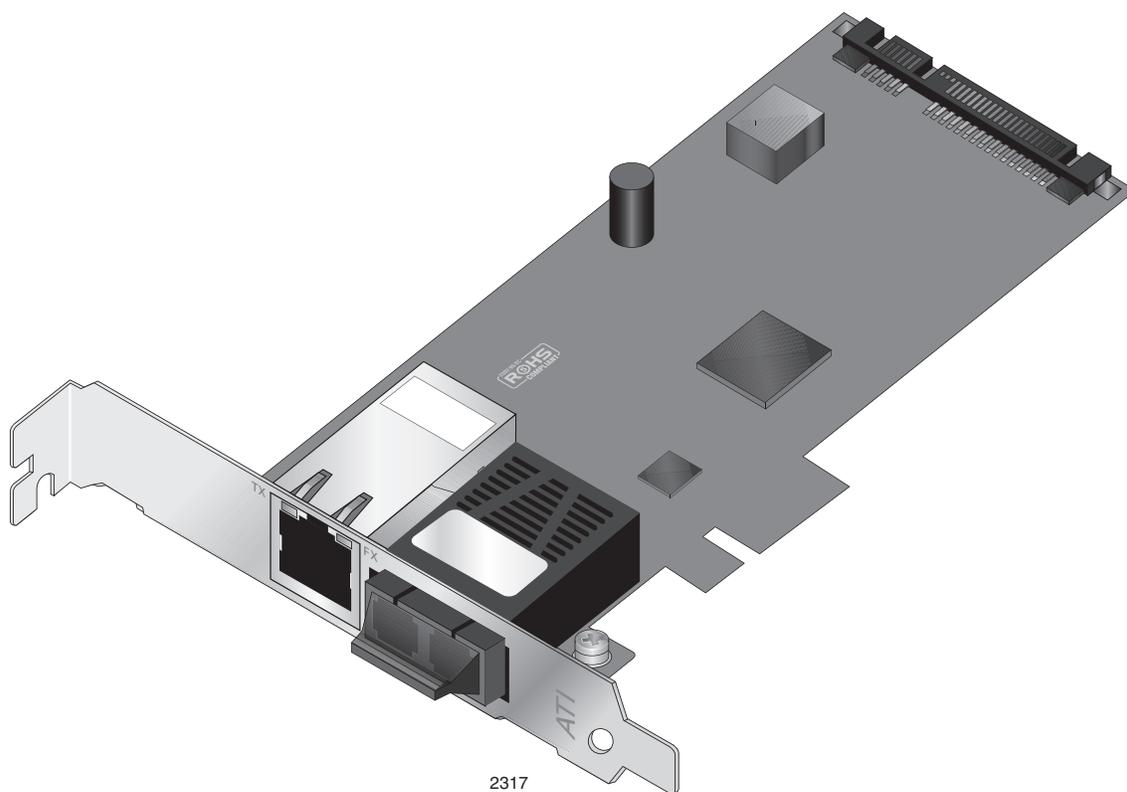


# AT-2716POE

Fast Ethernet Fiber & PoE Adapter



# Installation and Users Guide

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# Electrical Safety and Emissions Standards

This product meets the following standards:

<b>Federal Communications Commission Interference Statement</b>
<p><b>Declaration of Conformity</b></p> <p>Manufacturer Name: Allied Telesis, Inc.</p> <p>Declares that the product: <b>Fast Ethernet Adapters</b></p> <p>Model Numbers: <b>AT-2716POE</b></p> <p>This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 or television reception. 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:</p> <ul style="list-style-type: none"><li>- Reorient or relocate the receiving antenna.</li><li>- Increase the separation between the equipment and the receiver.</li><li>- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.</li><li>- Consult the dealer or an experienced radio/TV technician for help.</li></ul> <p>This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:</p> <ol style="list-style-type: none"><li>(1) This device must not cause harmful interference, and</li><li>(2) This device must accept any interference received, including interference that may cause undesired operation.</li></ol> <p>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.</p> <p><b>IMPORTANT NOTE:</b> <b>FCC Radiation Exposure Statement:</b></p> <p>This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.</p> <p>This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.</p> <p>IEEE802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.</p>

<b>Industry Canada</b>
<p>This Class A digital apparatus complies with Canadian ICES-003.</p> <p>Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.</p>

<b>European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment</b>
<p>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.</p>

RFI Emissions	FCC Class A
Immunity	EN55024
Electrical Safety	EN60950-1 (TUV), UL 60950-1 (CULUS)
 Laser Safety	EN60825

## Translated Safety Statements

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**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/software](http://www.alliedtelesis.com/support/software). For specific instructions, see “Where to Find Management Software Updates and Product Information” on page 11.

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## Preface

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This guide contains instructions on how to install the AT-2716POE Fast Ethernet Fiber & PoE Adapter. Procedures that describe how to install and configure the driver software on the Windows XP, Windows Vista, and Windows 7 Operating Systems are provided.

The Preface contains the following sections:

- “Safety Symbols Used in this Document” on page 10
- “Where to Find Management Software Updates and Product Information” on page 11
- “Contacting Allied Telesis” on page 12

## Safety Symbols Used in this Document

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This document uses the safety symbols defined in Table 1.

Table 1. Safety Symbols

Symbol	Meaning	Description
	Caution	Performing or omitting a specific action may result in equipment damage or loss of data.
	Warning	Performing or omitting a specific action may result in electrical shock.

## Where to Find Management Software Updates and Product Information

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New releases of management software are on the Allied Telesis web site. In addition, the installation and user guides are available for all Allied Telesis products in portable document format (PDF) on our web site. Both the management software and the product documentation are available at [www.alliedtelesis.com/support/software/](http://www.alliedtelesis.com/support/software/).

Once you access the web site, enter the hardware product model in the **Search by Product Name** field; for example, enter AT-2716POE. Then click **Find**. You can download the adapter drivers. In addition, you can view the documents online or download them onto your local workstation or server.

## Contacting Allied Telesis

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This section provides Allied Telesis contact information for technical support as well as sales or corporate information.

### Online Support

You can request technical support online by accessing the Allied Telesis Knowledge Base at [www.alliedtelesis.com/supportcenter](http://www.alliedtelesis.com/supportcenter). You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

### Email and Telephone Support

For Technical Support via email or telephone, refer to the Support & Services section of the Allied Telesis web site: [www.alliedtelesis.com/support](http://www.alliedtelesis.com/support). Select your country from the list displayed on the website. then select the appropriate menu tab.

### Warranty

For hardware warranty information, refer to the Allied Telesis web site at [www.alliedtelesis.com/support/warranty](http://www.alliedtelesis.com/support/warranty).

### Returning Products

Products for return or repair must first be assigned a return materials authorization (RMA) number. A product sent to Allied Telesis without an RMA number will be returned to the sender at the sender's expense.

To obtain an RMA number, contact the Allied Telesis Technical Support group at our web site: [www.alliedtelesis.com/support/rma](http://www.alliedtelesis.com/support/rma). Select your country from the list displayed on the website. Then select the appropriate menu tab.

### Sales or Corporate Information

You can contact Allied Telesis for sales or corporate information through our web site: [www.alliedtelesis.com/purchase/direct](http://www.alliedtelesis.com/purchase/direct).

To find an office near you, select [www.alliedtelesis.com/office](http://www.alliedtelesis.com/office).

### Management Software Updates

New releases of management software for our managed products are available on our Allied Telesis web site at <http://www.alliedtelesis.com/support/software>.

## Chapter 1

# Introduction to the AT-2716POE Fast Ethernet Fiber & PoE Adapter

---

This chapter provides an introduction to the AT-2716POE Fast Ethernet Fiber & PoE Adapter and discusses the following topics:

- “Functional Description” on page 14
- “AT-2716POE Adapter Software Drivers” on page 16

## Functional Description

---

The AT-2716POE Fast Ethernet Fiber & PoE Adapter is a highly integrated dual-port adapter based on Broadcom's BCM5718 chipset. The primary data port is 100FX fiber. The secondary port is a 1 Gigabit copper port which can support Class 3 Power over Ethernet (PoE) devices. See Figure 1.

In networks where the main data backbone is fiber, the AT-2716POE adapter is used to implement desktop VoIP (Voice over IP) solutions which are usually copper based.

The Allied Telesis AT-2716POE AT-Mux Configuration software allows packet bridging between the AT-2716POE FX fiber and the TP PoE (Power over Ethernet) port. It allows you to enable and configure VLANs as well as controlling the flow of packets through the bridge. The Windows XP, Windows Vista, and Windows 7 Operating Systems are supported by the AT-2716POE adapter drivers.

The adapter connects a PCI-Express compliant workstation to a 100FX Ethernet network. The adapter incorporates a technology that transfers data at a maximum rate of 200 Mbps. In addition, the adapters use fiber optic cabling and a connector that meets 62.5/125um or 50/125um multimode specifications. The AT-2716POE fiber port operates at 100 Mbps half/full-duplex mode. The copper port operates with auto negotiation of up to 1000 Mbps Full Duplex.

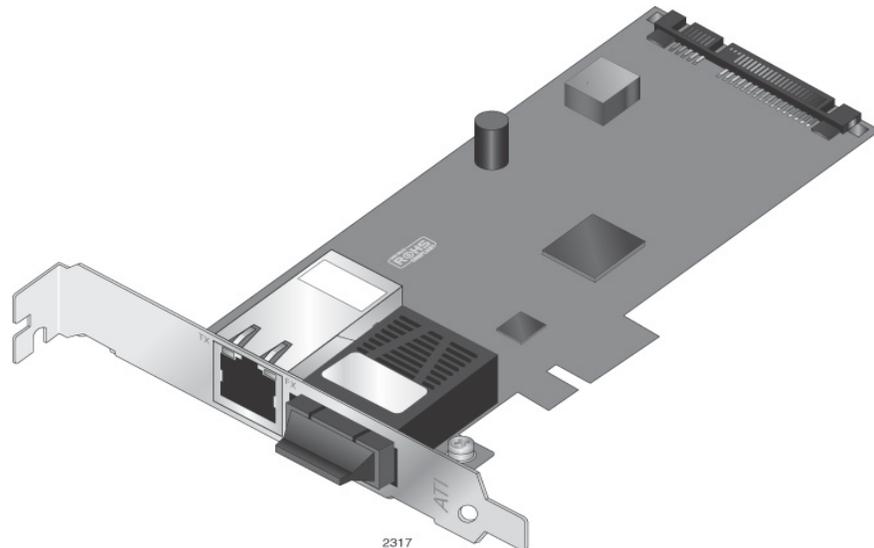


Figure 1. AT-2716POE Adapter

**LEDs**

The AT-2716POE adapter has two LEDs located on the copper port. See Figure 2. The left LED, labeled TX, indicates the link and activity status of the 1 Gigabit copper port that has PoE capabilities. The right LED, labeled FX, indicates the link and activity status of the 100FX fiber port. For a description of the LEDs, see Table 1.

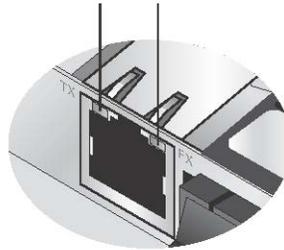


Figure 2. AT-2716FX/TP LEDs

Table 1. TX and FX LEDs

LED	State	Description
TX	Green	Indicates a valid link on the copper port.
	Blinking Green	Indicates data traffic is present between the adapter's copper port and its link partner.
FX	Green	Indicates a valid link on the fiber port.
	Blinking Green	Indicates data traffic is present between the adapter's fiber port and its link partner.

## AT-2716POE Adapter Software Drivers

You can download the latest version of the software driver and our configuration for the AT-2716POE adapter from the Allied Telesis website at [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software). After you have accessed this website, enter the model number in the **Search by Product Name** box; for example, AT-2716POE. Then click **Find**.

### Supported Operating Systems

The AT-2716POE adapter supports the following operating systems:

- Windows XP 32-bit
- Windows Vista 32-bit
- Windows Vista 64-bit
- Windows 7 32-bit
- Windows 7 64-bit

### Software Driver Features

The following is a list of the AT-2716POE advanced features by O/S:

Property	Windows XP	Windows Vista	Windows 7
802.1p QOS	X		
802.3az EEE	X	X	X
ARP Offload			X
EEE Control Policies	X	X	X
Ethernet@WireSpeed	X	X	X
Flow Control	X	X	X
Interrupt Moderation		X	X
IPv4 Checksum Offload	X	X	X
Jumbo MTU	X	X	X
Large Send Offload (IPv4)	X	X	X
Large Send Offload v2 (IPv4)		X	X
Large Send Offload v2 (IPv6)		X	X
Network Address	X	X	X
NS Offload			X
Priority & VLAN		X	X
Receive Side Scaling		X	X
RSS Queues		X	X
Speed & Duplex	X	X	X
TCP/UDP Checksum Offload Ipv4		X	X
TCP/UDP Checksum Offload Ipv6		X	X
Virtual Machine Queues			X
VLAN ID		X	X
VMQ Lookahead Split			X
VMQ VLAN Filtering			X
Wake Up Capabilities	X	X	X
WOL Speed	X	X	X

## Chapter 2

# Installing the Hardware

---

The AT-2716POE Fast Ethernet Fiber & PoE Adapter can be installed in any system with an appropriate PCIe slot. This chapter describes how to install the adapter and discusses the following topics:

- “Reviewing Safety Precautions” on page 18
- “Checking the Contents of Your Shipment” on page 20
- “Pre-Installation Checklist” on page 21
- “Installing a Network Adapter Card” on page 22
- “Connecting the Network Cables” on page 26
- “Checking Warranty Registration” on page 28

## Reviewing Safety Precautions

---

Please review the following safety precautions before you begin to install the network adapter card.

