Recovery Media User's Guide

PA-RISC Computer Systems

HP Part No. B3782-90210
Printed in USA December 1997

Edition 1

Legal Notices

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Corporate Offices:

Hewlett-Packard Co.
3000 Hanover St.
Palo Alto, CA 94304

Restricted Rights Legend. Use, duplication or disclosure by the U.S. Government Department of Defense is subject to restrictions as set forth in paragraph (b)(3)(ii) of the Rights in Technical Data and Software clause in FAR 52.227-7013.

Rights for non-DOD U.S. Government Departments and Agencies are as set forth in FAR 52.227-19(c)(1,2).

Use of this manual and flexible disc(s), compact disc(s), or tape cartridge(s) supplied for this pack is restricted to this product only. Additional copies of the programs may be made for security and back-up purposes only. Resale of the programs in their present form or with alterations, is expressly prohibited.

Warranty. A copy of the specific warranty terms applicable to your Hewlett-Packard product and replacement parts can be obtained from your local Sales and Service Office.

Ethernet is a trademark of Xerox Corporation.

X Window System is a trademark of the Massachussetts Institute of Technology.

MS-DOS and Microsoft are U.S. registered trademarks of Microsoft Corporation.

OSF/Motif is a trademark of the Open Software Foundation, Inc. in the U.S. and other countries.
Certification for conformance with OSF/Motif user environment pending.

Printing History

December 1997 . . . . . Edition 1.

This edition documents material related to installing and upgrading HP-UX operating systems and application software.

This printing date and part number indicate the current edition. The printing date changes when a new edition is printed. (Minor corrections and updates which are incorporated at reprint do not cause the date to change.) The part number changes when extensive technical changes are incorporated.

New editions of this manual will incorporate all material updated since the previous edition.

HP Printing Division:

Systems Technology Division
Hewlett-Packard Co.
19091 Pruneridge Ave.
Cupertino, CA 95014

About This Manual

The Recovery Media product is the platform for starting the HP-UX system recovery process. This manual is intended to provide an overview of how to use the Recovery Media for this function.

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

Chapter 1 How to deal with a damaged HP-UX operating system, and how to recover files

Problem Reporting

If you have any problems with the software or documentation, please contact your local Hewlett-Packard Sales Office or Customer Service Center.

Reader Comments. We welcome your comments about our documentation. If you have editorial suggestions or recommended improvements for this document, please write to us. You can reach us through e-mail at: hardwaredocs@cup.hp.com or by sending your letter to: Documentation Manager M/S 5657, Hewlett-Packard Company, 8000 Foothills Blvd, Roseville, CA 95747-6588 USA.

Please include the following information in your message:

- Title of the manual you are referencing.
- Manual part number (from the title page).
- Edition number or publication date (from the title page).
- Your name.
- Your company's name.

SERIOUS ERRORS, such as technical inaccuracies that may render a program or a hardware device inoperative, should be reported to your HP Response Center or directly to a Support Engineer.

Contents

1

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

One of the most critical functions performed by the Support Media 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.

System Recovery Using the Support Media

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

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

Caution

You should only attempt to recover HP-UX systems that match the revision of the Support Media you are using; e.g., you should only use a 10.30 Support Media to attempt to recover a 10.30 file system. Data corruption could occur if you attempt to mix revisions; e.g., if you attempt to recover a 9.0 file system with a 10.30 Support Media.

- The address of the root filesystem on the disk (i.e., what filesystem you will be checking/repairing using `fsck`)
- The address of the bootlif path of that disk
- What the autofile in the bootlif should contain
- Whether you have an LVM or non-LVM system

Note

If you have an LVM system, see Appendix B, which provides the procedures for activating the root volume group from the Support Media, on systems with 16MB, or with 24MB or greater.

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 Media 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.

The Four Automated Recovery Procedures

There are four possible recovery situations, each of which has its associated recovery procedure:

- If you can't get the system to the `ISL>` prompt from the system disk, you will want to rebuild the bootlif 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 `vmunix`, the system disk is corrupted; you will want to install *only* the critical files required to boot on the customer root filesystem.
- If you can't get to the `ISL>` prompt, but you know that the root file system is good, you will want to rebuild the bootlif on the system disk.
- If you believe your kernel is corrupted, you will want to replace only the kernel on the root filesystem.

The following four subsections describe these procedures in detail.

Rebuilding the `bootlif` and Installing Critical Files

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

1. Load the Support Media.
2. Reset the System Processor Unit (SPU) using the reset button, or keyswitch, 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 Media is mounted, enter `y` at the prompt.

   If the alternate boot path does not specify the address of the the tape device where the Support Media 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 Media 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 following at the `ISL>` prompt, depending upon the system you are trying to recover:

   ```
   ISL>[800|700]support
   ```

Note

If you type `support` by itself, you will be prompted to enter `700support` or `800support`, as appropriate.

The following message (or a similar one) will be displayed:

```
Attempting to load Support Media using the command
HPUX (;0) :SRECOVERY
```

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

```
                Welcome to the HP-UX installation process!

    Use the <tab> and/or arrow keys to navigate through the following menus,
    and use the <return> key to select an item.  If the menu items are not
    clear, select the "Help" item for more information.



                            [ Run a Recovery Shell   ]

                            [   Cancel and Reboot    ]


                                [ Help ]
```

9. Select `Run a Recovery Shell`, the screen clears, and the following will be displayed:

```
Would you like to start up networking at this time? [n]
```

10. Enter `n` and the following will be displayed:

```
  * Loading in a shell...
  * Loading in the recovery system commands...

(c) Copyright 1983, 1984, 1985, 1986 Hewlett-Packard Co.
(c) Copyright 1979 The Regents of the University of Colorado, a body corporate
(c) Copyright 1979, 1980, 1983 The Regents of the University of California
(c) Copyright 1980, 1984 AT&T Technologies.  All Rights Reserved.


                        HP-UX SUPPORT MEDIA


                    WARNING:  YOU ARE SUPERUSER !!


NOTE: Commands residing in the RAM-based file system are unsupported 'mini'
      commands. These commands are only intended for recovery purposes.
```

```
Loading commands needed for recovery!


      WARNING:  If ANYTHING is changed on a root(/) that is mirrored
                a 'maintenance mode'(HPUX -lm) boot MUST be done in
                order to force the mirrored disk to be updated!!



      Press <return> to continue.
```

11. Press (return) and the following status message is displayed:

```
Loading commands needed for recovery!
```

    Then the following menu will be displayed:

```
 SUPPORT MEDIA MAIN MENU

s.  Search for a file
b.  Reboot
l.  Load a file
r.  Recover an unbootable HP-UX system
x.  Exit to shell
c.  Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the support media.
Once a tool is loaded, it may be run from the shell. Some tools require other
files to be present in order to successfully execute.

Select one of the above:
```

