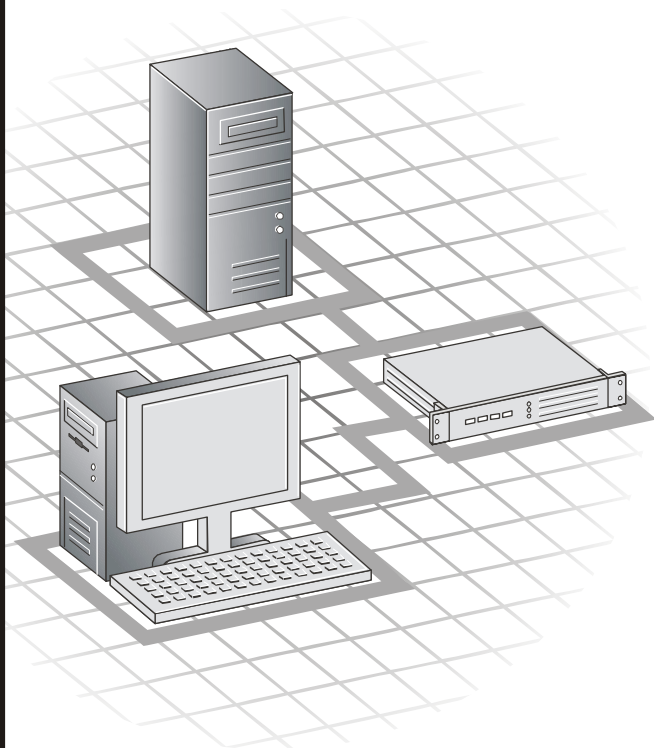




# INSTALLATION GUIDE

## ASA-7211C/F iSCSI ADAPTER FOR INITIATOR APPLICATIONS



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### Federal Communications Commission Radio Frequency Interference Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment to 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.
- Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.



### European Union Compliance Statement

This Information Technology Equipment has been tested and found to comply with EMC Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, in accordance with:

- EN55022 (1998) Emissions
- EN55024 (1998) Immunity:
  - EN61000-4-2 (1998) Electrostatic discharge:  $\pm 4$  kV contact,  $\pm 8$  kV air
  - EN61000-4-3 (1998) Radiated immunity
  - EN61000-4-4 (1995) Electrical fast transients/burst:  $\pm 1$  kV AC,  $\pm 0.5$  kV I/O
  - EN61000-4-5 (1995) Surges  $\pm 1$  kV differential mode,  $\pm 2$  kV common mode
  - EN61000-4-6 (1996) Conducted immunity: 3 V
  - EN61000-4-11 (1994) Supply dips and variation: 30% and 100%

In addition, all equipment requiring U.L. listing has been found to comply with EMC Directive 73/23/EEC as amended by 93/68/EEC in accordance with EN60950 with amendments A1, A2, A3, A4, A11.



### Australian/New Zealand Compliance Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to the Australian/New Zealand standard AS/NZS 3548 set out by the Spectrum Management Agency.



### **Canadian Compliance Statement**

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.



### **Japanese Compliance (Voluntary Control Council Initiative)**

This equipment complies to class B Information Technology equipment based on VCCI (Voluntary Control Council for Interface). This equipment is designed for home use but it may causes radio frequency interference problem if used too near to a television or radio. Please handle it correctly per this documentation.

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# Introduction

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The Adaptec<sup>®</sup> Storage Accelerator (ASA) 7211 iSCSI storage adapter is a PCI Host Bus Adapter (HBA) that enables servers and storage systems to be used in iSCSI SANs using an Ethernet interconnect. The adapter provides efficient, high-performance TCP/IP and iSCSI protocol offload, with throughput up to 2 Gigabits/sec at full duplex.

## Kit Contents

The Adaptec iSCSI kit includes:

- ASA-7211 adapter card, shown on [page 1-3](#).
- Adaptec iSCSI installation CD containing:
  - Operating system drivers
  - Configuration management utilities
  - SNMP extension agents
  - Readme files
  - The *iConfig Utility for Linux User's Guide* in PDF format
  - This *Installation Guide* in PDF format
- This *Installation Guide* as a printed document.



**Note:** You need a copper (CAT 5 or CAT 6), or fiber, Ethernet cable. The cable is *not* included in the kit.

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## Adaptec iSCSI Adapter Features

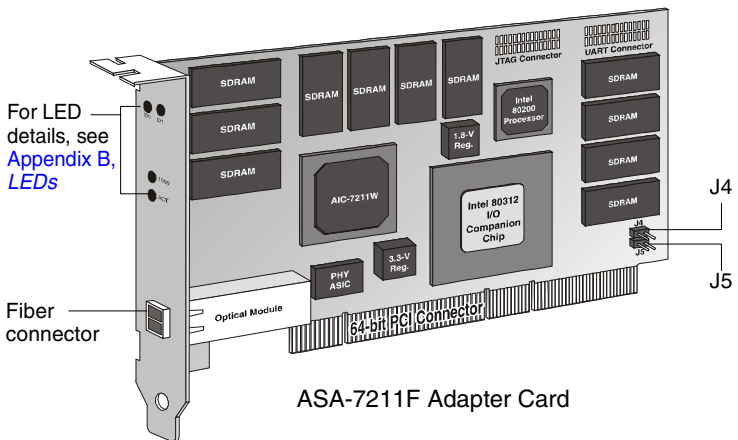
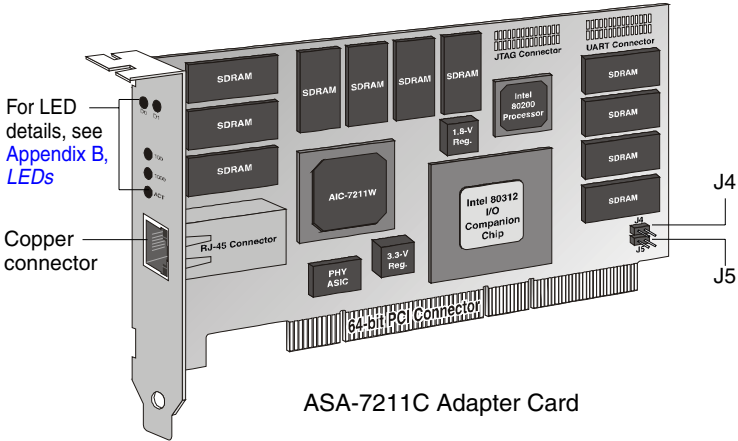
The Adaptec iSCSI adapter features are summarized below:

- PCI compatible:
  - PCI 2.2 compliant
  - compatible with 3.3/5-V, 32/64-bit, 33/66-MHz slots
- Available in two connector configurations:
  - ASA-7211C—Copper connector
  - ASA-7211F—Fiber connector
- Full iSCSI and TCP/IP protocol processing
- Supports flashable firmware upgrades



## Adapter Illustrations

The Adaptec iSCSI adapters are illustrated below. Note the difference in external connectors. One adapter has a copper connector; the other, a fiber connector.



