

# DNCIO Series

Single 10G Port Network Interface Cards with PCIe x4 Express Interface

- DNCI0T
- DNCIOLC
- DNCI0SP



## Installation and User's Guide

613-002857 Rev B

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#### Federal Communications Commission Interference Statement

#### **Declaration of Conformity**

Manufacturer Name: Allied Telesis, Inc.

Declares that the product: DNC10 Series 1 Port 10G Network Interface Card (w/PCI x4 Express Interface)

#### Model Numbers: DNC10LC, DNC10SP, and DNC10T

This equipment has been tested and found to comply with the limits for a Class B 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the 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.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device must not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

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.

### IMPORTANT NOTE:

#### FCC Radiation Exposure Statement:

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.

#### Industry Canada

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

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

#### 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.

RFI Emissions FCC Class B, EN55032 Class B, VCCI Class B, ICES-003 Issue 6

Immunity EN55035

Electrical Safety EN2368-1 (TUV), UL 62368-1 (<sub>C</sub>UL<sub>US</sub>)



Laser Safety EN60825

**Important:** Safety statements that have the *G* symbol are translated into multiple languages in the *Translated Safety Statements* document at **www.alliedtelesis.com/library**.

**Remarque:** Les consignes de sécurité portant le symbole *Arrow* sont traduites dans plusieurs langues dans le document *Translated Safety Statements,* disponible à l'adresse **www.alliedtelesis.com/ library**.

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## Preface

This guide contains instructions on how to install and configure the DNC10 Series adapters.

The Preface discusses the following topics:

- □ "Safety Symbols Used in this Document" on page 14
- □ "Contacting Allied Telesis" on page 15

This guide contains the installation instructions for the following single 10G port Network Interface Cards (NICs).

- □ DNC10SP
- DNC10LC
- DNC10T

## 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

Laser warnings inform you that an eye or skin hazard exists due to the presence of a Class 1 laser device.

### **Contacting Allied Telesis**

If you need assistance with this product, you may contact Allied Telesis technical support by going to the Support & Services section of the Allied Telesis web site at **www.alliedtelesis.com/support**. You can find links for the following services on this page:

- 24/7 Online Support Enter our interactive support center to search for answers to your questions in our knowledge database, check support tickets, learn about Return Merchandise Authorizations (RMAs), and contact Allied Telesis technical experts.
- USA and EMEA phone support Select the phone number that best fits your location and customer type.
- Hardware warranty information Learn about Allied Telesis warranties and register your product online.
- Replacement Services Submit an RMA request via our interactive support center.
- Documentation View the most recent installation guides, user guides, software release notes, white papers and data sheets for your product.
- Software Updates Download the latest software releases for your product.

For sales or corporate contact information, select your region and country, then go to **www.alliedtelesis.com/contact**.

Preface

## Chapter 1 Introduction

This chapter provides an introduction to the DNC10 Series network interface cards (NICs) with Wake-on-LAN (WoL).

This chapter contains the following sections:

- "Functional Description" on page 18
- □ "DNC10LC Fiber Optic Port" on page 20
- □ "DNC10SP SFP+ Port" on page 21
- □ "DNC10T Twisted Pair Copper Port" on page 23
- □ "Features" on page 25

### **Functional Description**

The DNC10 Series network adapters are 10 Gigabit Ethernet (10GbE) interface controllers that are based on the Aquantia AQC100 10GbE media access controller (MAC) with integrated serializer/deserializer (SerDes).

The Aquantia diagnostic tool can be used with the device to provide firmware programming and a first level of diagnostics and fault isolation.

These cards have Peripheral Component Interconnect Express (PCIe) bus connectors. The DNC10 Series network adapters support the PCIe x4 v3.0, 2.1 and 1.1a compliant interfaces.

The AT-DNC10 Series can perform accelerated Ethernet data networking and storage networking simultaneously for all popular protocols used in the data center, and includes features such as Data Center Bridging.

Enterprise networks that use multiple protocols and multiple network fabrics benefit from the ability of the network interface card (NIC) to combine data communications, storage, and clustering over a single Ethernet fabric and to boost server CPU performance and memory utilization while alleviating I/O bottlenecks.

Wake-on-LAN (WoL) is a protocol for remotely turning on a computer in a low power mode with a network message. A magic packet is a network message that a WoL-enabled computer receives and wakes up when the computer's MAC address matches one in the magic packet.

As part of the company's green range, the adapter is engineered to reduce power consumption. It incorporates centralized power management features that automatically place idle circuitry into a lower power mode to save energy. The basic characteristics of the NICs are listed in Table 1.

Adapter	Port	Speed	Cable Type	Maximum Distance	System Connection
DNC10SP	SFP+	10G/1G	Varies by SFP+ transceiver	Varies by SFP+ transceiver	PCle x4 (Gen 3)
DNC10LC	Duplex LC	10G	OM1	33m	PCle x4
		OM2	82m	(Gen 3)	
			OM3	300m	
			OM4	550m	
DNC10T	RJ45	10G	CAT6A	100m	PCle x4 (Gen 3)
		5G/2.5G/ 1G/100M	CAT5e or CAT6A		

Table 1. DNC10 Series Network Interface Cards

#### Note

The maximum operating distance of the SFP+ port on the DNC10SP adapter depends on the transceiver. Refer to the product's data sheet on the Allied Telesis web site for a list of supported transceivers.

After physically installing the DNC10 Series network adapter in your computer, install the driver software by referring to Chapter 3, "Installing the Driver Software" on page 41.

## **DNC10LC Fiber Optic Port**

The DNC10LC adapter card has one 10Gbps fiber optic port with a duplex LC connector. The port has a maximum operating distance of 300m with OM3 fiber optic cable. The DNC10LC links at 10G only. It has one LED to show the networking state.

The DNC10LC has a PCIe x4 motherboard bus interface as shown in Figure 1.



Figure 1. DNC10LC Adapter Card

The LC fiber optic adapter port is shown in Figure 2.



Figure 2. Duplex LC Connector on the DNC10LC Network Adapter

Table 2 describes the link states that the LED indicates.

Port LED	LED State	Description
L/A (Link/ Activity)	Solid Green	The port has established a link with a network device.
	Off	The port has not established a link with a network device.
	Flashing Green	The port is receiving or transmitting network packets.

### **DNC10SP SFP+ Port**

The DNC10SP adapter has an SFP+ port where you can plug in an SFP+ transceiver to connect the adapter to a compatible link partner. The DNC10SP will detect whether a 10G SFP+ or 1G SFP has been inserted and will only operate at that speed. It has one LED to show the networking state.

You cannot change the speed or duplex mode of the transceiver port. The maximum operating distance of an SFP+ port will vary depending on the SFP+ transceiver and type of fiber optic cabling.

The port supports the following types of transceivers:

Note

See the Allied Telesis website for supported SFP models.

- IGbps SPSX and SPLX short and long distance SFP transceivers using multi-mode or single mode fiber optic cable.
- 10Gbps SP10SR and SP10LR SFP+ short and long distance SFP+ transceivers using multi-mode or single mode fiber optic cable.
- 10Gbps SP10BD series of bidirectional transceivers for single mode fiber optic cable with maximum operating distances of 10 to 40 kilometers.
- 10Gbps SP10TW series of direct connect twinax cables with SFP+ transceiver-style connectors, in lengths of 1, 3, and 7 meters.
- 10Gbps SP10T transceiver with RJ-45 connector for links up to 20 meters (depending on SFP) with Category 6a twisted pair cable, or 100 meters at 1Gbps.

Guidelines for the port are listed here:

- □ It does not support 100Mbps-FX transceivers.
- □ It supports full-duplex mode only.
- The adapter can set the speed automatically with Auto-Negotiation. The default is Auto-Negotiation.

The DNC10SP adapter has a PCIe x4 motherboard bus interface as shown in Figure 3.



Figure 3. DNC10SP Adapter Card

#### Note

An SFP+ transceiver must be purchased separately. For a list of supported transceivers, refer to the product's data sheet on the Allied Telesis web site.

The SFP+ port is shown in Figure 4.



Figure 4. SFP+ Port on the DNC10SP Adapter

Table 2 describes the link states that the LED indicates.

Port LED	LED State	Description
L/A (Link/ Activity)	Solid Green	The port has established a link with a network device.
	Off	The port has not established a link with a network device.
	Flashing Green	The port is receiving or transmitting network packets.

### **DNC10T Twisted Pair Copper Port**

The DNC10T adapter card has one copper port that can operate at 100Mbps or 1/2.5/5/10Gbps. The card uses Auto-Negotiation to automatically set port speed and supports full-duplex mode only. The port has two status LEDs.

The adapter has a PCIe x4 motherboard bus connector as shown in Figure 5.



Figure 5. DNC10T Adapter Card

The twisted pair cable port is shown in Figure 6.



Figure 6. Twisted Pair Cable Port

The minimum cable requirements are listed here:

- 100Mbps Standard TIA/EIA 568-A-compliant Category 5 twisted pair cabling
- □ 1/2.5/5Gbps Standard TIA/EIA 568-B-compliant Category 5e twisted pair cabling
- 10Gbps Standard TIA/EIA 568-C-compliant Category 6A twisted pair cabling

The port has a maximum operating distance of 100 meters (328 feet).

The LEDs for the twisted pair port are described in Table 4.

Port LEDs	LED State	Network State
Left	Green Steady On	The transceiver has established a 10G link to a remote device.
	Amber Steady On	The transceiver has established a 100Mbps or 1/2.5/5G link to a remote device. The user will need to check connection properties in the OS to determine the actual link speed.
	Off	The port has not established a link.
Right	Green Steady On	The transceiver has established a link to a remote device.
	Green Blinking	The transceiver in the port is transmitting or receiving network traffic.
	Off	The port has not established a link.

Table 4. DNC10T Link and Activity LEDs

## Features

	Here a	e are the key features of the DNC10 Series network interface cards:		
Hardware		DNC10SP supports one SFP+ port		
		DNC10LC supports one fiber optic port with a duplex LC connector port		
		DNC10T supports one twisted pair port		
		PCIe v3.0, 2.1, and 1.1a compliant		
		TCP, IP, and UDP checksum		
		Virtual LANs (VLANs) - 802.1q VLAN tagging		
	Jumbo Frame support up to 16 KBytes			
	<ul> <li>Advanced Configuration and Power Interface (ACPI) power management compliant</li> </ul>			
		Low profile form factor		
		RoHS compliant		
		Preboot Execution Environment (PXE) v2.1		
		Unified Extensible Firmware Interface (UEFI)		
		Low profile and standard bracket		
		Wake-on-LAN (WoL)		
		Quality of Service (QoS) support up to eight traffic classes		
		Data Center Bridging (DCB)		
Software		Windows 10, 64-bit		
	□ Windows Server 2016			
		Windows Server 2019		
		Linux with kernel version 3.10 and higher		

Chapter 1: Introduction

## Chapter 2 Installing the Hardware

This chapter contains the following sections:

- □ "System Requirements" on page 28
- □ "Reviewing Safety Precautions" on page 29
- "Pre-Installation Checklist" on page 31
- "Replacing the Bracket" on page 32
- □ "Installing a Network Adapter" on page 34
- □ "Connecting the Network Cable" on page 38

## **System Requirements**

Before installing the DNC10 series network adapter, make sure your system meets the requirements listed below:

- **Computer with one of the following operating systems installed:** 
  - Windows 10, 64-bit
  - Windows Server 2016
  - Windows Server 2019
  - Linux with kernel version 3.10 and higher
- □ One open PCIe x4 or larger slot

### **Reviewing Safety Precautions**

**Important:** Safety statements that have the *Arch* symbol are translated into multiple languages in the *Translated Safety Statements* document at **www.alliedtelesis.com/library**.

**Remarque:** Les consignes de sécurité portant le symbole & sont traduites dans plusieurs langues dans le document *Translated Safety Statements*, disponible à l'adresse **www.alliedtelesis.com/library**.



