Chapter 3
Configuration and Troubleshooting

This chapter describes how to use the advanced configuration options of your NETGEAR 10/100/1000 Mbps Gigabit Ethernet Adapter GA311 and basic troubleshooting techniques.

Understanding the Configuration Options

The GA311 adapter provides the following advanced options:

- Configure the 802.1Q VLAN ID. The IEEE 802.1Q standard defines the operation of Virtual LAN (VLAN) Bridges that permit the definition, operation and administration of Virtual LAN topologies within a Bridged LAN infrastructure.

- Configure 802.1Q/1p VLAN tagging. The 802.1p Quality of service (QOS) is an OSI layer 2 standard for prioritizing network traffic at the data link sublayer.

- Enable Jumbo frames to extend Ethernet frames to 7500 bytes

- Set the link speed and the duplex mode:

    – Auto Negotiation

    – 1000Mbps/Full Duplex

    – 100Mbps/Full Duplex

    – 100Mbps/Half Duplex

    – 10Mbps/Full Duplex

    – 10Mbps/Half Duplex

- Set up checksum offloading to the network card

- Set up the offload of TCP large packets to the network card

- Enable wakeup on ARP/PING

Configuring Optional Adapter Properties

The table below introduces the optional advanced capabilities of the adapter.

Table 3-1. Advanced GA311 Adapter Properties

Properties	Description
802.1Q VLAN ID (Windows Vista, 2000, XP only)	Set the Virtual Lan ID number. The range is from 1 to 4094.
802.1Q/1p VLAN Tagging (Windows Vista, 2000, XP only)	When enabled, tags are recognized by 802.1p-aware switches and routers. Disabled by default.
Jumbo Frame (Windows NT not supported)	Extends the default Ethernet frame size from 1500 to 7500 bytes if enabled. Disabled by default.
Link Speed/Duplex Mode (Windows Vista, 2000, XP only)	A performance option that allows you to choose how the card transmits and receive packets over the network.You can select auto negotiation, or set the speed and whether to use half or full duplex.
Network Address	Displays the network address.
Offload Checksum (Windows Vista, 2000, XP only)	Supports hardware offload of checksum in the transmit and receive directions. When enabled, this option allows the card to verify the TCP/IP checksum of incoming (Rx) and/or outgoing (Tx) packets. This improves the TCP/IP transmit/receive performance by offloading this operation from the CPU.
Offload TCP_LargeSend (Windows Vista, 2000, XP only)	Supports hardware offload of large TCP packets in the transmit and receive directions. When enabled, this option improves the TCP/IP transmit/receive performance by offloading this operation from the CPU. Disabled by default.
WakeUp on ARP/PING (Windows NT not supported)	Enable wakeup on ARP/Ping. Disabled by default.

To configure the optional advanced adapter properties:

1. Click the Local Area Connection icon in the lower right section of the Windows taskbar.

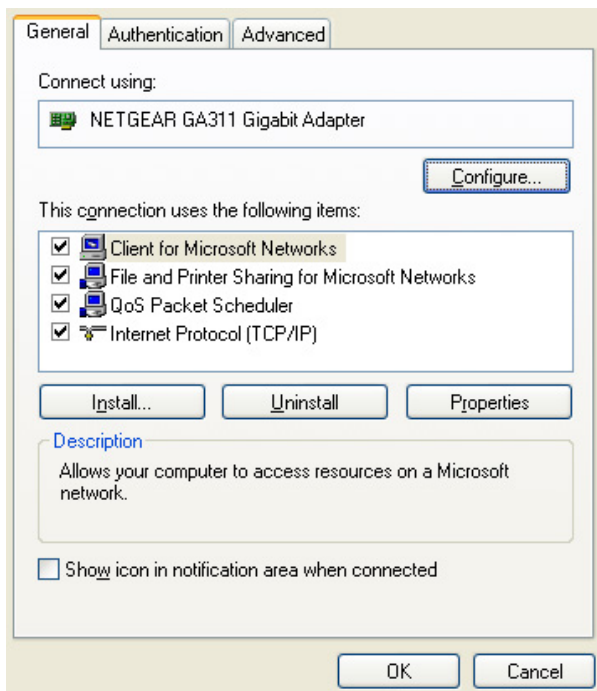2. Select the NETGEAR GA311 Gigabit Ethernet Adapter.

Figure 3-1

3. Click Configure, then select the Advanced tab to display the advanced configuration options. Be careful when changing these settings. Incorrect Advanced settings can cause your GA311 to behave unpredictably or not function.

4. Select the Property to configure, then click the drop-down arrow to set the Value.

5. Click OK when you have finished changing the configuration.

Basic Troubleshooting Tips

Checking the Port LEDs

The front panel of the GA311 has four LEDs: one for each port speed option (10Mbps, 100 Mbps and 1000Mbps) to indicate which link is active, and one LED for data transfer status.

Before the port LEDs can provide troubleshooting information, the card must be connected to the network, and the network drivers for your particular operating system must be installed. See "Basic Installation Instructions" on page 2-3 for more information.

The LEDs on the NETGEAR 10/100/1000 Mbps Gigabit Ethernet Adapter GA311 indicate the condition of link:

Figure 3-2

Verify that the card status LEDs operate as described in the table below:

Table 3-2. GA311 Port LED Activity

Label	Activity	Description
DATA	Blinking On Off	Brief bursts of data detected on the port Streams of data detected on the port No data detected on the port
1000	On Off	Good 1000 Mbps Gigabit Ethernet link No 1000 Mbps link; possible link at different speed, possible bad cable, bad connector, or configuration mismatch
100	On Off	Good 100 Mbps Gigabit Ethernet link No 100 Mbps link; possible link at different speed, possible bad cable, bad connector, or configuration mismatch
10	On Off	Good 10 Mbps Gigabit Ethernet link No 10 Mbps link; possible link at different speed, possible bad cable, bad connector, or configuration mismatch

Using a Troubleshooting Checklist

If you need to test the network adapter further, check the following items:

• Inspect all cables and connections. Check the length and rating of the cable. Make sure that the cable segment is compliant with the requirements shown in Table 2-3 on page 2-8.

• Connect the adapter to a different network port and run the tests again. If successful, the original network port may be defective or improperly configured.

• Check the adapter installation by reviewing "Basic Installation Instructions" on page 2-3. Make sure that the adapter is properly seated in a PCI slot.

• Check for specific hardware problems, such as broken traces or loose/broken solder connections.

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

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

Check the PCI BIOS parameters for proper configuration of the slot where the adapter is installed. The following table shows several possible PCI BIOS parameters. (These parameters may not all be available on every system.)

Table 3-3.   PCI BIOS Parameters

Parameter	Setting
Bus-Master	Enabled
Interrupt number	Set to any IRQ that does not conflict with another device
Latency timer	Recommended range is between 20 and 255. This parameter is typically set to 64

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

• Replace the failed network adapter with one that is known to work properly. If the second adapter works in the slot where the first one failed, the original adapter is probably defective.

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

• Remove all other network adapters from the system and run the tests again. If the adapter passes the tests, the other adapters might be causing the conflict.