**Note:** Some ASA-7211 adapters are manufactured with jumpers “hanging,” but not installed, on jumper connectors J4 and J5. Do not install these jumpers.

## Installation Overview

The following steps provide an overview of the process of installing and configuring the ASA-7211 adapter:



**Note:** If you already have an iSCSI adapter installed in the computer and you wish to update the driver, proceed directly to [Appendix A](#).

---

- 1 Verify that the computer meets the requirements described in [System Requirements on page 1-5](#).
- 2 Gain familiarity with the contents of the Adaptec iSCSI installation CD. Read the Readme files for installation and compatibilities issues.
- 3 Install the Adaptec iSCSI adapter as described in [Chapter 2](#).
- 4 Connect Ethernet cables with the appropriate connector type (either copper or fiber) between the adapter, switches (if any), and targets.



**Note:** You need a copper (CAT 5 or CAT 6), or fiber, Ethernet cable. The cable is *not* included in the kit.

---

- 5 **Installing the driver for nonbootable adapters**—If your operating system is already installed and you are adding the iSCSI adapter for additional storage capabilities, install the appropriate driver for the operating system as described in [Chapter 3](#).

**Creating an iSCSI bootable system**—If you are building a new system and wish to boot from an iSCSI target, skip [Chapter 3](#) and proceed to [Chapter 4](#).

- 6 Run the configuration management utility to configure the network, as described in [Chapter 5, Configuring the iSCSI System](#).

## System Requirements

The following system requirements are discussed:

- Hardware requirements
- Supported iSCSI targets
- Operating system requirements

### Hardware Requirements

The computer must meet the following requirements:

- Intel Pentium or equivalent processor
- An available PCI slot
- At least 128 MB of RAM
- CD-ROM drive
- Copper (CAT 5 or CAT 6), or fiber, Ethernet cable. (Not included. Visit [www.adaptec.com](http://www.adaptec.com) for cables.)

### Supported iSCSI targets

For the latest support information, refer to [www.adaptec.com](http://www.adaptec.com).

### Operating System Requirements

The computer must have one of the following compatible operating systems:

#### Windows

- Windows Server 2003:
  - Standard Edition
  - Enterprise Edition
  - Web Edition



**Note:** *Windows Server 2003 only*—The adapter currently does not support the Datacenter Edition. For updated OS support information, visit [www.adaptec.com](http://www.adaptec.com).

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- Windows 2000 Server and Advanced Server with Service Pack 4
- Windows NT 4.0 Server and Enterprise Edition with Service Pack 6a

## **Linux**

The following Linux versions are supported:

- Red Hat Version 9.0
- Red Hat Advanced Server 2.1
- SuSE Version 8.2 Professional
- SuSE Enterprise Server 8.0

## **Using the Adaptec iSCSI Installation CD**

The Adaptec iSCSI installation CD contains the device drivers, configuration management software, user documentation, and SNMP extensions for the Adaptec iSCSI adapter.

You can directly access directories and files on the Adaptec iSCSI installation CD. These include:

- **Documentation**—Contains the Readme text files and PDF files. See [About the Documentation on page 1-7](#) for details.
- **Drivers**—Provided for each supported operating system.
- **Configuration Management Software**—See [Configuration Management Utilities Overview](#).
- **Adaptec SNMP Extension Agents**—Provides Windows and Linux SNMP extension agents for simple network management. For details, see the Readme text file in the folder or directory for the operating system.

## **Configuration Management Utilities Overview**

The configuration management software is used to monitor connections, display statistics and event logs, and add and delete targets. The user interface for the utility and the method of installation depends on the operating system:

- **Windows iSCSI Configuration Manager**—Features a Graphical User Interface (GUI) with online Help. You install this utility automatically when you install the driver. See [Chapter 3, Installing the Driver in Existing Systems](#).
- **Linux iConfig Utility**—Text-based user interface. See the *iConfig Utility User's Guide* for instructions. You install this utility by copying the executable from the Adaptec iSCSI

installation CD to the hard drive. See *Installing and Running the iConfig Utility* on page 5-5.

## About the Documentation

The Adaptec iSCSI installation CD provides the following documentation files:

- **Readme.txt**—The generic Readme text file in the top-level of the CD file structure summarizes the contents of the installation CD.
  - **Windows**—Located in the Windows folder.
  - **Linux**—Located in the Linux folder.

These files contain the latest information about the Adaptec iSCSI adapter, important technical information about device compatibility, operating system support, and drivers.

Visit [www.adaptec.com](http://www.adaptec.com) for the latest updates.

Visit [ask.adaptec.com](http://ask.adaptec.com) for the latest troubleshooting tips for the adapter, driver, or configuration management utility.

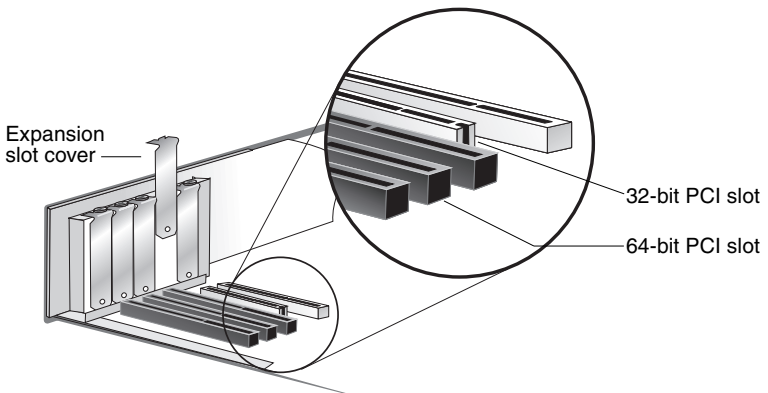
- **ASA-7211 iSCSI Adapter Installation Guide (This book)**—Describes how to install the Adaptec iSCSI adapter, install the driver, and get started using the configuration management software. Browse to the Documentation folder on the CD.
- **iSCSI Configuration Manager for Windows Online Help**—iSCSI Configuration Manager for Windows contains a complete online Help system.
- **iConfig Utility for Linux User's Guide**—Describes how to monitor the connections, display MIB statistics and event logs, and add and delete targets. Also contains customer support and warranty information. Browse to the Documentation folder on the CD.

