and addresses that the Support
   Tape uses to communicate with customer disk(s).
   NOTE: Cartridge tape and CDRom are considered disks.
m. Return to 'HP-UX Recovery MAIN MENU.'
x. Exit to the shell.
```

This menu must be used to run 'fsck' on the target file system to be recovered.
Selection:

14. If the device file to use is known, then enter a at the message prompt.

If the device file to use is not known, then enter b or c, or both, depending on the type of information you wish to obtain (usually, you will enter b, and then, if necessary, you will enter c).

If you enter b, information similar to the following example will be displayed:

```
Probing the disk(s)...

DISK INFORMATION: - please note the conflicts.

/dev/dsk/c0d0s13 last mounted as /      #a hp79370 at 8.0.0.
-> c0d0s13 conflicts with : section 3 : section 4 : section 5 .

/dev/dsk/c0d0s4 last mounted as /      #a hp79370 at 8.0.0.
-> c0d0s4 conflicts with : section 13 .

/dev/dsk/c1d0s11 last mounted as /S11   #a hp79350 at 8.0.1.
/dev/dsk/c1d0s7 last mounted as /S7     #a hp79350 at 8.0.1.
/dev/dsk/c0d0s3 last mounted as /extra  #a hp79370 at 8.0.0.
->c0d0s3 conflicts with : section 13 .

/dev/dsk/c0d0s5 last mounted as /mnt    #a hp79379 at 8.0.0.
-> c0d0s5 conflicts with : section 13 .

Several '/'s were found.

<Press return to continue>
```

The most important information for recovery purposes in the display above consists of the partition (e.g., the s13 in the entry /dev/dsk/c0d0s13) with its associated hardware address (e.g., 8.0.0). The other information included in the display is primarily intended to warn the user that there are conflicts between disk sections. For example, c0d0s13 conflicts with : section 3 : section 4 : section 5 . means that if you mount c0d0s13, you will be mounting over sections 3-5, overwriting their contents. The message

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Several '/'s were found is a warning that more than one section of the disk is bootable, and you will need to decide which of these potentially bootable sections you wish to **fsck**, mount, and then boot from.

15. Press **(Return)** and you will be returned to the File System Check MENU.
16. If, instead of selecting **b** from the File System Check MENU, you select **c**, the system will display information similar to the following on the system console:

Class	LU	H/W Path	Driver	H/W Status	S/W Status
disk	0	8.0.0	cio_ca0.hpib0.disc1	ok(0x214)	ok
disk	1	8.0.1	cio_ca0.hpib0.disc1	ok(0x212)	ok

<Press return to continue>

17. Press **(Return)** and you will be returned to the File System Check MENU.
18. Once you know the proper device file to use, then enter **a** at the File System Check MENU prompt.
19. The system will then display the following prompt on the system console:
Enter the device file associated with the file system to be checked
(example: c0d0s13):
20. Once you have entered the appropriate device file at the prompt, the system will then display the following:

A file system check will now be run. Note any errors. After the report, the user will be asked to run 'fsck' a second time. If errors are reported, run 'fsck' again to attempt to correct them.

<Press return to continue>

21. Press **(Return)** and a message similar to the following will be displayed:

```
'fsck -n' report on /dev/rdisk/c0d0s13:

** /dev/rdisk/c0d0s13 (NO WRITE)
** Last Mounted on /
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
11283 files, 0 icon, 197523 used, 287437 free (1149 frags, 35786 blocks)

Do you wish to run 'fsck' on /dev/rdisk/c0d0s13? <y or n>:
```

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22. If there are no inconsistencies (which is the case with the example above), then enter **n** at the prompt; if there are inconsistencies, then enter **y** at the prompt.
23. If you enter **n** at the prompt, then an attempt will be made to mount the device and continue.
24. If you enter **y** at the prompt, the following will be displayed on the system console:

The following is a brief description of 'fsck's options:

Key	Option
---	-----
-p	Check file system for inconsistencies. Correct errors only if no data loss will result. Must be only option entered.
-P	Check file system if not cleanly unmounted. Correct errors if no data loss will result. Must be only option entered.
-y	Assume yes response to all 'fsck' questions.
-n	Assume no response to all 'fsck' questions.
-b block	Use redundant superblock specified in 'block' variable (example: -b 16 to use first redundant superblock).

ENTER 'fsck' options (example: '-y' or <return> for no options):

25. If you choose option **-y**, the system will display something like the following on the system console:

```
'fsck -y' report on /dev/rdisk/c0d0s13:

** /dev/dsk/c0d0s13
** Last Mounted on /
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
11283 files, 0 icon, 197523 used, 287437 free (1149 frags, 35786 blocks)

Attempting to mount c0d0s13 to the Support Tape's /ROOT directory...

c0d0s13 successfully mounted.

<Press return to continue>
```

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26. Press **(Return)** and the following will be displayed on the system console:

Do you wish to use 'tar' to save customer files that will be over written by this automatic recovery procedure? <y or n>:

27. Generally, it is advisable to enter y at this prompt; if you do so, the following will be displayed:

Mount your backup media and be ready to enter device name for backup.

NOTE: The default device file is '/dev/rmt/0m'. The default device file works only if you are using a 9-track Magnetic or a DAT Drive (LU 0). If you wish to list other potential device files to use in conjunction with the 'tar' device file parameter, type 'x' to escape to the shell. At the shell prompt type the following:

```
lsf /dev/rmt/* /dev/rct/*
```

Once the backup device file is determined, type 'exit' to return to the recovery process.

28. As per the instructions, type exit, and you will be prompted for the full pathname for the backup device file:

ENTER device file (example: /dev/rmt/1m):

29. Enter the appropriate backup device file, or enter **(Return)** to accept the default; the following (or similar) information will be displayed:

```
a ./etc/frecovery 384 blocks
a ./etc/recover1 280 blocks
a ./etc/fsck 232 blocks
a ./etc/init 296 blocks
a ./etc/insf 336 blocks
a ./etc/ioint 144 blocks
a ./etc/ioscan 72 blocks
a ./etc/mkfs 112 blocks
a ./etc/mount 304 blocks
a ./etc/reboot 280 blocks
a ./etc/umount 40 blocks
a ./bin/cat 144 blocks
a ./bin/cpio 392 blocks
a ./bin/dd 120 blocks
a ./bin/mv 152 blocks
a ./bin/pwd 32 blocks
a ./bin/sh 264 blocks
a ./bin/stty 48 blocks
a ./bin/tar 360 blocks
a ./bin/su 248 blocks
a ./hp-ux 4264 blocks
*** When restoring these be carefull not to put 'corrupt' files back in place.**
```

Make sure the support tape is on line then press return to continue.

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***** Downloading files to the customer's disk *****

Note



You may be prompted to mount the second open reel at this point in the procedure.

Current tape section is unknown. Target is 1

Attempting to find position on tape...

Unable to read section.

Attempting return to Section 1 ... done (Section 1)

Current tape section is 1.

x ./etc/fsck , 11874 bytes, 232 tape blocks
x ./etc/mkfs , 147456 bytes, 288 tape blocks
x ./etc/mount , 151552 bytes, 296 tape blocks
x ./etc/reboot , 139264 bytes, 272 tape blocks
x ./etc/umount , 135168 bytes, 264 tape blocks
x ./etc/init , 151552 bytes, 296 tape blocks
x ./etc/frecovery , 196608 bytes, 384 tape blocks
x ./etc/insf , 167936 bytes, 328 tape blocks
x ./etc/ioint , 73728 bytes, 144 tape blocks
x ./etc/ioscan , 90112 bytes, 176 tape blocks
x ./etc/recover1 , 143360 bytes, 280 tape blocks
x ./bin/cat , 73728 bytes, 144 tape blocks
x ./bin/cpio , 196608 bytes, 384 tape blocks
x ./bin/mv , 77824 bytes, 152 tape blocks
x ./bin/pwd , 36864 bytes, 72 tape blocks
x ./bin/stty , 106496 bytes, 208 tape blocks
x ./bin/su , 126976 bytes, 248 tape blocks
x ./bin/tar , 184320 bytes, 360 tape blocks
x ./bin/sh , 135168 bytes, 264 tape blocks
x ./bin/dd , 61440 bytes, 120 tape blocks

Current tape section is 3. Target is 4.

Moving tape forward done

x ./usr/contrib/bin/hp-ux, 2043904 bytes, 3992 tape blocks

**** Creating device files on the customer's disk ****

***** Renaming the following customer files: *****

-- '/etc/passwd' has been renamed 'etc/passwd.BK' --
-- '/etc/pre_init_rc' has been renamed 'etc/pre_init_rc.BK' --
-- '/etc/inittab' has been renamed 'etc/inittab.BK' --
-- '/etc/ioconfig' has been renamed 'etc/ioconfig.BK' --
-- '/etc/rc' has been renamed 'etc/rc.BK' --
-- '/.profile' has been renamed '/.profile.BK' --
-- '/etc/checklist' has been renamed 'etc/checklist.BK' --



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<Press return and continue>

30. Press **Return** and the following will be displayed:

```
***** WARNING *****  
**** The new kernel (/hp-ux) is very limited. ****  
**** It must be REPLACED AS SOON AS POSSIBLE. ****  
***** WARNING *****
```

You will be forced to reboot into single user mode (/etc/passwd has been moved).

<Press return to continue>

31. Press **Return** and the following will be displayed on the system console:

Upon rebooting, if './.profile' fails, you may need to
issue the following commands immediately.

```
cd /dev  
/etc/insf -e  
/etc/insf
```

NOTE: You should then read 'RECOVERY.DOC'.

All 'critical' files have been installed. The bootlif has not been replaced.

<Press return to continue>

Note



At this point in the procedure, all critical files have been installed. However, if you selected option a from the HP-UX Recovery MAIN MENU, bootlif has not been installed.

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32. Press **Return** and information similar to the following will be displayed:

```
Current tape section is 5. Target is 4.
Moving tape backwards .... done

x ./usr/contrib/bin/uxbootlf, 1892352 bytes, 3696 tape blocks
x ./usr/contrib/bin/autofl, 30720 bytes, 60 tape blocks
```

```
Boot Partition      MENU
```

Select one of the following:

- a. Ready to specify the device file to use to rebuild the boot partition (example: c0d0s6)
- b. Examine customer disk(s). If possible, determine last mount information by scanning customer disk superblock(s).
NOTE: the file systems displayed MUST NOT be used as the boot partition. The address and disk type information MIGHT be of assistance.
- c. Display logical unit (lu) number(s) and addresses that the Support Tape uses to communicate with customer disk(s).
NOTE: Cartridge tape and CDROM are considered disks.
- m. Return to 'HP-UX Recovery MAIN MENU.'
- x. Exit to the shell.

This menu is for assistance in determining the device file to use for boot partition. Once the device file has been determined select 'a'.

Selection:

33. If you have not yet determined the device file where to build, select **b** (which will display sections which you should **NOT** use for the boot partition) or **c**, or both, as appropriate.

Note



If you select **b**, disregard any messages of the general form of the following example:

You probably want to use /dev/dsk/c0d0s4 for root.

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34. If you select **b**, information similar to the following will be displayed on the system console:

Probing the disk(s)...

DISK INFORMATION: - please note the conflicts.

/dev/dsk/c0d0s4 last mounted as / #a hp79370 at 8.0.0.
-> c0d0s4 conflicts with : section 13 .

/dev/dsk/c0d0s13 last mounted as /ROOT #a hp79370 at 8.0.0.
-> c0d0s13 conflicts with : section 3 : section 4 : section 5 .

/dev/dsk/c1d0s11 last mounted as /S11 #a hp79350 at 8.0.1.
/dev/dsk/c1d0s7 last mounted as /S7 #a hp79350 at 8.0.1.
/dev/dsk/c0d0s3 last mounted as /extra #a hp79370 at 8.0.0.
-> c0d0s3 conflicts with : section 13 .

/dev/dsk/c0d0s5 last mounted as /mnt #a hp79370 at 8.0.0.
-> c0d0s5 conflicts with : section 13 .

You probably want to use /dev/dsk/c0d0s4 for root.

<Press return to continue>

Caution



The file systems displayed above are **NOT** candidates for the boot partition. If one of the device files displayed above were to be used for this purpose, the associated file system would be destroyed. **ONLY A SECTION 6 MAY BE USED!**

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35. Press **(Return)** and the Boot Partition MENU will be displayed again on the system console:

Boot Partition MENU

Select one of the following:

- a. Ready to specify the device file to use to rebuild the boot partition (example: c0d0s6)
- b. Examine customer disk(s). If possible, determine last mount information by scanning customer disk superblock(s).
NOTE: the file systems displayed MUST NOT be used as the boot partition. The address and disk type information MIGHT be of assistance.
- c. Display logical unit (lu) number(s) and addresses that the Support Tape uses to communicate with customer disk(s).
NOTE: Cartridge tape and CDROM are considered disks.
- m. Return to 'HP-UX Recovery MAIN MENU.'
- x. Exit to the shell.

This menu is for assistance in determining the device file to use for boot partition. Once the device file has been determined select 'a'.

Selection:

36. You will generally select option a at this point, which will cause the following to be displayed on the system console:

Enter the boot partition device file's name (example: c0d0s6):

37. Enter the appropriate file name; if you were to enter c0d0s6 (or just enter **(Return)**, since it is the default), the following would be displayed:

Using /dev/rdisk/c0d0s6

<Press return to continue>

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38. Press **Return** and the Auto File Information MENU will be displayed:

Auto File Information MENU

Select one of the following.

- a. Place: 'hpux (8.0.0;13)/hp-ux'
into the 'auto' file of the bootlif and install bootlif
using the device file '/dev/rsk/c0d0s6' .
- b. Examine the customer disk(s). If possible, determine last
mount information by scanning customer disk superblock(s).
- c. Display logical unit (lu) number(s) and addresses that the Support
Tape uses to communicate with customer disk(s).
NOTE: Cartridge tape and CDROM are considered disks.
- p. Prompt user to enter the 'auto' file boot string.
- m. Return to 'HP-UX Recovery MAIN MENU.'
- x. Exit to the shell.

This menu is for assistance in determining the contents of the 'auto file' in
the boot partition. Once 'a' is correct, select it to install the bootlif.

CAUTION: Selecting 'a' will result in overwriting '/dev/rdisk/c0d0s6'.
All data associated with this device file will be lost!

Selection:

Note



The values displayed in option a of the Auto File Information MENU are
system specific, and these values must be correct for your system, otherwise
the auto file in your bootlif will be incorrect.

39. If the values displayed in option a of the Auto File Information MENU are incorrect, you
may enter the correct values by selecting option p from the Auto File Information MENU;
the system console will then prompt you:

Please enter the desired 'auto' file contents:

The Auto File Information MENU will then be displayed again, this time with the values
you just entered appearing in option a.

FOR HP INTERNAL USE ONLY

40. Once the values displayed in option a are correct, select option a from the Auto File Information MENU; the system responds with messages in the following format:

```
***** Installing bootlif on '/dev/rdisk/c0d0s6' *****  
  
924+0 records in  
924+0 records out  
  
**** Placing 'hpux (8.0.0;13)/hp-ux' in the 'auto' file ****  
  
All 'critical' files have been installed and the bootlif has been replaced.  
  
<Press return to continue>
```

41. Press **(Return)** and you will be returned to the IIP-UX Recovery MAIN MENU.
42. Select **m** to return to the SUPPORT TAPE MAIN MENU.
43. Select **b** to reboot the system.
44. Boot the customer's HP-UX operating system.

The system will display a number of status and information messages, and finally will display the following warning on the system console:

```
*****  
WARNING! WARNING! WARNING! WARNING! WARNING! WARNING! WARNING! WARNING!  
*****
```

```
THIS SYSTEM HAS BEEN BOOTED USING A TEMPORARY KERNEL!  
DO NOT ATTEMPT TO INVOKE MULTI-USER RUN-LEVEL USING THIS KERNEL!  
DO NOT ATTEMPT TO TURN ON SWAPPING...THE KERNEL WILL PANIC!
```

Type the following command from the shell prompt for more information on completing the recovery process:

```
cat /RECOVERY.DOC
```

```
*****  
#
```

FOR HP INTERNAL USE ONLY

45. Enter the following at the shell prompt:

```
# cat /RECOVERY.DOC
```

The system displays the following on the system console:

1) IMMEDIATELY replace the following files from a current backup archive:

```
/etc/checklist  /etc/frecover  /etc/fsck      /etc/init      /etc/inittab
/etc/insf       /etc/ioconfig  /etc/iointit  /etc/ioscan    /etc/mkfs
/etc/mount      /etc/passwd   /etc/rc       /etc/reboot    /etc/umount
/etc/recoversl  /etc/pre_init_rc
```

```
/bin/cat        /bin/cpio      /bin/dd        /bin/mv        /bin/pwd
/bin/sh         /bin/stty      /bin/su
```

```
/hp-ux         /.profile
```

NOTE: The backup archive may be extracted using '/bin/tar', '/bin/cpio' or '/etc/frecover'.

2) Reboot the System Processing Unit (SPU) using the following commands:

```
# sync
# sync
# /etc/reboot
```

46. Using tar, cpio, or frecover, replace the files listed above from the customer's current backup archive.

Warning



While all the files listed above are critical to a successful recovery, it is especially imperative that you ensure that the copy of /etc/ioconfig you extract from the customer archive is correct; otherwise, irreparable damage may result (this file assures that the correct logical unit (lu) assignments are made). *UNDER NO CIRCUMSTANCES SHOULD YOU BOOT A KERNEL WITHOUT HAVING PREVIOUSLY LOADED ITS CORRESPONDING /etc/ioconfig FILE.*

47. Enter the following at the Bourne prompt:

```
# sync
```

48. Enter the same command again at the Bourne prompt:

```
# sync
```

49. Enter the following at the Bourne prompt:

```
# /etc/reboot
```

FOR HP INTERNAL USE ONLY

Installing Critical Files Only

Following is the detailed procedure for installing all the critical files necessary to boot on the customer root filesystem:

1. Load the Support Tape (Reel #1, if you are using the open reel version of the Support Tape).
2. Reset the System Processor Unit (SPU) using the reset button, or key switch, as appropriate.
3. The console will display boot path information. If autoboot is enabled, the system console will eventually display the following or similar messages:

Autoboot from primary path enabled
To override, press any key within 10 seconds.

4. Press any key before the 10 seconds elapse. The system console will display the following prompt:

Boot from primary boot path (Y or N)?>

Enter n at the prompt.

5. The console will then display the following:

Boot from alternate boot path (Y or N)?>

If the alternate boot path specifies the address of the tape device where the Support Tape is mounted, enter y at the prompt.

If the alternate boot path does not specify the address of the address of the tape device where the Support Tape is mounted, enter n at the prompt. If n is entered at the prompt, the following message will be displayed on the system console:

Enter boot Path or ?>

Enter the address of the tape device where the Support Tape is mounted.

6. The system console will display the following:

Interact with IPL (Y or N)>

Enter y at the prompt.

7. The console will then display the following prompt:

ISL>

From this point, the operator can choose to recover an unbootable HP-UX operating system (see chapter 2), to run offline diagnostics or utilities (see chapter 3), or boot the Support Tape kernel to run online diagnostics (see chapter 4).

8. Load Reel #2 of the Support Tape (if you are using the open reel version of the Support Tape).

FOR HP INTERNAL USE ONLY

9. Type the word **support** at the Support Tape's ISL> prompt:

ISL>support

After several minutes (approximately), and after displaying several screens of status information, the following will be displayed:

***** Creating device files! *****

/ on /dev/root read/write on *day:month:date:hour:minutes:seconds:year*

Press <return> to continue.

10. Press **Return** and the following menu is displayed on the system console:

SUPPORT TAPE MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- d. On-line Diagnostics
 - Note: only for systems with 16 or more Megabytes of memory
- m. Display Manual page for a specific command
- r. Recover an HP-UX unbootable system (a contributed utility)
- u. Utilities
- x. Exit to shell

This menu is for listing and loading the tools contained on the support tape. Once a tool is loaded, it may be run from the shell.

Select one of the above:

FOR HP INTERNAL USE ONLY

11. Enter **r** at the message prompt, and the console then displays the following menu:

HP-UX Recovery MAIN MENU

Select one of the following:

- a. Rebuild the boot partition (section 6). Install all 'critical' files required to boot HP-UX on a customer root file system.
- b. Do not rebuild the boot partition (section 6). Install 'critical' files required to boot HP-UX on a customer root file system.
- m. Return to the 'Support Tape Main Menu'.
- x. Exit to the shell.

This menu aids in the recovery of an HP-UX system which will not boot.
Selection:

12. Enter **b** at the message prompt.

13. The console then displays the following menu:

File System Check MENU

Select one of the following:

- a. Run 'fsck'. Device file to use is known.
- b. Examine customer disk(s). If possible, determine last mount information by scanning customer disk superblock(s).
- c. Display logical unit (lu) number(s) and addresses that the Support Tape uses to communicate with customer disk(s).
NOTE: Cartridge tape and CDROM are considered disks.
- m. Return to 'HP-UX Recovery MAIN MENU.'
- x. Exit to the shell.

This menu must be used to run 'fsck' on the target file system to be recovered.
Selection:

FOR HP INTERNAL USE ONLY

14. If the device file to use is known, then enter **a** at the message prompt.

If the device file to use is not known, then enter **b** or **c**, or both, depending on the type of information you wish to obtain (usually, you will enter **b**, and then, if necessary, you will enter **c**).

If you enter **b**, information similar to the following example will be displayed:

```
Probing the disk(s)...
```

```
DISK INFORMATION: - please note the conflicts.
```

```
/dev/dsk/c0d0s13 last mounted as /      #a hp79370 at 8.0.0.  
-> c0d0s13 conflicts with : section 3 : section 4 : section 5 .
```

```
/dev/dsk/c0d0s4 last mounted as /      #a hp79370 at 8.0.0.  
-> c0d0s4 conflicts with : section 13 .
```

```
/dev/dsk/c1d0s11 last mounted as /S11   #a hp79350 at 8.0.1.  
/dev/dsk/c1d0s7 last mounted as /S7    #a hp79350 at 8.0.1.  
/dev/dsk/c0d0s3 last mounted as /extra #a hp79370 at 8.0.0.  
->c0d0s3 conflicts with : section 13 .
```

```
/dev/dsk/c0d0s5 last mounted as /mnt    #a hp79379 at 8.0.0.  
-> c0d0s5 conflicts with : section 13 .
```

```
Several '/'s were found.
```

```
<Press return to continue>
```

The most important information for recovery purposes in the display above consists of the partition (e.g., the **s13** in the entry **/dev/dsk/c0d0s13**) with its associated hardware address (e.g., **8.0.0**). The other information included in the display is primarily intended to warn the user that there are conflicts between disk sections. For example, **c0d0s13 conflicts with : section 3 : section 4 : section 5 .** means that if you mount **c0d0s13**, you will be mounting over sections 3-5, overwriting their contents. The message **Several '/'s were found** is a warning that more than one section of the disk is bootable, and you will need to decide which of these potentially bootable sections you wish to **fsck**, mount, and then boot from.

15. Press **Return** and you will be returned to the File System Check MENU.



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16. If, instead of selecting **b** from the File System Check MENU, you select **c**, the system will display information similar to the following on the system console:

Class	LU	H/W Path	Driver	H/W Status	S/W Status
disk	0	8.0.0	cio_ca0.hpib0.disc1	ok(0x214)	ok
disk	1	8.0.1	cio_ca0.hpib0.disc1	ok(0x212)	ok

<Press return to continue>

17. Press **Return** and you will be returned to the File System Check MENU.
18. Once you know the proper device file to use, then enter **a** at the File System Check MENU prompt.
19. The system will then display the following prompt on the system console:

Enter the device file associated with the file system to be checked
(example: c0d0s13):

20. Once you have entered the appropriate device file at the prompt, the system will then display the following:

A file system check will now be run. Note any errors. After the report, the user will be asked to run 'fsck' a second time. If errors are reported, run 'fsck' again to attempt to correct them.

<Press return to continue>

21. Press **Return** and a message similar to the following will be displayed:

'fsck -n' report on /dev/rdisk/c0d0s13:

```
** /dev/rdisk/c0d0s13 (NO WRITE)
** Last Mounted on /
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
11283 files, 0 icon, 197523 used, 287437 free (1149 frags, 35786 blocks)
```

Do you wish to run 'fsck' on /dev/rdisk/c0d0s13? <y or n>:

FOR HP INTERNAL USE ONLY

22. If there are no inconsistencies (which is the case with the example above), then enter n at the prompt; if there are inconsistencies, then enter y at the prompt.
23. If you enter y at the prompt, the following will be displayed on the system console:

The following is a brief description of 'fsck's options:

Key	Option
---	-----
-p	Check file system for inconsistencies. Correct errors only if no data loss will result. Must be only option entered.
-P	Check file system if not cleanly unmounted. Correct errors if no data loss will result. Must be only option entered.
-y	Assume yes response to all 'fsck' questions.
-n	Assume no response to all 'fsck' questions.
-b block	Use redundant superblock specified in 'block' variable (example: -b 16 to use first redundant superblock).

ENTER 'fsck' options (example: '-y' or <return> for no options):

Caution



Despite the fact that fsck -y is given as an example on the menu display, this is a dangerous option to select. fsck -P would be a much safer option to use.

24. If you choose option -n, then an attempt will be made to mount the device and continue.
25. If you do choose option -y, the system will display something like the following on the system console:

```
'fsck -y' report on /dev/rdisk/c0d0s13:

** /dev/dsk/c0d0s13
** Last Mounted on /
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
11283 files, 0 icon, 197523 used, 287437 free (1149 frags, 35786 blocks)

Attempting to mount c0d0s13 to the Support Tape's /ROOT directory...

c0d0s13 successfully mounted.