12. To load a file or files, enter `l` at the prompt; something similar to the following will be displayed:

```
Filesystem      kbytes    used   avail %cap iused  ifree iused Mounted on
/                    2011    1459 552  73%   137    343 29%   ?
/duped_root        2011    1418 593  71%    49    431 10%   ?

Enter the filename(s) to load:
```

13. Enter the name(s) of the file(s) you wish to load; for example:

```
sh vi date grep
```

    The following example lists two files (`ex` and `egrep`) which must be loaded before the files `vi` and `grep` can be loaded; it also lists a file (`date`) which is not in the load list.

```
 NOTE :
  Since ./usr/bin/vi is linked to ./usr/bin/ex
  './usr/bin/ex' must precede './usr/bin/vi' in the load list.

The file 'date' is NOT in the LOADCMS archive.
```

```
<Press return to continue>


 NOTE :
  Since ./usr/bin/grep is linked to ./usr/bin/egrep
  './usr/bin/egrep' must precede './usr/bin/grep' in the load list.

********  THE REQUESTED FILE(S): ***********

./sbin/sh ./usr/bin/vi ./usr/bin/grep



   Is the above load list correct? [n]
```

14. You decide that this load list is incorrect, because `./usr/bin/ex` does not precede `./usr/bin/vi` in the list of requested files, and so you enter `n`; the following is displayed:

```
Nothing will be loaded!

<Press return to return to Main Menu>
```

15. Press (return) and you return to the Main Menu:

```
 SUPPORT MEDIA MAIN MENU

  s.  Search for a file
  b.  Reboot
  l.  Load a file
  r.  Recover an unbootable HP-UX system
  x.  Exit to shell
  c.  Instructions on chrooting to a lvm /(root).

 This menu is for listing and loading the tools contained on the support media.
 Once a tool is loaded, it may be run from the shell. Some tools require other
 files to be present in order to successfully execute.

 Select one of the above:
```

16. This time you select `s` to search for a file you wish to load; you see the following display:

```
Either enter the filename(s) to be searched for, or 'all' for a total listing.
```

17. You enter the following:

```
vi awk /sbin/sh date
```

    You receive the following response:

```
./usr/bin/vi linked to ./usr/bin/ex
./sbin/awk
./usr/bin/awk
./sbin/sh
**** The file  'date' was not found in the LOADCMDS archive. ****
```

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

18. Press (return) and the Main Menu is displayed again:

```
SUPPORT MEDIA MAIN MENU

  s.  Search for a file
  b.  Reboot
  l.  Load a file
  r.  Recover an unbootable HP-UX system
  x.  Exit to shell
  c.  Instructions on chrooting to a lvm /(root).

 This menu is for listing and loading the tools contained on the support media.
 Once a tool is loaded, it may be run from the shell. Some tools require other
 files to be present in order to successfully execute.

 Select one of the above:
```

19. To begin the actual system recovery, select `r`. The HP-UX Recovery MENU is then displayed:

```
          HP-UX Recovery MENU

      Select one of the following:
      a.  Rebuild the bootlif (ISL, HPUX, and the AUTO file) and install
          all files required to boot and recover HP-UX on a customer's
          root file system.
      b.  Do not rebuild the bootlif but install files required to boot
          and recover HP-UX on the root file system.
      c.  Rebuild only the bootlif.
      d.  Replace only the kernel on the root file system.

      m.  Return to 'Support Media Main Menu'.
      x.  Exit to the shell.

         Use this menu to select the level of recovery desired.

         Selection:
```

20. Select `a` to install both the bootlif and critical files; the following menu is then displayed:

```
          DEVICE FILE VERIFICATION
            MENU

        This menu is used to specify the path of the root file system.
        When the information is correct, select 'a'.

      INFORMATION to verify:
            Device file used for '/'(ROOT) is c1t6d0
            The path to disk is 56/52.6.0

      Select one of the following:
```

```
a.  The above information is correct.
b.  WRONG!! The device file used for '/'(ROOT) is incorrect.

m.  Return to the 'HP-UX Recovery MENU.'
x.  Exit to the shell.

NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g.,c0t1d0s1lvm).

Selection:
```

21. Assuming the root device file is incorrect, select `b`; you will be prompted to enter the correct device filename:

```
Enter the device file associated with the '/'(ROOT) file system
(example: c1t6d0):
```

Note

On a system with hard sectored disks, the prompt and response might look like the following:

```
 Enter the device file associated with the '/'(ROOT) file system
 (example: c0t1d0s1lvm ) :  c0t0d0s13
/dev/rdsk/c0t0d0s13 not a special file

<Press return to continue>



 Enter the address associated with the '/'(ROOT) file system
 (example: 4.0.1) :  4.0.0

   NOTE: if your '/'(ROOT) is not part of a sectioned disk layout
    enter a 'W' for whole disk layout
       or
    enter a 'l' for an LVM disk layout
  instead of a section number.

 Enter the section associated with the '/'(ROOT) file system
 (example: 13 ):  13
making rdsk/c0t0d0s13 c 214 0x00000d
making dsk/c0t0d0s13 b 26 0x00000d
```

---

22. If you were to enter `c1t1d0` as the root device filename, you would see the following display:

```
        DEVICE FILE VERIFICATION
          MENU

      This menu is used to specify the path of the root file system.
      When the information is correct, select 'a'.

    INFORMATION to verify:
          Device file used for '/'(ROOT) is c1t1d0
          The path to disk is 56/52.1.0

    Select one of the following:
          a.  The above information is correct.
          b.  WRONG!! The device file used for '/'(ROOT) is incorrect.

          m.  Return to the 'HP-UX Recovery MENU.'
          x.  Exit to the shell.

          NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g.,c0t1d0s1lvm).

        Selection:
```

23. Select `a`, since `c1t1d0` is the correct root device filename; the following menu will be displayed:

```
     BOOTLIF PATH VERIFICATION
        MENU

      This menu must be used to determine the path to the bootlif (ISL, HPUX
      and the AUTO file).
      When the information is correct, select 'a'.

  INFORMATION to verify:
       Path to the bootlif is 56/52.1.0

  Select one of the following:
       a.  The above information is correct.
       b.  WRONG!! The path to bootlif is incorrect.

       m.  Return to the 'HP-UX Recovery MENU.'
       x.  Exit to the shell.


      Selection:
```

24. Assuming that the bootlif path is correct, enter `a`; the following menu is displayed:

```
       FILE SYSTEM CHECK
      MENU
```

```
The file system check '/sbin/fs/hfs/fsck -y /dev/rdsk/c1t1d0'
will now be run.

Select one of the following:
     a.  Run fsck -y .
     b.  Prompt for the fsck run string on c1t1d0.

     m.  Return to the 'HP-UX Recovery MENU.'


    Selection:
```

25. Select `a` to run `fsck -y` to check your file system for corruption; you will see a display similar to the following:

```
** /dev/rdsk/c1t1d0
** Last Mounted on /ROOT
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
6256 files, 0 icont, 149423 used, 1563824 free (928 frags, 195362 blocks)

Mounting c1t1d0 to the Support Media's /ROOT directory...

<Press return to continue>
```