To view and print the PDF files, you will need Adobe's Acrobat Reader or Viewer software installed on the system. Acrobat is available from Adobe as a free download. For details, visit [www.adobe.com](http://www.adobe.com).

## Installing the Adaptec iSCSI Adapter

To install the adapter in a PCI slot in a computer:

- 1 Before handling the board or any computer components, discharge any static electricity from your body by touching a grounded metal object such as the exposed metal parts on the back of the computer.
- 2 Turn off the power to the computer and disconnect the power cord.
- 3 Remove the cover from the computer case. If necessary, refer to the instructions in the computer documentation.
- 4 Locate an unused and unobstructed 64-bit or 32-bit PCI expansion slot and remove the expansion slot cover.



- 5 Insert the adapter in the PCI expansion slot. Press the board firmly into the slot until it clicks into place.



**Note:** Some ASA-7211 adapters are manufactured with jumpers “hanging,” but not installed, on jumper connectors J4 and J5. *Do not* install these jumpers.

---

- 6 Close the computer cabinet and reattach the power cord.
- 7 Connect Ethernet cables with the appropriate connector type (either copper or fiber) between the adapter, switches (if any), and targets.



**Note:** You need a copper (CAT 5 or CAT 6), or fiber, Ethernet cable. The cable is *not* included in the kit.

---

Next, proceed to [Chapter 3](#) to install the driver in an existing system or [Chapter 4](#) to create an iSCSI bootable system.

# Installing the Driver in Existing Systems

## In this Chapter...

<i>Installing the Windows Driver</i>	3-2
<i>Installing the Linux Module</i>	3-7

Now that you have installed the adapter in the computer and connected the Ethernet cables, you are ready to install the driver. When you are finished installing the driver, proceed to [Chapter 5, \*Configuring the iSCSI System\*](#).



---

**Note:** If you already have an iSCSI adapter installed in the computer and you wish to update the driver, see [Appendix A](#).

---



## Installing the Windows Driver

This section contains the following procedures:

- [Installing the Driver in Windows Server 2003](#)
- [Installing the Driver in Windows 2000](#)
- [Installing the Driver in Windows NT 4.0](#)

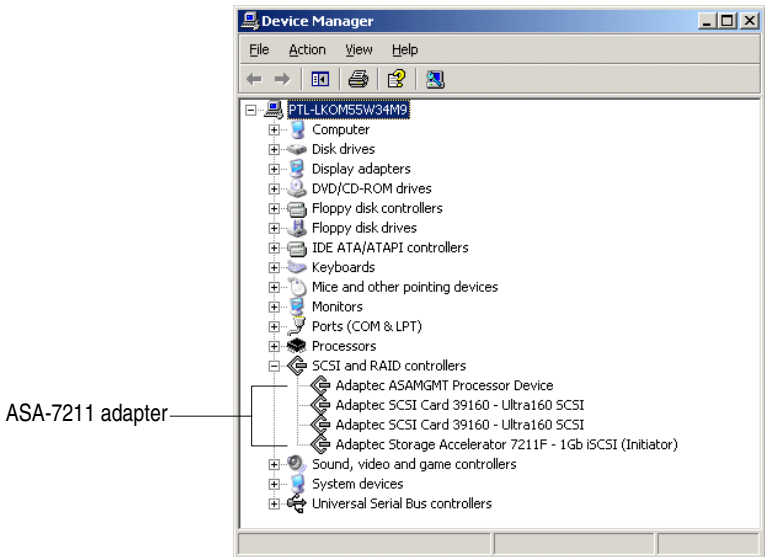
### Installing the Driver in Windows Server 2003

To install the driver:

- 1 Install the Adaptec iSCSI adapter according to the instructions in [Chapter 2](#).
- 2 Start Windows and log in with administrative privileges.  
The Windows Found New Hardware Wizard automatically detects the new hardware.  
The adapter is identified as a Mass Storage Controller. Later, it will be listed under the SCSI and RAID Controllers device group in the Device Manager.
- 3 Select **Install from a list or specific location (Advanced)**.
- 4 Insert the Adaptec installation CD and then click **Next**.
- 5 Select **Search for the best driver in these locations** and select **Include this location in the search**. Deselect **Search removable media**.
- 6 Click **Browse** and locate the Win2003 driver folder on the CD.
- 7 Click **Open** and then click **OK**.
- 8 If a warning message states that the software ...has not passed Windows Logo testing, click **Continue Anyway**.
- 9 On the Completing the Found New Hardware Wizard window, click **Finish**.  
  
When the driver installation is finished, the Found New Hardware Wizard window is displayed a second time, requesting that you install the Adaptec ASAMGMT Processor Device.
- 10 Select **Install from a list or specific location (Advanced)** and click **Next**.

- 11 Select **Search for the best driver in these locations** and select **Include this location in the search**. Deselect **Search removable media**.
- 12 Click **Browse** and locate the Win2003 driver folder on the installation CD and then click **Next**.
- 13 If a warning message states that the software ...has not passed Windows Logo testing, click **Continue Anyway**.
- 14 On the Completing the Found New Hardware Wizard window, click **Finish**.

The driver has been installed. The system does not require rebooting. To verify the driver installation, open the **Device Manager** and view the driver, as shown below.



When you are finished installing the driver, proceed to [Chapter 5, Configuring the iSCSI System](#).

## **Installing the Driver in Windows 2000**

To install the driver:

1 Install the Adaptec iSCSI adapter according to the instructions in [Chapter 2](#).

2 Start Windows and log in with administrative privileges.

The Windows Found New Hardware Wizard automatically detects the new hardware.

The adapter is identified as a Mass Storage Controller. Later, it will be listed under the SCSI and RAID Controllers device group in the Device Manager.