---

### Note

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/ software](http://www.alliedtelesis.com/support/software). For specific instructions, see "Where to Find Management Software Updates and Product Information" on page 11.

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### Warning

This is a "Class 1 Laser 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.  E29

---



---

### 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 adapter 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.
  - Use only insulated or non-conducting tools.
  - Verify that the system is powered OFF and unplugged before accessing internal components.
  - Installation or removal of adapters 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
-

## Checking the Contents of Your Shipment

---

The following items are included with your adapter:

- Antistatic bag (used for protecting the adapter when stored or shipped). Keep the adapter in its packaging until ready for installation.
- Standard profile bracket

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

## Pre-Installation Checklist

---

Before you install an adapter card, do the following:

1. Check that your system has an appropriate open PCIe slot.
2. For the PoE feature, check that you system has an appropriate SATA or IDE power connector available on your system power supply harness.
3. Verify that your system is using the latest BIOS.
4. If your system is active, shut it down.
5. When system shutdown is complete, power OFF and unplug your system.
6. Holding the adapter card 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 card's edge connector.
8. 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.

## Installing a Network Adapter Card

---

The following instructions apply to installing an AT-2716POE adapter in most systems. If you need more information, refer to the manuals that were supplied with your system for details about performing these tasks on your particular system.

---

**Note**

To perform this procedure, you need to supply one Phillips-head screw.

---

To install the network adapter card, perform the following procedure:

1. Review the “Pre-Installation Checklist” on page 21 and Reviewing Safety Precautions” on page 18.

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**

High voltage inside the system presents a safety hazard. Make sure the power is off before removing the cover.

---

2. Remove the system cover. See Figure 3.

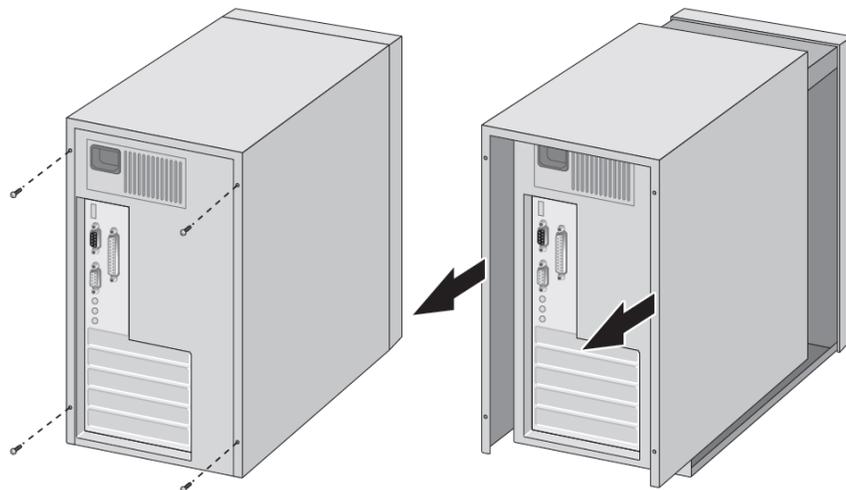


Figure 3. Removing the PC Cover

3. Select any appropriate empty, non-shared PCIe slot and remove the faceplate. If you do not know how to identify an appropriate PCIe slot, refer to your system documentation.

Keep the faceplate in a safe place. You may need it for future use. See Figure 4.

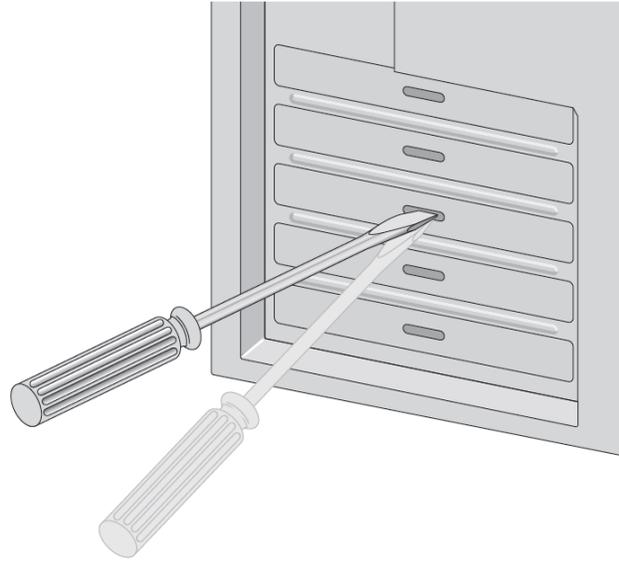


Figure 4. Removing the Faceplate from PCIe Slot

---

**Note**

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

---

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



**Caution**

Wear a grounding device and observe electrostatic discharge precautions when installing the network adapter card in a system. Failure to observe this caution could result in damage to the card.

---

5. Applying even pressure at both corners of the card, push the adapter card until it is firmly seated in the appropriate PCIe slot.

Make sure the card is securely seated. See Figure 5.

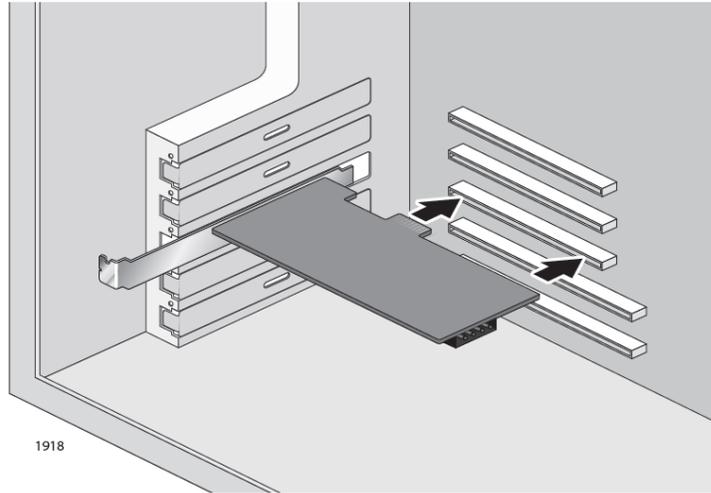


Figure 5. Inserting the Network Adapter Card



**Caution**

Do not use excessive force when seating the card, because this may damage the system or the adapter. If the card resists seating, remove it from the system, realign it, and try again.

6. Secure the network adapter card to the chassis with a Phillips-head screw (not provided) as shown in Figure 6.

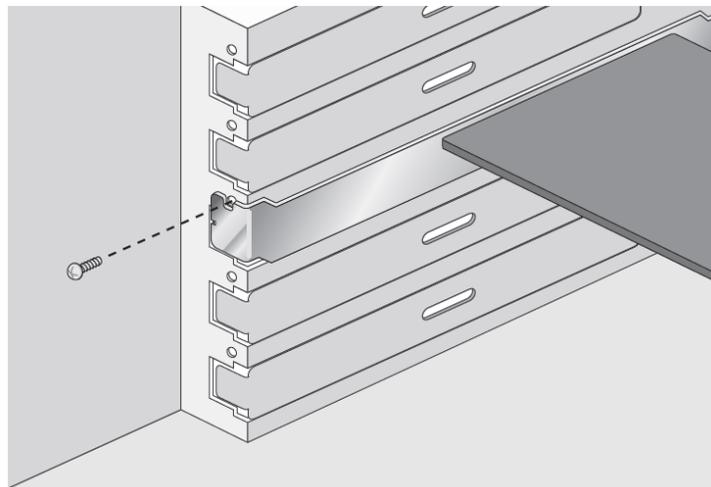


Figure 6. Securing the Adapter Card

7. Depending upon model order connect an appropriate unused power connector from the system power supply harness to the AT-2716POE SATA or IDE power connector receptacle as shown in Figure 7.

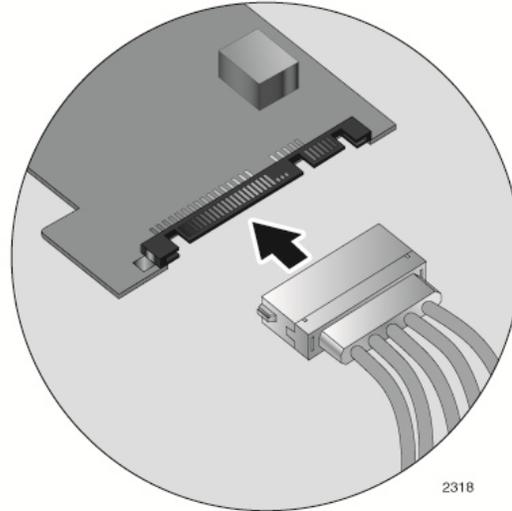


Figure 7. Installing System PS SATA Harness connector to AT-2716POE

8. Replace the system's cover and secure it with the screws removed in Step 2.
9. Disconnect any personal antistatic devices.
10. Power the system on.

---

**Note**

Once the system returns to proper operation, the adapter hardware is fully installed, but is not fully functional until the AT-2716POE driver software (Chapters 3 and 4) and AT-2716POE AT-Mux Configuration software (Chapter 5) is installed.

---

Next, connect the network cables. See "Connecting the Network Cables" on page 26.

## Connecting the Network Cables

---

The AT-2716POE adapter has one fiber optic connector to connect to the data network and one copper PoE port for attaching the adapter to a compatible link partner. The fiber optic connector requires a fiber optic cable. The copper port requires a twisted-pair cable. For pin signals and pinout information, see “10/100/1000Base-T Twisted-Pair Port Connectors” on page 88.

---

**Note**

For procedures to clean a fiber optic connection, see Appendix B “Cleaning Fiber Optic Connectors” on page 91.

---

To connect the fiber and copper network cables to the adapter, do the following:

1. Connect one end of the cable to the adapter:
  - For the copper port, connect one end of the twisted-pair cable to the adapter.
  - For the fiber optic connector, prepare a fiber optic cable according to the specifications in Table 2. Connect one end of the cable to the adapter. See Figure 8 on page 27 for an example of the fiber optic connector.

Table 2. 100BASE-FX Fiber Optic Cable Specifications

Port Type	Connector	Media	Maximum Distance
100BASE-FX	Fiber Optic	50 $\mu$ m multimode	2,000 meters (6,561.68 feet)
100BASE-FX	Fiber Optic	62.5 $\mu$ m multimode	2,000 meters (6,561.68 feet)



**Warning**

The fiber optic port contains a Class 1 laser device. When the port is disconnected, always cover it with the provided plug. Active exposed ports may cause skin or eye damage.  L4

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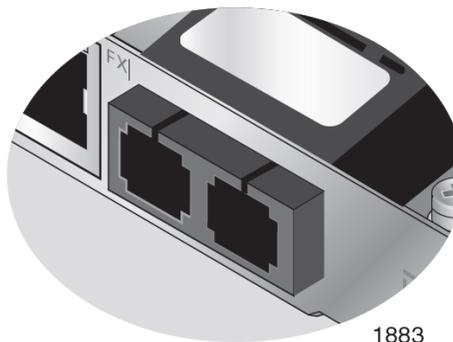


Figure 8. AT-2716POE Fiber Port

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

After the cable is properly connected at both ends, the adapter port LED is functional. See Table 1 on page 15 for a description of adapter port LED operation.

If the node attached to the AT-2716POE copper port is not capable of auto negotiation, you may need to set the speed and duplex mode of the AT-2716POE copper port.

## Checking Warranty Registration

---

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](http://www.alliedtelesis.com/support/warranty).

## Chapter 3

# Installing Windows XP NDIS Driver Software

---

This chapter describes how to install the Windows XP driver software. This chapter contains the following sections:

- “Installing the Driver Software” on page 30
- “Uninstalling the Driver Software” on page 38

After you install the driver software, you can modify the configuration properties as described in Chapter 7, “Setting Advanced Properties” on page 61.

## Installing the NDIS Driver Software

---

The system automatically detects new hardware and prompts you to install the driver software for that device when a Windows XP system first boots up. The same windows are displayed after an existing device driver is removed.

There are two installation procedures:

- “Using the Driver Installer” on page 30
- “Updating the Adapter Software” on page 33

---

**Note**

The adapter must be physically installed in your system before installing the driver software. See Chapter 2, “Installing the Hardware” on page 17 for details.

