# Installing HP VEE for HP-UX

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# About this Manual

This manual is written for HP-UX system administrators who wish to install HP VEE on an HP 9000 Series 700 or Series 300 HP-UX workstation, or on an HP Model V/743 or V/382 Embedded VXI Controller. The manual assumes knowledge of HP-UX and the X Window System (X11), and familiarity with the *HP-UX System Administration Tasks* manual. No knowledge of HP VEE is assumed. For information about using HP VEE, refer to the other HP VEE manuals included with the product.

# Conventions Used in this Manual

This manual uses the following typographical conventions:

| Example | Represents |
|---|---|
| *HP VEE Reference* | Italicized words are used for book titles and for emphasis. |
| `File` | Computer font represents text you will see on the screen, including menu names, features, buttons, or text you have to enter. |
| `dir` *filename* | In this context, the word in computer font represents text you type exactly as shown, and the italicized word represents an argument that you must replace with an actual value. |
| `File` ⟹ `Open` | The "⟹" is used in a shorthand notation to show the location of HP VEE features in the menu. For example, "`File` ⟹ `Open`" means to select the `File` menu and then select `Open`. |
| `Zoom Out \| In 2x \| In 5x` | Choices in computer font, separated with a bar ( \| ), indicate that you should choose one of the options. |
| Return | The keycap font graphically represents a key on the PC keyboard. |
| Press Ctrl + O | Represents a combination of keys on the PC keyboard that you should press at the same time. |
| **Dialog Box** | Bold font indicates the first instance of a word defined in the glossary. |

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# Installing HP VEE

This chapter describes how to install HP VEE from your HP VEE installation media. You will use the `/etc/update` program to install the software. If you need detailed information on the `/etc/update` program, or if you have problems when installing HP VEE, please refer to the *HP-UX System Administration Tasks* manual.

# System Requirements

**NOTE**

If you have an HP 9000 Series 700 system, please install your HP E2070A and HP E2071I HP-IB Cards, HP E2074A GPIO Cards, and HP E1489I MXI Interface Cards in your system before installing HP VEE. Carefully follow the hardware installation manual included with the interface cards.

Before installing HP VEE, you must have the following:

- The HP VEE installation media (CD-ROM, DAT tape, or cartridge tape).
- HP-UX version 9.x running on an HP 9000 Series 700 or Series 300 workstation, or on an HP Model V/743 or V/382 Embedded VXI Controller.
- X Window System (X11). (The HP VUE system is optional.)
- At least 50 MB (Megabytes) of free file system space on the disk that contains `/usr/lib`.
- At least 20 MB of swap space available for HP VEE. This means that you need 20 MB of swap space *in addition* to the amount of swap space required for X11 Windows and other applications you will run concurrently with HP VEE.

# Installing the Software

If you are installing HP VEE from CD-ROM, follow the instructions in "Installing from CD-ROM", which follows. If you are installing HP VEE from DAT or cartridge tape, skip ahead to "Installing from Tape".

# Installing from CD-ROM

**NOTE**

You must be logged in as superuser (`root`) to complete the procedure that follows. You cannot install HP VEE from a diskless node.

The HP VEE installation CD-ROM contains a mountable file system. The HP-UX `update` program expects the CD-ROM to be mounted on your file system. Your system must meet the following prerequisites before you mount the CD-ROM on your file system:

- The `cdfs` subsystem must be in your kernel. Use the HP-UX `SAM` program to verify the `cdfs` subsystem is in your kernel. If it isn't, use `SAM` to add it.
- There must be an empty directory to use as a mount point. This example procedure assumes a directory called `/UPDATE_CDROM`. Your mount directory can have a different name. If needed, you can create this directory with the following command:

  ```
  mkdir /UPDATE_CDROM
  ```

- There must be a block-mode device special file on your system for the CD-ROM drive. This special file may already exist in the `/dev/dsk` directory. If you do not find it there, you can create one with the `mknod` command. When using the `mknod` command you must supply a major number. Use `7` for a SCSI CD-ROM drive, or `0` for a Series 300 CS-80 CD-ROM drive. The following procedure assumes a block-mode device special file name of `/dev/dsk/cdrom`. Your special file can have a different name.

For further information about the HP-UX `update` utility, refer to the *Installing and Updating HP-UX* manual.