3 Click **Next**.

4 Select **Search for a suitable driver for my device (recommended)** and then click **Next**.

5 In the Locate Driver Files window, select **Specify a location**.

6 Insert the Adaptec installation CD and then click **Next**.

7 Click **Browse** and locate the Win2000 driver folder on the CD.

8 Click **Open** and then click **OK**.

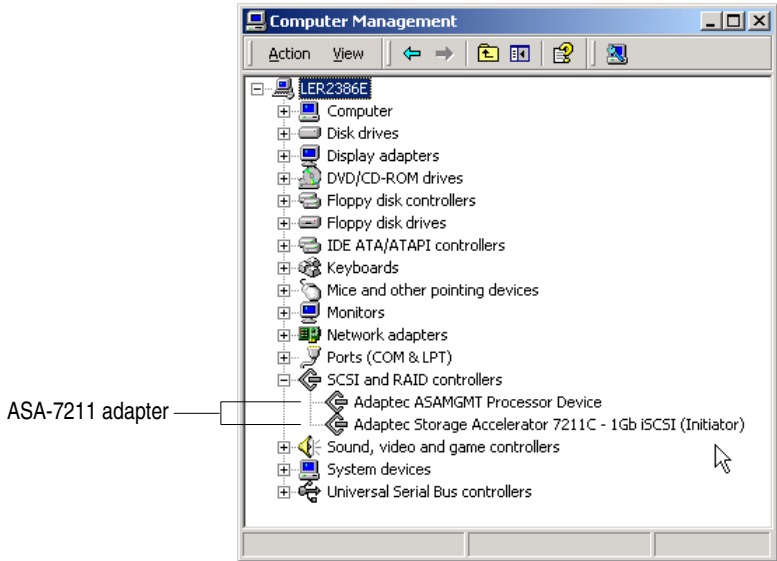
9 In the Driver Files Search Results window, select **Next** and follow the on-screen instructions to install the driver.

10 If the Digital Signature Not Found window is displayed, click **Yes** to continue.

11 In the Completing the Found New Hardware Wizard window, click **Finish**.

12 After the driver installation is finished, the Found New Hardware Wizard window displays a second time, requesting that you install the Adaptec ASAMGMT Processor Device. Click **Yes**.

The driver has been installed. The system does not require rebooting. To verify the driver installation, open the **Device Manager** and view the driver, as shown below.



When you are finished installing the driver, proceed to [Chapter 5, Configuring the iSCSI System](#).

## **Installing the Driver in Windows NT 4.0**

To install the driver:

- 1 Install the Adaptec iSCSI adapter according to the instructions in [Chapter 2](#).
- 2 Start Windows and log in with administrative privileges.
- 3 Insert the Adaptec installation CD.
- 4 Open the Windows **Control Panel**.
- 5 Double-click **SCSI Adapters**.
- 6 Click the **Drivers** tab.
- 7 Click **Add**, and then click **Have Disk**.
- 8 Click **Browse** and then browse to WinNT40 driver folder on the installation CD.
- 9 Click **Open**, and then click **OK**.
- 10 Click **Adaptec Storage Accelerator 7211 (NT 4.0)**.
- 11 Click **OK** and follow all Windows instructions. Windows will prompt you to reboot the computer.

When you are finished installing the module, proceed to [Chapter 5, \*Configuring the iSCSI System\*](#).

## Installing the Linux Module

This section contains the following procedures:

- [Installing the Module Using the RPM Package](#)
- [Installing to the Module Using the .tar.gz Package](#)

For additional Linux functionality, such as enabling multiLUN support in Red Hat or dynamically adding and removing devices, refer to the Linux Readme file located on the CD inside the RPM file.

### Installing the Module Using the RPM Package

To install the module:

- 1 Mount the Adaptec installation CD:  
for Red Hat `mount /dev/cdrom /mnt/cdrom`  
for SuSE `mount /dev/cdrom /media/cdrom`
- 2 Change to the cdrom directory:  
for Red Hat `cd /mnt/cdrom/Linux`  
for SuSE `cd /media/cdrom/Linux`
- 3 Extract the RPM package and install it:  
`rpm -Uhv asa72xx.rpm`
- 4 Change to the following directory:  
`cd /usr/src/asa72xx`
- 5 Unmount the Adaptec installation CD:  
for Red Hat `umount /mnt/cdrom`  
for SuSE `umount /media/cdrom`
- 6 *SuSE only*—
  - a Update the configuration file:  
`cp /boot/vmlinuz.config /usr/src/linux/.config`  
`cd /usr/src/linux`  
`make menuconfig`
  - b Exit and save changes.
  - c Change directory:  
`cd /usr/src/asa72xx`

**7** Run the configure script:

```
./configure
```

If the kernel source is not in `/usr/src/linux-2.4`, run the configure script using the tree option:

```
./configure --tree=<path to source tree>
```

For example, the following commands work:

```
Red Hat                ./configure --tree=/usr/src/linux-2.4
SuSE Enterprise Server 8.0 ./configure --tree=/usr/src/linux-2.4.19.SuSE
SuSE 8.2 Professional    ./configure --tree=/usr/src/linux-2.4.20.SuSE
```

**8** Build the ASA72XX module:

```
make
```

**9** You can load the ASA72XX module automatically or manually.

- To load the ASA72XX module *automatically*:

```
make install
/etc/init.d/asa72xx start
```

The ASA72XX module is copied to `/lib/modules/kernel_version`. Linux loads the module when booting.

- To load the ASA72XX module *manually*:

```
insmod asa72xx.o
```

**10** *Optional*—Verify that the module is loaded:

```
lsmod
```

If the module is loaded, the module table list displays `asa72xx`.

**11** Check the build version of the module:

```
rpm -qi asa72xx
```

When you are finished installing the module, proceed to [Chapter 5, Configuring the iSCSI System](#).

