SunSwift™ PCI Adapter Installation and User's Guide

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- Department of Communications (DOC) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan

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2. This device must accept any interference received, including interference that may cause undesired operation.

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Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

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2. This device must accept any interference received, including interference that may cause undesired operation.

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- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

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Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

DOC Class B Notice - Avis DOC, Classe B

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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Contents

Preface

This manual describes how to install and use your SunSwift™ PCI (Peripheral Component Interconnect) adapter.

The procedures in this manual assume that you are a system or network administrator experienced in installing similar hardware in a Solaris™ operating environment.

How This Book Is Organized

The document is organized as follows:

Chapter 1, **"About the SunSwift PCI Adapter,"** describes the hardware and software requirements for the SunSwift PCI Adapter as well as the adapter features.

Chapter 2, **"Installing the SunSwift PCI Adapter,"** tells you how to install the SunSwift PCI Adapter into your system.

Chapter 3, **"Using the SunSwift PCI Adapter,"** explains how to verify that the adapter is functioning properly and how to customize its performance.

Appendix A, **"Using the `selftest` Diagnostics,"** describes how to use the FCode `selftest` to verify the functionality of the adapter.

Appendix B, **"Interface Signals,"** presents the PCI adapter's Ethernet and SCSI pin characteristics.

Appendix C, **"Specifications,"** lists the hardware specifications.

Using UNIX Commands

This document may not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris 2.x Handbook for SMCC Peripherals*
- AnswerBook™ online documentation for the Solaris™ 2.x software environment
- Other software documentation that you received with your system

Typographic Conventions

TABLE P-1   Typographic Conventions

Typeface or Symbol	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output.	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
AaBbCc123	What you type, when contrasted with on-screen computer output.	`% `**`su`** `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Command-line variable; replace with a real name or value.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be `root` to do this. To delete a file, type `rm` *filename*.

Shell Prompts

TABLE P-2   Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

The following documents contain topics that relate to the information
in the *SunSwift PCI Adapter Installation and User's Guide.*

Title	Part Number
Solaris 2.x Handbook for SMCC Peripherals	801-5488
SunVTS 2.0 User's Guide	802-5331
Platform Notes: The hme SunFastEthernet Device Driver	802-2023
OpenBoot 3.x Command Reference Manual	802-5837

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TABLE P-3 SunExpress Contact Information

Country	Telephone	Fax
Belgium	02-720-09-09	02-725-88-50
Canada	1-800-873-7869	1-800-944-0661
France	0800-90-61-57	0800-90-61-58
Germany	01-30-81-61-91	01-30-81-61-92
Holland	06-022-34-45	06-022-34-46
Japan	0120-33-9096	0120-33-9097
Luxembourg	32-2-720-09-09	32-2-725-88-50
Sweden	020-79-57-26	020-79-57-27
Switzerland	0800-55-19-26	0800-55-19-27
United Kingdom	0800-89-88-88	0800-89-88-87
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World Wide Web: `http://www.sun.com/sunexpress/`

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- Email: `smcc-docs@sun.com`
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About the SunSwift PCI Adapter

The SunSwift PCI adapter offers 10 Mbps and 100 Mbps Ethernet networking and FAST-20 capabilities on the same PCI card.
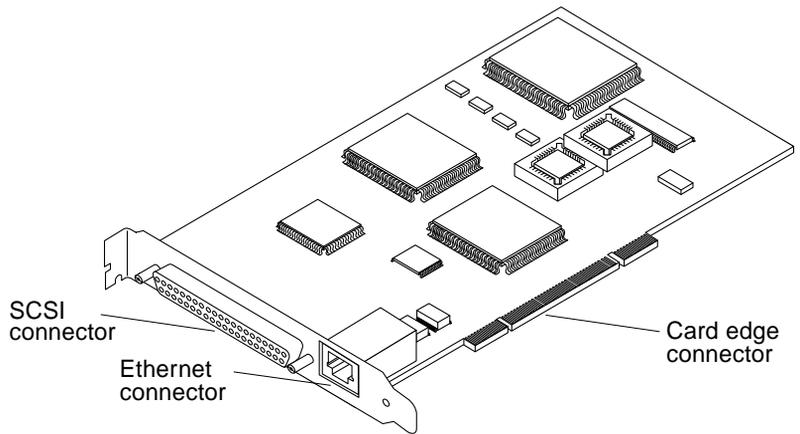
FIGURE 1-1   SunSwift PCI Adapter

