
Installing the HP I/O Libraries

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About this Manual

This manual explains how to install the current version of the HP I/O Libraries that are used with version 5.0 of HP VEE on the HP-UX operating system (Versions 9.x, 10.01, or 10.20). Take steps to ensure that you have the correct versions.

The manual assumes you are familiar with HP-UX, HP-UX Windows applications, HP VEE, instruments, and using I/O libraries. It also assumes you are familiar, in general, with installation procedures. No attempt is made to provide system administration information for HP-UX (for example, `update` or `swinstall`). No attempt is made to provide information about instruments.

Conventions Used in This Manual

This manual uses the following typographical conventions:

<i>Getting Started</i>	Italicized text is used for book titles and for emphasis.
Dialog Box	Bold text is used for the first instance of a word that is defined in the glossary.
File	Computer font represents text that you will see on the screen, including menu names, features, buttons, or text that you have to enter.
dir <i>filename</i>	In this context, the text in computer font represents an argument that you type exactly as shown, and the italicized text 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.
Sml Med Lrg	Choices in computer font, separated with bars (), indicate that you should choose one of the options.
Press Enter	In this context, bold represents a key to press on the keyboard.
Press Ctrl + O	Represents a combination of keys on the keyboard that you should press at the same time.

Contents

1. Installing the HP I/O Libraries

Preparing to Install the HP I/O Libraries	3
Verifying the Product Package	3
Verifying the System Hardware Requirements	3
Verifying the System Software Requirements	3
HP SICL and VTL for HP-UX 10	3
HP SICL for HP-UX 9	3
Installing HP SICL and VTL on HP-UX 10	4
The Logfile	7
Where to Go Next	8
Installing HP SICL on HP-UX 9	9
Verifying the HP SICL Installation on HP-UX 9	10
Where to Go Next	10

2. Configuring the HP I/O Libraries

Running the I/O Setup Utility	13
Running the VTL Configuration Utility	16
Where to Go Next	18

A. Removing Interface Cards

Removing Cards	21
----------------------	----

B. Removing the HP I/O Libraries Software

Removing HP VTL and SICL on HP-UX 10	25
Removing HP SICL on HP-UX 9	28

Index

Installing the HP I/O Libraries

Installing the HP I/O Libraries

You must install the HP I/O Libraries to do instrument I/O with HP VEE or with HP VEE RunTime. You may install the HP I/O Libraries before or after the HP VEE products. This chapter explains how to install the HP I/O Libraries. The main sections in this chapter are:

- Preparing to Install the HP I/O Libraries
- Installing HP SICL and VTL on HP-UX 10
- Installing HP SICL on HP-UX 9

The HP I/O Libraries consist of the following two libraries:

- **HP VISA Transition Library (VTL)** is an I/O library that is a subset of the VISA (Virtual Instrument Software Architecture) library. VTL lets you develop and run HP VEE applications containing instrument I/O that are *VXIplug&play* compliant. VTL is compatible with HP-UX 10.
- **HP Standard Instrument Control Library (SICL)** is an I/O library developed by HP that is portable across many I/O interfaces and platforms. SICL lets you use HP VEE applications currently implemented in SICL to remain compatible with SICL. SICL is compatible with HP-UX 9 and 10.

Preparing to Install the HP I/O Libraries

This section lets you prepare your system to install the HP I/O Libraries, including VTL and SICL, on your HP-UX system. Before installing the HP I/O Libraries, you must verify the following:

- Product Package
- System Hardware Requirements
- System Software Requirements

Verifying the Product Package

Make sure you have the HP I/O Libraries installation CD-ROM in your HP VEE 5.0 product. Be aware that the HP VEE development and run-time environments are on one CD-ROM, and the HP I/O Libraries are on another CD-ROM. The CD-ROM includes HP I/O Libraries for HP-UX 9 and HP-UX 10.

Verifying the System Hardware Requirements

See the *Installing HP VEE for HP-UX* manual for a description of the hardware system requirements. Also, be aware that you must have interface cards physically installed in the computer before you install and configure the HP I/O Libraries.