26. Assuming your file system is not corrupted, and you wish to continue with the system recovery, press (return) to mount your root file system under the Support Media's `/ROOT` directory; something similar to the following will be displayed:

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

x ./sbin/lvchange, 528384 bytes, 1032 tape blocks
./sbin/lvcreate linked to ./sbin/lvchange
./sbin/lvdisplay linked to ./sbin/lvchange
./sbin/lvextend linked to ./sbin/lvchange
./sbin/lvlnboot linked to ./sbin/lvchange
./sbin/lvreduce linked to ./sbin/lvchange
./sbin/lvremove linked to ./sbin/lvchange
./sbin/lvrmboot linked to ./sbin/lvchange
./sbin/pvchange linked to ./sbin/lvchange
./sbin/pvcreate linked to ./sbin/lvchange
./sbin/pvdisplay linked to ./sbin/lvchange
./sbin/pvmove linked to ./sbin/lvchange
./sbin/vgcfgbackup linked to ./sbin/lvchange
./sbin/vgcfgrestore linked to ./sbin/lvchange
./sbin/vgchange linked to ./sbin/lvchange
./sbin/vgcreate linked to ./sbin/lvchange
./sbin/vgdisplay linked to ./sbin/lvchange
./sbin/vgexport linked to ./sbin/lvchange
```

```
./sbin/vgextend linked to ./sbin/lvchange
./sbin/vgimport linked to ./sbin/lvchange
./sbin/vgreduce linked to ./sbin/lvchange
./sbin/vgremove linked to ./sbin/lvchange
./sbin/vgscan linked to ./sbin/lvchange
x ./sbin/mkdir, 102400 bytes, 200 tape blocks
x ./sbin/cat, 110592 bytes, 216 tape blocks
x ./sbin/mv, 114688 bytes, 224 tape blocks
x ./sbin/ioinit, 122880 bytes, 240 tape blocks
x ./sbin/ioscan, 122880 bytes, 240 tape blocks
x ./sbin/reboot, 139264 bytes, 272 tape blocks
x ./sbin/stty, 143360 bytes, 280 tape blocks
x ./sbin/fs_wrapper, 159744 bytes, 312 tape blocks
x ./sbin/umount, 196608 bytes, 384 tape blocks
x ./sbin/insf, 225280 bytes, 440 tape blocks
x ./sbin/ls, 225280 bytes, 440 tape blocks
x ./sbin/mount, 237568 bytes, 464 tape blocks
x ./sbin/init, 245760 bytes, 480 tape blocks
x ./sbin/awk, 327680 bytes, 640 tape blocks
x ./sbin/sh, 339968 bytes, 664 tape blocks
x ./sbin/chmod, 110592 bytes, 216 tape blocks
x ./sbin/mkboot, 147456 bytes, 288 tape blocks
x ./sbin/chown, 163840 bytes, 320 tape blocks
x ./sbin/pax, 249856 bytes, 488 tape blocks
x ./sbin/frecover, 262144 bytes, 512 tape blocks
x ./sbin/fs/hfs/mkfs, 208896 bytes, 408 tape blocks
x ./sbin/fs/hfs/newfs, 106496 bytes, 208 tape blocks
x ./sbin/fs/hfs/fsck, 192512 bytes, 376 tape blocks
x ./sbin/fsck symbolic link to /sbin/fs_wrapper
x ./sbin/mkfs symbolic link to /sbin/fs_wrapper
x ./sbin/newfs symbolic link to /sbin/fs_wrapper
Filesystem      kbytes    used   avail %cap iused  ifree iused Mounted on
/ROOT                1713247  149426 1392496  10%  6261 275339  2%   ?

Should the existing kernel be
'left', 'overwritten', or 'moved'?[overwritten]
```

27. To overwrite the existing kernel with your new file system, enter `overwritten` or `over` at the prompt; the following will be displayed:

```
 downloading ERECOVERY to /stand/vmunix


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


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

    -- '/.profile' has been renamed '/.profileBK' --

      *********** Installing bootlif  ***********
```

```
mkboot -b /dev/rmt/1m  -i ISL -i HPUX /dev/rdsk/c1t1d0

mkboot -a  hpux (56/52.1.0;0)/stand/vmunix /dev/rdsk/c1t1d0
```

Note

If you are recovering a system with hard sectored disks, you will see a message similar to the following, instead of the one above:

```
********** Installing bootlif  **********

mkboot -b 15.16.128.126 -H -i ISL -i HPUX /dev/rdsk/c0t0d0
mkboot -a  hpux (4.0.0;13)/stand/vmunix /dev/rdsk/c0t0d0
```

The `-H` is used with hard sectored disks; the `-l` option is used with LVM disks; and the `-W` option is used when you are specifying the whole disk.

```
RECOVERY COMPLETION
MENU

 Use this menu after the recovery process has installed all requested
 files on your system.

Select one of the following:
     a.  REBOOT the customer's system and continue with recovery.
     b.  Return to the Support Media's Main Menu.

     Selection:
```

28. Once you find yourself at the RECOVERY COMPLETION MENU, complete the recovery process by selecting `a`; you will see messages similar to the following:

```
NOTE:    System rebooting...

-------------------------------------------------------------------------------
   PDC - Processor Dependent Code - Version   1.3
   (c) Copyright 1990-1993, Hewlett-Packard Company, All rights reserved
-------------------------------------------------------------------------------
   16 MB of memory configured and tested.
   Primary boot path:    56/52.5   (dec)
   Alternate boot path:  56/52.3   (dec)

Manufacturing permissions ON

------- Main Menu ---------------------------------------------------------

        Command                       Description
        -------                       -----------

        BOot [PRI|ALT| &<path>]          Boot from specified path
        PAth [PRI|ALT|] [ &<path>]        Display or modify a path
        SEArch [DIsplay|IPL] [&<path>] Search for boot devices
```

```
        COnfiguration menu            Displays or sets boot values
        INformation menu              Displays hardware information
        SErvice menu                  Displays service commands
        MFG menu                      Displays manufacturing commands

        DIsplay                       Redisplay the current menu
        HElp [&<menu>|&<command>]      Display help for menu or command
        RESET                         Restart the system
-------
Main Menu: Enter command or menu >
```

29. Enter `bo pri` at the prompt to boot from the primary boot path; the following will then be displayed:

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

30. Enter `n` for unattended boot; several screens of status information will be displayed, followed by this warning:

```
THIS SYSTEM HAS BEEN BOOTED USING A TEMPORARY KERNEL!
DO NOT ATTEMPT TO INVOKE MULTI-USER RUN-LEVEL USING THIS KERNEL!

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

cat /RECOVERY.DOC
```

31. To obtain more information on the recovery process, type the following at the prompt:

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

You will see the following information displayed:

```
1) Restore valid copies of the following files (either from backup or
   from the <filename>BK files created during the recovery process).

