2911 Series

Gigabit Ethernet Network Interface Cards

2911SX/ST	2911STX/LC
2911SX/SC	2911LTX/SC
2911SX/LC	2911LTX/LC
2911LX/SC	2911SX/2LC
2911LX/LC	2911LX/2LC
2911SFP	2911SFP/2
2911STX/SC	2911T/2

2482

Installation and User's Guide

Electrical Safety and Emissions Standards

This product meets the following standards:

Federal Communications Commission Interference Statement

Declaration of Conformity

Manufacturer Name: **Allied Telesis, Inc.**
Declares that the product: **Gigabit Ethernet Network Interface Cards**
Model Numbers: **AT-2911SX/ST, AT-2911SX/SC, AT-2911SX/LC, AT-2911LX/SC, AT-2911LX/LC, AT-2911SFP, AT-2911STX/SC, AT-2911STX/LC, AT-2911LTX/SC, AT-2911LTX/LC, AT-2911SX/2LC, AT-2911LX/2LC, AT-2911SFP/2, and AT-2911T/2**

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.

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 instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

❑ Reorient or relocate the receiving antenna.

❑ Increase the separation between the equipment and receiver.

❑ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

❑ Consult the dealer or an experienced radio/TV technician for help.

⚠️ **Caution**
FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. ↩ E80

> ⚠️ **Avertissement**
>
> Avertissement de la FCC: Les changements ou modifications non expressément approuvés par la partie responsable de la conformité pourraient annuler l'autorité de l'utilisateur à utiliser cet équipement. ✍ E80

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The band from 5600-5650MHz will be disabled by the software during the manufacturing and cannot be changed by the end user. This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment

This Allied Telesis RoHS-compliant product conforms to the European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment. Allied Telesis ensures RoHS conformance by requiring supplier Declarations of Conformity, monitoring incoming materials, and maintaining manufacturing process controls.

Safety and Electromagnetic Emissions Certificates

Standard Compliance

- ❒ RoHs compliant
- ❒ European Union RoHS (Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.)
- ❒ China RoHs compliant

Certificates

- ❒ CE
- ❒ EAC
- ❒ FCC/IC
- ❒ RCM

Electromagnetic Compatibility (EMC)

- ❐ EN 55022
- ❐ EN 55024
- ❐ AS/NZS CISPR 22
- ❐ FCC 47 CFR Part 15, Subpart B

Safety

- ❐ EN 60950-1
- ❐ TUV-T
- ❐ UL 60950-1

Translated Safety Statements

Important: The ☞ indicates that a translation of the safety statement is available in a PDF document titled "Translated Safety Statements" on the Allied Telesis website at **www.alliedtelesis.com/support**.

Contents

Contents

Preface

This manual is the installation and user's guide for the 2911 Series Gigabit Ethernet Network Adapters. The adapters included in this series are:

❒ 2911SX/ST

❒ 2911SX/SC

❒ 2911SX/LC

❒ 2911LX/SC

❒ 2911LX/LC

❒ 2911SFP

❒ 2911STX/SC

❒ 2911STX/LC

❒ 2911LTX/SC

❒ 2911LTX/LC

❒ 2911SX/2LC

❒ 2911LX/2LC

❒ 2911SFP/2

❒ 2911T/2

The instructions in this guide explain how to install the network adapter on a desktop computer, install and uninstall the driver software, and configure the driver software.

This preface contains the following sections:

❒ "Safety Symbols Used in this Document" on page 10

❒ "Contacting Allied Telesis" on page 12

Safety Symbols Used in this Document

This document uses the following conventions:

Note
Notes provide additional information.

Caution
Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Warning
Warnings inform you that performing or omitting a specific action may result in bodily injury.

Warning
Warnings inform you that an eye and skin hazard exists due to the presence of a Class 1 laser device.

Translated Safety Statements

Important: The ✍ indicates that translations of the safety statement are available in the PDF document **Translated Safety Statements** posted on the Allied Telesis website at **alliedtelesis.com/library/search**.

❐ Übersetzte Sicherheitserklärungen

Wichtig: Das ✍ zeigt an, dass Übersetzungen der Sicherheitserklärung in den PDF-**Translated Safety Statements** auf der Allied Telesis-Website unter **alliedtelesis.com/us/en/library/search** verfügbar sind.

❐ Declaraciones de seguridad traducidas

Importante: El ✍ indica que las traducciones de la declaración de seguridad están disponibles en las **Translated Safety Statements** en PDF publicadas en el sitio web de Allied Telesis en **alliedtelesis.com/us/en/library/search**.

❐ Consignes de sécurité traduites

Important: Le symbole ✍ indique que les traductions de la déclaration de sécurité sont disponibles dans le PDF **Translated Safety Statements** publiées sur le site Web de Allied Telesis à l'adresse **alliedtelesis.com/us/en/library/search**.

❐ Dichiarazioni di sicurezza tradotte

Importante: ✍ indica che le traduzioni della dichiarazione di sicurezza sono disponibili nelle **Translated Safety Statements** in PDF pubblicate sul sito Web di Allied Telesis all'indirizzo **alliedtelesis.com/us/en/library/search**.

❐ Översatta säkerhetsförklaringar

Viktig: ✍ anger att översättningar av säkerhetsförklaringen finns tillgängliga i PDF-dokumentet **Translated Safety Statements** som publicerats på Allied Telesis webbplats på **alliedtelesis.com/us/en/library/search**.

Contacting Allied Telesis

If you need Allied Telesis technical support, visit
www.alliedtelesis.com/support.

Chapter 1
Overview

This chapter contains an overview for the 2911 Series Gigabit Ethernet Network Adapters and includes the following sections:

Physical Description

The 2911 Series Gigabit Ethernet Network Adapters are integrated Ethernet network interface cards based on Broadcom's BCM5718 chipset with a PCI Express (PCIe) x1 version 2 interface.

The 2911 series adapter connects a PCIe compliant computer to a Gigabit Ethernet network. Allied Telesis offers models equipped with a single port interface or dual port interface in the 2911 series. The 2911 adapter is equipped with single or dual fiber optic connector, copper connector, SFP slot, or a combination of these connectors.

2911 Series Single Port Adapters

The following 2911 series models are equipped with a single port interface:

- ❏ 2911SX/ST
- ❏ 2911SX/SC
- ❏ 2911SX/LC
- ❏ 2911LX/SC
- ❏ 2911LX/LC
- ❏ 2911SFP

The 2911SX/SC adapter card is shown in Figure 1.
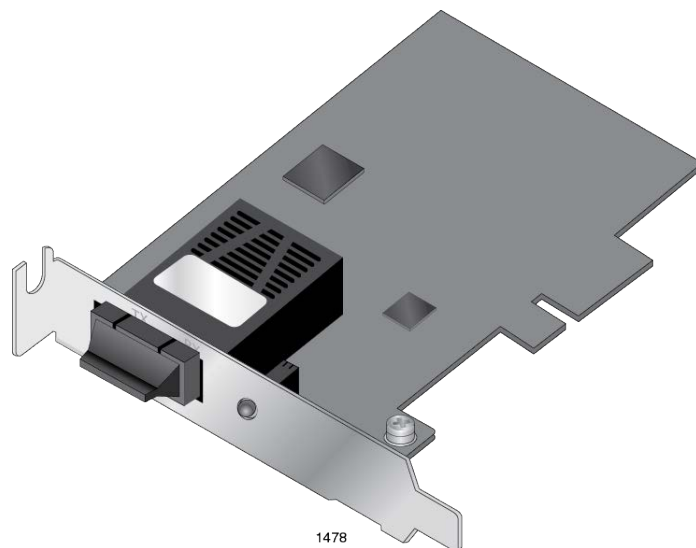
Figure 1. 2911SX/SC Adapter

2911 Series Dual Port Adapters

The following 2911 series models are equipped with a dual port interface:

- ❑ 2911STX/SC
- ❑ 2911STX/LC
- ❑ 2911LTX/SC
- ❑ 2911LTX/LC
- ❑ 2911SX/2LC
- ❑ 2911LX/2LC
- ❑ 2911SFP/2
- ❑ 2911T/2

The 2911LTX/LC adapter is shown in Figure 2.
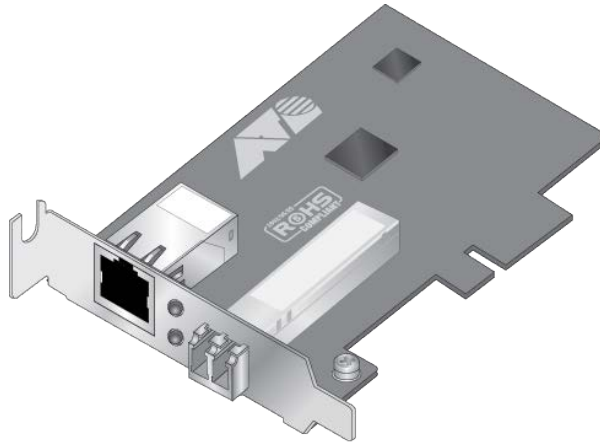
Figure 2. 2911LTX/LC Adapter

ST Fiber Optic Connector

The 2911SX/ST adapter is equipped with a 1000BASE-SX ST fiber optic connector for attaching to a compatible link partner.

The ST fiber optic connector is shown in Figure 3.

Figure 3. ST Fiber Optic Connector

To connect the adapter to a network cable, you must have a fiber optic network cable with the ST connector.

SC Fiber Optic Connector

The 2911SX/SC, 2911LX/SC, 2911STX/SC, and 2911LTX/SC, adapters are equipped with a 1000BASE-SX or 1000BASE-LX SC fiber optic connector.

The SC fiber optic connector is shown in Figure 4.
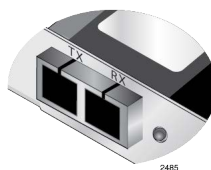
Figure 4. SC Fiber Optic Connector

To connect the adapter to a network cable, you must have a fiber optic network cable with the SC connector. For more information, see "1000BASE-X Fiber Optic Cable Specifications" on page 35.

LC Fiber Optic Connector

The 2911SX/LC, 2911LX/LC, 2911STX/LC, 2911LTX/LC, 2911SX/2LC, and 2911LX/2LC adapters are equipped with a 1000BASE-SX or 1000BASE-LX LC fiber optic connector. The 2911LX/2LC and 2911SX/2LC adapters have two LC connectors.

The LC fiber optic connector is shown in Figure 5.
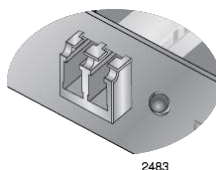
Figure 5. LC Fiber Optic Connector

To connect the adapter to a network cable, you must have a fiber optic network cable with the LC connector.

Twisted Pair Copper Port

The 2911STX/SC, 2911STX/LC, 2911LTX/LC adapters are equipped with a port for a 10/100/1000BASE-T twisted pair cable. The 2911T/2 adapter has two ports.

The twisted pair cable port is shown in Figure 6.

Figure 6. Twisted Pair Cable Port

The pin layout to a port and RJ-45 connector is illustrated in Figure 7.
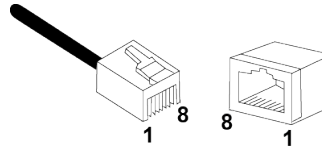
Figure 7. Pin and RJ-45 Connector Pin Layout

SFP Slot   The 2911SFP adapter has an SFP slot that you can plug in an SFP transceiver to connect the adapter to a compatible link partner. The 2911SFP/2 adapter has two SFP slots.

> **Note**
> The SFP slot is not hot-swappable. Shut down the PC that your network adapter is installed in, insert an SFP transceiver into the SFP slow, and restart the PC.

> **Note**
> An SFP transceiver must be purchased separately. For a list of supported transceivers, contact your Allied Telesis distributor or reseller.

The SFP slot is shown in Figure 8.
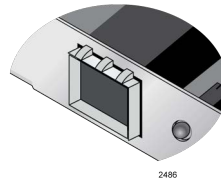
Figure 8. SFP Slot

LEDs   The 2911 series adapter has an LED per port.

Table 1 describes the link states that the LED indicates.

Table 1. LED Status

State	Description
On	Valid link.
Off	No link.
Flashing	Data traffic is present between the adapter and the switch.

Model Naming Conventions

The hardware features of the 2911 adapters are represented by the letters and numbers in the model names. The conventions for the 2911 adapters are identified in Figure 9.

AT-2911SX/2LC
1   2 3
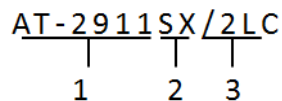
Figure 9. 2911 Model Naming Conventions

The conventions are defined in Table 2.

Table 2. 2911 Model Naming Conventions

Convention	Definition
1	Indicates the product name
2	Identifies the physical layer standard for Gigabit Ethernet transmission or SFP option. The following is a list of standards: ❒ SX - 1000BASE-SX multi-mode fiber optic cable ❒ LX - 1000BASE-LX single-mode fiber optic cable ❒ T - 10/100/1000BASE-T twisted-pair cable ❒ STX - dual port of SX fiber optic and twisted-pair cable ❒ LTX - dual port of LX fiber optic and twisted-pair cable ❒ SFP - SFP slot
3	Identifies the type of fiber optic connector and the number of connectors. The connectors are listed here: ❒ ST - ST connector ❒ SC - SC connector ❒ LC - LC connector The 2911 Series offers single and dual port. Number 2 means that the model has two ports of same type.

Supported Operating Systems

The following list shows the supported operating systems for the 2911 series adapters:

- ❑ Windows 11
- ❑ Windows 10
- ❑ Windows Server 2022
- ❑ Windows Server 2019
- ❑ Linux

The 2911 series network adapter installed on Linux systems uses Linux inbox driver software to operate so that you do not need to install driver software for Linux systems. A driver supplied with an operating system is called an inbox driver.

For the Windows platforms, you must install driver software for the network adapters. See Chapter 3, "Installing the Driver Software" on page 37.

Features

The 2911 adapter supports the following features:

❏ One or two interfaces

❏ x1 PCI Express v2.0

❏ PXE 2.0 remote boot support

❏ Flow control (IEEE 802.3x)

❏ VLAN tag support (IEEE 802.1Q)

❏ Jumbo packet (9K)

❏ TCP, IP, and UDP checksum

❏ TCP segmentation

❏ Transmit Side Scaling (TSS)

❏ Receive Side Scaling (RSS)

❏ 17 Receive Queues

❏ 16 Transmit Queues

❏ 17 MXI-x Vectors support per queue

❏ Link/Activity LED per port

❏ Configuration software

❏ ACPI 1.1a compliant

❏ RoHS compliant

❏ NIC Teaming for Windows Servers 2022 and 2019

❏ No hot-swappable SFP slot

NIC Teaming

NIC Teaming is a method of grouping network adapters together in your system as a team and making a team of network adapters function as a single adapter.

