Installing HP VEE-Engine and HP VEE-Test

HP 9000

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Preface

This manual is written for HP-UX system administrators who wish to install HP VEE-Test or HP VEE-Engine. It assumes knowledge of HP-UX and the X Window System (X11) and familiarity with the *HP-UX System Administration Manual*. It does not assume any knowledge of HP VEE-Test or HP VEE-Engine.

About This Manual. This manual contains installation instructions for HP VEE-Test and HP VEE-Engine. Any differences between the use of the products are noted in the text.

Conventions Used in This Manual

The following table explains the typographical conventions that appear in this manual.

Example	Represents
Installing HP VEE	Italicized words are used for book titles and for emphasis.
`uname -r`	Computer font represents text you will see on the screen or text you need to enter.
Type `veeengine` *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.

Contents

Installing HP VEE

This document describes how to install HP VEE-Test and HP VEE-Engine. 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 *HP-UX System Administration Tasks*, the chapter called "Updating HP-UX".

In this manual, the HP VEE-Test and HP VEE-Engine products are collectively referred to as HP VEE where the information is the same. However, these are *two separate products*. There is an installation media for HP VEE-Test and an installation media for HP VEE-Engine. If you have both products, you have two installation media, and need to perform two separate installations.

Prerequisites

Note

If you have an HP 9000 Series 700 system, please install your HP E2070A or HP E2071I HP-IB interface card(s), or your HP E1489I MXI Interface Controller card(s) 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-Test and/or HP VEE-Engine installation media (for example, a cartridge tape, CD-ROM, or DAT tape for the product you will install).
- HP-UX version 8.0 through 9.0 running on an HP 9000 Series 300 or Series 400. HP-UX version 8.05 through 9.0 running on an HP 9000 Series 700. (Use the `uname -a` command).
- X Window System (X11). (To check for its existence, type: `ls /usr/bin/x11start`).
- The following amount of free file system space on the disk which contains `/usr/lib`. (To check free file system space, use the `/bin/df` command.)

Product	Amount of Free Space Required
HP VEE-Test	26 Mbytes (approximately 52,000 blocks reported by the `/bin/df` command)
HP VEE-Engine	9 Mbytes (approximately 18,000 blocks reported by the `/bin/df` command)

- At least 10 Mbytes of swap space available for HP VEE. This means that you need 10 Mbytes swap space *IN ADDITION* to the amount of swap space required for X11 Windows and other applications you will run concurrently with HP VEE. You can check the amount of dynamic swap using the SAM program. To check the amount of permanent swap, execute the following command as the `root` user:

```
/usr/sam/bin/swapinfo
```

This lists the swap space, per device, in 1 Kbyte blocks.

In addition, you must know the name of the device file associated with the drive from which you will install HP VEE. The `/etc/update` program, by default, uses `/dev/update.src`.

Installing HP VEE

To install HP VEE:

1. Insert the HP VEE installation media into the drive. *Wait for the Busy light to remain off.*
2. Become the root user 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, enter the following command:

     ```
     /etc/update
     ```

     a. If your source device is not `/dev/update.src`, select `Change Source or Destination` and enter the device file associated with the drive in which you inserted the HP VEE installation media. If necessary, see *System Administration Tasks* for help with creating device files.

     b. Select the filesets to load:

     - When installing on a Series 700 or a Model V/382 select `All Filesets on the Source Media`.
     - When installing on other Series 300 or Series 400 select `Select/View Partitions and Filesets`. Then select the appropriate HP VEE product partition. Do *NOT* select the `VXI-IO-90` partition.

     The `/etc/update` program automatically exits when it is finished.

   - If you wish to install HP VEE non-interactively, enter the following commands:

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

     For *source_device*, specify the device file associated with the drive containing the HP VEE installation media. The default is `/dev/update.src`. Also, for *VEEPRODUCT*, specify either `VEEENGINE` or `VEETEST`, depending on which HP VEE product you are installing.

     When installing on a V/382 you must also enter the following command:

     `/etc/update -s` *source_device* `VXI-IO-90`

to load the VXI drivers partition.

It takes up to 15 minutes to load HP VEE from the installation media and run the customize script.