<Press return to continue>
```

FOR HP INTERNAL USE ONLY

26. Press **(Return)** and the following will be displayed on the system console:

Do you wish to use 'tar' to save customer files that will be over written by this automatic recovery procedure? <y or n>:

27. Generally, it is advisable to enter y at this prompt; if you do so, the following will be displayed:

Mount your backup media and be ready to enter device name for backup.

NOTE: The default device file is '/dev/rmt/0m'. The default device file works only if you are using a 9-track Magnetic or a DAT Drive (LU 0). If you wish to list other potential device files to use in conjunction with the 'tar' device file parameter, type 'x' to escape to the shell. At the shell prompt type the following:

```
lssf /dev/rmt/* /dev/rct/*
```

Once the backup device file is determined, type 'exit' to return to the recovery process.

28. As per the instructions, type exit, and you will be prompted for the full pathname for the backup device file:

ENTER device file (example: /dev/rmt/1m):

29. Enter the appropriate backup device file, or enter **(Return)** to accept the default; the following information (or similar information will be displayed):

```
a ./etc/frecovery 384 blocks
a ./etc/recover1 280 blocks
a ./etc/fsck 232 blocks
a ./etc/init 296 blocks
a ./etc/insf 336 blocks
a ./etc/ioint 144 blocks
a ./etc/ioscan 72 blocks
a ./etc/mkfs 112 blocks
a ./etc/mount 304 blocks
a ./etc/reboot 280 blocks
a ./etc/umount 40 blocks
a ./bin/cat 144 blocks
a ./bin/cpio 392 blocks
a ./bin/dd 120 blocks
a ./bin/mv 152 blocks
a ./bin/pwd 32 blocks
a ./bin/sh 264 blocks
a ./bin/stty 48 blocks
a ./bin/tar 360 blocks
a ./bin/su 248 blocks
a ./hp-ux 4264 blocks
```

*** When restoring these be carefull not to put 'corrupt' files back in place.**

FOR HP INTERNAL USE ONLY

Make sure the support tape is on line then press return to continue.

***** Downloading files to the customer's disk *****

Current tape section is unknown. Target is 1

Attempting to find position on tape...

Unable to read section.

Attempting return to Section 1 ... done (Section 1)

Current tape section is 1.

x ./etc/fscck , 11874 bytes, 232 tape blocks
x ./etc/mkfs , 147456 bytes, 288 tape blocks
x ./etc/mount , 151552 bytes, 296 tape blocks
x ./etc/reboot , 139264 bytes, 272 tape blocks
x ./etc/umount , 135168 bytes, 264 tape blocks
x ./etc/init , 151552 bytes, 296 tape blocks
x ./etc/frecovery , 196608 bytes, 384 tape blocks
x ./etc/insf , 167936 bytes, 328 tape blocks
x ./etc/ioint , 73728 bytes, 144 tape blocks
x ./etc/ioscan , 90112 bytes, 176 tape blocks
x ./etc/recover1 , 143360 bytes, 280 tape blocks
x ./bin/cat , 73728 bytes, 144 tape blocks
x ./bin/cpio , 196608 bytes, 384 tape blocks
x ./bin/mv , 77824 bytes, 152 tape blocks
x ./bin/pwd , 36864 bytes, 72 tape blocks
x ./bin/stty , 106496 bytes, 208 tape blocks
x ./bin/su , 126976 bytes, 248 tape blocks
x ./bin/tar , 184320 bytes, 360 tape blocks
x ./bin/sh , 135168 bytes, 264 tape blocks
x ./bin/dd , 61440 bytes, 120 tape blocks

Current tape section is 3. Target is 4.

Moving tape forward done

x ./usr/contrib/bin/hp-ux, 2043904 bytes, 3992 tape blocks

**** Creating device files on the customer's disk ****

***** Renaming the following customer files: *****

-- '/etc/passwd' has been renamed 'etc/passwd.BK' --
-- '/etc/pre_init_rc' has been renamed 'etc/pre_init_rc.BK' --
-- '/etc/inittab' has been renamed 'etc/inittab.BK' --
-- '/etc/ioconfig' has been renamed 'etc/ioconfig.BK' --
-- '/etc/rc' has been renamed 'etc/rc.BK' --
-- '/.profile' has been renamed '/.profile.BK' --
-- '/etc/checklist' has been renamed 'etc/checklist.BK' --

<Press return and continue>

FOR HP INTERNAL USE ONLY

30. Press **Return** and the following will be displayed:

```
***** WARNING *****  
**** The new kernel (/hp-ux) is very limited. ****  
**** It must be REPLACED AS SOON AS POSSIBLE. ****  
***** WARNING *****
```

You will be forced to reboot into single user mode (/etc/passwd has been moved).

<Press return to continue>

31. Press **Return** and the following will be displayed on the system console:

Upon rebooting, if '/.profile' fails, you may need to
issue the following commands immediately.

```
cd /dev  
/etc/insf -e  
/etc/insf
```

NOTE: You should then read 'RECOVERY.DOC'.

All 'critical' files have been installed. The bootlif has not been replaced.

<Press return to continue>

32. Press **Return** and you will be returned to the HP-UX Recovery MAIN MENU.

33. Select **m** to return to the SUPPORT TAPE MAIN MENU.

34. Select **b** to reboot the system.

FOR HP INTERNAL USE ONLY

35. Boot the customer's HP-UX operating system.

The system will display a number of status and information messages, and finally will display the following warning on the system console:

```
*****
WARNING! WARNING! WARNING! WARNING! WARNING! WARNING! WARNING! WARNING!
*****
```

```
THIS SYSTEM HAS BEEN BOOTED USING A TEMPORARY KERNEL!
DO NOT ATTEMPT TO INVOKE MULTI-USER RUN-LEVEL USING THIS KERNEL!
DO NOT ATTEMPT TO TURN ON SWAPPING...THE KERNEL WILL PANIC!
```

Type the following command from the shell prompt for more information on completing the recovery process:

```
cat /RECOVERY.DOC
```

```
*****
#
```

36. Enter the following at the shell prompt:

```
# cat /RECOVERY.DOC
```

The system displays the following on the system console:

- 1) IMMEDIATELY replace the following files from a current backup archive:

```
/etc/checklist /etc/frecovery /etc/fsck /etc/init /etc/inittab
/etc/insf /etc/ioconfig /etc/ioint /etc/ioscan /etc/mkfs
/etc/mount /etc/passwd /etc/rc /etc/reboot /etc/umount
/etc/recoversl /etc/pre_init_rc
```

```
/bin/cat /bin/cpio /bin/dd /bin/mv /bin/pwd
/bin/sh /bin/stty /bin/su
```

```
/hp-ux /.profile
```

NOTE: The backup archive may be extracted using '/bin/tar', '/bin/cpio' or '/etc/frecovery'.

- 2) Reboot the System Processing Unit (SPU) using the following commands:

```
# sync
# sync
# /etc/reboot
```

2-30 HP-UX System Recovery (HP-UX Systems Only)

FOR HP INTERNAL USE ONLY

37. Using `tar`, `cpio`, or `frecover`, replace the files listed above from the customer's current backup archive.

Warning



While all the files listed above are critical to a successful recovery, it is especially imperative that you ensure that the copy of `/etc/ioconfig` you extract from the customer archive is correct; otherwise, irreparable damage may result (this file assures that the correct logical unit (lu) assignments are made). *UNDER NO CIRCUMSTANCES SHOULD YOU BOOT A KERNEL WITHOUT HAVING PREVIOUSLY LOADED ITS CORRESPONDING `/etc/ioconfig` FILE.*

38. Enter the following at the Bourne prompt:

```
# sync
```

39. Enter the same command again at the Bourne prompt:

```
# sync
```

40. Enter the following at the Bourne prompt:

```
# /etc/reboot
```


Offline Diagnostics and Utilities

Running ISL Based Diagnostics and Utilities

The ISL programs listed below are among those available for hardware verification and troubleshooting. For a complete list of those available on your system, enter **help** at the **ISL>** prompt.

a1002ap	CPU diagnostic for the A1002A SPU (xx2 and 825/925 family CPUs)
a1100ap	CPU diagnostic for the A1100A SPU (850/950 family CPUs)
a1002am	memory diagnostic for the A1002A SPU (825/925 family CPUs)
a1100am	memory diagnostic for the A1100A SPU (850/950 family CPUs)
a1002ai	I/O diagnostic for the A1002A SPU (xx2 and 825/925 family CPUs)
a1100ai	I/O diagnostic for the A1100A SPU (850/950 family CPUs)
iomap	utility to list the physical I/O configuration of the system
caexr	channel adapter exerciser
bcdiag	bus converter diagnostic
uniproc	uni-processor diagnostic (842, 852, 865, 870, 948, 958, 980)
mproc	multi-processor diagnostic
sadpatch	a standalone diagnostic patching utility
clkutil	read and set the battery-backed-up time of day clock
ss_config	this utility is IIP company proprietary

To invoke one of the above programs, simply enter the appropriate diagnostic or utility at name at the **ISL>** prompt. For example, to invoke the CPU diagnostic for the A1002A SPU, do the following:

1. Enter **a1002ap** at the Support Tape's **ISL>** prompt, and information similar to the following will be displayed:

```
Beginning of SOM address = 0x00021000
Beginning of code space address = 0x00050000
Last code space address = 0x000ECFFC
Last SOM address = 0x000F0C10
DIAGNOSTIC SYSTEM FOR ISL STAND ALONE DIAGNOSTICS
Version 1.0
```

Type **HELP** for command information.

Type **INFO** for test information.

FOR HP INTERNAL USE ONLY

A1002AP.A1035A System Processor Unit Diagnostic, Version 2.0
There are 126 Sections in the Diagnostic - 1 thru 126
PROC>

2. To run the diagnostic, type *resume* at the PROC> prompt.

For further information on these programs, see the *Offline Diagnostics System Manual*, part number 30190-90010.

Online Subsystem Diagnostics

Running Online Subsystem Diagnostics from the Support Tape

Caution

You cannot run any of the Online Subsystem diagnostics from the Support Tape, unless your system has at least 16 Mb of memory.



The ON LINE DIAGNOSTICS MENU provides a special interface for Section 5 (/usr/diag/bin) of the Support Tape:

ON LINE DIAGNOSTICS MENU (TAPE SECTION 5: /usr/diag)

(Note: Any program with X won't run from the Support Tape Environment.)

0. AFIDAD	1. CARTDIAG	2. CENTPBA	3. CIPERLPD(X)
4. CS8ODIAG	5. DASSDIAG	6. DIAG7478	7. FLEXDIAG
8. GPIODAD	9. HPFLDIAG	10. HPIBDAD(X)	11. HPIBDDS
12. HPIBDIAG(X)	13. LANDAD(X)	14. MEMDIAG(X)	15. MUXDIAG
16. OPDIAG	17. OSI4DAD	18. PMUXDIAG	19. PSIDAD
20. REELDIAG	21. SCSICD	22. SCSICIO	23. SCSIDDS
24. SCSIDISK	25. SCSIPBA	26. SCSIREEL	27. SS8ODIAG
28. SYSMAP	D. Run DUI		
a. Report available space	p. Purge diags from memory		
r. Return previous menu	x. Exit to shell		

The diagnostic user interface "DUI" is loaded automatically with each diagnostic. Select one of the above:

When you make a selection, the selected diagnostic, the diagnostic user interface (DUI), and their associated files are automatically loaded. Due to space limitations, you may only load one diagnostic at a time. If you attempt to load a second one, the first one will be removed.

Once the diagnostic has been loaded, you will be returned to the ON LINE DIAGNOSTICS MENU. You then need to select option D. Run DUI. The system will respond by displaying the DUI> prompt. At this point, you enter the run command, followed by the name of the diagnostic, and any run command options which you wish to use.

The ON LINE DIAGNOSTICS MENU also provides options which report available space (a), and which allow you to purge diagnostics from memory to free up space for running other diagnostics (p).

FOR HP INTERNAL USE ONLY

A Sample Run Using cs80diag

The following is the procedure for running cs80diag from the Support Tape, one of the diagnostics you are most likely to run from the Online Diagnostics Subsystem:

1. Load the Support Tape (Reel #1 if you are using the open reel version of the Support Tape).
2. Boot to the ISL> prompt.
3. Type support at the ISL> prompt; the system will display several screens of status information, a disclaimer, and a warning, and then will display the following:

***** Creating device files! *****

/ on /dev/root read/write on day:month:date:hours:minutes:seconds:year
Press <return> to continue.

4. If you are using the open reel version of the Support Tape, load the second reel; otherwise, skip to the next step.
5. Press **Return** and the following menu will be displayed:

SUPPORT TAPE MAIN MENU

- s. Search for a file
- b. Reboot
- l. Load a file
- d. On-line Diagnostics
 - Note: only for systems with 16 or more Megabytes of memory
- m. Display Manual page for a specific command
- r. Recover an HP-UX unbootable system (a contributed utility)
- u. Utilities
- x. Exit to shell

This menu is for listing and loading the tools contained on the support tape.
Once a tool is loaded, it may be run from the shell.

Select one of the above:

4-2 Online Subsystem Diagnostics

FOR HP INTERNAL USE ONLY

6. Select **d**, and after a screenful of status information, the following will be displayed on the system console:

ON LINE DIAGNOSTICS MENU (TAPE SECTION 5: /usr/diag)

(Note: Any program with X won't run from the Support Tape Environment.)

0. AFIDAD	1. CARTDIAG	2. CENTPBA	3. CIPERLPD(X)
4. CS80DIAG	5. DASSDIAG	6. DIAG7478	7. FLEXDIAG
8. GPIODAD	9. HPFLDIAG	10. HPIBDAD(X)	11. HPIBDDS
12. HPIBDIAG(X)	13. LANDAD(X)	14. MEMDIAG(X)	15. MUXDIAG
16. OPDIAG	17. OSI4DAD	18. PMUXDIAG	19. PSIDAD
20. REELDIAG	21. SCSICD	22. SCSICIO	23. SCSIDDS
24. SCSIDISK	25. SCSIPBA	26. SCSIREEL	27. SS80DIAG
28. SYSMAP	D. Run DUI		
a. Report available space	p. Purge diags from memory		
r. Return previous menu	x. Exit to shell		

The diagnostic user interface "DUI" is loaded automatically with each diagnostic. Select one of the above:

7. Enter **4** at the message prompt (the selection number for **cs80diag**), and statistical and status information similar to the following will be displayed:

Diagnostic filesystem statistics before loading the specified diagnostic :

Filesystem	kbytes	used	avail	capacity	Mounted on
/dev/dsk/ram1	4515	1	4514	0%	/usr/diag
/dev/fs	2659	1929	730	73%	

8. Mount Reel #2 (if you are using the open reel version of the Support Tape), and a message similar to the following will be displayed:

Current tape section is 6. Target is 5.
Moving tape backwards done