To install HP VEE from CD-ROM:

1. Insert the CD-ROM in your CD-ROM drive.
2. Log in as superuser (`root`).
3. Mount the CD-ROM. For example:

   ```
   /etc/mount /dev/dsk/cdrom /UPDATE_CDROM -t cdfs
   ```

4. Execute the `update` utility:

   ```
   /etc/update
   ```

5. Answer the `update` prompts, as follows:
   a. Select: `Change Source or Destination ->`
   b. Select: `From CD-ROM (directory) to Local System` . . .
   c. Enter the mount directory in the `Source Directory` field
   d. Press the `Done` softkey: (f4)
   e. Answer (N) to the codeword prompt
   f. Select: `Select All Filesets on the Source Media ->`
   g. Select: `Start Loading Now` . . .
   h. Answer (Y) when asked to confirm.
6. The `update` program will tell you when it is done. (Typically, it takes about 5 minutes.) Then review the update log file for any error or warning messages by executing the following command:

   ```
   view /tmp/update.log
   ```

7. Unmount the CD-ROM. For example:

   ```
   /etc/umount /UPDATE_CDROM
   ```

Once you have completed the installation, you must configure HP VEE as described in Chapter 2.

## Installing from Tape

To install HP VEE from DAT or cartridge tape:

1. Insert the HP VEE installation tape into the drive. *Wait for the busy light to stop flashing (DAT) or remain off (cartridge).*
2. Log in as superuser (`root`) on either a cluster server or a stand-alone system. Note that you cannot install HP VEE from a diskless node.
3. Run the `/etc/update` program.
   - If you wish to install HP VEE interactively, execute the following command:

     ```
     /etc/update
     ```

     Then answer the `update` prompts as follows:

     a. If your source device is not `/dev/update.src`:

        i. Select: `Change Source or Destination ->`

        ii. Select: `From Tape Device to Local System` . . .

        iii. Enter the device file for your tape drive, and then press the `Done` softkey (F4).

     (Refer to your *HP-UX System Administration Tasks* manual for help with creating device files.)

     b. Select: `Select All Filesets on the Source Media ->`

     c. Select: `Start Loading Now` . . .

     d. Answer Y when asked to confirm.

     The `update` program will tell you when it is done. It may take up to 10 minutes from DAT (40 minutes from cartridge). Then go to step 4.

- If you wish to install HP VEE non-interactively, execute the following command:

  `/etc/update -s` *source_device* `VEETEST`

  For *source_device*, specify the device file associated with the drive containing the HP VEE installation tape. The default is `/dev/update.src`.

  The `update` program will tell you when it is done. It may take up to 10 minutes from DAT (40 minutes from cartridge). Then go to step 4.

4. Review the update log file for any error or warning messages by executing the following command:

   ```
   view /tmp/update.log
   ```

5. Remove the installation tape from the drive.

Once you have completed the installation, you must configure HP VEE as described in Chapter 2.

# 2

# Configuring HP VEE

# Configuring HP VEE

Once you have installed HP VEE as described in Chapter 1, you need to complete several configuration steps before you can run HP VEE.

- If you have installed HP VEE on an HP 9000 Series 700 Workstation, or on an HP Model V/743 Embedded VXI Controller, follow the instructions in "Configuring HP VEE for Series 700 and Model V/743", which follows.
- If you have installed HP VEE on an HP 9000 Series 300/400 Workstation, or on an HP Model V/382 Embedded VXI Controller, skip ahead to "Configuring HP VEE for Series 300 and Model V/382", later in this chapter.

In either case, once you have finished configuring HP VEE, go to Chapter 3.

# Configuring HP VEE for Series 700 and Model V/743

Once you have loaded HP VEE onto your Series 700 or V/743 system, configure HP VEE as described in the following sections.

**NOTE**

You must be running HP-UX 9.x and logged in as `root` in order to complete these tasks.

If you are installing HP VEE on a diskless cluster, you must perform these tasks for each diskless client that will be running HP VEE, as well as for the server.