   /etc/fstab,       /etc/inittab,  /stand/ioconfig,
   /etc/ioconfig,     /etc/passwd,  /sbin/pre_init_rc,
   /.profile,   and /etc/profile


  NOTE:  The backup archive may be extracted using '/sbin/frecover' or
   '/sbin/pax' (for backups made with 'tar' or 'cpio').
 If using '/sbin/pax', linking it to 'tar' or 'cpio' will force 'pax'
    to emulate the respective command line interface.

2) Replace /stand/vmunix from backup, since the present kernel is probably
   missing desired drivers.

3) If you have an lvm root, refer to /LVM.RECOVER .
```

32. If you have an LVM system, and want more information on recovery procedures, type the following:

```
# cat /LVM.RECOVER
```

You will see the following:

Note 

If a card has been added to, or removed from, your system since the original installation was completed, there is a chance that the device file for the root disk has changed. Consequently, before you run the LVM script `./lvmrec.scrpt` (Step 2, below), you should first recover `/stand/ioconfig` from backup and reboot.

```
INSTRUCTIONS to complete your LVM recovery:

The system must now be up now in "maintenance mode".

NOTE: In order for the following steps to lead to a successful lvm recovery the
      LVM label information must be valid. If the bootlif was updated from the
      RAM-based recovery system, then "mkboot -l" has already been run to
      repair the this label.

step 1. If the autofile was altered to force the system to boot in
 maintenance mode, use "mkboot -a" to remove the "-lm" option.

 Example:

    to change  "hpux -lm (52.6.0;0)/stand/vmunix"
    to   "hpux   (52.6.0;0)/stand/vmunix"

    use
     mkboot -a  "hpux (52.6.0;0)/stand/vmunix"  /dev/rdsk/<device file>
```

Note 

Use `lssf /dev/rdsk/*` to match device file with boot address.

```
   step 2. Run '/lvmrec.scrpt' to repair the following LVM
    configuration information:
           a. LVM records (lvmrec)
           b. BDRA (Boot Data Reserve Area)
           c. LABEL information

    Requirement:  The following files must reside on disk before
           the script can complete:
           a. /etc/lvmtab
           b. /etc/fstab
           c. /etc/lvmconf/<rootvg>.conf
           d. all device files specified in /etc/fstab
```

```
 To run '/lvmrec.scrpt' provide the device filename used to
 access the bootlif as an argument to the script.

 Example:

  /lvmrec.scrpt c0t6d0

  In this example 'c0t6d0' is the device file used to
  access the bootlif.

step 3. Once '/lvmrec.scrpt' completes, issue the command "reboot" and bring
 the system fully up.

 The recovery of the root LVM is complete.  If the '/lvmrec.scrpt'
 issued the following warning:

             "************ I M P O R T A N T *****************"
             "                                                "
             "Root logical volume has been repaired, but......."
             "you need to reboot the system and repair the Swap"
             "logical volume using the following LVM command:  "
             "   lvlnboot -A n -s /dev/<root lv>/<swap lvol>   "
             "because Recovery has no way to find out what is  "
             "the Swap logical volume information at this point"
             "                                                "
             "************************************************"

 The Swap and Dump logical volumes will need to be re-configured.

 The BDRA contains the "root", "swap" and "dump" logical volume
 information.  '/lvmrec.scrpt' only fixes the root logical volume
 information in the BDRA.  The "swap" and "dump" areas can be updated
 via the "lvlnboot" command.

 Example:

    lvlnboot -s /dev/<vg00>/lvol2
    lvlnboot -d /dev/<vg00>/lvol3

  In this example 'lvol2' and 'lvol3' are the "swap" and "dump"
  logical volumes respectively.

step 4. Perform any further data recovery deemed necessary.


*** NOTE ***

  If the same volume group contains more than one corrupted boot disk,
  repeat the above steps for each disk that needs to be repaired.
```

THIS COMPLETES THE PROCESS FOR REBUILDING THE BOOTLIF AND INSTALLING CRITICAL FILES.

Installing Critical Files Only

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

1. Load the Support Media.
2. Reset the System Processor Unit (SPU) using the reset button, or keyswitch, 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 Media is mounted, enter `y` at the prompt.

   If the alternate boot path does not specify the address of the the tape device where the Support Media 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 Media 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 following at the `ISL>` prompt, depending upon the system you are trying to recover:

   ```
   ISL>[800|700]support
   ```

Note

If you type `support` by itself, you will be prompted to enter `700support` or `800support`, as appropriate.

The following message (or a similar one) will be displayed:

```
Attempting to load Support Media using the command
HPUX (;0) :SRECOVERY
```

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

```
                Welcome to the HP-UX installation process!

    Use the <tab> and/or arrow keys to navigate through the following menus,
    and use the <return> key to select an item.  If the menu items are not
    clear, select the "Help" item for more information.



                              [ Run a Recovery Shell   ]

                              [   Cancel and Reboot    ]


                                  [ Help ]
```

9. Select `Run a Recovery Shell`, the screen clears, and the following will be displayed:

```
Would you like to start up networking at this time? [n]
```

10. Enter `n` and the following will be displayed:

```
  * Loading in a shell...
  * Loading in the recovery system commands...

(c) Copyright 1983, 1984, 1985, 1986 Hewlett-Packard Co.
(c) Copyright 1979 The Regents of the University of Colorado, a body corporate
(c) Copyright 1979, 1980, 1983 The Regents of the University of California
(c) Copyright 1980, 1984 AT&T Technologies.  All Rights Reserved.


                          HP-UX SUPPORT MEDIA


                       WARNING:  YOU ARE SUPERUSER !!


NOTE: Commands residing in the RAM-based file system are unsupported 'mini'
      commands. These commands are only intended for recovery purposes.
```

```
Loading commands needed for recovery!


      WARNING:  If ANYTHING is changed on a root(/) that is mirrored
                a 'maintenance mode'(HPUX -lm) boot MUST be done in
                order to force the mirrored disk to be updated!!



     Press <return> to continue.
```

11. Press (return) and the following status message is displayed:

```
Loading commands needed for recovery!
```

    Then the following menu will be displayed:

```
 SUPPORT MEDIA MAIN MENU

s.  Search for a file
b.  Reboot
l.  Load a file
r.  Recover an unbootable HP-UX system
x.  Exit to shell
c.  Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the support media.
Once a tool is loaded, it may be run from the shell. Some tools require other
files to be present in order to successfully execute.

Select one of the above:
```

12. To begin the actual system recovery, select `r`. The HP-UX Recovery MENU is then displayed:

```
          HP-UX Recovery MENU

     Select one of the following:
     a.  Rebuild the bootlif (ISL, HPUX, and the AUTO file) and install
         all files required to boot and recover HP-UX on a customer's
         root file system.
     b.  Do not rebuild the bootlif but install files required to boot
         and recover HP-UX on the root file system.
     c.  Rebuild only the bootlif.
     d.  Replace only the kernel on the root file system.

     m.  Return to 'Support Media Main Menu'.
     x.  Exit to the shell.

