

Hardware Information

Managing adapters and
devices

ESCALA POWER5



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ESCALA POWER5

Hardware Information

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Hardware

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Managing adapters and devices

The following information describes the specifications and maintenance of adapters and devices.

- **Managing PCI adapters**
This section provides information using and managing Peripheral Component Interconnect (PCI) adapters and specifications for specific adapters.
 - **Managing host channel adapters**
Learn about how to install and manage host channel adapters.
 - **Managing media devices**
Review the following information to learn about the prerequisites and device operations related to specified media devices.
-

Managing PCI adapters

This section provides information using and managing Peripheral Component Interconnect (PCI) adapters and specifications for specific adapters.

For related information about PCI adapters, see the following:

- For instructions on how to install, remove, or replace an adapter in a system unit or expansion unit, see [PCI adapters](#).
- For adapter placement information, see [PCI placement in the system unit or expansion unit](#).
- **PCI adapter use and operations**
The following information relates to Peripheral Component Interconnect (PCI) adapter use.
- **PCI adapter information by feature type**
Use the following information to aid in identifying adapters and service data for the adapters installed within a system unit.

Parent topic: [Managing adapters and devices](#)

Related links

For instructions on how to install, remove, or replace an adapter in a system unit or expansion unit, see:

[PCI Adapters](#)

PCI adapter use and operations

The following information relates to Peripheral Component Interconnect (PCI) adapter use.

Note:

- See the [PCI adapters](#) topic in Removing and Replacing parts for information about placement, installation and removal of PCI adapters.
- In some systems, you can install PCI adapters with the power on. These adapters are referred to as *hot-pluggable* PCI adapters.

See the [PCI adapters](#) topic in Removing and Replacing parts to determine if your system unit supports the hot-plugging of adapters.

- Do not hot-plug any PCI adapter supporting the system's boot device or system console, with the following exception: in you can use Concurrent Maintenance (hot-plug) on the LS adapter (boot device adapter).

Select the appropriate information from this list:

- [PCI slots](#)
- [Secondary PCI bus](#)
- [Multiple primary PCI buses](#)
- [Hot-pluggable PCI slots](#)
- [Integrated adapters](#)
- [32-bit versus 64-bit PCI slots](#)
- [33 MHz versus 50/66 MHz 64-Bit PCI slots](#)
- [Connectivity versus performance](#)
- [Slot restrictions](#)
- [Adapter labels](#)

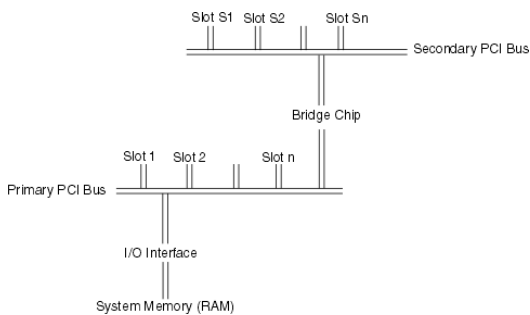
PCI slots

Each PCI bus has a limit on the number of adapters it can support. Typically, this limit can range from two adapters to six adapters for each bus. To overcome this limit, the system design can implement multiple PCI buses. You can use either of the following methods to add PCI buses to your system:

- Adding secondary PCI buses from the primary PCI bus
- Implementing multiple primary buses

Secondary PCI bus

To increase the number of PCI slots when designing a system, add a secondary PCI bus. A PCI-to-PCI bridge chip can connect a secondary bus to a primary bus. The following illustration shows how to use a primary PCI bus to increase the total number of PCI slots.



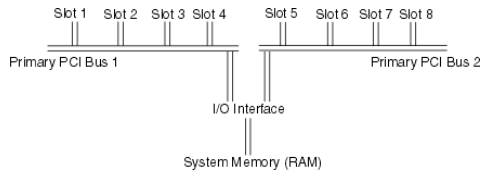
Because the slots on the secondary PCI bus must pass through the bridge chip, certain adapters on a secondary PCI bus might experience lower performance.

Some systems implement a secondary PCI bus. On these systems, place higher-speed adapters on the primary bus to optimize performance.

Multiple primary PCI buses

Another way to add more PCI slots, design the system with two or more primary PCI buses. This design requires a more complex I/O interface with the system memory. The following illustration shows another

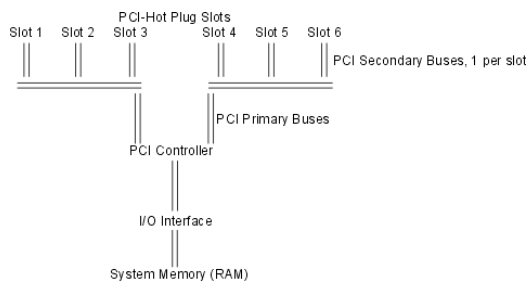
method of increasing the number of PCI slots.



This design can improve I/O performance over the secondary bus method because the I/O interface has created multiple parallel paths into the system memory.

Hot-pluggable PCI slots

If your system contains hot-plug enabled PCI slots. These systems dedicate a PCI bus to each PCI slot, which allows the adapter to be removed or added without affecting other adapters. This architecture uses one or more PCI primary buses that are bridged to multiple PCI secondary buses. Each PCI secondary bus has a single PCI slot.



Integrated adapters

The main processor board integrates a number of devices, but they physically connect to one of the PCI buses. For this reason, some of the buses might have only two or three slots available to install adapters. Integrated PCI adapters include SCSI adapters and Ethernet adapters.

32-bit versus 64-bit PCI slots

Choosing between 32-bit and 64-bit slots influences slot placement and affects performance. Higher-speed adapters use 64-bit slots because they can transfer 64 bits of data for each data-transfer phase.

The 32-bit adapters can typically function in 64-bit PCI slots. However, 32-bit adapters still operate in 32-bit mode and offer no performance advantage in a 64-bit slot. Likewise, most 64-bit adapters can operate in 32-bit PCI slots, but the 64-bit adapter operates in 32-bit mode and reduces performance potential.

33 MHz versus 50/66 MHz 64-Bit PCI slots**Connectivity versus performance**

You must consider some performance implications when configuring your system. Installing the maximum number of adapters might affect system performance.

Connectivity limits define how many specified adapters can be physically plugged into a system. This limit defines how many adapters the software and hardware can support. Connectivity limits define the maximum number of adapters for connecting to networks or disks. In many cases, a disk or network has a low duty cycle and the system needs additional adapters to retain the physical connection to all resources. In these cases, follow the connectivity limits.

This information also provides suggested performance limits, established to determine how many concurrently running adapters can provide good performance. As you add adapters (with each adapter performing at close to its rated speed), additional adapters continue to provide an incremental performance increase. After the system reaches its performance limit, adding more adapters does not provide an increase in I/O throughput.

Bus speed, memory speed, adapter design, or processor speed can influence performance. The system processor's speed can often limit how many adapters of a given type the system can support while maintaining maximum performance. After a system uses 90 percent of its system processor, adding more adapters only provides a minor throughput increase.

Because of the wide variety of workloads, this information provides performance-limit guidelines only. The guidelines are based on I/O streaming of large reads or writes to a disk or network. They are not based on small I/Os, which are more transaction-rate limited. Small I/O workloads probably use more system processor capacity and result in fewer supported adapters for maximum performance.

These guidelines are based on the maximum number of processors supported for multiprocessor systems. If your system runs fewer than the maximum number of processors supported, then typically you must reduce the maximum number of adapters by the same ratio. For example, if a system with a maximum of 12 processors can support 12 ATM adapters for maximum performance, the same system with eight processors can support only eight ATM adapters for maximum performance.

If your system uses disk and communication adapters concurrently, use a more conservative estimate of the number of supported adapters.

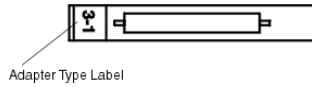
If your configured system runs close to its performance limits, ensure that your system type or configuration provides the desired performance. In these cases, you might need to contact your marketing support personnel for more detailed information.

Slot restrictions

You must install some adapters in specific PCI slots in various systems. Physical size limits, I/O address considerations, thermal limitations, and other factors influence these specifications.

Adapter labels

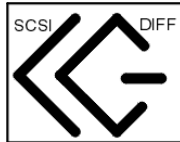
The following illustrations show how an adapter is labeled.



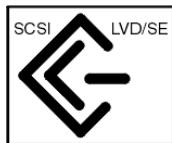
SCSI-1 or SCSI-2 single-ended, low-voltage differential, or differential adapters might carry one of the following ANSI icons:



Single-Ended



Differential



Low Voltage Differential/
Single-Ended

Parent topic: [Managing PCI adapters](#)

PCI adapter information by feature type

Use the following information to aid in identifying adapters and service data for the adapters installed within a system unit.

The adapter information shown here is used during nondirected service activities. This information is used to:

- Identify an adapter
- Find specific technical information about an adapter
- Where applicable, show special installation or cabling instructions
- Show signal names for the output pins of the adapter connectors
- Where applicable, show the settings for switches or jumpers

Adapters can be identified by their feature code (FC) or their custom card identification number (CCIN). The CCIN number is normally labeled on the adapter.