## Modifying the Hardware Configuration File

In order to configure your I/O interfaces for HP VEE, you need to have an appropriate configuration line for each interface in your hardware configuration file (`/usr/pil/etc/hwconfig.cf`). You don't need to create this file because a default file is provided (located at `/usr/pil/defaults/hwconfig.cf`). This file has a default line for each available interface. Each of these lines is "commented out" with a `#` character at the beginning of the line. If you are using the recommended switch settings for your interface, you need only uncomment the appropriate line by removing the `#` from the beginning of the line. (Use `vi` or another ASCII text editor.)

In addition, there is another configuration file (`iproc.cf`), which you will need to modify if you are configuring HP VEE for the HP E1489I MXI Interface or the HP Model V/743 Embedded VXI Controller.

**NOTE**

You must uncomment lines in `hwconfig.cf` for all interfaces that you want to access from HP VEE, including the COM1 and COM2 serial ports.

If you are installing HP VEE on a diskless cluster, you must put the modified `hwconfig.cf` and `iproc.cf` files on each diskless client that will be running HP VEE, as well as on the server. (You must be logged in as `root` on each system.)

The procedure is as follows:

1. Log in as superuser (`root`).
2. Copy the `/usr/pil/defaults/hwconfig.cf` file to `/usr/pil/etc/hwconfig.cf`:

   ```
   cp /usr/pil/defaults/hwconfig.cf /usr/pil/etc/hwconfig.cf
   ```

3. Copy the `/usr/pil/defaults/iproc.cf` file to `/usr/pil/etc/iproc.cf`:

   ```
   cp /usr/pil/defaults/iproc.cf /usr/pil/etc/iproc.cf
   ```

4. Using `vi` or another ASCII text editor, uncomment the appropriate line in `/usr/pil/etc/hwconfig.cf` for each I/O interface in your system. Also, for the HP E1489I MXI Interface and Model V/743 Embedded VXI Controller, uncomment the appropriate lines in `/usr/pil/etc/iproc.cf`.

   Refer to the subsections on the next few pages for examples of the the default lines for various interfaces. Also, the `hwconfig.cf` and `iproc.cf` files have comments to guide you.

5. Once you've modified `hwconfig.cf` (and `iproc.cf`) for all of your interfaces, go on to "Configuring the Kernel".

**Example—Uncommenting an HP-IB Configuration:**

For a single HP E2070A HP-IB Interface Card, the default line is as follows:

```
#7      hpib e2070 1 21 0b01110000  1 # Card in first slot  (slot #1)
```

To "uncomment" this line, remove the **#** character from the beginning of the line:

```
7       hpib e2070 1 21 0b01110000  1 # Card in first slot  (slot #1)
```

(Don't remove the second **#** character, the text after it is not part of the command, but is intended as a comment.)

### HP E2070A HP-IB Interface Configuration:

For a single HP E2070A HP-IB interface card in slot #1, the default logical unit number is 7, provided the default switch settings are used. (Refer to the HP E2070A owner's manual for further information.) Uncomment the following line:

```
#7      hpib e2070 1 21 0b01110000  1 # Card in first slot  (slot #1)
```

If you have installed more than one HP E2070A card, uncomment the appropriate line for each one. If you used the switch settings recommended in the HP E2070A owner's manual, the uncommented lines will work without further modification. If you have changed the switch settings, you must modify the lines in the `hwconfig.cf` file following the instructions in the file.

### HP E2071I High-Speed HP-IB Interface Configuration:

For a single HP E2071I High-Speed HP-IB interface card in slot #1, the default logical unit number is 7, provided the default switch settings are used. (Refer to the HP E2071I owner's manual for further information.) Uncomment the following line:

```
#7       hpib e2071 1 21 0b0000 1  3
```

If you have installed more than one HP E2071I card, uncomment the appropriate line for each one. If you used the switch settings recommended in the HP E2071I owner's manual, the uncommented lines will work without further modification. If you have changed the switch settings, you must modify the lines in the `hwconfig.cf` file following the instructions in the file.

### HP 9000 Model 745I Internal HP-IB Configuration:

For the Model 745I internal HP-IB interface, the default logical unit number is 7. Uncomment the following line:

```
#7       hpib s745 0xf0835000 21 1
```

### HP Model V/743 Internal HP-IB Configuration:

For the Model V/743 internal HP-IB interface, the default logical unit number is 7. Uncomment the following line:

```
#7 hpib  s743 99 21 0b0000 1  9
```

### COM1 and COM2 Serial Port Configuration:

For most Series 700 RS-232 serial ports, uncomment one or both of the following lines:

```
#9  COM1 serial700 0xf0823000 26 9600 0x00 0x03 0x00 0x00 0x00
#10 COM2 serial700 0xf0822000 25 9600 0x00 0x03 0x00 0x00 0x00
```

If you want to use one of your serial ports (COM1 or COM2) for a modem or device requiring the `termio` driver, *do not* uncomment the line corresponding to that port.