---

---

**Not**

If the Windows XP system detects an adapter and installs a default driver, update the driver as described in “Updating the Adapter Software” on page 33.

---

---

**Note**

If there is an onboard Broadcom network interface, the native Broadcom driver may load. It is recommended to install the latest driver supplied by Allied Telesis.

---

---

**Note**

After XP driver installation AT-2716POE ATMux Configuration software must be installed to complete the bridging function of the adapter, refer to Chapter 5 for details.

---

### Manual Driver Install

When you boot up the operating system after installing the adapter card, a series of *Found New Hardware* windows are displayed. You must have Administrator privileges to install the driver software.

---

**Note**

Before beginning this procedure, verify that the Windows XP system has been upgraded to the latest version with the latest service pack applied.

---

To install the adapter software on a Windows XP system, do the following:

1. Download the software drivers from the Allied Telesis website to a folder on your computer.

For specific instructions, see “Where to Find Management Software Updates and Product Information” on page 11.

2. Start up your Windows XP system and log in.

The initial *Found New Hardware Wizard* window is displayed. See Figure 9

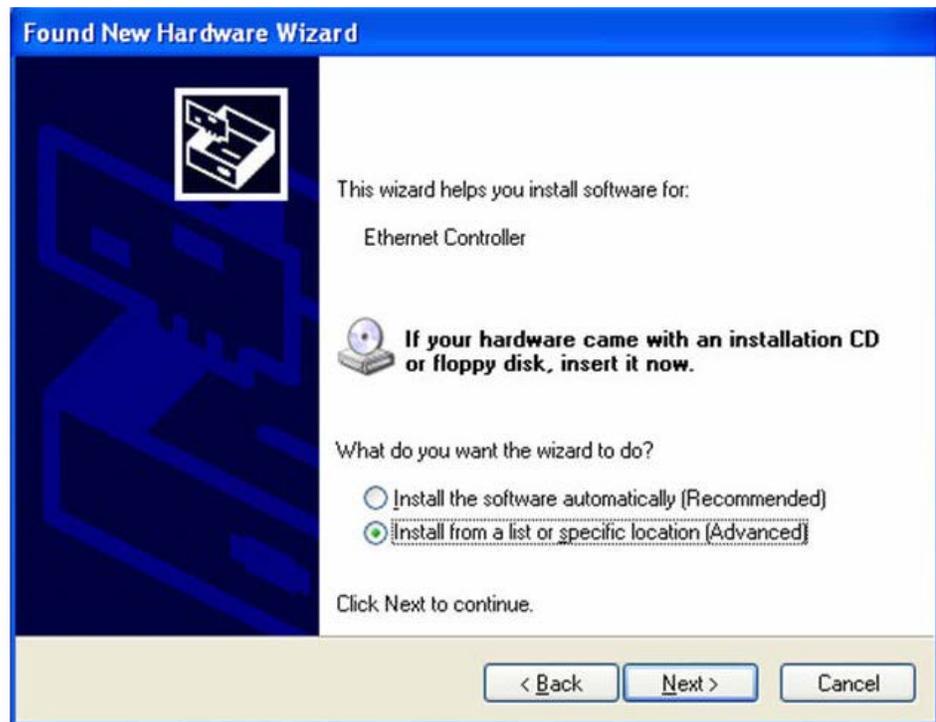


Figure 9. Found New Hardware Wizard - Initial Window

3. Click **Install from a list or specific location (Advanced)** and then click **Next**.

The search and installation options are displayed in the next *Found New Hardware Wizard* window. See Figure 10 on page 32.

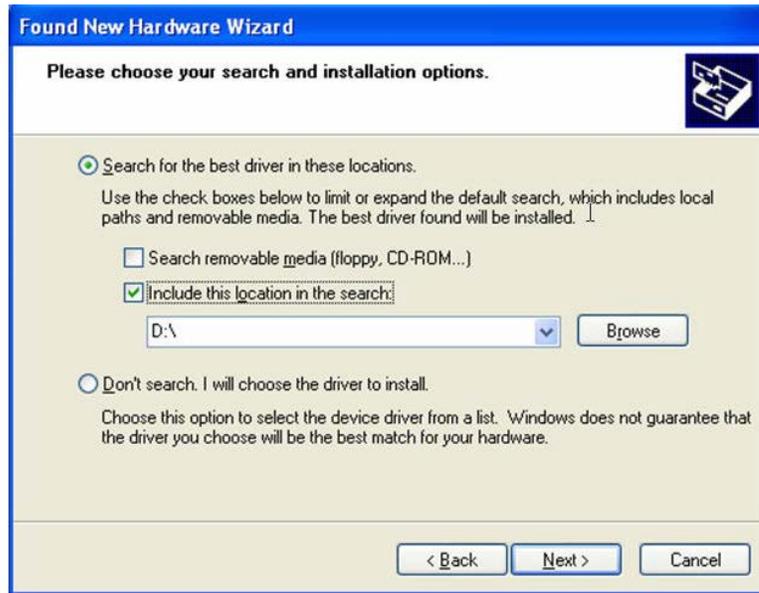


Figure 10. Found New Hardware Wizard Window: Search and Installation Options

4. Click the check box for **Include this location in the search**.
5. Click **Browse** and locate the path of the software driver.
6. Click **Next**.
7. When the software installation is complete, click **Finish** to close the wizard and complete the software installation.

**Updating the Adapter Software** This section provides a procedure for updating the adapter software for Windows XP Operating Systems.

To obtain the latest AT-2716POE adapter software drivers, you can download them from the Allied Telesis website at [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software). For specific instructions, see "Where to Find Management Software Updates and Product Information" on page 11.

---

**Note**

You may need to reboot your system after completing the driver update to properly load the new drivers.

---

### Updating the Windows XP Driver Software

To update the adapter software on a Windows XP system, do the following:

---

**Note**

Update all adapters by repeating the following steps on each device.

---

1. Start a Windows XP system and log in. You must have Administrator privileges to update the driver software.
2. On the desktop, open the **Start** menu. See Figure 11 on page 34 for an example of the Start menu.

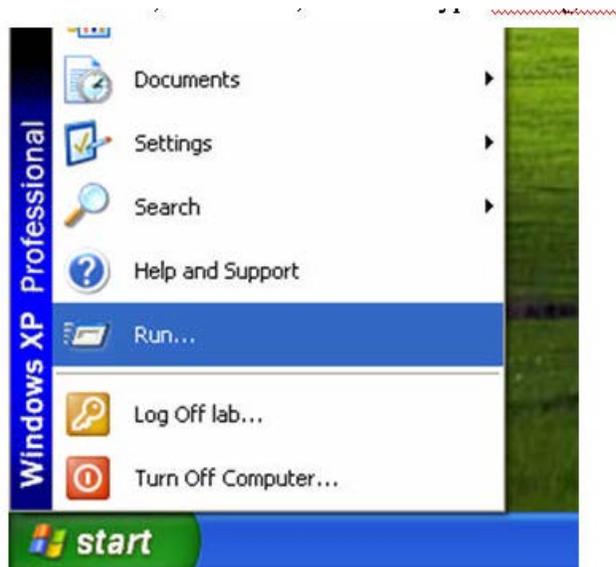


Figure 11. Windows XP Professional Start Window

3. Select **Run** from the menu and enter the following command:

devmgmt.msc

See Figure 12 for an example of the Run Window.

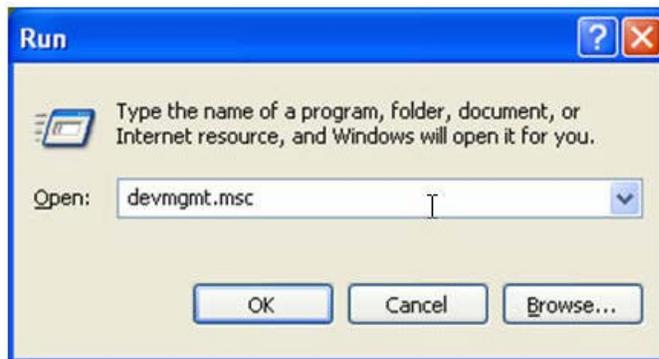


Figure 12. Run Window

The Device Manager Window is shown in Figure 13.

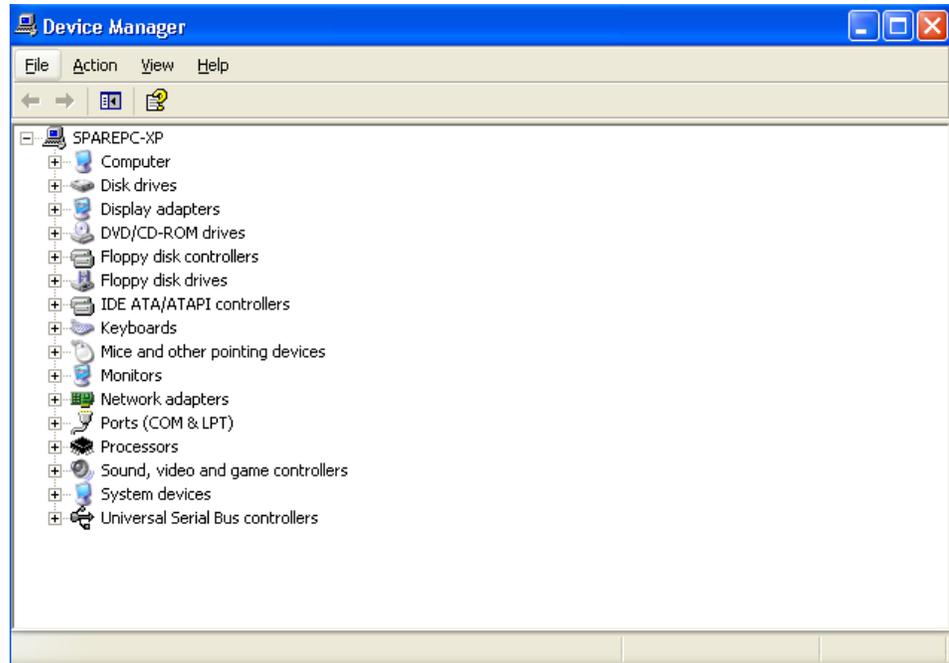


Figure 13. Device Manager Window (Network adapter folder is collapsed)

4. In the Device Manager window, click the + next to the Network adapters folder.

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

5. Right click on the AT-2716POE adapter and select **Update Driver**.

The *Welcome to the Hardware Update Wizard* window opens, as shown in Figure 14.



Figure 14. Welcome to Hardware Update Wizard Window

6. Click **No, not this time** to copy the driver software from your PC.
7. Click **Next**.

The Second New Found Hardware Wizard Window opens, as shown in Figure 15.

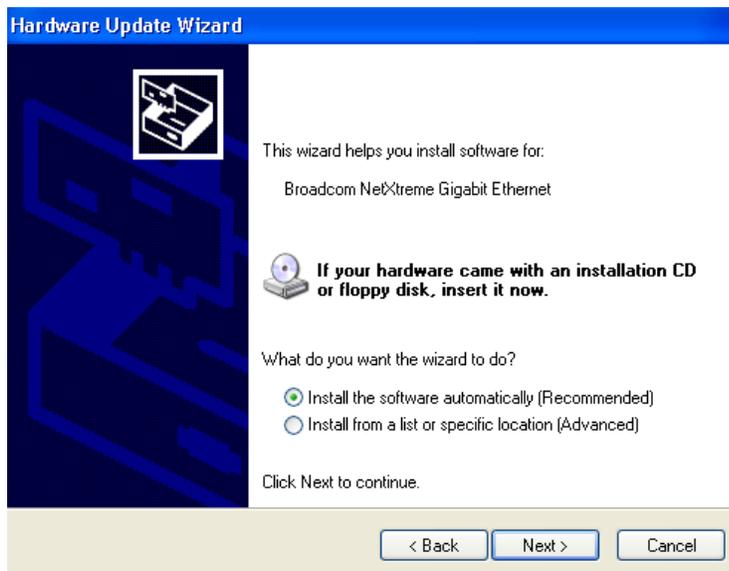


Figure 15. Hardware Update Wizard Window

8. Click **Install from a list or specified location (Advanced)**.

9. Click **Next**.

10. If you are prompted to specify the location of the software driver, click **Browse** (do not use the text field) and locate the path.

After you install the driver software, you can modify the configuration properties. See Chapter 7, "Setting Advanced Properties" on page 61.

## Uninstalling the Driver Software

---



---

### Caution

Before uninstalling the Allied Telesis device, be sure to capture all Advanced Property settings because the properties are lost during the uninstall process.

---

To uninstall the adapter software from your system, perform the following procedure:

1. Start your Windows XP system and log in.

---

### Note

You must have Administrator privileges to remove the driver software.

---

2. Right click on **My Computer** and then select **Properties** from the menu.

The Device Manager Window opens. It is shown in Figure 13 on page 35.