- **10 Gb Ethernet-SR PCI-X 2.0 DDR adapter (FC 5721)(CCIN 573A)**
Learn about the 10 Gb Ethernet-SR PCI-X 2.0 DDR Adapter.
- **10 Gb Ethernet-LR PCI-X 2.0 DDR adapter (FC 5722)(CCIN 576A)**
Learn about the 10 Gb Ethernet-LR PCI-X 2.0 DDR adapter.
- **Dual port gigabit Ethernet-SX PCI-X adapter (FC 5707)(CCIN 5707)**
Learn about the dual port gigabit Ethernet-SX PCI-X adapter.
- **Gigabit Ethernet-SX PCI-X adapter (FC 6800, 5700)(CCIN 5700)**
Learn about the Gigabit Ethernet-SX PCI-X adapter.
- **4-Port 10/100 Base-TX Ethernet PCI adapter (FC 4961)**
Learn about the 4-Port 10/100 Base-TX Ethernet PCI adapter..
- **4-Port 10/100/1000 Base-TX PCI-X adapter (FC 5740, FC 1954)**
Learn about the 4-Port 10/100/1000 Base-TX PCI-X adapter.
- **10/100/1000 Base-TX Ethernet PCI-X adapter (FC 1979, 5701, 6801)(CCIN 5701)**
Learn about the 10/100/1000 Base-TX Ethernet PCI-X adapter.
- **10/100 Mbps Ethernet PCI adapter II (FC 4962)(CCIN 4962)**
Learn about the 10/100 Mbps Ethernet PCI adapter II.
- **4 Gb Single-Port Fibre Channel PCI-X 2.0 DDR Adapter (FC 1905, 5758, 5761) (CCIN 1910, 280D)**
Learn about the 4 Gb Single-Port Fibre Channel PCI-X 2.0 DDR Adapter.
- **4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter (FC 1910, 5759) (CCIN 1910, 5759)**
Learn about the 4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter.

- **PCI-X DDR dual-channel Ultra320 SCSI adapter (FC 0647, 1912, 5736, 5775) (CCIN 571A)**
Learn about the PCI-X DDR dual-channel Ultra320 SCSI adapter.
- **PCI-X DDR dual-channel Ultra320 SCSI RAID adapter (FC 0648, 1913, 5737, 5776)(CCIN 571B)**
Learn about the PCI-X DDR dual-channel Ultra320 SCSI RAID adapter.
- **Auxiliary-write cache IOA (FC 5580, 5581)(CCIN 5708)**
Learn about the auxiliary-write cache IOA adapter and the PCI-X Ultra4 RAID disk-controller adapters used with it.
- **1 Gigabit iSCSI TOE PCI-X adapter (FC 5714, 1987, 5713, 1986)(CCIN 573B, 573C)**
Learn about the 1 Gigabit iSCSI TOE PCI-X adapter.
- **POWER GXT135P graphics PCI adapter (FC 2848)**
Learn about the POWER GXT135P graphics PCI adapter.
- **POWER GXT135P graphics PCI adapter (FC 2849)**
Learn about the POWER GXT135P graphics PCI adapter.
- **PCI audio adapter (FC 8244)**
Learn about the PCI audio adapter.
- **2 port USB PCI adapter (FC 2738)(CCIN 28EF)**
Learn about the 2 Port USB PCI adapter.
- **8-Port asynchronous EIA-232E/RS-422A PCI adapter (FC 2943)**
Learn about the 8-Port asynchronous EIA-232E/RS-422A PCI adapter.
- **64-bit/66MHz PCI ATM 155 UTP adapter (FC 4953)**
Learn about the 64-bit/66MHz PCI ATM 155 UTP adapter.
- **PCI-X Cryptographic Coprocessor (FC 4764)(CCIN 4764)**
Learn about the 4764 PCI-X Cryptographic Coprocessor.
- **Cryptographic accelerator (FC 4960, CCIN 2058)**
Learn about the cryptographic accelerator.
- **PCI cryptographic coprocessor (FC 4963)**
Learn about the PCI cryptographic coprocessor.

Parent topic: [Managing PCI adapters](#)

10 Gb Ethernet-SR PCI-X 2.0 DDR adapter (FC 5721)(CCIN 573A)

Learn about the 10 Gb Ethernet-SR PCI-X 2.0 DDR Adapter.

Overview

The 10 Gigabit Ethernet-SR PCI-X 2.0 DDR Adapter is designed to provide a PCI-X based server connection. The adapter conforms to the IEEE 802.3ae 10 Gigabit Ethernet standard and supports Jumbo frames.

The 10 Gigabit Ethernet-SR PCI-X supports the following distances:

- Up to 33m using 62.5 um multimode fiber with 200 MHz*km minimum modal bandwidth at 850 nm
- Up to 300m using 50 um multimode fiber with 2000 MHz*km minimum modal bandwidth at 850 nm

The adapter is designed to run in standard PCI-X v2.0 and PCI-X v1.0a compliant systems with 64-bit PCI-X BusMaster slots at 133 Mode 1 or Mode 2. The adapter draws power from the PCI-X 3.3 V supplies and is keyed to fit only into a 3.3 V slot. The adapter supports 1M x 8 bit boot FLASH ROM and has a 240 KB on-chip TX packet buffer and a 32 MB on-chip RX packet buffer.

The adapter provides the following features:

- Single-slot, short form factor, 6.6 by 4.2 inch, half-length PCI cards
- 64-bit Direct Bus Mastering on the PCI-X bus
- Dual Address Cycle for access to 64-bit addresses
- PCI-X split transactions
- DMA engine for movement of command, status, and network data across PCI-X
- Message Signaled Interrupts (MSI)
- 240 KB on-chip TX packet buffer
- 32 MB on-chip RX packet buffer
- 1 MB Boot Flash ROM
- Jumbo frames (9 KB)

- Interrupts coalescing
- 802.1q VLAN tagging and stripping
- Conforms to IEEE 802.3ae 10 Gigabit Ethernet standard

Operating system or partition requirements

AIX 5L Version 5.3 with the 5300-04 Technology Level

AIX 5L Version 5.2 with the 5200-08 Technology Level

Red Hat Enterprise Linux version 4 U2

SUSE Linux Enterprise Server 9 SP3

Preparing for installation

This section helps you prepare to install your adapter. Preparing to install the adapter involves the following tasks:

- Verifying your hardware requirements
- Verifying your software requirements
- Gathering tools and documentation

If you are installing your operating system at this time, install your adapter before you install the operating system. See [Installing the adapter](#) for instructions.

If you are installing only the device driver for this adapter, install your device driver software before you install the adapter. See [Installing the device driver software](#) for instructions.

Verifying your hardware requirements

The 10 Gigabit Ethernet-SR PCI-X 2.0 DDR adapter requires the following hardware:

- A wrap plug for the multimode fiber connector, if you are running the total diagnostics package
- Shortwave (850 nm) 50/62.5 micron multimode fiber network attachment

The following table indicates the allowable cable lengths from the adapter to the gigabit Ethernet switch, including patch cables:

Table 1. Adapter cable information

Cable type	Physical connector type	Maximum range (meters)
62.5 m MMF	LC	33
50 m MMF	LC	300

Verifying your software requirements

Ensure that your operating system supports this adapter before you install it. See [Operating system or partition requirements](#).

Gathering tools and documentation

To install the adapter, make sure you have access to the following:

- The 10 Gigabit Ethernet-SR PCI-X 2.0 DDR adapter
- The operating system documentation
- The system unit documentation
- The PCI adapter placement information for the system unit.
- Wrap plug
- A flat-blade screwdriver
- AIX 5L Base Operating System CD, which includes the device driver, or the AIX 5L device driver CD-ROM

Installing the device driver software

This section explains how to install device driver software. The device driver is provided for the AIX 5L operating system.

Be sure you have read [Preparing for installation](#) to determine:

- If you should install your device driver software first, go to step 1 of this section.
- If you should install your adapter hardware first, go to [Installing the adapter](#). When you install AIX 5L, your adapter device driver automatically installs.

If you already have a supported level of AIX 5L installed, the device driver is already installed and you can go to [Installing the adapter](#). Otherwise, install the device driver.

To install device driver software, do the following:

1. Log in to the system unit as root user.
2. Insert the media containing the device driver software (for example; CD-ROM) into the appropriate media device.
3. Type the following System Management Interface Tool (SMIT) fast path: **smitty devinst**
4. Press Enter. The Install Additional Device Software screen highlights the INPUT device/directory for software option.
5. Select or type your input device:
 - ◆ Press F4 to display the input device list.
 - ◆ Select the name of the device (for example; CD-ROM) that you are using and press Enter.
 - ◆ OR
 - ◆ In the entry field, type the name of the input device you are using and press Enter.
 - ◆ The Install Additional Device Software window highlights the SOFTWARE to install option.
6. Press F4 to display the SOFTWARE to install window.
7. Type the following to display the Find window: /
8. For the adapter, type the following device package name: **devices.pci.1410EB02**
9. Press Enter. The system finds and highlights this device driver software.
10. Press F7 to select the highlighted device driver software.
11. Press Enter. The INSTALL ADDITIONAL DEVICE SOFTWARE screen displays. The entry fields are automatically updated.
12. Press Enter to accept the information. The ARE YOU SURE window displays.
13. Press Enter to accept the information. The COMMAND STATUS screen displays.
 - ◆ The term RUNNING is highlighted to indicate that the installation and configuration command is in progress.
 - ◆ When RUNNING changes to OK, scroll to the bottom of the page and locate the Installation Summary.
 - ◆ After a successful installation, SUCCESS displays in the Result column of the Installation Summary at the bottom of the page.
14. Remove the installation media from the drive.
15. Press F10 to exit SMIT.
16. Go to the adapter installation procedure, [Installing the adapter](#).

