Reference Manual for the Model DM602 ADSL Modem

NETGEAR

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SM-DM602
October 2002

Trademarks

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Statement of Conditions

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NETGEAR does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

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

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

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

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

EN 55 022 Declaration of Conformance

This is to certify that the Model DM602 ADSL Modem is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class B (CISPR 22).

Bestätigung des Herstellers/Importeurs

Es wird hiermit bestätigt, daß das Model DM602 ADSL Modem gemäß der im BMPT-AmtsblVfg 243/1991 und Vfg 46/1992 aufgeführten Bestimmungen entstört ist. Das vorschriftsmäßige Betreiben einiger Geräte (z.B. Testsender) kann jedoch gewissen Beschränkungen unterliegen. Lesen Sie dazu bitte die Anmerkungen in der Betriebsanleitung.

Das Bundesamt für Zulassungen in der Telekommunikation wurde davon unterrichtet, daß dieses Gerät auf den Markt gebracht wurde und es ist berechtigt, die Serie auf die Erfüllung der Vorschriften hin zu überprüfen.

Certificate of the Manufacturer/Importer

It is hereby certified that the Model DM602 ADSL Modem has been suppressed in accordance with the conditions set out in the BMPT-AmtsblVfg 243/1991 and Vfg 46/1992. The operation of some equipment (for example, test transmitters) in accordance with the regulations may, however, be subject to certain restrictions. Please refer to the notes in the operating instructions.

Federal Office for Telecommunications Approvals has been notified of the placing of this equipment on the market and has been granted the right to test the series for compliance with the regulations.

Voluntary Control Council for Interference (VCCI) Statement

This equipment is in the second category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential areas.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read instructions for correct handling.

Customer Support

Refer to the Support Information Card that shipped with your Model DM602 ADSL Modem .

World Wide Web

NETGEAR maintains a World Wide Web home page that you can access at the universal resource locator (URL) *http://www.netgear.com*. A direct connection to the Internet and a Web browser such as Internet Explorer or Netscape are required.

Contents

About This Guide

Congratulations on your purchase of the NETGEAR™ Model DM602 ADSL Modem .

The DM602 modem provides a secure connection for a computer to the Internet through an internal ADSL modem.

Technical Support

For help with any technical issues, contact Customer Support, or visit us on the Web at www.NETGEAR.com. The NETGEAR Web site includes an extensive knowledge base, answers to frequently asked questions, and a means for submitting technical questions online.

Related Publications

As you read this document, you may be directed to various RFC documents for further information. An RFC is a Request For Comment (RFC) published by the Internet Engineering Task Force (IETF), an open organization that defines the architecture and operation of the Internet. The RFC documents outline and define the standard protocols and procedures for the Internet. The documents are listed on the World Wide Web at *www.ietf.org* and are mirrored and indexed at many other sites worldwide.

Typographical Conventions

This guide uses the following typographical conventions:

italics	Book titles and UNIX file, command, and directory names.
`courier font`	Screen text, user-typed command-line entries.
Initial Caps	Menu titles and window and button names.
[Enter]	Named keys in text are shown enclosed in square brackets. The notation [Enter] is used for the Enter key and the Return key.
[Ctrl]+C	Two or more keys that must be pressed simultaneously are shown in text linked with a plus (+) sign.
ALL CAPS	DOS file and directory names.

Special Message Formats

This guide uses the following formats to highlight special messages:

> ➡ **Note:** This format is used to highlight information of importance or special interest.

Chapter 1
Introduction

This chapter describes the features of the NETGEAR Model DM602 ADSL Modem .

About the Modem

The Model DM602 ADSL Modem connects your computer to the Internet using a built-in ADSL modem.

The DM602 modem provides you with high-speed ADSL Internet access. There is no need to run software on the computer to connect, and you can choose how long you want the connection to remain available after there is no activity on your computer.

With minimum setup, you can install and use the modem in minutes.

Key Features

The DM602 modem provides the following features:

- Easy, web-based setup for installation and management

- Direct connection to the Internet using the built-in ADSL modem

- USB connection to your computer eliminates the need for installing an Ethernet card

- Modem or Router Device Mode

    – Modem Device Mode supports configuration of your Internet connection on your computer, and running software on your computer to log in to your ISP, if needed.

    – Router Device Mode supports configuration of your Internet connection on your DM602 modem, and can be configured to automatically log in to your ISP, if needed.

- Protocol Support

    – Dynamic Host Configuration Protocol (DHCP) server for dynamically assigning network configuration information to one computer.

