Using Swinstall to Install HP-UX Software Packages

August 2000

Agilent Technologies

Innovating the HP Way

Using Swinstall to Install HP-UX Software Packages

CAUTION

Use this guide ONLY when referenced to do so by the revision-specific software package quick-installation guide.

In this guide...

Introduction

Use this guide ONLY when directed to do so by a revision-specific software package quick-installation guide.

This guide provides step-by-step instructions for installing HP-UX software packages (updates, upgrades and patches) through the use of the HP-UX operating system utility, swinstall.

Swinstall is the exclusive software package installation tool for Agilent 3070 family controllers operating with HP-UX.

PATCH CONSULTANT IS NO LONGER SUPPORTED.

NOTE

Reference information for swinstall can be found by entering: `man swinstall` at a shell window prompt.

Performing the Software Package Installation

Perform the installation as described in **Table 1**, when directed to do so by a revision-specific software package quick-installation guide.

Table 1 Install the HP-UX software package

Task	Step
1 Un-boot the testhead.	
2 Log in as `root`	
3 If the software package to be installed is on tape, insert it in the tape drive and continue. Otherwise, continue.	
4 Start swinstall.	**a** Open a shell window and at the prompt, enter: `swinstall &` **NOTE** An information window may open and display `The default source "/var/spool/sw" does not exist or is not a valid source...` See **Figure 1** on page 9. If so, disregard it and click **OK** to close the window. A **Specify Source** window will open.

Table 1 Install the HP-UX software package (continued)

Task	Step
5 Select a source from which to install the software package. **NOTE** Leave the software filter button in the default position.	**a** In the **Specify Source** window, click the dash after **Source Depot Type** See **Figure 2** on page 10. **b** Choose a source type from the three possibilities below and perform the associated instructions: ■ If the file was downloaded from the Internet to a local drive: 1) Click **Local Directory** 2) In the **Source Depot Path...** field, type the path to the downloaded file including the file name. ■ If the file is on tape: • Click **Local Tape** The **Source Depot Path...** field will automatically be filled with the default tape device. ■ If the file resides in a network location: 1) Click **Network Directory/CDROM** 2) In the **Source Host Name...** field, type the network system hostname or IP address. 3) In the **Source Depot Path...** field, type the path to the downloaded file including the file name. **c** Click the **OK** button. The **SD Install – Software Selection** window will open and list available software for installation.

Table 1 Install the HP-UX software package (continued)

Task	Step
6 Optional -- View the software package contents before installing the software package. **Skip this task and continue with Task 7 if it is not desired to view what the software package contents are before installing the software package.**	**CAUTION** The automounter must be disabled to complete these steps. Instructions to disable the automounter are found under **Avoiding Potential Problems** in the referring revision-specific software package quick-installation guide. **a** In the **SD Install – Software Selection** window, double-click the fileset bundle **307X** to reveal its contents. **b** Left-click **3070SB** to select then right-click it and choose **Mark For Install** **c** Complete **Task 8** on page 5 through **Task 11**. **d** From the toolbar, open the file manager and navigate to the directory `/var/hp3070/revision.doc` **e** Double-click the file `current_release_notes.html` The software release bulletin, which displays the features included and issues resolved by installing the software package, will open in a web-browser application. **f** In the **SD Install – Software Selection** window, double-click the **..(Go up)** button to return to **Top (Bundles and Products)** **g** Continue with **Task 7** to install the software package OR Exit without installing the software package. To exit: 1) Close the **SD Install – Software Selection** window. 2) Logout. 3) Log back in for normal system use.

Table 1 Install the HP-UX software package (continued)

Task	Step
7 Select the software bundles to be installed. **NOTE** It is not an issue to re-install **3070SB** if **Task 6** was performed.	**CAUTION** Select only bundles described under **Software Bundles to Select (or Exclude)** in the referring revision-specific software package quick-installation guide. **a** In the **SD Install – Software Selection** window, for each bundle for installation, left-click to select then right click and choose **Mark For Install** See **Figure 3** on page 11. **NOTE** An **Error** window may appear indicating some selections have requirements that haven't been met or some of the software is already installed. See **Figure 4** on page 12. Ignore the error and click the **OK** button. All bundles to be installed should now display **Yes** under the **Marked?** column. See **Figure 5** on page 13.
8 Begin the installation analysis.	**a** From the **SD Install – Software Selection** window menu-bar, click **Actions** > **Install (analysis)...**. See **Figure 5** on page 13. An **Install Analysis** window will open and the analysis will begin.

Table 1 Install the HP-UX software package (continued)

Task	Step
9 Let the installation analysis run to completion. **NOTE** If the **Install Analysis** fails, review **Changes in Size to File Systems** in the referring software package quick-installation guide.	In the **Install Analysis** window, the **Status** field will display **Ready**, **Ready with warnings**, or **Ready with errors** See **Figure 6** on page 14. **NOTE** The **Products Scheduled** field in the **Install Analysis** screen will display the number of products to be installed compared to the number initially selected. If the **Status** box reads **Ready with warnings** or **Ready with errors** these numbers will be different. This can be ignored. **a** Click the **OK** button. **NOTE** If there were fatal errors, a message will display indicating which error occurred and that the installation will not be allowed to continue. In such case, click on the **Logfile...** button for more information. A **Confirmation** window will be displayed.

Table 1 Install the HP-UX software package (continued)

Task	Step
10 Begin the installation of software selected in **Task 7**.	**a** In the **Confirmation** window, click **Yes** See **Figure 7** on page 15. **NOTE** A message may be displayed indicating a reboot will be required once the installation is complete. See **Figure 8** on page 16. Click the **Yes** button. An **Install** window will come up and display progress information as the software loads. See **Figure 9** on page 17. **NOTE** The **Time Left (minutes)** indicated may not be reliable.
11 Let the software load run to completion.	In the **Install** window, the **Status** field will display **Ready, Ready with Errors** or **Ready with Warnings**, and the **Done** button will be enabled. See **Figure 10** on page 18. **a** Click the **Done** button for all above options. **NOTE** If following steps to view the software release bulletin, return to **Task 6 Step d** on page 4.

Table 1 Install the HP-UX software package (continued)

Task	Step
12 Complete the installation.	A dialog box will be displayed if a reboot is required. ■ If so, click the OK button and wait for the controller to reboot. **CAUTION** ⚠ It could take as long as 45 minutes for the boot step **Configuring all unconfigured filesets...** to complete. BE PATIENT! Powering down the controller before the reboot is complete can cause damage to the file system! Otherwise, ■ Close the **SD Install – Software Selection** window.
13 Return to the software package quick-installation guide.	**a** Continue with **Verifying the Software Package Installation** in the referring revision-specific software package quick-installation guide.