## Installing to the Module Using the .tar.gz Package

To install the module:

- 1 Mount the Adaptec installation CD:  
for Red Hat `mount /dev/cdrom /mnt/cdrom`  
for SuSE `mount /dev/cdrom /media/cdrom`
- 2 Change to the cdrom directory:  
for Red Hat `cd /mnt/cdrom/Linux`  
for SuSE `cd /media/cdrom/Linux`
- 3 Create the ASA72XX directory under /usr/src:  
`mkdir -p /usr/src/asa72xx`
- 4 Copy the .tar.gz package to /usr/src/asa72xx:  
`cp -v asa72xx.tar.gz /usr/src/asa72xx`
- 5 Change to the /usr/src/asa72xx directory:  
`cd /usr/src/asa72xx`
- 6 Unmount the Adaptec installation CD:  
for Red Hat `umount /mnt/cdrom`  
for SuSE `umount /media/cdrom`
- 7 Extract the .tar.gz package:  
`tar -zxvf asa72xx.tar.gz`
- 8 *SuSE only*—
  - a Update the configuration file:  
`cp /boot/vmlinuz.config /usr/src/linux/.config`  
`cd /usr/src/linux`  
`make menuconfig`
  - b Exit and save changes.
  - c Change directory:  
`cd /usr/src/asa72xx`



**9** Run the configure script:

```
./configure
```

If the kernel source is not in `/usr/src/linux-2.4`, run the configure script using the tree option:

```
./configure --tree=<path to source tree>
```

For example, the following commands work:

```
Red Hat                ./configure --tree=/usr/src/linux-2.4
SuSE Enterprise Server 8.0 ./configure --tree=/usr/src/linux-2.4.19.SuSE
SuSE 8.2 Professional    ./configure --tree=/usr/src/linux-2.4.20.SuSE
```

**10** Build the ASA72XX module:

```
make
```

**11** You can load the ASA72XX module automatically or manually.

- To load the ASA72XX module *automatically*:

```
make install
/etc/init.d/asa72xx start
```

The ASA72XX module is copied to `/lib/modules/kernel_version`. Linux loads the module when booting.

- To load the module *manually*:

```
insmod asa72xx.o
```

**12** Verify that the ASA72XX module is loaded:

```
lsmod
```

If the module is loaded, the module table list displays `asa72xx`.

When you are finished installing the module, proceed to [Chapter 5, Configuring the iSCSI System](#).

# Creating an iSCSI-Bootable System

## In this Chapter...

<i>Configuring the iSCSI Adapter BIOS</i>	4-2
<i>Installing the Driver with Windows</i>	4-4
<i>Installing the Module with Linux</i>	4-5

Now that you have installed the adapter in the computer and connected the Ethernet cables, you are ready to install your operating system and iSCSI driver so that the system boots from an iSCSI target.

Before you begin, you need to know the following facts about your network:

- Target IP address (for at least the bootable target)
- Initiator iSCSI name (if different from the default), IP address, and subnet mask

In addition, you need to verify that the targets are configured to recognize the initiator iSCSI name.

# Configuring the iSCSI Adapter BIOS

## Overview

Configuring the BIOS involves the following tasks:

- 1 *Optional*—Configure the initiator by entering the iSCSI initiator name (iqn name), initiator IP address, and initiator subnet mask.
- 2 Configure a single bootable target by entering the iSCSI portal name (*iSCSI*) and target IP address and making the target bootable.
- 3 Rescan to make the target visible.
- 4 Rescan again to establish connectivity between the initiator and the target.
- 5 Set target login and availability parameters.

This section discusses only how to configure a bootable target. If you need to configure any nonbootable targets, proceed with the driver and operating system installation, then use:

- iSCSI Configuration Manager (for Windows). Refer to the online Help.
- iConfig utility (for Linux). Refer to the *iConfig Utility for Linux User's Guide*.

## Using the iSCSISelect Utility

To use the iSCSISelect utility to configure the iSCSI adapter BIOS and add a single bootable target:

- 1 Start the system, then press **Ctrl-A** when prompted to start the iSCSISelect utility.
- 2 Select **Adapter Configuration > Controller Configuration** and press **Enter**. Then, accept the default (recommended) or type a different iSCSI initiator name.




**Note:** Verify that the initiator iSCSI name (iqn name) chosen is listed in the target's ACL (Access Control List).

---

- 3 Save settings.
- 4 Select **Adapter Configuration > Network Configuration**. Type the initiator IP address and the subnet mask.
- 5 Save settings and press **Esc** to return to the main menu.

- 6 To create a single boot target entry, select **Target Configuration > Add Targets** and press **Enter**.
    - a For the target name, choose one of the following:
      - Type *iSCSI* as the target portal name. (recommended)
      - Leave blank, and the utility automatically uses *iSCSI*.
      - Enter the full iqn name.
    - b Specify an IP address for the target.
    - c Use the default for the port number, 3260, and verify that **Available after reboot** is *Yes*.
  - 7 Save settings.
  - 8 Select **Target Configuration > Rescan Targets** and press **Enter** to make the target you added in [Step 6](#) visible in [Step 9](#).
  - 9 Select **Target Configuration > Manage Targets > Available Targets** and press **Enter**.
  - 10 Press **Enter** again to display target properties.
  - 11 Select **Yes** for **Available After Reboot** and **Target Login**.
  - 12 Save settings.
  - 13 Press **Esc** twice to return to the **Target Menu**.
  - 14 Select **Target Configuration > Boot Targets** and press **Enter**.
  - 15 Select the target you want to make bootable, and press **F4**.

**List of Boot LUNs** is displayed.
  - 16 Verify that the LUN you want to make bootable is listed first in the boot order. If not, change the boot order accordingly.
- 
-  **Note:** If the bootable target has multiple LUNs, only ONE of the LUNs is actually bootable. The adapter automatically uses the LUN listed first in the boot order.
- 

- 17 Press **Esc**, then **Y** to save the boot order.
- 18 Press **Esc** three times, then **Y** when prompted to exit iSCSISelect.

The computer will automatically restart.

## Installing the Driver with Windows

To install the driver during a fresh install of the operating system, you need to perform the following procedures:

- [Creating a Driver Floppy Disk](#)
- [Installing the OS and Driver](#)

### Creating a Driver Floppy Disk



---

**Note:** To create a driver floppy disk, you need a separate computer with a functioning Windows operating system.

---

To create the driver disk:

- 1 Insert a formatted, blank floppy disk.
- 2 Browse to the appropriate directory for the operating system you intend to install, one of the following:
  - \Windows\Win2003\disk
  - \Windows\Win2000\disk
  - \Windows\WinNT40\disk
- 3 Click the self-extracting Winxxx.exe file and extract the files to the floppy disk.

### Installing the OS and Driver

- 1 Insert the Windows setup CD and restart the system to begin the Windows installation.
- 2 When prompted to install a third-party driver, press **F6**.
- 3 Insert the driver floppy disk you created in [Creating a Driver Floppy Disk](#) and wait until prompted to install a driver. Press **S** to specify that the driver is on the installation floppy disk, and then press **Enter**. The computer reads the disk.