Verify AIX software installation

To verify that the device driver for the adapter is installed, do the following:

1. If necessary, log in as root user.
2. At the command line, type: `lslpp -l devices.pci.1410EB02.rte`
3. Press Enter.

If the adapter device driver is installed, the following is an example of the data that displays on your screen:

Fileset	Level	State	Description
Path: /usr/lib/objrepos devices.pci.1410EB02.rte	5.2.xx	COMMITTED	Ethernet adapter software

Verify that the devices.pci.1410EB02.rte filesets are installed at the AIX 5L version 5.2 with the 5200-08 Recommended Maintenance package or later level. If this information displays but you continue to have problems, go to [Installing the adapter](#).

If no data displays on your screen, the adapter device driver did not install correctly. Try reinstalling the driver.

Installing the adapter

Refer to the [PCI Adapters](#) topic for instructions on placement and installation of PCI adapters. After you have installed the adapter, continue on to [Verifying the adapter Installation](#).

Verifying the adapter installation

To verify that your system unit recognizes the PCI adapter, do the following:

1. If necessary, log in as root user.
2. At the command line, type: `lsdev -Cs pci`
3. Press Enter.

A list of PCI devices displays. If the adapter is installed correctly, an Available status for each port indicates that the adapter is installed and ready to use. If the message on your screen indicates that any of the ports is DEFINED instead of AVAILABLE, shut down your machine and verify that the adapter was installed correctly.

Connecting to an Ethernet network

This section explains how to connect the adapter to the multimode fiber network. Refer to your local procedures for information about connecting the adapter to your Ethernet network.

Note: Only one type of network can be attached to the adapter card at one time.

To connect the adapter to a multimode fiber network, do the following:

1. Insert the male fiber LC connector of the fiber cable into the adapter LC connector.
2. Insert the male fiber LC connector of the other end of the cable into the network switch.

Note:

- If your switch has an SC receptacle, you need an LC-SC converter cable.
- It is necessary to configure an IP network interface to enable the adapter to detect link and illuminate the LINK LED.

Understanding the adapter LEDs

The LEDs on the adapter provide information about the card's operation status. The LEDs are visible through the card's mounting bracket and, when lit, indicate the following conditions:

Table 2. Adapter LEDs

LED	Light	Description
TX	Off	No activity
	Blinking green	Transmit activity
RX	Off	No activity
	Blinking green	Receive activity
Link	Off	No link
	Green	Link established

Parent topic: [PCI adapter information by feature type](#)

10 Gb Ethernet-LR PCI-X 2.0 DDR adapter (FC 5722)(CCIN 576A)

Learn about the 10 Gb Ethernet-LR PCI-X 2.0 DDR adapter.

Overview

The 10 Gigabit Ethernet-LR PCI-X 2.0 DDR adapter is designed to provide a PCI-X based server connection. The adapter conforms to the IEEE 802.3ae 10 Gigabit Ethernet standard and supports Jumbo frames.

The adapter provides the following features:

- Single-slot, short form factor, 6.6 by 4.2 inch, half-length PCI cards
- 64-bit Direct Bus Mastering on the PCI-X bus
- Dual Address Cycle for access to 64-bit addresses
- PCI-X split transactions
- DMA engine for movement of command, status, and network data across PCI-X
- Message Signaled Interrupts (MSI)
- 240 KB on-chip TX packet buffer
- 32 MB on-chip RX packet buffer
- 1 MB Boot Flash ROM
- Jumbo frames (9 KB)
- Interrupts coalescing
- 802.1q VLAN tagging and stripping
- Conforms to IEEE 802.3ae 10 Gigabit Ethernet standard

Operating system or partition requirements

AIX 5L Version 5.3 with the 5300-04 Technology Level

AIX 5L Version 5.2 with the 5200-08 Technology Level

Red Hat Enterprise Linux version 4 U2

SUSE Linux Enterprise Server 9 SP3

Preparing for installation

This section helps you prepare to install your adapter. Preparing to install the adapter involves the following tasks:

- Verifying your hardware requirements
- Verifying your software requirements
- Gathering tools and documentation

If you are installing your operating system at this time, install your adapter before you install the operating system. See [Installing the adapter](#) for instructions.

If you are installing only the device driver for this adapter, install your device driver software before you install the adapter. See [Installing the device driver software](#) for instructions.

Verifying your hardware requirements

The 10 Gigabit Ethernet-LR PCI-X 2.0 DDR adapter requires the following hardware:

- A wrap plug for the single mode fiber connector, if you are running the total diagnostics package
- Longwave (1310 nm) 9/50 micron multimode fiber network attachment

The following table indicates the allowable cable lengths from the adapter to the gigabit Ethernet switch, including patch cables:

Table 1. Adapter cable information

Cable type	Physical connector type	Maximum range (meters)
9 m SMF	SC	10 km

Verifying your software requirements

Ensure that your operating system supports this adapter before you install it. See [Operating system or partition requirements](#).

Gathering tools and documentation

To install the adapter, make sure you have access to the following:

- The 10 Gigabit Ethernet-LR PCI-X 2.0 DDR adapter
- The operating system documentation
- The system unit documentation
- The PCI adapter placement information for the system unit.
- Wrap plug
- A flat-blade screwdriver
- AIX 5L Base Operating System CD, which includes the device driver, or the AIX 5L device driver CD-ROM

Installing the device driver software

This section explains how to install device driver software. The device driver is provided for the AIX 5L operating system.

Be sure you have read [Preparing for installation](#) to determine:

- If you should install your device driver software first, go to step 1 of this section.
- If you should install your adapter hardware first, go to [Installing the adapter](#). When you install AIX 5L, your adapter device driver automatically installs.

If you already have a supported level of AIX 5L installed, the device driver is already installed and you can go to [Installing the adapter](#). Otherwise, install the device driver.

To install device driver software, do the following:

1. Log in to the system unit as root user.
2. Insert the media containing the device driver software (for example; CD-ROM) into the appropriate media device.
3. Type the following System Management Interface Tool (SMIT) fast path: **smitty devinst**
4. Press Enter. The Install Additional Device Software screen highlights the INPUT device/directory for software option.
5. Select or type your input device:
 - ◆ Press F4 to display the input device list.
 - ◆ Select the name of the device (for example; CD-ROM) that you are using and press Enter.
 - ◆ OR
 - ◆ In the entry field, type the name of the input device you are using and press Enter.
 - ◆ The Install Additional Device Software window highlights the SOFTWARE to install option.
6. Press F4 to display the SOFTWARE to install window.
7. Type the following to display the Find window: /
8. For the adapter, type the following device package name: **devices.pci.1410EC02**
9. Press Enter. The system finds and highlights this device driver software.
10. Press F7 to select the highlighted device driver software.
11. Press Enter. The INSTALL ADDITIONAL DEVICE SOFTWARE screen displays. The entry fields are automatically updated.
12. Press Enter to accept the information. The ARE YOU SURE window displays.
13. Press Enter to accept the information. The COMMAND STATUS screen displays.
 - ◆ The term RUNNING is highlighted to indicate that the installation and configuration command is in progress.
 - ◆ When RUNNING changes to OK, scroll to the bottom of the page and locate the Installation Summary.
 - ◆ After a successful installation, SUCCESS displays in the Result column of the Installation Summary at the bottom of the page.
14. Remove the installation media from the drive.
15. Press F10 to exit SMIT.
16. Go to the adapter installation procedure, [Installing the adapter](#).

Verify AIX software installation

To verify that the device driver for the adapter is installed, do the following:

1. If necessary, log in as root user.
2. At the command line, type: **lslpp -l devices.pci.1410EC02.rte**
3. Press Enter.

If the adapter device driver is installed, the following is an example of the data that displays on your screen:

Fileset	Level	State	Description
Path: /usr/lib/objrepos devices.pci.1410EC02.rte	5.2.0.85	COMMITTED	Ethernet adapter software

Verify that the devices.pci.1410EC02.rte filesets are installed at the AIX 5L version 5.2 with the 5200-08 Recommended Maintenance package or later level. If this information displays but you continue to have problems, go to [Installing the adapter](#).

If no data displays on your screen, the adapter device driver did not install correctly. Try reinstalling the driver.

Installing the adapter

Refer to the [PCI Adapters](#) topic for instructions on placement and installation of PCI adapters. After you have installed the adapter, continue on to [Verifying the adapter Installation](#) .

Verifying the adapter Installation

To verify that your system unit recognizes the PCI adapter, do the following:

1. If necessary, log in as root user.
2. At the command line, type: `lsdev -Cs pci`
3. Press Enter.

A list of PCI devices displays. If the adapter is installed correctly, an Available status for each port indicates that the adapter is installed and ready to use. If the message on your screen indicates that any of the ports is DEFINED instead of AVAILABLE, shut down your machine and verify that the adapter was installed correctly.

Connecting to an Ethernet network

This section explains how to connect the adapter to the multimode fiber network. Refer to your local procedures for information about connecting the adapter to your Ethernet network.

Note: Only one type of network can be attached to the adapter card at one time.

To connect the adapter to a multimode fiber network, do the following:

1. Insert the male fiber SC connector of the fiber cable into the adapter SC connector.
2. Insert the male fiber SC connector of the other end of the cable into the network switch.

Note: It is necessary to configure an IP network interface to enable the adapter to detect link and illuminate the LINK LED.