Hardware and Software Requirements

Before using the SunSwift PCI adapter, make sure your system meets the following hardware and software requirements:

Hardware and Software	Requirements
Hardware Requirements	Sun™ systems with an available PCI slot
Software Requirements	Solaris 2.5.1 Hardware: 4/97 release
Firmware	OpenBoot™ PROM version 3.0 or greater
Peripherals Attached to PCI Adapter	All SCSI-2 devices
SCSI Cables	Only standard, Sun-supported cabling to ensure reliable SCSI interface connections

Features

Following is a list of the SunSwift PCI adapter features:

PCI

- PCI Local Bus, Rev 2.1 compliant
- 32-bit PCI up to 33 MHz
- Universal add-in (3.3V and 5V signaling)
- Two 64K x 8 OpenBoot Flash ROMs (one per function)
- Built-in PCI bridge

PCI Ethernet Interface

- 32-bit PCI up to 33 MHz
- 32-bit target access to internal registers
- 8-, 16-, or 32-bit target access to configuration registers
- 32-bit master data transfers
- Two DMA channels with 2 Kbyte FIFOs
- Unique IEEE MAC address stored on board

Network Interface

- 10BASE-T and 100BASE-TX interfaces with auto-negotiation full-duplex capabilities

PCI SCSI Interface

- 16-bit target access to SCSI controller internal registers
- 8-, 16-, or 32-bit target access to configuration registers
- 32-bit master data transfers
- 128 byte DMA FIFO
- Dual channel SCSI DMA controller
- Supports 8-, 16-, 32-, and 64-byte PCI bursts

SCSI RISC Processor

- Execution of multiple I/O control blocks from the host
- Reduced host intervention and interrupt overhead

SCSI Interface

- ANSI X3.131-1994 SCSI-2 compliant
- ANSI X3T10/1071D SCSI-3 Fast-20 compliant
- ANSI X3T9.2/86-109 Rev. 10g (SCSI-2) specification, including Fast (10 MHz) and Wide (16-bit) SCSI options support
- Asynchronous and synchronous transfer modes support
- Synchronous SCSI data transfer rates
  - Wide and Ultra SCSI (40 Mbytes/sec)
  - Ultra SCSI (20 Mbytes/sec)
  - Wide and Fast SCSI (20 Mbytes/sec)
  - Fast SCSI (10 Mbytes/sec)
  - Normal (5 Mbytes/sec)
- Fast single-ended 8/16 Bit
- SCSI asynchronous transfer rate:
  - Max. 12 Mbytes/sec 16-bit
  - Max. 6 Mbytes/sec 8-bit
- Up to 32-byte data FIFO between the DMA and SCSI channels
- 32-bit transfer counter (4 GB max. block length)
- 8-bit or 16-bit data and parity compatible, optional checking
- Fast SCSI single ended Max. cable length of 6 m (19 ft.) (15 targets)
- FAST-20 (Ultra) single ended SCSI MAX. cable length:
  - Up to 6 devices - maximum 3 meters
  - More than 6 devices - maximum 1.5 meters

Diagnostic Support

- RISC runs onboard diagnostic on power-up

Ultra Drive Cable Length

- Four or less SCSI devices attached - maximum 3 meter cable length
- Five or more devices attached - maximum 1.5 meter cable length

Non-Ultra Drive Cable Length

- Maximum cable length of 6 meters (19.7 feet)

Note – If you mix Ultra drives with non-Ultra drives, the total length of all cables cannot exceed 3 meters.

Installing the SunSwift PCI Adapter

This chapter contains procedures for installing the adapter in your system.

Note – Refer to your system installation or service manual (and the SCSI device installation manual, as necessary) for detailed instructions for the following tasks.

▼ To Install the Adapter

1. **Power off your system and open the system unit.**

2. **Attach the wrist strap's adhesive copper strip to the metal casing of the power supply. Wrap the other end twice around your wrist, with the adhesive side against your skin.**

3. **Holding the PCI card by the edges, unpack and place it on an antistatic surface.**

4. **Identify the slot number in which you want to insert the SunSwift PCI adapter.**

5. **Remove the PCI filler panel from the slot that you selected.**

6. **Holding the PCI card by the edges, align the card edge connector with the PCI slot. Slide the card face plate into the small slot at the end of the PCI opening.**

7. **Applying even pressure at both corners of the card, push the PCI card until it is firmly seated in the slot.**

Caution – Do not use excessive force when installing the adapter into the PCI slot. You may damage the adapter's PCI connector. If the adapter does not seat properly when you apply even pressure, remove the adapter and carefully reinstall it again.