Screen-Shots

Figure 1 Disregard this **Information** window and click **OK** to close it

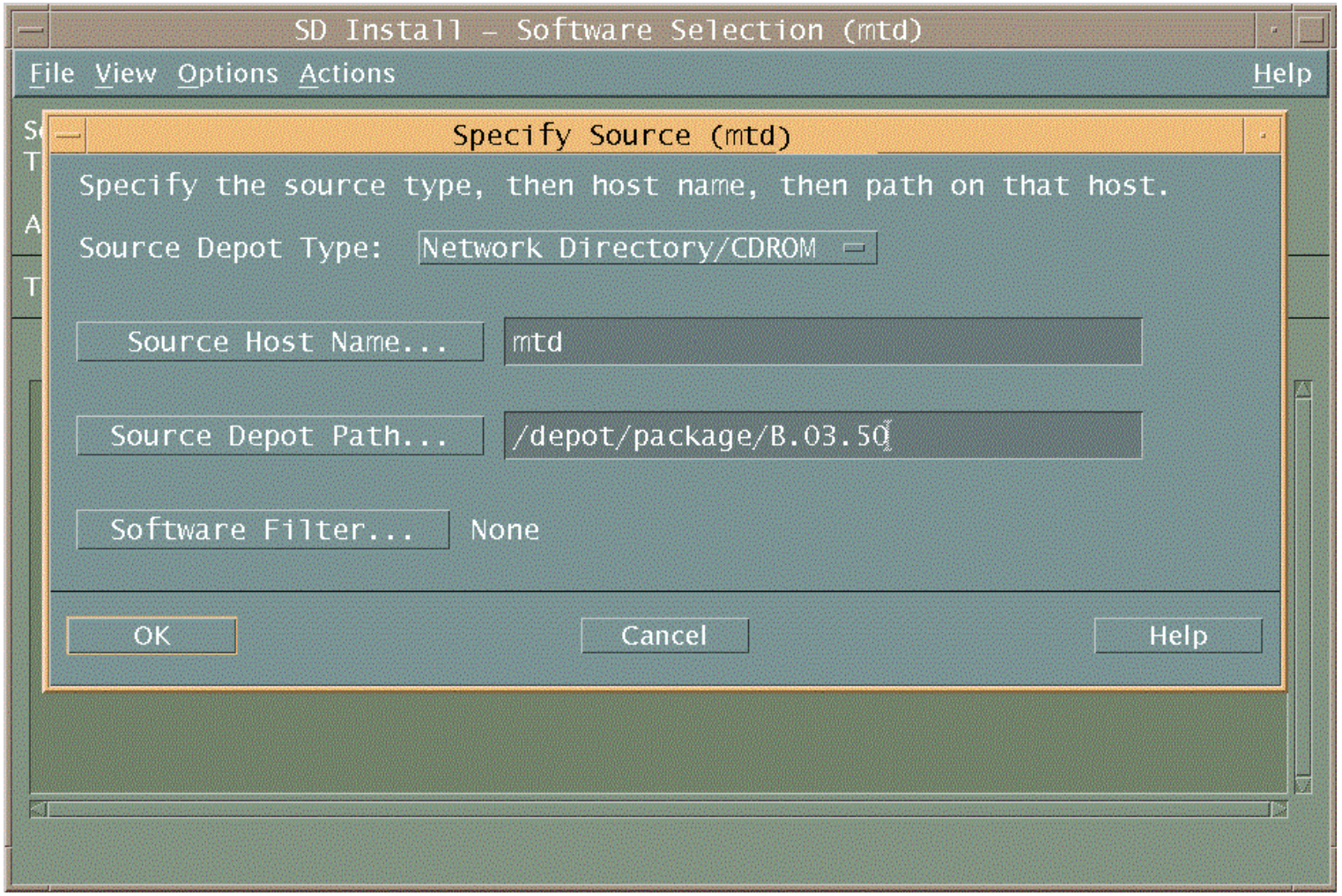


Figure 2 The **Specify Source** window

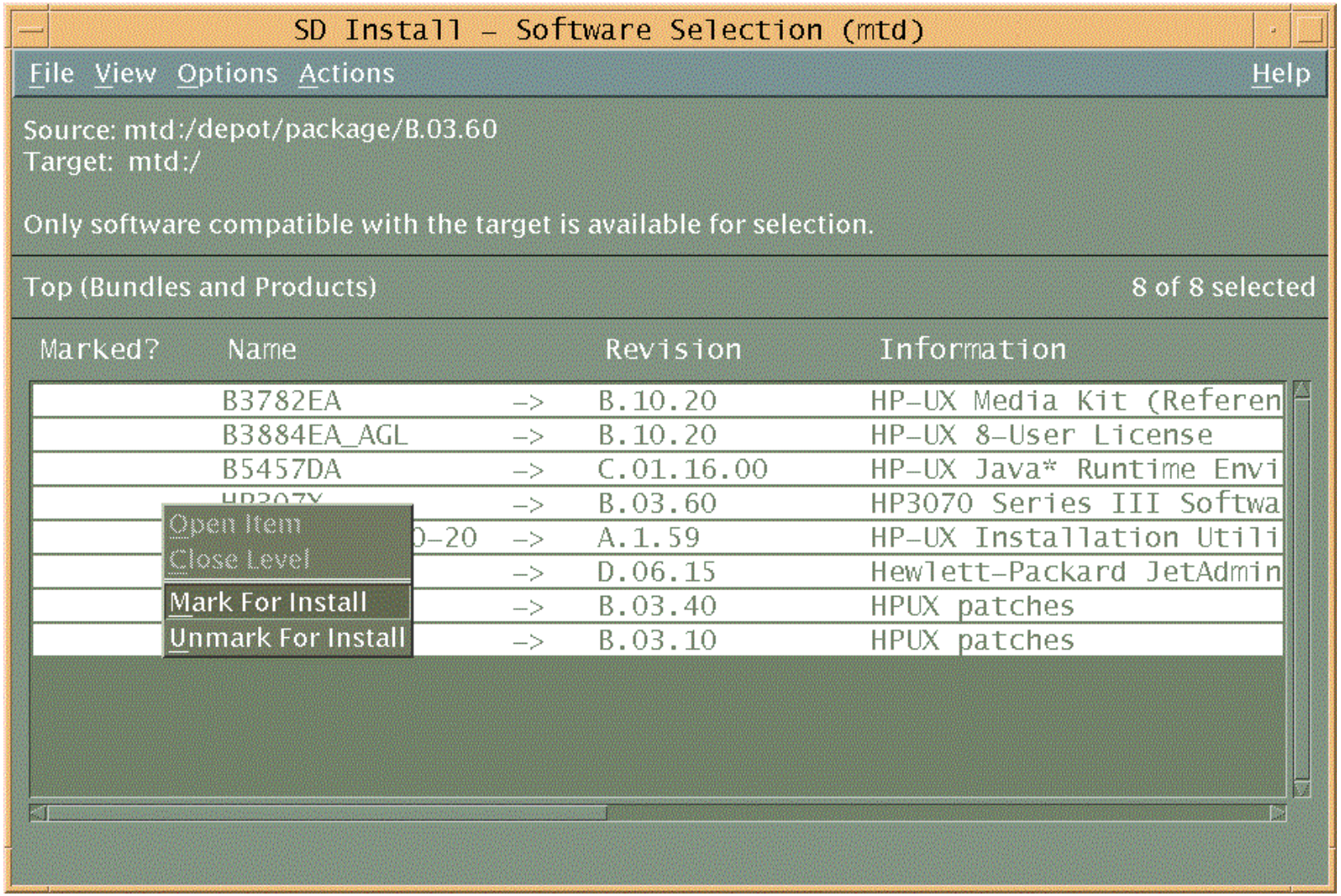


Figure 3 The **Software Selection** window -- Left-click to select then right-click and **Mark For Install** each bundle specified in the revision-specific software package quick-installation guide