3. In the Device Manager window, click the **+** next to the Network adapters folder.

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

4. Right-click on the adapter to be removed and select **Uninstall**. A Confirm Device Removal window opens.

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

---

### Note

Not all of the driver files are removed as part of this procedure.

---

## Chapter 4

# Installing the Windows Vista and Windows 7 NDIS Driver Software

---

This chapter describes how to install the Windows Vista and Windows 7 driver software for the AT-2716POE adapter. The installation procedures are identical for the 32-bit and 64-bit Windows Operating systems.

This chapter contains the following sections:

- “Installing the Driver Software” on page 40
- “Uninstalling the Driver Software” on page 44

---

**Note**

To set Advanced Properties, see Chapter 7, “Setting Advanced Properties” on page 61.

---

**Note**

After NDIS driver installation AT-2716POE Vlan Configuration software must be installed to complete the bridging function of the adapter, refer to Chapter 5 for details

---

## Installing the Driver Software

---

After you physically install an AT-2716POE adapter and turn on the computer, the system detects the new hardware and asks for a software driver when the Windows operating system first boots up. Shortly after you log in, you need to install the driver software. To install or update the driver software, you must have administrative privileges.

To obtain the latest AT-2716POE adapter software drivers, go to the Allied Telesis website at [www.alliedtelesis.com/support/software](http://www.alliedtelesis.com/support/software). For specific instructions, see “Where to Find Management Software Updates and Product Information” on page 11.

To install the Windows Vista or Windows 7 Operating System driver software, do the following:

---

**Note**

The adapter must be physically installed in your system before you install the driver software. For specific instructions, see Chapter 2, “Installing the Hardware” on page 17.

---

**Opening the Device Manager**

1. Start a Windows operating system and log in.
2. To select the Device Manager, select Start -> All Programs -> Accessories -> Run. From the Start Menu, select **Run**.

The Run window is displayed. See Figure 16.

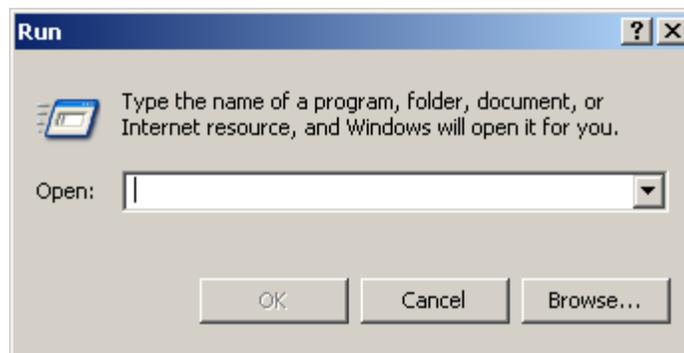


Figure 16. Run Window

3. Enter the following command in the Run window:

```
mmc devmgmt.msc
```

4. Click OK.

The Windows Device Manager window is displayed. For an example of the Device Manager window, see Figure 17.

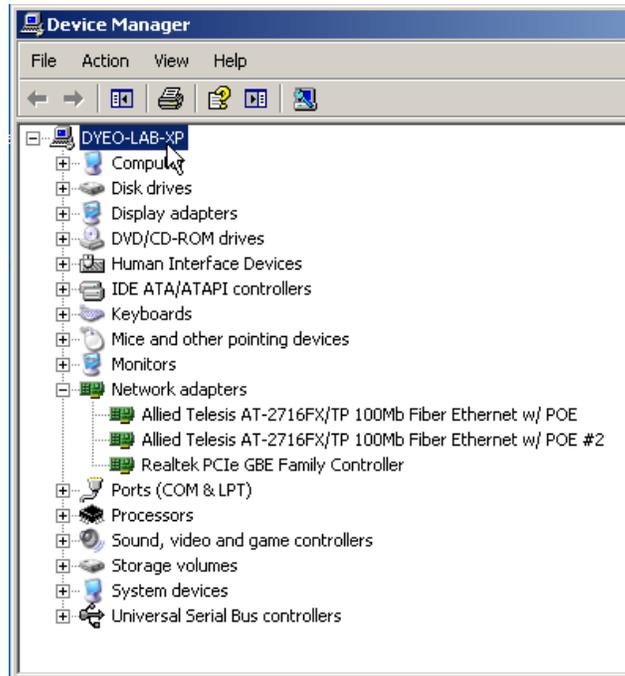


Figure 17. Windows Device Manager Window

5. Open the Network Adapters folder clicking on the “+” next to the Network adapters folder.
6. The selection expands to show the list of installed adapter cards on your PC.

The list of installed adapters are displayed. Two AT-2716POE adapters are listed either by its Allied Telesis AT-2716POE name or as “Broadcom NetExtreme”.

7. Right click on the first **Allied Telesis AT-2716POE** or **Broadcom NetExtreme** adapter that is listed.

The adapter window is displayed.

8. Go to “Installing AT\_2716 POE Driver,” next.

**Installing the AT-2716POE Driver** The procedure in this section describes how to install the driver software for the AT-2716POE adapter.

1. Open the Device Manger. Refer to “Opening the Device Manager” on page 40 for more information.
2. Open the Network Adapters folder by clicking on the “+” symbol next to the Network adapters folder.

The selection expands to show the list of installed adapter cards on your PC. Two AT-2716POE adapters are listed either by its Allied Telesis AT-2716POE name or as “Broadcom NetExtreme”.

3. Right click on the first **Allied Telesis AT-2716POE** or **Broadcom NetExtreme** adapter that is listed under Network Adapters.

See Figure 18 for an example of the Device Manger window with Ethernet Controller selected.

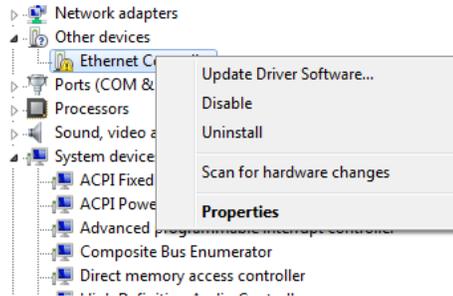


Figure 18. Device Manager Window: Ethernet Controller

4. Select Update Driver Software.

The Update Driver Software - Ethernet Controller Window is displayed. See Figure 19.

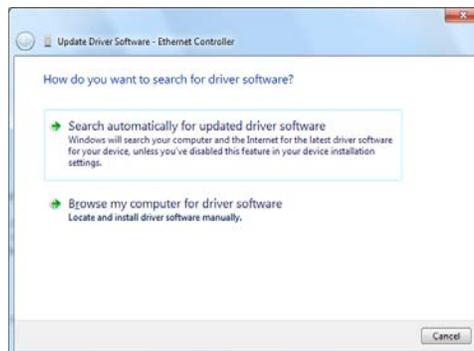


Figure 19. Update Driver Software - Ethernet Controller Window

5. Click **Browse my computer for driver software**.

The Update Driver Software - Ethernet Controller: Browse for Driver Software Window is displayed. See Figure 20 on page 43.

6. Click **Browse** to search your computer for the location of the driver software. See Figure 20.

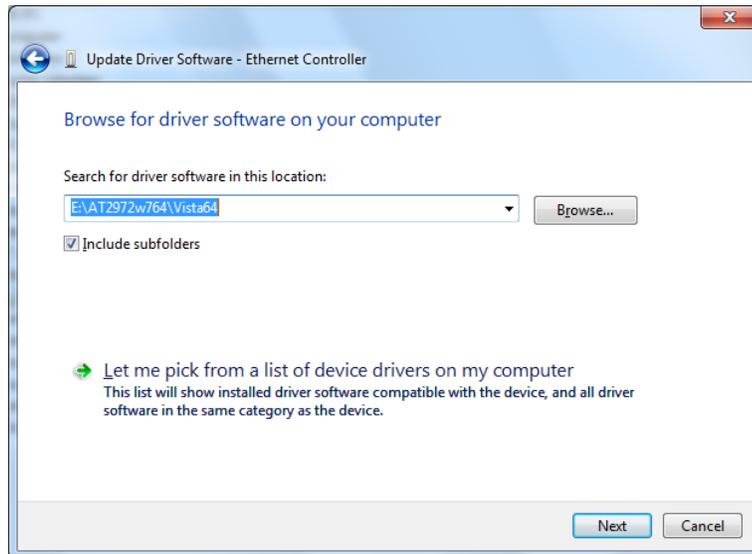


Figure 20. Update Driver Software: Ethernet Controller: Browse

7. Click **Next**. A confirmation message is displayed. See Figure 21.

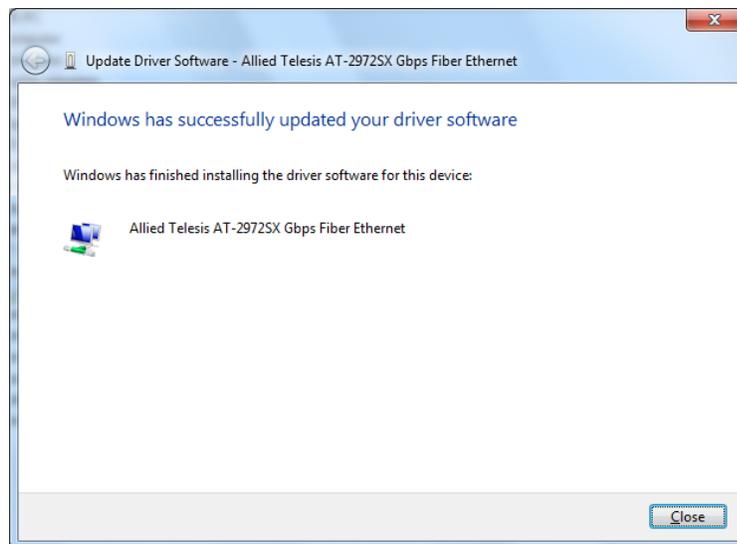


Figure 21. Update Driver Software - Confirmation Window

## Uninstalling the Driver Software

---

Before physically removing an adapter from your system, you need to uninstall the driver software first. The procedure in this section describes how to uninstall the driver software.

---

**Note**

You must have Administrator privileges to remove the driver software.

---

**Caution**

Before uninstalling the Allied Telesis device, be sure to capture all of the Advanced Property settings because the properties are lost during the uninstall process.

---

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

1. Start a Windows Vista or Windows 7 Operating System on your system and log in.
2. Open the **Device Manager**.

For specific instructions on how to open the Device Manager, see the following:

- To open the Device Manager in the Windows 7 Operating System, follow steps 3 and 4.
- To open the Device Manager in the Windows Vista Operating System, follow steps 5 through 7.

3. To select the Device Manager in the Windows 7 Operating System, select the Start button. See Figure 17 on page 41.

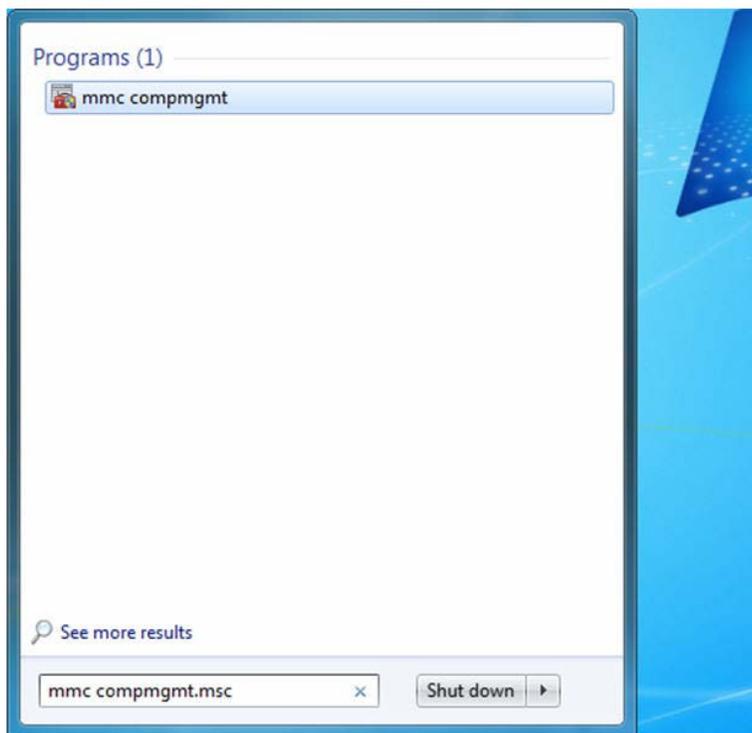


Figure 22. Windows 7 Search Box

4. Enter the following command:

```
mmc devmgmt.msc
```

The Device Manager window is displayed. For an example of the Device Manager window, see Figure 18 on page 42.

5. To select the Device Manager in the Windows Vista Operating System, select the Start menu.

See Figure 19 on page 42 for an example of the Windows Vista Start menu.



Figure 23. Windows Vista Start Menu

6. From the Start Menu, select **Run**.

The Windows Vista Run window is displayed. See Figure 16.