The Adaptec driver for your operating system, one of the following, is listed:

- Adaptec Windows Server 2003 1Gb iSCSI Miniport Driver
  - Adaptec Windows 2000 1Gb iSCSI Miniport Driver
  - Adaptec Windows NT 4.0 1Gb iSCSI Miniport Driver
- 4 Press **Enter**.

- 5 Proceed with the Windows installation, responding to prompts and instructions as needed.

## Installing the Module with Linux

To install the driver while installing a fresh operating system, you need to perform the following procedures:

- [Creating a Module Floppy Disk](#)
- [Installing the OS and Module](#)

For additional Linux functionality, such as enabling multiLUN support in Red Hat or dynamically adding and removing devices, refer to the Linux Readme file located on the CD.

### Creating a Module Floppy Disk



---

**Note:** To create a module floppy disk, you need a separate computer with a functioning Linux operating system.

---

To create the driver disk:

- 1 Insert a blank, formatted floppy disk.
- 2 Mount the Adaptec installation CD:  
for Red Hat `mount /dev/cdrom /mnt/cdrom`  
for SuSE `mount /dev/cdrom /media/cdrom`
- 3 Change to the `cdrom` directory:  
for Red Hat `cd /mnt/cdrom/Linux/RedHat9_AS21/disk`  
for SuSE `cd /media/cdrom/Linux/SuSE82_Enterprise/disk`

Then type:

for Red Hat `dd if=RedHat9_AS21.img of=/dev/fd0`  
for SuSE `dd if=SuSE82_Ent.img of=/dev/fd0`

## Installing the OS and Module

1 Restart the computer and boot from the Linux installation CD.

2 *For Red Hat*—Insert the driver floppy disk you created in [Creating a Module Floppy Disk](#), type `expert`, then press **Enter**.

*For SuSE Version 8.2 Professional*—Press **F3**, then press **Enter**. Then, insert the driver floppy disk you created in [Creating a Module Floppy Disk](#) when prompted.

*For SuSE Enterprise Server 8.0*—Press **Ctrl + Alt**, and then press **Enter**. Then, insert the driver floppy disk you created in [Creating a Module Floppy Disk](#) when prompted.

3 Complete the Linux installation.

4 Log in and verify that ASA72XX module is loaded:

```
lsmod
```

If the module is loaded, the module table list displays `asa72xx`.

# Configuring the iSCSI System

## In this Chapter

<i>Using the iSCSI Configuration Manager – Windows only</i>	5-1
<i>Using the iConfig Utility – Linux only</i>	5-5

Now that you have installed the Adaptec iSCSI adapter, Ethernet cables, and driver, you need to run the configuration management software to configure the iSCSI system.

## Using the iSCSI Configuration Manager – *Windows only*

To start the Adaptec iSCSI Configuration Manager, open the Control Panel and select **Adaptec iSCSI Configuration Manager**.

If you are starting the iSCSI Configuration Manager for the first time, the Express Setup wizard starts automatically, and assists you in configuring your initiator and discovering targets, as described in *Using the Express Setup Wizard on page 5-2*.

For additional instructions on using the iSCSI Configuration Manager, click **Help**.



## Using the Express Setup Wizard

This section describes the Express Setup wizard, which starts automatically when you start the iSCSI Configuration Manager for the first time. Express Setup assists you in configuring your initiator and discovering targets.

Before you begin, you need to know the following facts about your network:

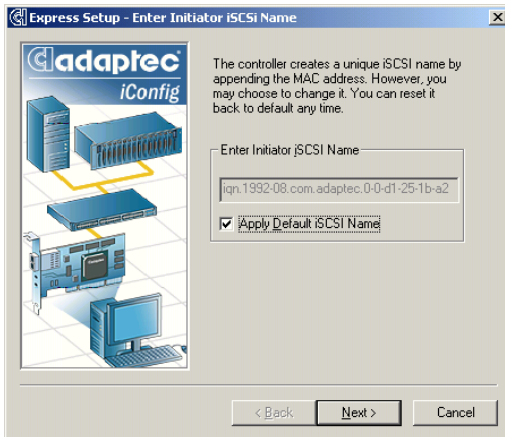
- Target IP address (for at least the bootable target)
- Initiator iSCSI name (if different from the default), IP address, and subnet mask

In addition, you need to verify that the targets are configured to recognize the initiator iSCSI name.

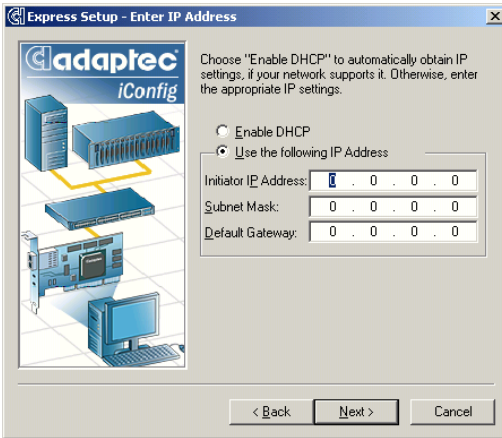
The procedure for using the Express Setup wizard is as follows:

- 1 Open the Control Panel and select **Adaptec iSCSI Configuration Manager**.

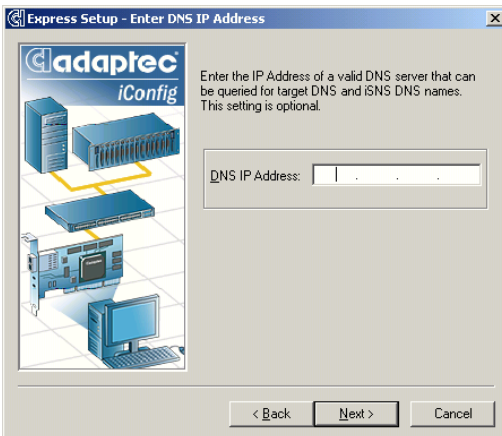
You are prompted to enter a configuration file name or proceed with Express Setup. If you choose to proceed with Express Setup, you are prompted to choose an initiator iSCSI name, as shown below.