Verifying the System Software Requirements

The HP I/O Libraries for HP-UX have the following software requirements:

HP SICL and VTL
for HP-UX 10

- HP-UX 10.01 or HP-UX 10.20.
- You need at least 20 Mbytes of free disk space. Not all of this will be occupied by SICL and VTL, but it will be used in the installation process.

HP SICL for
HP-UX 9

- HP-UX 9.x.
- You need at least 15 Mbytes of free disk space. Not all of this will be occupied by SICL, but it will be used in the installation process.

Installing HP SICL and VTL on HP-UX 10

This section provides details on installing HP SICL and VTL on a system running the HP-UX 10 operating system. This installation uses the HP-UX Software Distributor (SD) tools and should take 20 to 30 minutes to complete. Verify that your system meets all the hardware and software requirements (as described earlier in this chapter) before continuing with this installation.

The HP-UX software distributor (SD) install program (`swinstall`) is an interactive program that will install software from CD-ROM depot, or from a special SD-UX directory on your local host or on some other host. The software distributor cluster program (`swcluster`) uses `swinstall` to install the software onto your cluster nodes. If you are not familiar with the SD-UX software distributor tools, see the *Managing HP-UX Software with SD-UX* manual, or the manual page for `sd` for additional instructions. If you have any questions while using the tool, use the online help for more information. Follow the steps listed below to install the HP I/O Libraries.

Note

If this is the first time you are installing the HP I/O Libraries for HP-UX 10, then additional software will be installed and the `swinstall` program will reboot your machine.

1. Become the `root` user on the server for a diskless cluster or a stand-alone system.
2. Insert your HP I/O Libraries CD-ROM and mount it. See the `mount (1m)` man page for information on the `mount` command.

3. Run the interactive HP-UX software distributor program:

- a. On a stand-alone machine, or on the server of a diskless cluster (installed on server, but not on clients):

```
/usr/sbin/swinstall
```

- b. On a diskless cluster server (installed on server and clients):

```
/usr/sbin/swcluster -i -vvv
```

The `-i` indicates interactive mode, and the `-vvv` indicates the level of verbosity.

4. If you used the `swcluster` program, the program will prompt for you to select the alternate root path. On Series 700 computers, the path is usually the following:

```
/export/shared_roots/OS_700
```

5. The program lists the following fields:

Source Host Name	Lists the host you are installing from. If you would like to install from a different host, be sure to include the server IP address.
Source Depot Path	Specifies the source depot you wish to install from. If you are installing from CD-ROM depot, list the directory the CD-ROM depot is mounted on (for example, <code>/cdrom</code>). If you are installing from a hard disk, list the directory path to the filesets (usually, <code>/var/spool/sw</code>).
Change Software View	Specify All Bundles for HP I/O Libraries software.

Change the fields above to reflect your installation and click on the OK button.

Installing the HP I/O Libraries

Installing HP SICL and VTL on HP-UX 10

6. The `swinstall` program reads the bundles available from the source depot; for example, you see something like:

```
E2091D    D.01.xx
```

7. Install the entire HP I/O Libraries bundle. Click on the bundle in the edit window and click on the **Actions** menu bar. Select **Mark for Install** to select the HP I/O Libraries bundle for installation. Note that additional software will be installed if you are installing for the first time.
8. Once you have marked the HP I/O Libraries bundle for installation, select **Actions** from the menu bar. Select **Install** to begin the analysis process.
9. The program will then perform an analysis to ensure the process will be successful. When the analysis status reads **Ready**, click on the **OK** button to begin the installation. If the analysis fails, click on the **Logfile** button for information on why the analysis failed.
 - a. If you used the `swcluster` program, the program will prompt asking if you would like to exit `swinstall`. The `swcluster` program calls `swinstall` to install the software onto the cluster nodes. Once you exit `swinstall`, the software will be installed on the cluster nodes, and the program will exit. Note that if this is the first time the software is installed, the cluster clients will be halted. Now continue with step number 12.
 - b. If you used the `swinstall` program, the program will prompt to ensure you want to install the selected software. After selecting **YES**, the program may also prompt that your machine will be rebooted once the software is installed. Click on **YES** and the installation will begin.
10. Once the software is installed the program prompts if you have any **NOTES**, **ERRORS**, or **WARNINGS**. If you do have any of these, click on the **Logfile** button to determine any necessary action. See the next subsection for information on **NOTES**, **ERRORS**, or **WARNINGS**.
11. When the status reads **Ready**, click on the **Done** button. If extra software was installed, the program will prompt stating that your machine will reboot. Click on **YES** to continue.