> **Note**
> NIC Teaming on the 2911 series adapter is supported on Windows Servers 2022 and 2019.

To create a team in a Window Server, perform the following procedure:

> **Note**
> To create a NIC team, you must have administrative privileges.

1. Click the Start button.

2. Click Server Manager.

3. In the left hand pane, click Local Server.

4. In the right hand Properties window, select NIC Teaming, then click the Disabled link.

   The NIC Teaming dialogue box opens.

5. Follow the dialogue box to select network adapters and add a new team.

Contents of Your Shipment

The following items are included with your 2911 series adapter:

□ Antistatic bag

The adapter is shipped in an antistatic bag. It protects the module when stored or shipped. Keep the module in its packaging until ready for installation.

□ Standard-profile bracket

The standard-profile bracket is a faceplate whose length is longer than the low-profile bracket. The 2911 series adapters from a factory are shipped with a low-profile bracket attached; however, you can replace it with the standard-profile bracket if your PCIe slot is the standard-profile size.

Note
The 2911 adapter is not shipped with a software driver CD. You must download the driver software from the Allied Telesis website. See Chapter 3, "Downloading the Driver Software" on page 39.

Inform your network supplier of any missing or damaged items. If you need to return the module, you must pack it in the original (or equivalent) packing material or the warranty will be voided. See "Contacting Allied Telesis" on page 12.

The product documentation is available in Portable Document Format (PDF) on our web site at **www.alliedtelesis.com/support/software/**. You can view the documents online or download them onto a local workstation or server.

Warranty Registration

Allied Telesis hardware products are covered under limited warranties.

All Allied Telesis warranties are subject to and provided only on the terms and conditions set out in the Allied Telesis Limited Warranties listed on the Allied Telesis website at **www.alliedtelesis.com/support/warranty**.

Chapter 2
Installing the Hardware

This chapter contains the following sections:

❑ "Reviewing Safety Precautions" on page 26

❑ "Pre-Installation Checklist" on page 28

❑ "Replacing the Bracket" on page 29

❑ "Installing the 2911 Series Adapter Card" on page 31

❑ "Connecting the Network Cables" on page 35

Reviewing Safety Precautions

Review the following safety precautions before you begin to install a module.

> **Note**
> The ✍ indicates that a translation of the safety statement is available in a PDF document titled "Translated Safety Statements" posted on the Allied Telesis website at **www.alliedtelesis.com/ support**.

> **Warning**
> This is a "Class 1 LED product". ✍ L1

> **Warning**
> Do not stare into the laser beam. ✍ L2

> **Warning**
> Do not look directly at the fiber optic cable ends or inspect the cable ends with an optical lens. ✍ L6

> **Warning**
> Do not work on this equipment or cables during periods of lightning activity. ✍ E2

> **Warning**
> Operating Temperature: This product is designed for a maximum ambient temperature of 40 degrees C. ✍ E7

> **Note**
> All Countries: Install this product in accordance with local and National Electric Codes. ✍ E8

Warning

The module is being installed in a system that operates with voltages that can be lethal. Before you remove the cover of your system, you must observe the following precautions to protect yourself and to prevent damage to the system components.

– Remove any metallic objects or jewelry from your hands and wrists.

– Make sure to use only insulated or nonconducting tools.

– Verify that the system is powered OFF and unplugged before accessing internal components.

– Installation or removal of modules must be performed in a static-free environment. The use of a properly grounded wrist strap or other personal antistatic devices and an antistatic mat is strongly recommended. ☞ E39

Pre-Installation Checklist

Before installing the 2911 series adapter, check the following list:

1. Check that your computer has an appropriate open PCIe slot.

2. Verify that your computer is using the latest BIOS.

3. When you download the driver software from the Allied Telesis website, record the path to where the driver file resides on your system.

4. If your computer is active, shut it down.

5. When the system shutdown is complete, power off and unplug your system.

6. Holding the adapter by the edges, remove it from its shipping package and place it on an antistatic surface.

7. Check the adapter for visible signs of damage, particularly on the edge connector.

Note
Do not attempt to install a damaged adapter. If the adapter is damaged, report it to Allied Telesis. See "Contacting Allied Telesis" on page 12.

Replacing the Bracket

The 2911 series adapter is shipped with the low-profile bracket attached to the adapter. Depending on your PC, you may need to replace the bracket attached to your adapter.

The following procedure describes how to remove the low-profile bracket from the adapter and replace it with the standard bracket. You can also use this procedure to remove the standard bracket and replace it with the low-profile bracket.

To replace the low-profile bracket with the standard bracket, perform the following procedure:

1. Remove the screws that attach the bracket to the adapter. See Figure 10.
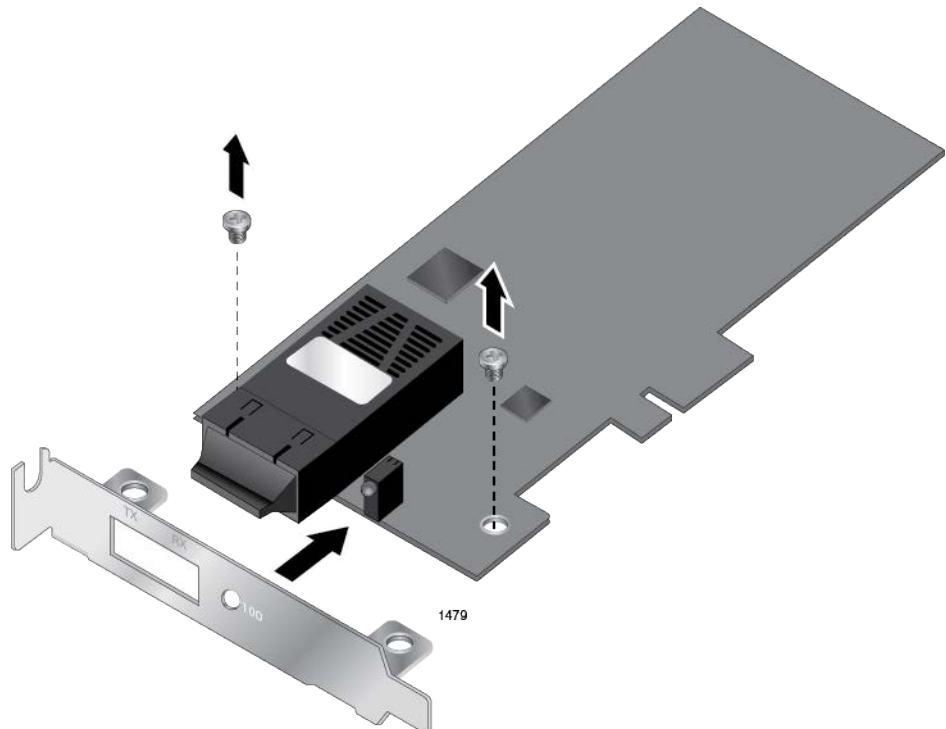
Figure 10. Removing the Low-Profile Bracket

2. Align the tabs of the standard bracket with the holes on the adapter and fasten the screws onto the adapter. See Figure 11.
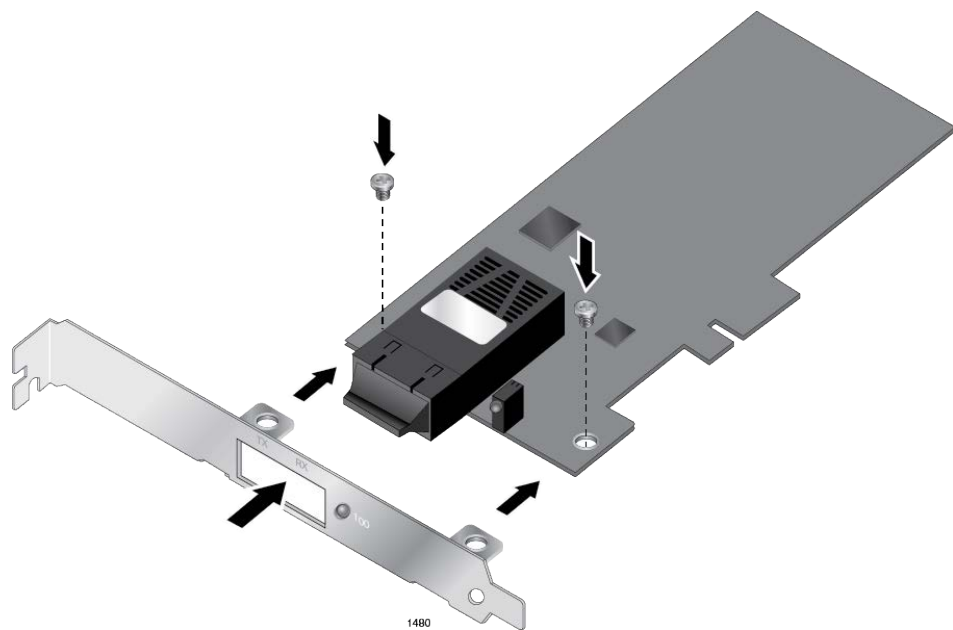
Figure 11. Fastening Screws onto Standard Bracket

Installing the 2911 Series Adapter Card

The following instructions describe how to install an 2911 series adapter in most systems. Refer to the manuals that were supplied with your system for details about performing these tasks on your particular system.

To install an 2911 series adapter, perform the following procedure:

1. Review "Reviewing Safety Precautions" on page 26 and "Pre-Installation Checklist" on page 28.

   Before installing the adapter, ensure the system power is OFF and unplugged from the power outlet, and that proper electrical grounding procedures have been followed.

   ### ⚠ Warning
   To prevent electric shock, do not remove the cover. No user-serviceable parts inside. This unit contains hazardous voltages and should only be opened by a trained and qualified technician. To avoid the possibility of electric shock, disconnect electric power to the product before connecting or disconnecting the cables. ⸾ E1

2. Remove the system cover. See Figure 12.
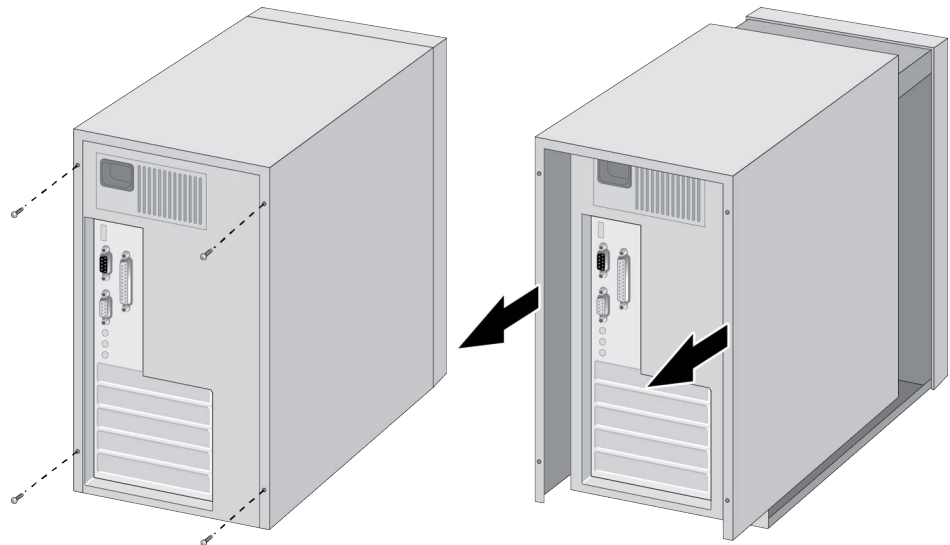
Figure 12. Removing the PC Cover

3. Select any appropriate empty PCIe slot.

   If you do not know how to identify an appropriate PCIe slot, refer to your system documentation.

4. Remove the faceplate that is directly in line with the PCIe slot you selected. See Figure 13.

   Keep the faceplate in a safe place. You may need it for future use.
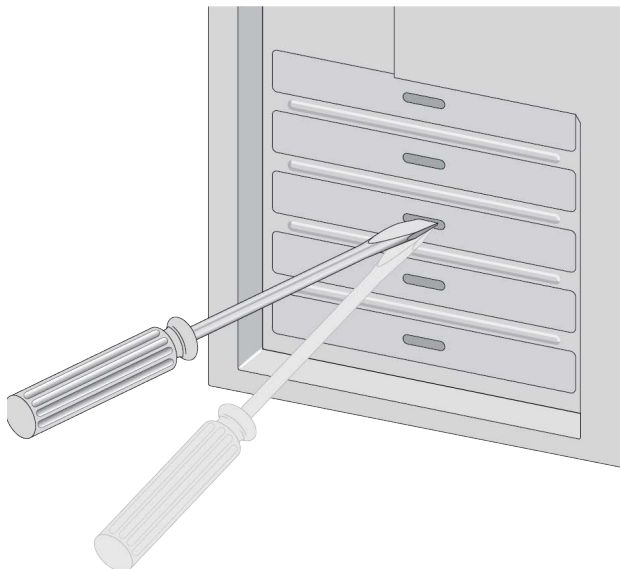
Figure 13. Removing the Faceplate From PCIe Slot

Note
If you cannot locate or know how to find an appropriate PCIe slot, refer to the documentation that came with your system.

5. Remove the network adapter card from the shipping package and store the packaging material in a safe location.

⚠️ **Caution**
A module can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the device. ∽E74

6. Applying even pressure at both corners of the card, push the adapter card until it is firmly seated in the PCIe slot you have selected.