### HP E2074A GPIO Interface Configuration:

For a single HP E2074A GPIO interface card in slot #1, the default logical unit number is `12`, provided the default switch settings are used. (Refer to the HP E2074A owner's manual for further information.) Uncomment the following line:

```
#12  gpio   e2074  1 0x15  0b0000  10  0b00000  0x00  0x00  1
```

If you are using the HP 44702A/B High-Speed Voltmeter in the HP 3852A Data Acquisition and Control Unit, it is recommended that you modify the GPIO interface line as follows:

```
12  gpio   e2074  1 0x15  0b0000  10  0b11110  0x10  0x22  1
```

If you have installed more than one HP E2074A card, uncomment the appropriate line for each one. If you used the switch settings recommended in the HP E2074A owner's manual, the uncommented lines will work without further modification. If you have changed the switch settings, you must modify the lines in the `hwconfig.cf` file following the instructions in the file.

### HP E1489I MXI Interface Configuration:

For a single HP E1489I MXI interface card in slot #1, the default logical unit number is `16`. (Refer to the HP E1489I owner's manual for further information.) Uncomment the following line in the `hwconfig.cf` file:

```
#16  vxi  e1489 3 0 0 9 0x500000 16 0x600000 10
```

Also, uncomment the following lines in the `iproc.cf` file:

```
#boot ivxirm -p -I vxi

#sysreset vxi ivxirm -t &

#monitor
```

If you have installed more than one HP E1493I card, uncomment the appropriate line for each one in `hwconfig.cf`. If you used the switch settings recommended in the HP E1493I owner's manual, the uncommented lines will work without further modification. If you have changed the switch settings, you must modify the lines in the `hwconfig.cf` file following the instructions in the file. Also, uncomment the appropriate lines in `iproc.cf`, following the instructions in that file.

### HP Model V/743 VXI Configuration:

The default logical unit number for the HP Model V/743 Embedded VXI Controller's VXI backplane is `24`. Uncomment the following line in the `hwconfig.cf` file:

```
#24  vxi  v743 0 0
```

It is highly recommended that you change this line so that the logical unit number for the VXI backplane is `16`, as shown below:

```
16  vxi  v743 0 0
```

Also, uncomment the following lines in the `iproc.cf` file:

```
#boot ivxirm -p -I vxi

#sysreset vxi ivxirm -t &

#monitor
```

### LAN Configuration:

To configure HP VEE for access to LAN-based instruments, uncomment the following line:

```
#30 lan ilan 0 0 120 25 1 1
```

This will allow your HP VEE/Series 700 system to act as a LAN client. Thus you can access LAN-based instruments by means of either an HP E2050 LAN/HP-IB Gateway, or an HP Series 700 system with the HP SICL LAN server software installed. Refer to the HP E2050 or HP SICL documentation for further information.

### I-SCPI Configuration:

To configure I-SCPI for HP VEE, uncomment the line:

```
#64 iscpi iscpi 0 0 /usr/pil/lib/iscpi vxi
```

This allows HP VEE to use message-based communication for register-based VXI devices that are supported by I-SCPI.

## Configuring the Kernel

This section tells how to install the PIL (Portable Instrument Library) I/O subsystem into the HP-UX kernel. To do this, you must be logged in as the `root` user and be running HP-UX version 9.x.

> **NOTE**
>
> If you are installing HP VEE on a diskless cluster, you must perform these steps for each diskless client that will be running HP VEE, as well as for the server. (You must be logged in as `root` on each system.)