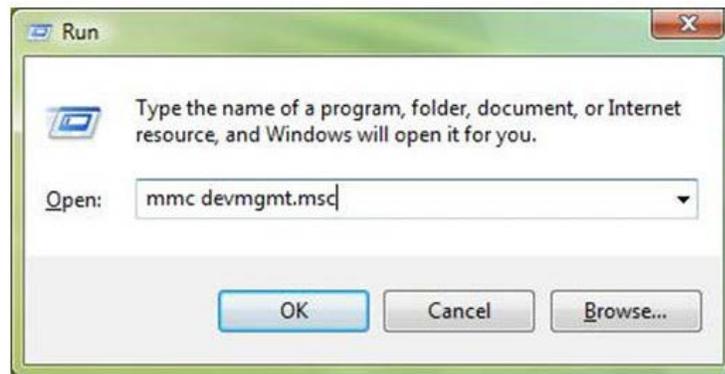


Figure 24. Windows Vista Run Window

7. Enter the following command in the Run window:

```
mmc devmgmt.msc
```

The Device Manager Window is shown in Figure 18 on page 42.

8. In the Device Manager window, click the **+** next to the Network adapters folder.

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

9. Right-click on the adapter you want to remove and select **Uninstall**.

A Confirm Device Removal window opens.

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

---

**Note**

Not all of the driver files are removed as a result of this procedure. You can remove additional drivers and installation files by selecting the checkbox to remove these files.

---

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## Chapter 5

# Installing the AT-2716POE AT-Mux CONFIGURATION Application

---

This chapter describes how to install the AT-2716POE AT-Mux CONFIGURATION application on the Windows XP, Windows Vista, and Windows 7 driver software on an AT-2716POE adapter. The installation procedure is identical for all of the above mentioned Windows Operating systems.

This chapter contains the following sections:

- “Virtual LANs and the AT-2716POE AT-Mux CONFIGURATION Protocol” on page 50
- “Installing the AT-2716POE AT-Mux CONFIGURATION Application” on page 53

---

**Note**

To set Advanced Properties, see Chapter 7, “Setting Advanced Properties” on page 61.

---

## Virtual LANs and the AT-2716POE AT-Mux Configuration Utility

---

The AT-2716POE adapter is IEEE 802.1Q-compliant and is designed to support virtual LANs (VLANs) and tagged packets. A VLAN is an independent traffic domain where traffic generated by the nodes of a VLAN is restricted only to nodes that are members of the same VLAN. Traffic within a VLAN cannot cross over a VLAN boundary unless there is an interconnection device, such as a router or a Layer 3 switch in the network.

Often, VLANs are used to group nodes with related functions into their own separate, logical LAN segments. These VLAN groupings can be based on similar data needs or security requirements. In addition, VLANs can increase network performance and security by restricting traffic to specific devices or areas of a network.

A tagged VLAN (IEEE 802.1Q) contains one or more network links that carry traffic from more than one VLAN. The VLAN traffic is identified by a *header tag*, or simply a *tag*, that follows the source and destination addresses in a packet. The tag contains a VLAN identifier (VID) that uniquely identifies the VLAN to which a packet belongs. The AT-2716POE adapter is capable of reading the header tag in tagged packets as they arrive on the port, as well as adding tags to packets when transmitting packets.

Before a network adapter card can handle tagged packets, you must configure it by specifying the appropriate VIDs of the VLANs whose tagged packets the adapter is to process.

If the network adapter card handles tagged traffic from more than one VLAN, you can use the AT-2716POE AT-Mux Configuration utility, which you can download from the Allied Telesis website. This utility allows you to assign a VID to each adapter port enabling a network adapter card to process tagged traffic from different VLANs.

The following list briefly outlines the behavior of a network adapter card when handling tagged and untagged VLAN traffic:

- An adapter where no VIDs have been assigned accepts and transmits only untagged packets. (An untagged packet does not contain a header tag and, consequently, lacks VLAN identification.) The adapter discards any tagged packets that arrive on the port. Both the fiber and copper port communicate on the same network.
- An adapter where at least one VID has been assigned accepts only those tagged packets with header tags that match the assigned VIDs

on that assigned port. The adapter discards all untagged packets on that port as well as any tagged packets with VLAN IDs that do not match the VLAN IDs assigned to the card. Either one or both adapter ports can be tagged with the same or different VLAN IDs.

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## Installing the AT-2716POE AT-Mux Configuration Utility

---

1. Double click Setup.exe for 32 bit operating system or Setup64.exe for 64 bit operating system to start the AT-2716POE AT-Mux Setup Wizard. See Figure 28.

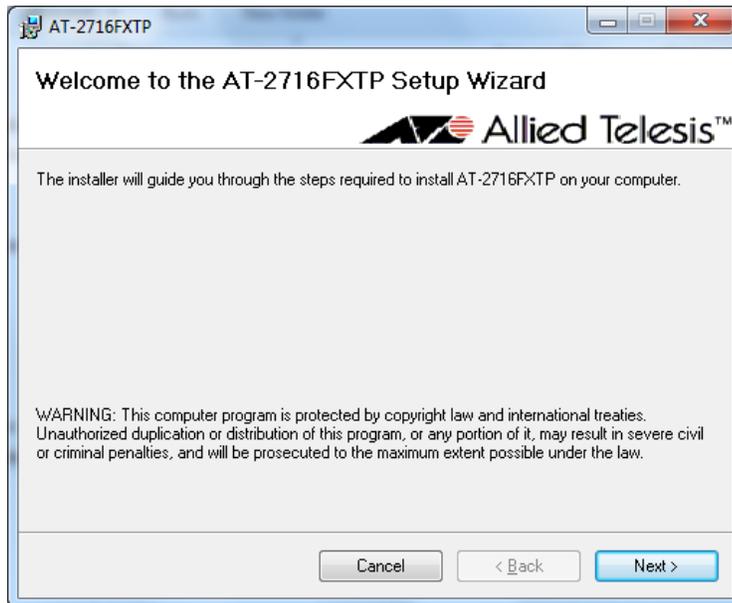


Figure 28. Welcome to the AT-2716POE AT-Mux Setup Wizard Window

2. Click **Next**.

The Confirm Installation window is displayed. See Figure 29.

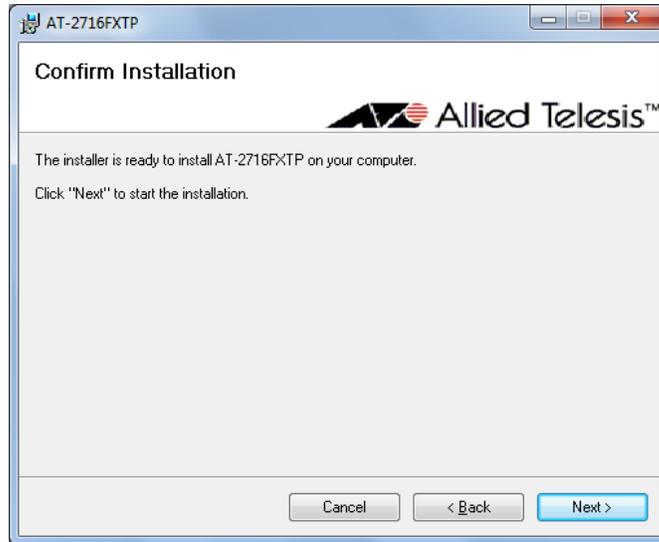


Figure 29. Confirm Installation Window

3. Click **Next**.

The Installing AT-2716POE Window is displayed. See Figure 30.

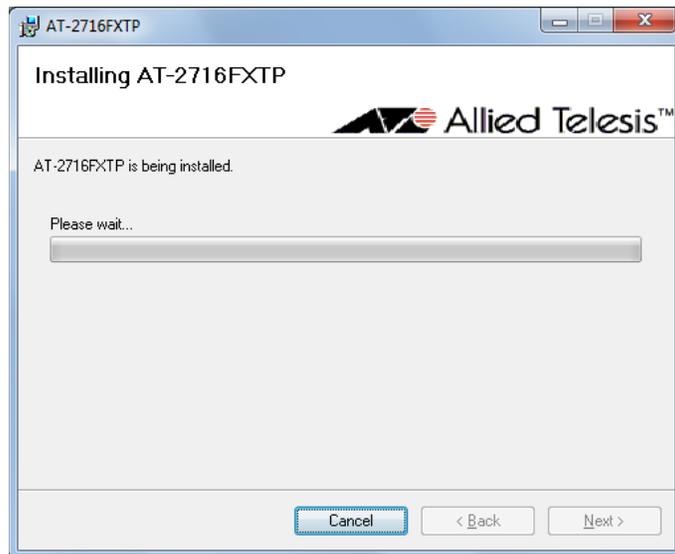


Figure 30. Installing AT-2716FXTP Window

4. Click **Next**.

The Installation Complete window is displayed. See Figure 31 on page 55.

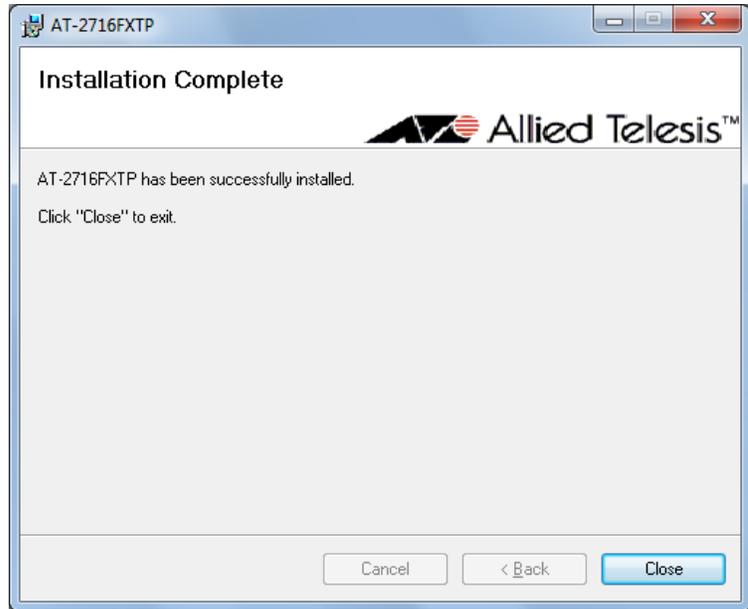


Figure 31. Installation Complete Window

5. Click **Close**.

## Configuring the AT-2716POE AT-Mux Configuration Utility

---

To launch the AT-2716POE AT-Mux Configuration Utility, perform the following steps:

1. Click on Start.
2. Click on Control Panel
3. Run the ATI AT-Mux Setup program (AT Vlan) from the Control Panel. The AT-2716POE AT-Mux Configuration window appears.

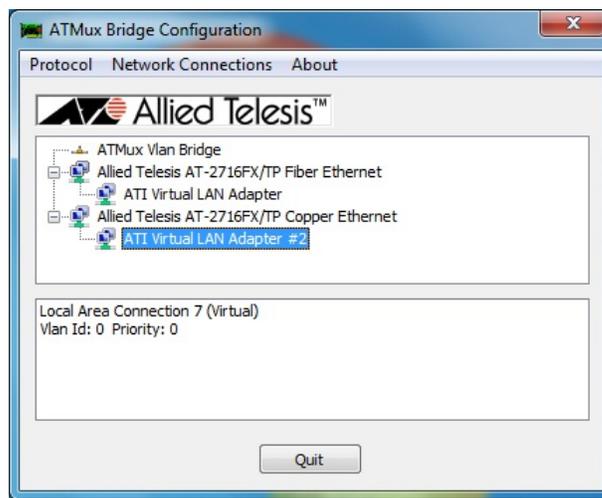


Figure 31.1. AT-2716POE VLAN Configuration window

3. Double-click the fiber or copper port. The VLAN and Priority settings window is displayed.

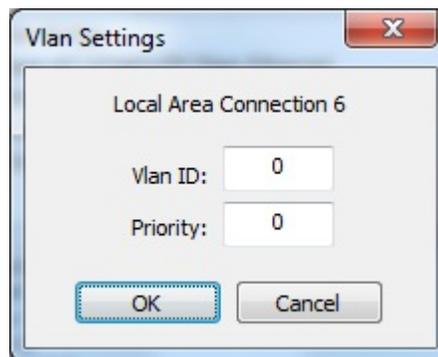


Figure 31.2. VLAN and Priority settings window

5. Enter the desired VLAN ID and/or Priority setting and click OK.

## Chapter 6

# VoIP Configuration Example

---

This chapter describes an example of the AT-2716POE adapter supporting both data and VoIP Ethernet traffic.

**VoIP Support** The AT-2716 POE is a two port adapter with a 100FX fiber port and a 100TX copper port capable of supporting a Class 3 PoE device. This unique port configuration allows a PoE device to be attached to a standard desktop workstation on the copper port and communicate downstream through the a secured 100FX fiber link. The PoE device could be a VoIP phone, a WiFi Access Point, or a security camera that requires between 0W to 15.4W of PoE power.