        Use this menu to select the level of recovery desired.
```

```
Selection:
```

13. Select `b` to install critical files only; the following menu is then displayed:

```
    DEVICE FILE VERIFICATION
      MENU

  This menu is used to specify the path of the root file system.
  When the information is correct, select 'a'.

INFORMATION to verify:
      Device file used for '/'(ROOT) is c1t6d0
      The path to disk is 56/52.6.0

Select one of the following:
      a.  The above information is correct.
      b.  WRONG!! The device file used for '/'(ROOT) is incorrect.

      m.  Return to the 'HP-UX Recovery MENU.'
      x.  Exit to the shell.

      NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g.,c0t1d0s1lvm).

    Selection:
```

14. Assuming the root device file is incorrect, select `b`; you will be prompted to enter the correct device filename:

```
Enter the device file associated with the '/'(ROOT) file system
(example: c1t6d0):
```

Note

On a system with hard sectored disks, the prompt and response might look like the following:

```
 Enter the device file associated with the '/'(ROOT) file system
 (example: c0t1d0s1lvm ) :  c0t0d0s13
/dev/rdsk/c0t0d0s13 not a special file

<Press return to continue>



 Enter the address associated with the '/'(ROOT) file system
 (example: 4.0.1) :  4.0.0

  NOTE: if your '/'(ROOT) is not part of a sectioned disk layout
   enter a 'W' for whole disk layout
      or
   enter a 'l' for an LVM disk layout
  instead of a section number.

 Enter the section associated with the '/'(ROOT) file system
 (example: 13 ):  13
 making rdsk/c0t0d0s13 c 214 0x00000d
 making dsk/c0t0d0s13 b 26 0x00000d
```

15. If you were to enter `c1t1d0` as the root device filename, you would see the following display:

```
      DEVICE FILE VERIFICATION
        MENU

    This menu is used to specify the path of the root file system.
    When the information is correct, select 'a'.

  INFORMATION to verify:
        Device file used for '/'(ROOT) is c1t1d0
        The path to disk is 56/52.1.0

  Select one of the following:
        a.  The above information is correct.
        b.  WRONG!! The device file used for '/'(ROOT) is incorrect.

        m.  Return to the 'HP-UX Recovery MENU.'
        x.  Exit to the shell.

        NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g.,c0t1d0s1lvm).

      Selection:
```

16. Select `a`, since `c1t1d0` is the correct root device filename; the following menu will be displayed:

```
        FILE SYSTEM CHECK
       MENU

      The file system check '/sbin/fs/hfs/fsck -y /dev/rdsk/c1t1d0'
      will now be run.

    Select one of the following:
         a.  Run fsck -y .
         b.  Prompt for the fsck run string on c1t1d0.

         m.  Return to the 'HP-UX Recovery MENU.'


        Selection:
```

17. Select `a` to run `fsck -y` to check your file system for corruption; you will see a display similar to the following:

```
** /dev/rdsk/c1t1d0
** Last Mounted on /ROOT
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
6256 files, 0 icont, 149423 used, 1563824 free (928 frags, 195362 blocks)

Mounting c1t1d0 to the Support Media's /ROOT directory...

<Press return to continue>
```

18. Assuming your file system is not corrupted, and you wish to continue with the system recovery, press return to mount your root file system under the Support Media's `/ROOT` directory; something similar to the following will be displayed:

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

x ./sbin/lvchange, 528384 bytes, 1032 tape blocks
./sbin/lvcreate linked to ./sbin/lvchange
./sbin/lvdisplay linked to ./sbin/lvchange
./sbin/lvextend linked to ./sbin/lvchange
./sbin/lvlnboot linked to ./sbin/lvchange
./sbin/lvreduce linked to ./sbin/lvchange
./sbin/lvremove linked to ./sbin/lvchange
./sbin/lvrmboot linked to ./sbin/lvchange
./sbin/pvchange linked to ./sbin/lvchange
./sbin/pvcreate linked to ./sbin/lvchange
./sbin/pvdisplay linked to ./sbin/lvchange
./sbin/pvmove linked to ./sbin/lvchange
```

```
./sbin/vgcfgbackup linked to ./sbin/lvchange
./sbin/vgcfgrestore linked to ./sbin/lvchange
./sbin/vgchange linked to ./sbin/lvchange
./sbin/vgcreate linked to ./sbin/lvchange
./sbin/vgdisplay linked to ./sbin/lvchange
./sbin/vgexport linked to ./sbin/lvchange
./sbin/vgextend linked to ./sbin/lvchange
./sbin/vgimport linked to ./sbin/lvchange
./sbin/vgreduce linked to ./sbin/lvchange
./sbin/vgremove linked to ./sbin/lvchange
./sbin/vgscan linked to ./sbin/lvchange
x ./sbin/mkdir, 102400 bytes, 200 tape blocks
x ./sbin/cat, 110592 bytes, 216 tape blocks
x ./sbin/mv, 114688 bytes, 224 tape blocks
x ./sbin/ioinit, 122880 bytes, 240 tape blocks
x ./sbin/ioscan, 122880 bytes, 240 tape blocks
x ./sbin/reboot, 139264 bytes, 272 tape blocks
x ./sbin/stty, 143360 bytes, 280 tape blocks
x ./sbin/fs_wrapper, 159744 bytes, 312 tape blocks
x ./sbin/umount, 196608 bytes, 384 tape blocks
x ./sbin/insf, 225280 bytes, 440 tape blocks
x ./sbin/ls, 225280 bytes, 440 tape blocks
x ./sbin/mount, 237568 bytes, 464 tape blocks
x ./sbin/init, 245760 bytes, 480 tape blocks
x ./sbin/awk, 327680 bytes, 640 tape blocks
x ./sbin/sh, 339968 bytes, 664 tape blocks
x ./sbin/chmod, 110592 bytes, 216 tape blocks
x ./sbin/mkboot, 147456 bytes, 288 tape blocks
x ./sbin/chown, 163840 bytes, 320 tape blocks
x ./sbin/pax, 249856 bytes, 488 tape blocks
x ./sbin/frecover, 262144 bytes, 512 tape blocks
x ./sbin/fs/hfs/mkfs, 208896 bytes, 408 tape blocks
x ./sbin/fs/hfs/newfs, 106496 bytes, 208 tape blocks
x ./sbin/fs/hfs/fsck, 192512 bytes, 376 tape blocks
x ./sbin/fsck symbolic link to /sbin/fs_wrapper
x ./sbin/mkfs symbolic link to /sbin/fs_wrapper
x ./sbin/newfs symbolic link to /sbin/fs_wrapper
Filesystem      kbytes    used   avail %cap iused  ifree iused Mounted on
/ROOT      1713247  149426 1392496  10%  6261 275339  2%   ?

Should the existing kernel be
'left', 'overwritten', or 'moved'?[overwritten]
```