```
x ./usr/diag/bin/libdiagsl.sl, 692224 bytes, 1352 tape blocks
x ./usr/diag/bin/libc.sl, 937984 bytes, 1832 tape blocks
x ./usr/diag/bin/libm.sl, 77824 bytes, 152 tape blocks
x ./usr/diag/bin/dld.sl, 45056 bytes, 88 tape blocks
x ./usr/diag/bin/libcl.sl, 1076704 bytes, 2103 tape blocks
x ./usr/diag/bin/CS80DIAG, 319488 bytes, 624 tape blocks
x ./usr/diag/bin/C0004000, 70613 bytes, 138 tape blocks
x ./usr/diag/bin/DUI, 425984 bytes, 832 tape blocks
x ./usr/diag/bin/DUIDIR, 23280 bytes, 46 tape blocks
x ./usr/diag/bin/CDUIF000, 134937 bytes, 264 tape blocks
x ./usr/diag/bin/CSERV000, 70799 bytes, 139 tape blocks
x ./usr/diag/bin/DIAGINIT, 61440 bytes, 120 tape blocks
x ./usr/diag/bin/DIAGMON, 98304 bytes, 192 tape blocks
x ./usr/diag/bin/DUIIOH, 69632 bytes, 136 tape blocks
x ./usr/diag/bin/IODEVACC, 5149 bytes, 11 tape blocks
x ./usr/diag/bin/SECURITY, 7 bytes, 1 tape blocks
x ./usr/diag/bin/DIAGLIST, 1449 bytes, 3 tape blocks
```

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```
x ./usr/diag/bin/ipcs, 122880 bytes, 240 tape blocks
x ./usr/diag/bin/ipcrm, 36864 bytes, 72 tape blocks
x ./usr/diag/bin/kill, 49152 bytes, 96 tape blocks
x ./usr/diag/bin/ps, 122880 bytes, 240 tape blocks
x ./usr/diag/bin/zap_sherlock, 1021 bytes, 2 tape blocks
Diagnostic filesystem statistics after loading the specified diagnostic :
Filesystem      kbytes    used   avail capacity Mounted on
/dev/dsk/ram1    4515     4413    102      98%   /usr/diag
/dev/fs          2659     1929     730     73%
```

Type <return> to continue.

9. Press **Return** and you will be returned to the ON LINE DIAGNOSTICS MENU.

10. This time, select D. Run DUI, and the following will be displayed:

Starting DIAGNINT now

Type <return> to continue.

11. Press **Return** and the following warning and status messages will be displayed:

```
WARNING: Logging has been disabled. Please check disk
space and clean up unneeded log files. If
LOG9999 exists then logging will be disabled.
Starting DUI now .....
Please wait .....
```

Type <return> to continue.

12. Press **Return** and the following banner will be displayed:

```
*****
*****      ONLINE DIAGNOSTIC SYSTEM      *****
*****
***** (C) Copyright Hewlett Packard Co. 1987, 1989, 1990 *****
*****      All Rights Reserved      *****
*****
*****      DUI Version A.02.10      *****
*****      Diagnostic Monitor Version  A.02.19      *****
*****
*****
*****
*****
```

Type "HELP" for assistance.

DUI >

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13. At the DUI > prompt, type **cs80diag** plus the physical device number, and any **run** command options you desire; for example, you might enter the following command string at the prompt:

DUI >cs80diag pdev=8.0.0

The system will then display the banner for **cs80diag**, execute the diagnostic, exit the diagnostic, and return you to the DUI > prompt.

14. Type **exit** and you will be returned to the ON LINE DIAGNOSTICS MENU.
15. If you wish to run another diagnostic, repeat the process of diagnostic selection and execution, described above. You may want to select option **a** to see if there is enough space to run another diagnostic. Chances are, your best bet would be to select **p** to purge any diagnostics already loaded, and then proceed to select and load the next diagnostic you wish to run from the ON LINE DIAGNOSTICS MENU.
16. Once you have finished running all the diagnostics you wish to run, you may return to the SUPPORT TAPE MAIN MENU by selecting option **r** from the ON LINE DIAGNOSTICS MENU, or you may exit to the shell by selecting **x**.

See the following titles for further information on the Online Diagnostics Subsystem:

- *Online Diagnostics Subsystem Manual, Volume 1: SPU* (09740-90028)
- *Online Diagnostics Subsystem Manual, Volume 2: Device Adapters* (09740-90031)
- *Online Diagnostics Subsystem Manual, Volume 3: LAN/SCSI/MUX* (09740-90034)
- *Online Diagnostics Subsystem Manual, Volume 4: Disks/Printers* (09740-90040)
- *Online Diagnostics Subsystem Manual, Volume 5: Tapes* (09740-90042)
- *Online Diagnostics Subsystem Utilities Manual* (09740-90021)

Tape Resident Files

The following is a list of files resident on the tape, by tape section number. By selecting option **t** from the SUPPORT TAPE UTILITIES MENU, and specifying a section of the tape, you can generate a similar listing of the contents of that section of the tape, and display it on the system monitor.

