

# *Installing SunSwift SBus Adapter Software On Solaris 2.4 and 2.5 Systems*

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**3** 

This chapter describes SunSwift SBus Adapter software installation requirements for Solaris 2.4 and 2.5 software versions only.

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**Note** – You must have already installed the SunSwift SBus Adapter in your system prior to performing the following tasks.

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### 3.1 *Preparing for Software Installation*

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**Note** – If the CD-ROM drive that you are using for software installation is attached to a remote machine, refer to your SunOS installation guide for remote CD-ROM access.

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#### ***For Solaris 2.5 Systems***

Some newer systems are pre-loaded with the SunSwift SBus Adapter driver (`hme`). Before installing the driver from the CD-ROM, perform the following task.

- ♦ **As superuser, check for the `hme` driver and its revision number by using the `modinfo` command:**

```
# modinfo | grep hme
```

You should see a line similar to the example below if the driver is already installed:

```
51 50270000 9f78 7 1 hme (FEPS Ethernet Driver v 1.40)
```

- If the revision number is 1.40 or above, your system already has the SunSwift SBus Adapter driver, and loading from the CD is unnecessary.
- If the revision number is below 1.40, or nothing is displayed as a result of the `modinfo` command, install the software from the CD-ROM that came with the SunSwift SBus Adapter. (See below).

#### ***Installing Software From the CD-ROM for Solaris 2.4 and 2.5***

- ♦ **Install the software drivers from the CD-ROM that came with the SunSwift SBus Adapter. Refer to the CD-ROM documentation that came with your adapter for driver installation instructions (Part No: 804-5303-10).**

## 3.2 Net-Install of Solaris 2.4 Over the hme Interface

This section is *only* applicable if you are installing Solaris 2.4 on a net-install client system *over* the SunSwift SBus Adapter (hme) interface.

**Note** – The Solaris 2.4 CD-ROM cannot be used to perform a net-install (read only), thus the Solaris 2.4 CD image archive is required to update certain SunSwift SBus Adapter files.

### Updating the Solaris 2.4 Archive to Use the hme Interface

**1. Determine the directory where the CD image is located on the boot server.**

For example, if the Solaris software is located within a directory named DIR, change to the root partition of the client being installed by typing:

```
# cd DIR/export/exec/kvm/<archive_of_arch>/etc
```

The /etc/bootparams file will point you to the client's root partition.

**2. Edit the name\_to\_major file by adding an entry for the SunSwift SBus Adapter device (hme).**

If the major device number for the last file entry is *n* then use *n+1* for the hme channel major device number. As shown in the example below, if the last entry for the major device number is 108, use 109 for the hme device.

```
# llcl 107
# audiocs 108
# hme 109
```

**3. Copy the hme driver from the SunSwift SBus Adapter CD-ROM to the client's root partition as follows:**

```
# cp /cdrom/sunswift_1_0/2.4/SUNWhmd/reloc/kernel/drv/hme \
DIR/export/exec/kvm/<archive_of_arch>/kernel/drv
```

**4. On the client system, perform the tasks in Section 3.5.3, "Booting From the Network Using Solaris 2.4."**

5. **Complete the client installation. Refer to your Solaris documentation for detailed instructions.**
6. **Reboot the system.**
7. **Install the software drivers from the CD-ROM that came with the SunSwift SBus Adapter. Refer to the CD-ROM documentation that came with your adapter for driver installation instructions (Part No: 804-5303-10).**

### 3.3 Host File Configuration

After installing the SunSwift SBus Adapter software, you must create a `hostname.hme<num>` file for its Ethernet interface. You must also create both an IP address and a hostname for its Ethernet interface in the `/etc/hosts` file.

To prepare your system for the SunSwift SBus Adapter:

1. **Create a `/etc/hostname.hme<num>` file, where `<num>` refers to the number of each SunSwift SBus Adapter channel you plan to use. For example, use channel `hme0` for the first card; use channel `hme1` for a second card.**
  - Do not create `/etc/hostname.hme<num>` files for SunSwift SBus Adapter channels you plan to leave unused. The `/etc/hostname.hme<num>` file must contain the hostname for the appropriate network interface.
  - The hostname should have an IP address and should be entered in the `/etc/hosts` file.
  - The hostname should be different from any other hostname of any other interface, for example: `/etc/hostname.le0` and `/etc/hostname.hme0` cannot share the same hostname.
  - Following is an example of the `/etc/hostname.hme<num>` files required for a machine called `zardoz` that will be known as `zardoz-11` and `zardoz-12` on the networks connected to the `hme0` and `hme1` Ethernet interfaces.

```
zardoz # cat /etc/hostname.hme0
zardoz-11
zardoz # cat /etc/hostname.hme1
zardoz-12
```