19. To overwrite the existing kernel with your new file system, enter `overwritten` or `over` at the prompt; the following will be displayed:

```
downloading ERECOVERY to /stand/vmunix


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

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

-- '/.profile' has been renamed '/.profileBK' --



RECOVERY COMPLETION
MENU

 Use this menu after the recovery process has installed all requested
 files on your system.

Select one of the following:
     a.  REBOOT the customer's system and continue with recovery.
     b.  Return to the Support Media's Main Menu.

     Selection:
```

20. Once you find yourself at the RECOVERY COMPLETION MENU, complete the recovery process by selecting a; you will see messages similar to the following:

```
NOTE:    System rebooting...

--------------------------------------------------------------------------------
   PDC - Processor Dependent Code - Version   1.3
   (c) Copyright 1990-1993, Hewlett-Packard Company, All rights reserved
--------------------------------------------------------------------------------
   16 MB of memory configured and tested.
   Primary boot path:    56/52.5   (dec)
   Alternate boot path:  56/52.3   (dec)

Manufacturing permissions ON


------- Main Menu ---------------------------------------------------------------

        Command                       Description
        -------                       -----------

        BOot [PRI|ALT|<path>]        Boot from specified path
        PAth [PRI|ALT] [<path>]       Display or modify a path
        SEArch [DIsplay|IPL] [<path>] Search for boot devices

        COnfiguration menu            Displays or sets boot values
        INformation menu              Displays hardware information
        SERvice menu                  Displays service commands
        MFG menu                      Displays manufacturing commands

        DIsplay                       Redisplay the current menu
```

```
        HElp [<menu>|<command>]       Display help for menu or command
        RESET                         Restart the system
-------
Main Menu: Enter command or menu >
```

21. Enter `bo pri` at the prompt to boot from the primary boot path; the following will then be displayed:

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

22. Enter `n` for unattended boot; several screens of status information will be displayed, followed by this warning:

    ```
    THIS SYSTEM HAS BEEN BOOTED USING A TEMPORARY KERNEL!
    DO NOT ATTEMPT TO INVOKE MULTI-USER RUN-LEVEL USING THIS KERNEL!

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

    cat /RECOVERY.DOC
    ```

23. To obtain more information on the recovery process, type the following at the prompt:

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

    You will see the following information displayed:

    ```
     1) Restore valid copies of the following files (either from backup or
        from the <filename>BK files created during the recovery process).

        /etc/fstab,       /etc/inittab,  /stand/ioconfig,
        /etc/ioconfig,     /etc/passwd,  /sbin/pre_init_rc,
        /.profile,   and /etc/profile


       NOTE:  The backup archive may be extracted using '/sbin/frecover' or
        '/sbin/pax' (for backups made with 'tar' or 'cpio').
      If using '/sbin/pax', linking it to 'tar' or 'cpio' will force 'pax'
         to emulate the respective command line interface.

     2) Replace /stand/vmunix from backup, since the present kernel is probably
        missing desired drivers.

     3) If you have an lvm root, refer to /LVM.RECOVER .
    ```

24. If you have an LVM system, and want more information on recovery procedures, type the following:

    ```
    # cat /LVM.RECOVER
    ```

    You will see the following:

Note

If a card has been added to, or removed from, your system since the original installation was completed, there is a chance that the device file for the root disk has changed. Consequently, before you run the LVM script `./lvmrec.scrpt` (Step 2, below), you should first recover `/stand/ioconfig` from backup and reboot.

```
INSTRUCTIONS to complete your LVM recovery:

The system must now be up now in "maintenance mode".

NOTE: In order for the following steps to lead to a successful lvm recovery the
      LVM label information must be valid. If the bootlif was updated from the
      RAM-based recovery system, then "mkboot -l" has already been run to
      repair the this label.

step 1. If the autofile was altered to force the system to boot in
 maintenance mode, use "mkboot -a" to remove the "-lm" option.

 Example:

    to change  "hpux -lm (52.6.0;0)/stand/vmunix"
    to   "hpux   (52.6.0;0)/stand/vmunix"

    use
     mkboot -a  "hpux (52.6.0;0)/stand/vmunix"  /dev/rdsk/<device file>
```

Note

Use `lssf /dev/rdsk/*` to match device file with boot address.

```
   step 2. Run '/lvmrec.scrpt' to repair the following LVM
    configuration information:
           a. LVM records (lvmrec)
           b. BDRA (Boot Data Reserve Area)
           c. LABEL information

    Requirement:  The following files must reside on disk before
           the script can complete:
           a. /etc/lvmtab
           b. /etc/fstab
           c. /etc/lvmconf/<rootvg>.conf
           d. all device files specified in /etc/fstab


    To run '/lvmrec.scrpt' provide the device filename used to
    access the bootlif as an argument to the script.

    Example:
```

```
  /lvmrec.scrpt c0t6d0

  In this example 'c0t6d0' is the device file used to
  access the bootlif.

step 3. Once '/lvmrec.scrpt' completes, issue the command "reboot" and bring
 the system fully up.

 The recovery of the root LVM is complete.  If the '/lvmrec.scrpt'
 issued the following warning:

             "************ I M P O R T A N T *****************"
             "                                                "
             "Root logical volume has been repaired, but......."
             "you need to reboot the system and repair the Swap"
             "logical volume using the following LVM command:  "
             "   lvlnboot -A n -s /dev/<root lv>/<swap lvol>   "
             "because Recovery has no way to find out what is  "
             "the Swap logical volume information at this point"
             "                                                "
             "************************************************"

 The Swap and Dump logical volumes will need to be re-configured.

 The BDRA contains the "root", "swap" and "dump" logical volume
 information.  '/lvmrec.scrpt' only fixes the root logical volume
 information in the BDRA.  The "swap" and "dump" areas can be updated
 via the "lvlnboot" command.

 Example:

    lvlnboot -s /dev/<vg00>/lvol2
    lvlnboot -d /dev/<vg00>/lvol3

  In this example 'lvol2' and 'lvol3' are the "swap" and "dump"
  logical volumes respectively.

step 4. Perform any further data recovery deemed necessary.


*** NOTE ***

  If the same volume group contains more than one corrupted boot disk,
  repeat the above steps for each disk that needs to be repaired.
```

THIS COMPLETES THE PROCESS FOR INSTALLING CRITICAL FILES ONLY.

Rebuilding the "bootlif" Only

Following is an example of the detailed procedure for rebuilding the bootlif of the system disk on the customer root filesystem:

1. Load the Support Media.
2. Reset the System Processor Unit (SPU) using the reset button, or keyswitch, 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 Media is mounted, enter `y` at the prompt.

   If the alternate boot path does not specify the address of the the tape device where the Support Media 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 Media 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 following at the `ISL>` prompt, depending upon the system you are trying to recover:

   ```
   ISL>[800|700]support
   ```

Note

If you type `support` by itself, you will be prompted to enter `700support` or `800support`, as appropriate.