   Make sure the card is securely seated. See Figure 14.
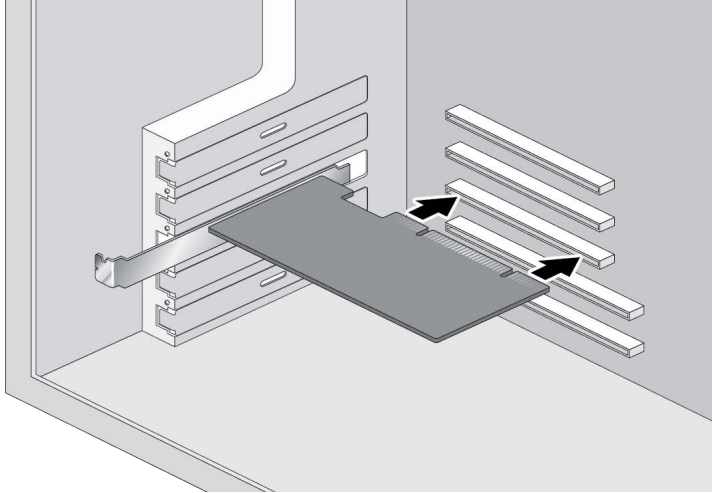
Figure 14. Inserting the Network Adapter Card

⚠ **Caution**
Do not use excessive force when seating the module, because this may damage the system or the module. If the module resists seating, remove it from the system, realign it, and try again. ✍ E47

7. Secure the network adapter card to the chassis with a Phillips-head screw (not provided) as shown in Figure 15 on page 33.
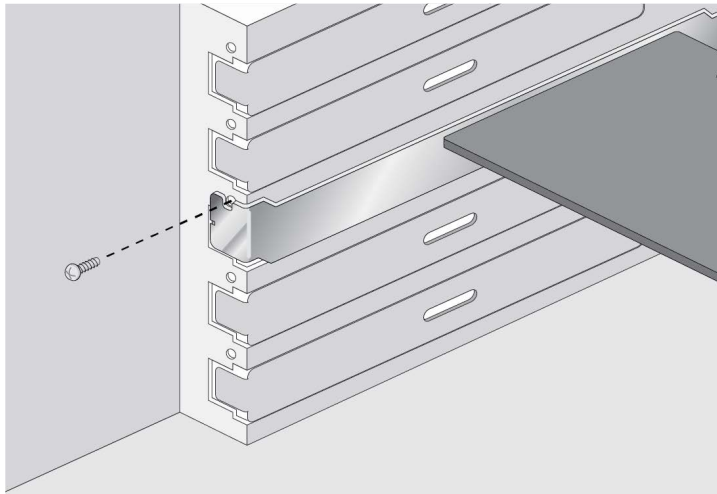
Figure 15. Securing the Adapter Card

8. Replace the system's cover and secure it with the screws removed in Step 2.

9. Power the system on.

Note

When you installed the adapter in a Windows Operating system before installing the driver software, the Found New Hardware Wizard launches automatically except Windows 7 and Windows Server 2008 R2 systems. For installing the driver software, refer to the section for your Windows Operating system.

Once the system returns to proper operation, the adapter card is fully installed. Next, connect the network cables. See "Connecting the Network Cables" on page 35.

Connecting the Network Cables

After you install an 2911 series adapter in your desktop computer, attach the system to a compatible link partner or an IEEE 802.3 compliant Gigabit Ethernet switch. The adapter has a fiber optic connector, copper connector, SFP slot, or a combination of these connectors.

Note

You must have a fiber optic or copper cable to connect your system to the network. If your adapter has an SFP slot, you must have an SFP transceiver as well. Contact your Allied Telesis distributor or reseller for a list of supported transceivers.

Fiber Optic Cable The 2911 series fiber optic adapters are equipped with two types of fiber optic connectors: SC and LC connectors. For optical characteristics of the 2911 adapter, see Appendix A, "Specifications" on page 95. In addition, the 2911 data sheet is available on the Allied Telesis website: **www.alliedtelesis.com**.

To connect a fiber optic network cable to the adapter, perform the following procedure:

1. Prepare a fiber optic cable according to the specifications in Table 3.

Table 3. 1000BASE-X Fiber Optic Cable Specifications

Port Type	Connector	Media	Maximum Distance
1000BASE-SX	Fiber Optic	50 µm multimode 850 nm	550 meters (1,804 feet)
1000BASE-SX	Fiber Optic	62.5 µm multimode 850 nm	275 meters (853 feet)
1000BASE-LX	Fiber Optic	9.125 µm single mode 1310 nm	10 kilometer (6.213 miles)

Warning
The fiber optic ports contain a Class 1 laser device. When the ports are disconnected, always cover them with the provided plug. Exposed ports may cause skin or eye damage. &~ L4

2. Remove a rubber plug from the adapter.

3. Connect one end of the fiber optic cable to the adapter.

4. Connect the other end of the fiber optic cable to the appropriate Ethernet network port or fiber optic port.

After connecting the system to the network and power is supplied, the adapter performs auto-negotiation and attempts to establish the connection at 1000 Mbps full-duplex only. The adapter port LED should be functional at this point. See Table 1 on page 17 for a description of adapter port LED operation.

Note
Even minor smudges or dirt on the end face of the fiber can disrupt light transmission and lead to failure of the connection. For instructions that describe how to clean the fiber optic connector, see Appendix B "Cleaning Fiber Optic Connectors" on page 101

Twisted Pair Copper Cable

If your 2911 series adapter is equipped with a twisted pair copper port, you need a copper network cable with RJ-45 connectors. See "Twisted Pair Copper Port" on page 16.

1. Connect one end of the cable to the adapter.

2. Connect the other end of the cable to the appropriate Ethernet network port or twisted pair copper port.

After connecting the system to the network and power is supplied, the adapter performs auto-negotiation and attempts to establish the connection at the appropriate speed and duplex mode.

SFP Transceiver

If your 2911 series adapter is equipped with an SFP slot, you must have an SFP transceiver and an appropriate cable.

1. Insert an SFP transceiver into the SFP socket on the adapter until the SFP transceiver snaps into place in the socket.

2. Remove a plug from the SFP transceiver.

3. Connect one end of the cable to the SFP transceiver.

4. Connect the other end of the cable to the appropriate Ethernet network port or an appropriate port.

After connecting the system to the network and power is supplied, the adapter performs auto-negotiation and attempts to establish the connection at 1000 Mbps full-duplex only.

Chapter 3
Installing the Driver Software

This chapter describes how to install driver software for the 2911 adapter onto your operating system. It contains the following topics:

❐ "Overview" on page 38

❐ "Downloading the Driver Software" on page 39

❐ "Installing the Driver Software" on page 41

❐ "Updating the Driver Software" on page 43

Overview

To install or update the driver software onto the Windows systems, you must follow the steps below:

❒ "Downloading the Driver Software" on page 39

❒ "Installing the Driver Software" on page 41

Or

❒ "Updating the Driver Software" on page 43

Guidelines   Here are the guidelines for installing and updating the driver software on your Windows operating system:

❒ To install or update the driver software, you must have administrative privileges.

❒ When you install the 2911 adapter on your computer and start the system, the Windows system detects a new adapter and may install a default driver; however, you must update the driver software with the driver that you downloaded from the Allied Telesis website.

❒ Device Manager lists your adapter as *Allied Telesis 2911xx Gigabit Ethernet* once you installed the driver software. Before you install the driver software, Device Manager lists your adapter as Ethernet Controller or as a Broadcom device.

❒ To update the driver software, you use the same procedure for installing the driver software for the first time. The only difference between updating and installing the driver software is the name of your adapter that Device Manager detects and lists.

Linux Driver   The 2911 network adapter installed on Linux systems uses Linux inbox driver software to operate so that you do not need to install driver software for Linux systems.

Downloading the Driver Software

The drivers for network adapters are available from the Allied Telesis website.

To download the driver software, do the following:

1. Open a web browser, such as Internet Explorer or FireFox, on your system.

2. Enter the following URL:

   http://www.alliedtelesis.com/support/software

   The Software Downloads page is displayed as shown in Figure 16.

Product Type	Product	Drivers/Software
Switches	GS950 V2 Series	Software for the GS950 V2 Series
Network Adapters	2711 Series	Drivers for 2711 Series Network Adapters
Network Adapters	2914 Series	Drivers for the 2911, 2914 & 2914GP Series Network Adapters
Network Adapters	2911 Series	Drivers for the 2911, 2914 & 2914GP Series Network Adapters
Network Adapters	DNC10 Series	Drivers for DNC10 Series Network Adapters
Network Adapters	2914GP Series	Drivers for the 2911, 2914 & 2914GP Series Network Adapters

Figure 16. Software Downloads Page

3. Find the driver for the 2911 adapter and click the link.

4. Save the zip folder onto your system.

5. Extract the zip folder and place the files on your system.

6. Record the location of the files.

7. Perform one of the following options:

❒ To install the driver with Device Manager, go to "Installing the Driver Software" on page 41.

❒ To update the driver with Device manager, go to "Updating the Driver Software" on page 43.

Installing the Driver Software

Once you physically install the 2911 series adapter, the system detects the new hardware when the Windows operating system first boots up. Shortly after you log in, you need to install the driver software for your adapter.

To install the driver software onto the 2911 network adapter for the first time, perform the following procedure:

1. Open Device Manager.

   There are several ways to open Device Manger. One of them is by opening the Start button in the bottom left corner of the screen, type "device manager," then click the Device Manger icon.

   The Device Manager window appears as shown in Figure 17.

Figure 17. Device Manager

2. In the Device Manager window, double-click **Network adapters** to expand the field.

3. Right-click **Ethernet Controller** or **Broadcom device** to display the shortcut menu.

4. In the shortcut menu, select **Update driver**. See Figure 18.

Figure 18. Ethernet Controller in Device Manager

The update driver window prompts you to select either **Search automatically for drivers** or **Browse my computer for drivers**.

5. Select **Browse my computer for drivers**.

6. Navigate folders and locate the driver that you placed for 2911 adapter. See "Downloading the Driver Software" on page 39.

7. Click **Next**.

The confirmation message appears when the driver software is successfully updated.

8. Click **Close**.

Updating the Driver Software

To update the driver software, you use the same procedure for installing the driver software for the first time. The only difference between updating and installing the driver software is the name of your adapter that Device Manager detects and lists.

Device Manager lists your adapter as **Allied Telesis 2911xx Gigabit Ethernet** once you installed the driver software. Before you installed the driver software, Device Manager does not know the name and lists your adapter as Ethernet Controller or as a Broadcom device.

To update the driver software onto the 2911 network adapter for the first time, perform the following procedure:

> **Note**
> To install the driver software, you must have administrative privileges.

1. Open Device Manager.

   There are several ways to open Device Manger. One of them is by opening the Start button in the bottom left corner of the screen, type "device manager," then click the Device Manger icon.
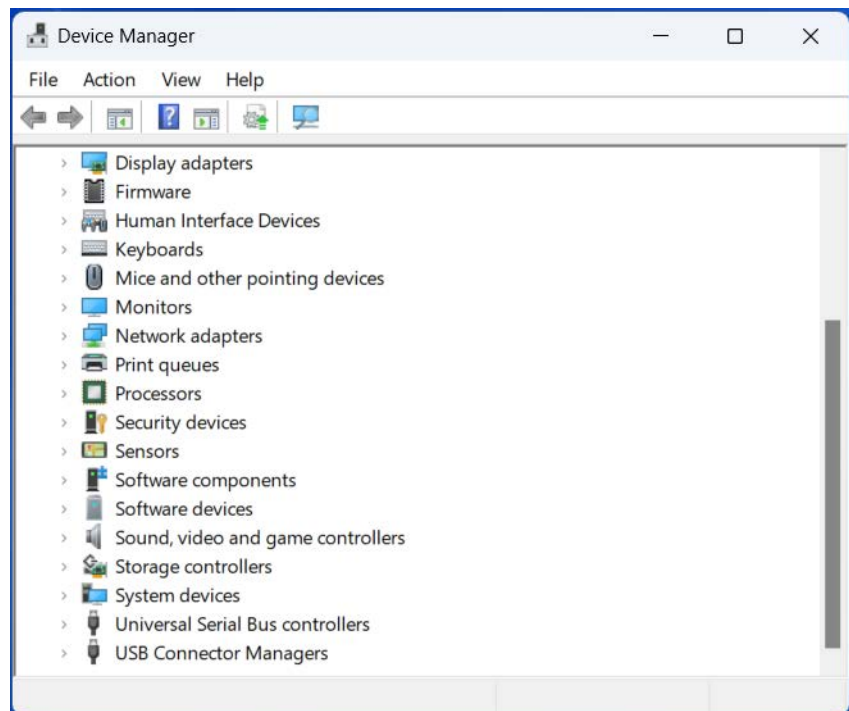
   The Device Manager window appears as shown in Figure 17 on page 41.

2. In the Device Manager window, double-click **Network adapters** to expand the field.

3. Right-click **Allied Telesis 2911xx Gigabit Ethernet** to display the shortcut menu.

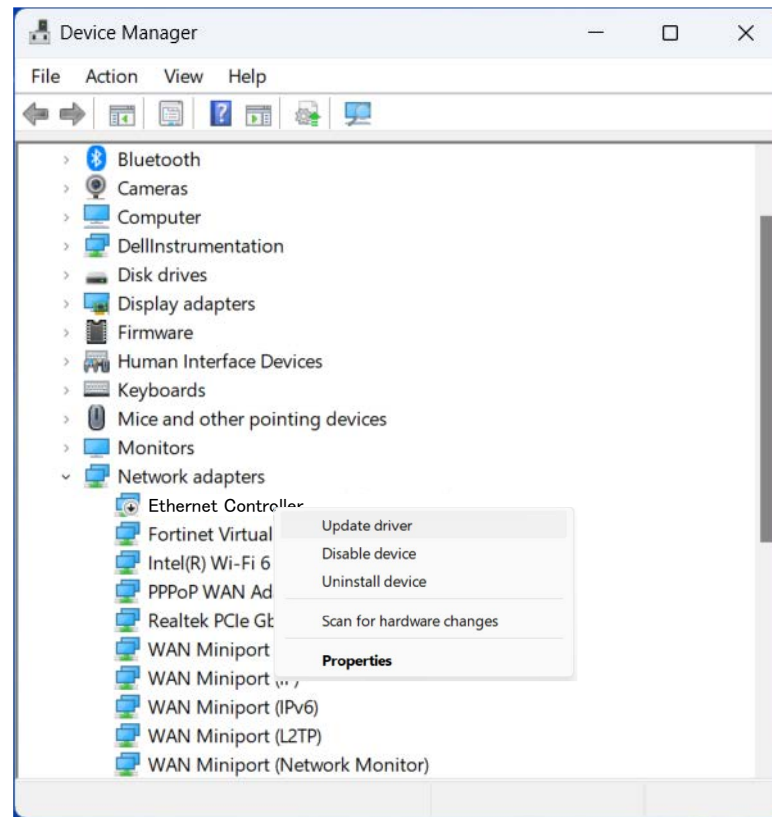4. In the shortcut menu, select **Update driver**. See Figure 19.
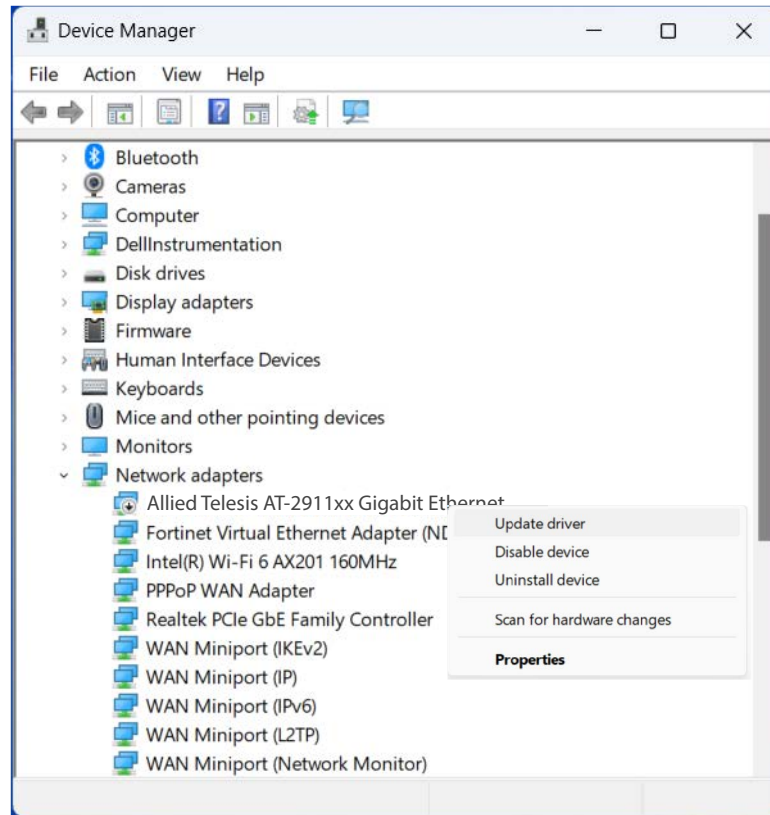
Figure 19. 2911xx Gigabit Ethernet in Device Manager

The update driver window prompts you to select either **Search automatically for drivers** or **Browse my computer for drivers**.