#### Warning

Do not stare into the laser beam. & L2



#### 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.  $\alpha$  L4



#### Warning

Do not look directly at the fiber optic cable ends or inspect the cable ends with an optical lens.  ${\cal A}$  L6



#### Warning

Do not work on this equipment or cables during periods of lightning activity. Ar 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.  $\cancel{\mbox{E8}}$ 



#### 🙀 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 staticfree environment. The use of a properly grounded wrist strap or other personal antistatic devices and an antistatic mat is strongly recommended. *er* E39



#### Caution

Do not use excessive force when seating the card, as the force may damage the system or the adapter card. If the card resists seating, remove it from the system, realign it, and try again.  $\approx$  **E47** 

### **Pre-Installation Checklist**

Before installing the DNC10 series network adapter, check the following list:

- 1. Check that your computer has an appropriate open PCIe slot.
- 2. Verify that your system is using the latest BIOS.
- 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 system is active, shut it down.
- 5. When system shutdown is complete, 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.

#### Note

Do not attempt to install any damaged adapter card. If the adapter card is damaged, report it to Allied Telesis. See "Contacting Allied Telesis" on page 15.

## **Replacing the Bracket**

The DNC10 series network adapter is shipped with the low-profile bracket attached to the adapter. Additionally, a standard bracket is supplied also. Depending on your system, you may need to replace the bracket attached to your adapter card.

The following procedure describes how to remove the low-profile bracket from the network 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 network adapter. See Figure 7.



Figure 7. Removing the Low-Profile Bracket

2. Align the tabs of the standard bracket with the holes on the network adapter and fasten the screws onto the network adapter. See Figure 8 on page 33.



Figure 8. Fastening Screws onto Standard Bracket

## **Installing a Network Adapter**

The following instructions apply to installing a DNC10 series network 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 the network adapter, perform the following procedure:

1. Review the "Pre-Installation Checklist" on page 31 and "Reviewing Safety Precautions" on page 29.

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



#### 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 staticfree environment. The use of a properly grounded wrist strap or other personal antistatic devices and an antistatic mat is strongly recommended. & E39
- 2. Remove the system cover and select any empty PCIe slot. See Figure 9 on page 35.

If you do not know how to identify a PCIe x4 or larger slot, refer to your system documentation.



Figure 9. Removing the PC Cover

3. Select an empty, non-shared PCIe slot and remove the faceplate.

Keep the faceplate in a safe place. You may need it for future use. See Figure 10.



Figure 10. Removing the Faceplate From PCIe Slot

- 4. Remove the network adapter from the shipping package and store the packaging material in a safe location.
- 5. Applying even pressure at both corners of the network adapter, push the adapter until it is firmly seated in the PCIe slot.

Make sure the adapter is securely seated. See Figure 11 on page 36.



Figure 11. Inserting the Network Adapter



#### Caution

Do not use excessive force when seating the adapter, as the force may damage the system or the adapter. If the adapter resists seating, remove it from the system, realign it, and try again.& E47

6. Secure the network adapter to the chassis with a Phillips-head screw (not provided) as shown in Figure 12.



Figure 12. Securing the Network Adapter

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

When the system returns to proper operation, the network adapter is fully installed. Next, connect the network cables. See "Connecting the Network Cable" on page 38.

# **Connecting the Network Cable**

Depending on the type of DNC10 series network adapter installed, it is equipped with an SFP+, fiber optic, or copper RJ45 port. To connect the network adapter to the network, you must have a cable with the appropriate connector.

### DNC10LC Fiber Optic Cable

To connect a fiber optic network cable to the duplex LC connector on the DNC10LC network adapter, perform the following procedure:

1. Prepare a fiber optic cable with an appropriate connector.



#### 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.  $\alpha$  L4

- 2. Remove the dust cover from the duplex LC connector on the fiber optic port.
- 3. Connect one end of the cable to the network adapter.
- 4. Connect the other end of the cable to the fiber optic port on a remote network device.
- 5. Load the driver as described in Chapter 3, "Installing the Driver Software" on page 41.

# **DNC10SP SFP+** The network adapter requires an SFP+ transceiver and an appropriate cable to connect to the network.

- 1. Insert an SFP+ transceiver into the SFP+ port on the network adapter until the SFP+ transceiver snaps into place in the port.
- 2. Remove the dust cover 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 fiber optic port on a remote network device.
- 5. Load the driver as described in Chapter 3, "Installing the Driver Software" on page 41.

# DNC10T Twisted-Pair Copper Cable

To connect a copper network cable to the network adapter, perform the following procedure.

- 1. Prepare a twisted-pair copper cable.
- 2. Connect one end of the cable to the network adapter.
- 3. Connect the other end of the cable to the appropriate port on a remote network device.
- 4. Load the driver as described in Chapter 3, "Installing the Driver Software" on page 41.

Chapter 2: Installing the Hardware

# Chapter 3 Installing the Driver Software

This chapter describes how to install driver software for the DNC10 Series network adapter onto your operating system. It contains the following topics:

- □ "Overview" on page 42
- □ "Downloading the Driver Software" on page 43
- □ "Accessing the Device Manager" on page 45
- □ "Installing the Driver Software" on page 47
- □ "Updating the Driver Software" on page 51
- □ "Performing the Silent Installation" on page 52

# Overview

	After you install the DNC10 Series network adapter on your computer, your next step is to install the driver software onto your Windows operating system. You can install the driver software using the Device Manager or the silent installation method.
	When you install the driver software using the Device Manager, the dialog boxes guide you through the installation process. On the other hand, using the silent installation method, you can install software without constant interactions by suppressing dialog boxes.
Guidelines	Here are the guidelines for installing and updating the driver software on your operating system:
	To install or update the driver software, you must have administrative privileges.
	<ul> <li>When you install the DNC10 Series network adapter on your computer and start the system, the system detects a new adapter and may install a default driver. In either case, you must update the driver software for the DNC10 Series network adapter. See "Installing the Driver Using the Device Manager", or "Installing the Driver Using the Silent Installation Method".</li> </ul>
Installing the Driver Using the	To install or update the driver software using the Device Manager, follow the steps below:
<b>Device Manager</b>	"Downloading the Driver Software" on page 43
	"Accessing the Device Manager" on page 45
	"Installing the Driver Software" on page 47
	Or
	"Updating the Driver Software" on page 51
Installing the Driver Using the	To install or update the driver software using the silent installation, follow the steps below:
Silent Installation	"Downloading the Driver Software" on page 43
Method	"Performing the Silent Installation" on page 52

### **Downloading the Driver Software**

The driver software for the adapters is available on the Allied Telesis website. The driver is the same for all DNC10 Series NICs.

To download the software:

1. Open a web browser, such as Internet Explorer or FireFox, on your computer and enter the following:

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

The Allied Telesis Software Download page is displayed as shown in Figure 13.



Figure 13. Software Downloads Search Result Example

- 2. Click Support.
- 3. Select Software Library.
- 4. Complete the form to gain access to the Download Center.
- 5. Check your email for the access Login ID and password.
- 6. Click Download Center.

7. Enter the Login ID and Password and click Login.

🌐 Software Downloads   A 🗙	Alfied Telesis Download 🗙 🖸 (79) You Keep Me 🗄 🚸 🗙 📋 🗕 🗖	×
$\leftarrow$ $\rightarrow$ C $($ alliedteles	is.flexnetoperations.com/control/allt/login? 🛧 💉 🚱 😌 📘 🖬 🕶 🔞	:
Allie	ed Telesis"	
HOME > ALLIED TELESIS DOWNLOA	D CENTER > LOGIN	
	Local languages for Russian, Japanese, Italian, French, Spanish and German are now available,	ł
	Login ID atiguest@alliedtelesis.com	
	Password	
	Remember my password until I logout	
	Login	

Figure 14. Login Window

- 8. Select the driver for the DNC10 Series network adapter and your operating system.
- 9. Save the zip folder onto your system.
- 10. Right-click the zip folder and select Extract All.

A window appears and prompts you to specify the location of a folder where you want to place the unzipped files.

🕞 🚹 Extract Compressed (Zipped) Folders	
Select a Destination and Extract Files	
C:\Users\Test\Desktop\driver	Browse
Show extracted files when complete	
	Extract Cancel

Figure 15. Select a Destination and Extract

- 11. Specify the location of the folder and click Extract.
- 12. Record the location of the folder.

### Accessing the Device Manager

When you install or update the driver software for DNC10 Series network adapter, you must first access the Device Manager. The procedures for accessing the Device Manager are slightly different among Windows operating systems. To access the Device Manager on your operating system, follow one of the procedures below:

#### **Option 1**

To access the Device Manager on a Windows platform, do the following:

1. Right-click the start button at the bottom left corner.

The Windows menu appears.



Figure 16. Windows Menu

2. Select **Device Manager** in the search box.



The Device Manager window appears.

Figure 17. Device Manager Window

### **Option 2**

Another option to accessing the Device Manager is:

1. Type **Device Manager** in the search field at the bottom left corner.

The following screen appears.

All Apps Documents Web	More 🔻				20	1	ନ	
Best match								
Control panel			1					
Search the web			Davis	o Mon	aar			
	>		Co	ntrol pane	ager			
		🖵 Open						
		o ä <del>i</del>	ol 📑	9	Fm	ø	4	1

Figure 18. Searching for Device Manager

2. Click on the **Device Manager**.

The Device Manager window appears as shown in Figure 17.

### **Installing the Driver Software**

Once you physically install the DNC10 Series network card, the system detects the new hardware and creates an entry in the Device Manager when the Windows operating system first boots up. Shortly after you log in, you need to install the driver software for your adapter card.

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

To install the driver software, do the following:

- 1. Access the Device Manager, see "Accessing the Device Manager" on page 45.
- 2. In the Device Manager window, double-click **Network Adapters** to expand the field.
- 3. **Option 1** If the system has another network connection to provide Internet access:
  - a. Right-click on **Aquantia device** or **Ethernet Controller** (if no driver was installed).
  - b. Select Update Driver Software.

The Update Driver Software window appears. See Figure 20 as an example.

 ← Update Drivers - Allied Telesis AT-DNC10 Series Ethernet #2
 How do you want to search for drivers?
 → Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.
 → Browse my computer for driver software Locate and install driver software manually.

Cancel

Х

c. Select Search automatically for updated driver software.

Windows will download the driver from Windows Update.

**Option 2** - If the system does not have another network connection to provide Internet access:

a. Right-click on Allied Telesis DNC10 Series Fiber Ethernet.

#### Note

The Device Manager may identify the new DNC10 adapter as an Ethernet Controller, Aquantia device, or Allied Telesis device.

The shortcut menu appears. See Figure 19 as an example.



Figure 19. Selecting the DNC10 Series Adapter in the Device Manager

#### b. Select Update Driver Software.

The Update Driver Software window appears. See Figure 20 on page 49 as an example.

🛚 ບ	pdate Drivers - Allied Telesis AT-DNC10 Series Ethernet #2
Ηον	v do you want to search for drivers?
$\rightarrow$	Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.
$\rightarrow$	Browse my computer for driver software Locate and install driver software manually.

Cancel

×

Figure 20. Update Driver Software Window

#### c. Select Browse my computer for driver software.

The Browse for Drivers on Your Computer window prompts you to enter the location of the driver folder. See Figure 21 as an example.

		×
←	Update Drivers - Allied Telesis AT-DNC10 Series Ethernet	
	Browse for drivers on your computer	
	Search for drivers in this location:	
	_DNC10 Series/DNC Series Agile/DNC10T\860-002249a\diag\driver v Browse	
	☑ Include subfolders	
	→ Let me pick from a list of available drivers on my computer This list will show available drivers compatible with the device, and all drivers in the same category as the device.	
	Next Cance	2l

Figure 21. Browse for Drivers on Your Computer

- 4. Specify the location of the driver software. See "Downloading the Driver Software" on page 43 for details.
- 5. Click Next.

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

6. Click Close.

### **Updating the Driver Software**

If your operating system automatically installs a default driver or Aquantia driver, you need to update the driver software with the driver that you downloaded from the Allied Telesis website. To obtain the latest version of the DNC10 Series network adapter driver, see "Downloading the Driver Software" on page 43.