Understanding the adapter LEDs

The LEDs on the adapter provide information about the card's operation status. The LEDs are visible through the card's mounting bracket and, when lit, indicate the following conditions:

Table 2. Adapter LEDs

LED	Light	Description
TX	Off	No activity
	Blinking green	Transmit activity
RX	Off	No activity
	Blinking green	

		Receive activity
Link	Off	No link
	Green	Link established

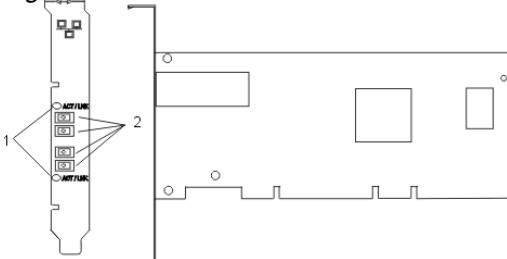
Parent topic: [PCI adapter information by feature type](#)

Dual port gigabit Ethernet-SX PCI-X adapter (FC 5707)(CCIN 5707)

Learn about the dual port gigabit Ethernet-SX PCI-X adapter.

The dual port gigabit Ethernet-SX PCI-X adapter is a high-performance, highly integrated, universal, Ethernet LAN adapter for PCI-X and PCI systems. The adapter presents one electrical load but appears as two independent devices to software. The adapter provides 1000 Mbps throughput on a standard shortwave (850nm) 50/62.5 micron multimode optical cable and conforms to the IEEE 802.3z standard and supports distances of 260m for 62.5u MMF and 550m for 50.0u MMF.

Figure 1. Feature 5707



- 1 LED
- 2 Multimode Fiber LC Receptacle

Understanding the Adapter LED

The LED on the Dual Port Gigabit Ethernet-SX PCI-X Adapter provides information about the card's operation status. The LED is visible through the card's mounting bracket and, when lit, indicates the following conditions:

LED	Status
-----	--------

Off	No Link/No Activity
On (Green)	Link, No Activity
Flashing (Green)	Link, Activity

Gigabit Ethernet-SX PCI-X Adapter Specifications

Item

Description
FRU number 00P4290
I/O bus architecture PCI 2.2 and PCI-X V1.0a compliant
Busmaster Yes
Maximum number For system-specific adapter placement information, see PCI placement in the system unit or expansion unit
Adapter size PCI short form
Connector information LC fiber optic
Wrap plug LC fiber optic, part number 11P3847
Cables Customer supplied. Optional LC-SC 62.5 micron converter cable, part number 11P1374, FC 2459, is available. For 50 micron LC-SC connections, use converter cable part number 11P1373, FC 2456.

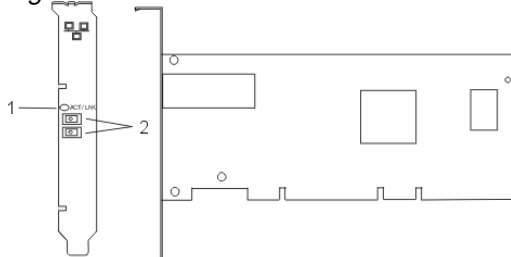
Parent topic: [PCI adapter information by feature type](#)

Gigabit Ethernet-SX PCI-X adapter (FC 6800, 5700)(CCIN 5700)

Learn about the Gigabit Ethernet-SX PCI-X adapter.

The Gigabit Ethernet-SX PCI-X adapter is a high-performance, highly integrated, universal, Ethernet LAN adapter for PCI-X and PCI systems. The adapter provides 1000 Mbps throughput on a standard shortwave (850 nm) 50 or 62.5 micron multimode optical cable and conforms to the IEEE 802.3z standards and supports distances of 260 meters for 62.5u MMF and ESCALA PL 450T/R meters for 50.0u MMF. The adapter is designed to run in standard PCI-X V1.0a compliant systems with 32 or 64-bit PCI-X Bus Master slots at 66 or 133 MHz, and in PCI 2.2 compliant systems with 32 or 64-bit PCI bus master slots at 33 or 66 MHz. The adapter runs on 5.0 V.

Figure 1. Feature 5700



- 1 LED
- 2 Multimode Fiber LC Receptacle

The LED on the Gigabit Ethernet-SX PCI-X Adapter provides information about the adapter's operation status. The LED is visible through the adapter's mounting bracket and, when lit, indicates the following conditions:

LED	Status
Off	No Link/No Activity
On (Green)	Link, No Activity
Flashing (Green)	Link, Activity

Gigabit Ethernet-SX PCI-X adapter specifications

Item	Description
FRU number	00P3055
I/O bus architecture	PCI 2.2 and PCI-X V1.0a compliant
Busmaster	Yes
Maximum number	For system-specific adapter placement, see PCI placement in the system unit or expansion unit .
Adapter size	PCI short form
Connector information	LC fiber optic
Wrap plug	LC fiber optic, part number 11P3847
Cables	Customer supplied. Optional LC-SC 62.5 micron converter cable, part number 11P1374, FC 2459, is available. For 50 micron LC-SC connections, use converter cable part number 11P1373, FC 2456.

Parent topic: [PCI adapter information by feature type](#)

4-Port 10/100 Base-TX Ethernet PCI adapter (FC 4961)

Learn about the 4-Port 10/100 Base-TX Ethernet PCI adapter..

The 4-Port 10/100 Base-TX Ethernet PCI adapter provides attachment at 10 Mbps or 100 Mbps to a carrier sense multiple access/collision detection (CSMA/CD) Ethernet local area network (LAN) for systems designed to operate with the PCI bus interface. The adapter uses the IEEE-802.3u standard for communications. The adapter will occupy a single slot but will appear to the system to be four unique 10/100 Ethernet adapters.

The adapter supports connections to 10BaseT or 100BaseTx on unshielded twisted pair networks through an RJ-45 connector.

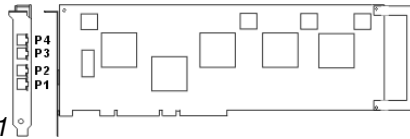


Figure 1. Feature 4961

4-Port 10/100 Base-TX Ethernet PCI adapter specifications

Item	Description
FRU number	09P1421
I/O bus architecture	PCI
Busmaster	Yes
Connector information	8-position RJ-45
Cables:	Customer supplied (use Y type connection)
For 10 Mbps	Use category 3, 4, or 5 unshielded twisted pair
For 100 Mbps	Use category 5 only unshielded twisted pair
Wrap plug	Twisted-pair, part number 00G2380

Viewing the LEDs

The adapter has two LEDs for each port to provide status on the adapter's operation. The LEDs are visible on the mounting bracket at each port's connector. They indicate the following conditions when lit:

- Green LED (1) - indicates 100 Mbps operation
- Yellow LED (2) - indicates transmit or receive activity

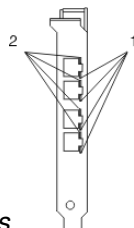


Figure 2. Adapter LEDs

Parent topic: [PCI adapter information by feature type](#)

4-Port 10/100/1000 Base-TX PCI-X adapter (FC 5740, FC 1954)

Learn about the 4-Port 10/100/1000 Base-TX PCI-X adapter.

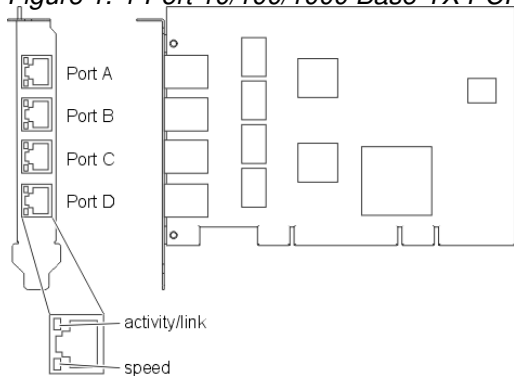
Overview

The 4-Port 10/100/1000 Base-TX PCI-X adapter is a 64-bit Ethernet card. It is a full height PCI-X 1.0a adapter which supports four gigabit ports on a single adapter delivering increased bandwidth for PCI-X slot-constrained systems. It provides high connectivity and reliability using two integrated, dual-port gigabit Ethernet controllers and a PCI-X bridge chip. The adapter connects the system to an Ethernet LAN at speeds of 10, 100, or 1000 Mbps.

The 4-Port 10/100/1000 Base-TX PCI-X adapter provides the following features:

- 3.3 volts, 64-bit, 133 MHz with 64-bit Direct Bus Mastering on the PCI-X bus
- IEEE 802.3ab 1000Base-T compliant
- IEEE 802.3u 100Base-TX compliant
- IEEE 802.3 10Base-T compliant
- 802.1q VLAN tagging
- Two Intel 82546GB Gigabit Controllers
- Interrupt Moderation
- TCP Segmentation offload and encapsulation in hardware
- Checksum offloading of IP, TCP, and UDP frame
- Remote Management Support (WfM, RIS, SNMP/DMI)
- Increased connectivity while significantly reducing CPU utilization
- Four RJ-45 ports
 - ◆ CAT-5 cabling for 1000 Mbps
 - ◆ CAT-3 or CAT-5 cabling for 100 Mbps or 10 Mbps
- Two LED adapter status indicators per port for link activity and speed
- Boot ROM on two ports
- Advanced cable diagnostics
- European Union Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment compliant

Figure 1. 4-Port 10/100/1000 Base-TX PCI-X adapter



Operating system or partition requirements

AIX 5L Version 5.3 with the 5300-04 Technology Level, or later

AIX 5L Version 5.2 with the 5200-08 Technology Level, or later

Red Hat Enterprise Linux version 4 U2 and U3

SUSE Linux Enterprise Server 9 SP3

Preparing for installation

This section helps you prepare to install your 4-Port 10/100/1000 Base-TX PCI-X adapter. Preparing to install the adapter involves the following tasks:

- Verifying your hardware requirements
- Verifying your software requirements
- Gathering tools and documentation

Note:

- If you are installing your operating system at this time, install your adapter before you install the operating system. See [Installing the adapter](#) for instructions.
- If you are installing only the device driver for this adapter, install your device driver software before you install the adapter. See [Installing the device driver software](#) for instructions.