5. Select **Browse my computer for drivers**.

6. Navigate folders and locate the driver that you placed for 2911 adapter. See "Downloading the Driver Software" on page 39.

7. Click **Next**.

The confirmation message appears when the driver software is successfully updated.

8. Click **Close**.

Chapter 4
Uninstalling the Driver Software

This chapter describes how to uninstall the driver software for the 2911 adapter.

This chapter contains the following topics:

Overview

When you no longer use the 2911 series adapter for your computer, you may want to uninstall the driver software from your operating system.

Guidelines   Here are the guidelines to uninstalling the driver software from your system:

❐ You must have Administrator privileges to remove the driver software.

❐ Before uninstalling the Allied Telesis device, capture all of the Advanced Property settings for later use. The properties are lost during the uninstall process.

Uninstalling the Driver Software

To uninstall the driver software from your operating system, do the following:

1. Start your Windows operating system and log in.

2. Open Device Manager.

   There are several ways to open Device Manger. One of them is by opening the Start button in the bottom left corner of the screen, type "device manager," then click the Device Manger icon.

   The Device Manager window appears as shown in Figure 17 on page 41.

3. In Device Manager, click the ▷ next to the Network Adapters folder.

   The selection expands to show the list of installed network adapter cards.

4. Right-click **Allied Telesis AT-2911xx Gigabit Fiber Ethernet**.

   The shortcut menu appears. See Figure 19 on page 44.

5. Select **Uninstall**.

   The Confirm Device Uninstall window pops up as shown in Figure 20.

Figure 20. Confirm Device Uninstall Window

6. Check the check box if you want to remove the driver software for your adapter.

7. Click **OK** to complete the uninstall.

Chapter 5

Modifying Advanced Properties

This chapter includes the following topics:

Overview

To modify the advanced properties of the 2911 adapter, you must access Device Manager on your operating system, then go to each advanced property page.

Guidelines

Here are the guidelines to modifying the advanced properties:

❐ To change the advanced property settings, you must have Administrator privileges.

❐ When you upgrade the driver software, the settings of the advanced properties may change. Verify the settings after upgrading the driver software.

Twisted pair copper port

In addition to the advanced properties listed on page 49, twisted pair copper ports have the following properties:

❐ Wake Up Capabilities

❐ WOL Speed

Wake Up Capabilities

The Wake Up Capabilities property enables the network adapter to wake up from a low-power mode when it receives a network wake-up frame. Two types of wake-up frames are available: Magic Packet and Wake Up Frame.

WOL Speed

The WOL Speed property allows you to set the speed at which the adapter connects to a network while the adapter is in the Wake on LAN (WOL) mode.

Accessing Advanced Properties

To modify advanced properties, first access Device Manager, open the properties of your 2911 series adapter, and select a feature you want to change its setting.

1. Open Device Manager.

    There are several ways to open Device Manger. One of them is by opening the Start button in the bottom left corner of the screen, type "device manager," then click the Device Manger icon.

    The Device Manager window appears as shown in Figure 17 on page 41.

2. In Device Manager, double-click Allied Telesis AT-2911xx Gigabit Fiber Ethernet.

    The properties window pops up as shown in Figure 21.
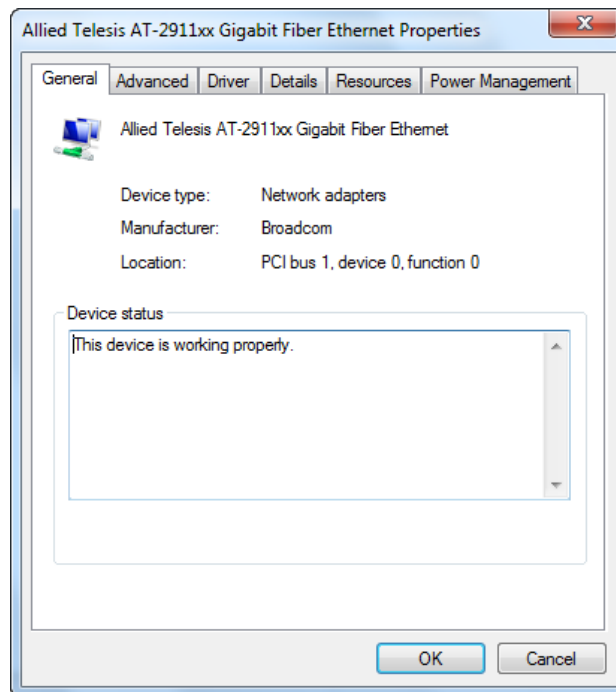
Figure 21. Properties Window

3. Click the **Advanced** tab.

    The Advanced Properties window opens as shown in Figure 22.
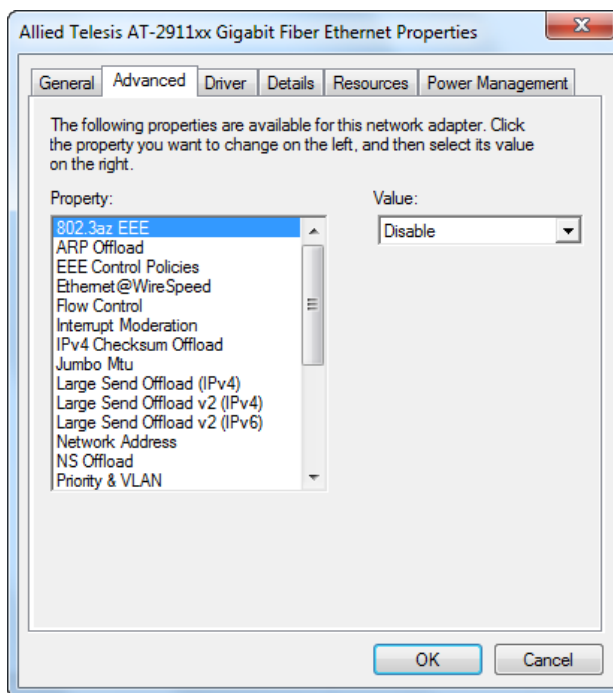
Figure 22. Advanced Properties Window

802.3az EEE

The 802.3az EEE (Energy-Efficient Ethernet) feature allows you to reduce power consumption when the network link is idle.

> **Note**
> This feature is valid only for copper ports. For fiber connectors, the setting is always disabled.

To enable or disable the 802.3az EEE feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **802.3az EEE** in the Property box.

   The 802.3az EEE page is displayed as shown in Figure 23.
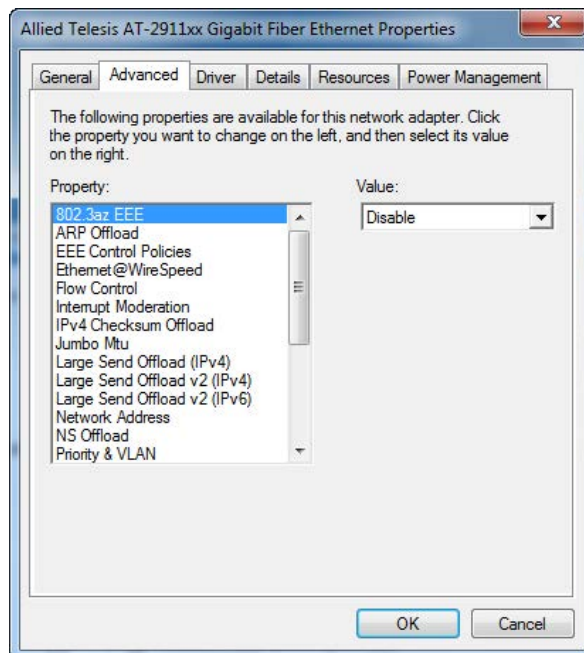
Figure 23. 802.3az EEE Page

3. Select one of the following options:

  ❐ **Disable —** The Energy-Efficient Ethernet feature is off. This is the default setting.

  Note
  For fiber connectors, the setting is always disabled.

  ❐ **Enable —** The adapter saves energy consumption when the link is idle.

4. Click **OK**.

ARP Offload

The ARP Offload feature, one of the network power management features, allows the adapter to respond to an ARP request without waking up the computer.

To enable or disable the ARP Offload feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **ARP Offload** in the Property box.

   The ARP Offload page is displayed as shown in Figure 24.
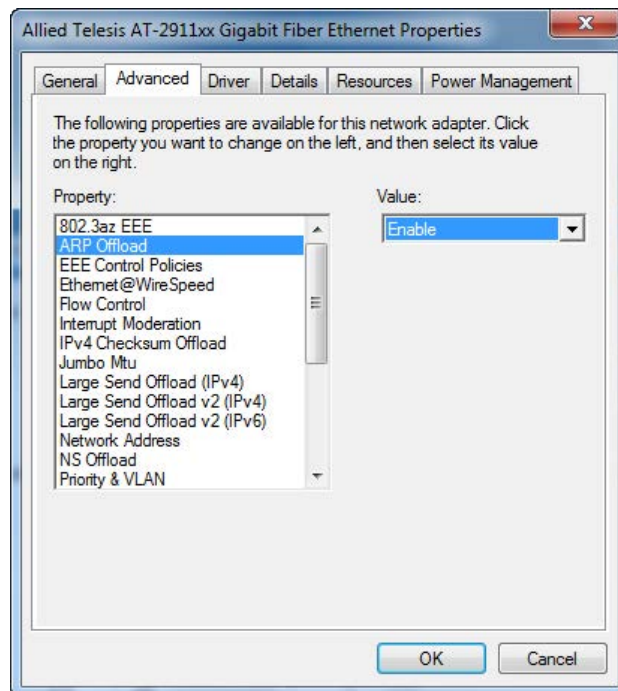
Figure 24. ARP Offload Page

3. Select one of the following options:

   ❑ **Disable —** The computer wakes up from sleep mode and responds to an ARP request.

   ❑ **Enable —** The adapter responds to an ARP request without waking up the computer. This is the default setting.

4. Click **OK**.

EEE Control

The EEE (Energy-Efficient Ethernet) Control feature allows you prioritize power saving, performance, optimal power, and performance.

To change the setting of the EEE Control feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **EEE Control** in the Property box.

   The EEE Control page is displayed as shown in Figure 25.
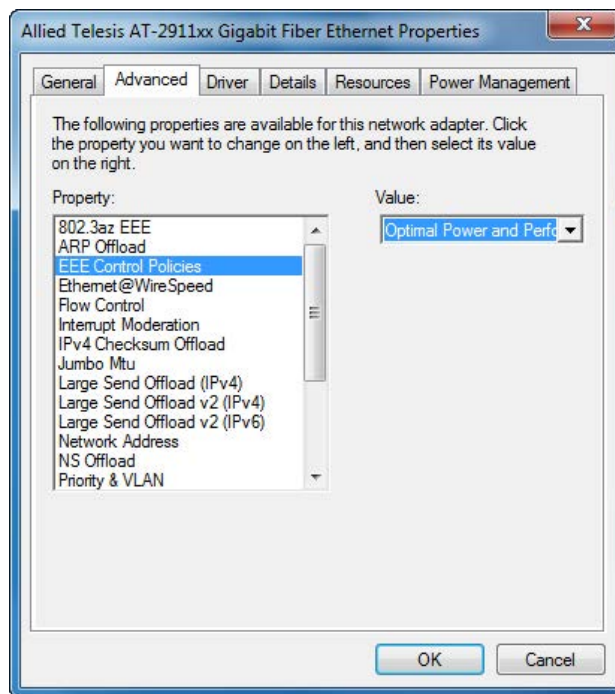
Figure 25. EEE Control Page

3. Select one of the following options:

   ❏ **Optimal Power and Performance —** The adapter manages the best trade-off between energy efficiency and performance. This is the default setting.

   ❏ **Maximum Performance —** The adapter manages power for the best performance.

   ❏ **Maximum Power Saving —** The adapter manages power for the best energy saving.

4. Click **OK**.

Ethernet@WireSpeed

The Ethernet@WireSpeed feature enables the adapter with a twisted pair copper interface to establish a link at a lower speed when only two pairs of wires are available in the connected cable.

> **Note**
> This feature is valid only for copper ports. For fiber connectors, the setting is always disabled.

To enable or disable the Ethernet@WireSpeed feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Ethernet@WireSpeed** in the Property box.

   The Ethernet@WireSpeed page is displayed as shown in Figure 26.
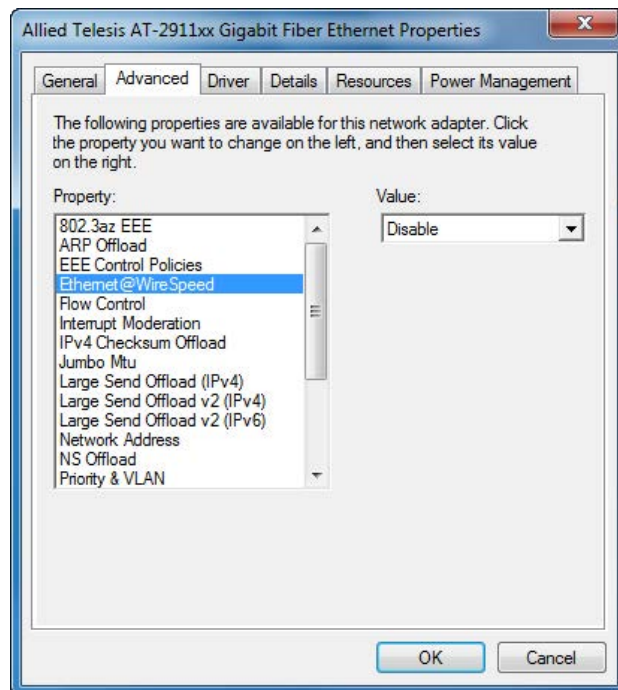
Figure 26. Ethernet@WireSpeed Page

3. Select one of the following options:

    ❐   **Disabled —** The adapter tries to establish a link at 1000 Mbps.