1. Log in as superuser (`root`).
2. Modify the `hwconfig.cf` and `iproc.cf` files as described in "Modifying the Hardware Configuration File" (the previous section), if you haven't already done so.
3. Run the PIL configuration program:

   ```
   /usr/pil/bin/pilconf
   ```

   This will configure your Series 700 system, including building a new kernel. While the program runs, it will prompt you for the following information:

   a. Name of the `hwconfig.cf` file. Always use `/usr/pil/etc/hwconfig.cf`.

   b. Name of your `dfile`. This is the name of the `dfile` you use to customize your kernel, which is usually `/etc/conf/dfile`. However, if you've copied this file to another name and made changes, specify the new name for this file. If you've used SAM to configure your kernel in the past, you may want to use `/etc/conf/dfile.SAM`.

c. Name of a kernel backup file. This is the file in which your old `/hp-ux` kernel file is saved. The default is `/SYSPILBCKUP`, but it can be any name you choose.

**Problems?**

Depending on your current kernel configuration, the PIL configuration program may not complete successfully. If this happens, a message will inform you of the failure and ask you to reboot your system.

After you have rebooted your system, log in as `root` again and type in:

```
/usr/pil/bin/pilconf -e
```

The PIL configuration program will now complete successfully.

4. When the PIL configuration program is finished, it will ask you if you want to reboot. Type `y` to reboot.

   If you respond with an `n` (the default), you should manually reboot your system by typing:

   ```
   /etc/reboot
   ```

   Once your system has rebooted, the PIL I/O configuration is complete.

## Configuring the VXI Resource Manager

If you have installed one or more HP E1489I interfaces cards, or if you are using an HP Model V/743 Embedded VXI Controller, your system will run a VXI Resource Manager. This is invoked by the changes you made to the `iproc.cf` file.

In general, the resource manager follows a set of rules defined by the VXI standard when configuring the system. However, the VXI standard

does not define some aspects of configuration. Also, some rule changes may be required for specific applications. The static configuration files specify these site-dependent configurations rule changes. These files reside in the directories `/usr/pil` (`vximanuf.cf` and `vximodel.cf`) and `/usr/pil/etc/vxiLU`, where `LU` is the logical unit number of the VXI interface. The static configuration files are listed below.

| | |
|---|---|
| `/usr/pil/vximanuf.cf` | Database of VXI Manufacturer Identification numbers. |
| `/usr/pil/vximodel.cf` | Database of VXI Model Identification numbers. |
| `/usr/pil/etc/vxiLU/dynamic.cf` | Database used to perform dynamic configuration. |
| `/usr/pil/etc/vxiLU/vmedev.cf` | Database listing resources of non-VXI devices. |
| `/usr/pil/etc/vxiLU/irq.cf` | Database showing interrupt line mapping. |
| `/usr/pil/etc/vxiLU/cmdrsrvt.cf` | Database showing changes to the default commander/servant hierarchy. |
| `/usr/pil/etc/vxiLU/names.cf` | Database of symbolic names to assign to devices. |
| `/usr/pil/etc/vxiLU/oride.cf` | Database for overriding the resource manager. It is a set of registers in A16 with associated values. The values are poked into the registers just before Normal Operation. |
| `/usr/pil/etc/vxiLU/ttltrig.cf` | Only used for extended VXI system or MXI system. Its purpose is to describe the routing of the TTL lines. |

# Removing Configured Interface Card(s)

If you wish to remove interface cards from a system, you must perform the following tasks *before* physically removing the cards. After completing these tasks, you may then go through the procedures to physically remove the cards.

## Removing All Cards

If you are removing *all* of the configured interface cards from a system (that is, no more PIL I/O will be used), log in as the `root` user and do the following:

1. Run the `eisa_config` program:

   ```
   /etc/eisa_config
   ```

   When the program prompts you, execute the following commands:

   a. `remove` *slot_number*

      For *slot_number*, substitute the actual EISA bus slot number for each card you are removing. Note that you must re-execute the `remove` command for each card you are removing (for example, `remove 1`, `remove 2`, and so forth.)

   b. `save`

   c. `quit`

2. Copy the file `/etc/rc.prepil` to `/etc/rc` to restore your original `rc` file.
3. Remove the `pil` driver using the `Drivers` menu under `Kernel Configuration` on SAM . Then rebuild the kernel using SAM.