    – DHCP client for dynamically obtaining configuration information from the Internet Service Provider (ISP)

    – Point-to-Point Protocol (PPP) over Ethernet (PPPoE) support

    – PPP over ATM (PPPoA) support

- Automatic Login Capability executes user login for Point to Point Protocol over Ethernet (PPPoE) or Point to Point Protocol over ATM (PPPoA) accounts

- Front panel LEDs for easy monitoring of status and activity

- Flash memory for firmware upgrade

- Free technical support seven days a week, twenty-four hours a day

Auto Uplink™ and Autosensing 10/100 Ethernet

The DM602 modem can connect to either a 10 Mbps standard Ethernet card or a 100 Mbps Fast Ethernet card. The local LAN interface is autosensing and is capable of full-duplex or half-duplex operation.

Depending on the country of purchase, the DM602 modem incorporates Auto Uplink™ technology (also called MDI/MDIX). The Ethernet port will automatically sense whether the cable plugged into the port should have a 'normal' connection (e.g. connecting to a PC) or an 'uplink' connection (e.g. connecting to a router, switch, or hub). That port will then configure itself to the correct configuration. This feature also eliminates the need to worry about crossover cables, as Auto Uplink™ will accommodate either type of cable to make the right connection.

Modem or Router Device Mode

The DM602 modem can be set to operate in either Modem Device Mode or Router Device Mode. The DM602 sold in Germany defaults to Modem Mode.

Modem Device Mode

When set to operate in Modem Device Mode, your computer must be configured for whatever settings your ISP requires. Also, if your ISP uses software to establish your Internet connection, such software must be run on your computer.

Router Device Mode

In Router Device Mode, the DM602 supports configuration of the Transmission Control Protocol/ Internet Protocol (TCP/IP) parameters and login functions on the modem.

- Automatic Configuration of Attached computer by DHCP
  In Router Device Mode, the DM602 modem dynamically assigns network configuration information, including IP, gateway, and domain name server (DNS) addresses, to your computer using DHCP. This feature greatly simplifies configuration of your computer.

- Automatic Login for PPPoE and PPPoA
  In Router Device Mode, PPPoE and PPPoA configuration of the modem provides always-on connections to the Internet. This feature eliminates the need to run a login program on your computer.

Easy Installation and Management

You can install, configure, and operate the Model DM602 ADSL Modem within minutes after connecting it to the network. The following features simplify installation and management tasks:

- Animated installation assistant
  The Resource CD contains an animated installation assistant to guide you through set up.

- Browser-based management
  Browser-based configuration allows you to easily configure your modem from almost any type of personal computer, such as Windows, Macintosh, or Linux. The modem includes built-in online help accessed via the browser-based Web Management Interface.

- Visual monitoring
  The DM602 modem's front panel LEDs provide an easy way to monitor its status and activity.

Maintenance and Support

NETGEAR offers the following features to help you maximize your use of the DM602 modem:

- Flash memory for firmware upgrade

- Free technical support seven days a week, twenty-four hours a day

Chapter 2
Setting Up the Hardware

This chapter describes the Model DM602 ADSL Modem hardware and provides instructions for installing it.

Package Contents

The product package should contain the following items:

ADSL Modem DM602

Power adapter

DM602 ADSL Modem
Resource CD, installation guide,
support information card &
warranty/registration card

Category 5
100 Mbps
Ethernet cable

Micro Filter
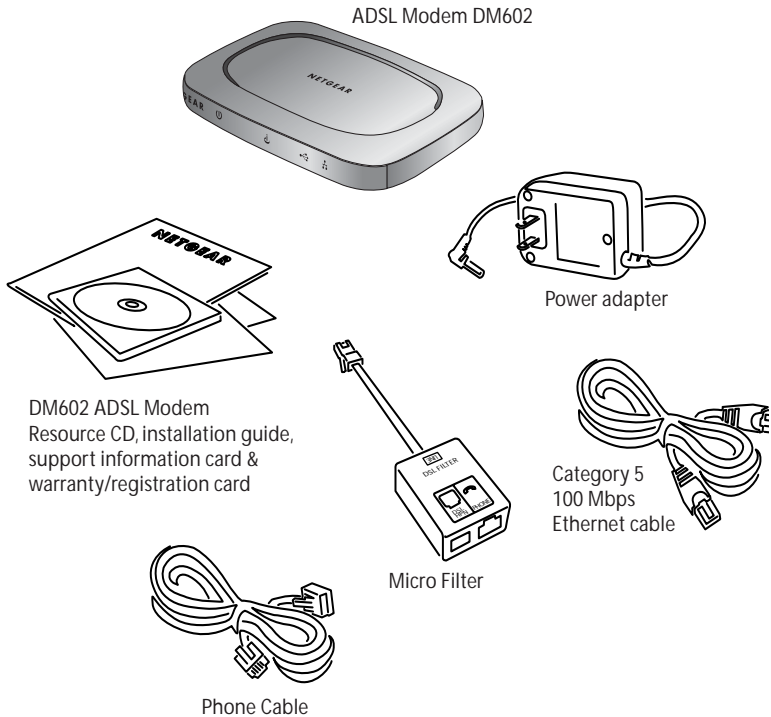
Phone Cable

Figure 2-1.   DM602 Package Contents

- Model DM602 ADSL Modem
- AC power adapter (varies by region)
- Category 5 (Cat 5) Ethernet cable
- USB Cable (depending on the country of purchase)
- Telephone cable
- Microfilters (quantity and type vary by region)
- *Model DM602 Resource* CD, including:

    — This guide

    — Application Notes

- *DM602 ADSL Modem Installation Guide*
- Warranty Card
- Support Information Card

If any of the parts are incorrect, missing, or damaged, contact your NETGEAR dealer. Keep the carton, including the original packing materials, in case you need to return the modem for repair.