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 the Device Manager detects and lists.

The Device Manager lists your adapter card entry as Allied Telesis DNC10 Series Fiber Ethernet once you installed the driver software. Before you installed the driver software, the Device Manager may list your adapter entry as an Ethernet Controller, Aquantia device, or Allied Telesis device.

To update the driver software for your DNC10 Series network adapter, see "Installing the Driver Software" on page 47.

# **Performing the Silent Installation**

To simplify the driver installation process, you may perform a silent installation when installing driver software for the DNC10 Series network adapter card entries. The silent installation is a method of installing software in the silent mode without constant interactions by suppressing dialog boxes.

#### Note

You can apply the silent installation method only to Microsoft certified drivers. The drivers that Allied Telesis provides for the DNC10 Series network adapters are all Microsoft certified.

Use a command line utility called Driver Package Installer (DPInst) for the silent installation. DPInst is included in the Windows Developer Kit (WDK) provided by Microsoft. You can obtain the latest DPInst by downloading and installing the latest WDK from the Microsoft website.

**Installing the** To install the driver silently, perform the following instructions:

### **Driver Silently**

- 1. Create a folder in your Windows system.
- 2. Download driver software for the DNC10 Series network adapter.

See "Downloading the Driver Software" on page 43.

3. Place the driver files that you downloaded into the folder that you created in step 1.

The folder should include the following driver files:

- □ .sys
- □ .inf
- □ .cat
- 4. Download the latest WDK to obtain the dpinst utility.

Consult Microsoft websites to download WDK.

5. Place the dpinst.exe and its supporting files in the same folder where you placed the driver files.

You must place the 64-bit dpinst utility if your operating system is the 64-bit version. Place the 32-bit for dpinst utility for the 32-bit version operating system.

6. Open a command prompt window with administrator privileges.

- 7. Change the directory to the folder where the dpinst utility and the driver files reside.
- 8. Install the driver in the silent mode by entering the following command:
  - > dpinst /S

#### Note

Adding the /S switch to the dpinst command suppresses the display of wizard pages, user dialog boxes, and other user intervention requests.

The driver is installed silently.

Viewing<br/>SupportedYou can display help information about the dpinst command-line<br/>options.DPInst OptionsView all supported dpinst options by executing the following command:

- 1. Open a command prompt window with administrator privileges.
- 2. Change the directory to the folder where the dpinst utility and the driver files reside.

> dpinst /?

The command displays the help text.

Chapter 3: Installing the Driver Software

# Chapter 4 Modifying Advanced Properties

This chapter includes the following topics:

- □ "Overview" on page 57
- □ "Accessing Advanced Properties" on page 58
- □ "ARP Offload" on page 60
- D "Downshift Retries" on page 61
- "Energy-Efficient Ethernet" on page 62
- □ "Flow Control" on page 63
- □ "Interrupt Moderation" on page 65
- "Interrupt Moderation Rate" on page 66
- "IPv4 Checksum Offload" on page 68
- □ "Jumbo Packet" on page 69
- □ "Large Send Offload v1 (IPv4)" on page 71
- □ "Large Send Offload v2 (IPv4)" on page 72
- □ "Large Send Offload v2 (IPv6)" on page 73
- □ "Link Speed" on page 74
- □ "Locally Administered Address" on page 76
- "Log Link State Event" on page 78
- "Maximum Number of RSS Queues" on page 79
- □ "NS Offload" on page 80
- "Priority & VLAN" on page 81
- □ "Receive Buffers" on page 83
- □ "Receive Side Scaling" on page 84
- □ "Recv Segment Coalescing (IPv4)" on page 85
- "Recv Segment Coalescing (IPv6)" on page 87
- "TCP/UDP Checksum Offload (IPv4)" on page 89
- □ "TCP/UDP Checksum Offload (IPv6)" on page 91
- □ "Transmit Buffers" on page 93
- "VLAN ID" on page 94
- □ "VLAN Monitor Mode" on page 95
- □ "Wait for Link" on page 97

- □ "Wake from Power Off State" on page 99
- □ "Wake on Link" on page 101
- □ "Wake on Magic Packet" on page 102
- "Wake on Pattern Match" on page 103
- □ "Wake on Ping" on page 104

The DNC10 series network adapters allow you to modify advanced properties to meet your requirements. To access the advanced properties, access Device Manager, 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.

# **Accessing Advanced Properties**

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

- 1. Access the Device Manager. See "Accessing the Device Manager" on page 45.
- 2. In the Device Manager window, click Network Adapters.



3. Double-click Allied Telesis AT-2911GP Series Ethernet.



The properties window pops up.

4. Click the **Advanced** tab.

The Advanced Properties window opens as shown in Figure 22.

Allied Telesis AT-DNC10 Series Eth	hernet Pr	operties	×
Events Resourc General Advanced	es	Power Ma Driver	anagement Details
The following properties are availa the property you want to change o on the right.	ble for this on the left,	s network adapte and then select	r. Click its value
Property:		<u>V</u> alue:	
ARP Offload Downshift retries Energy-Efficient Ethemet Flow Control Interrupt Moderation Interrupt Moderation Rate IPv4 Checksum Offload Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event	~	Disabled	•
		OK	Const

Figure 22. Advanced Properties Window

# **ARP Offload**

The ARP Offload feature enables the adapter not to wake up when responding to an ARP request. ARP is used to verify whether a computer is still present on the network and resolve an IP address into a MAC address.

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

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select ARP Offload in the Property box.

The ARP Offload page is displayed as shown in Figure 23.

Events	Resources	Power M	anagement
General	Advanced	Driver	Details
The following properties he property you want to on the right.	are available for t change on the le	his network adapte ft, and then select	er. Click its value
Property:		<u>V</u> alue:	
ARP Offload	^	Enabled	-
Events and the second s	et (IPv4) (IPv4) (IPv6) Idress	Disabled Enabled	
Log Link State Event	v		

Figure 23. ARP Offload Page

- 3. Select one of the following options:
  - **Disabled** This feature is disabled.
  - Enabled The adapter does not wake up when responding to an ARP request. This is the default setting.
- 4. Click OK.

### **Downshift Retries**

This feature offers a way for the network systems to reliably select the best speed that the cabling plant can support. When `on`, it enables a link speed downgrade in case the currently selected speed is constantly failing. This only applies to DNC10T.

To specify or change the Downshift Retries feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select **Downshift Retries** in the Property box.

The Downshift Retries page is displayed as shown in Figure 24.

Events	Resources		Power N	lanagement
General	Advanced		Driver	Details
The following prop he property you w on the right. Property:	erties are available ant to change on t	for thi	is network adapt , and then select <u>V</u> alue:	er. Click t its value
ARP Offload		~	4	
Downshift retries	themet		3	
Flow Control	unon ici		4	
Interrupt Moderati	on Rate		6	
IPv4 Checksum C	ffload		7 Disabled	
Jumbo Packet Large Send Offloa	d V1 (IPv4)		Disabled	
Large Send Offloa	d V2 (IPv4)			
Large Send Offica Link Speed	ia v2 (IPV6)			
Locally Administer Log Link State Ev	ed Address ent	~		
				_

Figure 24. Downshift Retries Page

- 3. Select one of the following options:
  - □ 1 through 7 Enables the specified amount of tries before attempting to reduce the speed.
  - **Disable** This feature is disabled.
- 4. Click OK.

# **Energy-Efficient Ethernet**

The Energy-Efficient Ethernet property allows you to optimize the energy usage of the interface over Ethernet.

Note

This feature is valid only for copper ports.

To view the Energy-Efficient Ethernet feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Energy-Efficient Ethernet in the Property box.

The Energy-Efficient Ethernet page is displayed as shown in Figure 25.

Evenus	Resour	ces	Power I	Management
General	Advance	d	Driver	Details
ne following prop e property you w n the right.	erties are avail vant to change	able for th on the lef	nis network adap t, and then seled	oter. Click ct its value
operty:			<u>V</u> alue:	
RP Offload		^	Disabled	
nergy-Efficient B	Ethernet		Disabled	
low Control			Enabled	
nterrupt Moderat	ion Ion Rate			
Pv4 Checksum (	Offload			
umbo Packet arrae Send Offici	ad V1 (IPv4)			
arge Send Offlo	ad V2 (IPv4)			
arge Send Offloi ink Speed	ad V2 (IPv6)			
ocally Administe	red Address			
og Link State Ev	vent	¥		

Figure 25. Energy-Efficient Ethernet Page

- 3. Select one of the following options:
  - Disabled For the DNC10LC and DNC10SP network adapter ports are fiber connectors and the setting is always disabled.
  - Enabled For the DNC10T network adapter has copper ports and can be set to Energy-Efficient Ethernet enabled.
- 4. Click OK.

### **Flow Control**

The Flow Control feature allows you to control the flow between the DNC10 adapter port and its link partner. You can enable or disable the adapter port to process received PAUSE frames and transmit PAUSE frames.

To specify or change the Flow Control feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Flow Control in the Property box.

The Flow Control page is displayed as shown in Figure 26.

	Resources		Power M	anagement
General	Advanced		Driver	Details
The following prop he property you v on the right. Property:	perties are available vant to change on t	e for this the left, a	network adapte and then select Value:	er. Click its value
ARP Offload Downshift retries Energy-Efficient I <b>How Control</b> Interrupt Moderal Interrupt Moderal Interrupt Moderal Interrupt Moderal Jumbo Packet Large Send Offlo Large Send Offlo Large Send Offlo Large Send Offlo Large Send Offlo Large Send Offlo Large Send Offlo Locally Administe Log Link State E	Ethemet tion Offload ad V1 (IPv4) ad V2 (IPv4) ad V2 (IPv6) ered Address vent	~	Rx & Tx Ena Disabled Rx & Tx Ena Rx Enabled Tx Enabled	bled

Figure 26. Flow Control Page

- 3. Select one of the following options if available:
  - **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 58.

2. Select Interrupt Moderation in the Property box.

The Interrupt Moderation page is displayed as shown in Figure 27.

General Che following propertie he property you want to on the right. Croperty: ARP Offload Downshift retries Energy-Efficient Ether Flow Control Interrupt Moderation Interrupt Moderation Interrupt Moderation Intervupt	Advanced s are availat to change o net	ble for n the k	Driv this netwo ft, and th <u>V</u> alue Ena Disa	er ork adapt en selec e: abled abled abled	Det er. Click t its value	tails
The following propertie ne property you want t n the right. Property: ARP Offload Downshift retries Energy-Efficient Ether Flow Control Interrupt Moderation Interrupt Moderation Interrupt Moderation Interrupt Moderation	s are availa to change o net	ble for n the l	this netwo ft, and th <u>V</u> alue Ena Disa Ena	ork adapt en selec e: abled abled abled	er. Click t its value	
Downshift retries Energy-Efficient Ethen Flow Control Interrupt Moderation Interrupt Moderation F Invertigent Moderation F	net Rate		Disa	abled abled		
Flow Control Interrupt Moderation Interrupt Moderation F IPv4 Checksum Office	Rate		Ena	abled		
Interrupt Moderation Interrupt Moderation F IPv4 Checksum Offloa	Rate					
Interrupt Woderation F	sare					
	ad					
Jumbo Packet	1 (10					
Large Send Offload V Large Send Offload V	1 (IPV4) 2 (IPv4)					
Large Send Offload V	2 (IPv6)					
Locally Administered A Locally Administered A Log Link State Event	Address	¥				

Figure 27. Interrupt Moderation Page

- 3. Select one of the following options:
  - Disabled The Interrupt Moderation feature is disabled. The adapter generates one interrupt for every packet transmission and packet reception.
  - Enabled The Interrupt Moderation feature is enabled. This is the default setting.
- 4. Click OK.

## **Interrupt Moderation Rate**

To improve system performance, you can configure the interrupt moderation rate. This setting defines the maximum number of interrupts per second that the adapter is allowed to generate. Note that decreasing this value decreases the CPU usage.

To specify or change the Interrupt Moderation Rate feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Interrupt Moderation Rate in the Property box.