8. **If necessary, reinstall the PCI filler panel in the unused PCI opening.**

9. **Detach the wrist strap and close the system unit.**

Note – See the next chapter to complete the software configuration and additional setup procedures.

Using the SunSwift PCI Adapter

This chapter tells you how to verify that the adapter is functioning properly and how to optimize its performance.

Verifying the Installation

Before booting the system, verify the installation by performing the tasks that follow. Refer to the *Solaris 2.5.1 Handbook for SMCC Peripherals* manual or your Solaris documentation for the detailed instructions.

▼ To Verify the Installation

1. **Power on the system.**

2. **When the banner is displayed, press the Stop-A keys to interrupt the boot process and to get to the** ok **prompt.**

3. **Use the** `show-devs` **command to list the system devices.**

You should see SunSwift PCI adapter output similar to the example below.

```
ok show-devs
/SUNW,ffb@1e,0
/SUNW,UltraSPARC@0,0
/pci@1f,2000
/pci@1f,4000
/counter-timer@1f,1c00
/virtual-memory
/memory@0,0
/aliases
/options
/openprom
/chosen
/packages
/pci@1f,2000/pci@2
/pci@1f,2000/pci@2/SUNW,isptwo@4
/pci@1f,2000/pci@2/SUNW,hme@0,1
/pci@1f,2000/pci@2/pci108e,1000@0
/pci@1f,2000/pci@2/SUNW,isptwo@4/st
/pci@1f,2000/pci@2/SUNW,isptwo@4/sd
/pci@1f,4000/scsi@3
/pci@1f,4000/network@1,1
/pci@1f,4000/ebus@1
```

- `isptwo` identifies the SCSI interface on the SunSwift PCI adapter.
- `hme` identifies the adapter Ethernet device.
- `network` identifies the motherboard network interface.
- `scsi` identifies the motherboard SCSI interface.

If these devices are not listed, check that the adapter is properly seated and reinstall the adapter, if necessary.

Diagnostics Testing

For SunSwift PCI adapter diagnostic testing, see Appendix A, "Using the `selftest` Diagnostics," and refer to the *SunVTS User's Guide.*

Auto-Negotiation

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

The link speed and modes supported by the SunSwift PCI Adapter are listed as follows in decreasing order of priority:

- 100 Mbps, full-duplex
- 100 Mbps, half-duplex
- 10 Mbps, full-duplex
- 10 Mbps, half-duplex

When the system is booted, the SunSwift PCI adapter advertises these capabilities to the Link Partner at the other end of the link (a hub, switch, or another network interface card (NIC) in a host system). If the Link Partner also supports auto-negotiation, it will advertise its capabilities over the link. The common highest priority mode supported by both sides will be selected automatically for the link operation.

If the SunSwift PCI adapter is connected to a remote system or to an interface that is not capable of auto-negotiation, your system will automatically select the speed and half-duplex mode.

If the SunSwift PCI adapter is connected to a Link Partner in which auto-negotiation protocol is not operational, 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 for more information on the `hme` device driver and auto-negotiation. This document is also available in the Solaris AnswerBook.

Monitoring Network Activity

Perform the following task to verify that the system recognizes the Ethernet connection. Make sure that you are connected to an active network.

● **To monitor network activity or incoming network packets, type the following at the** ok **prompt, including quotation marks and spaces:**

```
ok apply watch-net <full path name of the hme interface>
Internal loopback test -- succeeded.
Transceiver check -- passed.
Looking for Ethernet Packets.
'.' is a Good Packet. 'X' is a Bad Packet.
Type any key to stop.
.........................................
```

Note – In the example above, *<full path name of the* hme *interface>* is the full path name of the hme interface. Use the show-devs command at the ok prompt to display the full path name of the hme device.

Rebooting the System

After you have examined the network activity, perform a reconfiguration boot on your system so the operating environment can recognize the adapter.

● **Perform a reconfiguration boot on the system.**

```
ok boot -r
```

Refer to the *Solaris 2.x Peripheral's Handbook* for more information.

Configuring Host Files

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

Your system motherboard Ethernet interface (network) uses the hme device driver as well, with an interface identified as hme0. (The number 0 following hme represents the *first* instance of the interface.) You can find the interface numbers in the /etc/path_to_inst file.