The Modem's Front Panel

The front panel of the DM602 modem (Figure 2-2) contains status LEDs.

Figure 2-2.   DM602 Front Panel

You can use some of the LEDs to verify connections. Table 2-1 lists and describes each LED on the front panel of the DM602 modem.

Table 2-1.   LED Descriptions

Label	Activity	Description
Power	On Off	Power is supplied to the modem. Power is not supplied to the modem.
Internet	On (Green) Blink (Green) Blink (Yellow) Off	The ADSL port has linked with the service provider. Data is being transmitted or received over the ADSL port. The ADSL port is attempting to train with the service provider. The ADSL port is not making contact with the service provider.
USB	On Off	Data is being transmitted or received. No link is detected on this port.
Ethernet	On (Green) Blink (Green) On (Yellow) Blink (Yellow) Off	The Local port has detected a link with a 100 Mbps device. Data is being transmitted or received at 100 Mbps. The Local port has detected a link with a 10 Mbps device. Data is being transmitted or received at 10 Mbps. No link is detected on this port.

The Modem's Rear Panel

The rear panel of the Model DM602 modem (Figure 2-3) contains port connections and a power switch.

Figure 2-3. **DM602 Rear Panel**

Viewed from left to right, the rear panel contains the following features:

• 15 V AC power adapter outlet

• USB port for connecting the modem to the local PC

• Ethernet port for connecting the modem to the local PC

• Factory Default Reset push-button

• ADSL (WAN) port for connecting the modem to the ADSL service provider.

Local Network Hardware Requirements

The Model DM602 ADSL Modem is intended for use with computers that connect by twisted-pair Ethernet or USB cables.

PC Requirements

To install and run the DM602 modem with your computer, the computer must have an installed Ethernet Network Interface Card (NIC) and an Ethernet cable or an available USB port. If the PC will connect at 100 Mbps, you must use a Category 5 (CAT5) cable such as the cable provided with your modem.

Access Requirement

The Model DM602 ADSL Modem contains a built-in ADSL modem, which connects directly to an ADSL service provider.

Connecting the Modem

Before using your modem, you need to do the following:

- Connect your Ethernet or USB cable from the computer to the modem (see page 2-8).
- Connect the line from your ADSL service provider to the ADSL port of the modem (see page 2-5).
- Connect the power adapter (see page 2-7).

A typical installation is shown in Figure 2-4, below
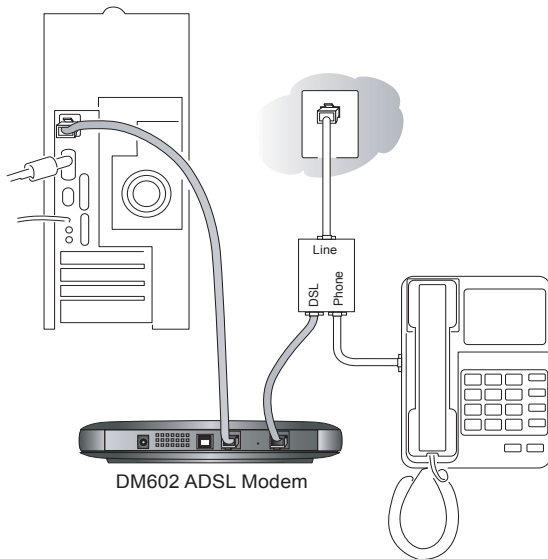
Figure 2-4.   Typical installation

Connecting to Your ADSL Service and Telephone Provider

The ADSL and telephone connections may vary by region.

ADSL Through a Modular RJ-11 Wall Jack.

→	**Note:** The wall jack attached to the ADSL port of the modem must provide the ADSL signal on the inner pair of wires (pins 2 and 3 of the 4-pin jack). If this is not the case, a swapper (not included) is necessary to move the connection to the inner pair.

To install the Model DM602 modem directly to the wall jack without installing a telephone:

1. Connect the provided telephone cable to the wall jack.

2. Connect the other end of the telephone cable to the ADSL port on the modem.

To install both the Model DM602 modem and a telephone:

1. Plug the "LINE" connection from the included microfilter into the wall jack.

2. Connect the "DSL" jack of the microfilter to the ADSL port of your modem using the telephone cable provided.

3. Connect the "PHONE" side of the microfilter to your telephone, using your existing telephone cable.

ADSL Through Other Wall Jacks

1. Plug the "LINE" connection from the included microfilter into the wall jack.

2. Connect the "DSL" jack of the microfilter to the ADSL port of your modem using the telephone cable provided.

3. Connect the "PHONE" side of the microfilter to your telephone, using your existing telephone cable.

If you have additional telephones, you will need to purchase additional microfilters and connect them between the telephones and the wall jack. A microfilter is required for each telephone on the line.