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

	Resources	3	Power	Management
General	Advanced		Driver	Details
he following prop re property you v n the right. roperty: ARP Offload Downshift retries Energy-Efficient I Flow Control Interrupt Moderal Internupt Moderal IPv4 Checksum I Jumbo Packet Large Send Offlo Large Send Offlo Large Send Offlo Large Send Offlo Locally Administet	erties are available vant to change on Ethernet tion Diffload ad V1 (IPv4) ad V2 (IPv4) ad V2 (IPv6) ered Address	e for th the left	is network adap t, and then select Adaptive Adaptive Adaptive Extreme High Low Medium Off	ter. Click tt its value

Figure 28. Interrupt Moderation Rate Page

- 3. Select one of the following options:
  - Adaptive Interrupt throttle rate (ITR) = -1, no interrupts/sec, it is dynamically changed by the driver. This is the default setting.
  - **Extreme** ITR = 3600.
  - □ **High** ITR = 2000.

- □ **Medium** ITR = 950.
- □ **Low** ITR = 400.
- **Off** ITR = 0, no limit.
- 4. Click OK.

# **IPv4 Checksum Offload**

To specify or change the IPv4 Checksum Offload feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select IPv4 Checksum Offload in the Property box.

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

General     Advanced     Driver     Details       The following properties are available for this network adapter. Click ne property you want to change on the left, and then select its value in the right.     Value:       ARP Offload     Image: Select additional interrupt for the select its value     Image: Select additional interrupt for the select its value       ARP Offload     Image: Select additional interrupt Moderation Interrupt Moderation Rate     Image: Select additional interrupt Moderation Rate       IPv4 Checksum Offload     Image: Select additional interrupt Moderation Rate     Image: Select additional interrupt Moderation Rate       Jumbo Packet     Large Send Offload V1 (IPv4)     Image: Select additional interrupt Moderation Rate       Jumbo Packet     Locally Administered Address     Image: Select additional interrupt Moderation Rate       Jumbo Packet     Locally Administered Address     Image: Select additional interrupt interru	Events	Resources	Po	wer Management
he following properties are available for this network adapter. Click he property you want to change on the left, and then select its value in the right. Property: ARP Offload Downshift retries Energy-Efficient Ethemet Row Control Interrupt Moderation Rate <b>IPV4 Checksum Offload</b> Jumbo Packet Large Send Offload V1 (IPV4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event	General	Advanced	Driver	Details
Downshift refres Derrgy-Efficient Ethemet Row Control Interrupt Moderation Interrupt Moderation Rate <b>IPV4 Checksum Offload</b> Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event	The following prop the property you w in the right. Property: ARP Offload	erties are available f ant to change on th	for this network e left, and then <u>V</u> alue: Rx &	adapter. Click select its value Tx Enabled
Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event	Downshift retries Energy-Efficient E Flow Control Interrupt Moderati Interrupt Moderati	themet on on Rate	Disabl Rx & Rx En Tx En	ed Ix Enabled abled abled
	Jurby Checksum C Jumbo Packet Large Send Offloa Large Send Offloa Large Send Offloa Link Speed Locally Administer Log Link State Ev	ad V1 (IPv4) ad V2 (IPv4) ad V2 (IPv6) red Address vent		

Figure 29. IPv4 Checksum Offload Page

- 3. Select one of the following options:
  - Disabled Disables the IPv4 Checksum Offload function for both receiving and transmitting.
  - Rx & Tx Enabled Enables the IPv4 Checksum Offload function for both receiving and transmitting IPv4 packets. This is the default setting.
  - Rx Enabled Enables the IPv4 Checksum Offload function only for receiving IPv4 packets.
  - □ **Tx Enabled** Enables the IPv4 Checksum Offload function only for transmitting IPv4 packets.
- 4. Click OK.

### **Jumbo Packet**

Enables the network adapter to transmit and receive oversized Ethernet frames that are greater than 1500 bytes, but less than or equal to 16348 bytes in length. This property requires the presence of a switch that is able to process jumbo frames. Maximum frame size is set at 1500 bytes by default (Jumbo Packet disabled). To increase the maximum frame size, choose one of the values from the drop-down list.

To change the Jumbo Packet setting, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Jumbo Packet in the Property box.

The Jumbo Packet page is displayed as shown in Figure 30.



Figure 30. Jumbo Packet Page

- 3. Select the desired jumbo frame size from the list. The options are:
  - □ 2040 bytes
  - □ 4088 bytes
  - □ 9014 bytes
  - 16348 bytes

- Disabled The adapter does not handle jumbo frames.
- 4. Click OK.

# Large Send Offload v1 (IPv4)

Normally, the TCP segmentation is done by the protocol stack. When you enable the Large Send Offload property, the TCP segmentation can be done by the network adapter. The default setting for this property is Enabled.

To enable or disable the Large Send Offload v1 (IPv4) feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Large Send Offload v1 (IPv4) in the Property box.

The Large Send Offload v1 (IPv4) page is displayed as shown in Figure 31.



Figure 31. Large Send Offload v1 (IPv4) Page

- 3. Select one of the following options:
  - Disabled The Large Send Offload v1 (IPv4) feature is disabled
  - Enabled The Large Send Offload v1 (IPv4) feature is enabled. This is the default setting.
- 4. Click OK.

# Large Send Offload v2 (IPv4)

Normally, the TCP segmentation is done by the protocol stack. When you enable the Large Send Offload property, the TCP segmentation can be done by the network adapter. The default setting for this property is 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 58.

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.

Events	Resou	irces	Power M	anagement
General	Advanc	ed	Driver	Details
he following prop ne property you v n the right.	perties are ava vant to change	ilable for the lef	his network adapte t, and then select Value:	er. Click its value
ARP Offload		•	Enabled	
Downshift retries		^	Disabled	
Energy-Efficient   Flow Control	Ethernet		Enabled	
nterrupt Moderat	tion			
nterrupt Moderal	tion Rate Offload			
Jumbo Packet				
Large Send Offic Large Send Offic	ad V2 (IPV4)			
Large Send Offlo Link Speed	ad V2 (IPv6)			
Locally Administe Log Link State E	ered Address vent	~		

Figure 32. Large Send Offload v2 (IPv4) Page

Select one of the following options:

- Disabled The feature is disabled.
- Enabled The adapter port segments large packets up to 256Kb for IPv4 traffic before sending them out. This is the default setting.
- 3. 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 adapter port 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 58.

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.

Events	Resource	s	Powe	er Management
General	Advanced		Driver	Details
The following prop he property you w on the right.	erties are availab ant to change on	le for th the lef	iis network ad t, and then se	apter. Click lect its value
<u>'roperty:</u>			Value:	
ARP Offload		^	Enabled	
Energy-Efficient E	themet		Disabled	
Flow Control			Enabled	
Interrupt Moderati Interrupt Moderati	on on Rate			
IPv4 Checksum (	Offload			
Jumbo Packet Large Send Offloa	ad V1 (IPv4)			
Large Send Offloa	ad V2 (IPv4)			
Large Send Ottloa Link Speed	ad V2 (IPv6)			
Locally Administer	red Address			
Log Link State Ev	vent	*		

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 port segments large packets up to 256Kb for IPv6 traffic before sending them out. This is the default setting.
- 4. Click **OK**.

# **Link Speed**

To specify or change the port speed, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Link Speed in the Property box.

The Link Speed page is displayed as shown in Figure 34.

General     Advanced     Driver     Details       The following properties are available for this network adapter. Click to property you want to change on the left, and then select its value in the right.     Click to adapter. Click to adapter	General     Advanced     Driver     Details       General     Advanced     Driver     Details       The following properties are available for this network adapter. Click to property you want to change on the left, and then select its value in the right.     Click to adapter. Click t	General     Advanced     Driver     Details       General     Advanced     Driver     Details       The following properties are available for this network adapter. Click to property you want to change on the left, and then select its value in the right.     Click to adapter. Click t	Events	Resources	s	Power	Management
he following properties are available for this network adapter. Click te property you want to change on the left, and then select its value in the right. roperty:          Import       Value:         Jumbo Packet       Auto Negotiation         Jarge Send Offload V1 (IPv4)       100M         Locally Administered Address       IG         Locally Administered Address       5G         Locally Kate Event       Auto Negotiation         Maximum number of RSS Queues       Auto Negotiation         Prototty & VLAN       Auto Negotiation         Receive Buffers       Auto Negotiation         Recev Segment Coalescing (IPv4)       ✓	he following properties are available for this network adapter. Click he property you want to change on the left, and then select its value in the right. roperty: Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv4) Link Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload Priortly & VLAN Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) ✓	he following properties are available for this network adapter. Click he property you want to change on the left, and then select its value in the right. Toperty: Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Locally Administered Address Locally Administered Address Local Kate Event Maximum number of RSS Queues NS Offload Priority & VLAN Receive Buffers Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv6) ✓	General	Advanced		Driver	Details
roperty: Value: Jumbo Packet Jarge Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload NS Offload NS Offload Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) ✓	roperty: Value: Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Jink Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload Priority & VLAN Receive Biffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) ✓	roperty: Value: Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Log Link Speed Log Link State Event Maximum number of RSS Queues NS Offload Priority & VLAN Receive Buffers Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv6) ✓	he following pro ne property you n the right.	perties are availabl want to change on	e for t the le	nis network adaj ft, and then sele	oter. Click ct its value
Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Locally Administered Address Loc Jink State Event Maximum number of RSS Queues VS Offload VLAN Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6)	Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload Priority & VLAN Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) ✓	Jumbo Packet Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload Phorty & VLAN Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv6)	roperty:			<u>V</u> alue:	
			Large Send Offil Large Send Offil Large Send Offil Link Speed Locally Administ Log Link State E Maximum numbe NS Offload Priority & VLAN Receive Buffers Receive Side Sc Recv Segment ( Recv Segment (	bad V1 (IPv4) bad V2 (IPv6) ered Address event er of RSS Queues caling Coalescing (IPv4) Coalescing (IPv6)	~	100M 10G 1G 2.5G 5G Auto Nego	tiation

Figure 34. Link Speed Page

3. Select one of the following options:

#### Note

Allied Telesis recommends leaving this value set to the default Auto Negotiation. For the fiber versions of the DNC10, auto-negotiation does not refer to traditional speed and duplex auto-negotiation that is commonly used on copper-based NIC products. It simply means that the NIC will automatically detect the speed of the fiber module and set the controller's speed to match.

#### DNC10LC

- Auto Negotiation Link speed will be set to 10G
- 10G Link speed is 10G per second

All other settings are invalid.

#### DNC10SP

- Auto Negotiation The NIC will auto-detect the SFP speed and link speed will be set to 10G or 1G accordingly
- 10G Link speed is 10G per second
- IG Link speed is 1G per second

All other settings are invalid.

#### Note

The DNC10T uses standard auto-negotiation to determine link speed in all cases. Forced speed is disallowed by IEEE 802.3 for any speed of 1Gbps and above. When choosing a single speed from the drop-down list, only that speed will be advertised by the NIC; if the link partner does not also advertise the chosen speed, no link will be established.

#### DNC10T

- Auto Negotiation The NIC will advertise all supported speeds and negotiate the highest common speed with the link partner.
- 10G Only 10Gbps speed will be advertised.
- □ 5G Only 5Gbps speed will be advertised.
- □ 2.5G Only 2.5Gbps speed will be advertised.
- IG Only 1Gbps speed will be advertised.
- □ 100M Only 100Mbps speed will be advertised.
- 4. Click OK.

### **Locally Administered Address**

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

To specify or change the Locally Administered Address, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Locally Administered Address in the Property box.

The Locally Administered Address page is displayed as shown in Figure 35.

		101	wei management
General	Advanced	Driver	Details
ne following prop e property you v n the right. operty:	perties are available for vant to change on the	or this network a e left, and then s <u>V</u> alue:	adapter. Click select its value
umbo Packet arge Send Offlo arge Send Offlo ink Speed ocally Administe og Link State E flaximum numbe IS Offload trontly & VLAN Receive Buffers Receive Buffers Recev Segment C	ad V1 (IPv4) ad V2 (IPv4) ad V2 (IPv6) went r of RSS Queues aling coalescing (IPv4) coalescing (IPv6)	C Not Pre	sent

Figure 35. Locally Administered Address Page

- 3. Select one of the following options:
  - Value Used to manually assign a MAC address to the adapter.
  - □ Not Present Uses the factory-assigned address on the adapter. This is the default.