In networks where the primary connection for your computer workstation is a fiber backbone, the fiber port on your AT-2716 POE adapter can be configured to separate the data for your computer workstation from the data on the copper port connected to a PoE device such as VoIP (Voice over IP) phone. This application is accomplished by installing Allied Telesis's ATMux configuration utility which allows bridging between the ports and the configuration of Virtual Local Area Networks (VLANs) for the ports.

A VLAN is a group of ports on an Ethernet LAN that form a logical Ethernet segment. These ports form an independent traffic domain where the traffic generated by the nodes of a VLAN remains within the VLAN. In this case, you can create a separate VLAN for the data from your computer and a second VLAN for the data from VoIP PoE phone. The incoming and outgoing Ethernet traffic is tagged accordingly for the computer and the VoIP phone. This tagging can be done either by the phone, or in cases where the phone does not support VLAN tagging, by the ATMux Configuration Utility.

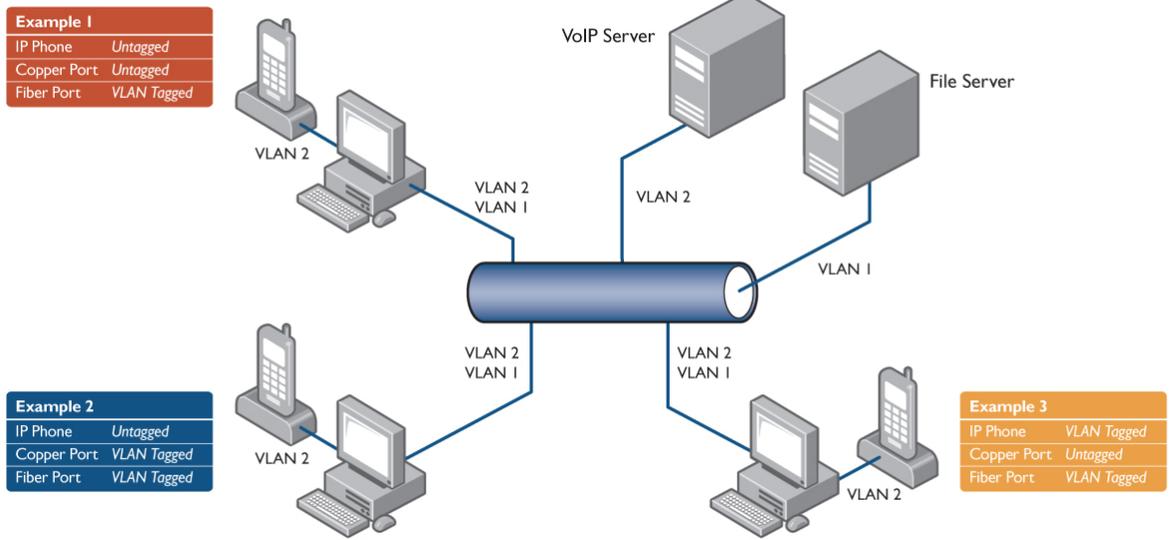


Figure 32. VLAN topology

In Figure 32, the VoIP phone is attached to the AT-2716POE copper port. However, many VoIP devices cannot recognize VLAN tagged packets. The AT-2716POE Configuration Utility handles this situation by allowing you to enable the VLAN setting on the copper port and assign a unique VLAN ID to the port for the VoIP traffic. Once this is done, the AT-2716POE adapter will insert the correct VLAN tag on each VoIP Ethernet packet before traffic flows onto the fiber cable.

The adapter is configured so that traffic from both VLANs flows through the fiber port to the fiber backbone of the local area network. The data traffic and VoIP traffic are segmented or isolated from each other with this configuration even though all of the packets travel on the same fiber cable connected to the AT-2716POE fiber port.

Example 1 shows a scenario where non VLAN aware VoIP phone is present. VoIP data is transmitted untagged on VLAN 2 and network data is tagged with VLAN1 and is segmented from VoIP data.

Example 2 shows a scenario where non VLAN aware VoIP phone is present. In this scenario, the copper port of the AT-2716 POE is responsible for tagging the VoIP data with VLAN 2. This data is then sent through the fiber port to the network backbone. Network data continues to be tagged with VLAN 1 and is segmented from VoIP data.

Example 3 shows a scenario where a VLAN aware phone is present and has VLAN tagging enabled. VoIP data is transmitted tagged with VLAN 2 between the phone and the copper port. The AT-2716POE passes this data unchanged from the copper port through the fiber port to the network backbone. Network data continues to be tagged with VLAN 1 and is segmented from VoIP data.

Each AT-2716POE port is capable of transmitting and receiving tagged or non-tagged packets giving the network administrator several options as listed in Table 3.

Table 3. AT-2716 POE VLAN Settings

<b>Fiber Port VLAN Settings</b>	<b>Copper Port VLAN Settings</b>	<b>Effect of VLAN Tags on Ethernet Packets</b>
Disabled (0)	Disabled (0)	Packets are not tagged on either port. Packets from the host computer on the fiber port are unchanged. Packets on the copper port are bridged to the fiber port unchanged.
Enabled	Disabled (0)	Packets from the host computer are tagged on the fiber port. Packets on the copper port are unchanged and bridged to the fiber port unchanged.
Disabled (0)	Enabled	Packets from the host computer are untagged and passed through to the fiber port unchanged. Packets on the copper port are tagged and bridged to the fiber port.
Enabled	Enabled	Packets from the host computer are tagged on the fiber port. Packets on the copper port are tagged and bridged to the fiber port.

Table 4 shows all of the allowable tagged vs. non-tagged configurations available. Not all possible combinations are supported.

Table 4. Allowable tagged/non-tagged combinations

When a VLAN capable VoIP phone is present and VLAN tagging is enabled on the phone:		
	Copper Port Tagged	Copper Port Un-Tagged
<b>Fiber Port Tagged</b>	<b>Not Supported</b>	<b>Allowed</b>
<b>Fiber Port Un-Tagged</b>	<b>Not Supported</b>	<b>Allowed</b>
When a non-VLAN aware VoIP phone is present (no VLAN tagging at phone):		
	Copper Port Tagged	Copper Port Un-Tagged
<b>Fiber Port Tagged</b>	<b>Allowed</b>	<b>Allowed</b>
<b>Fiber Port Un-Tagged</b>	<b>Allowed</b>	<b>Allowed</b>

## Chapter 7

# Setting Advanced Properties

---

Although the default values are appropriate in most cases, you can change any of the available options to meet the requirements of your system. The Windows Advanced Properties are accessible from the Advanced Tab.

This chapter discusses the following topics:

- “Accessing the Advanced Tab” on page 62
- “Modifying Advanced Properties” on page 69

## Accessing the Advanced Tab

---

To modify the configuration properties of the Windows Operating Systems, you must access the Advanced Tab. Depending on your operating system, there are several ways to do this. See the following procedures:

- “Selecting the Advanced Tab in Windows XP” on page 62
- “Selecting the Advanced Tab in Windows 7” on page 64
- “Selecting the Advanced Tab in Windows Vista” on page 66

### Selecting the Advanced Tab in Windows XP

Although the default values are appropriate in most cases, you can change any of the available options to meet the requirements of your system. After the adapter driver software has been installed, you can use this procedure to access the System Property Dialog box which provides access to the Advanced Properties on the Advanced Tab.

To access the System Properties Dialog box, perform the following procedure:

1. Start a Windows XP system and log in.

You must have Administrator privileges to update the driver software.

2. On the desktop, right click **My Computer**.

The My Computer window opens.

3. Select **Properties** from the menu.

The System Properties Dialog box opens, as shown in Figure 33 on page 64.

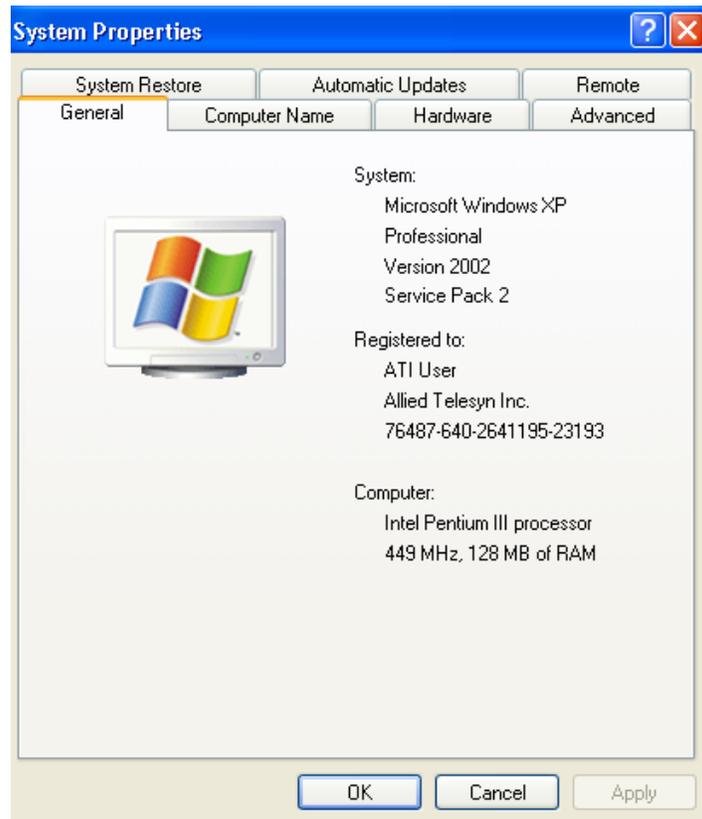


Figure 33. System Properties Dialog Box

4. Click on the Advanced Tab.

**Selecting the Advanced Tab in Windows 7**

To select the Advanced Tab in the Windows 7 Operating System, do the following:

1. Select the Start button. See Figure 34.

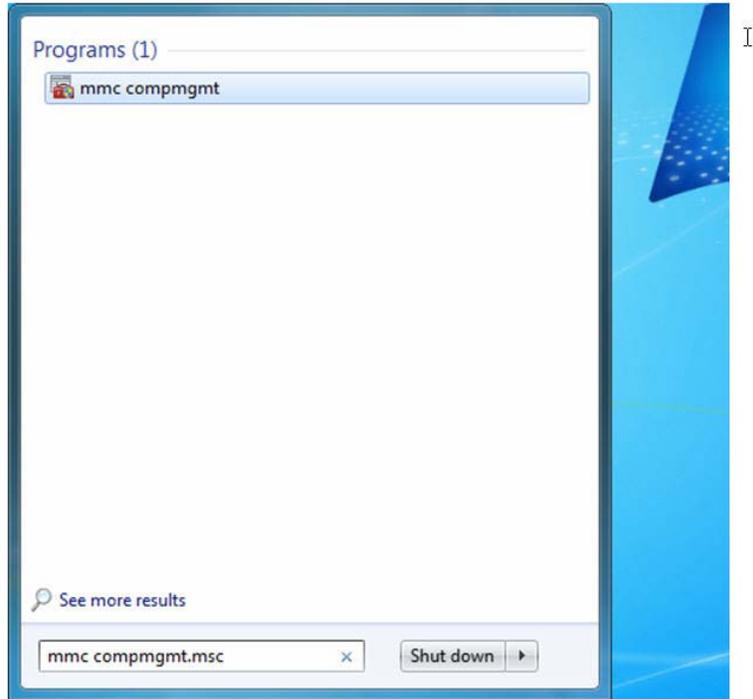


Figure 34. Windows 7 Search Box

2. Enter the following command:

```
mmc compmgmt.msc
```

The Device Manager window is displayed. For an example of the Device Manager window, see Figure 35 on page 65.

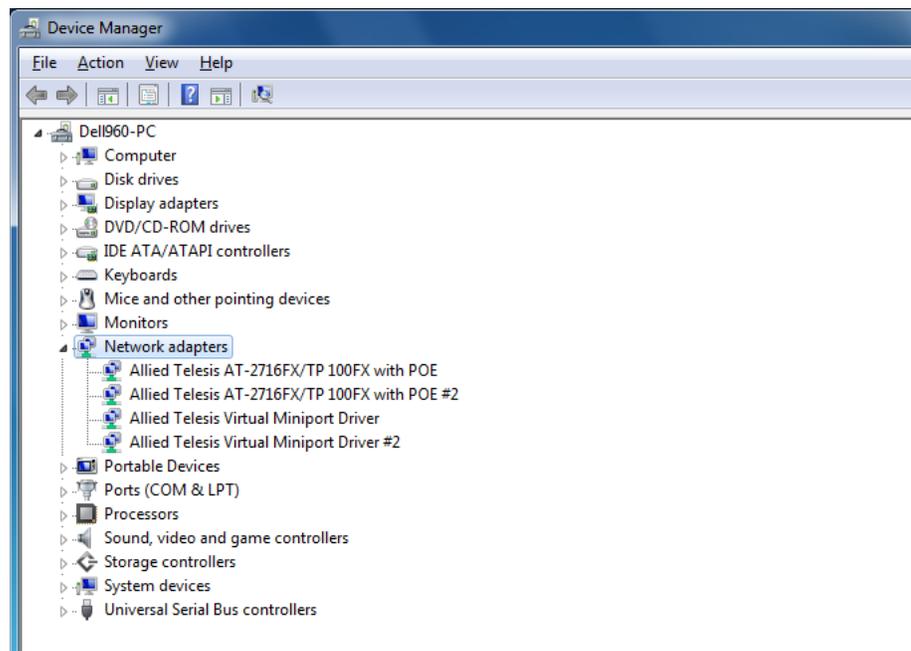


Figure 35. Device Manager Window

3. Open the Network Adapters folder.  
The list of installed adapters is displayed.
4. Right click on the **Allied Telesis AT-2716POE** adapter.  
The adapter window is displayed.