**2. Create an appropriate entry in the `/etc/hosts` file for each active hme channel.**

Using the example in step 1, you will have:

```
zardoz # cat /etc/hosts
...
127.0.0.1    localhost
129.144.10.57 zardoz    loghost
129.144.11.83 zardoz-11
129.144.12.41 zardoz-12
```

### 3.4 Caution: Package Dependency



**Caution** – There is a package dependency with the SunSwift SBus Adapter. Before proceeding, perform the following task.

- ♦ **As superuser, check for the adapter packages by using the `pkginfo` command:**

```
# pkginfo | grep SUNWhmd
```

- If you see lines containing `SUNWhmdl` and `SUNWhmdlu` *and* lines containing `SUNWhmd` and `SUNWhmdu`, then do not remove any of these packages from your system.

## 3.5 Booting

The following sections discuss various ways of booting. See the section that applies to your specific needs.

### 3.5.1 Booting From the Network Using Solaris 2.5

To use the SunSwift SBus Adapter Ethernet interface as the boot device for Solaris 2.5 systems, perform the following tasks.

**1. At the `ok` prompt type:**

```
ok show-devs
```

The `show-devs` command lists the system devices. You should see the full path name of the `hme` device, similar to the example below:

```
/iommu@f,e0000000/sbus@f,e0001000/SUNW,hme@3,8c00000
```

**2. At the `ok` prompt type:**

```
ok boot (full path name of the hme device)
```

### 3.5.2 Diskless Client Booting for Solaris 2.4

In order to boot a diskless client with a local SunSwift SBus Adapter interface (hme) on a Solaris 2.4 system, the following tasks must be performed on the boot server.

**1. Go to your client's root partition by typing the following:**

```
# cd /export/root/<client name>/etc
```

**2. Edit the `name_to_major` file by adding an entry for the SunSwift SBus Adapter device (hme).**

If the major device number for the last file entry is `n` then use `n+1` for the hme channel major device number. As shown in the example below, if the last entry for the major device number is 104, use 105 for the hme device.

```
# qec 103
# qe 104
# hme 105
```

**3. Copy the hme driver from the CD-ROM to the client's root partition as follows:**

```
# cp /cdrom/sunswift_1_0/2.4/SUNWhmd/reloc/kernel/drv/hme \
/export/root/<client name>/kernel/drv/hme
```

**4. Create a `hostname.hme<num>` file for the client in the `/etc` directory in the client's root partition.**

Proceed to Section 3.5.3, "Booting From the Network Using Solaris 2.4" for the client system.

### 3.5.3 Booting From the Network Using Solaris 2.4

The device name of newer SBus cards for Solaris 2.5 is identified by a “SUNW,” prefix. If your system is running Solaris 2.4, it will not recognize the device. Perform the following tasks to set up your system so the device driver can recognize the SunSwift SBus Adapter.

**1. At the `ok` prompt type:**

```
ok setenv use-nvramrc? true
ok show-devs
```

The `show-devs` command lists the system devices. You should see the full path name of the `hme` device, similar to the example below:

```
/iommu@f,e0000000/sbus@f,e0001000/SUNW,hme@3,8c00000
```

**2. Type:**

```
ok nvedit
```

**3. Type the following exactly as shown, spaces and quotation marks included, pressing the Return key at the end of lines 0, 1 and 2:**

```
0: probe-all install-console banner
1: cd (full path name of the hme device)
2: " hme" nameprop
3: device-end
```

**4. Press the Control-C keys after typing `device-end`.**

**5. At the `ok` prompt, type:**

```
ok nvstore
ok reset
```

Your system will reset and the banner will appear.

6. Press the Stop-A keys to get to the `ok` prompt.
7. At the `ok` prompt, type `show-devs` to list your system devices and verify that the name property was changed correctly.  
You should see the full path name of the `hme` device, *excluding* `SUNW`, prior to `hme`, similar to the example below:

```
/iommu@f,e0000000/sbus@f,e0001000/hme@3,8c00000
```

8. At the `ok` prompt, type:

```
ok boot (full path name of the hme device)
```

## 3.6 Post-Installation Procedures (Optional)

Perform the tasks in the following sections to verify and customize the performance of the SunSwift SBus Adapter.