    Note
    For fiber connectors, the setting is always disabled.

    ❐   **Enabled —** The adapter establishes a link at a lower speed when only two pairs of wires are available in the connected cable. This is the default setting for the 2911 series adapters with a twisted pair copper interface.

4. Click **OK**.

Flow Control

The Flow Control feature allows you to control the flow between the 2911 adapter and its link partner. You can enable or disable the adapter to process received PAUSE frames and transmit PAUSE frames.

To enable or disable the Flow Control feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Flow Control** in the Property box.

   The Flow Control page is displayed as shown in Figure 27.
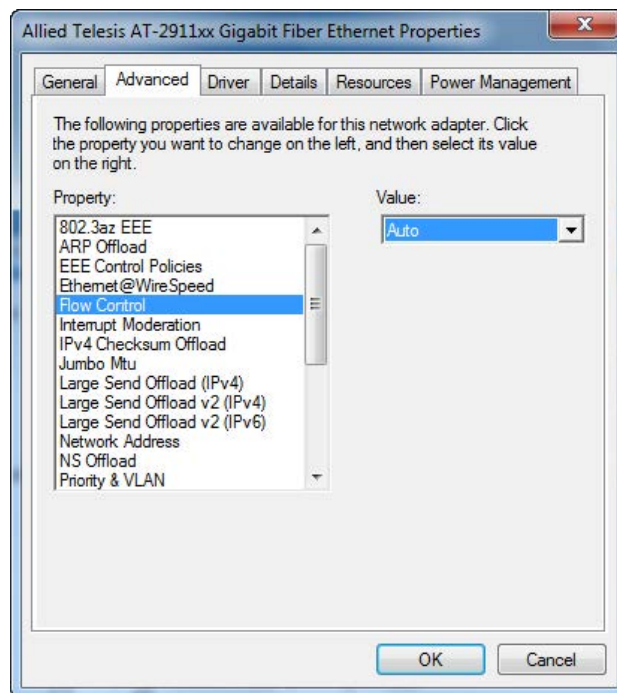
Figure 27. Flow Control Page

3. Select one of the following options:

    ❒ **Auto —** Receiving and transmitting PAUSE frames are optimized. This is the default setting.

    ❒ **Disabled —** The adapter ignores PAUSE frames.

    ❒ **Tx & Rx Enabled —** The adapter processes PAUSE frames when receiving and transmits PAUSE frames.

    ❒ **Rx Enabled —** The adapter processes PAUSE frames when receiving, but does not transmit PAUSE frame.

    ❒ **Tx Enabled —** The adapter transmits PAUSE frames, but ignores PAUSE frames when receiving.

4. Click **OK**.

Interrupt Moderation

The Interrupt Moderation feature allows you to limit the rate of interrupts to the CPU during packet transmission and packet reception. When this feature is enabled, interrupts are handled as a group so that the CPU utilization decreases; however, the latency may increase.

To enable or disable the Interrupt Moderation feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Interrupt Moderation** in the Property box.

   The Interrupt Moderation page is displayed as shown in Figure 28.
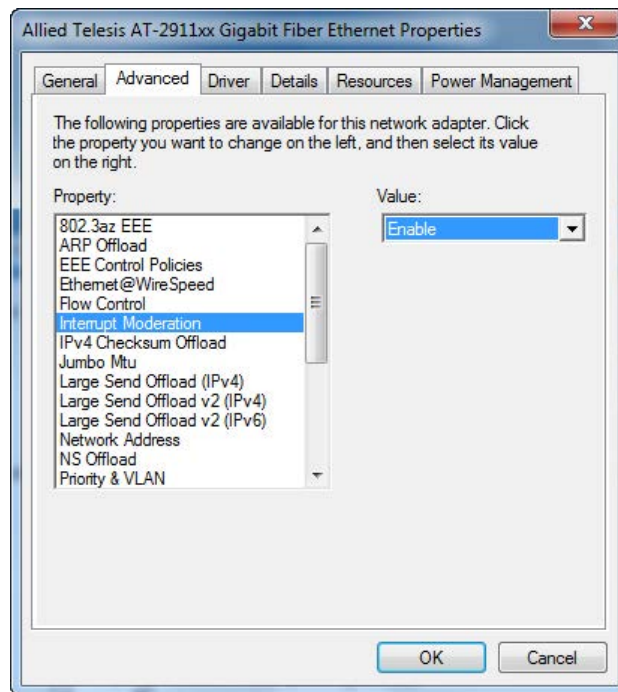
Figure 28. Interrupt Moderation Page

3. Select one of the following options:

   ❐ **Disabled —** The Interrupt Moderation feature is disabled.
   ❐ **Enabled —** The Interrupt Moderation feature is enabled. This is the default setting.

4. Click **OK**.

IPv4 Checksum Offload

The IPv4 Checksum Offload feature allows the adapter to verify the IPv4 checksum to enhance IPv4 receive and transmit performance and reduce CPU utilization.

To enable or disable the IPv4 Checksum Offload feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **IPv4 Checksum Offload** in the Property box.

   The IPv4 Checksum Offload page is displayed as shown in Figure 29.
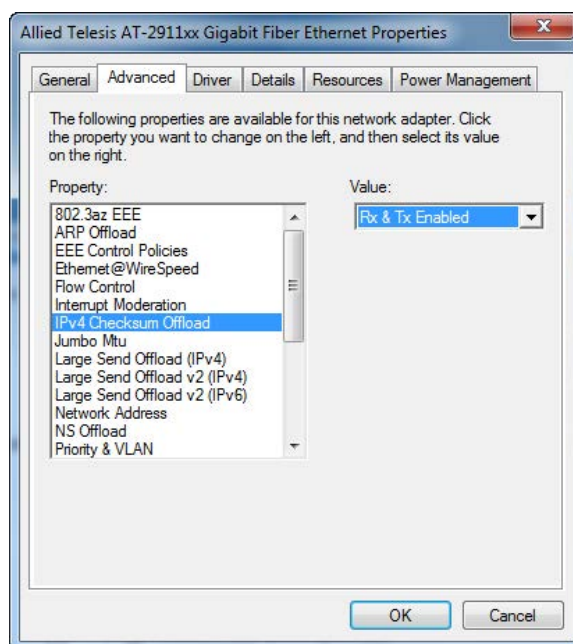
Figure 29. IPv4 Checksum Offload Page

3. Select one of the following options:

   ❐ **Rx & Tx Enabled —** The adapter verifies IPv4 Checksum for both receiving and transmitting packets. This is the default setting.

   ❐ **Disabled —** The CPU verifies IPv4 checksum.

   ❐ **Rx Enabled —** The adapter verifies IPv4 Checksum only for receiving packets.

   ❐ **Tx Enabled —** The adapter verifies IPv4 Checksum only for transmitting packets.

4. Click **OK**.

Jumbo Mtu

The Jumbo Mtu (Maximum transmission unit) feature allows you to specify the size of the Ethernet frame that the adapter supports. The network performance usually improves when the larger frame size is specified: however, the network must be capable of supporting the oversized Ethernet frames.

To change the Jumbo Mtu setting, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Jumbo Mtu** in the Property box.

   The Jumbo Mtu page is displayed as shown in Figure 30.
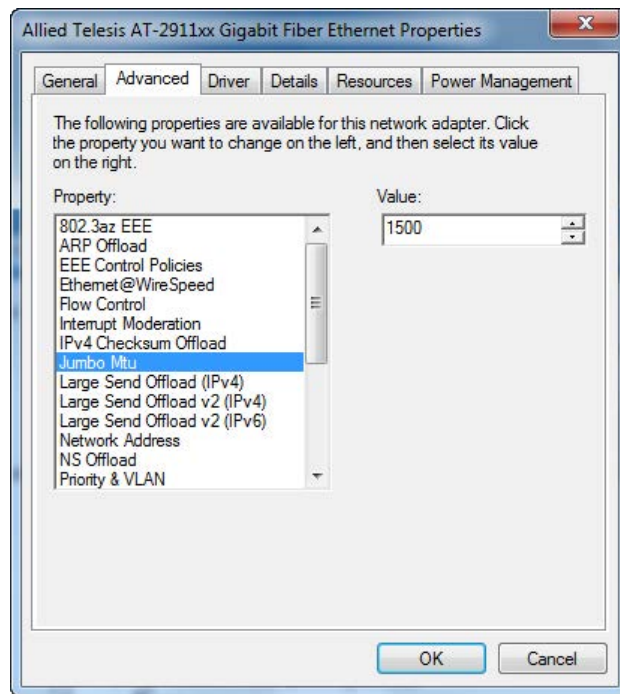
Figure 30. Jumbo Mtu Page

3. Specify the size of the frame in the Value box.

   The range of the value is from 1,500 to 9,000. The default value is 1,500.

4. Click **OK**.

Large Send Offload (IPv4)

The Large Send Offload (IPv4) feature allows you to control the load of sending out large packets. When this feature is enabled, the 2911 adapter segments large packets and reduces the CPU load.

The Large Send Offload (IPv4) feature supports large packets up to 64kb. The Large Send Offload v2 (IPv4), which supports large packets up to 256kb, overrides the Large Send Offload (IPv4) feature if both features are enabled. For more information, see "Large Send Offload v2 (IPv4)" on page 66.

To enable or disable the Large Send Offload (IPv4) feature, do the following:

1. Access the Advanced Properties.

    See "Accessing Advanced Properties" on page 51.

2. Select **Large Send Offload (IPv4)** in the Property box.

    The Large Send Offload (IPv4) page is displayed as shown in Figure 31.

Figure 31. Large Send Offload (IPv4) Page

3. Select one of the following options:

    ❒ **Disabled —** This feature is disabled.

    ❒ **Enabled —** The adapter segments large packets up to 64kb for IPv4 traffic before sending them out. This is the default setting.

4. Click **OK**.

Large Send Offload v2 (IPv4)

The Large Send Offload v2 (IPv4) feature allows you to control the load of sending out large packets. When this feature is enabled, the 2911 adapter segments large packets for IPv4 traffic and reduces the CPU load.

This feature, which supports large packets up to 256kb, overrides the Large Send Offload (IPv4) feature if both features are enabled.

To enable or disable the Large Send Offload v2 (IPv4) feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Large Send Offload v2 (IPv4)** in the Property box.

   The Large Send Offload v2 (IPv4) page is displayed as shown in Figure 32.
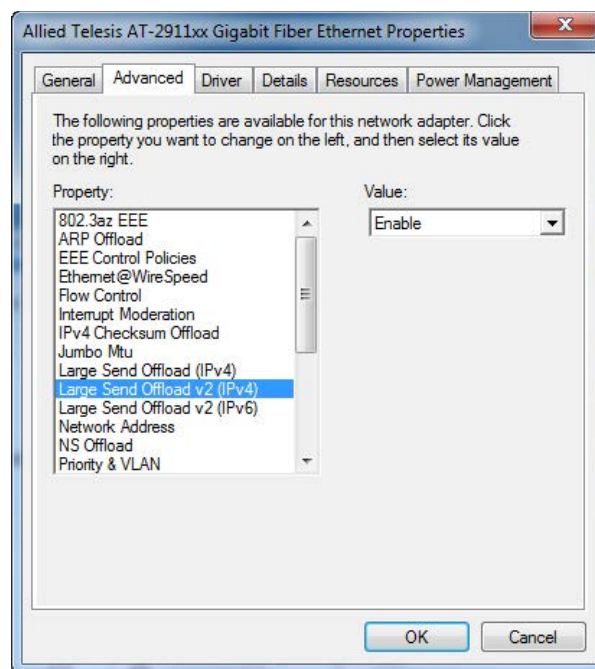
Figure 32. Large Send Offload v2 (IPv4) Page

3. Select one of the following options:

    ❐ **Disabled —** The feature is disabled.

    ❐ **Enabled —** The adapter segments large packets up to 256kb for IPv4 traffic before sending them out. This is the default setting.

4. Click **OK**.

Large Send Offload v2 (IPv6)

The Large Send Offload v2 (IPv6) feature allows you to control the load of sending out large packets. When this feature is enabled, the 2911 adapter segments large packets for IPv6 traffic and reduces the CPU load.

To enable or disable the Large Send Offload v2 (IPv6) feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Large Send Offload v2 (IPv6)** in the Property box.

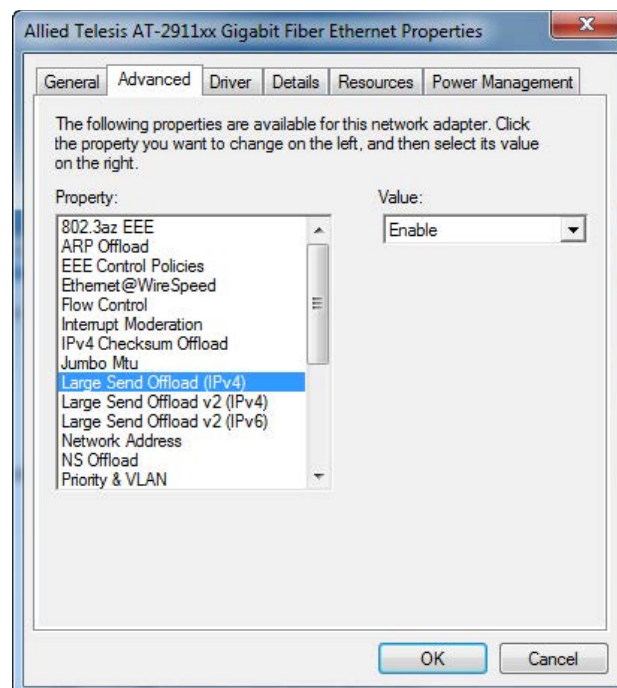   The Large Send Offload v2 (IPv6) page is displayed as shown in Figure 33.
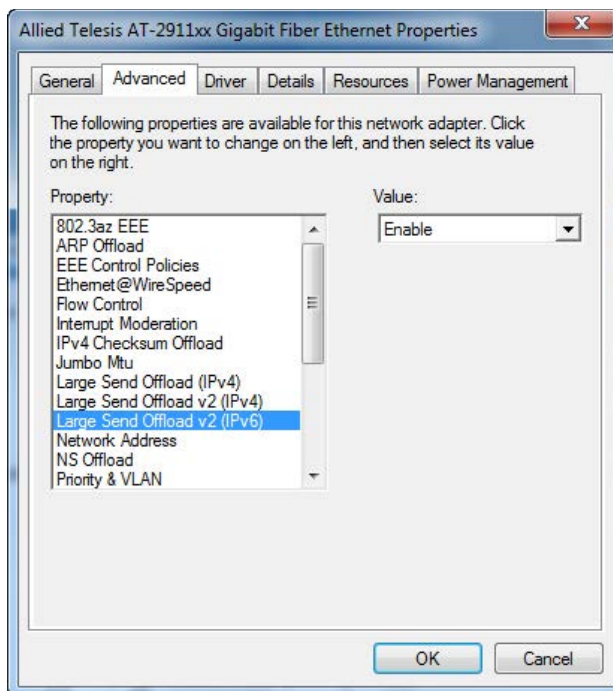
Figure 33. Large Send Offload (IPv6) Page

3. Select one of the following options:

   ❒ **Disabled —** The adapter does not segment packets for IPv6 traffic.