The Advanced tab is shown in Figure 36.

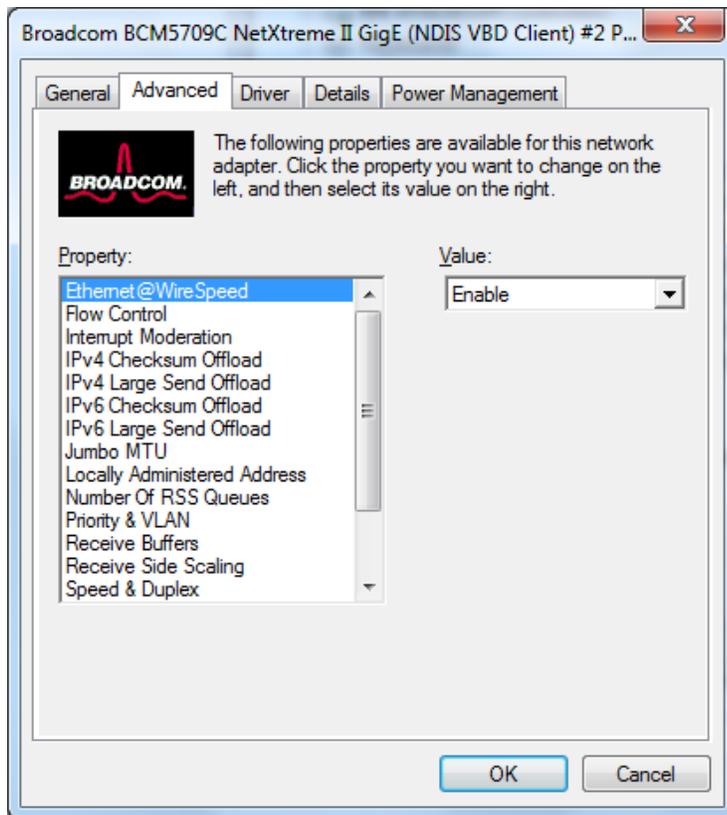


Figure 36. Advanced Tab

5. Select the **Advanced** tab.

The Advanced tab is shown in Figure 36 on page 66.

**Selecting the Advanced Tab in Windows Vista**

In the Windows Vista Operating System, you access the Advanced Tab through the Device Manager.

To select the Device Manager in the Windows Vista Operating System, do the following:

1. Select the Start menu.

See Figure 37 for an example of the Windows Vista Start menu.



Figure 37. Windows Vista Start Menu

2. From the Start Menu, select **Run**.

The Windows Vista Run window is displayed. See Figure 38.



Figure 38. Windows Vista Run Window

3. Enter the following command in the Run window:

`mmc devmgmt.msc`

4. From the Computer Management Window, select Device Manager in the left panel.

The Device Manager window is displayed. See Figure 35 on page 65.

5. Open the Network Adapters folder.

The list of installed adapters is displayed.

6. Right click on the **Allied Telesis AT-2716POE** adapter.

The adapter window is displayed.

7. Select the **Advanced** tab.

The Advanced tab is shown in Figure 36 on page 66.

## Modifying Advanced Properties

---

In most cases, the default property values available on the Advanced Tab are appropriate although you can change any of the available options to meet the requirements of your system. You must have Administrator privileges to modify the driver software.

After you have installed the driver software, you can use the following procedures to verify or change the adapter properties:

- Updating the 802.3az EEE property on page 70.
- Updating the ARP Offload property on page 70.
- Updating the EEE Control Policies property on page 70.
- Updating the Ethernet@WireSpeed property on page 70.
- Updating the Flow Control property on page 70.
- Updating the Interrupt Moderation property on page 71.
- Updating the IPv4 Checksum Offload property on page 71.
- Updating the Jumbo MTU property on page 71.
- Updating the Large Send Offload (IPv4) property on page 71.
- Updating the Large Send Offload v2 (IPv4) property on page 72.
- Updating the Large Send Offload v2 (IPv6) property on page 72.
- Updating the Network Address property on page 72.
- Updating the NS Offload property on page 72.
- Updating the Priority & VLAN property on page 72.
- Updating the Receive Side Scaling property on page 73.
- Updating the RSS Queues property on page 73.
- Updating the Speed & Duplex property on page 73.
- Updating the TCP/UDP Checksum Offload Ipv4 property on page 73.
- Updating the TCP/UDP Checksum Offload Ipv6 property on page 74.
- Updating the Virtual Machine Queues property on page 74.
- Updating the VLAN ID property on page 74.
- Updating the VMQ Lookahead Split property on page 74.
- Updating the VMQ VLAN Filtering property on page 74.
- Updating the Wake Up Capabilities property on page 75.
- Updating the WOL Speed property on page 75.

---

**Note**

After you upgrade the driver software, the Advanced Properties may change.

---

---

**Note**

The procedures in the sections listed above may differ slightly if the "Classic Start Menu" is set on your computer.

---

Updating the 802.3az EEE property The "802.3az EEE" property will allow the adapter to enter Low Power Idle mode when network utilization is low.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and, then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "802.3az EEE " parameter to Disable or Enable.

The default setting is Disable.

Updating the ARP Offload property The "ARP offload" property will allow the network device to respond to an ARP request while in standby mode.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and, then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "ARP Offload" parameter to Disable or Enable.

The default setting is Enable.

Updating the EEE Control Policies The "EEE Control Policies" property defines the balance of the performance and power saving functions of the device.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and, then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Select the Maximum Performance, Maximum Power Saving, or Optimal Power and Performance option.

The default setting is Optimal Power and Performance.

Updating the Ethernet@WireSpeed property The "Ethernet@WireSpeed" property enables a 1000BASE-T Ethernet adapter to establish a link at a lower speed when only two pairs of wires are available in the cable plant.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and, then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Ethernet@WireSpeed" parameter to Disabled or Enable.

The default setting is Disable.

Updating the Flow Control property The "Flow Control" property allows the user to enable or disable the receipt or transmission of PAUSE frames. PAUSE frames enable the adapter and the switch to control the transmit rate. The side that is receiving the PAUSE frame temporarily stops transmitting.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.

3. Set the "Flow Control" parameter to Auto, Disabled, Rx Enabled, Rx & Tx Enabled, or Tx Enabled.

The default setting is Auto.

**Updating the Interrupt Moderation property** The "Interrupt Moderation" property will cause the network device to send interrupt requests only after multiple packets have been received and not immediately upon receipt of a packet.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Interrupt Moderation" parameter to Disable or Enable.

The default setting is Enable.

**Updating the IPv4 Checksum Offload property** The "IPv4 Checksum offload" property allows the checksum to be computed by the Gigabit Ethernet Adapter.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the IPv4 Checksum Offload parameter to Disable, RX & TX Enabled, RX Enabled, or TX Enabled.

The default setting is RX & TX Enabled

**Updating the Jumbo MTU property** The "Jumbo MTU" property allows the adapter to transmit and receive oversized Ethernet frames that are greater than 1514 bytes but less than 9000 bytes in length. Note that this parameter requires a switch that is able to process large frames.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections, and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Jumbo MTU is set at 1500 bytes by default. To increase the size of the received frames, increase the byte quantity in 500-byte increments up to 9000 bytes.

The default setting is 1500.

**Updating the Large Send Offload (IPv4)** The "Large Send Offload (IPv4)" property allows the TCP segmentation to be done by the Gigabit Ethernet Adapter.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Large Send Offload (IPv4)" parameter to Disable or Enable.

The default setting is Enable.

Updating the Large Send Offload v2 (IPv4) The "Large Send Offload v2 (IPv4)" property allows for configuring LSO using version 2 of the IPv4 protocol.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Large Send Offload v2 (IPv4)" parameter to Disable or Enable.

The default setting is Enable.

Updating the Large Send Offload v2 (IPv6) property The "Large Send Offload v2 (IPv6)" property allows for configuring LSO using version 2 of the IPv6 protocol.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Large Send Offload v2 (IPv6)" parameter to Disable or Enable.

The default setting is Enable.

Updating the Network Address property The "Network Address" property is a user-defined address that is used in place of the MAC address that was originally assigned to the adapter. Every adapter in the network must have its own unique MAC address. This locally administered address consists of a 12-digit hexadecimal number.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Configure the "Network Address" parameter by assigning a unique node address for the adapter.

The default setting is Not Present.

Updating the NS Offload property The "NS offload" property sets the ability of the network adapter to respond to a Neighbor Discovery Neighbor Solicitation request with a Neighbor Advertisement without waking the computer.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "NS Offload" parameter to Disable or Enable.

The default setting is Enable.

Updating the Priority & VLAN property The "Priority & VLAN" property enables or disables the priority and VLAN tagging functions of the device.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the Priority & VLAN setting to Priority & VLAN Disabled, Priority & VLAN Enabled, Priority Enabled, or VLAN Enabled.

The default setting is Priority & VLAN Enabled.

Updating the Receive Side Scaling property The "Receive Side Scaling" Property allows for scaling the network processing load across multiple processors.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Receive Side Scaling" parameter to Disable or Enable.

The default setting is Enabled.

Updating the RSS Queues property The "RSS Queues" property allows configuring RSS queues from 1 to 4. Options are RSS 1 Queue, RSS 2 Queue, and RSS 4 Queue.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the RSS queues to RSS 1 Queue, RSS 2 Queues, or RSS 4 Queues.

The default setting is RSS 4 Queues.

Updating the Speed & Duplex property The "Speed & Duplex" property allows for configuring the connection speed and duplex of the device.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the speed to 10 Mb Full, 10 Mb Half, 100 Mb Full, 100 Mb Half, or Auto.

The default setting for fiber is 100 Mb Full.

The default setting for copper is Auto.

Updating the TCP/UDP Checksum Offload (Ipv4) property The "TCP/UDP Checksum Offload (IPv4)" property allows configuring checksum offload for the IPv4 protocol.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the " TCP/UDP Checksum Offload (Ipv4)" parameter to Disable, RX & TX Enabled, RX Enabled, or TX Enabled

The default setting is RX & TX Enabled.

Updating the TCP/UDP Checksum Offload (Ipv6) property

The "TCP/UDP Checksum Offload (IPv6)" property allows configuring checksum offload for the IPv6 protocol.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the " TCP/UDP Checksum Offload (Ipv4)" parameter to Disable, RX & TX Enabled, RX Enabled, or TX Enabled

The default setting is RX & TX Enabled.

Updating the Virtual Machine Queues property

The "Virtual Machine Queues" property defines whether the device has enabled or disabled the virtual machine queue (VMQ) feature.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Virtual Machine Queues" parameter to Disable or Enable.

The default setting is Disable.

Updating the VLAN ID property

The "VLAN ID" property sets the VLAD ID that network traffic will be tagged with if the Priority & VLAN setting is set to Priority & VLAN enabled or VLAN enabled.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Enter the desired VLAN ID in the VLAN ID field.

The default setting is 0.

Updating the VMQ Lookahead Split property

The "VMQ Lookahead Split" property defines whether the device has enabled or disabled the ability to split receive buffers into lookahead and post-lookahead buffers.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "VMQ Lookahead Split" parameter to Disable or Enable.

The default setting is Disable.

Updating the VMQ VLAN Filtering property

The "VMQ VLAN Filtering" property defines whether the device has enabled or disabled the ability to filter network packets by using the VLAN identifier in the media access control (MAC) header.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.

2. Click the Configure button and then the Advanced tab.
3. Set the "VMQ VLAN Filtering" parameter to Disable or Enable.

The default setting is Disable.

Updating the Wake Up Capabilities property      The "Wake Up Capabilities" parameter allows the user to set the adapter to wake up from a low power mode when it receives a network wake up frame. There are two wake up frames: Magic Packet and IP frame.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "Wake Up Capabilities" parameter to Both, Magic Packet, None, or Wake Up Frame.

The default setting is Both.

Updating the WOL Speed property      The "WOL Speed" property allows the user to select the speed at which the adapter connects to the network during Wake-on-LAN mode.

1. In Microsoft Windows, right-click the Network Adapter in Network Connections and then click Properties.
2. Click the Configure button and then the Advanced tab.
3. Set the "WOL Speed" parameter to 10 Mb, 100 Mb, or Auto.

The default setting is 100 Mb.