The following message (or a similar one) will be displayed:

```
Attempting to load Support Media using the command
HPUX (;0) :SRECOVERY
```

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

```
                    Welcome to the HP-UX installation process!

    Use the <tab> and/or arrow keys to navigate through the following menus,
    and use the <return> key to select an item.  If the menu items are not
    clear, select the "Help" item for more information.



                                [ Run a Recovery Shell   ]

                                [   Cancel and Reboot    ]


                                    [ Help ]
```

9. Select `Run a Recovery Shell`, the screen clears, and the following will be displayed:

```
Would you like to start up networking at this time? [n]
```

10. Enter `n` and the following will be displayed:

```
  * Loading in a shell...
  * Loading in the recovery system commands...

(c) Copyright 1983, 1984, 1985, 1986 Hewlett-Packard Co.
(c) Copyright 1979 The Regents of the University of Colorado, a body corporate
(c) Copyright 1979, 1980, 1983 The Regents of the University of California
(c) Copyright 1980, 1984 AT&T Technologies.  All Rights Reserved.


                              HP-UX SUPPORT MEDIA


                           WARNING:  YOU ARE SUPERUSER !!


NOTE: Commands residing in the RAM-based file system are unsupported 'mini'
      commands. These commands are only intended for recovery purposes.
```

```
Loading commands needed for recovery!


      WARNING:  If ANYTHING is changed on a root(/) that is mirrored
                a 'maintenance mode'(HPUX -lm) boot MUST be done in
                order to force the mirrored disk to be updated!!



    Press <return> to continue.
```

11. Press (return) and the following status message is displayed:

```
Loading commands needed for recovery!
```

    Then the following menu will be displayed:

```
 SUPPORT MEDIA MAIN MENU

s.  Search for a file
b.  Reboot
l.  Load a file
r.  Recover an unbootable HP-UX system
x.  Exit to shell
c.  Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the support media.
Once a tool is loaded, it may be run from the shell. Some tools require other
files to be present in order to successfully execute.

Select one of the above:
```

12. To begin the actual system recovery, select `r`. The HP-UX Recovery MENU is then displayed:

```
          HP-UX Recovery MENU

    Select one of the following:
    a.  Rebuild the bootlif (ISL, HPUX, and the AUTO file) and install
        all files required to boot and recover HP-UX on a customer's
        root file system.
    b.  Do not rebuild the bootlif but install files required to boot
        and recover HP-UX on the root file system.
    c.  Rebuild only the bootlif.
    d.  Replace only the kernel on the root file system.

    m.  Return to 'Support Media Main Menu'.
    x.  Exit to the shell.

       Use this menu to select the level of recovery desired.
```

```
Selection:
```

13. Select `c` to rebuild the bootlif; the following menu is then displayed:

```
BOOTLIF PATH VERIFICATION
   MENU

This menu must be used to determine the path to the bootlif (ISL, HPUX
and the AUTO file).
When the information is correct, select 'a'.

INFORMATION to verify:
     Path to the bootlif is 56/52.1.0

Select one of the following:
     a.  The above information is correct.
     b.  WRONG!! The path to bootlif is incorrect.

     m.  Return to the 'HP-UX Recovery MENU.'
     x.  Exit to the shell.


Selection:
```

14. Assuming that the bootlif path is correct, enter `a`; the following menu is displayed:

```
BOOT STRING VERIFICATION
 MENU

 This menu must be used to verify the system's boot string.
 When the information is correct, select 'a'.

INFORMATION to verify:
     The system's boot string should be:
      'hpux -lm (56/52.5.0)/stand/vmunix'

Select one of the following:
     a.  The above information is correct.
     b.  WRONG!! Prompt the user for the system's boot string.

     m.  Return to the 'HP-UX Recovery MENU.'
     x.  Exit to the shell.

NOTE: For an LVM '/'(ROOT) the '-lm' option MUST be specified
      (example: 'hpux -lm (2.3.4)/stand/vmunix' )

Selection:
```

15. Assuming the boot string is incorrect, enter `b` at the prompt; you will see a message similar to the following:

```
AUTO FILE should be (replacing 'hpux -lm (56/52.5.0)/stand/vmunix'):
```

16. Enter the correct information (for example, `hpux`); you will then see the BOOT STRING VERIFICATION MENU displayed again:

```
      BOOT STRING VERIFICATION
       MENU

       This menu must be used to verify the system's boot string.
       When the information is correct, select 'a'.

   INFORMATION to verify:
        The system's boot string should be:
         'hpux'

   Select one of the following:
        a.  The above information is correct.
        b.  WRONG!! Prompt the user for the system's boot string.

        m.  Return to the 'HP-UX Recovery MENU.'
        x.  Exit to the shell.

   NOTE: For an LVM '/'(ROOT) the '-lm' option MUST be specified
         (example: 'hpux -lm (2.3.4)/stand/vmunix' )

  Selection:
```

Note

If you know for certain that your root filesystem is good, you don't need to use the `-lm` option when recovering an LVM system.

17. Assuming the information is now correct, enter `a` at the prompt, and something similar to the following will be displayed:

```
      ********** Installing bootlif  **********

mkboot -b /dev/rmt/1m  -i ISL -i HPUX /dev/rdsk/c1t1d0

mkboot -a  hpux (56/52.5.0;0)/stand/vmunix /dev/rdsk/c1t1d0
```

Note

If you are recovering a system with hard sectored disks, you will see a message similar to the following, instead of the one above:

```
          ********** Installing bootlif  **********

   mkboot -b 15.16.128.126 -H -i ISL -i HPUX /dev/rdsk/c0t0d0
   mkboot -a  hpux (4.0.0;13)/stand/vmunix /dev/rdsk/c0t0d0
```

The `-H` is used with hard sectored disks; the `-l` option is used with LVM disks; and the `-W` option is used when you are specifying the whole disk.

```
RECOVERY COMPLETION
MENU

 Use this menu after the recovery process has installed all requested
 files on your system.

Select one of the following:
     a.  REBOOT the customer's system and continue with recovery.
     b.  Return to the Support Media's Main Menu.

     Selection:
```

18. Once you find yourself at the RECOVERY COMPLETION MENU, complete the recovery process by selecting `a`, rebooting your system.

    THIS COMPLETES THE PROCESS FOR REBUILDING THE BOOTLIF ONLY.

Replacing the Kernel Only On the Root Filesystem

Following is an example of the detailed procedure for replacing the kernel only on the root filesystem:

1. Load the Support Media.
2. Reset the System Processor Unit (SPU) using the reset button, or keyswitch, 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 Media is mounted, enter `y` at the prompt.

   If the alternate boot path does not specify the address of the the tape device where the Support Media 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 Media 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 following at the `ISL>` prompt, depending upon the system you are trying to recover:

   ```
   ISL>[800|700]support
   ```

Note

If you type `support` by itself, you will be prompted to enter `700support` or `800support`, as appropriate.