#### Note

The appropriate assigned ranges and exceptions for the locally administered address include the following:

The range is 00:00:00:00:00:01 to FF:FF:FF:FF:FD.

Do not use a multicast address (least significant bit of the high byte = 1).

Do not use all 0s or all Fs.

4. Click OK.

#### Log Link State Event

This feature allows you to enable or disable logging of the adapter's link state changes (such as changes to the port link state or duplex mode mismatch) in the system logs.

To enable or disable the Log Link State Event feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Log Link State Event in the Property box.

The Log Link State Event page is displayed as shown in Figure 36.

Events	Resources		Power I	Management
General	Advanced		Driver	Details
The following prope the property you wa on the right.	rties are available nt to change on th	for this ne left,	and then selec	ter. Click t its value
Jumbo Packet Large Send Offloat Large Send Offloat Large Send Offloat Locally Administere Log Link State Eve Maximum numberc NS Offload Priority & VLAN Receive Buffers Receive Stde Scal Recy Segment Co.	d V1 (IPv4) V2 (IPv4) d V2 (IPv6) d Address ant of RSS Queues		Enabled Disabled Enabled	Ţ

Figure 36. Log Link State Event Page

- 3. Select one of the following options:
  - **Disabled** This feature is disabled.
  - Enabled The adapter generates link state events. This is the default setting.
- 4. Click OK.

# **Maximum Number of RSS Queues**

The RSS Queues feature assigns data to queues associated with physical CPU cores. You can specify the maximum number of RSS queues that the network adapter assigns receiving data to.

To specify or change the maximum number of RSS Queues, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Maximum Number of RSS Queues in the Property box.

The Maximum Number of RSS Queues page is displayed as shown in Figure 37.

Events	Resources	\$	Power M	anagement
General	Advanced		Driver	Details
The following property you want the right. Property: Property: Large Send Offloa	erties are available ant to change on d V1 (IPv4)	e for thi the left	s network adapte , and then select <u>V</u> alue:	er. Click its value
Large Send Offloa Large Send Offloa Link Speed Locally Administer	d V2 (IPv4) d V2 (IPv6) ed Address		1 Queue 2 Queues 4 Queues	-
Log Link State Ev Maximum number NS Offload Priority & VLAN Receive Buffers Receive Side Sca Recv Segment Co Recv Segment Co TCP/UDP Checks	ent of RSS Queues ling valescing (IPv4) valescing (IPv6) sum Offload (IPv4	*	o queues	

Figure 37. Maximum Number of RSS Queues Page

- 3. Select one of the following options:
  - **1 Queue** The system allocates up to one RSS queue.
  - **2 Queues** The system allocates up to two RSS queues.
  - **4 Queues** The system allocates up to four RSS queues.
  - **8 Queues** The system allocates up to eight RSS queues.
- 4. Click OK.

# **NS Offload**

The NS (Neighbor Solicitation) Offload feature enables the adapter not to wake up when responding to an NS request.

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

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select NS Offload in the Property box.

The NS Offload page is displayed as shown in Figure 38.

Events	Resources	Power M	anagement
General	Advanced	Driver	Details
The following prope he property you wa on the right.	rties are available for nt to change on the l	this network adapte eft, and then select	er. Click its value
property:		<u>V</u> alue:	
Large Send Offload Large Send Offload Large Send Offload Link Speed Locally Administere Log Link State Eve Maximum number of No Offload Priority & VLAN Receive Buffers Receive Side Scal Recv Segment Co. TCP/UDP Checks	id V2 (IPV4) 4 V2 (IPV4) d V2 (IPV6) d Address ent if RSS Queues ing alescing (IPv4) alescing (IPv4) um Offload (IPv₂ ∨	Enabled Disabled Enabled	<u> </u>

Figure 38. NS Offload Page

- 3. Select one of the following options:
  - **Disabled** This feature is disabled.
  - Enabled The adapter does not wake up when responding to an NS request. 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 94.

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

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

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

The Priority & VLAN page is displayed as shown in Figure 39.

Events	Resources		Power I	Management
General	Advanced		Driver	Details
he following prop ne property you w n the right.	oerties are available vant to change on t	e for thi he left	s network adap , and then selec	ter. Click ct its value
roperty:		_	Value:	
Large Send Offlo	ad V1 (IPv4)	^	Priority & VI	AN Enabled
Large Send Offlo	ad V2 (IPv6)		Packet Prio	rity Enabled
Link Speed			Priority & VL	AN Enabled
Locally Administe	red Address		VLAN Enab	oled
Maximum number	r of RSS Queues			
NS Offload				
Priority & VLAN				
Receive Side Sc	aling			
Recv Segment C	oalescing (IPv4)			
Recv Segment C TCP/UDP Check	coalescing (IPv6) (sum Offload (IPv4	~		
			OK	Car

Figure 39. Priority & VLAN Page

- 3. Select one of the following options:
  - Priority & VLAN Enabled Allows for packet prioritization and VLAN tagging. This is the default setting.

- Priority & VLAN Disabled Prevents packet prioritization and VLAN tagging.
- □ **Packet Priority Enabled** Allows packet prioritization only.
- **VLAN Enabled** Allows VLAN tagging only.
- 4. Click OK.

### **Receive Buffers**

Receive buffers are data segments that allow the network adapter to allocate receive packets to memory.

To specify or change the Receive Buffers feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

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

The Receive Buffers page is displayed as shown in Figure 40.

General     Advanced     Driver     Details       The following properties are available for this network adapter. Click the property you want to change on the left, and then select its value on the right.     Click the select its value       Property:     Value:       Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload Priority & VLAN     Si2       Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) TCP/UDP Checksum Offload (IPv+ Y     Si2	Events	Resources	Power	Management
The following properties are available for this network adapter. Click the property you want to change on the left, and then select its value on the right.  Property: Value: Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload Priority & VLAN Receive Buffers Receive Suffers R	General	Advanced	Driver	Details
Property:       Value:         Large Send Offload V1 (IPv4)          Large Send Offload V2 (IPv6)          Link Speed          Locally Administered Address          Log Link State Event       Maximum number of RSS Queues         NS Offload       Priontly & VLAN         Receive Buffers       Receive Side Scaling         Recv Segment Coalescing (IPv4)          Recv Segment Coalescing (IPv6)          TCP/UDP Checksum Offload (IPv. *	The following prope the property you wa on the right.	erties are available for t ant to change on the le	his network ada ft, and then sele	oter. Click ct its value
Large Send Offload V1 (IPv4) Large Send Offload V2 (IPv4) Large Send Offload V2 (IPv6) Link Speed Locally Administered Address Log Link State Event Maximum number of RSS Queues NS Offload Priority & VLAN Receive Suffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) TCP/UDP Checksum Offload (IPv+ ✓	Property:		<u>V</u> alue:	
	Large Send Offloa Large Send Offloa Large Send Offloa Link Speed Locally Administer Log Link State Ev Maximum number NS Offload Priority & VLAN Receive Side Sca Recv Segment Cc Recv Segment Cc TCP/UDP Checks	d V2 (IPv4) d V2 (IPv6) ed Address ent of RSS Queues ling ialescing (IPv4) ialescing (IPv6) sum Offload (IPv₂ ∨		

Figure 40. Receive Buffers Page

3. Specify the buffer size in the Value box.

The range of valid receive buffers is 128 to 4096 in increments of 8 with 512 receive buffers as the default value.

4. Click **OK**.

### **Receive Side Scaling**

The Receive Side Scaling (RSS) feature allows the adapter to efficiently distribute receive processing across multiple CPU's so as to prevent overloading a single CPU. To make this feature effective, the computer must have multiple CPU's 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 58.

2. Select Receive Side Scaling in the Property box.

The Receive Side Scaling page is displayed as shown in Figure 41.

Events	Resources	P	ower Mar	nagement
General	Advanced	Driver		Details
The following prope he property you wa on the right.	rties are available for nt to change on the	rthis network left, and ther	adapter. select its	Click s value
Property:		<u>V</u> alue:		
Receive Builes Scal Recv Segment Coa Recv Segment Coa TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks UDP Checks UD	ng Alescing (IPv4) alescing (IPv6) um Offload (IPv4 e e off state acket Alatch	Enab Disab Enab	ed ed ed	<u> </u>

Figure 41. Receive Side Scaling Page

- 3. Select one of the following options:
  - Enabled Receiving data is processed by multiple CPU's. This is the default setting.
  - Disabled Receiving data is processed by a single CPU.
- 4. Click OK.

### **Recv Segment Coalescing (IPv4)**

When receiving data, the miniport driver, NDIS, and TCP/IP must all look at each segment's header information separately. When large amounts of data are being received, this creates a large amount of overhead. Receive segment coalescing (RSC) reduces this overhead by coalescing a sequence of received segments and passing them to the host TCP/IP stack in one operation, so that NDIS and TCP/IP need only look at one header for the entire sequence.

To enable or disable the Receive Segment Coalescing (IPv4) feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Receive Segment Coalescing (IPv4) in the Property box.

The Receive Segment Coalescing (IPv4) page is displayed as shown in Figure 42.

Events	Resources	Power	Management
General	Advanced	Driver	Details
The following pro he property you v on the right. <u>P</u> roperty:	perties are available fo want to change on the	r this network ada left, and then selv <u>V</u> alue:	ipter. Click ect its value
Receive Buffers Receive Side Sc Recv Segment ( Recv Segment ( TCP/UDP Chec TCP/UDP Chec TCP/UDP Chec Transmit Buffers VLAN ID VLAN Monitor m Wait for Link Wake from powe Wake on Link Wake on Magic Wake on Patter	caling Coalescing (IPv4) Coalescing (IPv6) ksum Offload (IPv4 ksum Offload (IPv4 ode er off state Packet h Match	Enabled Disabled Enabled	

Figure 42. Receive Segment Coalescing (IPv4) Page

- 3. Select one of the following options:
  - **Enabled** RSC is enabled. This is the default setting.
  - **Disabled** RSC is disabled.

4. Click OK.

### **Recv Segment Coalescing (IPv6)**

When receiving data, the miniport driver, NDIS, and TCP/IP must all look at each segment's header information separately. When large amounts of data are being received, this creates a large amount of overhead. Receive segment coalescing (RSC) reduces this overhead by coalescing a sequence of received segments and passing them to the host TCP/IP stack in one operation, so that NDIS and TCP/IP need only look at one header for the entire sequence.

To enable or disable the Receive Segment Coalescing (IPv6) feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Receive Segment Coalescing (IPv6) in the Property box.

The Receive Segment Coalescing (IPv6) page is displayed as shown in Figure 43.

General he following prop he property you w n the right. roperty: Receive Buffers Receive Side Sc. Receive Suffers	Advanced verties are availabl vant to change on	e for this the left,	Driver s network adapte and then select	Details r. Click its value
he following prop he property you w n the right. roperty: Receive Buffers Receive Side Sci Receive Side Sci	erties are availabl ant to change on	e for this the left,	s network adapte and then select	r. Click its value
Recy Segment C TCP/UDP Check TCP/UDP Check Transmit Buffers VLAN ID VLAN Monitor mo Waite for Link Wake for Down	aling oalescing (IPv4) oalescing (IPv6) isum Offload (IPv isum Offload (IPv1 isum Offload (IPv1 ide	^	Value: Enabled Disabled Enabled	
Wake on Link Wake on Magic I Wake on Pattern	Packet Match	<b>~</b>		

Figure 43. Receive Segment Coalescing (IPv6) Page

- 3. Select one of the following options:
  - **Enabled** RSC is enabled. This is the default setting.
  - **Disabled** RSC is disabled.

4. Click OK.

#### **TCP/UDP Checksum Offload (IPv4)**

The TCP/UDP Checksum Offload (IPv4) function enables the adapter port 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 Manager on your operating system.