4. Remove the installation media from the drive. You have now installed HP VEE. Continue with the next sections.

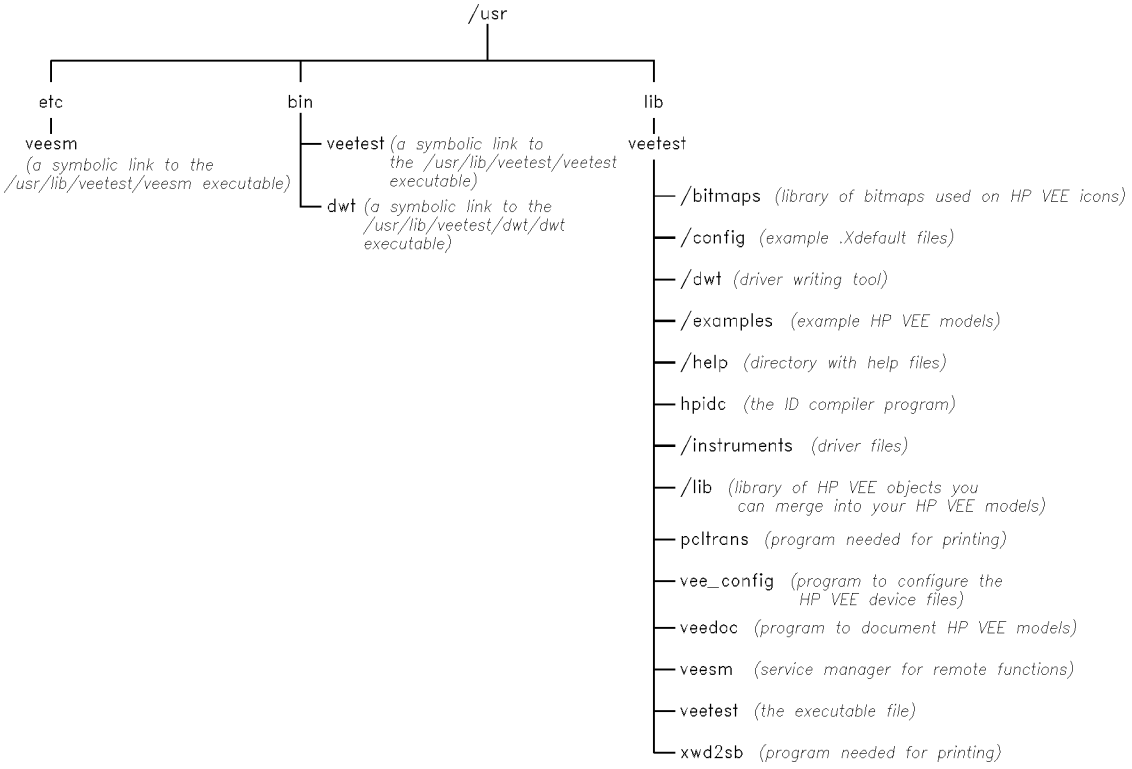
Summary of Changes to Your System

If You Installed HP VEE-Test

The HP VEE-Test installation procedure performs the following:

- Loads HP VEE-Test onto your system. HP VEE-Test consists of one partition (`VEETEST`), containing three filesets: `VEETEST-MAIN`, `VEETEST-IDS`, and `VEETEST-HELP`. In addition,
  - On the Series 700 it loads the filesets: `PIL-RUN`, `PIL-VXI` and `PIL-HPIB`.
  - On the Series 300, selecting `VXI-IO-90` partition loads the filesets: `PIL-RUN` and `PIL-VXI`. Note that this partition will only work with HP-UX 9.0.
- Runs the `vee_config` program to configure device files for HP VEE-Test on your cluster server or stand alone system (for HP 9000 Series 300/400 systems or HP 75000 Series C Model V382 VXI Controllers only). The device files will be configured in the `/dev` directory. You must run the `vee_config` program on each cluster client that will run HP VEE-Test.

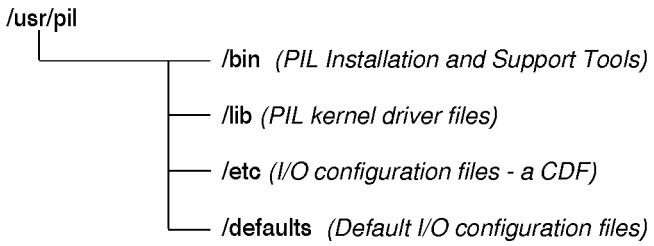
■ Creates the following directory structure.



HP VEE-Test Directory Structure

For HP 9000 Series 700 systems, the HP VEE-Test installation procedure also installs the files in the `PIL-RUN`, `PIL-HPIB`, and `PIL-VXI` filesets under the `/etc/eisa` and `/usr/pil` directories, as shown below.