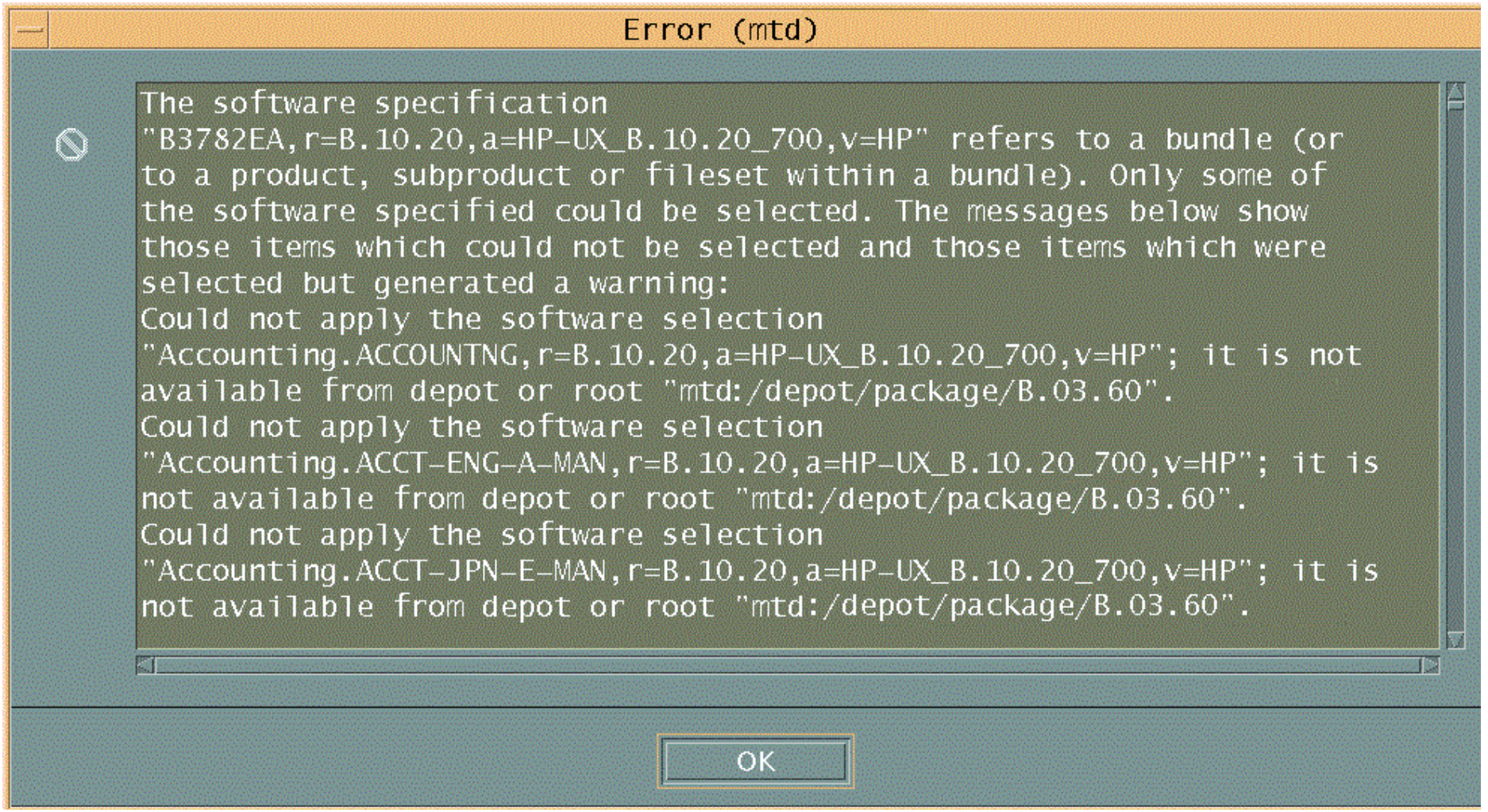


Figure 4 Ignore this **Error** window and click **OK** to close it

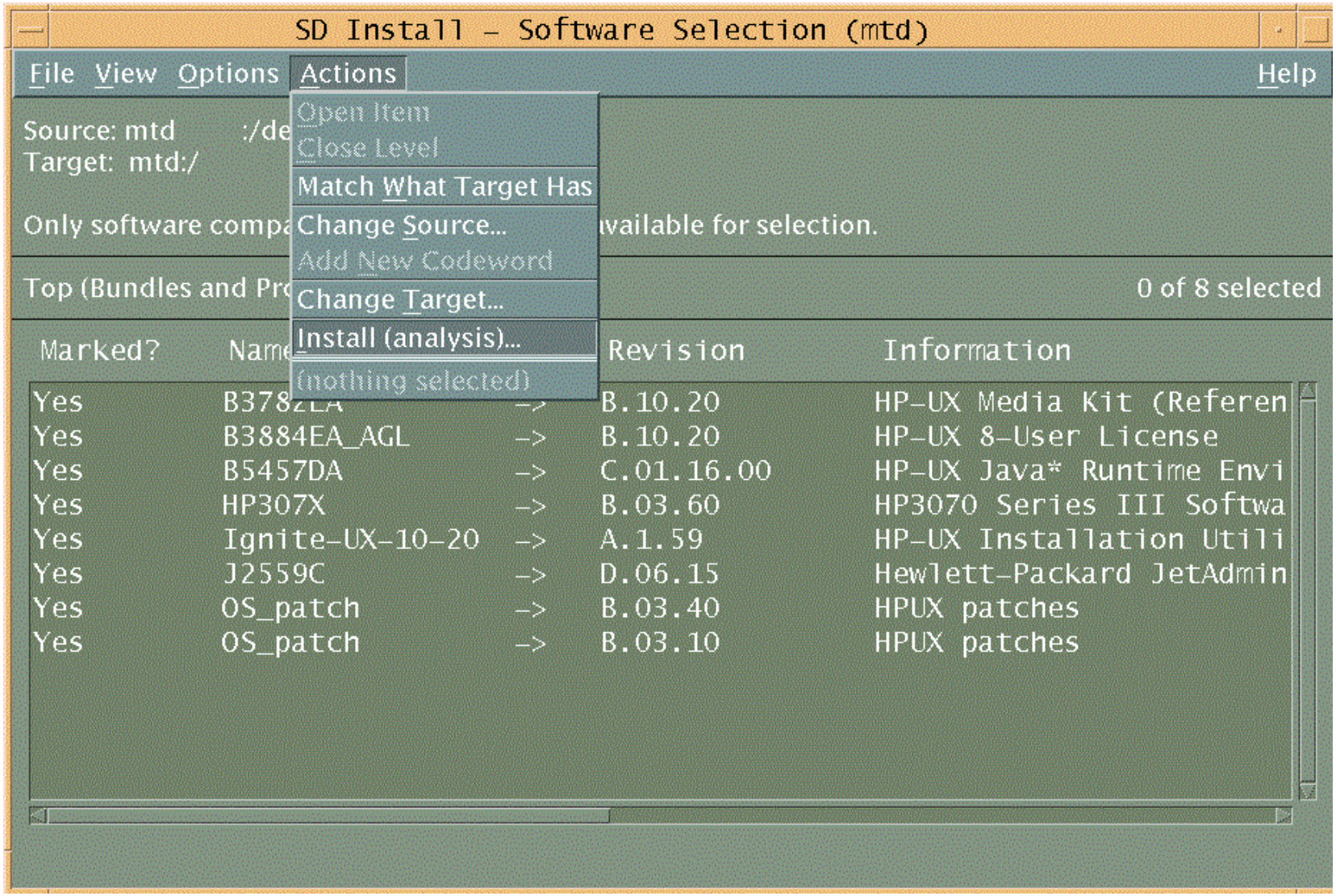


Figure 5 With appropriate bundle(s) selected for installation, choose **Actions > Install (analysis)...**