Note

The first time the machine (stand-alone, server, or cluster client workstation) is rebooted after installation, it may take several minutes longer than usual due to additional software configuration steps.

12. When the loading process is complete and the system(s) have rebooted, unmount your CD-ROM, remove the installation media, and store it in a safe place. See the `umount (1m)` man page for information on the `umount` command. The HP I/O Libraries software is now installed on your system.

Note

You can run the `swverify` command to ensure that the HP I/O Libraries filesets were installed on your system. See the *Managing HP-UX Software with SD-UX* manual for information on running this command. The following is an example of verifying the `HPIOLIBS` bundle:

```
swverify -d E2091D
```

The Logfile

You can now check for errors or warnings that might have occurred during the HP I/O Libraries installation. Review the log file generated by the `swinstall` program by selecting `Logfile` from the menu.

If you used the `swcluster` program, you can view the logfile by doing the following:

```
tail -50 /var/adm/swcluster.log | more
```

- **NOTE** is generally an information message, and action on your part is probably not needed.
- **WARNING** messages tell you that the installation did not complete with the expected results, but action on your part may not be needed.
- **ERROR** messages tell you that the `swinstall` program was unable to successfully complete a function, and action on your part is required to complete the installation process successfully.

Where to Go Next

Once you have completed installing the HP I/O Libraries on HP-UX 10, continue with Chapter 2, “Configuring the HP I/O Libraries”.

Installing HP SICL on HP-UX 9

This section explains how to install the SICL software on a system running HP-UX 9. If you have a system running HP-UX 10, see the previous section for installation instructions. This installation uses the HP-UX `update` program, and should take 20 to 30 minutes to complete. (Be sure your system meets the hardware and software requirements (explained earlier in this chapter).)

Note

HP VTL is *not* supported on HP-UX 9.

If you are not familiar with the HP-UX `update` program, see the *Installing and Updating HP-UX* manual for additional instructions. Follow the steps listed below to install SICL.

1. Become the `root` user on the server for a diskless cluster or a stand-alone system.
2. Insert the SICL installation media.
3. Mount the CD-ROM.
4. Run the interactive HP-UX `update` program:

```
/etc/update
```

5. Select `Change Source or Destination` and *ALWAYS* select the following (yes, even with CD-ROM):

```
From Tape Device to Local System
```

6. Make sure the `Source` is set to the proper source for your system (for example, `/cdrom/pil.e2091.upd`). Also verify that `Destination Directory` is set to `/`.
7. Select `DONE` when all fields are correct.
8. Choose `Select all filesets` to install all SICL filesets.

9. Press the **Start Loading** softkey to install the selected filesets – **F4**.
10. When the loading process is complete, remove the CD-ROM from the drive. The SICL software is now loaded on your system.

Verifying the HP SICL Installation on HP-UX 9

You can now check for errors or warnings that might have occurred during the HP-UX update process. Review the end of the log file generated by the update program by typing the following:

```
tail -50 /tmp/update.log | more
```

Find the correct date and time headings and look for any new messages that begin with **NOTE**, **ERROR**, or **WARNING**:

- **NOTE** is generally an information message, and action on your part is probably not needed.
- **WARNING** messages tell you that the installation did not complete with the expected results, but action on your part may not be needed.
- **ERROR** messages tell you that the update program was unable to successfully complete a function, and action on your part is required to complete the update process successfully.

Where to Go Next

Once you have completed installing the HP I/O Libraries on HP-UX 9, continue with Chapter 2, “Configuring the HP I/O Libraries”.