▼ To Prepare Your System for the Adapter

1. **At the command line, use the** grep **command to search the** /etc/path_to_inst **file for** hme **devices.**

   ```
   # grep hme /etc/path_to_inst
   "/pci@1f,4000/network@1,1" 0 "hme"
   "/pci@1f,2000/pci@2/SUNW,hme@0,1" 1 "hme"
   ```

   In the example above, the network@1,1 instance is the on-board FastEthernet device, and the SUNW,hme@0,1 instance is the SunSwift PCI adapter. For clarity, the instance numbers are bold. In this example, you would create an /etc/hostname.hme1 file because the adapter's hme instance number is 1.

2. **Create an** /etc/hostname.hme<*num*> **file.**

   Replace the <*num*> following the hme ending with the instance number of the SunSwift PCI adapter's instance number. For example, if the system's /etc/path_to_inst file lists the adapter's instance number as 1, you would create a file called /etc/hostname.hme1.

   Note – If you have replaced a Sun FastEthernet PCI adapter with the SunSwift PCI adapter, using the same PCI slot, you will need to rename the existing hostname.hme<*num*> file to reflect the new instance number used by the SunSwift PCI adapter. For example, if the previous file had a *.hme1 extension, and the new instance number is 2, you would rename the file to hostname.hme2.

- Do not create an `/etc/hostname.hme<num>` file for a SunSwift PCI adapter channel you do not plan to use. 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.hme0` and `/etc/hostname.hme1` cannot share the same hostname.

The 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
```

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

Using the example in Step 2, 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
```

Booting from the Network

You can use the SunSwift PCI Adapter Ethernet interface as the boot device.

▼ To Boot from the Network

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 this example:

```
/pci@1f,2000/pci@2/SUNW,hme@0,1
```

2. **Type:**

```
ok boot /pci@1f,2000/pci@2/SUNW,hme@0,1
```

Booting from a CD-ROM Drive

You can use a CD-ROM drive connected to the SunSwift PCI adapter SCSI interface at target id 6 as the boot device for Solaris 2.5.1 systems.

▼ To Boot from a CD-ROM Drive

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 SCSI CD-ROM device, similar to the example below:

```
/pci@1f,4000/pci@2/SUNW,isptwo@4/sd
```

Note – The above example is from a Sun Ultra 30 Series system. On other Sun PCI systems, the leading portion of the device path could be different. Refer to the system's installation or service manual for more information.

2. Type:

```
ok boot /pci@1f,4000/pci@2/SUNW,isptwo@4/sd@6,0:f
```

The above command should start booting the system from the CD-ROM media loaded in the CD-ROM drive.

Post-Installation Procedures (Optional)

Perform the tasks in the following sections to customize the performance of the SunSwift PCI Adapter.

Increasing Performance with a Solaris 2.5.1 Patch

To achieve the best performance from the SunSwift PCI adapter on systems running the Solaris 2.5.1 Hardware: 4/97 operating environment, you should install the 103934-05 patch. (Higher revisions of this patch, if available, should also increase the adapter's performance.) You can safely install this patch after you have installed the adapter into your system.

Note – You can download this patch from the SunSolve Online™ website (`http://sunsolve.sun.com`). Otherwise, please contact your local SunService representative for assistance, or contact your local SunService authorized service provider for information on how to receive and install this patch.

Configuring Driver Parameters

The `hme` device driver controls the `SUNW,hme` Ethernet device. The device driver automatically selects the link speed using the auto-negotiation protocol with the link partner. (See "Auto-Negotiation" on page 9.)

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

- Configure the `hme` driver parameters generally for all `SUNW,hme` 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(1M)` utility to *temporarily* change a parameter. This change is lost when you reboot the system.

Refer to the *Platform Notes: The hme Fast Ethernet Device Driver* document for more information on configuring driver parameters. This document is also available on the Solaris AnswerBook.

Using Hubs that Do Not Send Link Pulses

Certain 10BASE-T hubs are not compliant with the IEEE 802.3 Ethernet standards for link pulses, so, therefore, they 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.

▼ To Use Hubs that Do Not Send 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 this example:

```
/pci@1f,2000/pci@2/SUNW,hme@0,1
```

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. **Type:**

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

6. **Reboot your system.**

Increasing TCP/IP Performance

You can increase the TCP/IP performance of the SunSwift PCI adapter by changing the TCP highwater mark to 64K. This can be done with the ndd(1M) utility as follows.

▼ To Increase TCP/IP Performance

● **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 and affect all system networking interfaces.