   ❒ **Enabled —** The adapter segments large packets up to 256kb for IPv6 traffic before sending them out. This is the default setting.

4. Click **OK**.

Network Address

The Network Address allows you to replace the MAC address originally assigned to the adapter with a user-defined address. The user-defined address that you assign to the adapter is called a locally administered address.

⚠️ **Caution**

A locally administered address overrides the original MAC address stored in the 2911 adapter hardware. When you change the MAC address, be sure to assign a unique MAC address. ✍ E81

To assign or change the Network Address, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Network Address** in the Property box.

   The Network Address page is displayed as shown in Figure 34.
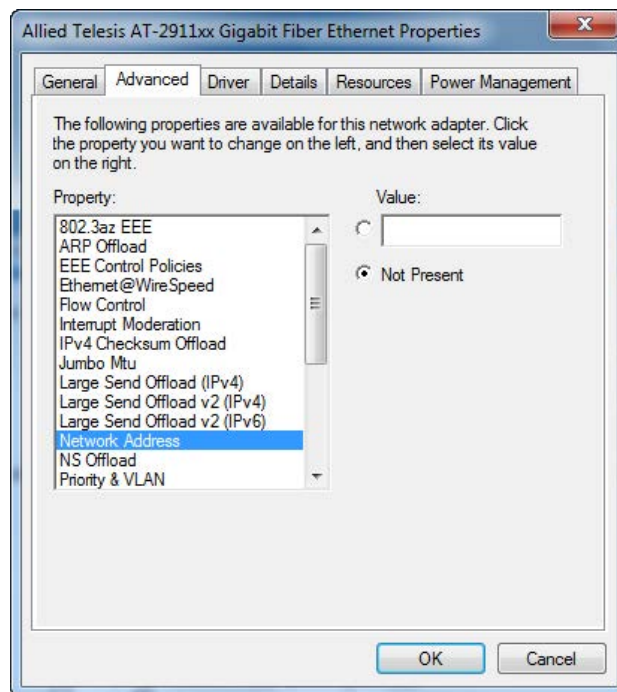
Figure 34. Network Address Page

3. In the **Value** text box, enter a locally administered address for the 2911 adapter.

   By default, no network address is assigned.

   Here are guidelines to assigning a locally administered address:

   ❒ The address must be unique.

   ❒ The address consists of a 12-digit hexadecimal number, for example, "000C46005501."

   ❒ The range is from 0000 0000 0001 to FFFF FFFF FFFD excluding multicast MAC addresses, which cannot be used. The multicast MAC address has the least significant bit of the most significant octet as 1.

4. Click **OK**.

NS Offload

The NS (Neighbor Solicitation) Offload feature, one of the network power management features, allows the adapter to respond to a Neighbor Solicitation request without waking up the computer.

To enable or disable the NS Offload feature, do the following:

1. Access the Advanced Properties.

    See "Accessing Advanced Properties" on page 51.

2. Select **NS Offload** in the Property box.

    The NS Offload page is displayed as shown in Figure 35.
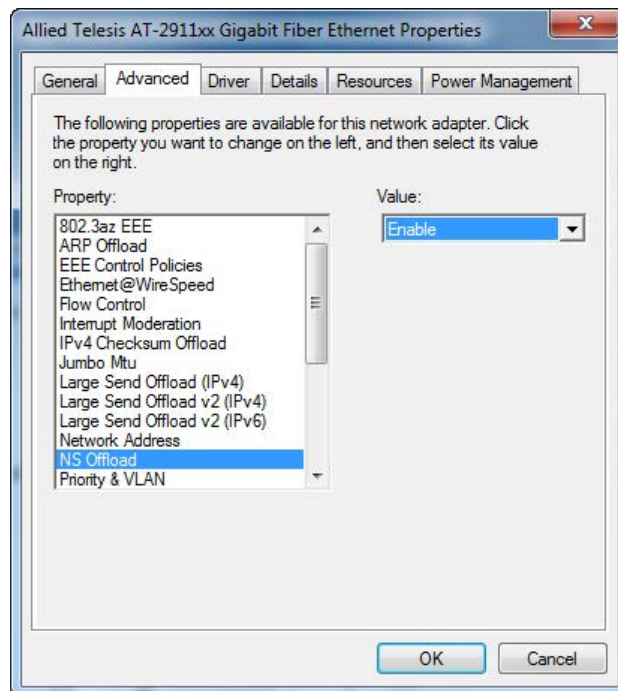
Figure 35. NS Offload Page

3. Select one of the following options:

    ❑ **Disable —** The computer wakes up from sleep mode and responds to an NS request.

    ❑ **Enable —** The adapter responds to a Neighbor Solicitation request without waking up the computer. This is the default setting.

4. Click **OK**.

Priority & VLAN

The Priority & VLAN feature allows you to control sending and receiving tagged frames of QoS and VLAN.

When the property is set to Priority & VLAN Enabled, the adapter sends and receives QoS and VLAN tagged frames; with Priority Enabled, the adapter sends and receives QoS tagged frames; with VLAN Enabled, the adapter sends and receives VLAN tagged frames. To assign a VLAN ID to the adapter, see "VLAN ID" on page 85.

To enable or disable the Priority & VLAN feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Priority & VLAN** in the Property box.

   The Priority & VLAN page is displayed as shown in Figure 36.
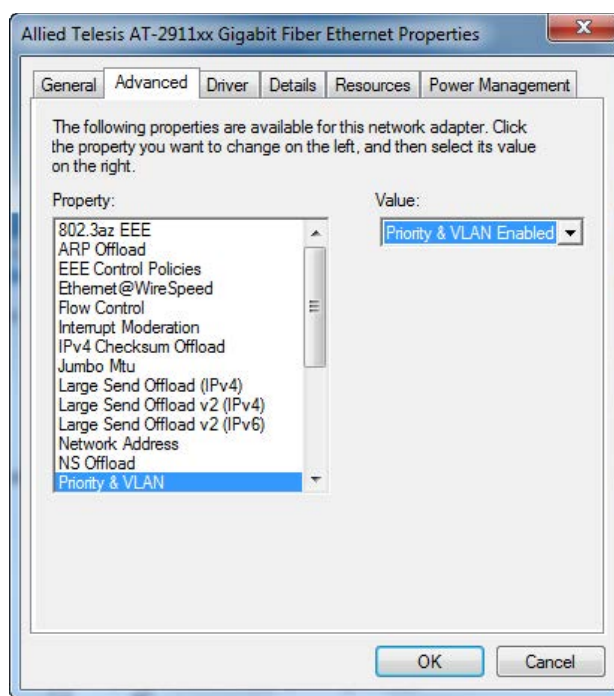
Figure 36. Priority & VLAN Page

3. Select one of the following options:

    ❐ **Priority & VLAN Enabled —** The adapter sends and receives QoS and VLAN tagged frames. This is the default setting.

    ❐ **Priority Enabled —** The adapter sends and receives QoS tagged frames.

    ❐ **VLAN Enabled —** The adapter sends and receives VLAN tagged frames.

4. Click **OK**.

Receive Buffers

The Receive Buffers property specifies the number of receive buffers allocated for the adapter. Increasing this value may enhance performance in receiving traffic, but consumes more system memory.

To change the Receive Buffers value, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Receive Buffers** in the Property box.

   The Receive Buffers page is displayed as shown in Figure 37.
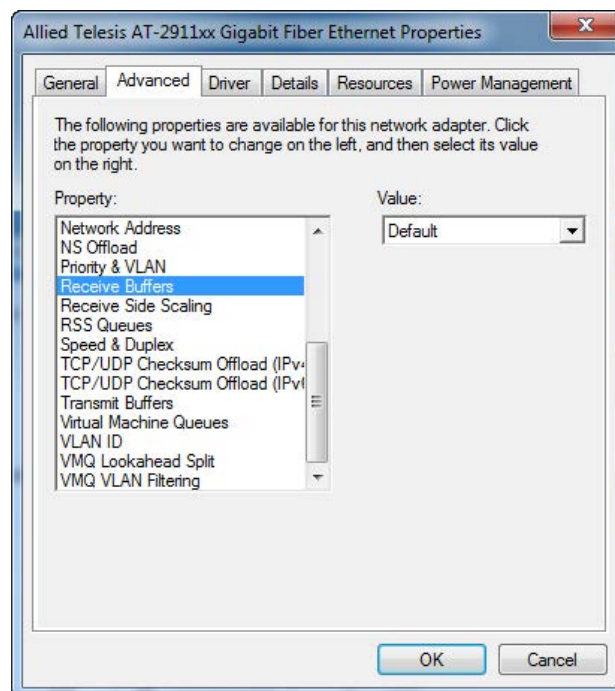
Figure 37. Receive Buffers Page

3. Select one of the following options:

   ❑ **Default —** Specifies the default number of receive buffers allocated to the adapter. This is the default setting.

   ❑ **Maximum —** Specifies the maximum number of receive buffers allocated to the adapter.

   ❑ **Minimum —** Specifies the minimum number of receive buffers allocated to the adapter.

4. Click **OK**.

Receive Side Scaling

The Receive Side Scaling (RSS) feature allows the adapter to efficiently distribute receive processing across multiple CPU and to prevent from overloading a single CPU. To make this feature effective, the computer must have multiple CPUs in a multiprocessor system.

To enable or disable the Receive Side Scaling feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Receive Side Scaling** in the Property box.

   The Receive Side Scaling page is displayed as shown in Figure 38.
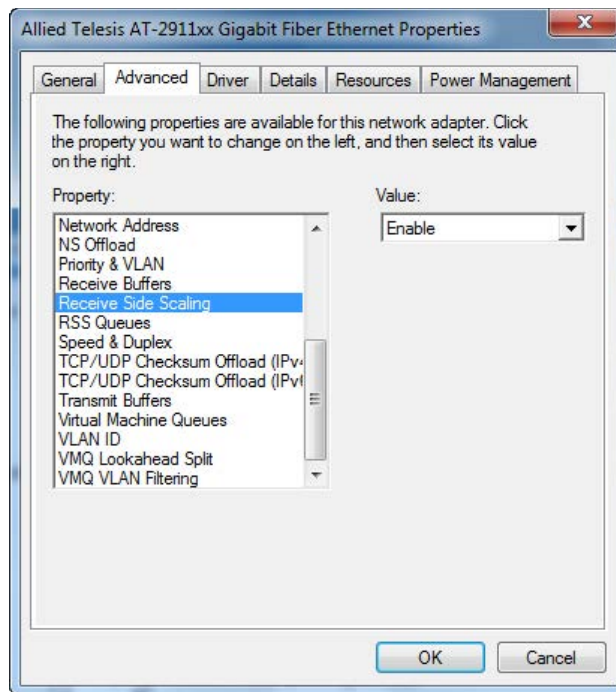
Figure 38. Receive Side Scaling Page

3. Select one of the following options:

   ❐ **Enabled —** Receiving data is processed by multiple CPUs. This is the default setting.

   ❐ **Disabled —** Receiving data is processed by a single CPU.

4. Click **OK**.

RSS Queues

The RSS Queues feature allocates queue space between the adapter and processor, and allows you to specify the number of RSS queues that the adapter assigns receiving data to.

To Specify the RSS Queues value, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **RSS Queues** in the Property box.

   The RSS Queues page is displayed as shown in Figure 39.
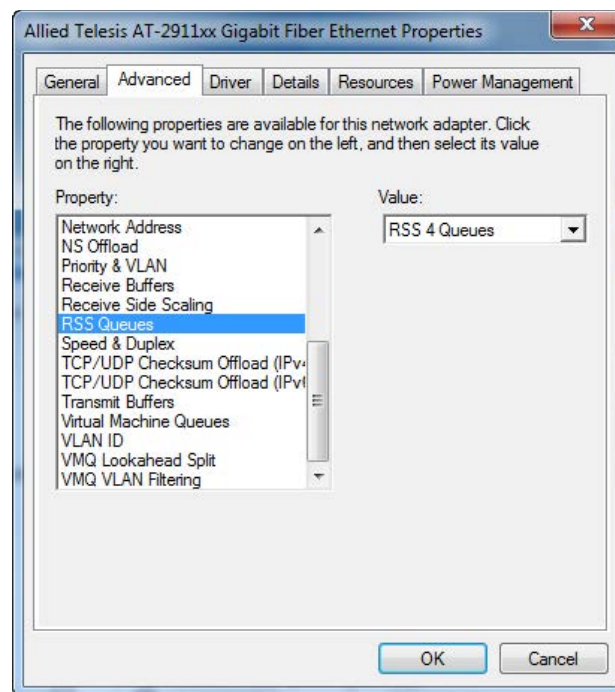
Figure 39. RSS Queues Page

3. Select one of the following options:

Note
The supported number of RSS queues and default setting depend on the adapter and operating system. You might not see all options listed below.

❐ **RSS 4 Queues —** The system allocates four RSS queues.

❐ **RSS 1 Queue —** The system allocates one RSS queue.

❐ **RSS 2 Queues —** The system allocates two RSS queues.

4. Click **OK**.

Speed & Duplex

The Speed & Duplex feature sets the link speed and duplex mode of the adapter with a twisted pair copper interface.

Note
This feature is valid only for copper ports. For fiber connectors, the setting is always Auto.

To change the Speed & Duplex property, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Speed & Duplex** in the Property box.

   The Speed & Duplex page is displayed as shown in Figure 40.
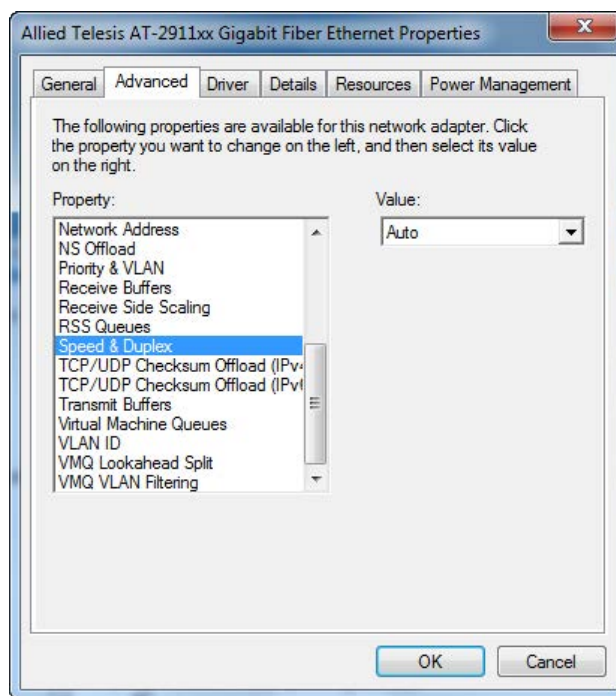
Figure 40. Speed & Duplex Page

3. Select one of the following options:

    ❒ **Auto —** Auto-negotiation. This is the default setting.