Configuring the HP I/O Libraries

Configuring the HP I/O Libraries

Before you can begin using HP VEE applications that use either SICL or VTL for instrument I/O, you need to configure each of your systems to operate with an I/O interface or interfaces. This chapter explains how to configure the HP I/O Libraries, including VTL and SICL, on your HP-UX system. The main sections of this chapter are as follows:

- Running the I/O Setup Utility
- Running the VTL Configuration Utility

Running the I/O Setup Utility

The I/O setup utility updates the `hwconfig.cf` file to reflect your interface configuration.

Note

This procedure must be performed on each node of a diskless cluster that will be running HP VEE using VTL and/or SICL. You need to configure the server of a diskless cluster if you plan to run your applications on the server.

Note

This procedure assumes previous installation of all I/O interface cards. For I/O interface installation procedures, see the *Installation Guide* or *User's Guide* for the I/O interface.

1. Login as `root` on the system to be configured.

If you are executing on a diskless cluster, then the `/etc/opt/sicl` directory will be NFS diskless client private and all files in it will be client-specific on HP-UX 10. On HP-UX 9, the `/usr/pil/etc` directory will be a CDF and all files in it will be cnode-specific.

2. Run the I/O setup utility to configure your I/O interfaces to run with SICL and VTL. The following commands will invoke the I/O setup utility:

On HP-UX 10:

```
/opt/sicl/bin/iosetup
```

On HP-UX 9:

```
/usr/pil/bin/iosetup
```

Note

The `iosetup` utility can only be run from a writable directory. Therefore, if you are running on a NFS diskless cluster client in the `/opt` directory, then you must change your directory to a writable directory such as `/tmp`.

Configuring the HP I/O Libraries

Running the I/O Setup Utility

The following options are available:

- `-enumber` Allows you to specify the number of EISA slots to be configured. See the following note.
- `-mmodel` Allows you to specify the machine type.

Note

If you are operating on a system with an EISA expander (such as the HP S2399A), use the `-e number of slots` option to specify the number of eisa slots available. For example,

```
/opt/sicl/bin/iosetup -e7
```

3. The available interfaces will be listed on the left side of the window. Click on the interface you wish to configure and click on the **Configure** button. The I/O setup utility will display information about that interface. Edit the fields displayed to match your setup and click on the **OK** button. The defaults provided are usually sufficient. However, if you need more information, click on the **Help** button for detailed information about the field content.

Repeat this step for each interface you wish to configure. If you plan to use two interfaces of the same type, then you must configure each interface separately.

Note

You must ensure that all addresses and interrupt lines (IRQs) are unique and do not conflict with an address or IRQ line used by any other card in the system.

4. Once you have added all desired interfaces, click on the **Done** key from the main menu. The I/O Setup utility will edit the `hwconfig.cf` file and rebuild the kernel. (If you only add a LAN interface the kernel is not rebuilt.) Status messages will scroll by very quickly. To review the messages, see the `/usr/pil/etc/kernbld.log` file on HP-UX 9, or the `/var/opt/sicl/kernbld.log` file on HP-UX 10.

5. Reboot your system in order for the kernel changes to take affect (this step is not required if you only configure a LAN interface).
6. If you are configuring a cnode or a root server of a diskless cluster to act as a LAN-to-instrument_interface gateway, then you must run the `lanconf` utility by typing the following:

On HP-UX 10:

```
/opt/sicl/bin/lanconf
```

On HP-UX 9:

```
/usr/pil/bin/lanconf
```

If you are configuring a stand-alone system to act as a LAN-to-instrument_interface gateway, then this utility was already run for you as part of the installation process.

See the `lanconf` man page for details as to what steps this utility performs.

Running the VTL Configuration Utility

If you plan to develop and run HP VEE programs that are *VXIplug&play* compliant on HP-UX, you must also run the VTL configuration utility. The VTL configuration utility configures your system for VTL devices. In order to build VTL applications, all VTL devices must be configured beforehand. Use the following procedure to configure VTL devices:

Note

VTL is *only* supported on HP-UX 10. Skip this section if you are running on HP-UX 9.

The `iosetup` utility *must* be run prior to running the VTL configuration utility.