Forcing Network Speed Between 10 Mbps and 100 Mbps

▼ To Force Network Speed Between 10 Mbps and 100 Mbps

1. **At the ok prompt, use the show-devs command to list the system devices.**

   The full path name of the hme device, similar to this example, should be displayed:

   ```
   /pci@1f,2000/pci@2/SUNW,hme@0,1
   ```

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>**.**

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

5. **Type:**

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

6. **Reboot your system.**

   Refer to the *Platform Notes: The hme Fast Ethernet Device Driver* document for more information on the hme device driver and forcing network speed. This document is also available on the Solaris AnswerBook.

`local-mac-address` Property

The network interface of the SunSwift PCI Adapter is assigned a unique MAC (Media Access Control) address, which represents the 48-bit ethernet address for the channel. The OpenBoot™ firmware reports this MAC address via the `local-mac-address` property in the device nodes corresponding to the network interfaces.

A system is not obligated to use this assigned MAC address if it has a system-wide MAC address. In such cases, the system-wide MAC address applies to all network interfaces on the system.

The device driver, or any other adapter utility, can use the network device's MAC address (`local-mac-address`) while configuring it. In future Solaris releases, you will be able to use the channel's MAC address when booting over the network.

The `mac-address` property of the network device specifies the network address (system-wide or `local-mac-address`) used for booting the system. To start using the MAC addresses assigned to the network interface of the adapter, set the NVRAM configuration variable `local-mac-address?` to `true`.

```
ok setenv local-mac-address? true
```

Using the `selftest` Diagnostics

The following tests are available to help identify problems when the system containing the SunSwift PCI adapter does not boot.

The FCode `selftest` is added to the device tree during the probing phase of the OpenBoot PROM start-up sequence. You can invoke the FCode `selftest` diagnostics by using the OpenBoot user interface `test` or `test-all` commands. If you encounter an error while running the diagnostics, appropriate messages will be displayed. Refer to the *OpenBoot 3.x Command Reference Manual* for more information on the `test` and `test-all` commands.

`selftest` exercises most functionality of the adapter sub-section by sub-section and checks for the following conditions:

■ Isolates faulty FRUs
■ Checks, with a high confidence, that no hardware fault exists on No Trouble Found (NTF)
■ Checks connectivity during adapter card installation
■ Verifies that all components are functional

Ethernet FCode `selftest` Diagnostic

● **Type the following to run** `selftest` **using the** `test` **command:**

```
ok setenv diag-switch? true
ok test <device-path>
Hme register test -- succeeded.
Internal loopback test -- succeeded.
Transceiver check -- Using Onboard Transceiver - Link Up.
passed
Hme register test -- succeeded.
Doing more loopback tests -- passed
ok
```

The following tests are run when the `test` command is executed:

- `hme` register
- MAC Internal Loopback
- 100 MByte PHY Loopback
- 100 MB TP Loopback
- 10 MB XCVR Loopback

SCSI FCode `selftest` Diagnostics

● **Type the following to run** `selftest` **using the** `test` **command:**

```
ok setenv diag-switch? true
ok test <device-path>
ok
```

The following register tests are available on the ISP1040B:

- PCI Configuration Space Registers
- Bus Configuration Registers
- RISC Registers
- Command DMA Register
- SXP Registers
- RISC Registers

The following FIFO tests are available:

- DMA Data Channel FIFO
- DMA Command Channel FIFO

The following Loopback tests are available:

- Host to DMA (DMA Data Channel)
- DMA Command Channel FIFO (DMA Host Test)
- Host DMA Command Channel FIFO
- SXP FIFO DMA Data Channel FIFO
- DMA Data Channel FIFO SXP FIFO
- Host SXP FIFO

Note – The `ok` prompt will be displayed without any error messages if all of the tests run successfully.

Interface Signals

SunSwift PCI Adapter Connectors
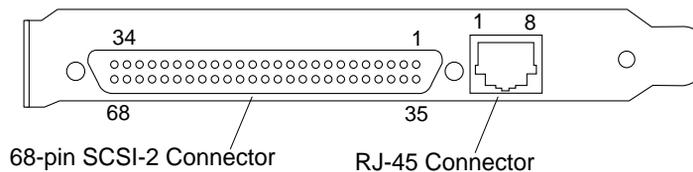
FIGURE B-1   SunSwift PCI Adapter Backplate