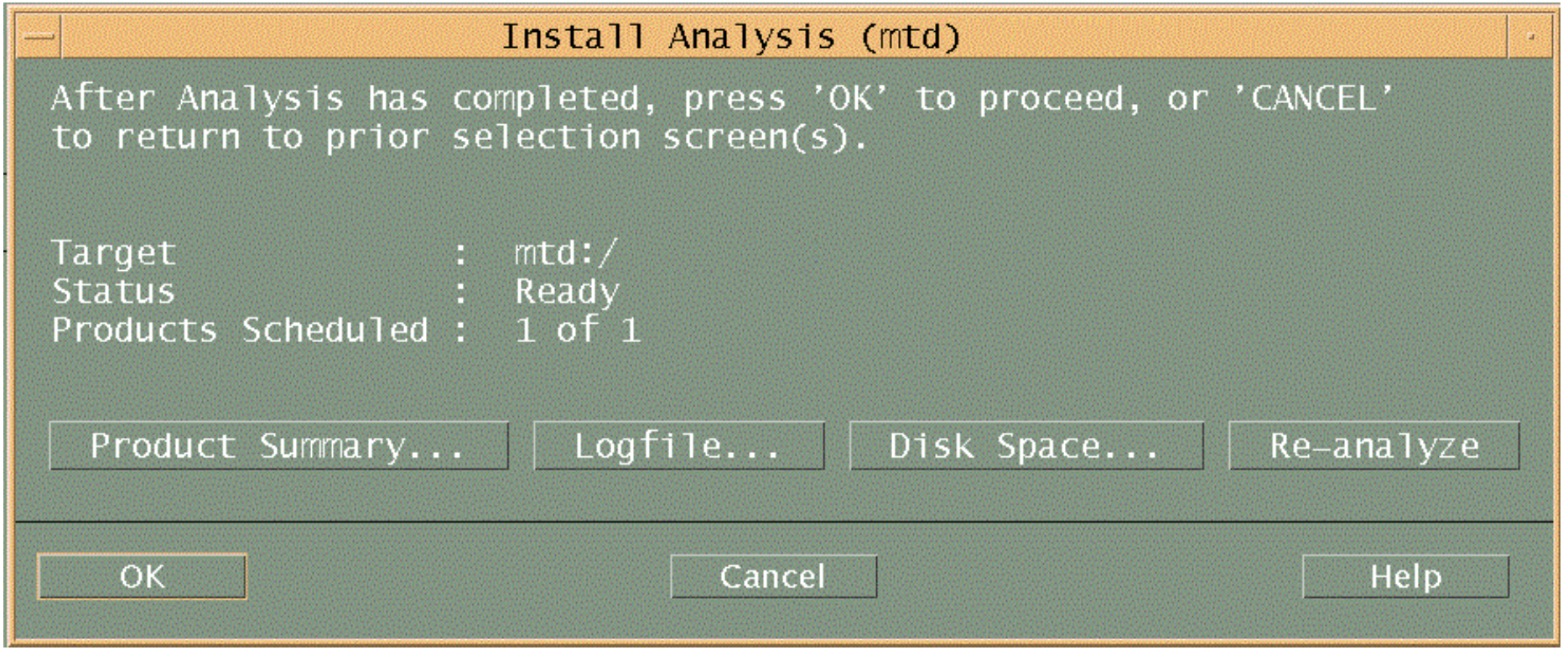


Figure 6 This install analysis is complete

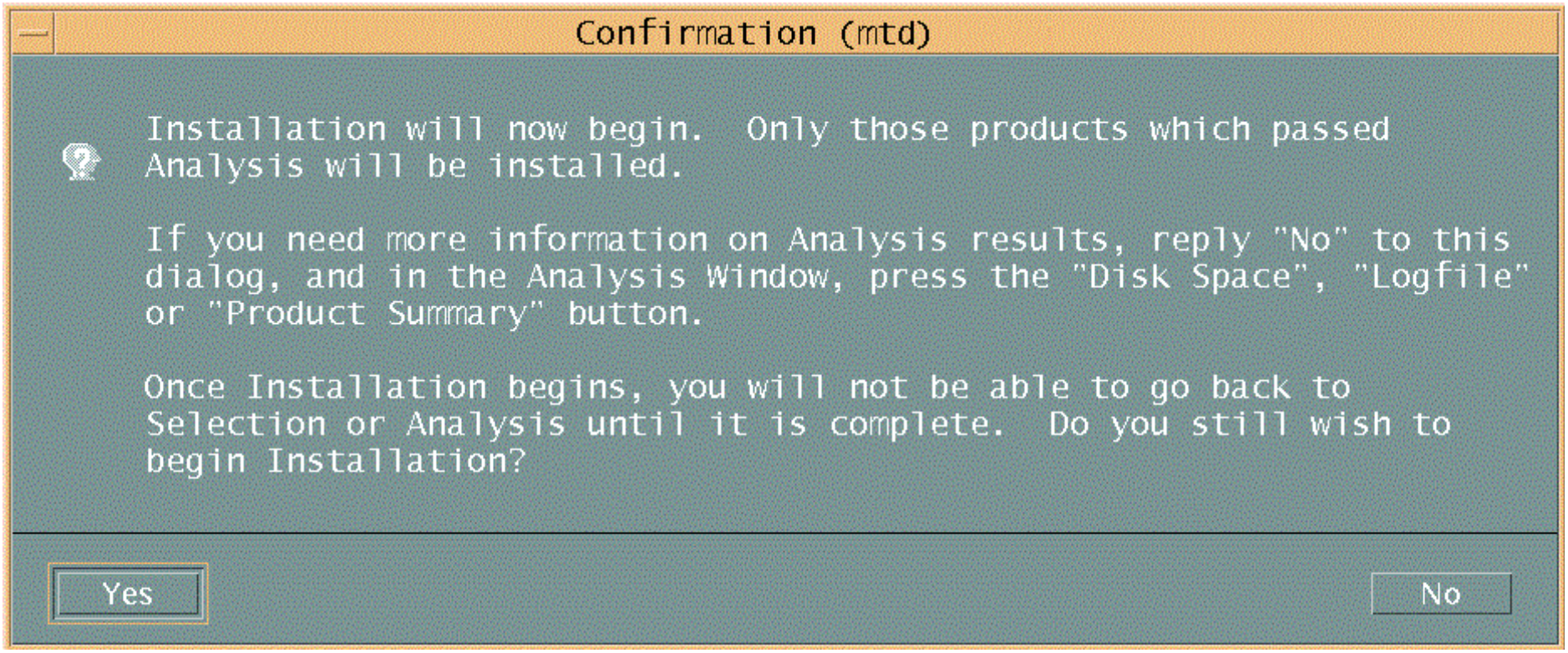


Figure 7 A **Confirmation** window

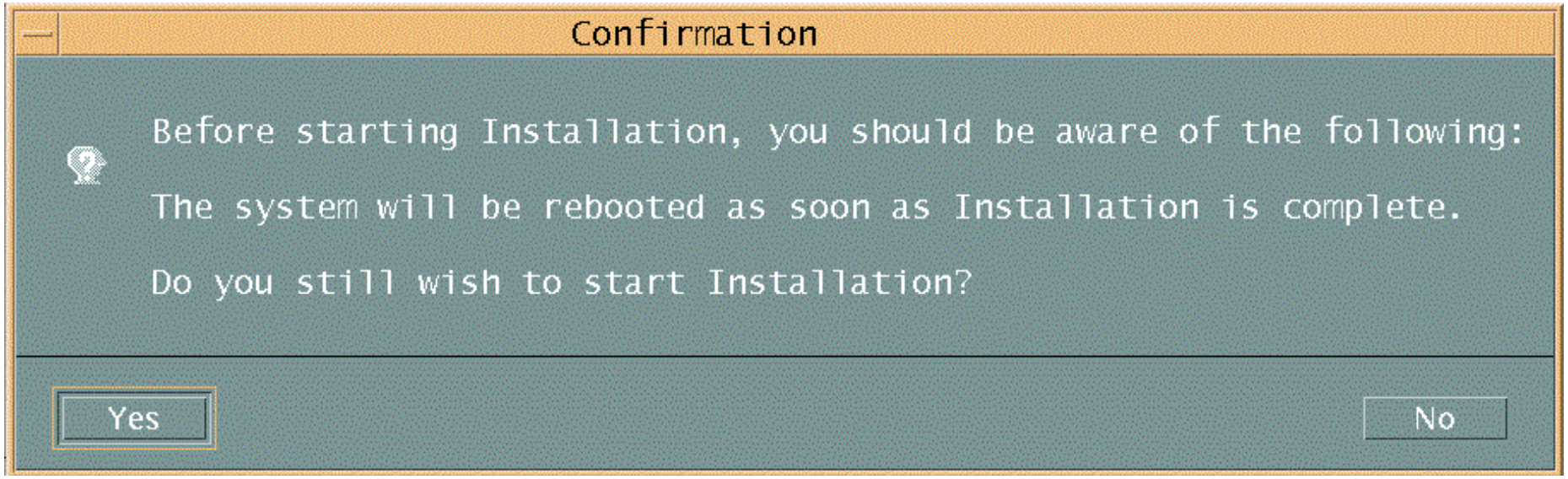


Figure 8 A **Confirmation** dialog box indicating a reboot will be necessary

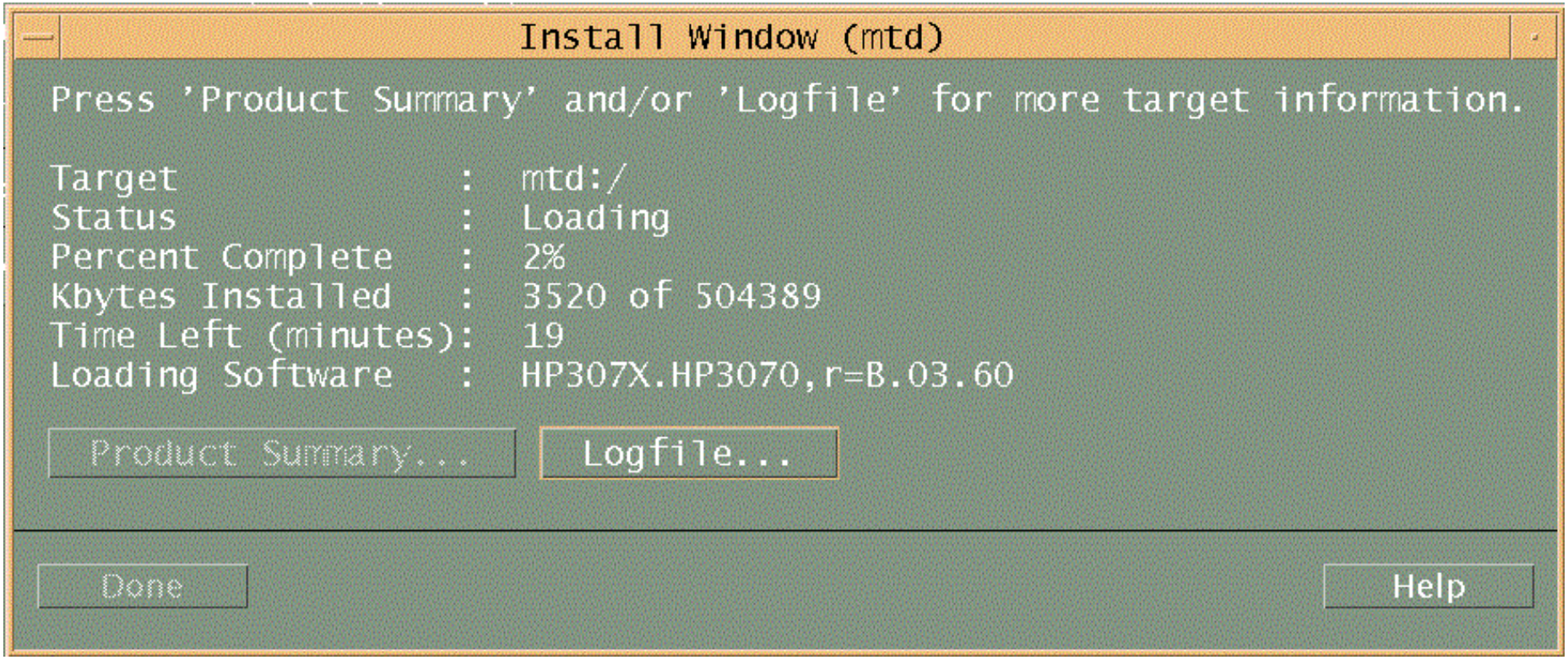


Figure 9 Software load progress in the **Install** window

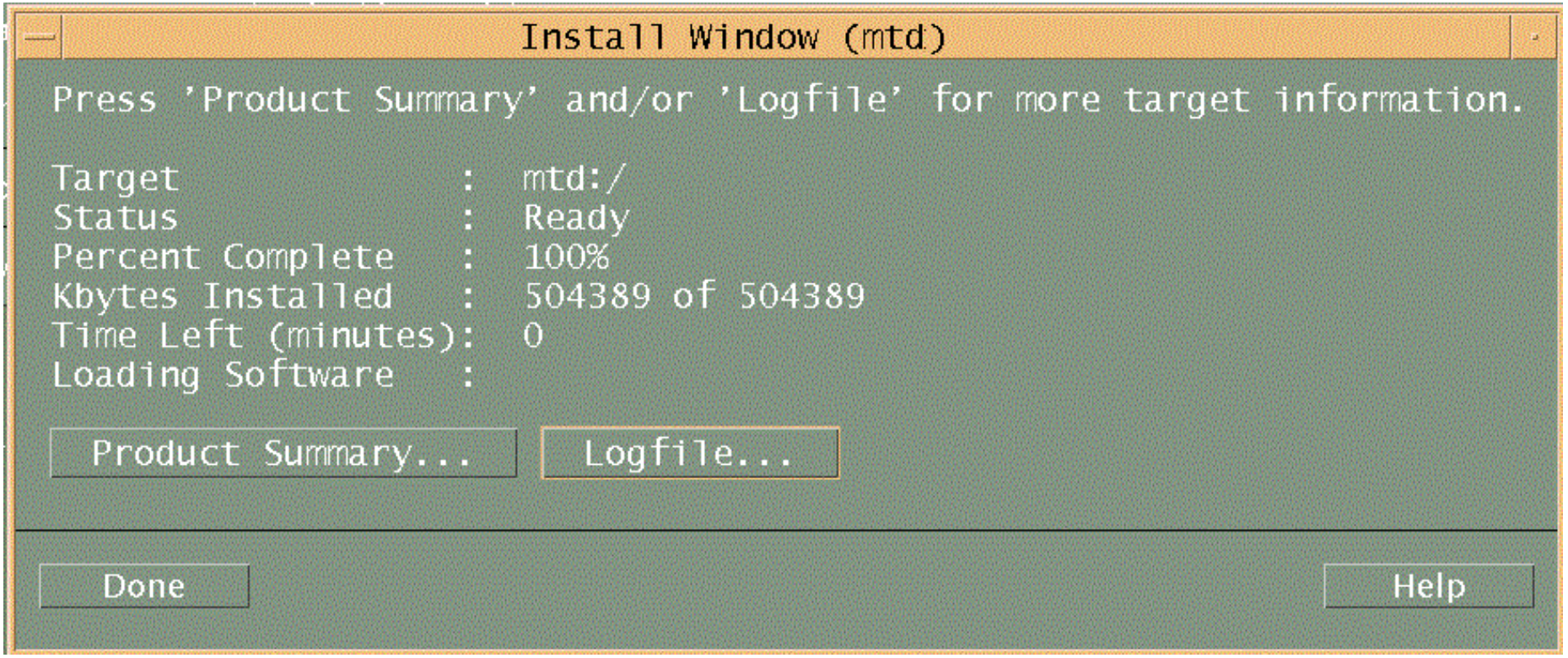


Figure 10 Software load complete in the **Install** window

Logical Volume (lvol) Size Issues – Managing and Resizing

This section describes situations in which system administrators may be trying to solve problems with the size of existing logical volumes. Agilent's supported and preferred solution for logical volume (lvol) size problems is a re-install of HP-UX. In some cases, Agilent clients and users have requested alternatives to a full re-install. Those solutions are presented here with the stipulation that these are not supported solutions.

Risks Associated with Unsupported Procedures

CAUTION

This information is for experienced system administrators only. If you are an end user, do not for any reason attempt any of these procedures. Many of the non-preferred solutions detailed here could cause permanent data loss or total system failure. Call your Agilent SE or FE before attempting any of these procedures if you have any questions whatsoever.

Additional cautions

- Always do a complete system backup and a make_recovery before attempting any of these procedures.
- The following instructions contain information on how to boot into single-user mode. These allow users to completely bypass all system security. Treat these instructions with proper care (do not allow end users to access these instructions).