- Login as `root` on the system to be configured.
- Run the VTL configuration utility to configure your VTL devices. The following command will invoke the VTL configuration utility:

```
/opt/vxipnp/hpux/hpvisa/vtlcfg
```

- The available interfaces will be listed on the left side of the window. Click on the interface you wish to configure and click on the `Configure` button. The VTL Configuration utility will display information about that interface. Edit the fields displayed to match your setup. The defaults provided are usually sufficient. However, if you need more information, click on the `Help` button for detailed information about the field content.

Note that the default is for all VTL devices to be identified at run time. If you wish to change this default, click on one of the following:

- ☐ Identify all known devices now - The program will prompt for you to ensure that all instruments on the interface are turned on and in working condition. This selection will check for VTL devices when `Continue` is selected.

- ☐ Manually configure devices on this interface - Click on the Add button and enter the device address. Repeat for each device you want to manually add. Click on Done to exit.

Repeat this step for each VTL device you wish to configure. If you plan to use two interfaces of the same type, then you must configure each interface separately.

- Once you have added all the desired VTL devices, click on the Done button from the main menu.

Where to Go Next

Once you have completed the HP I/O Libraries installation and configuration procedures, you may begin using HP VEE to do instrument I/O. Be aware that you must have also installed HP VEE, which is on a separate CD-ROM.

A

Removing Interface Cards

Removing Interface Cards

This appendix describes how to remove an interface card from your system, or to have the HP I/O Libraries ignore the interface card.

Removing Cards

To remove one or more interface cards from your system, do the following:

1. Log in as `root` on the system.
2. Run the I/O setup utility to edit your configured I/O interfaces. The following commands will invoke the I/O setup utility:

On HP-UX 10:

```
/opt/sicl/bin/iosetup
```

On HP-UX 9:

```
/usr/pil/bin/iosetup
```

3. The configured I/O interfaces will be listed on the right side of the window. Click on the interface you wish to remove and click on the `Remove` button. The I/O setup utility will ask if you really want to remove the interface. Click on `OK` and the interface will be removed. Repeat this step for each interface you wish to remove.
4. Once you have removed the desired interfaces, exit the utility by clicking on the `Done` button. The I/O setup utility will edit the `hwconfig.cf` file and rebuild the kernel.

Note

If you remove all interface cards, the I/O setup utility will also remove SICL from the kernel.

Removing Cards

5. If you have removed any EISA or ISA I/O cards, you need to run the `eisa_config` program before rebooting your system. Otherwise, skip to step 6.

On HP-UX 10:

```
/sbin/eisa_config
```

On HP-UX 9:

```
/etc/eisa_config
```

When prompted perform the following commands:

- a. `remove slot_number`

Where `slot_number` corresponds to the EISA bus slot number for each card that you will remove. Note that you must repeat this command for *each* card that you will be removing.

- b. Enter `save` to save the changes.
- c. Enter `quit` to exit the `eisa_config` program.

6. Reboot your system.

Removing the HP I/O Libraries Software

Removing the HP I/O Libraries Software

This appendix describes the process to remove one or both of the HP I/O Libraries on HP-UX 9 or HP-UX 10.

Removing HP VTL and SICL on HP-UX 10

This procedure describes how to remove the HP I/O Libraries using the HP-UX Software Distributor (SD) tools. This procedure is only supported on HP-UX 10. The HP-UX software distributor remove program (`swremove`) is an interactive program that will remove software from your system. If you are not familiar with the SD-UX software distributor tools, see the *Managing HP-UX Software with SD-UX* manual for additional instructions. If you have any questions while using the tool, use the online help for more information. Follow the steps listed below to remove one or both of the HP I/O Libraries.

1. Become the `root` user on the server for a diskless cluster or on a stand-alone system.
2. Run the interactive HP-UX software distributor remove program:

- a. On a stand-alone machine:

```
/usr/sbin/swremove
```

- b. On a diskless cluster (removed on server and clients):

```
/usr/sbin/swcluster -r -i -vvv
```

The `-r` indicates remove, `-i` indicates interactive mode, and the `-vvv` indicates the level of verbosity.