### 3.6.1 Using Hubs That Do Not Send Link Pulses

Certain hubs are not compliant with the IEEE 802.3 Ethernet standards for link pulses, therefore do not send link pulses. To connect your system to these non-compliant hubs, you need to disable your system from looking for link pulses.

**1. At the `ok` prompt type:**

```
ok show-devs
```

The `show-devs` command lists the system devices. You should see the full path name of the `hme` device, similar to the example below:

```
/iommu@f,e0000000/sbus@f,e0001000/SUNW,hme@3,8c00000
```

**2. Type:**

```
ok nvedit
```

**3. Type the following, pressing the Return key at the end of line 0:**

```
0: probe-all install-console banner
1: apply disable-link-pulse (full path name of the hme device)
```

**4. Press the Control-C keys after typing (full path name of the `hme` device).**

**5. At the `ok` prompt, type:**

```
ok nvstore
ok setenv use-nvramrc? true
```

**6. Reboot your system.**

### 3.6.2 Configuring Driver Parameters

The `hme` device driver, which is loaded from the CD-ROM, controls the `SUNW,hme` Ethernet device. The device driver automatically selects the link speed using the auto-negotiation protocol with the link partner. (See Section 3.6.5, “Auto-Negotiation.”)

You can manually configure the `hme` device driver parameters to customize each `SUNW,hme` device in your system in one of three ways:

- Configure the `hme` driver parameters generally for all devices in the system by entering the parameter variables in the `/etc/system` file.
- Set a parameter on a per-device basis by creating the `hme.conf` file in the `/kernel/drv` directory.
- Use the `ndd` utility to *temporarily* change a parameter. This change is lost when you reboot the system.

### 3.6.3 Increasing 100BASE-T Performance

The 100BASE-T performance of the SunSwift SBus Adapter can be increased by changing the TCP hiwater marks to 64K. This can be done with the `ndd` utility as follows.

**1. As superuser type:**

```
# ndd -set /dev/tcp tcp_xmit_hiwat 65535
# ndd -set /dev/tcp tcp_recv_hiwat 65535
# ndd -set /dev/tcp tcp_cwnd_max 65534
```

The changes will take effect immediately.

### 3.6.4 Forcing Network Speed Between 10 Mbps and 100 Mbps

1. At the `ok` prompt, use the `show-devs` command to list the system devices. You should see the full path name of the `hme` device, similar to the example below:

```
/iommuf,e0000000/sbus@f,e0001000/SUNW,hme@3,8c00000
```

2. Type:

```
ok nvedit
```

3. Type the following, pressing the Return key at the end of line 0:

```
0: probe-all install-console banner
1: apply transfer-speed=10 (full path name of the hme device)
```

4. Press the Control-C keys after typing (full path name of the hme device).

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**Note** – In the above example, the speed is forced to 10 Mbps. To force the speed to 100 Mbps, replace 10 with 100.

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5. At the `ok` prompt type:

```
ok nvstore
ok setenv use-nvramrc? true
```

6. Reboot your system.

Refer to the *Platform Notes: The hme Fast Ethernet Device Driver* document (Part No: 802-3970) for more information on the `hme` device driver and forcing network speed. This document is also available on the Solaris 2.5 and the Solaris 2.5: 1/96 AnswerBook.

### 3.6.5 Auto-Negotiation

A key feature of the SunSwift SBus Adapter is auto-negotiation. The *auto-negotiation* protocol, as specified by the 100BASE-T standard, automatically selects the operation mode (half-duplex or full-duplex) and speed (10 Mbps or 100 Mbps) for the adapter.

The `hme` device driver operates the `SUNW, hme` device by default in half-duplex mode only.

If the SunSwift SBus Adapter is connected to a remote system or interface that is not capable of auto-negotiation, your system automatically selects the speed and half-duplex mode.

If the SunSwift SBus Adapter is connected to a link partner with which the auto-negotiation protocol fails to operate successfully, you can configure the device to not use this protocol and force the driver to set up the link in the mode and speed of your choice.

Refer to the *Platform Notes: The hme Fast Ethernet Device Driver* document (Part No: 802-3970) for more information on the `hme` device driver and auto-negotiation. This document is also available on the Solaris 2.5 and the Solaris 2.5: 1/96 AnswerBook.