See "Accessing Advanced Properties" on page 58.

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

The TCP/UDP Checksum Offload (IPv4) page is displayed as shown in Figure 44.

Events	Resource	s	Power I	Management
General	Advanced		Driver	Details
he following prop ne property you w n the right.	erties are availab ant to change on	e for thi: the left,	s network adap , and then selec	ter. Click t its value
property:			<u>V</u> alue:	
Receive Side Scz Recv Segment Cc Recv Segment Cc TCP/UDP Check TCP/UDP Check TCP/UDP Check ULAN ID VLAN ID VLAN Monitor mo Wait for Link Wake from power Wake on Link Wake on Pattern Wake on Pattern	lling Jalescing (IPv4) alescing (IPv6) sum Offload (IPv1 sum Offload (IPv1 de off state 'acket Match	*	Disabled Rx & Tx En Rx Enabled Tx Enabled	abled

Figure 44. 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.
  - Disabled Disables the TCP/UDP Checksum Offload (IPv4) function for both receiving and transmitting.
  - **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 port 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 Manager on your operating system.

See "Accessing Advanced Properties" on page 58.

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

The TCP/UDP Checksum Offload (IPv6) page is displayed as shown in Figure 45.

General     Advanced     Driver     Details       General     Advanced     Driver     Details       he following properties are available for this network adapter. Click ne property you want to change on the left, and then select its value is the right.     Its additional is additional intervalue intervalue is additional intervalue intervalue is additional intervalue is additional intervalue intervalu	Events	Resource	s	Power	Management
he following properties are available for this network adapter. Click he property you want to change on the left, and then select its value in the right. Toperty: Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) TCP/UDP Checksum Offload (IPv TCP/UDP Checksum Offload (IPv VLAN ID VLAN ID VLAN Monitor mode Wait for Link Wake on power off state Wake on Magic Packet Wake on Pattern Match	General	Advanced		Driver	Details
ropetry:     Value:       Receive Buffers     Receive Side Scaling       Receive Side Scaling     Image: Scaling       Receive Segment Coalescing (IPv4)     Disabled       Receive Segment Coalescing (IPv6)     Image: Scaling       TCP/UDP Checksum Offload (IPv1)     Rx & Tx Enabled       TCP/UDP Checksum Offload (IPv1)     Rx & Tx Enabled       Transmit Buffers     VLAN ID       VLAN ID     VLAN ID       Wake form power off state     Wake on Magic Packet       Wake on Pattern Match	The following prop ne property you w n the right.	erties are availabl ant to change on	e for t the le	his network ada ft, and then sele	pter. Click ect its value
Receive Side Scaling Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) TCP/UDP Checksum Offload (IPv TCP/UDP Checksum Offload (IPv TCP/UDP Checksum Offload (IPv VLAN ID VLAN ID VLAN ID VLAN Monitor mode Waite for Link Wake on Magic Packet Wake on Magic Packet Wake on Pattern Match	roperty:		_	<u>v</u> alue:	
	Receive Side Sci. Recv Segment Cr. Recv Segment Cr. TCP/UDP Check TCP/UDP Check TCP/UDP Check Transmit Buffres VLAN ID VLAN Monitor mo Wait for Link Wake from power Wake on Link Wake on Magic F Wake on Patterm	aling palescing (IPv4) sum Offload (IPv4 sum Offload (IPv4 de off state Packet Match	~	Disabled Rx & Tx E Rx Enable Tx Enable	abled d d

Figure 45. 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.
  - Disabled Disables the TCP/UDP Checksum Offload (IPv6) function for both receiving and transmitting.
  - **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.

# **Transmit Buffers**

The number of transmit buffers. Transmit buffers are data segments that allow the network adapter to monitor transmit packets in the system memory.

To specify or change the Transmit Buffers feature, do the following:

1. Access the Device Manager on your operating system.

See "Accessing Advanced Properties" on page 58.

2. Select Transmit Buffers in the Property box.

The Transmit Buffers page is displayed as shown in Figure 46.

Events	Resources	Power	Management
General	Advanced	Driver	Details
The following prope the property you wa in the right.	erties are available for ant to change on the l	this network adap eft, and then selec	oter. Click ct its value
roperty:		<u>V</u> alue:	
Receive Side Sca Recv Segment Co Recv Segment Co TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks VLAN ID VLAN Monitor moc Wait for Link Wake from power Wake on Link Wake on Agic P Wake on Pattern I	ling alescing (IPv4) alescing (IPv6) sum Offload (IPv4 sum Offload (IPv4 de off state acket Match ✓		

Figure 46. Transmit Buffers Page

- 3. Specify the buffer size in the Value box. The valid range is 256 to 8184 in increments of 8. The default value is 2048
- 4. Click OK.

# VLAN ID

The VLAN ID property allows you to specify a VLAN ID on your network to the adapter port. The adapter port 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 58.

2. Select VLAN ID in the Property box.

The VLAN ID page is displayed as shown in Figure 47.

General ne following prop e property you v n the right.	Advanced	e for this	Driver	Details
ne following prop e property you v 1 the right.	perties are available	o for this		
	vanit to change on t	the left,	s network ada and then sele	pter. Click ct its value
operty:			<u>V</u> alue:	
hiority & VLAN leceive Buffers leceive Buffers leceive Segment C lecv Segment C CP/UDP Checl CP/UDP CHEC CP/UDP C	aling Coalescing (IPv4) Coalescing (IPv6) csum Offload (IPv4 (sum Offload (IPv4 (IPv4 csum Offload (IPv4 ande er off state	×	٣	

Figure 47. VLAN ID Page

3. Specify a VLAN ID in the Value box.

The range of the value is from 0 to 4094. The default value is 0. Leaving the VLAN ID set to 0 will result in no VLAN tag being added to egress packets, even if VLAN is enabled. This field must be set to the desired VLAN ID if VLAN headers are desired.

4. Click OK.

# **VLAN Monitor Mode**

The VLAN Monitor Mode controls VLAN stripping.

Note

Allied Telesis recommends setting this feature as Disabled. This property will be removed in future driver versions.

To change the VLAN Monitor Mode feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select VLAN Monitor Mode in the Property box.

The VLAN Monitor Mode page is displayed as shown in Figure 48.

General     Advanced     Driver     Details       The following properties are available for this network adapter. Click the property you want to change on the left, and then select its value on the right.     Click the select its value on the left, and then select its value on the right.       Property:     Value:       Receive Sude Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) TCP/UDP Checksum Offload (IPv4 TCP/UDP Checksum Offload (IPv4 TCP/UDP Checksum Offload (IPv4 TCP/UDP Checksum offload (IPv4 Wait for Link Wake from power off state Wake on Link Wake on Magic Packet Wake on Pattern Match     Value:	Events	Resource	s	Power I	Management
The following properties are available for this network adapter. Click the property you want to change on the left, and then select its value on the right.  Property:  Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) TCP/UDP Checksum Offload (IPv4 TCP/UDP Checksum Offload (IPv4 Transmit Buffers VLAN ID VLAN Monitor mode Wait for Link Wake on Magic Packet Wake on Pattern Match	General	Advanced		Driver	Details
Property:     Value:       Receive Buffers     Disabled       Receive Side Scaling     Disabled       Receive Side Scaling     Disabled       Receive Segment Coalescing (IPv4)     Disabled       Receive Segment Coalescing (IPv6)     Disabled       TCP/UDP Checksum Offload (IPv4     Transmit Buffers       VLAN ID     VLAN Monitor mode       Walk for Link     Wake on Link       Wake on Magic Packet     Vake on Pattern Match	The following prop the property you wa on the right.	erties are availab ant to change on	le for this the left,	and then selec	ter. Click t its value
Receive Suffers     Image: Control of State       Receive Segment Coalescing (IPv4)       Receive Segment Coalescing (IPv6)       TCP/UDP Checksum Offload (IPv       TCP/UDP Checksum Offload (IPv       TCP/UDP Checksum Offload (IPv       VLAN ID       VLAN ID       Wate from power off state       Wake on Link       Wake on Magic Packet       Wake on Pattern Match	Property:			value:	
	Receive Side Sca Recv Segment Cc Recv Segment Cc TCP/UDP Check: TCP/UDP Check: TCP/UDP Check VLAN Monitor mo Wait for Link Wait for Link Wake from power Wake on Magic F Wake on Magic F Wake on Pattern	ling valescing (IPv4) valescing (IPv6) sum Offload (IPv1 sum Offload (IPv1 de off state vacket Match		Disabled Enabled	

Figure 48. VLAN Monitor Mode Page

- 3. Select one of the following options:
  - □ Enabled If set to enabled, the VLAN tags may be stripped.
  - Disabled If set to disabled, the VLAN tags will not be stripped and packets will be passes to OS as is. This is the default setting.

4. Click OK.

#### Wait for Link

Decides if the driver waits for the link status of the interface before reporting the link state to the OS.

#### Note

Allied Telesis recommends setting this feature as Auto or On. This property will be removed in future driver versions.

To change the Wait for Link feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select **Wait for Link** in the Property box.

The Wait for Link page is displayed as shown in Figure 49.

Events	Resources	3	Power I	Management
General	Advanced		Driver	Details
The following prop the property you w on the right. Property:	erties are availabl ant to change on	e for this the left,	network adap and then selec <u>V</u> alue:	ter. Click t its value
Receive slide Sca Receive Side Sca Recv Segment Cr TCP/UDP Check Transmit Buffers VLAN ID VLAN Monitor mo Wait for Link Wake from powen Wake on Magic F Wake on Magic F	aling balescing (IPv4) balescing (IPv6) sum Offload (IPv sum Offload (IPv1 de off state Packet Match	~	Auto Detec Auto Detec Off On	

Figure 49. Wait for Link Page

- 3. Select one of the following options:
  - Auto Detect If set to Auto Detect, it is the same as on. This is the default setting.
  - Off If set to Off, driver will not wait for link negotiation on copper side and will report link state as

connected to OS.

- □ **On** If set to On, driver will report only actual link state of the network interface.
- 4. Click OK.

#### Wake from Power Off State

When enabled this feature directs the NIC to wake the computer from sleep/power off for Wake on LAN support.

To enable or disable the Wake from Power Off State feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Wake from Power Off State in the Property box.

The Wake from Power Off State page is displayed as shown in Figure 50.

General     Advanced     Driver     Details       he following properties are available for this network adapter. Click the property you want to change on the left, and then select its value in the right.     Click       roperty:     Value:     Value:       Receive Buffers     Inabled     Disabled       Receive Side Scaling     Disabled     Disabled       Receive Side Scaling     Disabled     Disabled       Recv Segment Coalescing (IPv4)     Disabled     Disabled       CP/UDP Checksum Offload (IPv4)     Inabled     Inabled       VLAN ID     VLAN Nonitor mode     Nake on Uink     Nake on Uink       Nake on Uink     Value int     Value int	Events	Resource	s	Power M	Management
he following properties are available for this network adapter. Click te property you want to change on the left, and then select its value in the right. roperty: <u>Value:</u> Receive Buffers Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segm	General	Advanced		Driver	Details
roperty: <u>V</u> alue: Receive Buffers Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) TCP/UDP Checksum Offload (IPv4 TCP/UDP Checksum Offload (IPv4 Transmit Buffers /LAN ID /LAN Monitor mode Nait for Link Vake on Ink Nake on Magic Packet Nake on Pattern Match ✓	he following prop ne property you w n the right.	perties are availab vant to change on	le for th the left	is network adapt t, and then selec	ter. Click t its value
Receive Buffers Receive Buffers Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) Recv Segment Coalescing (IPv6) ICP/UDP Checksum Offload (IPv4 Transmit Buffers /LAN ID /LAN Monitor mode Nait for Link Vake on Ingic Packet Nake on Magic Packet Nake on Pattern Match	roperty:			<u>V</u> alue:	
	Receive Side Sc Recv Segment C TCP/UDP Check TCP/UDP Check Transmit Buffers VLAN ID VLAN Monitor mc Walt for Link Wake from powe Wake on Link Wake on Maaic	aling icalescing (IPv4) icalescing (IPv6) issum Offload (IPv4 issum Offload (IPv4 ode r off state Packet Match	×	Disabled Enabled	
	Wake on Pattern				
	Wake on Pattern				
	Wake on Pattern				
	Wake on Pattern				

Figure 50. Wake from Power Off State Page

- 3. Select one of the following options:
  - □ **Enabled** Wakes the computer from sleep/power off for Wake on LAN support. This is the default setting.
  - **Disabled** The feature is disabled.
- 4. Click OK.