- For all these processes, never use **su** or **su-**. Log in as **root** for all procedures.

Possible Causes for lvol Size Problems

There are several reasons you might need to manage information on or actually resize logical volumes. Most are common-sense causes—installations of newer, larger operating system versions, or the addition of data or software patches to existing drives.

Changes in the lvol layout can also affect the required size of logical volumes (e.g., **/opt**, which at one time was its own logical volume, was moved at B.03.40 and made part of the /root directory structure, causing an increase in the size of **/root**).

Solving lvol Size Problems

Again, it is important to note that the safe, supported method for solving lvol size problems is a complete re-install of HP-UX, during which you can specify an increase or decrease in the default logical volume sizes.

The following sections contain alternate solutions and procedures for lvol re-sizing in three different situations. The sections are as follows:

- **Resizing all logical volumes except /var, /usr, and /root** (using SAM)
- **Resizing the /var and /usr logical volumes**
- **Managing or resizing the /root logical volume**

Resizing all logical volumes except /var, /usr, and /root

Use this procedure when you need to extend the logical volume of any logical volume other than **/var**, **/usr**, or **/root**. Again, this is an "unsupported" procedure for system administrator use only. This resolution also includes directions for SAM.

In this example, the **/home** lvol is being extended.

NOTE

Once you increase a logical volume, you cannot decrease it later. You will have to clear the entire disk and start over.

To resize logical volumes:

1 **Login as root.**

NOTE

This must be done from the testhead controller. Do not attempt this process using X on a PC

2 **At the # prompt, type:**

```
finger
```

Make sure that there is nobody else logged in.

3 **Type:**

```
fuser -cu <lv name>
```

where **<lv name>** is the logical volume name (e.g., **/home**). If any processes appear that are not owned by root, there are background processes that will prevent you from extending the logical volume.

4 **Kill any suspect processes or force closure of processes by shutting down the controller.**

To shut down, type

```
shutdown -r 0
```

5 **After the reboot, when the CDE screen re-appears, login as root.**

6 **Type:**

```
sam
```

You will enter the SAM GUI.

7 **In the SAM GUI, select:**

Disks and File Systems <Symbol>Æ **Logical Volumes**

8 **Highlight the logical volume to be extended (in this case, lvol5 for /home).**

9 **Click on the Actions Menu <Symbol>Æ Increase Size**

10 **Choose a larger size for the logical volume, noting the space available for use.**

11 **Click OK.**

Resizing the /var and /usr logical volumes

Use this procedure when you need to extend the logical volume of the **/var** or **/usr** filesystems. Again, this is an "unsupported" procedure for system administrator use only. Make sure you have reviewed and you understand the cautionary statements at the beginning of this section.

CAUTION

Files critical to the operating system may reside on these logical volumes, so use extreme caution when resizing lvols, or relocating or deleting files.