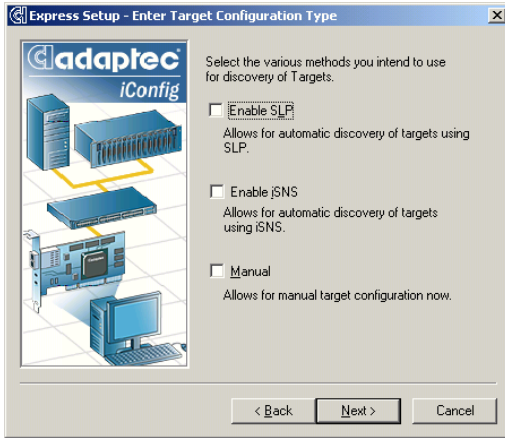
- 2 Choose an initiator iSCSI name. Adaptec recommends that you apply the default name. However, you can assign your own iSCSI name to the adapter if you uncheck **Apply Default iSCSI Name** and enter your own unique iSCSI name. Click **Next** to continue.
- 3 Select **Enable DHCP** if your network supports it, or manually assign a static IP address, subnet mask, and gateway IP address. Click **Next** to continue.



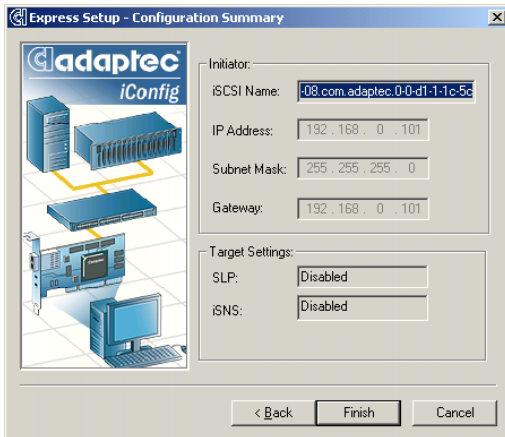
- 4 Enter the IP address of your DNS (Domain Name Server). If you do not have one, leave the field blank and click **Next** to continue.



- 5 Select the method for target discovery, then click **Next**.



- 6 If you are satisfied with your configuration settings, click **Finish**. Otherwise, click **Back** to edit the appropriate configuration settings.



## Using the iConfig Utility – Linux only

iConfig has an easy-to-use Express Setup that prompts you for the information the system needs to be configured the first time.

Once the system is setup, you can use iConfig to view, change, or upgrade the configuration. For example, you can monitor the connections, display MIB statistics and event logs, and add and delete targets.

The following instructions are provided:

- [Installing and Running the iConfig Utility on page 5-5](#)
- [Using Express Setup to Configure the iSCSI Adapter on page 5-6](#)
- [Changing the iConfig Password on page 5-7](#)
- [Configuration Tasks on page 5-7](#)

### Installing and Running the iConfig Utility

To install and run iConfig on Red Hat:

- 1 Login as root.
- 2 To mount the Adaptec installation CD, type:  
for Red Hat `mount /dev/cdrom /mnt/cdrom`  
for SuSE `mount /dev/cdrom /media/cdrom`
- 3 To change to the Linux directory on the CD, type:  
for Red Hat `cd /mnt/cdrom/Linux/RedHat9_AS21/config_utility`  
for SuSE `cd /media/cdrom/Linux/SuSE82_Enterprise/config_utility`
- 4 To copy the utility to the local hard drive, type:  
`cp -v iconfig /sbin`
- 5 Enter `iconfig`
- 6 At the login prompt, type the default user ID, `admin`
- 7 At the password prompt, type the default password, `adaptec`  
The iConfig Express Setup instructions are displayed.

Now that you have started iConfig, proceed to [Using Express Setup to Configure the iSCSI Adapter on page 5-6](#).

## Using Express Setup to Configure the iSCSI Adapter

Now that you have started iConfig, you are ready to run iConfig Express Setup to configure the adapter (initiator).



**Note:** In any menu, press **Esc** to get back to the previous menu.

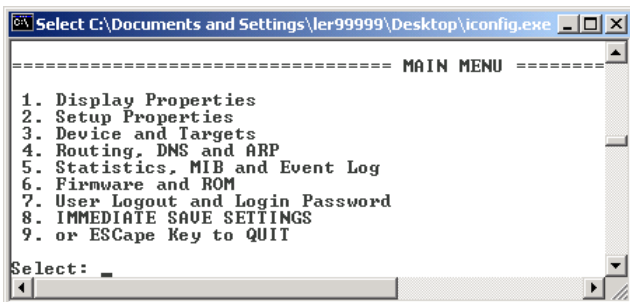
When you run iConfig for the first time, Express Setup starts automatically, and you are prompted to type the following information for the initiator:

- IP address
- Subnet mask
- Gateway address
- iSCSI initiator name

Now that the initiator is configured, you can choose from these options:

- **Allow iConfig to discover targets automatically**—iConfig locates and configures targets and displays target information.
- **Enter target information manually**—You are prompted to type the following information for each target:
  - Target DNS name or IP address
  - Port number
  - iSCSI target name

After you enter this information, save the settings. The Main Menu is displayed as shown below.



## Changing the iConfig Password

The default user ID is `admin`. The default password is `adaptecc`. To change the default password:

- 1 From the Main Menu, select **User Logout and Login Password**.  
For details, see the Main Menu illustration on [page 5-6](#).
- 2 Select **Changing the Password**.
- 3 To complete the change, follow the iConfig instructions.

## Configuration Tasks

The following table summarizes the configuration tasks you can perform using iConfig. The menu options all appear in the Main Menu illustration on [page 5-6](#).

To perform this task...	Use this Menu Option...
> View controller and target info	> 1. Display Properties
> View and set controller, Ethernet, SLP, and ISNS properties. > View and set login parameters.	> 2. Setup Properties
> View, add, edit, delete, log in, log out, and rescan targets.	> 3. Device and Targets
> View, add, and delete routing, DNS, ARP, and Host table entries.	> 4. Routing, DNS, and ARP
> View port transmission statistics, event messages, initiator login, iSCSI session statistics and iSCSI node portal info.	> 5. Statistics, MIB, and Event Log
> Erase or save ROM settings. > Upgrade firmware.	> 6. Firmware and ROM
> Log out. > Change your password.	> 7. User Logout and Login Password
> Save settings.	> 8. Immediate Save Settings

For additional information, refer to the *iConfig Utility User's Guide*.

# A

## Updating the Driver

In this Chapter...