    > **Note**
    > For fiber connectors, the setting is always Auto.

    ❒ **10 Mbps Half Duplex —** 10 Mbps speed in the half duplex mode.

    ❒ **10 Mbps Full Duplex —** 10 Mbps speed in the full duplex mode.

    ❒ **100 Mbps Half Duplex —** 100 Mbps speed in the half duplex mode.

    ❒ **100 Mbps Full Duplex —** 100 Mbps speed in the full duplex mode. This is the default setting.

4. Click **OK**.

TCP/UDP Checksum Offload (IPv4)

The TCP/UDP Checksum Offload (IPv4) function enables the adapter to compute the checksum of transmitting IPv4 packets and verify the checksum of receiving IPv4 packets, taking load off from the CPU.

To modify the TCP/UDP Checksum Offload (IPv4) setting, do the following:

1. Access the Device Manger on your operating system.

   See "Accessing Advanced Properties" on page 51.

2. Select **TCP/UDP Checksum Offload (IPv4)** in the Property box.

   The TCP/UDP Checksum Offload (IPv4) page is displayed as shown in Figure 41.
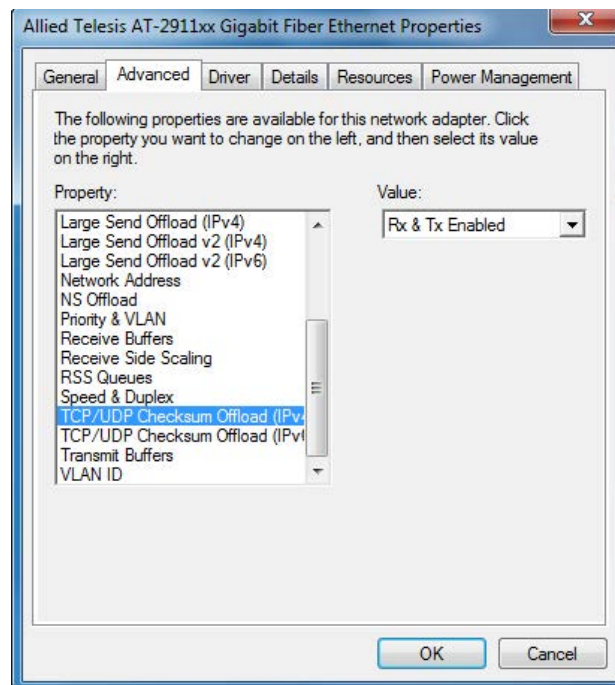
Figure 41. TCP/UDP Checksum Offload (IPv4) Page

3. Select one of the following options:

❐ **Rx & Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv4) function for both receiving and transmitting IPv4 packets. This is the default setting.

❐ **Rx Enabled —** Enables the TCP/UDP Checksum Offload (IPv4) function only for receiving IPv4 packets.

❐ **Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv4) function only for transmitting IPv4 packets.

4. Click **OK**.

TCP/UDP Checksum Offload (IPv6)

The TCP/UDP Checksum Offload (IPv6) function enables the adapter to compute the checksum of transmitting IPv6 packets and verify the checksum of receiving IPv6 packets, taking load off from the CPU.

To enable or disable the TCP/UDP Checksum Offload (IPv6) feature, do the following:

1. Access the Device Manger on your operating system.

   See "Accessing Advanced Properties" on page 51.

2. Select **TCP/UDP Checksum Offload (IPv6)** in the Property box.

   The TCP/UDP Checksum Offload (IPv6) page is displayed as shown in Figure 42.
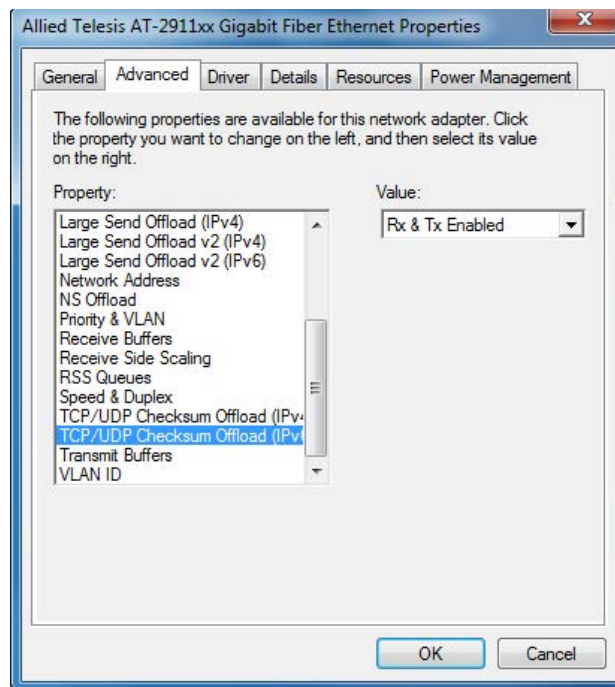
Figure 42. TCP/UDP Checksum Offload (IPv6) Page

3. Select one of the following options:

    ❒ **Rx & Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv6) function for both receiving and transmitting IPv6 packets. This is the default setting.

    ❒ **Rx Enabled —** Enables the TCP/UDP Checksum Offload (IPv6) function only for receiving IPv6 packets.

    ❒ **Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv6) function only for transmitting IPv6 packets.

4. Click **OK**.

Virtual Machine Queues

The Virtual Machine Queues feature allows you to control the load of sorting data packets. When this feature is enabled, the adapter sorts data packets to improve networking performance and reduce CPU utilization. This feature applies to host computers with Windows Server 2008 R2 or Windows 7 64 bit operating systems only. To make this feature effective, the host computer must be set in virtual environment.

To change the Virtual Machine Queues, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 51.

2. Select **Virtual Machine Queues** in the Property box.

   The Virtual Machine Queues page is displayed as shown in Figure 43.

Figure 43. Virtual Machine Queues Page

3. Select one of the following options:

   □ **Disable —** The feature is disabled. This is the default setting.
   □ **Enable —** The adapter sorts data packets.

4. Click **OK**.

VLAN ID

The VLAN ID property allows you to specify a VLAN ID on your network to the adapter. The adapter adds the value of the VLAN ID to a frame in the VLAN tag before transmitting the frame.

To change the VLAN ID value, do the following:

1. Access the Advanced Properties.

    See "Accessing Advanced Properties" on page 51.

2. Select **VLAN ID** in the Property box.

    The VLAN ID page is displayed as shown in Figure 44.
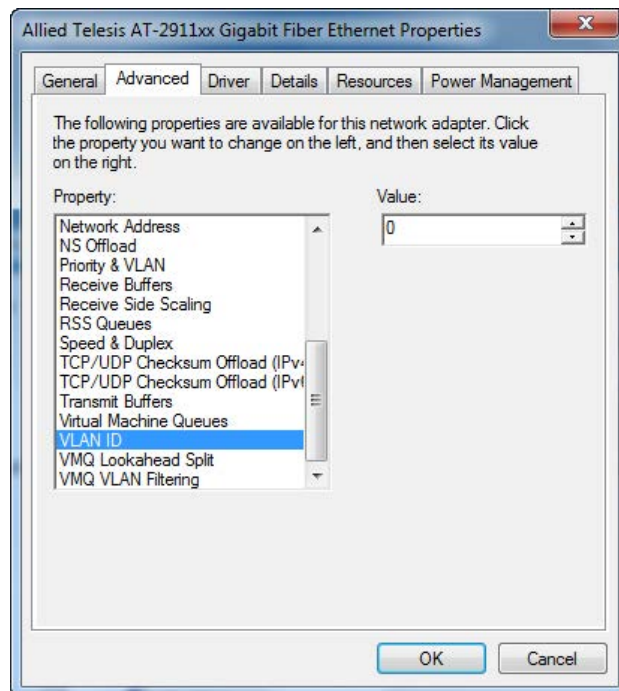
Figure 44. VLAN ID Page

3. Specify an VLAN ID in the Value box.

    The range of the value is from 0 to 4094. The default value is 0.

4. Click **OK**.

VMQ Lookahead Split

The VMQ Lookahead Split feature allows the adapter to split receive buffers into two separate buffers. This feature applies to host computers with Windows Server 2008 R2 or Windows 7 64 bit operating systems only. To make this feature effective, the host computer must be set in virtual environment.

To enable or diable the VMQ Lookahead Split feature, do the following:

1. Access the Advanced Properties.

    See "Accessing Advanced Properties" on page 51.

2. Select **VMQ Lookahead Split** in the Property box.

    The VMQ Lookahead Split page is displayed as shown in Figure 45.
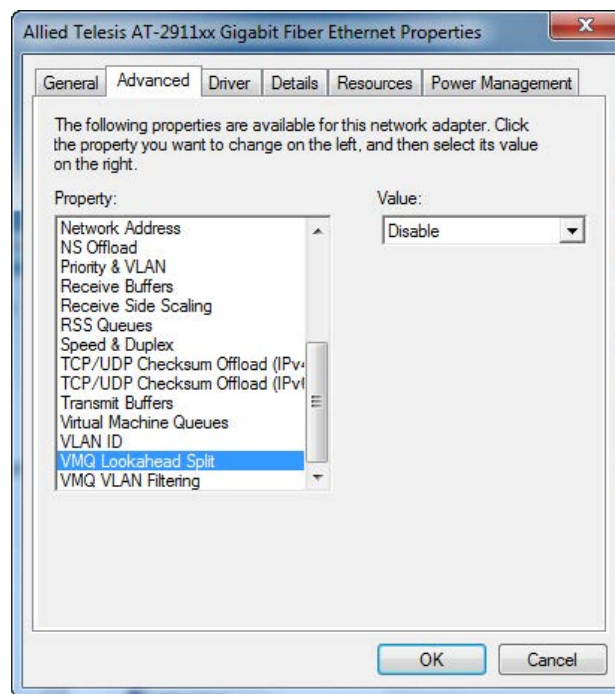
Figure 45. VMQ Lookahead Split Page

3. Select one of the following options:

    ❑   **Disable —** The feature is disabled. This is the default setting.

    ❑   **Enable —** The adapter uses two separate lookahead receive buffers.

4. Click **OK**.

VMQ VLAN Filtering

The VMQ VLAN Filtering feature allows the adapter to filter data packets using the VLAN ID in the media access control (MAC) header to improve networking performance and reduce CPU utilization. This feature applies to host computers with Windows Server 2008 R2 or Windows 7 64 bit operating systems only. To make this feature effective, the host computer must be set in virtual environment.

To enable or disable the VMQ VLAN Filtering feature, do the following:

1. Access the Advanced Properties.

    See "Accessing Advanced Properties" on page 51.

2. Select **VMQ VLAN Filtering** in the Property box.

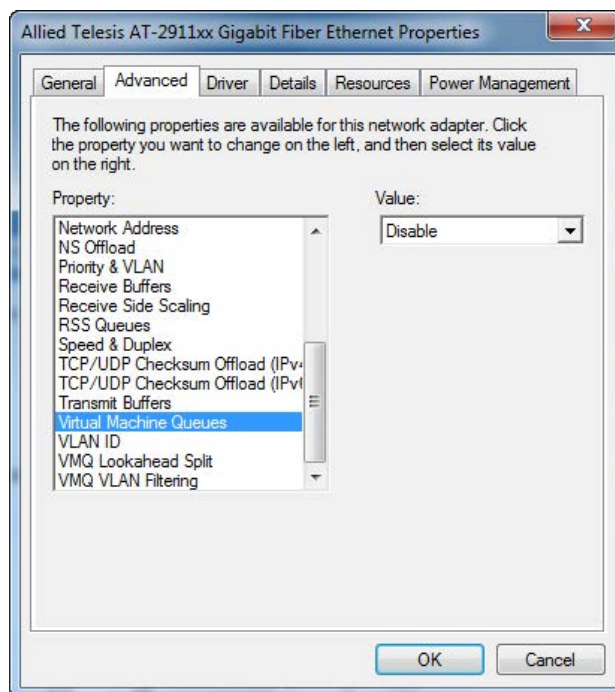   The VMQ VLAN Filtering page is displayed as shown in Figure 46.
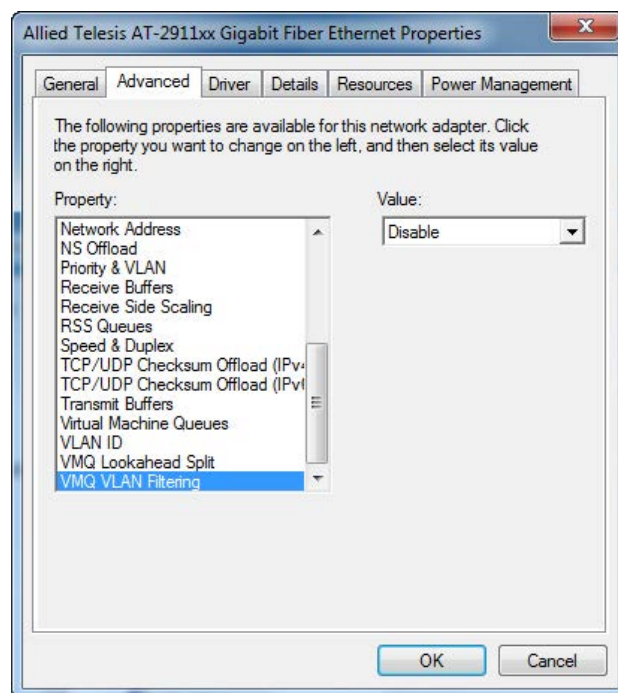
Figure 46. VMQ VLAN Filtering Page

3. Select one of the following options:

    ❒ **Disable —** The feature is disabled. This is the default setting.
    ❒ **Enable —** The adapter filters data packets using the VLAN ID in the MAC header.

4. Click **OK**.

Chapter 6
Troubleshooting

This chapter describes troubleshooting procedures and contains the following sections:

❐ "Troubleshooting Checklist" on page 90

❐ "Checking a Port LED on the Adapter" on page 91

❐ "Testing Network Connectivity" on page 92

❐ "Software Problems and Solutions" on page 94

Troubleshooting Checklist

The following checklist provides recommended actions to resolve problems installing the Allied Telesis 2911 Series Gigabit Ethernet Network Adapters or running them in your system.

Note
Before opening the cabinet of your system for removing or inserting the adapter, review all precautions outlined under "Reviewing Safety Precautions" on page 26.