For this example, assume that you are extending **/dev/vg00/lvo19**, the **/var** directory. In this example, 1 Gb of space will be added.

Before You Begin

Keep the following things in mind as you go through this example or as you attempt the procedure:

- This procedure may vary depending on the type of controller you are using. You may see the term ISL or IPL in this example; which of these you see on screen will also vary, depending on your controller.
- On a C240 or B180L system, the disk drive referenced should match the SCSI address that MTD ships for the C240s. On a 712, 725, or C110 with MTD pre-loaded disks, there are notes for places where you may do things differently for a dual boot system.
- You must know the following things before starting the procedure:
  - For the particular mount point (directory) (e.g., **/var**, **/home**, or **/usr**), what is the block device file for the logical volume?

    In this example **/var** is being increased. The logical volume block device file is **/dev/vg00/lvol9**. You can find the information about which logical volume is associated with which mount point by running **bdf**. Make sure you write down the block device file name for each logical volume for which you want to increase the size.
  - What is the physical volume (physical disk drive) for the logical volume?

    To find out, type :

    ```
    vgdisplay -v <volume group>
    ```

    where **<volume group>** is usually **vg00**. In the above example, the volume group is **vg00** because it is part of the block device file name (**/dev/vg00/lvol9**). At the end of the **vgdisplay** will be about five lines describing the physical volumes for the volume group. Look for the **PV Name** field. This should be something like **/dev/dsk/c0t6d0**. This is the physical volume name that will be used later. Also note the **Free PE** field. This tells you the number of free physical extents (1 extent = 4Mb). If this value is 0 then you cannot extend the logical volume.

Task Overview

1 **Boot into single user mode.**

2 **Use lvextend to extend the logical volume.**

3 **Use extendfs to extend the filesystem.**

4 **Mount the resized volume by rebooting the system.**

1 Boot into single user mode.

a Shut down the system using the shutdown or reboot command.

b As the system begins to come back up, press the **Esc** key about once per second.

You should arrive at the `BOOT_ADMIN>` prompt.

c Choose option 1 or 2 below, depending on your system type:

1) On the C240 or B180L, at the **BOOT_ADMIN** prompt, type:

```
boot pri
```

When asked if you want to interact with IPL or ISL, choose **Y**.

At the **ISL** (or **IPL**) prompt, type:

```
hpux -is
```

This will bring up HP-UX in single user mode.

2) On the 712, 725, or C110, with the internal disk at Unix 9.x and the external disk (SCSI.4.0) at UNIX 10.20, at the **BOOT_ADMIN** prompt, type:

```
boot scsi.4.0 isl
```

At the **ISL** prompt, type:

```
hpux -is /stand/vmunix
```

This will bring up HPUX 10.20 on the external disk.

NOTE

If you get to a CDE login screen, you have not booted into single user mode. If this is the case, start over and at the ISL prompt type:

```
isl> hpux -iS /stand/vmunix
```

This should bring up a root prompt with no login required. If so, you are now in single user mode.

If you are not sure where your disk drives are, you can type:

```
ls /dev/dsk
```

to determine your disk addresses.

2 Use lvextend to extend the logical volume.

In this example, the logical volume is being extended from 250Mb (the default size for a 2 Gb root disk) to 1.25 Gb. You can specify that you want the increased disk space allocated to a specific disk (physical volume). If you do not, LVM will determine where to allocate the space.

a Type:

```
lvextend -L <new size> <logical volume>
```

In this example, the syntax would look like this:

```
lvextend -L 1250 /dev/vg00/lvol9
/dev/dsk/c0t3d0
```

where the disk you are adding to is **/dev/dsk/c0t3d0**.

b Check the logical volume with **lvdisplay**:

```
lvdisplay  /dev/vg00/lvol9
```

3 Use extendfs to extend the filesystem.

At this point, the size of the filesystem is still the same, so you will also need to extend it. Type:

```
extendfs <logical volume>
```

In this example, the syntax would look like this:

```
extendfs -F hfs  /dev/vg00/rlvol9
```

Note that the device file that you extend is the character (rather than the block device file). This is somewhat subtle **rlvol** instead of **lvol**. If you don't specify a size (for more information, do a **man extendfs**), this command by default will extend the filesystem to use all the available space on that logical volume.

4 Mount the resized volume by rebooting the system.

You need to remount the filesystem. Since you are now in single user mode, the easiest way to do this is to reboot the system. Type:

```
reboot
```

Managing or resizing the /root logical volume

Use these procedures when you need to solve size issues on the **/root** filesystem. Again, these are "unsupported" procedures for system administrator use only.

If you choose not to do a full re-install of HP-UX, use one of the following resolutions to either manage lvol size or to actually resize the logical volume. Make sure you have reviewed and you understand all the cautionary statements at the beginning of this section.

CAUTION

Performing any of the following procedures can result in severe system difficulties. Files critical to the operating system reside on /root, so use extreme caution when resizing this logical volume, or when relocating or deleting files.

Before You Begin

Take all the following considerations into account before proceeding.

- The examples and procedures that follow assume you are running HP-UX 10.20.
- Note that HP UX 10.20 does not fit on some older 1 Gb drives; they cannot be resized to make the operating system fit. In this case, contact Agilent for the preferred solution, which is an external drive that has HP-UX and the Agilent 3070 software pre-installed.
- Some of these steps require temporary access to an extra hard drive.
- Make sure you have a current make_recovery and full backup of each system being modified. This operation can cause permanent data loss.
- These steps cannot be used to reduce the size of a lvol. Once you increase their size, the only way to reduce their size is to re-load the operating system, destroying all your existing data. (You can use **lvreduce**, but there are limitations and restrictions on its successful operation.
- This is an unsupported procedure, but it does work most of the time. However, you assume the risk for any data loss or system malfunction. If you are uncomfortable with these warnings, or are an inexperienced end-user, do not follow this procedure. Contact your Agilent System Engineer for on-site consulting to perform these steps.

1 Determine if you have enough free space on your hard drive(s).

Issue the following command:

```
bdf -l  <enter>
```

where -l is a hyphen/minus sign and l is the letter l. This returns the allocated, used and free space on your existing local logical volumes. Compare this to the physical size of your hard drive(s). If the allocated / used space is within 5% of your physical hard drive size, your hard drives are getting too full.

2 Note which logical volume(s) you want to manage or increase the size of.

You can now consider one of the following unsupported procedures for managing or resizing your existing logical volume(s).

Resolutions That Do Not Involve Actual lvol Resizing

The following resolutions may be used if you do not want to re-install HP-UX and you do not want to attempt the complicated resizing procedure.

- Copy the file system to another disk.

  If a larger hard disk is available, copy the root file system from the original disk to the spare disk.

  Refer to the "Tasks You Can Perform Only with HP-UX Commands" section of Chapter 5 of the Managing Systems and Workgroups Manual (Part Number B23355-90157) for details on creating alternate boot disks.

- Use your recovery tape created with **make_recovery** (refer to man section 1m).

  This is the least time-consuming process. **make_recovery** is provided as a part of the product Ignite-UX, which is free of charge and available on the Applications Release Media or at URL: *http://www.software.hp.com*

- Move a directory to another disk drive.