→	**Note:** Microfilters are required to isolate your ADSL signal from your telephone signal. If microfilters are not used, or if they are connected backward, you may notice a "ticking" noise on your telephone, and the performance of your ADSL line may be affected.

Connecting the Power Adapter

To connect the power adapter to the modem:

1. Plug the connector of the power adapter into outlet on the rear panel of the modem.

2. Plug the other end of the adapter into an AC power outlet.

3. Verify that the PWR LED on the modem is lit.

Verifying Power

After applying power to the modem, complete the following steps to verify that power is correctly applied:

1. When power is first applied, verify that the Power LED comes on.

   All LEDs will be briefly tested.

2. After approximately 10 seconds, verify that the local Ethernet or USB port LED is lit for the port that is connected to your computer.

3. If a port's LED is lit, a link has been established to the connected device. If a local Ethernet port is connected to a 100 Mbps device, verify that the port's LED is green. If the port is 10 Mbps, the LED should be yellow.

Connecting to Your Computer

Your computer will attach to either the Ethernet or USB 1.1 modem ports shown in Figure 2-3.

Ethernet

To connect your computer to the modem via Ethernet:

1. Locate the Category 5 Ethernet cable which came with your modem.

2. Connect your computer to the modem using the Ethernet cable which came with you modem.

USB

To connect your computer to the modem via USB involves installing the USB driver, then the Ethernet driver:

→	**Note:** The USB connection option is only available for Windows PCs. Also, Windows 95 does not support USB without special operating system upgrades and patches.

1. Install the USB driver

    a. Insert the CD which came with your modem into the CD drive of your computer.
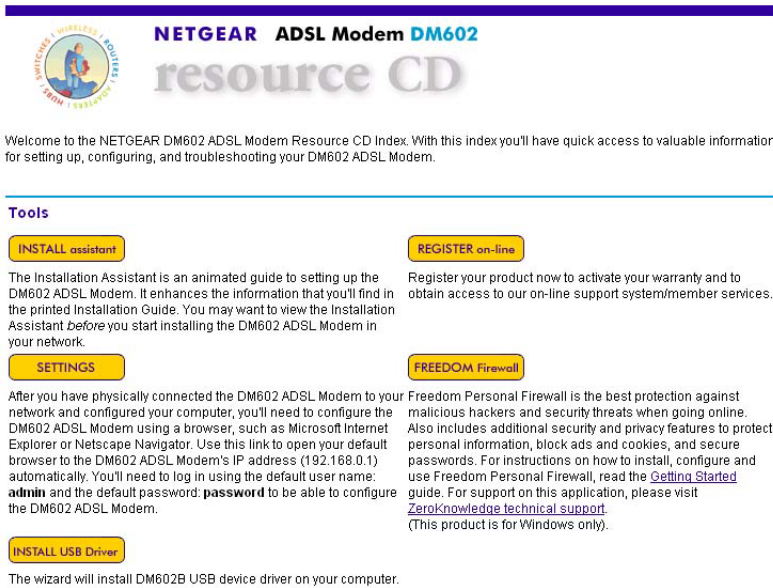
Figure 2-5.   CD Startup Screen

    b. Click the INSTALL USB Driver button.

    c. If a message prompts to save or open the file, click Open to launch the setup.exe utility.

    d. Follow the setup wizard prompts to install the USB driver and click Finish when done.

2. **Turn on the modem and connect your computer to the modem with the USB cable.**

    The found new hardware Windows installation wizard will prompt you for the drivers

    a. Follow the Windows prompts to complete the installation of the modem.

    b. Browse to the CD and install the USB driver by clicking through the Windows wizard prompts.

You have now finished connecting your modem.

Ready to Configure Your Modem

You are now ready to assure your computer is prepared for connecting to and configuring your modem, as described in the following chapter.

Chapter 3
Preparing Your Computer

This chapter describes how to prepare your computer to connect to the Internet through the Model DM602 ADSL Modem and how to verify the readiness of a DSL modem account from an Internet service provider (ISP).

> **Note:** If an ISP technician configured your PC during the installation of a DSL modem, or if you configured it using instructions provided by your ISP, you may need to copy the current configuration information for use in the configuration of your modem. Write down this information before reconfiguring your computer.

Preparing Your Computer for TCP/IP Networking

Computers access the Internet using a protocol called Transmission Control Protocol/Internet Protocol (TCP/IP). Your computer must have TCP/IP installed and selected as its networking protocol. If an Ethernet Network Interface Card (NIC) is already installed in your computer, then TCP/IP is probably already installed as well.