#### Note

This feature may require addition settings in the OS and/or BIOS.

### Wake on Link

This is part of the Wake on LAN feature. The adapter wakes the computer from a low-power mode when the link state on the adapter's port changes from no link to link.

To enable or disable the Wake on Link feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select **Wake on Link** in the Property box.

The Wake on Link page is displayed as shown in Figure 51.

Events	Resources	Power Ma	anagement
General	Advanced	Driver	Details
The following prope the property you wa on the right.	erties are available for ant to change on the l	this network adapte eft, and then select	r. Click its value
Property:		<u>V</u> alue:	
Receive Side Scal Recv Segment Co Recv Segment Co TCP/UDP Checks TCP/UDP Checks TCP/UDP Checks VLAN ID VLAN Monitor moc Wait for Link Wake from power Wake on Link Wake on Magic P Wake on Pattern I Wake on Pattern I	Ing (IPv4) alescing (IPv6) sum Offload (IPv4 sum Offload (IPv4 sum Offload (IPv4 de off state acket Match	Disabled Disabled Forced	

Figure 51. Wake on Link Page

- 3. Select one of the following options:
  - Disable This feature is disabled. This is the default setting.
  - □ **Forced** The adapter wakes the computer when the status of the port changes from no link to link.
- 4. Click OK.

### Wake on Magic Packet

The Wake on Magic Packet feature enables the adapter to wake up from a low-power mode when the adapter port receives a Magic packet.

To enable or disable the Wake on Magic Packet feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Wake on Magic Packet in the Property box.

The Wake on Magic Packet page is displayed as shown in Figure 52.

Events	Resources		Power N	lanagement
General	Advanced		Driver	Details
The following prope the property you wa on the right.	erties are available f ant to change on th	or this r e left, a	network adapt Ind then selec	ter. Click t its value
Property:			<u>V</u> alue:	
Receive Side sca Recv Segment Co Recv Segment Co TCP/UDP Checks Transmit Buffers VLAN ID VLAN Monitor mor Wait for Link Wake from power Wake on Link Wake on Link Wake on Pattern Wake on Ping	alescing (IPv4) alescing (IPv6) sum Offload (IPv- sum Offload (IPv- de off state acket Match		Enabled Disabled Enabled	
				_

Figure 52. Wake on Magic Packet Page

- 3. Select one of the following options:
  - Enabled The adapter wakes up from a low-power mode when receiving a Magic Packet. This is the default setting.
  - Disabled The adapter stays in a low-power mode when receiving a Magic Packet.
- 4. Click OK.

#### Wake on Pattern Match

The Wake on Pattern Match feature enables the network adapter to wake up the computer from a low-power mode when it receives a packet that matches the wake patterns specified in the operating system.

To enable of disable the Wake on Pattern Match feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select Wake on Pattern Match in the Property box.

The Wake on Pattern Match page is displayed as shown in Figure 53.

General     Advanced     Driver     Details       The following properties are available for this network adapter. Click he property you want to change on the left, and then select its value on the right.     Click he property and the select its value on the right.       Property:     Value:     Enabled       Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv4) TCP/UDP Checksum Offload (IPv4 TCP/UDP Checksum Offload (IPv4 Walk for Magic Packet Wake on Dink Wake on Pagic Packet Wake on Pagic Packet Wake on Pagic Packet     Value:	Events	Resources	Power M	anagement
The following properties are available for this network adapter. Click he property you want to change on the left, and then select its value in the right.          Property:       Value:         Property:       Value:         Receive Side Scaling       Enabled         Recv Segment Coalescing (IPv4)       Isabled         TCP/UDP Checksum Offload (IPv4)       Transmit Buffers         YLAN ID       VLAN Monitor mode         Wake on Dink       Wake on Pattern Match         Wake on Ping       Value:	General	Advanced	Driver	Details
Receive Side Scaling Recv Segment Coalescing (IPv4) Recv Segment Coalescing (IPv6) TCP/UDP Checksum Offload (IPv4 TCP/UDP	The following prop he property you w on the right. <u>P</u> roperty:	erties are available for ant to change on the k	this network adapte ft, and then select <u>V</u> alue:	er. Click its value
	Receive Side Sc Recv Segment C Recv Segment C TCP/UDP Check TCP/UDP Check TCP/UDP Check TCP/UDP Check VLAN ID VLAN ID VLAN Monitor mo Wait for Link Wake on Link Wake on Link Wake on Pattern Wake on Ping	aling oalescing (IPv4) sum Offload (IPv4 sum Offload (IPv4 sum Offload (IPv4 ide r off state Packet <u>Match</u>	Enabled Disabled Enabled	

Figure 53. Wake on Pattern Match Page

- 3. Select one of the following options:
  - Enabled The adapter wakes up from a low-power mode when receiving a packet that matches one of the patterns specified in the operating system.
  - **Disabled** The adapter stays in a low-power mode.
- 4. Click OK.

### Wake on Ping

This is part of the Wake on LAN feature. The adapter wakes the computer from a low-power mode when it receives a Ping packet on its port.

To enable or disable the Wake on Ping feature, do the following:

1. Access the Advanced Properties.

See "Accessing Advanced Properties" on page 58.

2. Select **Wake on Ping** in the Property box.

The Wake on Ping page is displayed as shown in Figure 48.

Events	Resources		Power M	Management
General	Advanced		Driver	Details
The following proper he property you war on the right.	ties are available f nt to change on th	or this e left,	network adap and then selec	ter. Click t its value
Property:			<u>V</u> alue:	
Receive Side Scali Recv Segment Coa Recv Segment Coa TCP/UDP Checksu Transmit Buffers VLAN ID VLAN Monitor mod Wait for Link Wake from power or Wake on Link Wake on Magic Pa Wake on Pattern N Wake on Ping	ng ng alescing (IPv4) alescing (IPv6) um Offload (IPv4 um Offload (IPv1 e off state acket latch		Disabled Disabled Enabled	

Figure 54. Wake on Ping Page

- 3. Select one of the following options:
  - Disabled This feature is disabled. This is the default setting.
  - Enabled The adapter wakes the computer when it receives a Ping packet.
- 4. Click OK.

# Chapter 5 Uninstalling the Driver Software

This chapter describes how to uninstall the driver software for the DNC10 Series network adapter.

This chapter contains the following topics:

- □ "Overview" on page 106
- □ "Uninstalling the Driver Software Using Device Manager" on page 107
- □ "Uninstalling the Driver Software Silently" on page 108

# Overview

When you no longer use the DNC10 Series network adapter for your computer, you can uninstall the driver software from your operating system.

As you can install driver software for the DNC10 Series network adapter using Device Manager or the silent installation method, you can also uninstall driver software in two ways:

- □ "Uninstalling the Driver Software Using Device Manager" on page 107
- □ "Uninstalling the Driver Software Silently" on page 108
- **Guidelines** Here are the guidelines for uninstalling the driver software from your system:
  - You must have Administrator privileges to remove the driver software.
  - Before uninstalling the network adapter, capture all of the Advanced Property settings for later use. The properties are lost during the uninstall process.

### Uninstalling the Driver Software Using Device Manager

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

- 1. Start your Windows operating system and log in.
- 2. Access the Device Manager.

See "Accessing the Device Manager" on page 45.

- 3. In the Device Manager window, expand the Network Adapters folder.
- 4. Right-click the Allied Telesis AT-DNC10 Series Series Ethernet.

The shortcut menu appears as shown in Figure 55.



Figure 55. Device Manager Shortcut Menu

5. Select Uninstall device.

The Confirm Device Uninstall window pops up.

- 6. Check the check box if you want to remove the driver software for your adapter.
- 7. Click **OK** to complete the uninstall.

# **Uninstalling the Driver Software Silently**

You can apply the silent installation method to uninstall the driver.

To uninstall the driver without user-intervention, perform the following steps:

- 1. Open a command prompt window with administrator privileges.
- 2. Change the directory to the folder where the dpinst utility and the driver files reside.
- 3. Uninstall the driver silently by executing the following command:
  - > dpinst /U inf\_file\_name.inf /S

**Note** Replace *inf\_file\_name* with the name of .inf file.

The driver is uninstalled without user-intervention.
# Chapter 6 Troubleshooting

This chapter describes troubleshooting procedures. It contains the following sections:

- □ "Troubleshooting Checklist" on page 110
- □ "Testing Network Connectivity" on page 113

# **Troubleshooting Checklist**

The following checklist provides recommended actions to take to resolve problems installing the DNC10 series adapter card or running it in your system.

#### Note

Before opening the cabinet of your system to remove or install the adapter card, review all precautions outlined under "Reviewing Safety Precautions" on page 29.