  This option does not expand the logical volume, but should be considered as an optional solution.

- Create another logical volume with unused hard drive space.

  Mount the new volume and move the directories (and their subordinate files) onto the new volume.

  Create a symbolic/soft link from the new volume to the old location.

Resizing the /root logical volume

Use this procedure when you need to extend the logical volume of the **/root** filesystem. Again, this is an "unsupported" procedure for system administrator use only. Make sure you have reviewed and you understand all the cautionary statements at the beginning of this section

CAUTION

⚠ The following procedures can be EXTREMELY dangerous if done incorrectly, and should NEVER be carried out by inexperienced end-users. You should be prepared to do a reinstall (full backups, etc.) before beginning this procedure

Before You Begin

Keep in mind the following considerations:

- The root, primary swap and dump logical volumes are documented as inextensible. Simply saying that this is a limitation of the implementation of these logical volumes is to some extent misleading. In fact, there are two reasons to disallow extension of root:

- the **extendfs** (refer to man section 1m) command can only be used on filesystems that are not mounted
- the **/root** logical volume cannot span disks and must be contiguous.

- To extend a logical root volume, there must be free space available immediately following the logical volume on the disk, so you may need a spare disk to use as your temporary root disk.
- Extending root can be done with just two reboots. The safest, supported method would be system reinstallation, however this does result in down time.

Task overview

To solve the problem of a full root/boot disk, use the following procedure:

NOTE

It is always a good idea to keep root as small as possible (even though the 3070 installation places **/opt** in the **/root** lvol). You should avoid using the ability to extend root to make the entire filesystem fit under one root file system. After system failures, large root file systems can take longer to **fsck** at reboot time and are more time-consuming to change.

This example adds a new LVM disk, **c1d0s2**, a C2474S at hardware address 52.3.0 (this will be different, based on the type of controller you are using), to the root volume group to make room on **c0d0s2**, the original root disk, then extends the original root logical volume.

1 Create a new bootable LVM disk.

For this example, the new disk is **c1d0s2**. The syntax would look like this:

```
pvcreate -B /dev/rdsk/c1d0s2
```

2 Include the disk in the current volume group.

For this example, the syntax would look like this:

vgextend /dev/vg00 /dev/dsk/c1d0s2

You can verify you have done this correctly by typing

```
vgdisplay -v /dev/vg00
```

3 Make the disk a boot disk by adding boot utilities.

(This assumes the new disk is installed at hardware path 8/0/19/0.6.0.)

a Type:

```
mkboot /dev/rdsk/c1d0s2
```

This places the boot utilities in the boot area.

b Type:

```
mkboot -a "hpux
(8/0/19/0.6.0;2)/stand/vmunix"
/dev/rdsk/c1d0s2
```

This adds an AUTO file in the boot LIF area.

4 Create a logical volume on the new disk that is the same size as the original root disk.

In this example the size should be 104Mb with 26 physical extents.

a Type:

```
lvcreate -C y -r n -n lvnew /dev/vg00
```

b Type:

```
lvextend -l 26 /dev/vg00/lvnew
/dev/dsk/c1d0s2
```

5 Create a file system in the logical volume /dev/vg00/lvnew.

Type:

```
newfs /dev/vg00/rlvnew
```

6 Create a mount directory for the new file system.

a Type:

```
mkdir /newroot
```

b Type:

```
mount /dev/vg00/lvnew /newroot
```

7 Move to / and copy the root file system over to the /newroot.

a Type:

```
cd /
```

b Type:

```
find . -xdev -depth -print | cpio -pxdm
/newroot
```

8 Modify BDRA (Boot Data Reserved Area) so that the system will use lvnew as the root file system, leaving swap and dump on lvol2 as they were before.

a Type:

```
lvrmboot -r /dev/vg00
```

b Type:

```
lvlnboot -r /dev/vg00/lvnew
```

c Type:

```
lvlnboot -s /dev/vg00/lvol2
```

d Type:

```
lvlnboot -d /dev/vg00/lvol2
```

9 Move the physical volume for the swap (and dump) and /usr to new disk.

a Type:

```
pvmove -n /dev/vg00/lvol2
/dev/dsk/c0d0s2 /dev/dsk/c1d0s2
```

b Type:

```
pvmove -n /dev/vg00/lvol3
/dev/dsk/c0d0s2 /dev/dsk/c1d0s2
```

c Verify using **lvdisplay**.

```
-v /dev/vg00/lvol2 and lvdisplay -v
/dev/vg00/lvol3)
```

10 Reboot the system from the new disk in single user mode. At the ISL prompt, type:

```
hpux -iS (52.3.0;2)/hp-ux
```

If the above fails, try to boot from the original disk using LVM maintenance mode:

```
hpux -lm
```

where **-** is a hyphen/minus sign, and **lm** are the letters l and m.

11 Extend the original root logical volume.

In this example, the original root logical volume **/dev/vg00/lvol1** is extended from the original 104Mb (26 extents) to 200Mb (50 logical extents).

For this example, syntax would look like this:

```
lvextend -l 50 /dev/vg00/lvol1
```

12 Extend the original root file system.

For this example, syntax would look like this:

```
extendfs /dev/vg00/rlvol1
```

13 Make a new directory /origroot and mount /dev/vg00/lvol1 to it.

For this example, syntax would look like this:

```
mount /dev/vg00/lvol1 /origroot
```

14 Run fsck to extend the root file system.

Run **fsck** on the root file system. Because the root file system is mounted, the Superblock is not in sync with the redundant Superblocks created by the **extendfs** command. Since the redundant Superblocks correctly reflect the new size of **root**, use one of them when performing **fsck**. Refer to man section 1m for more information on **fsck**. Type:

```
fsck -b (alternate SB from extendfs)
/dev/vg00/lvol1
```

15 Modify BDRA to use the original root, lvol1 (now larger).

a Type:

```
lvrmboot -r /dev/vg00
```

b Type:

```
lvlnboot -r /dev/vg00/lvol1
```

c Type:

```
lvlnboot -s /dev/vg00/lvol2
```

d Type:

```
lvlnboot -d /dev/vg00/lvol2
```

16 Reboot from the original root disk.

(In this example, **/dev/dsk/c0d0s2**).

At this point, **root** is now on the original disk, but is using a 200Mb root file system, with primary swap and **/usr** on the new disk. The new logical volume (lvnew) can now be removed with **lvremove** if you wish to reuse that space.

In Case of Difficulty

Reference information for swinstall can be found by entering: `man swinstall` in a shell window.

If difficulty persists, contact your Agilent support representative.

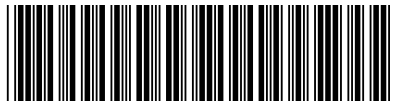
NOTE

Find your Agilent support representative on the Internet at `http://www.agilent.com`

1 From the top of the page, click **Contact Us**

2 Click **Test & Measurement**

3 Click (your country) and find the **Technical & Professional Services** heading.



Document No. E9900-96171 Rev. B 08/2000

Printed in USA