Verifying Your Hardware Requirements

The 4-Port 10/100/1000 Base-TX PCI-X adapter requires the following hardware:

- A wrap plug for the RJ-45 connector, if you are running the total diagnostics package
- CAT-5 unshielded twisted pair (UTP) cables for 1000 Mbps network attachment
- CAT-5 or CAT-3 unshielded twisted pair (UTP) cables for 100 Mbps or 10 Mbps network attachment

Note: The above cable can be no longer than 100 meters. Including patch cables, this is the maximum allowable cable length from the adapter to the local switch.

Verifying Your Software Requirements

Ensure that your operating system supports this adapter before you install it. See [Operating system or partition requirements](#).

Gathering tools and documentation

To install the 4-Port 10/100/1000 Base-TX PCI-X adapter, make sure you have access to the following:

- The 4-Port 10/100/1000 Base-TX PCI-X adapter
- The operating system documentation
- The system unit documentation
- The PCI adapter placement information for the system unit.
- Wrap plug(s)
- A flat-blade screwdriver
- AIX Base Operating System CD, which includes the device driver, or the AIX device driver CD-ROM

Installing the device driver software

This chapter explains how to install device driver software. The device driver is provided for the AIX operating system.

Be sure you have read [Preparing for installation](#) to determine:

- If you should install your device driver software first, go to step 1 of this section.
- If you should install your adapter hardware first, go to [Installing the adapter](#). When you install AIX, your adapter device driver automatically installs.

If your installed AIX operating system (AIX 5.2.0.85 or later; AIX 5.3.0.40 or later) supports the 4-Port 10/100/1000 Base-TX PCI-X adapter and you already have this adapter installed, the device driver is already installed and you can install the adapter. Go to [Installing the adapter](#) for instructions. Otherwise, install the device driver.

To install device driver software, do the following:

1. Log in to the system unit as root user.
2. Insert the media containing the device driver software (for example; CD-ROM) into the appropriate media device. If your system does not have a CD-ROM drive, refer to your system documentation for performing a NIM (Network Installation Management) installation.
3. Type the following System Management Interface Tool (SMIT) fast path: **smitty devinst**
4. Press Enter. The Install Additional Device Software screen highlights the INPUT device/directory for software option.
5. Select or type your input device:
 - ◆ Press F4 to display the input device list.
 - ◆ Select the name of the device (for example; CD-ROM) that you are using and press Enter.
 - ◆ OR
 - ◆ In the entry field, type the name of the input device you are using and press Enter.
 - ◆ The Install Additional Device Software window highlights the SOFTWARE to install option.
6. Press F4 to display the SOFTWARE to install window.
7. Type the following to display the Find window: /
8. For the 4-Port 10/100/1000 Base-TX PCI-X adapter, type the following device package name:
devices.pci.14101103
9. Press Enter. The system finds and highlights this device driver software.
10. Press F7 to select the highlighted device driver software.
11. Press Enter. The INSTALL ADDITIONAL DEVICE SOFTWARE screen displays. The entry fields are automatically updated.
12. Press Enter to accept the information. The ARE YOU SURE window displays.
13. Press Enter to accept the information. The COMMAND STATUS screen displays.
 - ◆ The term RUNNING is highlighted to indicate that the installation and configuration command is in progress.
 - ◆ When RUNNING changes to OK, scroll to the bottom of the page and locate the Installation Summary.
 - ◆ After a successful installation, SUCCESS displays in the Result column of the Installation Summary at the bottom of the page.
14. Remove the installation media from the drive.
15. Press F10 to exit SMIT.
16. Go to the adapter installation procedure, [Installing the adapter](#).

Verify AIX software installation

To verify that the device driver for the adapter is installed, do the following:

1. If necessary, log in as root user.
2. At the command line, type: **lslpp -l devices.pci.14101103.rte**
3. Press Enter.

If the 4-Port 10/100/1000 Base-TX PCI-X adapter device driver is installed, the following is an example of the data that displays on your screen:

Fileset	Level	State	Description
---------	-------	-------	-------------

Path: /usr/lib/objrepos devices.pci.14101103.rte	5.2.0.0	COMMITTED	4-Port 10/100/1000 Base-TX PCI-X Adapter Software
---	---------	-----------	--

Verify that the devices.pci.14101103.rte filesets are installed at the AIX 5.2.0.0 (or later level) or AIX 5L 5.3.0.0 (or later level). If this information displays but you continue to have problems, go to [Installing the adapter](#).

If no data displays on your screen, the 4-Port 10/100/1000 Base-TX PCI-X adapter device driver did not install correctly. Try reinstalling the driver.

Installing the adapter

Refer to the [PCI Adapters](#) topic for instructions on placement and installation of PCI adapters. After you have installed the adapter, continue on to Verifying the adapter Installation .

Verifying the adapter installation

To verify that your system unit recognizes the PCI adapter, do the following:

1. If necessary, log in as root user.
2. At the command line, type: `lsdev -Cs pci`
3. Press Enter.

A list of PCI devices displays. If the 4-Port 10/100/1000 Base-TX PCI-X adapter is installed correctly, an available status for each port indicates that the adapter is installed and ready to use. If the message on your screen indicates that any of the ports is DEFINED instead of AVAILABLE, shut down your machine and verify that the adapter was installed correctly.

Connecting to an Ethernet network

This section explains how to connect the adapter to the UTP network. Refer to your local procedures for information about connecting the 4-Port 10/100/1000 Base-TX PCI-X adapter to your Ethernet network.

To connect the adapter to an unshielded twisted-pair (UTP) network, do the following:

1. Insert the RJ-45 jack of the UTP cable into one of the RJ-45 connectors on the adapter.
2. Insert the RJ-45 jack of the other end of the UTP cable into the network switch.

Understanding the adapter LEDs

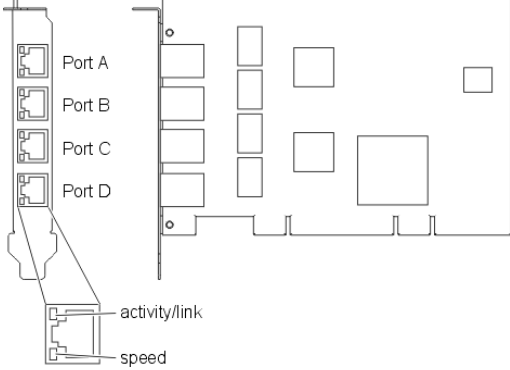
The LEDs on the 4-Port 10/100/1000 Base-TX PCI-X adapter provide information about the card's operation status. The LEDs are visible through the card's mounting bracket and, when lit, indicate the following conditions:

Table 1.

LED	Light	Description
ACT/LNK	Green	Good link
	Off	No link (The absence of a link could be the result of a bad cable, a bad connector, or a configuration mismatch)
	Blinking	Data activity

Link Speed	Off	10 Mbps
	Green	100 Mbps
	Orange	1000 Mbps

Figure 2. 4-Port 10/100/1000 Base-TX PCI-X adapter

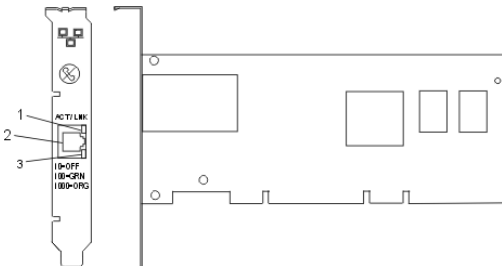


Parent topic: [PCI adapter information by feature type](#)

10/100/1000 Base-TX Ethernet PCI-X adapter (FC 1979, 5701, 6801)(CCIN 5701)

Learn about the 10/100/1000 Base-TX Ethernet PCI-X adapter.

The 10/100/1000 Base-TX Ethernet PCI-X adapter is a high-performance, highly integrated, universal Ethernet LAN adapter for PCI-X and PCI systems. The adapter provides 10/100/1000 Mbps connectivity over four pairs of standard CAT-5 cable up to 100 meters. It conforms to IEEE 802.3ab 1000 Base-T standard. The adapter is designed to run in standard PCI-X V1.0a compliant systems with 32 or 64-bit PCI-X Bus Master slots at 66 or 133 MHz, and in PCI 2.2 compliant systems with 32 or 64-bit PCI bus master slots at 33 or 66 MHz. The adapter runs on 5.0 V and 3.3 V aux.