Troubleshooting       Inspect all cables and connections. Verify that the cable connections on the network adapter and network device are attached securely.         Verify that the fiber strand connected to TX of the port is connected to the RX of the link partner and vice versa.         Verify that the remote network device is powered on and operating properly.         Try connecting the adapter to another network device.         Repeat the procedure for installing the adapter driver. Refer to "Installing the Driver Software" on page 47.         If the remote device is a management device, use its management software to confirm that the port connected to the adapter is enabled.         Verify that the computer with the adapter has the latest BIOS.         Note         The following items require removing the cover from the computer.         Inspect the adapter for damage.         Verify that the adapter is completely inserted in the PCle connector in the system.         Try installing the adapter in a different PCle slot in the system.         Try installing the adapter in a different system.         Werify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.	General	Here a	are general troubleshooting suggestions:		
<ul> <li>Verify that the fiber strand connected to TX of the port is connected to the RX of the link partner and vice versa.</li> <li>Verify that the remote network device is powered on and operating properly.</li> <li>Try connecting the adapter to another network device.</li> <li>Repeat the procedure for installing the adapter driver. Refer to "Installing the Driver Software" on page 47.</li> <li>If the remote device is a management device, use its management software to confirm that the port connected to the adapter is enabled.</li> <li>Verify that the computer with the adapter has the latest BIOS.</li> <li>Note         The following items require removing the cover from the computer.         Inspect the adapter for damage.         Verify that the adapter is completely inserted in the PCIe connector in the system.         Try installing the adapter in a different PCIe slot in the system.         Try installing the adapter in a different system.         Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.     </li> </ul>	Troubleshooting		Inspect all cables and connections. Verify that the cable connections on the network adapter and network device are attached securely.		
<ul> <li>Verify that the remote network device is powered on and operating properly.</li> <li>Try connecting the adapter to another network device.</li> <li>Repeat the procedure for installing the adapter driver. Refer to "Installing the Driver Software" on page 47.</li> <li>If the remote device is a management device, use its management software to confirm that the port connected to the adapter is enabled.</li> <li>Verify that the computer with the adapter has the latest BIOS.</li> <li>Note         <ul> <li>The following items require removing the cover from the computer.</li> <li>Inspect the adapter for damage.</li> <li>Verify that the adapter is completely inserted in the PCIe connector in the system.</li> <li>Try installing the adapter in a different PCIe slot in the system.</li> <li>Try installing the adapter in a different system.</li> </ul> </li> <li>DNC10LC         <ul> <li>Here are troubleshooting suggestions for the DNC10LC adapter:</li> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul> </li> </ul>			Verify that the fiber strand connected to TX of the port is connected to the RX of the link partner and vice versa.		
<ul> <li>Try connecting the adapter to another network device.</li> <li>Repeat the procedure for installing the adapter driver. Refer to "Installing the Driver Software" on page 47.</li> <li>If the remote device is a management device, use its management software to confirm that the port connected to the adapter is enabled.</li> <li>Verify that the computer with the adapter has the latest BIOS.</li> <li>Note The following items require removing the cover from the computer.</li> <li>Inspect the adapter for damage.</li> <li>Verify that the adapter is completely inserted in the PCIe connector in the system.</li> <li>Try installing the adapter in a different PCIe slot in the system.</li> <li>Try installing the adapter in a different system.</li> <li>MNC10LC Adapter</li> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul>			Verify that the remote network device is powered on and operating properly.		
<ul> <li>Repeat the procedure for installing the adapter driver. Refer to "Installing the Driver Software" on page 47.</li> <li>If the remote device is a management device, use its management software to confirm that the port connected to the adapter is enabled.</li> <li>Verify that the computer with the adapter has the latest BIOS.</li> <li>Note         The following items require removing the cover from the computer.         </li> <li>Inspect the adapter for damage.</li> <li>Verify that the adapter is completely inserted in the PCIe connector in the system.</li> <li>Try installing the adapter in a different PCIe slot in the system.</li> <li>Try installing the adapter in a different system.</li> <li>Werify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul>			Try connecting the adapter to another network device.		
<ul> <li>If the remote device is a management device, use its management software to confirm that the port connected to the adapter is enabled.</li> <li>Verify that the computer with the adapter has the latest BIOS.</li> <li>Note         The following items require removing the cover from the computer.         </li> <li>Inspect the adapter for damage.</li> <li>Verify that the adapter is completely inserted in the PCIe connector in the system.</li> <li>Try installing the adapter in a different PCIe slot in the system.</li> <li>Try installing the adapter in a different system.</li> <li>Here are troubleshooting suggestions for the DNC10LC adapter:         <ul> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul> </li> </ul>			Repeat the procedure for installing the adapter driver. Refer to "Installing the Driver Software" on page 47.		
<ul> <li>Verify that the computer with the adapter has the latest BIOS.</li> <li>Note The following items require removing the cover from the computer.</li> <li>Inspect the adapter for damage.</li> <li>Verify that the adapter is completely inserted in the PCle connector in the system.</li> <li>Try installing the adapter in a different PCle slot in the system.</li> <li>Try installing the adapter in a different system.</li> <li>Here are troubleshooting suggestions for the DNC10LC adapter:</li> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul>			If the remote device is a management device, use its management software to confirm that the port connected to the adapter is enabled.		
Note         The following items require removing the cover from the computer.         Inspect the adapter for damage.         Verify that the adapter is completely inserted in the PCIe connector in the system.         Try installing the adapter in a different PCIe slot in the system.         Try installing the adapter in a different system.         Try installing the adapter in a different system.         Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.			Verify that the computer with the adapter has the latest BIOS.		
The following items require removing the cover from the computer.         Inspect the adapter for damage.         Verify that the adapter is completely inserted in the PCIe connector in the system.         Try installing the adapter in a different PCIe slot in the system.         Try installing the adapter in a different system.         DNC10LC         Adapter         Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.		-	Note		
<ul> <li>Inspect the adapter for damage.</li> <li>Verify that the adapter is completely inserted in the PCIe connector in the system.</li> <li>Try installing the adapter in a different PCIe slot in the system.</li> <li>Try installing the adapter in a different system.</li> <li>Here are troubleshooting suggestions for the DNC10LC adapter:</li> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul>		-	The following items require removing the cover from the computer.		
<ul> <li>Verify that the adapter is completely inserted in the PCle connector in the system.</li> <li>Try installing the adapter in a different PCle slot in the system.</li> <li>Try installing the adapter in a different system.</li> <li>Here are troubleshooting suggestions for the DNC10LC adapter:         <ul> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul> </li> </ul>			Inspect the adapter for damage.		
<ul> <li>Try installing the adapter in a different PCIe slot in the system.</li> <li>Try installing the adapter in a different system.</li> <li>DNC10LC Adapter</li> <li>Here are troubleshooting suggestions for the DNC10LC adapter:</li> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul>			Verify that the adapter is completely inserted in the PCIe connector in the system.		
<ul> <li>Try installing the adapter in a different system.</li> <li>DNC10LC Adapter</li> <li>Here are troubleshooting suggestions for the DNC10LC adapter:</li> <li>Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.</li> </ul>			Try installing the adapter in a different PCIe slot in the system.		
DNC10LC       Here are troubleshooting suggestions for the DNC10LC adapter:         Adapter       Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.			Try installing the adapter in a different system.		
Adapter Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.	DNC10LC Here are troubleshooting sug		are troubleshooting suggestions for the DNC10LC adapter:		
	Adapter		Verify that the fiber optic cable is securely connected to the duplex LC ports on the DNC10LC adapter and remote network device.		

- Verify that you are using the correct type of fiber optic cable and that the cable length does not exceed the maximum length. Refer to Table 9 on page 117.
- Verify that the duplex LC ports on the DNC10LC adapter and the remote network device have the same operating properties, such as wavelength, fiber optic cable type, and maximum operating distance. Refer to Table 1 on page 19.
- Test the attenuation of both directions on the fiber optic cable with a fiber optic tester to determine whether the optical signal is too weak (sensitivity) or too strong (maximum input power). Table 9 on page 117. If there is no link, try creating a loopback between the TX port and the RX port of the fiber connector. A successful link may indicate an incompatibility or fault with the connected cables or equipment.
- **DNC10SP** Here are troubleshooting suggestions for the DNC10SP adapter:

#### Adapter

- □ Verify that the SFP+ transceiver is fully inserted in the port in the adapter.
- Verify that the fiber optic ports on the fiber optic transceiver and remote network device have the same operating properties, including wavelength, fiber optic cable type, and maximum operating distance. Refer to the specifications included with the transceiver.
- □ Verify that the SFP or SFP+ module is of a supported type.
- If the problem is with two BiDi (bi-directional) transceivers, refer to their data sheets to verify that their transmission and reception frequencies are opposite each other. For instance, a BiDi transceiver that transmits and receives at 1310nm and 1550nm, respectively, has to be connected to a transceiver that transmits and receives at 1550nm and 1310nm, respectively. Two BiDi transceivers will not establish a link if they transmit and receive at the same frequencies.
- Test the attenuation of both directions on the fiber optic cable with a fiber optic tester to determine whether the optical signal is too weak (sensitivity) or too strong (maximum input power). If there is no link, try creating a loopback between the TX port and the RX port of the fiber connector. A successful link may indicate an incompatibility or fault with the connected cables or equipment.

#### **DNC10T Adapter**

Here are troubleshooting suggestions for the DNC10T adapter:

- Verify that the Ethernet cable is securely connected to the ports on the network adapter and network device.
- Verify that the cable is correct for the link speed. Refer to "DNC10T Twisted Pair Copper Port" on page 23.
- □ Verify that the cable does not exceed 100 meters (328 feet).

### **Testing Network Connectivity**

This section describes how to test the network connectivity of the new adapter with the operating system TCP/IP Ping command. This test assumes the following:

- □ The adapter is connected to your network.
- The computer has an IP address. The address can be a static address that you manually assigned it or a dynamic address from a DHCP server.
- □ You know the IP address of another network device.
- If the new DNC10 adapter is the only network adapter in the computer, you may test it either by having it ping another device or by having another device ping the adapter. However, if there is more than one network adapter in the computer, you should test the new adapter by having another device ping it.

To test the network connectivity, perform the following procedure.

- 1. Click the Start icon in the left bottom corner of the computer screen.
- 2. In the search box, type **cmd** and click **OK**.
- 3. If you are performing the ping command at the system with the new network adapter, type **ipconfig /all** to display its IP address configuration.

D:\WINDOWS\system32\cmd.exe	- 🗆 ×
<pre>:\&gt;ipconfig /all indows IP Configuration Host Name : whitebox Primary Dns Suffix : Node Type : Unknown IP Routing Enabled : No WINS Proxy Enabled : No DNS Suffix Search List : netatnic.local</pre>	
<pre>thernet adapter Local Area Connection 9: Connection-specific DNS Suffix .: netatnic.local Description Allied Telesyn AT-2711FX 100Mb F Ethernet Adapter #6 Physical Address</pre>	iber AM PM
:\>	-

An example of the command output is shown in Figure 56.

Figure 56. IPCONFIG Command

4. Type **ping** and the IP address of another network device from the command line, then press **Enter**. If you are performing the ping command at the system with the new adapter, specify the IP address of a remote device the adapter should ping. If you are performing the command at another system, enter the IP address of the new adapter.

The results of the Ping command are displayed, as shown in Figure 57. The output should indicate that the system received a reply to its ping from the destination system.

D:\WINDOWS\system32\cmd.exe	- 🗆 ×
D:\>ping 192.162.1.1	
Pinging 192.162.1.1 with 32 bytes of data:	
Reply from 192.162.1.1: bytes=32 time<1ms TTL=64 Reply from 192.162.1.1: bytes=32 time<1ms TTL=64 Reply from 192.162.1.1: bytes=32 time<1ms TTL=64 Reply from 192.162.1.1: bytes=32 time<1ms TTL=64 Ping statistics for 192.162.1.1: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 0ms, Average = 0ms	
D:\>	-
•	• //

Figure 57. Ping Command

This appendix contains the following sections:

- □ "Physical Specifications" on page 115
- □ "Environmental Specifications" on page 116
- □ "Power Specifications" on page 116
- □ "RJ-45 Twisted Pair Port Pinouts" on page 117

# **Physical Specifications**

Table 5 contains the weights of the adapter cards.

Table	5.	Weights

Network Interface Card	Weight
DNC10LC	4.25 g (0.15 oz)
DNC10SP	2.83 g (0.10 oz)
DNC10T	2.83 g (0.10 oz)

Table 6 contains the dimensions of the adapter cards.

Table 6. Dimensions
---------------------

Network Interface Card	Dimension (H x D x W)
DNC10LC	82.55 mm x 101.6 mm x 9.05 mm (3.25 in x 4.0 in x 0.75 in)
DNC10SP	82.55 mm x 101.6 mm x 9.05 mm (3.25 in x 4.0 in x 0.75 in)
DNC10T	82.55 mm x 101.6 mm x 9.05 mm (3.25 in x 4.0 in x 0.75 in)

# **Environmental Specifications**

Table 7 contains the environmental specifications of the adapter cards.

Environmental Specification	Value	
Operating Temperature	<u>DNC10LC</u> : 0° C to 50° C (32° F to 122° F) <u>DNC10SP</u> : 0° C to 50° C (32° F to 122° F) <u>DNC10T</u> : 0° C to 40° C (32° F to 104° F)	
Storage Temperature	-25° C to 70° C (-13° F to 158° F)	
Operating Humidity	5% to 95% non-condensing	
Storage Humidity	5% to 95% non-condensing	
Maximum Operating Altitude	Up to 3,048 m (10,000 ft)	
Maximum Storage Altitude	Up to 3,048 m (10,000 ft)	

# **Power Specifications**

Table 8 contains the power specifications of the adapter cards:

Operating Voltage	3.3V
Maximum Power Consumption	DNC10SP Typical: 2W (with SP10SR) Maximum: 4.5W (with SP10ZR80/I) DNC10LC Typical: 1.75W Maximum: 3W
	DNC10T Typical: 4W Maximum:7W

Table 8. Operating Voltages and Maximum Power Consumption

## **RJ-45** Twisted Pair Port Pinouts

Figure 58 illustrates the pin layout of the RJ-45 connector on the DNC10T adapter.



Figure 58. Pin Layout (Front View) of the Twisted Pair Port on the DNC10T Adapter

Table 9 lists the pin signals at 100Mbps.

. Pin Signals on the RJ-45 Twisted Pair Port at 100				100
	Pin	MDI Signal	MDI-X Signal	
	1	TX+	RX+	
	2	TX-	RX-	
	3	RX+	TX+	
	4	Not used	Not used	
	5	Not used	Not used	
	6	RX-	TX-	
	7	Not used	Not used	
	8	Not used	Not used	

Table 9 Mbps Table 10 lists the pin signals at 1/2.5/5/10Gbps.

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

Table 10. Pin Signals on the Twisted Pair Port at 1/2.5/5/10Gbps