Most operating systems include the software components you need for networking with TCP/IP:

- Windows® 95 or later includes the software components for establishing a TCP/IP network.

- Windows 3.1 does not include a TCP/IP component. You need to purchase a third-party TCP/IP application package such as NetManage Chameleon.

- Macintosh Operating System 7 or later includes the software components for establishing a TCP/IP network.

- All versions of UNIX or Linux include TCP/IP components. Follow the instructions provided with your operating system or networking software to install TCP/IP on your computer.

In most cases, you should install TCP/IP so that the computer obtains its specific network configuration information automatically from a DHCP server during bootup.

The DM602 modem is shipped preconfigured as a DHCP server. The modem assigns the following TCP/IP configuration information for one computer only automatically when your computer is rebooted:

- Computer IP addresses—192.168.0.2
- Subnet mask—255.255.255.0
- Gateway address (the modem)—192.168.0.1

Configuring Windows 95, 98, and ME for TCP/IP Networking

As part of the PC preparation process, if TCP/IP is not already installed, you need to manually install and configure TCP/IP on your computer. Before starting, locate your Windows CD; you may need to insert it during the TCP/IP installation process.

Install or Verify Windows Networking Components

To install or verify the necessary components for IP networking:

1. On the Windows taskbar, click the Start button, point to Settings, and then click Control Panel.
2. Double-click the Network icon.

   The Network window opens, which displays a list of installed components:
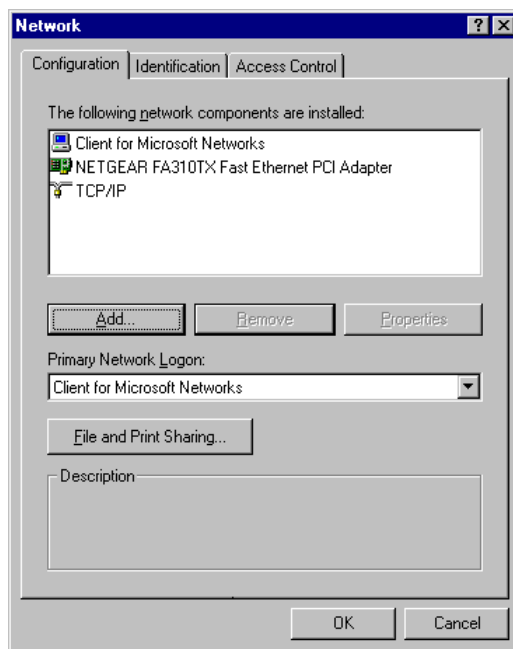
You must have an Ethernet adapter, the TCP/IP protocol, and Client for Microsoft Networks.

➡️ | **Note:** It is not necessary to remove any other network components shown in the Network window in order to install the adapter, TCP/IP, or Client for Microsoft Networks.

If you need the adapter:

a. Click the Add button.

b. Select Adapter, and then click Add.

c. Select the manufacturer and model of your Ethernet adapter, and then click OK.

If you need TCP/IP:

a. Click the Add button.

b. Select Protocol, and then click Add.

c. Select Microsoft.

d. Select TCP/IP, and then click OK.

If you need Client for Microsoft Networks:

    a.   Click the Add button.

    b.   Select Client, and then click Add.

    c.   Select Microsoft.

    d.   Select Client for Microsoft Networks, and then click OK.

3. Restart your PC for the changes to take effect.

Enabling DHCP to Automatically Configure TCP/IP Settings

After the TCP/IP protocol components are installed, the PC must be assigned specific information about itself and resources that are available on its network. The simplest way to configure this information is to allow the computer to obtain the information from the internal DHCP server of the DM602 modem. To use DHCP with the recommended default addresses, follow these steps:

1. Connect the PC to the modem, then restart the modem.

2. On the PC, open the Network control panel (refer to the previous section) and select the Configuration tab.

3. From the components list, select TCP/IP->(your Ethernet adapter) and click Properties.

4. In the IP Address tab, select "Obtain an IP address automatically".

5. Select the Gateway tab.

6. If any gateways are shown, remove them.

7. Click OK.

8. Restart the PC.

Selecting Windows' Internet Access Method

To select Windows' LAN Internet access method, follow these steps:

1. On the Windows taskbar, click the Start button, point to Settings, and then click Control Panel.

2. Double-click the Internet Options icon.

3. Select "I want to set up my Internet connection manually" or "I want to connect through a Local Area Network" and click Next.

4. Select "I want to connect through a Local Area Network" and click Next.

5. Uncheck all boxes in the LAN Internet Configuration screen and click Next.

6. Proceed to the end of the Wizard.

Verifying TCP/IP Properties (Windows)

After your PC is configured and has rebooted, you can check the TCP/IP configuration using the utility *winipcfg.exe*:

1. On the Windows taskbar, click the Start button, and then click Run.

2. Type **winipcfg**, and then click OK.

   The IP Configuration window opens, which lists (among other things), your IP address, subnet mask, and default gateway.