The following message (or a similar one) will be displayed:

```
Attempting to load Support Media using the command
HPUX (;0) :SRECOVERY
```

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

```
                    Welcome to the HP-UX installation process!

    Use the <tab> and/or arrow keys to navigate through the following menus,
    and use the <return> key to select an item.  If the menu items are not
    clear, select the "Help" item for more information.



                              [ Run a Recovery Shell   ]

                              [   Cancel and Reboot    ]


                                  [ Help ]
```

9. Select `Run a Recovery Shell`, the screen clears, and the following will be displayed:

```
Would you like to start up networking at this time? [n]
```

10. Enter `n` and the following will be displayed:

```
  * Loading in a shell...
  * Loading in the recovery system commands...

(c) Copyright 1983, 1984, 1985, 1986 Hewlett-Packard Co.
(c) Copyright 1979 The Regents of the University of Colorado, a body corporate
(c) Copyright 1979, 1980, 1983 The Regents of the University of California
(c) Copyright 1980, 1984 AT&T Technologies.  All Rights Reserved.


                              HP-UX SUPPORT MEDIA


                           WARNING:  YOU ARE SUPERUSER !!


NOTE: Commands residing in the RAM-based file system are unsupported 'mini'
      commands. These commands are only intended for recovery purposes.
```

```
Loading commands needed for recovery!


      WARNING:  If ANYTHING is changed on a root(/) that is mirrored
                a 'maintenance mode'(HPUX -lm) boot MUST be done in
                order to force the mirrored disk to be updated!!



     Press <return> to continue.
```

11. Press (return) and the following status message is displayed:

```
Loading commands needed for recovery!
```

    Then the following menu will be displayed:

```
 SUPPORT MEDIA MAIN MENU

s.  Search for a file
b.  Reboot
l.  Load a file
r.  Recover an unbootable HP-UX system
x.  Exit to shell
c.  Instructions on chrooting to a lvm /(root).

This menu is for listing and loading the tools contained on the support media.
Once a tool is loaded, it may be run from the shell. Some tools require other
files to be present in order to successfully execute.

Select one of the above:
```

12. To begin the actual system recovery, select `r`. The HP-UX Recovery MENU is then displayed:

```
          HP-UX Recovery MENU

     Select one of the following:
     a.  Rebuild the bootlif (ISL, HPUX, and the AUTO file) and install
         all files required to boot and recover HP-UX on a customer's
         root file system.
     b.  Do not rebuild the bootlif but install files required to boot
         and recover HP-UX on the root file system.
     c.  Rebuild only the bootlif.
     d.  Replace only the kernel on the root file system.

     m.  Return to 'Support Media Main Menu'.
     x.  Exit to the shell.

        Use this menu to select the level of recovery desired.
```

```
Selection:
```

13. Select `d` to replace only the kernel on the root filesystem; the following menu is then displayed:

```
        DEVICE FILE VERIFICATION
          MENU

      This menu is used to specify the path of the root file system.
      When the information is correct, select 'a'.

    INFORMATION to verify:
          Device file used for '/'(ROOT) is c1t6d0
          The path to disk is 56/52.6.0

    Select one of the following:
          a.  The above information is correct.
          b.  WRONG!! The device file used for '/'(ROOT) is incorrect.

          m.  Return to the 'HP-UX Recovery MENU.'
          x.  Exit to the shell.

          NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g.,c0t1d0s1lvm).

        Selection:
```

14. Assuming the root device file is incorrect, select `b`; you will be prompted to enter the correct device filename:

```
Enter the device file associated with the '/'(ROOT) file system
(example: c1t6d0):
```

Note

On a system with hard sectored disks, the prompt and response might look like the following:

```
 Enter the device file associated with the '/'(ROOT) file system
 (example: c0t1d0s1lvm ) :  c0t0d0s13
/dev/rdsk/c0t0d0s13 not a special file

<Press return to continue>



 Enter the address associated with the '/'(ROOT) file system
 (example: 4.0.1) :  4.0.0

   NOTE: if your '/'(ROOT) is not part of a sectioned disk layout
    enter a 'W' for whole disk layout
       or
    enter a 'l' for an LVM disk layout
   instead of a section number.

 Enter the section associated with the '/'(ROOT) file system
 (example: 13 ):  13
 making rdsk/c0t0d0s13 c 214 0x00000d
 making dsk/c0t0d0s13 b 26 0x00000d
```

15. If you were to enter `c1t1d0` as the root device filename, you would see the following display:

```
      DEVICE FILE VERIFICATION
        MENU

    This menu is used to specify the path of the root file system.
    When the information is correct, select 'a'.

  INFORMATION to verify:
        Device file used for '/'(ROOT) is c1t1d0
        The path to disk is 56/52.1.0

  Select one of the following:
        a.  The above information is correct.
        b.  WRONG!! The device file used for '/'(ROOT) is incorrect.

        m.  Return to the 'HP-UX Recovery MENU.'
        x.  Exit to the shell.

        NOTE: If '/' is an LVM, use an 's1lvm' suffix (e.g.,c0t1d0s1lvm).

      Selection:
```

16. Select `a`, since `c1t1d0` is the correct root device filename; the following menu will be displayed:

```
 FILE SYSTEM CHECK
MENU

The file system check '/sbin/fs/hfs/fsck -y /dev/rdsk/c1t1d0'
will now be run.

Select one of the following:
     a.  Run fsck -y .
     b.  Prompt for the fsck run string on c1t1d0.

     m.  Return to the 'HP-UX Recovery MENU.'


    Selection:
```

17. Select `a` to run `fsck -y` to check your file system for corruption; you will see a display similar to the following:

```
** /dev/rdsk/c1t1d0
** Last Mounted on /ROOT
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
6256 files, 0 icont, 149423 used, 1563824 free (928 frags, 195362 blocks)

Mounting c1t1d0 to the Support Media's /ROOT directory...

Filesystem      kbytes    used   avail %cap iused  ifree iused Mounted on
/ROOT               434773  352461   38834  90% 15241  54647 22%   ?

Should the existing kernel be
 'left', 'overwritten', or 'moved'?[overwritten]over
```

18. To overwrite the existing kernel with your new file system, enter `overwritten` or `over` at the prompt; the following will be displayed:

```
 downloading ERECOVERY to /stand/vmunix




RECOVERY COMPLETION
MENU

 Use this menu after the recovery process has installed all requested
 files on your system.
```

```
Select one of the following:
     a.  REBOOT the customer's system and continue with recovery.
     b.  Return to the Support Media's Main Menu.

         Selection:
```

19. Once you find yourself at the RECOVERY COMPLETION MENU, complete the recovery process by selecting `a`, rebooting your system.

    THIS COMPLETES THE PROCESS FOR REPLACING THE KERNEL ONLY ON THE ROOT FILE SYSTEM.