1
ACT/LNK LED

- 2 RJ-45 Connector
- 3 Link Speed LED

The LEDs on the 10/100/1000 Base-TX Ethernet PCI-X Adapter provide information about the adapter's operation status. The LEDs are visible through the adapter's mounting bracket and, when lit, indicate the following conditions:

LED	Light	Description
Link Speed	Off	10 Mbps
	Green	100 Mbps
	Orange	1000 Mbps
Link	Green	Good link
	Off	No link: could indicate a bad cable, bad connector, configuration mismatch, or not selected
	Blinking	Indicates data activity

10/100/1000 Base-TX Ethernet PCI-X adapter specifications

Item

Description

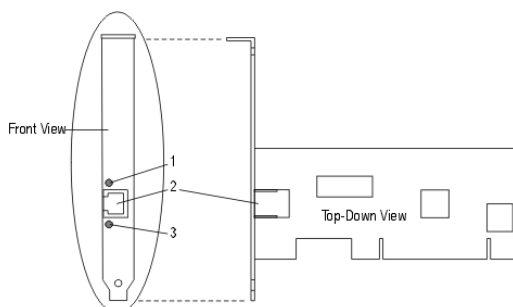
- FRU number
00P3056
- I/O bus architecture
PCI 2.2 and PCI-X V1.0a compliant
- Busmaster
Yes
- Maximum number
For system-specific adapter placement, see [PCI placement in the system unit or expansion unit](#).
- Adapter size
PCI short form
- Connector information
RJ-45
- Wrap plug
RJ-45, part number 00G2380
- Cables
Customer supplied. Use CAT-5 twisted pair bulk cables (TIA or EIA 568A is recommended).

Parent topic: [PCI adapter information by feature type](#)

10/100 Mbps Ethernet PCI adapter II (FC 4962)(CCIN 4962)

Learn about the 10/100 Mbps Ethernet PCI adapter II.

The 10/100 Mbps Ethernet PCI adapter II is a 32-bit, 33 MHz high performance expansion adapter card for systems adhering to the Peripheral Component Interconnect (PCI) and IEEE 802.3 standards. The adapter connects the system to an Ethernet LAN at either 10 Mbps or 100 Mbps data rate.



- 1 ACT/LINK LED
- 2 RJ-45 connector
- 3 100 TX LED

10/100 Mbps Ethernet PCI adapter II specifications

Item	Description
FRU number	09P5023
I/O bus architecture	PCI 2.2 compliant
Busmaster	Yes
Maximum number	For system-specific adapter placement information, see PCI placement in the system unit or expansion unit
Connector	RJ-45
Wrap plug	RJ-45, part number 00G2380
Cables	Customer supplied. Use CAT-5 twisted pair bulk cables (TIA/EIA 568A is recommended).

Parent topic: [PCI adapter information by feature type](#)

4 Gb Single-Port Fibre Channel PCI-X 2.0 DDR Adapter (FC 1905, 5758, 5761) (CCIN 1910, 280D)

Learn about the 4 Gb Single-Port Fibre Channel PCI-X 2.0 DDR Adapter.

The 4 Gigabit Single-Port Fibre Channel PCI-X 2.0 DDR Adapter is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The 4 Gigabit Single-Port Fibre Channel PCI-X Adapter will auto-negotiate for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps or 4 Gbps of which the device or switch is capable. Distances of up to 500 meters running at 1 Gbps data rate, up to 300 meters running at 2 Gbps data rate, and 4 Gbps data rate up to 150 meters are supported between the adapter and an attaching device or switch. When used with IBM Fibre Channel storage switches supporting long-wave optics, distances of up to 10 kilometers are capable running at either 1 Gbps, 2 Gbps, or 4 Gbps data rates.

The 4 Gigabit Single-Port Fibre Channel PCI-X Adapter can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with a SC type fiber connector(s), use of an LC-SC 50 Micron Fiber Converter Cable (#2456) or a LC-SC 62.5 Micron Fiber Converter Cable (#2459) is required.

Adapter specifications

Item

Description

Adapter FRU number	03N5005 (FC 1905) 03N5014 (FC 5758, 5761)
Wrap plug FRU number	11P3847 (FC 1905, 5758, 5761)
I/O bus architecture	PCI-X 2.0a, PCI 3.0, PCI-X Mode 2 - 266MHz, PCI-X Mode 1 - 133 MHz, PCI - 66 MHz
Slot requirement	One available 3.3 volt PCI or PCI-X slot
FC compatibility	1, 2, 4 Gigabit
Cables	50/125 micron Fibre 1.0625Gb/sec 2m-500m 2.125Gb/sec 2m 300m 4.25Gb/sec 2m 150m 6.25/125 micron fibre 1.0625 Gb/sec 2m 300m 2.125 Gb/sec 2m 150m 4.25 Gb/sec 2m 70m
Maximum number	For system-specific adapter placement information, see PCI placement in the system unit or expansion unit
Operating system or partition requirements	AIX 5L Version 5.2 with the 5200-08 Technology Level AIX 5L Version 5.3 with the 5300-04 Technology Level Red Hat Enterprise Linux version 4 U2 SUSE Linux Enterprise Server 9 SP3 V5R3M0 with PTFs, V5R3M5 with PTFs, V5R4M0 base.

Note: If you are installing a new feature, ensure that you have the software required to support the new feature and that you determine if there are any existing PTF prerequisites. To do this, use the IBM Prerequisite Web site at http://www-912.ibm.com/e_dir/eServerPrereq.nsf

Parent topic: [PCI adapter information by feature type](#)

Related information

[PCI adapter placement in the system unit or expansion unit](#)

4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter (FC 1910, 5759) (CCIN 1910, 5759)

Learn about the 4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter.

The 4 Gigabit Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter is a 64-bit address/data, short form factor PCI-X adapter with an LC type external fiber connector that provides single or dual initiator capability over an optical fiber link or loop. With the use of appropriate optical fiber cabling, this adapter provides the capability for a network of high-speed local and remote located storage. The adapter will auto-negotiate for the highest data rate between adapter and an attaching device at 1 Gbps, 2 Gbps or 4 Gbps of which the device or switch is capable. Between the adapter and an attaching device or switch, the distances supported are up to: 500 meters running at 1 Gbps data rate, 300 meters running at 2 Gbps data rate, and 150 meters running at 4 Gbps data rate. When used with IBM Fibre Channel storage switches supporting long-wave optics, distances of up to 10 kilometers are capable running at either 1 Gbps, 2 Gbps, or 4 Gbps data rates.

The 4 Gb Dual-Port Fibre Channel PCI-X Adapter can be used to attach devices either directly, or by means of Fibre Channel Switches. If attaching a device or switch with a SC type fiber connector(s), use of an LC-SC 50 Micron Fiber Converter Cable (#2456) or a LC-SC 62.5 Micron Fiber Converter Cable (#2459) is required.

Adapter specifications

Item

Description

Adapter FRU number	03N5020 (FC 1910) 03N5029 (FC 5759)
Wrap plug FRU number	11P3847 (FC 1910, 5759)
I/O bus architecture	PCI-X 2.0a, PCI 3.0, PCI-X Mode 2 - 266MHz, PCI-X Mode 1 - 133 MHz, PCI - 66 MHz
Slot requirement	One available 3.3 volt PCI or PCI-X slot
FC compatibility	1, 2, 4 Gigabit
Cables	50/125 micron Fibre 1.0625Gb/sec 2m-500m

2.125Gb/sec 2m 300m

4.25Gb/sec 2m 150m

6.25/125 micron fibre

1.0625 Gb/sec 2m 300m

2.125 Gb/sec 2m 150m

4.25 Gb/sec 2m 70m

Maximum number

For system-specific adapter placement information, see [PCI placement in the system unit or expansion unit](#)

Operating system or partition requirements

AIX 5L Version 5.2 with the 5200-08 Technology Level

AIX 5L Version 5.3 with the 5300-04 Technology Level

Red Hat Enterprise Linux version 4 U2

SUSE Linux Enterprise Server 9 SP3

Parent topic: [PCI adapter information by feature type](#)

Related information

[PCI adapter placement in the system unit or expansion unit](#)

PCI-X DDR dual-channel Ultra320 SCSI adapter (FC 0647, 1912, 5736, 5775) (CCIN 571A)

Learn about the PCI-X DDR dual-channel Ultra320 SCSI adapter.

The PCI-X DDR dual-channel Ultra320 SCSI adapter is a high-performance SCSI adapter for PCI-X and PCI systems. The adapter provides two SCSI channels (buses), each capable of running 320 MBps (maximum). Each SCSI bus can either be internal (on systems that support internal SCSI devices or backplane attachments) or external, but not both. Internally attached Ultra320 devices run at a data rate of up to 320 MBps on systems that have internal backplanes that are capable of supporting Ultra320 speeds.

PCI-X DDR dual-channel Ultra320 SCSI adapter specifications

Item	Description
FRU number	39J3536 (FC 0647, 5736, 5775) 39J2421 (FC 1912)
I/O bus architecture	PCI 2.2 compliant
Slot requirement	One available 3.3 volt PCI or PCI-X slot

Maximum number

For system-specific adapter placement information, see [PCI placement in the system unit or expansion unit](#)

Operating system or partition requirements

AIX 5L for Power version 5.2 with 5200-07 required maintenance package or higher
 AIX 5L for Power version 5.3 with 5300-03 required maintenance package or higher
 Red Hat Enterprise Linux 4 Update 2 or newer
 SuSE Linux Enterprise Server 9 Service Pack 2 or newer

Required software or drivers

AIX - devices.pci.1410c002 device driver package
 Linux - ipr driver Version 2.0.10.3 (or later) for SLES 9 kernels, Version 2.0.11.1 (or later) for RHEL4 kernels, or Version 2.0.13 (or later) for kernel.org kernels (kernel version 2.6.12 or later)

Tools

None

Cables

Attachment cables are shipped with the attaching subsystem or device.