## Removing One or More Card(s)

If you are removing one or more, but *not* all, of the configured interface card(s) from a system, log in as the `root` user and do the following:

1. Edit the `/usr/pil/etc/hwconfig.cf` file and comment out or delete the line(s) specifying the card(s) you are removing.
2. Run the `eisa_config` program:

   ```
   /etc/eisa_config
   ```

   When the program prompts you, execute the following commands.

a. `remove` *slot_number*

For *slot_number*, substitute the actual EISA bus slot number for each card you are removing. Note that you must re-execute the `remove` command for each card you are removing (for example, `remove 1`, `remove 2`, and so forth.)

b. `save`

c. `quit`

3. Run the `pilconf` program:

```
/usr/pil/bin/pilconf
```

4. Reboot your system.

When you have completed configuring HP VEE, go on to Chapter 3.

# Configuring HP VEE for Series 300 and Model V/382

Once you have loaded HP VEE onto your Series 300/400 or V/382 system, configure HP VEE as described in the following sections.

**NOTE**

You must be running HP-UX 9.x and logged in as `root` in order to complete these tasks.

If you are installing HP VEE on a diskless cluster, you must perform these tasks for each diskless client that will be running HP VEE, as well as for the server.

## Configuring DIL in the Kernel for HP-IB

Use the SAM program to see what is in your kernel and to reconfigure your kernel if necessary. To check what is currently in your kernel, use the `Drivers` choice under `Kernel Configuration` in SAM. Refer to *HP-UX System Administration Tasks* for information on SAM and reconfiguring your kernel.

- Set the `ndilbuffers` operating system parameter to at least 30. On diskless clients this may currently be set to 1, which precludes you from running HP VEE with any other program using `dil` calls (such as HP BASIC/UX). Check this under the `Configurable Parameters` choice in SAM's `Kernel Configuration` menu.
- Verify that the kernel *on each system running HP VEE* is configured with the appropriate device (or instrument) drivers:
  - If you have serial devices, configure the `98626` driver.

- If you have GPIO devices (not supported for the V/382), configure the `gpio` driver.
- If you have HP-IB devices, configure both the `hpib` and `98624` drivers for Series 300/400, but only the `hpib` driver for the V/382.

**NOTE**

DO NOT configure the HP 98624 High Speed HP-IB driver if you are installing HP VEE on an HP Model V/382 system. Doing so will cause a kernel flaw.

If you add these device drivers, you must re-execute `vee_config` before you can access the devices (or instruments) from HP VEE. This is documented in the "Configuring the Device Files" section.

## Configuring PIL in the Kernel for VXI (Model V/382 Only)

If you are installing HP VEE on an HP Model V/382 Embedded VXI Controller, complete the steps in this section. For a Series 300 system, skip to the next section, "Configuring the Device Files".

You must complete the following tasks to finish installing the Portable Instrument Library (PIL) I/O Subsystem (VXI driver) into the HP-UX kernel. You must be logged in as the `root` user and be running HP-UX version 9.x to be able to complete these tasks.

1. Copy the `/usr/pil/defaults/hwconfig.cf` file to `/usr/pil/etc/hwconfig.cf` file:

   ```
   cp /usr/pil/defaults/hwconfig.cf /usr/pil/etc/hwconfig.cf
   ```

2. Edit the appropriate line for the embedded controller by removing the `#` character from the beginning of this line in `hwconfig.cf`:

```
#16 vxi  v382 16 0
```

The logical unit address 16, is a default "software" number in the `/usr/pil/etc/hwconfig.cf` file. The logical address 0 is the factory default setting for the V/382 VXI controller.

3. Copy the `/usr/pil/defaults/iproc.cf` file to `/usr/pil/etc/iproc.cf` file:

```
cp /usr/pil/defaults/iproc.cf /usr/pil/etc/iproc.cf
```

4. Edit the appropriate lines for the VXI system by removing the `#` character from the beginning of these lines in `iproc.cf`:

```
#boot ivxirm -p -I vxi

#sysreset vxi ivxirm -t &

#monitor
```

The `iproc.cf` file causes the `iproc` program to become a daemon and monitor the VXI backplane for a `SYSRESET`. The `iproc` program runs the resource manager when `SYSRESET` occurs.