❑ Inspect all cables and connections. Verify that the cable connections between the adapter and the switch are attached properly. Make sure that the cable length and rating are compliant with the requirements listed in "Connecting the Network Cables" on page 35.

❑ Check the adapter installation by reviewing Chapter 2, "Installing the Hardware" on page 25.

❑ Make sure that the adapter board is properly seated in a PCIe slot. Check for specific hardware problems, such as obvious damage to board components or the PCIe edge connector.

❑ Check the configuration settings and change them if they are in conflict with another device.

❑ Make sure that your system is using the latest BIOS.

❑ Try inserting the adapter in another slot. If the new position works, the original slot in your system may be defective.

❑ Replace the adapter that is not working with one that is known to work properly. If the second adapter works in the slot where the first one failed, the original adapter is probably defective.

❑ Install the adapter in another functioning system and run the tests again. If the adapter passed the tests in the new system, the original system may be defective.

❑ Remove all other adapters from the system and run the tests again. If the adapter passes the tests, the other adapters may be causing contention.

Checking a Port LED on the Adapter

Each port has an LED that indicates the link status. The LED functions once the driver is installed and the cables are connected properly. The LED is lit solid if data traffic is present.

Before the port LED can provide troubleshooting information, the adapter must be connected to the network and the network driver for your particular operating system must be installed.

Before troubleshooting, verify the following:

❐   The adapter driver software has been installed.

❐   The adapter is connected to a network.

❐   The LED operates properly.

To check the LED status, see Table 1 on page 17.

Testing Network Connectivity

This section describes how to test network connectivity for Windows and Linux networks.

Guidelines   Here are guidelines to the adapter and switch settings:

❑ When you are using the fiber optic port or a Gigabit SFP, both the adapter and the switch must be set to Auto-Negotiation.

❑ When using a 100Mbps SFP, the adapter must be set to Auto-Negotiation. The switch may work at Auto-Negotiation, or may need to be set to 100Mbps with the full duplex mode, depending on the switch.

❑ You can test the connectivity of the 2911 network adapter either from the host device or another device in the same network. Choose a test method from the following options:

– If the host device where you installed the 2911 network adapter has other network adapters, go to "Testing the 2911 Network Adapter from Another Device," next.

– If the 2911 network adapter is only one network adapter installed in the host device, you can use either method: "Testing the 2911 Network Adapter from Another Device," next, or "Testing the 2911 Network Adapter from the Host Device" on page 93.

Testing the 2911 Network Adapter from Another Device   If the host device where you installed the 2911 network adapter has other network adapters, test the connectivity from another device in the network.

To test the connectivity of the network adapter from another device in the network, perform the following procedure.

1. Complete the adapter driver installation. See "Completing the Adapter Driver Installation" on page 39.

2. Assign an IP address to the 2911 network adapter.

   The IP address can be a static address that you manually assigned it or a dynamic address from a DHCP server.

3. If you do not know the IP address of the 2911 network adapter, start Command Prompt.

   There are several ways to start Command Prompt. One of therm is by clicking the Start icon in the bottom left corner of the host device's screen. In the search box, type cmd and press Enter.

4. Issue the `ipconfig /all` command at the prompt and remember the IP address of the 2911 network adapter.

5. From another device in the same network, issue `ping` command with the IP address of the 2911 network adapter at Command Prompt.

6. Check the ping results.

Testing the 2911 Network Adapter from the Host Device

If the 2911 network adapter is only one network adapter installed in the host device, you can test the connectivity from the host device of the 2911 network adapter.

To test the connectivity of the network adapter, perform the following procedure.

1. Complete the adapter driver installation. See "Completing the Adapter Driver Installation" on page 39.

2. Assign an IP address to the 2911 network adapter.

   The IP address can be a static address that you manually assigned it or a dynamic address from a DHCP server.

3. Start Command Prompt.

   There are several ways to start Command Prompt. One of therm is by clicking the Start icon in the bottom left corner of the host device's screen. In the search box, type `cmd` and press Enter.

4. Issue the `ping` command with the IP address of another device in your network at the system.

   Example: `ping 192.168.1.30`

5. Check the ping results.

Linux

To verify that the Ethernet interface is up and running, run `'ifconfig'` to check the status of the Ethernet interface. In addition, you can use the `'netstat -i'` command to check the statistics on the Ethernet interface. Consult the manual pages for more information about the `'ifconfig'` and `'netstat'` commands.

To ping an IP host on the network to verify connection has been established, perform the following procedure.

1. From the command line, type **ping <*IP address*>**.

2. Press **Enter**.

   The command displays the packet send/receive status.

Software Problems and Solutions

The following are known problems and solutions:

Problem: When the bus on the system is operating at PCIe mode, the adapter performs at PCIe mode if it is added by the Hot Plug application.

Solution: When the system is booted up without an adapter, the bus operates at the lowest mode which is PCIe. This problem can be corrected by rebooting the system.

Problem: The adapter may not perform at optimal level when it is added by the Hot Plug application on some systems.

Solution: The system BIOS, in some systems, does not set the cache line size and the latency timer, after the adapter is added by the Hot Plug application. This problem can be corrected by rebooting the system.

Appendix A
Specifications

This appendix contains the following specifications:

- ❏ "Physical and Power Specifications" on page 96
- ❏ "Environmental Specifications" on page 97
- ❏ "Power Specifications" on page 98
- ❏ "Optical Specifications" on page 99

Physical and Power Specifications

Table 4 provides the dimensions and weight specifications of the 2911 series adapters:

Table 4. Physical Specifications

Model	Length		Height		Weight	
	(cm)	(inch)	(cm)	(inch)	(g)	(oz)
2911SX/ST	8.8	3.5	6.9	2.7	56.7	2.0
2911SX/SC	8.8	3.5	6.9	2.7	56.7	2.0
2911SX/LC	8.8	3.5	6.9	2.7	56.7	2.0
2911LX/SC	8.8	3.5	6.9	2.7	56.7	2.0
2911LX/LC	8.8	3.5	6.9	2.7	56.7	2.0
2911SFP	8.9	3.5	6.9	2.7	45.4	1.6
2911STX/SC	8.8	3.5	6.9	2.7	59.5	2.1
2911STX/LC	8.8	3.5	6.9	2.7	59.5	2.1
2911LTX/SC	8.8	3.5	6.9	2.7	59.5	2.1
2911LTX/LC	8.8	3.5	6.9	2.7	59.5	2.1
2911SX/2LC	8.3	3.3	6.9	2.7	65.2	2.3
2911LX/2LC	8.3	3.3	6.9	2.7	65.2	2.3
2911SFP/2	8.4	3.3	6.9	2.7	48.2	1.7
2911T/2	7.6	3.0	6.9	2.7	48.2	1.7

Environmental Specifications

The following environmental specifications apply to the 2911 adapter:

Table 5. Environmental Specifications

Operating Temperature	0°C to 45°C (+32°F to +113°F)
Storage Temperature	-20°C to +70°C (-4°F to +158°F)
Operating Humidity	5% to 90% (non-condensing)
Storage Humidity	5% to 95% (non-condensing)
Operating Altitude Range	3048 m (10,000 ft.)

Power Specifications

The following power specifications apply to the 2911 adapter:

Table 6. Power Specifications

Model	Power (Watts)
2911SX/ST	1.5 @ +3.3V
2911SX/SC	1.5 @ +3.3V
2911SX/LC	1.5 @ +3.3V
2911LX/SC	1.5 @ +3.3V
2911LX/LC	1.5 @ +3.3V
2911SFP	1.5 @ +3.3V
2911STX/SC	1.7 @ +3.3V
2911STX/LC	1.7 @ +3.3V
2911LTX/SC	1.7 @ +3.3V
2911LTX/LC	1.7 @ +3.3V
2911SX/2LC	2.4 @ +3.3V
2911LX/2LC	2.4 @ +3.3V
2911SFP/2	2.4 @ +3.3V
2911T/2	1.4 @ +3.3V

Optical Specifications

The following optical specifications apply to the 2911 series adapters:

Table 7. Optical Specifications

	Optical Sensitivity	Output Optical Power	Wavelength
1000SX/ST Connector	-17 dBm	-9.5/-4 dBm	850 nm
1000SX/SC Connector	-17 dBm	-9.5/-4 dBm	850 nm
1000SX/LC Connector	-17 dBm	-9.5/-1.5 dBm	850 nm
1000LX/SC Connector	-20 dBm	-9.5/-3 dBm	1310 nm
1000LX/LC Connector	-20 dBm	-9.5/-3 dBm	1310 nm

Appendix A: Specifications

Appendix B

Cleaning Fiber Optic Connectors

This appendix explains how to clean fiber optic connectors and includes the following topics:

❐ "Overview" on page 102

❐ "Cleaning Fiber Optic Connectors Using a Cartridge-Type Cleaner" on page 103

❐ "Cleaning Fiber Optic Connector Using a Swab" on page 105

Overview

The fiber optic connector consists of a fiber optic plug and its adapter. The end of the fiber optic cable is held in the core of the ferrule in the plug. Light signals are transmitted through the core of the fiber. Even minor smudges or dirt on the end face of the fiber, completely invisible to the naked eye, can disrupt light transmission and lead to failure of the component or of the entire system. Therefore, it is of utmost importance to clean all fiber optic connectors before use.
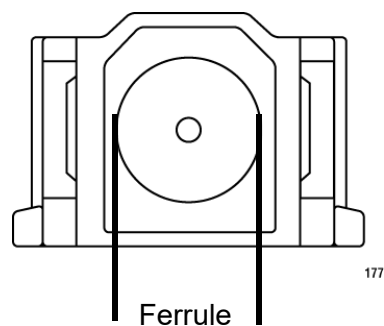
Figure 47 shows the ferrule in an SC connector.

Figure 47. Ferrule in an SC Connector Plug

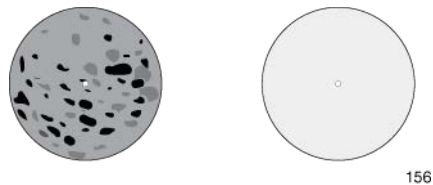Figure 48 shows part of the end face of an unclean and clean ferrule.

Figure 48. Unclean and Clean Ferrule

Cleaning Fiber Optic Connectors Using a Cartridge-Type Cleaner

Fiber optic cartridge-type cleaners are available from many vendors and typically called "cartridge cleaners." See Figure 49.

Figure 49. Cartridge Cleaner

Note
Do not use compressed air or aerosol air to clean a fiber optic connector.

To clean a fiber optic connector using a cartridge cleaner, do the following:

1. With one hand, hold the cartridge cleaner and push the lever on the cleaning cartridge in the direction of the arrow to expose the cleaning surface.

2. Place the ferrule tip on the exposed cleaning surface and rub the ferrule in a downward direction, as shown in Figure 50.
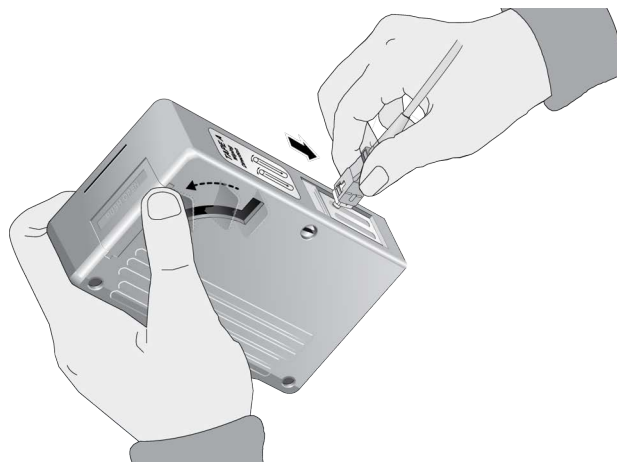

Figure 50. Rubbing the Ferrule Tip on the Cleaning Surface

Note

Rub the ferrule tip on the cleaning surface in one direction only.

---

3. When you reach the end of the cleaning surface, pick up the ferrule tip, rotate and place it at the top and rub downwards at least 2 times.

⚠️ **Caution**

Failing to pick up the ferrule tip when you reach the bottom of the cleaning surface can result in static electricity that can damage the fiber optic cable. ⤶ E82

---

4. If desired, repeat steps 3 and 4.

5. If a fiber inspection scope is available, use the scope to inspect the ferrule end face to make sure that it is clean.

6. Reconnect the cable to the port or protect the ferrule tip with a dust cap.

Note

Always keep a dust cap on a fiber optic cable when it is not in use.

Note

Do not touch the end face of the ferrule in the connector.

⚠️ **Warning**

Do not stare into the laser beam. ⤶ L2

⚠️ **Warning**

Do not look directly at the fiber optic cable ends or inspect the cable ends with an optical lens. ⤶ L6

Cleaning Fiber Optic Connector Using a Swab

Specially treated swabs (stick cleaners) are available for cleaning inside connector adapters or hard-to-reach ferrule tips. These swabs, often referred to as "lint free" or "alcohol free" swabs, are available from many vendors. Stick cleaners are available in both 2.5 mm and 1.25 mm sizes for use on SC and MU connectors respectively. See Figure 51.

Note
NEVER use a household cotton swab and/or alcohol to clean a fiber optic connector. This may leave a residue on the ferrule tip.
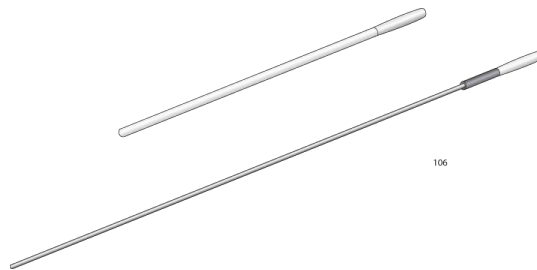
Figure 51. Lint-Free and Alcohol-Free Swabs

Note
Do not use compressed air or aerosol air to clean a fiber optic connector.

To clean a recessed ferrule using a swab, do the following.

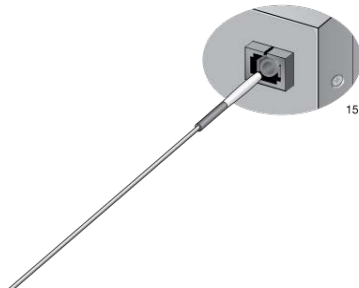1. Insert the swab into the adapter as shown in Figure 50 and rub the ferrule tip with the swab.

Figure 52. Cleaning a Recessed Ferrule

2. If needed, repeat step 1.

3. If a fiber inspection scope is available, use the scope to inspect the connector to make sure that it is clean and to check for scratches, pits, or other problems that may affect performance.

    Note
    Always keep a dust cap on a fiber optic cable when it is not in use.

    Warning
    Do not stare into the laser beam. &~ L2

    Warning
    Do not look directly at the cable ends or inspect the cable ends with an optical lens. &~ L6