Parent topic: [PCI adapter information by feature type](#)

PCI-X DDR dual-channel Ultra320 SCSI RAID adapter (FC 0648, 1913, 5737, 5776)(CCIN 571B)

Learn about the PCI-X DDR dual-channel Ultra320 SCSI RAID adapter.

The PCI-X DDR dual-channel Ultra320 SCSI RAID adapter is a high-performance SCSI adapter for PCI-X and PCI systems. The adapter provides RAID 0,10,5,6 capability, 90 MB of write cache, and can address up to 30 16-bit SCSI physical disk drives on two independent SCSI buses. The adapter uses and supports low voltage differential (LVD) drivers and receivers only. Each SCSI bus can either be internal (on systems that support internal SCSI devices or backplane attachments) or external, but not both. Internally attached Ultra320 devices run at a data rate of up to 320 MBps on systems that have internal backplanes that are capable of supporting Ultra320 speeds.

PCI-X DDR dual-channel Ultra320 SCSI RAID adapter specifications

Item**Description**

FRU number

39J3534 (FC 5737)
 39J2418 (FC 1913)

I/O bus architecture

PCI 2.2 compliant

Slot requirement

One available 3.3 volt PCI or PCI-X slot

Maximum number

For system-specific adapter placement information, see [PCI placement in the system unit or expansion unit](#)

Operating system or partition requirements

AIX 5L Version 5.2 with the 5200-07 Technology Level, or later
 AIX 5L Version 5.3 with the 5300-03 Technology Level, or later
 Red Hat Enterprise Linux version 4, Update 2 or newer
 SUSE Linux Enterprise Server 9 Service Pack 2 or newer
 V5R3 or later

Required software or drivers

AIX - devices.pci.1410be02 device driver package
 Linux - ipr driver Version 2.0.10.3 (or later) for SLES 9 kernels, Version 2.0.11.1 (or later) for RHEL4 kernels, or Version 2.0.13 (or later) for kernel.org kernels (kernel version 2.6.12 or later)

Tools

None

Cables

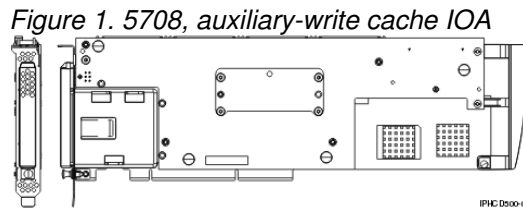
Attachment cables are shipped with the attaching subsystem or device.

Parent topic: [PCI adapter information by feature type](#)

Auxiliary-write cache IOA (FC 5580, 5581)(CCIN 5708)

Learn about the auxiliary-write cache IOA adapter and the PCI-X Ultra4 RAID disk-controller adapters used with it.

Feature 5580 includes a 2780 PCI-X Ultra4 RAID disk-controller adapter, a CCIN 5708 auxiliary-write cache IOA adapter, and the required connection cable. Feature 5581 includes a 2757 PCI-X Ultra RAID disk-controller adapter, a CCIN 5708 auxiliary-write cache IOA adapter, and the required connection cable.



A physical cable connection is required between the 5708 adapter and SCSI port 4 of a 2780 or 2757 adapter. Both the 5708 adapter and the disk-controller adapter it is connected to must be installed in the same physical system unit or expansion unit, and must be installed in the same partition.

The 5708 adapter has 757 MB of auxiliary maximum compressed write cache. The adapter mirrors the write cache of the disk-controller adapter that it is connected to. Protection of data is enhanced by having two copies of the write cache stored on separate adapters. If a failure occurs to the write cache of the disk-controller, the 5708 adapter provides a backup copy during the recovery of the failed IOA.

Considerations for installing or converting to feature 5580 or 5581

Attention: Converting your adapters to feature 5580 or 5581 will require extensive planning. If the planning is not done correctly, the result could be an extended server outage, loss of data, or both. You might need to do a full system restore.

Read the following questions in relation to your system:

- Are you converting from feature 2780 to feature 5580?
- Are you converting from feature 2757 to feature 5581?
- Are you replacing any other existing storage adapters with features 5580 and 5581?
- Is your server partitioned (LPAR) ?

If the answer to any of these questions is yes, or you are unsure of the answers, contact your authorized service provider for planning and deployment services.

5708 adapter specifications

Item	Description
Adapter FRU number	39J0686
Battery FRU number	97P4846
Cable FRU number	39J1702
Cables	Specific Storage Adapter to Auxiliary Storage Adapter SCSI cable is necessary and is provided with each feature or conversion.
I/O bus architecture	PCI 2.2 power/bus compliant
Unit description	<ul style="list-style-type: none"> • Long, 64 bit, 133 MHz, 3.3 V edge connector, single-slot • PCI-X 2.0 compliant • Compatible down to 32 bit, 33 MHz PCI adapter slots
Operating system or partition requirements	Supported in the operating systems or partitions only, versions V5R2, V5R3, and later.
Maximum number	For system-specific adapter placement, see PCI placement in the system unit or expansion unit .
Partition information	<ul style="list-style-type: none"> • If you are placing the feature in the primary partition or any non-partitioned system, the auxiliary cache IOA for the load source (LS) adapter must be in the same enclosure as the LS IOA. • If you are placing the feature in the secondary partition on any system, the auxiliary cache IOA for the LS adapter must be under the LS IOP.
Related information	<ul style="list-style-type: none"> • This feature must be placed in attached expansion units. The 5708 adapter cannot be placed in the model ESCALA PL 250T/R, ESCALA PL 450T/R, or ESCALA PL 850R/PL 1650R/R+ system units. • The disk controller adapter and the auxiliary-write cache adapter each require one PCI slot. • Both adapters must be installed in the same enclosure. • The adapters are connected by a SCSI cable (provided).

- The operating system identifies the 5708 adapter as a storage controller with no devices attached.
- The 5708 adapter is not supported in an environment without an IOP.
- Types 2780 and 2757 will not appear on ordering, shipping, or inventory documentation when received as part of these features.

Installing the adapters

To install the adapters, see [PCI adapters](#), then return here for instruction on installing the SCSI cable.

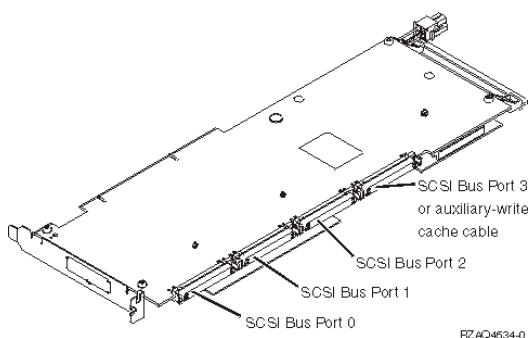
Installing the SCSI cable

The disk controller adapter and the auxiliary-write cache adapter are connected by a SCSI cable.

Attention: Do not install or remove the adapter cable if the adapters have the power on. Use the service procedures to turn off the power to the adapter slots or shut down the system or partition in which the adapters are placed.

To install the SCSI cable, do the following:

1. Attach the SCSI cable to SCSI bus port 3 (fourth physical port) of the disk controller adapter.



2. Attach the cable to the SCSI port on the auxiliary-write cache adapter.

Note:

1. Attaching the cable to the disk controller reduces the number of SCSI buses that support disk drives from four to three.
2. Reducing the number of SCSI buses might also reduce the number of disk drives supported by the disk controller, depending on the system unit or expansion drawer in which the disk controller is installed.
3. No disk drives are driven by the auxiliary-write cache adapter. This adapter protects against extended outage caused by loss of write cache, but does not protect against a disk controller failure.

Parent topic: [PCI adapter information by feature type](#)

1 Gigabit iSCSI TOE PCI-X adapter (FC 5714, 1987, 5713, 1986)(CCIN 573B, 573C)

Learn about the 1 Gigabit iSCSI TOE PCI-X adapter.