<i>Updating the Windows Driver</i>	A-1
<i>Updating the Linux Module</i>	A-5

This Appendix describes how to update the driver if you already have an iSCSI adapter installed in the computer.

### Updating the Windows Driver

This section contains the following procedures:

- *Updating the Driver in Windows Server 2003*
- *Updating the Driver in Windows 2000*
- *Installing the Driver in Windows NT 4.0*

## Updating the Driver in Windows Server 2003

---



**Note:** If you update the operating system to Windows Server 2003, you need to update the ASA-7211 driver, too.

---

To update the driver:

- 1 Open the Windows Device Manager.
- 2 Expand **SCSI & RAID controllers**.
- 3 Right-click the controller identified as an **Adaptec Storage Accelerator 7211** and choose **Update Driver**.  
The Hardware Update Wizard is displayed.
- 4 Select **Install from a list or specific location (Advanced)**.
- 5 Insert the disk containing the new driver and then click **Next**.
- 6 Select **Don't search. I will choose the driver to install** and then click **Next**.
- 7 Click **Have Disk**.  
The Install From Disk text box is displayed.
- 8 Click **Browse** and browse to the appropriate location on the driver disk.
- 9 Click **Open** and then click **OK**.
- 10 Choose the appropriate driver (7211C or 7211F) for the adapter and click **Next**.
- 11 If a warning message states that the software ...has not passed Windows Logo testing, click **Continue Anyway**.
- 12 In the Completing the Hardware Update Wizard window, click **Finish**. No reboot is required.

To verify the driver installation, open the **Device Manager** and view the driver, as shown on [page 3-3](#).



**Note:** If there are multiple adapters in the computer, you need to update each of them separately (including the Adaptec ASAMGMT Processor Device) to show the correct driver version for each device.

---



## Updating the Driver in Windows 2000

To update the driver:

- 1 Insert the disk containing the new driver.
- 2 Open the Windows Device Manager.
- 3 Expand **SCSI & RAID controllers**.
- 4 Right-click the controller identified as an **Adaptec Storage Accelerator 7211** and choose **Properties**.
- 5 Select the **Driver** tab.
- 6 Click **Update Driver** and then click **Next**.
- 7 Click **Display a list** and then click **Next**.
- 8 Click **Have Disk**.
- 9 Click **Browse** and browse to the appropriate location on the driver disk.
- 10 Click **Open** and then click **OK**.
- 11 Choose the appropriate driver (**7211C** or **7211F**) for your adapter and click **Next**.
- 12 Click **Next** again.
- 13 If you see the Digital Signature Not Found window, click **Yes** to continue.
- 14 Click **Finish**. No reboot is required.

To verify the driver installation, open the **Device Manager** and view the driver, as shown on [page 3-5](#).



**Note:** If there are multiple adapters in the computer, you need to update each of them separately (including the ASAMGMT Processor Device) to show the correct driver version for each device.

---

## **Updating the Driver in Windows NT 4.0**

This section describes the following procedures:

- *Removing the Old Driver*
- *Adding the New Driver*

### **Removing the Old Driver**

To update the driver, you must first remove the driver. To remove the driver:

- 1 Open the Windows **Control Panel**.
- 2 Double-click **SCSI Adapters**.
- 3 Click the **Drivers** tab.
- 4 Choose the appropriate driver from the list box.
- 5 Click the controller identified as an **Adaptec Storage Accelerator 7211**.
- 6 Click **Remove** and follow all Windows instructions. Windows will prompt you to reboot the computer.

### **Adding the New Driver**

To add the new driver:

- 1 Insert the disk containing the new driver.
- 2 Open the Windows **Control Panel**.
- 3 Double-click **SCSI Adapters**.
- 4 Click the **Drivers** tab.
- 5 Click **Add**, and then click **Have Disk**.
- 6 Click **Browse** and browse to the appropriate location on the driver disk.
- 7 Click **Open**, and then click **OK**.
- 8 Click **Adaptec Storage Accelerator 7211 (NT 4.0)**.
- 9 Click **OK** and follow all Windows instructions. Windows will prompt you to reboot the computer.

## Updating the Linux Module

In order to update the Linux `asa72xx` module, you need to first remove the old module prior to installing the new module. To remove the old module:

- 1 Verify that no devices are being used by the adapter.
- 2 Unmount all volumes from the adapter.
- 3 If the `asa72xx` module is loaded, use `rmmod` or `modprobe` to unload the module. Enter:

```
rmmod asa72xx
```

or enter:

```
modprobe -r asa72xx
```

- 4 To change to the `/usr/src/asa72xx` directory, enter:

```
cd /usr/src/asa72xx
```

- 5 To run the remove script, enter:

```
sh asa72xx_remove
```

- 6 To remove the RPM, enter:

```
cd ..
```

and then enter:

```
rpm -e asa72xx
```

- 7 To remove the `asa72xx` directory, enter:

```
rm -rfv asa72xx
```

The module is now removed from the system.

- 8 Install the new module according to the instructions in [Installing the Linux Module on page 3-7](#).

## LEDs

You can use the adapter LEDs to diagnose problems during system startup and as speed indicators during normal system operation. The following tables describe the LED functions.

### LED Diagnostics Definitions

D0	D1	Definition
Off	Off	Power-on Self Test (POST) failed.
Flashing	Off	POST is in progress.
On	Off	POST is complete.
On	On	Initialization is complete.

### LED Functions for ASA-7211C

Label on Bracket <sup>1</sup>	Reference Designator <sup>2</sup>	Function	LED Description	Color
100	DS2	Rate indicator	When lit, indicates a valid 100-Megabit/sec connection.	Green
1000	DS3	Rate indicator	When lit, indicates a valid GbE (1000 Megabit/sec) connection.	Green
ACT	DS4	Activity status	When flashing, indicates an incoming or outgoing traffic.	Yellow

<sup>1</sup> See the appropriate figure on [page 1-3](#).

<sup>2</sup> When both DS2 and DS3 are off and DS4 is on, a 10-Megabit/sec connection is indicated.

### LED Functions for ASA-7211F

Label on Bracket <sup>1</sup>	Reference Designator	Function	LED Description	Color
1000	DS3	Rate indicator	When lit, indicates a valid GbE (1000 Megabit/sec) connection.	Green
ACT	DS4	Activity status	When lit, indicates an incoming signal or outgoing traffic.	Yellow

<sup>1</sup> See the appropriate figure on [page 1-3](#).



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