Single-Ended SCSI-2 Connector Signals

TABLE B-1   Single-Ended Connector Signals

Pin	Signal	Pin	Signal
1	SCSI_GND	35	SCSI_D<12>_
2	SCSI_GND	36	SCSI_D<13>_
3	SCSI_GND	37	SCSI_D<14>_
4	SCSI_GND	38	SCSI_D<15>_
5	SCSI_GND	39	SCSI_DATA_PARITY1_
6	SCSI_GND	40	SCSI_D<0>_

TABLE B-1 Single-Ended Connector Signals *(Continued)*

Pin	Signal	Pin	Signal
7	SCSI_GND	41	SCSI_D<1>_
8	SCSI_GND	42	SCSI_D<2>_
9	SCSI_GND	43	SCSI_D<3>_
10	SCSI_GND	44	SCSI_D<4>_
11	SCSI_GND	45	SCSI_D<5>_
12	SCSI_GND	46	SCSI_D<6>_
13	SCSI_GND	47	SCSI_D<7>_
14	SCSI_GND	48	SCSI_DATA_PARITY0_
15	SCSI_GND	49	SCSI_GND
16	SCSI_GND	50	SCSI_GND
17	SCSI_TERMPOWER	51	SCSI_TERMPOWER
18	SCSI_TERMPOWER	52	SCSI_TERMPOWER
19	OPEN	53	OPEN
20	SCSI_GND	54	SCSI_GND
21	SCSI_GND	55	SCSI_ATN_
22	SCSI_GND	56	SCSI_GND
23	SCSI_GND	57	SCSI_BSY_
24	SCSI_GND	58	SCSI_ACK_
25	SCSI_GND	59	SCSI_RST_
26	SCSI_GND	60	SCSI_MSG_
27	SCSI_GND	61	SCSI_SEL_
28	SCSI_GND	62	SCSI_CD_
29	SCSI_GND	63	SCSI_REQ_
30	SCSI_GND	64	SCSI_IO_
31	SCSI_GND	65	SCSI_D<8>_
32	SCSI_GND	66	SCSI_D<9>_
33	SCSI_GND	67	SCSI_D<10>_
34	SCSI_GND	68	SCSI_D<11>_

RJ-45 Connector Signals

TABLE B-2   Rj-45 Connector Signals

Pin	Signal
1	Transmit+
2	Transmit-
3	Receive+
4	No Connection
5	No Connection
6	Receive-
7	No Connection
8	No Connection

Specifications

Performance Specifications

Feature	Specification
PCI clock	33 MHz max.
PCI data burst transfer rate	132 MB/sec.
SCSI synchronous transfer rate	20/40 Mbytes/sec.
SCSI asynchronous transfer rate	Max. 12 Mbytes/sec 16-bit Max. 6 Mbytes/sec 8-bit
Transfer Size	4 GByte max.
PCI Data/Address Lines	AD31-0
PCI modes	Master/slave
SCSI interface	Single -ended
SCSI Bus parity	Yes
SCSI 8-Bit Bus devices	Yes
SCSI 16-Bit Bus devices	Yes
100BASE-TX transfer rate	<= 100 Mbps (in each direction for full duplex)
10BASE-T transfer rate	<= 10 Mbps (in each direction for full duplex)

Physical Characteristics

Dimension	Measurement
Length	6.6 in. (167.64 mm)
Width	4.2 in. (106.68 mm)
Height (not including PCB):	
Primary component side	0.570 in. (14.48 mm)
Back side	0.105 in. (2.67 mm)
Weight	141.75 grams

Power Requirements

Specification	Measurement
Maximum power consumption	15 Watts
Voltage	5V +/- 5%
Ripple	Maximum 100 mV

Environmental Specifications

Condition	Operating Specification	Storage Specification
Temperature	0 to 55 C (+32 to +131 F)	-40 to +75 C (-40 to +149 F)
Relative humidity	5 to 95% non-condensing (45 C, wet bulb temperature)	0 to 95% non-condensing 10 C/hour
Altitude	-1000 to +15,000 feet	-1000 to + 50,000 feet
Shock	10g, 1/2 sine wave, 11 msec	60g, 1/2 sine wave, 11 msec
Vibration, peak to peak displacement	0.005 in. max (5 to 32 Hz)	0.1 in. max (5 to 17 Hz)
Vibration, peak acceleration	0.25g (5 to 500 Hz) (Sweep Rate = 1 octave/min.)	0.25g (5 to 500 Hz) (Sweep Rate = 1 octave/min.)

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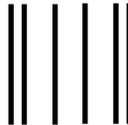3. Was the information accurate and easy to follow? _____

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