3. If you used the `swcluster` program, the program will prompt for you to select the alternate root path. On Series 700 computers, the path is usually the following:

```
/export/shared_roots/OS_700
```

Removing the HP I/O Libraries Software

Removing HP VTL and SICL on HP-UX 10

4. From the software displayed, select, for example, the E2091D bundle by clicking on that bundle in the edit window and click on the **Actions** menu bar. Select **Mark for Remove** to select the HP I/O Libraries bundle for removal.

If you wish to remove individual products or filesets instead of the complete bundle, use the following instructions. Otherwise, continue with the next step.

- To select an individual product, double-click on the HP I/O Libraries bundle until the products (SICL and VTL) are displayed. Note that the Bristol Technology HyperHelp Viewer will also be displayed as a product if you installed it to use SICL or VTL online help. Now you can select a specific product for removal by clicking on desired product and selecting **Mark for Remove** from the **Actions** menu bar.
 - To select individual filesets, double-click on the bundle, then on the product until the individual filesets are displayed. Now you can select a specific fileset by clicking on the desired fileset and selecting **Mark for Remove** from the **Actions** menu bar. Mark all the filesets you wish to remove.
5. Once you have marked the HP I/O Libraries bundle, a specific I/O library, or the individual filesets for removal, select **Actions** from the menu bar. Select **Remove** to begin the removal process.

6. The program will then perform an analysis to ensure the process will be successful. When the analysis reads `Ready`, click on the `OK` button to begin the removal. If the analysis fails, look at the `Logfile` for information on why the analysis failed.
 - a. If you used the `swcluster` program, the program will prompt asking if you would like to exit `swremove`. The `swcluster` program calls `swremove` to remove the software onto the cluster nodes. Once you exit `swremove`, the software will be removed from the cluster nodes, and the program will exit. Now continue with step number 9.
 - b. If you used the `swremove` program, the program will prompt to ensure you want to remove the selected software. Click on `YES` and the removal will begin.
7. Once the software is removed the program prompts if you have any `NOTES`, `ERRORS`, or `WARNINGS`. If you do have any of these, press the `Logfile` button to determine any necessary action.
8. When the status reads `Ready`, click on the `Done` button.
9. Execute the following command to remove the SICL device directories:

```
rm -r /dev/sicl
```

Removing HP SICL on HP-UX 9

This procedure describes how to remove HP SICL from an HP-UX 9 system. This procedure is only supported on HP-UX 9.

1. Become `root` user on the server for a diskless cluster or a stand-alone system.
2. Run the following utility and mark `Y` for yes for all filesets beginning with `PIL`.

```
/etc/rmfn
```

3. Select the `Start Removing` function key to remove the marked filesets.
4. Exit the `rmfn` utility.
5. Remove the following lines from `/etc/rc`:

```
#Perform PIL Initialization  
/usr/pil/bin/iproc -x
```

6. Execute the following command to remove `PIL` device directories:

```
rm -r /dev/pil
```

7. Execute the following command to remove residual files from directories:

```
rm -r /usr/pil
```

Index

C

Configuring
 HP I/O Libraries, 12–17
 LAN server, 15
 SICL, 13
 VTL, 13, 16

E

eisa_config program, 22

H

Hardware requirements, 3
HP I/O Libraries
 configuration, 12–??
 overview, 2
hwconfig.cf file, 13

I

Installation
 hardware requirements, 3
 on HP-UX 10, 4–7
 on HP-UX 9, 9–10
 preparing, 3
 software requirements, 3
 verify product, 3
 verifying, 7, 10
Interfaces
 removing, 21
iosetup utility, 13

L

LAN server
 configuration, 15
 lanconf program, 15
lanconf program, 15
Logfile, 7

O

Overview
 HP I/O Libraries, 2

P

Product, 3

R

Removing
 interfaces, 21
 SICL on HP-UX 9, 28
 VTL and SICL on HP-UX 10, 25

S

SICL
 configuration, 13
 product, 3
 removing on HP-UX 10, 25
 removing on HP-UX 9, 28
Software requirements, 3
swcluster, 4, 25
swinstall, 4
swremove, 25

U

update, 9
Updating
 interfaces, 21

V

VTL
 configuration, 13, 16
 product, 3
 removing on HP-UX 10, 25
vtlcfg utility, 16



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