/etc/eisa/!HWP1450.CFG *(HP-IB Card EISA Configuration File)*



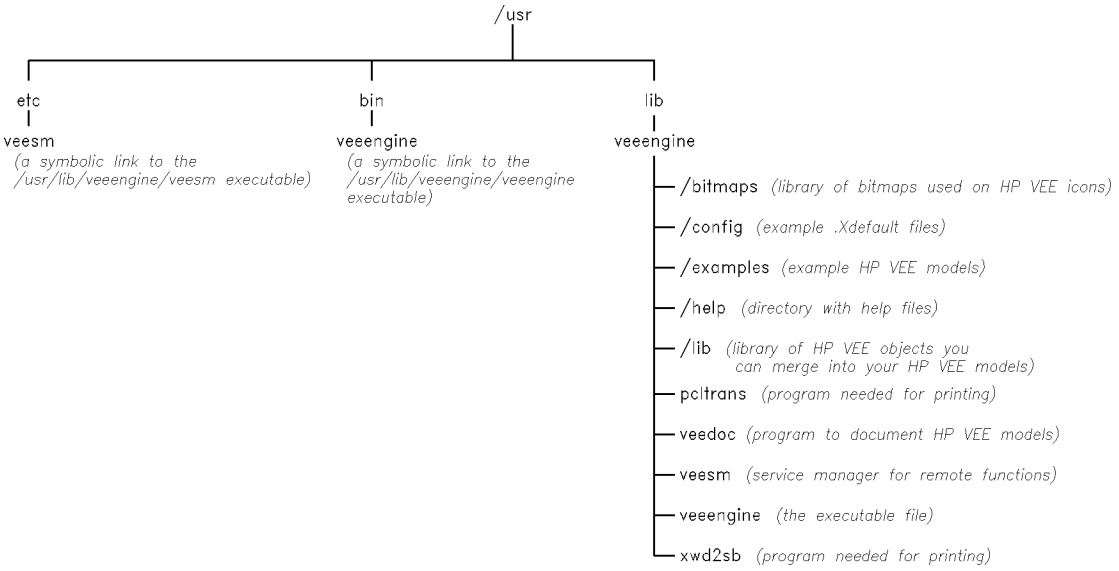
HP VEE-Test Filesets Directory Structure

For the HP 75000 Series C Model V382 VXI Controller, the installation process for HP VEE-Test also installs the files in the `PIL-RUN` and `PIL-VXI` filesets under the `/user/pil` directory, as shown above.

If You Installed HP VEE-Engine

The HP VEE-Engine installation procedure performs the following:

- Loads HP VEE-Engine onto your system. HP VEE-Engine consists of one partition (`VEEENGINE`), containing two filesets: `VEEENG-MAIN` and `VEEENG-HELP`.
- Creates the directory structure shown below.



HP VEE-Engine Directory Structure

Configuring HP VEE-Test for HP 9000 Series 300/400

If you installed HP VEE-Engine, skip to the section named "Color Planes and HP VEE".

If you installed HP VEE-Test on an HP 9000 Series 700, skip to the section named "Configuring HP VEE-Test for HP 9000 Series 700".

If you installed HP VEE-Test on an HP 75000 Series C Model V/382 VXI Controller, skip to the section named "Configuring HP VEE-Test for an HP 75000 Series C Model V/382 VXI Controller".

Once you have loaded HP VEE-Test onto your Series 300 or 400 system, read through the next two subsections to make sure HP VEE-Test will run on your system.

Configure the Kernel for I/O Drivers

Use the SAM program to see what is in your kernel and to reconfigure your kernel if necessary.

Also, if you are on a diskless cluster, you must perform these steps for each cluster client that will be running HP VEE-Test. Note that you must perform these procedures *on each client, NOT on the server.*

- Set the `ndilbuffers` operating system parameter to at least 30. On cluster 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).

  For HP-UX 8.x, check this under the `Miscellaneous Parameters` choice in SAM's `Modify Operating System Parameters` under `Kernel Configuration`.

  For HP-UX 9.x, check this under the `Configurable Parameters` choice in SAM, under `Kernel Configuration`.

- Verify that the kernel *on each system running HP VEE* is configured with the appropriate device (or instrument) drivers:
  - If you have GPIO devices, configure the `gpio` driver.
  - If you have HP-IB devices, configure both the `hpib` and `98624` drivers.
  - If you have serial devices, configure the `98626` driver.

For HP-UX 8.x, to check what is currently in your kernel, use the `Miscellaneous drivers` and `I/O drivers` choice under `View/Modify I/O Configuration` under `Kernel Configuration` in SAM. Refer to *System Administration Tasks* for information on SAM and reconfiguring your kernel.

For HP-UX 9.x, to check what is currently in your kernel, use the `Drivers` choice under `Kernel Configuration` in SAM. Refer to *System Administration Tasks* for information on SAM and reconfiguring your kernel.