5. Run the PIL configuration program:

```
/usr/pil/bin/pilconf
```

This will configure your V/382 system, including building a new kernel. While the program runs, it will prompt you for the following information:

a. Name of the `hwconfig.cf` file. Always use `/usr/pil/etc/hwconfig.cf`.

b. Name of your `dfile`. This is the name of the `dfile` you use to customize your kernel, which is usually `/etc/conf/dfile`. However, if you've copied this file to another name and made changes, specify the new name for this file. If you've used SAM to configure your kernel in the past, you may want to use `/etc/conf/dfile.SAM`.

c. Name of a kernel backup file. This is the file in which your old `/hp-ux` kernel file is saved. The default is `/SYSPILBCKUP`, but it can be any name you choose.

**Problems?**

Depending on your current kernel configuration, the PIL configuration program may not complete successfully. If this happens, a message will inform you of the failure and ask you to reboot your system.

After you have rebooted your system, log in as `root` again and type in:

```
/usr/pil/bin/pilconf -e
```

The PIL configuration program will now complete successfully.

6. When the PIL configuration program is finished, it will ask you if you want to reboot. Type `y` to reboot.

   If you respond with an `n` (the default), you should manually reboot your system by typing:

   ```
   /etc/reboot
   ```

   Once your system has rebooted, the PIL I/O configuration is complete.

## Configuring the Device Files

The `vee_config` program configures device files for the GPIO, HP-IB, and Serial devices. For the Model V/382 Embedded VXI Controller, the VXI configuration is discussed in the previous section.

The `vee_config` program runs automatically at installation. However, you must manually run the program in the following situations:

- If HP VEE is being installed on a diskless client, run `vee_config` on each client that will run HP VEE. (The installation process does this automatically for the server.)

- If you add kernel drivers or a new interface card after installing HP VEE, run the `vee_config` program on all systems that will access the kernel driver or interface card.

To run the HP VEE device file configuration program:

1. Log into the system on which you will configure the device file. You can log in as any user; you do not need to be the `root` user to run the configuration program.
2. Type:

```
/usr/lib/veetest/vee_config
```

This configures the HP VEE device files on the system. If you do not perform this step, then users who attempt to access external instruments from within HP VEE on that system will see an error message stating that they need to run `vee_config`.

## Configuring the VXI Resource Manager (Model V/382 Only)

Read this section if you are installing HP VEE on an HP Model V/382 Embedded VXI Controller. If you are installing HP VEE on a Series 300 system, go to Chapter 3.

In general, the resource manager follows a set of rules defined by the VXI standard when configuring the system. However, the VXI standard does not define some aspects of configuration. Also, some rule changes may be required for specific applications. The static configuration files specify these site-dependent configurations rule changes. These files reside in the directories `/usr/pil` (`vximanuf.cf` and `vximodel.cf`) and `/usr/pil/etc/vxiLU`, where `LU` is the logical unit number of the VXI interface. The static configuration files are listed below.

| | |
|---|---|
| `/usr/pil/vximanuf.cf` | Database of VXI Manufacturer Identification numbers. |
| `/usr/pil/vximodel.cf` | Database of VXI Model Identification numbers. |

| | |
|---|---|
| `/usr/pil/etc/vxiLU/dynamic.cf` | Database used to perform dynamic configuration. |
| `/usr/pil/etc/vxiLU/vmedev.cf` | Database listing resources of non-VXI devices. |
| `/usr/pil/etc/vxiLU/irq.cf` | Database showing interrupt line mapping. |
| `/usr/pil/etc/vxiLU/cmdrsrvt.cf` | Database showing changes to the default commander/servant hierarchy. |
| `/usr/pil/etc/vxiLU/names.cf` | Database of symbolic names to assign to devices. |
| `/usr/pil/etc/vxiLU/oride.cf` | Database for overriding the resource manager. It is a set of registers in A16 with associated values. The values are poked into the registers just before Normal Operation. |
| `/usr/pil/etc/vxiLU/ttltrig.cf` | Only used for extended VXI system or MXI system. Its purpose is to describe the routing of the TTL lines. |

When you have completed configuring HP VEE, go on to Chapter 3.

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# After You Have Installed and Configured HP VEE

# After You Have Installed and Configured HP VEE

Once you have finished installing HP VEE (as described in Chapter 1) and configuring HP VEE (as described in Chapter 2), verify the installation as described in the following section.