3. From the drop-down box, select your Ethernet adapter.

   The window is updated to show your settings, which should match the values below if you are using the default TCP/IP settings that NETGEAR recommends:

   • IP addresses—192.168.0.2 through 192.168.0.253

   • The subnet mask is 255.255.255.0

   • The default gateway is 192.168.0.1

Configuring Windows NT or 2000 for TCP/IP Networking

As part of the PC preparation process, you need to assure TCP/IP is installed and configured on the PC. Before starting, locate your Windows CD which you may need to insert during the TCP/IP installation process.

Install or Verify Windows Networking Components

To install or verify the necessary components for IP networking:

1. On the Windows taskbar, click the Start button, point to Settings, and then click Control Panel.

2. Double-click the Network and Dialup Connections icon.

3. If an Ethernet adapter is present in your PC, you should see an entry for Local Area Connection. Double-click that entry.

4. Select Properties.

5. Verify that 'Client for Microsoft Networks' and 'Internet Protocol (TCP/IP)' are present. If not, select Install and add them.

6. Select 'Internet Protocol (TCP/IP)', click Properties, and verify that "Obtain an IP address automatically is selected.

7. Click OK and close all Network and Dialup Connections windows.

8. Make sure your PC is connected to the modem, then reboot your PC.

Verifying TCP/IP Properties

To check your PC's TCP/IP configuration:

1. On the Windows taskbar, click the Start button, and then click Run.

    The Run window opens.

2. Type `cmd` and then click OK.

    A command window opens

3. Type `ipconfig /all`

    Your IP Configuration information will be listed, and should match the values below if you are using the default TCP/IP settings that NETGEAR recommends:

    -   IP addresses—192.168.0.2 through 192.168.0.253

    -   The subnet mask is 255.255.255.0

    -   The default gateway is 192.168.0.1

4. Type `exit`

Configuring A Macintosh for TCP/IP Networking
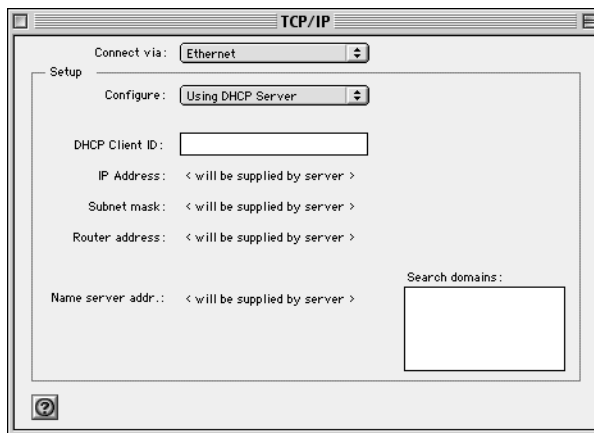
Beginning with Macintosh Operating System 7, TCP/IP is already installed on the Macintosh. On the Macintosh, you will need to configure TCP/IP to use DHCP.

Configuring MacOS 8.6 or 9.x for TCP/IP Networking

1. From the Apple menu, select Control Panels, then TCP/IP.

The TCP/IP Control Panel opens:

2. From the "Connect via" box, select your Macintosh's Ethernet interface.

3. From the "Configure" box, select Using DHCP Server.

    You can leave the DHCP Client ID box empty.

4. Close the TCP/IP Control Panel.

5. Repeat this for each Macintosh on your network.

Configuring MacOS X for TCP/IP Networking

1. From the Apple menu, choose System Preferences, then Network.

2. If not already selected, select Built-in Ethernet in the Configure list.

3. If not already selected, Select Using DHCP in the TCP/IP tab.

4. Click Save.

Verifying TCP/IP Properties for Macintosh Computers

After your Macintosh is configured and has rebooted, you can check the TCP/IP configuration by returning to the TCP/IP Control Panel. From the Apple menu, select Control Panels, then TCP/IP.
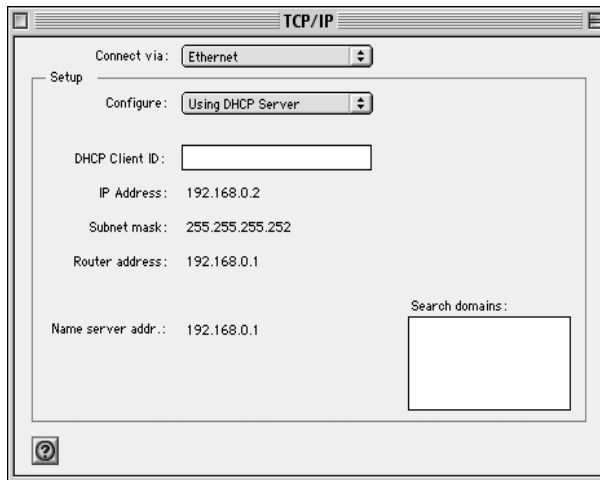
The panel is updated to show your settings, which should match the values below if you are using the default TCP/IP settings that NETGEAR recommends:

- IP addresses—192.168.0.2 through 192.168.0.253
- The subnet mask is 255.255.255.0
- The default gateway is 192.168.0.1

If you do not see these values, you may need to restart your Macintosh or you may need to switch the "Configure" setting to a different option, then back again to "Using DHCP Server".