Section 1 (/etc)

Section 1 of the tape contains the following files, which are located in the **/etc** directory:

fsck	file system consistency check and interactive repair
chroot	change root directory for a command
mkfs	construct a file system
mknod	create special file info and files
mksf	make a special file
mount	mount a file system
reboot	reboot the system
umount	unmount a file system
gettydefs	speed and terminal settings used by getty
inittab	generic system initialization script
rmsf	delete a special file
init	process control initialization
swapon	enable additional device for paging and swapping
clri	clear i-node
devnm	device name
disksecn	calculate default disk section sizes
disktab	disk description file
dmesg	collect system diagnostic messages to form error log
fbackup	selectively back up files
dump	incremental file system dump
frecover	selectively recover files
fscklean	determine shutdown status of specified file system

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fsdb	file system debugger
getty	set terminal type, modes, speed, and line discipline
insf	install special file
link	exercise link and unlink system calls
lssf	list a special file
mvdir	move a directory
ncheck	generate names from i-numbers
newfs	construct a new file system
restore	data recovery
savecore	save a core dump of the operating system
setmnt	establish mount table <code>mnttab</code>
shutdown	terminate all processing
unlink	remove directory entry; delete file
rc	command script for autoboot and daemons
ioinit	initializes I/O system
ioscan	scans system and data structures
recoversl	recover shared library
fbackuprdr	used by <code>fbackup</code>
fbackupwrt	used by <code>fbackup</code>

Section 2 (/bin)

Section 2 contains the following files, which are contained in the /bin directory:

cat	concatenate, copy, and print files
chmod	change file mode
chown	change file owner
cmp	compare files
cp	copy files
cpio	copy file archives in and out
date	print and set the date
diff	differential file comparator
du	summarize disk usage
echo	echo (print) arguments
env	set environment for command execution
false	provide truth values
find	find files
grep	search an ASCII file for a pattern
kill	send a signal to a process
ln	link files
ls	list contents of directories
mkdir	make a directory
mv	move (or rename) files
nohup	run a command immune to hangups, logouts, and quits
od	octal dump
passwd	change login passwd
ps	report process status
pwd	working directory name
rm	remove a file
size	print section sizes of object files
stty	set the options for a terminal port
su	become super user or another user
sync	update the superblock
touch	update access, modification, and/or change times of a file
true	provide truth values
uname	print the name of current HP-UX version



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wc	word, line, and character count
nm	print name list of common object file
sum	print checksum and block count of a file
xd	hexadecimal dump
tty	get the name of the terminal
tar	tape file archiver
sh	shell, the standard command programming language
dd	convert, reblock, translate, and copy a file
mt	magnetic tape manipulation program
expr	evaluate arguments as an expression

Section 3 (/usr/bin)

Section 3 contains the following files, which are located in the /usr/bin directory:

bdf	Berkeley disk free
file	determine file type
tabs	set tabs on a terminal
tset	terminal dependent initialization
what	identify files for SCCS information
iostat	report I/O statistics
lifcp	copy to or from LIF files
lifinit	write LIF volume header onto a file
lifs	list contents of a LIF directory
lifrename	rename LIF files
lifrm	remove a LIF file
mediainit	initialize a medium
vmstat	report virtual memory statistics
tcio	command set 80 cartridge tape utility
vi	screen-oriented (visual) display editor based on ex

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Section 4 (/usr/contrib)

Section 4 contains the following files, which are contained in the /usr/contrib directory:

uxbootlf	generic LIF structure
disked	interactive disk editor for IIFS
autofl	used by recovery system
analyze	virtual UNIX postmortem crash analyzer
ql	runs adb and analyze; analyzes crashes and dumps
where_is_root	used by recovery system
hp-ux	the support kernel

**Section 5 (/usr/diag/bin)**

Section 5 includes the following files, located in the /usr/diag/bin directory, which are needed to run diagnostics from the Support Tape:

AFIDAD	AFI device adapter diagnostic
CARTDIAG	1/4" tape drive diagnostic
CENTPBA	Centronics PBA diagnostic
CIPERLPD	Ciper line printer diagnostic
CS80DIAG	CS80 disk drive diagnostic
DASSDIAG	Direct access secondary storage device diagnostic
DIAG7478	HP7974A/7987A/B magnetic tape drive diagnostic
FLEXDIAG	Fiber link exchange disk drive diagnostic
GPIODAD	GPIO device adapter diagnostic
HPFLDIAG	HP-FL adapter diagnostic
HPIBDAD	HPIB device adapter diagnostic
HPIBDDS	HPIB digital data storage drive diagnostic
HPIBDIAG	HPIB device adapter diagnostic
LANDAD	LAN diagnostic
MEMDIAG	Memory diagnostic
MUXDIAG	CIO asynchronous port multiplexer diagnostic
OPDIAG	optical disk drive diagnostic
OSI4DAD	HP OSI EXPRESS 802.4 device adapter diagnostic
PMUXDIAG	Asynchronous 8-channel multiplexer diagnostic
PSIDAD	PSI device adapter diagnostic
REELDIAG	HP7979A/7980A/7980XC tape drive diagnostic

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SCSICD	SCSI compact disk drive diagnostic
SCSICIO	SCSIO CIO device adapter diagnostic
SCSIDDs	SCSI digital data storage drive diagnostic
SCSIDISK	SCSI disk drive diagnostic
SCSIPBA	SCSI PBA diagnostic
SCSIREEL	SCSI reel tape drive diagnostic
SS80DIAG	SS80 disk drive diagnostic
SYSMAP	System map utility
DUI	Diagnostic user interface
DIAGMON	Diagnostic monitor

Section 6 (/usr/lib/terminfo/h)

Section 6 contains the following files, located in the /usr/lib/terminfo/h, which describe the characteristics of terminals supported under IIP-UX:

- hp2392a
- hp2393a
- hp2394a
- hp2397a

Section 7 (/manual)

Section 7 contains the following man pages, located in the /manual directory:

- disked.lm the man page for disked
- analyze.lm the man page for analyze

What's New for 8.0

The following is a list of some of the major differences between the 8.0 version of the Support Tape and previous versions:

- Because of the memory requirements of 8.0, Support Tape functionality can no longer be implemented using a single 1/2" 1600 BPI reel; the open reel version of the Support Tape is now contained on two separate reels (see **Tape Layout** in Chapter 1 for more specific information on how the two reels are partitioned).

Note



The Support Tape continues to be a single tape for both the 1/4" cartridge tape and for the DAT media.

- Due to an increase in the amount of memory required by the Online Diagnostics Subsystem environment, online diagnostics cannot be run from the 8.0 Support Tape on 8 Mb systems; at least 16 Mb are required.
- Since 8.0 supports autoconfiguration, the `-a` option, used to add drivers from the ISL support command, is no longer needed to boot the Support Tape.
- The HP-UX 8.0 Support Tape contains a new contributed utility to the main menu, which allows the CE to copy LIF files and critical system files from the Support Tape to the customer's system disk.

Caution



This utility should only be used to repair HP-UX 8.0 systems.



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