## Chapter 8

# Troubleshooting

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This chapter describes troubleshooting procedures and discusses the following topics:

- “Hardware Diagnostics” on page 77
- “Checking Port LEDs on the Adapter” on page 78
- “Troubleshooting Checklist” on page 79
- “Testing Network Connectivity” on page 80
- “Software Problems and Solutions” on page 82

## Hardware Diagnostics

---

Loopback diagnostic tests are available for testing the adapter's hardware under Microsoft DOS operating system and are available for download at the product's website. These tests provide access to the adapter's internal or external diagnostics, where packet information is transmitted across the physical link.

## Checking Port LEDs on the Adapter

---

The adapter has two LEDs, one LED for each port and indicates network link and network activity. Before the port LEDs can provide troubleshooting information, the adapter must be connected to the network and the network drivers for your particular operating system must be installed.

1. Verify that the adapter driver software has been installed and that the adapter is connected to a network.
2. Check to see that the LEDs operate as described in Table 4.

Table 4. Fiber Optic Port LED Status

LED	State	Description
TX/FX	On	Valid network link.
	Blinking	Data Traffic is present
	Off	No network link.

## Troubleshooting Checklist

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The following checklist provides recommended actions to take to resolve problems installing the Allied Telesis AT-2716POE adapter or running it in your system.



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### Warning

Before opening the cabinet of your system for removing or inserting the adapter, please review all precautions outlined under "Reviewing Safety Precautions" on page 18.

---

- 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 26."
- Check the adapter installation by reviewing Chapter 2, "Installing the Hardware" on page 17.
- 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 accordingly 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 failed adapter 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.
- Check for the latest operating system drivers or configuration utilities on Allied Telesis's Software Support website
- Try a different PCIe slot.

## Testing Network Connectivity

---

The following section describes how to test network connectivity for Windows XP, Windows Vista, and Windows 7 networks. Use the ping command to determine if network connectivity is working.

---

**Note**

When using forced link speeds, make sure that both the adapter and the switch are forced to the same speed. Or, make sure both partners are configured for Auto-Negotiation.

---

To test the network connectivity for the Windows driver software, do the following:

1. Select **Run** from the Windows Start Menu.

The Run command window opens, as shown in Figure 40.

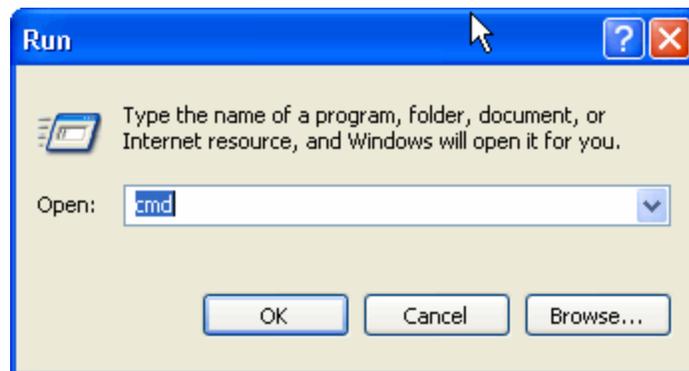


Figure 40. Run Command Window

2. Type **cmd** and click **OK**.
3. Type **ipconfig /all**

The command window opens, as shown in Figure 41 on page 84.

```

C:\WINDOWS\system32\cmd.exe
F:\>ipconfig /all

Windows IP Configuration

    Host Name . . . . . : atg.lc
    Primary Dns Suffix . . . . . : atg.lc
    Node Type . . . . . : Unknown
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No
    DNS Suffix Search List. . . . . : atg.lc
                                     atg.lc

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix . : atg.lc
    Description . . . . . : Intel(R) 82567LM-3 Gigabit Network C
    Physical Address. . . . . : A4-BA-DB-F0-E7-45
    Dhcp Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . . : Yes
    IP Address. . . . . : 10.28.1.21
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.28.1.1
    DHCP Server . . . . . : 10.28.5.20
    DNS Servers . . . . . : 10.28.5.20
                             10.4.5.7
    Lease Obtained. . . . . : Wednesday, June 29, 2011 6:52:20 AM
    Lease Expires . . . . . : Wednesday, July 13, 2011 6:52:20 AM
  
```

Figure 41. Command Window with ipconfig /all displayed

4. Type **ping <IP address>** from the command line, then press **Enter**.

The network connectivity information is displayed, as shown in Figure 42.

```

C:\WINNT\System32\cmd.exe
C:\>ping 172.16.10.6

Pinging 172.16.10.6 with 32 bytes of data:

Reply from 172.16.10.6: bytes=32 time<10ms TTL=128

C:\>
  
```

Figure 42. Command Window with ping displayed

## Software Problems and Solutions

---

This section lists problems and solutions for the Microsoft Remote Installation Service (RIS), Windows Operating Systems, and miscellaneous issues.

### Microsoft Remote Installation Service (RIS) Instructions

**Problem:** Microsoft Remote Installation Service (RIS) installation fails for Windows XP.

**Solution:** Refer to Microsoft Article Q246184, "How to Add Third-Party OEM Network Adapters to RIS Installations."

### Windows XP Image

To deploy a Windows XP Image, follow the steps in the Microsoft Article Q246184 at <http://support.microsoft.com/default.aspx?scid=kb%3benus%3b246184>.

### Windows Operating Systems

This section lists known problems and solutions in Windows XP, Windows Vista, and Windows 7 Operating Systems.

**Problem:** IP address is configurable on a member of the team.

**Solution:** When a team is created, the TCP/IP properties for the adapters are unselected. Then you can select and configure TCP/IP properties of the adapters and configure an IP address manually.

**Problem:** When creating 64 VLANs, all virtual adapters show disconnected or one of the 64 VLANs show disabled.

**Solution:** The maximum VLAN configurations are 63 tagged and one untagged VLAN ID 0. If 64 tagged VLANs are created, they are disconnected. A reboot is required and only 63 tagged VLANs show links, while a 64th is disabled.

### Miscellaneous

The following table lists known miscellaneous 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 application.

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

## Appendix A

# Specifications

---

## Physical Specifications

---

This section lists the dimension and weight of AT-2716POE adapter.

Dimensions: 14.09 cm x 5.6 cm (5.5 in x 2.2 in)

Weight: 68 g ( 2.4 oz)

## Environmental Specifications

---

The following environmental specifications apply the AT-2716POE adapter.

Operating Temperature:	0°C to 40°C (+32°F to +104°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Operating Humidity:	5% to 85% (noncondensing) 40°C, 16 hour dwells at extremes
Storage Humidity:	5% to 95% (noncondensing) 10°C/hour
Operating Altitude Range:	10,000
Storage Altitude Range:	35,000 ft.
Operating Shock:	10g, 1/2 sine wave, 11 msec
Storage Shock:	60g, 1/2 sine wave, 11 msec
Operating vibration, peak to peak displacement:	0.005 in. max (5 to 32 Hz)
Storage vibration, peak to peak displacement:	0.1 in. max (5 to 17 Hz)
Operating vibration, peak acceleration:	0.25g (5 to 500 Hz) (Sweep Rate = 1 octave/ min.)

Storage vibration, peak acceleration:	0.25g (5 to 500 Hz) (Sweep Rate = 1 octave/ min.)
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## **Power Specifications**

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The operating voltage specification in this section applies to the AT-2716POE adapter.

Power Consumption:	2.5 Watts (without PoE) @ +3.3V
--------------------	---------------------------------

## **Operating Specifications**

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The following operating specifications apply the AT-2716POE adapter.

Output Optical Power:	-17 dBm typical
-----------------------	-----------------

Receive Sensitivity:	-34 dBm typical
----------------------	-----------------

## 10/100/1000Base-T Twisted-Pair Port Connectors

This section lists the pin signals for the 10/100/1000Base-T twisted-pair ports for the AT-2716POE adapter. Figure 43 illustrates the pin layout to an RJ-45 connector and port.

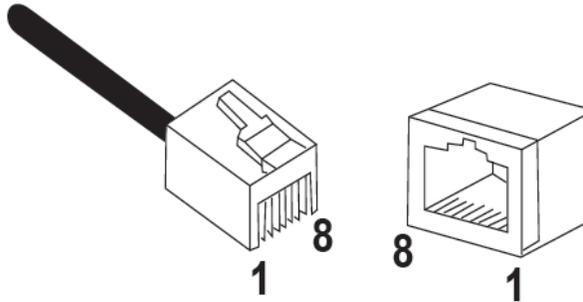


Figure 43. RJ-45 Connector and Port Pin Layout

Table 5 lists the RJ-45 pin signals when a twisted-pair port is operating in the MDI configuration.

Table 5. MDI Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-

Table 6 lists the RJ-45 port pin signals when a twisted-pair port is operating in the MDI-X configuration.

Table 6. MDI-X Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	RX+
2	RX-
3	TX+
4	TX-

Table 7 lists the RJ-45 connector pin and their signals when a 1000Base-T port is operating at 1000 Mbps.

Table 7. RJ-45 1000Base-T Connector Pinouts

Pin	Pair	Signal
1	1	TX and RX+
2	1	TX and RX-
3	2	TX and RX+

Table 7. RJ-45 1000Base-T Connector Pinouts (Continued)

<b>Pin</b>	<b>Pair</b>	<b>Signal</b>
4	3	TX and RX+
5	3	TX and RX-
6	2	TX and RX-
7	4	TX and RX+
8	4	TX and RX-

## Appendix B

# Cleaning Fiber Optic Connectors

---

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 44 shows the ferrule in an SC connector.

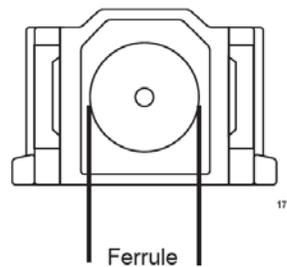


Figure 44. Ferrule in an SC Connector Plug

Figure 45 shows part of the end face of an unclean and clean ferrule.

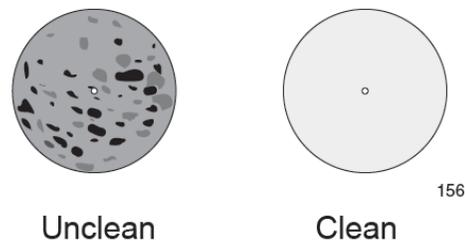


Figure 45. Unclean and Clean Ferrule

This appendix provides the following procedures

- "Using a Cartridge-Type Cleaner" on page 92
- "Using a Swab" on page 94

## Using a Cartridge-Type Cleaner

---

Fiber optic cartridge cleaners are available from many vendors and are typically called “cartridge cleaners,” as shown in Figure 46.



Figure 46. Cartridge Cleaner

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**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, perform the following procedure.

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, as shown in Figure 47.
2. Place the ferrule tip on the exposed cleaning surface and rub the ferrule in a downward direction, as shown in Figure 47.

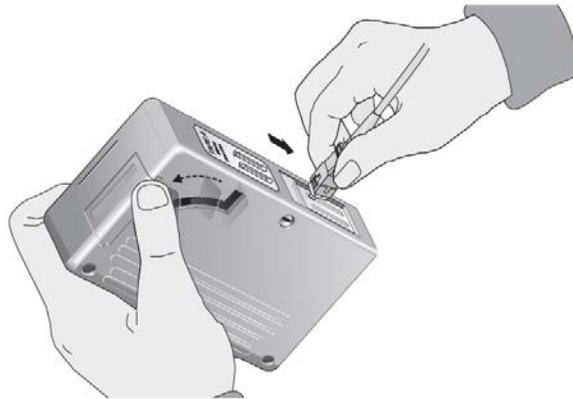


Figure 47. Rubbing the Ferrule Tip on the Cleaning Surface

---

**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.

---

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

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**Warning**

Do not look directly at the cable ends or inspect the cable ends with an optical lens.  E29

---

## Using a Swab

---

Specially treated swabs, known as 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, as shown in Figure 48. Stick cleaners are available in both 2.5 mm and 1.25 mm sizes for use on SC and MU connectors respectively.

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**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.

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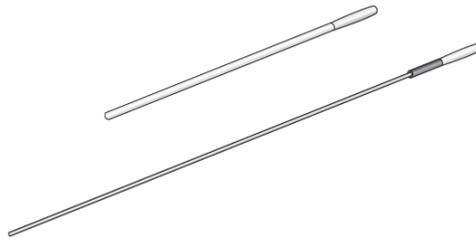


Figure 48. Lint-Free and Alcohol-Free Swabs

---

**Note**

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

---

To clean a recessed ferrule using a swab, perform the following procedure.

1. Insert the swab into the adapter as shown in Figure 47 and rub the ferrule tip with the swab.

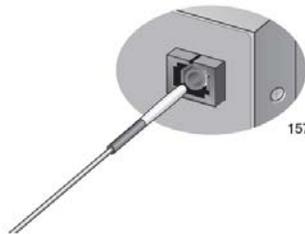


Figure 49. Cleaning a Recessed Ferrule

2. If desired, 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.  E29

---