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

Configure the Device Files

The `vee_config` program configures device files for HP VEE-Test. This program is automatically run at installation on the system from which you installed. However, you must manually run the configuration program in the following situations:

- If you have an HP-UX cluster, run the configuration program on each cluster client that will run HP VEE-Test.
- If you add kernel drivers or a new interface card, run the configuration program on all the systems that will access the kernel driver or interface card.

To run the HP VEE-Test device file configuration program:

1. Log onto 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`.

When you have completed configuring HP VEE-Test for your HP 9000 Series 300/400 system, skip to the section "About the .veeio File".

Configuring HP VEE-Test for HP 75000 Series C Model V/382 VXI Controller

If you installed HP VEE-Engine, skip to the section named "Color Planes and HP VEE".

Once you have loaded HP VEE-Test onto your V/382 system, read through the next two subsections to make sure HP VEE-Test will run on your system. You must be logged in as `root` in order to complete these tasks.

Configure 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 *System Administration Tasks* for information on SAM and reconfiguring your kernel.

- Set the `ndilbuffers` operating system parameter to at least 30. On diskless V/382 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 HP-IB devices, configure the `hpib` driver.
  - If you have serial devices, configure the `98626` driver.

Note

DO NOT configure the HP 98624 High Speed HP-IB driver along with PIL on your V/382 system. Doing so will cause a fatal 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 section "Configure the Device Files".

Configure PIL in the Kernel for VXI

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 9.0 or greater 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 `#` symbol 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 `#` symbol 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, it will inform you as such and ask you to reboot your system.

After you have rebooted your system, login 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.

Configure the Device Files

For the HP 75000 Series C Model V/382 VXI Controller the `vee_config` program configures device files for the HP-IB and Serial devices only. The VXI configuration is discussed in the previous section titled "Configure PIL in the Kernel for VXI".

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

- If the V/382 is a diskless client, run the configuration program on each client that will run HP VEE-Test, NOT the server.
- If you add `dil` kernel drivers as described in the previous section, after installing HP VEE-Test.

To run the HP VEE-Test device file configuration program:

1. Log onto 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

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 over riding 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-Test for your HP 75000 Series C Model V/382 VXI Controller, skip to the section "About the .veeio File".

Configuring HP VEE-Test for HP 9000 Series 700

If you installed HP VEE-Engine, skip to the section named "Color Planes and HP VEE".

Once you have loaded HP VEE-Test onto your Series 700 system, read through the next two subsections to make sure HP VEE-Test will run on your system.

Configure the Kernel

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 8.05 or greater to be able to complete these tasks.

Also, if you are on a diskless cluster, you must perform these steps for each cluster client that will be running HP VEE-Test. Note that you must perform these procedures *on each client, NOT on the server.*

1. 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
   ```

2. 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
   ```

3. If you installed *a single* HP E2070A HP-IB interface card into your system and used the default switch settings for the card as explained in the HP E2070A installation manual, edit the appropriate line for this interface by removing the `#` symbol from the beginning of this line in `hwconfig.cf`:

   ```
   # 7 hpib e2070a 1 21 0b01111000  1
   ```

   Then skip to step 5.

4. If you installed *more than one* HP E2070A HP-IB interface card into your system, edit the `/usr/pil/etc/hwconfig.cf` file to reflect the the switch settings you used on the cards:

   - If you used the recommended switch settings for the cards as explained in the HP E2070A installation manual then uncomment the appropriate

lines at the end of the `hwconfig.cf` file that correspond to the cards you installed.

- If you set switches on your cards to settings different from those recommended in the HP E2070A installation manual then edit the appropriate lines at the end of the `hwconfig.cf` file to reflect the different settings you used. The `hwconfig.cf` file contains instructions on how to do this.

5. If you installed *a single* HP E2071I HP-IB interface card into your system and used the default switch settings for the card as explained in the HP E2071I installation manual, edit the appropriate line for this interface by removing the `#` symbol from the beginning of this line in `hwconfig.cf`:

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

   Then skip to step 7.

6. If you installed *more than one* HP E2071I HP-IB interface card into your system, edit the `/usr/pil/etc/hwconfig.cf` file to reflect the the switch settings you used on the cards:

   - If you used the recommended switch settings for the cards as explained in the HP E2071I installation manual then uncomment the appropriate lines at the end of the `hwconfig.cf` file that correspond to the cards you installed.
   - If you set switches on your cards to settings different from those recommended in the HP E2071I installation manual then edit the appropriate lines at the end of the `hwconfig.cf` file to reflect the different settings you used. The `hwconfig.cf` file contains instructions on how to do this.