- [Description and technical overview](#)
- [Preparing to install the adapter](#)
- [Installing the device driver software for the adapter](#)
- [Installing the 1 Gigabit iSCSI TOE PCI-X adapter](#)
- [Configuring the 1 Gigabit iSCSI TOE PCI-X adapter](#)
- [Connecting the adapter to an Ethernet network](#)
- [Technical Appendixes](#)

Parent topic: [PCI adapter information by feature type](#)

Description and technical overview

The 1 Gigabit iSCSI TOE PCI-X Adapter is an adapter that encapsulates SCSI commands and data into TCP packets and transports them over a 1-gigabit-Ethernet network through IP. The adapter is dual function, operating as an iSCSI TOE (TCP/IP offload engine) adapter or as a general purpose Ethernet adapter where the TCP/IP protocol is offloaded onto the adapter. However, the network function is not supported by AIX. The adapter is available in the following versions:

- [1 Gigabit-SX iSCSI TOE PCI-X Adapter \(optical connector\), FC 5714 and FC 1987](#)
- [1 Gigabit-TX iSCSI TOE PCI-X Adapter \(copper connector\), FC 5713 and FC 1986](#)

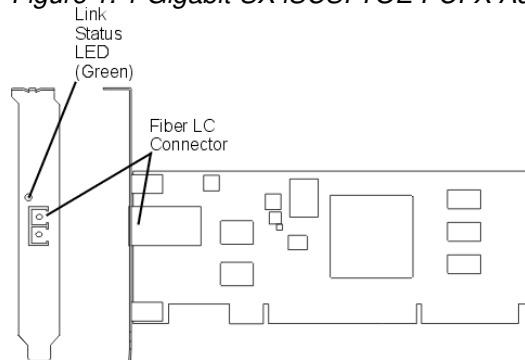
1 Gigabit-SX iSCSI TOE PCI-X Adapter (optical connector), FC 5714 and FC 1987 (CCIN 573C)

- 133 MHz PCI-X version 1.0a support and version 2.0 mode 1
- PCI 2.3 compliant
- Low profile
- 3.3 V
- Hardware implementation of entire TCP/IP stack
- 200 MB/s, full duplex gigabit Ethernet
- iSCSI initiator support
- IEEE 802.3z compliant
- iSCSI RFC 3720 Compliant
- Multimode fiber cabling support
- Fiber LC connector for multimode fiber cabling
- Dual-address cycle support for access to 64-bit addresses
- 64-bit addressing support for systems with physical memory greater than 4 gigabytes

- PCI-X split transactions support
- LED indicator for link activity

Note: The fiber adapters are designed with specifications that the cable be a dual-cable connector, with transmit and receive cable ends clamped together. If you use separate transmit and receive fiber cables, clamp the cables together to enhance the retention strength on the fiber transceiver connector. Clamping the cables together also improves the alignment of the fibers with the connector and is designed to improve overall performance.

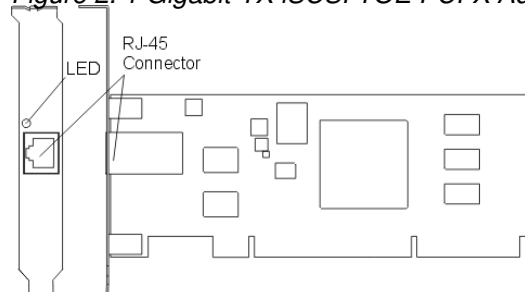
Figure 1. 1 Gigabit-SX iSCSI TOE PCI-X Adapter



1 Gigabit-TX iSCSI TOE PCI-X Adapter (copper connector), FC 5713 and FC 1986 (CCIN 573B)

- 133 MHz PCI-X version 1.0a support and version 2.0 mode 1
- PCI 2.3 compliant
- Low profile
- 3.3 v
- Hardware implementation of entire TCP/IP protocol stack
- Full Duplex Gigabit Ethernet
- iSCSI initiator support
- IEEE 802.3ab 1000 Base-T compliant
- iSCSI RFC 3720 Compliant
- PCI-X split transactions support
- LED indicator for link activity
- RJ-45 unshielded twisted pair (UTP) connector for category-5 copper cabling

Figure 2. 1 Gigabit-TX iSCSI TOE PCI-X Adapter



Parent topic: [1 Gigabit iSCSI TOE PCI-X adapter \(FC 5714, 1987, 5713, 1986\)\(CCIN 573B, 573C\)](#)

Preparing to install the adapter

Preparing to install the adapter involves the following tasks:

- Verifying your hardware requirements

- Verifying your software requirements
- Checking prerequisites
- Gathering tools and documentation

Note: If you are installing your operating system at this time, install the adapter before you install the operating system. If you are installing only the device driver for this adapter, install the device driver before you install the adapter.

- [Verifying your hardware requirements](#)
- [Verifying your software requirements](#)
- [Checking prerequisites](#)
- [Gathering tools and documentation](#)

Parent topic: [1 Gigabit iSCSI TOE PCI-X adapter \(FC 5714, 1987, 5713, 1986\)\(CCIN 573B, 573C\)](#)

Verifying your hardware requirements

1 Gigabit-TX iSCSI TOE PCI-X Adapter (copper connector)

The 1 Gigabit-TX iSCSI TOE PCI-X Adapter requires the following hardware:

- Category 5 unshielded twisted pair (UTP) cables for network attachment

Note: The cable can be no longer than 100 meters, including patch cables. This is the maximum allowable cable length from the adapter to the local switch.

- RJ-45 wrap plug. (Part number 00P1689, included in FC 5713 and FC 1986)

1 Gigabit-SX iSCSI TOE PCI-X Adapter (optical connector)

The 1 Gigabit-SX iSCSI TOE PCI-X Adapter requires the following hardware:

- A wrap plug for the multimode fiber connector (Part number 113847, included in FC 5714 and FC 1987)
- Shortwave (850nm) 50/62.5 micron multimode fiber network attachment

The following table shows the minimum and maximum allowable fiber cable lengths from the SX adapter to the gigabit Ethernet switch, including patch cables:

Table 1. Fiber cable lengths for the 1 Gigabit-SX iSCSI TOE PCI-X Adapter (optical connector).

Fiber type	Modal bandwidth (MHz-km)	Minimum range (meters)	Maximum range (meters)
62.5 μ.m MMF	160	2	220
62.5 μ.m MMF	200	2	275
50 μ.m MMF	400	2	500
50 μ.m MMF	500	2	500

Parent topic: [Preparing to install the adapter](#)

Verifying your software requirements

The 1 Gigabit iSCSI TOE PCI-X Adapter is supported on AIX 5L version 5.2 and 5.3, and on SUSE Linux Enterprise Server 9 SP3.

Parent topic: [Preparing to install the adapter](#)

Checking prerequisites

To install the 1 Gigabit-SX iSCSI TOE PCI-X Adapter or 1 Gigabit-TX iSCSI TOE PCI-X Adapter, you will need the following:

- The adapter
- AIX Base Operating System CD, which includes the device driver, or the AIX device driver CD-ROM

If an item is missing or damaged, contact your vendor.

Note: Be sure to retain your proof of purchase as it might be required to receive warranty service.

Parent topic: [Preparing to install the adapter](#)

Gathering tools and documentation

To install the adapter, you need the following items:

- A flat-blade screwdriver
- Instructions on how to install a PCI adapter in your specific, system unit. See the [PCI Adapters](#) topic.
- Your operating system documentation. .

Parent topic: [Preparing to install the adapter](#)

Installing the device driver software for the adapter

This section explains how to install the device driver software. The device driver is provided for the AIX operating system.

- [Installing the device driver software for the 1 Gigabit-SX iSCSI TOE PCI-X adapter](#)
- [Verify AIX software installation](#)
- [Installing the device driver software for the 1 Gigabit-TX iSCSI TOE PCI-X adapter device driver software](#)
- [Verify AIX software installation](#)

Parent topic: [1 Gigabit iSCSI TOE PCI-X adapter \(FC 5714, 1987, 5713, 1986\)\(CCIN 573B, 573C\)](#)

Installing the device driver software for the 1 Gigabit-SX iSCSI TOE PCI-X adapter

This section explains how to install the device driver software. The device driver is provided for the AIX operating system.

Note: If you are installing your operating system at this time, install the adapter before you install the operating system. If you are installing only the device driver for this adapter, install the device driver before you install the adapter.

1. If you should install your device driver software first, go to step 1 and continue with this section.
2. If you should install your adapter hardware first, go to [Installing the 1 Gigabit iSCSI TOE PCI-X adapter](#). When you install AIX, your adapter device driver is automatically installed.

Note: You only need to install the device driver for the first instance of the 1 Gigabit-SX iSCSI TOE PCI-X Adapter. Any subsequent installation of the 1 Gigabit-SX iSCSI TOE PCI-X Adapter will not require that you install the device driver again. Go to [Installing the 1 Gigabit iSCSI TOE PCI-X adapter](#) for instructions.

To install the device driver software, do the following:

1. Turn on the system unit power.
2. Log in as root user.
3. Insert the media containing the device driver software (for example, a CD-ROM)) into the appropriate media device. If your system does not have a CD-ROM drive, refer to your system documentation for performing a NIM (Network Installation Management) installation.
4. At the command line, type the following System Management Interface Tool (SMIT) fastpath:

```
smit devinst
```

5. Press Enter. The Install Additional Device Software screen highlights the INPUT device/directory for software option.
6. Select or type your input device:

Press F4 to display the input device list. Select the name of the device (for example: CD-ROM) that you are using, and press Enter.

OR

In the entry field, type the name of the input device you are using and press Enter.

The Install Additional Device Software window highlights the SOFTWARE to install option

7. Press F4 to display the SOFTWARE to install window.
8. Type a forward slash (/) to display the Find window.
9. For the 1 Gigabit-SX iSCSI TOE PCI-X Adapter, type the following device package name:

```
devices.pci.1410cf02
```

10. Press Enter. The system finds and highlights this device driver software.
11. Press Enter.

The INSTALL ADDITIONAL DEVICE SOFTWARE screen displays. The entry fields are automatically updated.

12. Press Enter to accept the information.

The ARE YOU SURE window displays.

13. Press Enter to accept the information.

The COMMAND STATUS screen displays. The term RUNNING is highlighted, to indicate that the installation and configuration command is in progress.

14. When RUNNING changes to OK, scroll to the bottom of the page and locate the Installation Summary.

After a successful installation, SUCCESS displays in the Result column of the Installation Summary.

15. Remove the installation media from the drive.
16. Press F10 to exit SMIT.
17. Go to [Installing the 1 Gigabit iSCSI TOE PCI-X adapter](#), to see the adapter installation procedure.

Parent topic: [Installing the device driver software for the adapter](#)