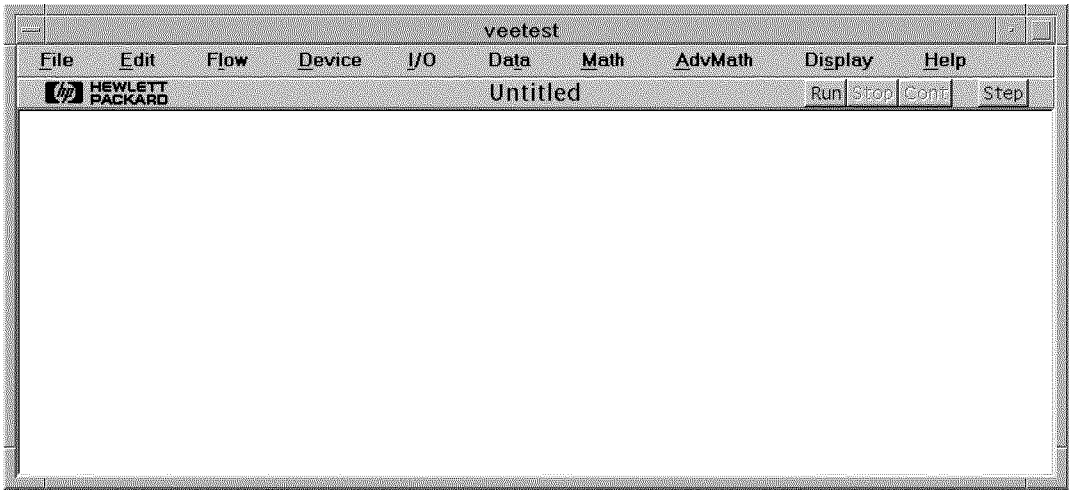
# Verifying the Installation

To verify the installation, start HP VEE as follows:

1. Log into HP-UX, and start X11 or HP VUE if they are not already running.
2. At the prompt in an active X11 or HP VUE window, type:

   ```
   veetest
   ```

   Within several seconds, you'll see the HP VEE window open, as shown below:




If you see the above screen, HP VEE is installed. For information about using HP VEE, refer to the other HP VEE manuals starting with *Getting Started with HP VEE*.

To exit HP VEE, click on **File**, then click on **Exit** in the resulting pull-down menu. The HP VEE window will disappear.

# Additional Information

The following sections provide some additional information of interest to HP VEE programmers.

## About the .veeio File

HP VEE contains a file called `/usr/lib/veetest/config/d.veeio`. This ASCII file contains some example configuration information (for example, hardware type and addresses) for communicating to external instruments. As shipped, it contains seven entries, some of which are used to run some of the programs in the `examples` directory.

The first time each user runs HP VEE, HP VEE will automatically copy the `/usr/lib/veetest/config/d.veeio` file to that user's $HOME directory as `.veeio`. There is nothing that you, the system administrator, need to do to configure the `.veeio` file. Users will add to this file as they configure additional drivers.

## Color Planes and HP VEE

Your computer is equipped with a certain number of display planes (usually 1, 4, 6, or 8). X11 uses the information in these display planes to color your application's window. If you have more than one application running (each in its own window), and you notice the screen colors changing as you move from one application's window to another, then one of two things may be happening. Either all the applications, together, use more colors than one set of planes can handle, or one or more of the applications allocates its own private color map (for example, HP BASIC/UX).

HP VEE uses at least 50 colors (this varies depending which colors your program actually uses), so you may experience this behavior when HP VEE is one of your applications. The symptoms are: when you are in the HP VEE window, the HP VEE colors will be correct for HP VEE, but may be wrong in other application's windows. When you move to another application's window, the colors will be correct for that application, but may be wrong for HP VEE. *This is typical X11 behavior—it is not a problem with HP VEE.*

For further information, refer to the "Configuring HP VEE" appendix in *HP VEE Advanced Programming Techniques*.

## Local-Language Keyboard Support in HP VEE

You can configure HP VEE to accept input from local-language keyboards and to display most local-language characters. *If your users will run HP VEE on a system that has a non-USASCII keyboard, you must configure HP VEE to support the local language keyboard before your users use HP VEE.* Please refer to the "Configuring HP VEE" appendix in *HP VEE Advanced Programming Techniques*. This appendix includes information on supported keyboards and how to configure HP VEE for those keyboards.

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