Verifying the Readiness of Your DSL Internet Account

For access to the Internet, you need to contract with an Internet service provider (ISP) for a single-user Internet access account using a DSL modem.

For a single-user Internet account, your ISP supplies TCP/IP configuration information. With a typical account, much of the configuration information is dynamically assigned when your computer is first booted up while connected to the ISP, and you will not need to know that dynamic information.

Are Login Protocols Used?

Some ISPs require login protocol which requires you to enter a login name and password in order to access the Internet. If you run a program such as WinPOET or EnterNet to connect to your Internet account, then your account uses PPP over Ethernet (PPPoE).

If login protocols are used, you can configure your modem to operate in router mode. After the modem is configured, it will perform the login task when needed, and you will no longer need to run the login program from your computer. It is not necessary to uninstall the login program.

If you prefer to run the software on your computer which performs the login, you can do so by configuring the modem to operate in Modem Device Mode.

Is Your ISP Configuration for a Static IP Address?

More and more, ISPs are dynamically assigning configuration information. However, if your ISP does not dynamically assign configuration information but instead gave you a fixed configuration, your ISP should have given you the following basic information for your account:

- An IP address and subnet mask
- A gateway IP address, which is the address of the ISP's router
- One or more domain name server (DNS) IP addresses
- Host name and domain suffix

  For example, your account's full server names may look like this:

  `mail.xxx.yyy.com`

  In this example, the domain suffix is `xxx.yyy.com`.

If an ISP technician configured your computer during the installation of the service for a static IP address, or if you configured it for a static IP address using instructions provided by your ISP, you need to be sure you have that configuration information recorded. You will need to configure your computer's TCP/IP settings to use a static IP address, , then connect to the modem to configure it. Once the modem is set to operate in Modem Device Mode, you will need to reconfigure your computer with the TCP/IP configuration you recorded from your ISP.

Restarting the Computer

Once you've set up your computer to work with the modem, you must reset the devices to be able to communicate correctly.

1. Pull the modem's power adapter out of the socket on the back, then put it back in to reset it, and wait about 10 seconds.

2. Restart the computer that is connected to the modem.

Ready for Configuration

After configuring your computer for TCP/IP networking and connecting it to the DM602 modem, you are ready to access and configure the modem. Proceed to the next chapter.

Basic Configuration of the Modem

This chapter describes how to perform the basic configuration of your Model DM602 ADSL Modem for your Internet connection.

Accessing the Web Configuration Manager in the Modem

In order to use the browser-based Web Configuration Manager built into the modem, your computer must have a web browser program installed such as Microsoft Internet Explorer or Netscape Navigator. Because the Configuration Manager uses Java, your Web browser must be Java-enabled and support HTTP uploads. NETGEAR recommends using Microsoft Internet Explorer 4.0 or Netscape Navigator 4.0 or above. Free browser programs are readily available for Windows, Macintosh, or UNIX/Linux.

To configure the modem for Internet access using your browser:

1. Turn on the modem and wait at least ten seconds for initialization to complete.
   If you normally use a login program such as Enternet or WinPOET to access the Internet, do not launch that program.

2. Configure your computer with the static IP address of 192.168.0.2, and a subnet mask of 255.255.255.0. If you need assistance with this, please refer to "Preparing Your Computer for TCP/IP Networking" on page 3-1.

3. Launch your web browser, and click your browser's Stop button.In the Address or Location box of your browser, type **http://192.168.0.1** and press ENTER.
   A login window opens as shown in Figure 4-1 below.
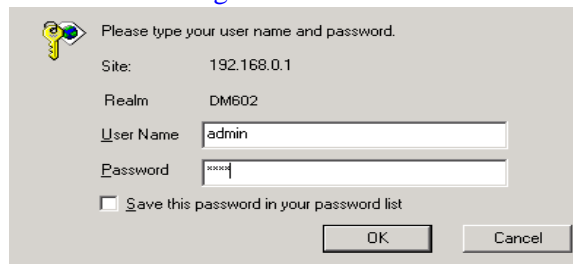
Figure 4-1.   Modem Login window

For added security, the modem is protected with a User Name and Password.

> ➡ **Note:** This User Name and Password are for the modem only. They are not the same as any user name and password your ISP may require to access the Internet.