7. If you installed *a single* HP E1489I MXI interface card into your system and used the default switch settings for the card as explained in the HP E1489I installation manual, edit the appropriate lines in `hpconfig.cf` and `iproc.cf` by removing the `#` symbol from the beginning of this line in `hwconfig.cf`:

   ```
   # 16 vxi e1489 1 0 0  9 0x500000 16 0x600000 10
   ```

   and by removing the `#` symbol from the beginning of these lines in `iproc.cf`:

```
#boot ivxirm -p -I vxi

#sysreset vxi ivxirm -t &

#monitor
```

Then skip to step 9.

8. If you installed *more than one* HP E1489I MXI interface card into your system, edit the `/usr/pil/etc/hwconfig.cf` and `/usr/pil/etc/iproc.cf` files to reflect the the switch settings you used on the cards:

   - If you used the recommended switch settings for the cards as explained in the HP E1489I installation manual then uncomment the appropriate lines at the end of the `hwconfig.cf` file that correspond to the cards you installed.
   - If you set switches on your cards to settings different from those recommended in the HP E1489I installation manual then edit the appropriate lines at the end of the `hwconfig.cf` file to reflect the different settings you used. The `hwconfig.cf` file contains instructions on how to do this.
   - Uncomment the appropriate lines in the `iproc.cf` file. The `iproc.cf` file contains comments pointing out the purpose of each line.

9. If you are installing this software on an HP 9000 Series 700 Model 745i with an internal HP-IB interface, edit the appropriate line for this interface by removing the `#` symbol from the beginning of this line in `hwconfig.cf`:

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

10. 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, it will inform you as such and ask you to reboot your system.

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

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

The PIL configuration program will now complete successfully.

---

11. 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, 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 over riding 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 HP E2070A HP-IB interface card(s), HP E2071I High Speed HP-IB interface card(s) or HP E1489 MXI interface card(s) from a system, you must perform the following tasks *before* physically removing the card(s). 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), login 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, login 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.

About the .veeio File

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

The first time your users run HP VEE-Test, it will automatically copy the `/usr/lib/veetest/config/d.veeio` file to their $HOME directory as `.veeio`; there is nothing 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 30 colors (this varies depending on how you define the colors and which colors HP VEE actually uses while running), 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.*

If this is a problem for your HP VEE users, please refer to the appendix in the *Using HP VEE* manual called "Configuring HP VEE". This includes guidelines on how to minimize the problem.

Native Language Keyboard Support in HP VEE

You can configure HP VEE to accept input from native language keyboards and to display most native 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 native language keyboard before your users use HP VEE.* Please refer to the *Using HP VEE* manual, the appendix called "Configuring HP VEE". This appendix includes information on supported keyboards and how to configure HP VEE for those keyboards.

Verify the Installation

To verify the installation, start the HP VEE product you just installed.

First, you need to be logged in to HP-UX and have X11 started. Then start HP VEE, as follows:

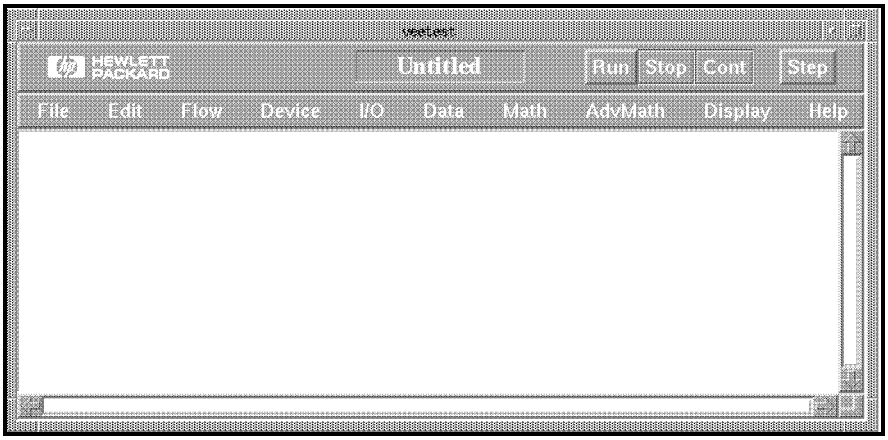
1. At the prompt in an active X11 window, start HP VEE.
   - If you installed HP VEE-Test, type:

     ```
     veetest
     ```

   - If you installed HP VEE-Engine, type:

     ```
     veeengine
     ```

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



The HP VEE Window

If you see the above screen, Congratulations! HP VEE is installed. Your users can now learn to use HP VEE by following the *Getting Started with HP VEE* manual.

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