4. Type **admin** in the User Name box, **password** in the Password box, and then click OK. The modem's built in Web Configuration Manager screen below to your browser.
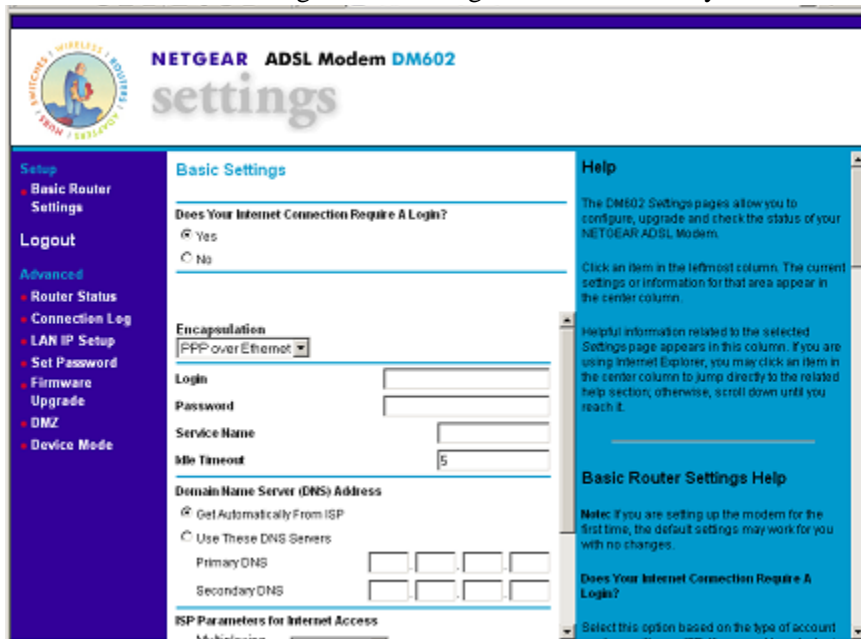

Figure 4-2.   Browser-based Configuration via Basic Router Settings menu

5. Choose the configuration procedure below which matches the configuration settings of your ISP ADSL account.

Configuring the Modem in Router Device Mode
for an ISP Account with PPPoE or PPPoA Login

If your Internet service account uses a login protocol such as PPP over Ethernet (PPPoE) or PPP over ATM (PPPoA), fill out the menu below.

Figure 4-3.   Menu for PPP login accounts

1. Enter the PPPoE or PPPoA login user name and password provided by your ISP. These fields are case sensitive. If you wish to change the login time-out, enter a new value in minutes.

    You will no longer need to launch the ISP's login program on your computer in order to access the Internet. When you start an Internet application, your modem will automatically log you in.

2. Next, enter the Idle Time-out value in minutes.

➡   **Note:** PPPoE and PPPoA will authenticate with the network when you have data to transmit.The modem will stay connected until you stop transmitting and will then wait for the login time-out to expire before disconnecting.

3. Domain Name Server (DNS) Address:

    Usually the "Get Automatically from ISP" setting will work.

    If your ISP does not automatically transmit DNS addresses to the modem during login, select "Use these DNS servers" and enter the IP address of your ISP's Primary DNS Server. If a Secondary DNS Server address is available, enter it also.

4. If your ISP requires Multiplexing and Virtual Circuit configuration, enter those parameters. These values are factory set but you should verify that they are correct for your ISP. Use the modem's built in Web Configuration Manager to set these parameters as needed.

5. Click on Apply.

Your modem is now configured to provide Internet access for your computer. When your PC is configured correctly, your modem automatically accesses the Internet when your computer requires access. It is not necessary to run a dialer or login application such as Dial-Up Networking or Enternet to connect, log in, or disconnect. These functions are performed automatically by the modem.

Configuring the Modem in Modem Device Mode for a Fixed (Static) TCP/IP Account

If your Internet service account uses Fixed TCP/IP assignment, you will use the modem in Modem Device Mode.
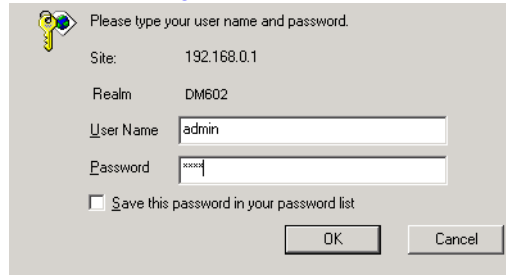
To configure the modem for Internet access using your browser:

1. Turn on the modem and wait at least ten seconds for initialization to complete.

2. Reboot your computer to obtain DHCP configuration from the modem.

3. Launch your web browser, and click your browser's Stop button.

4. In the Address or Location box of your browser, type **http://192.168.0.1** and press ENTER. For added security, the modem is protected with a User Name and Password.

> **→** **Note:** This User Name and Password are for the modem only. They are not the same as any user name and password your ISP may require to access the Internet.

A login window opens as shown in Figure 4-4 below:.
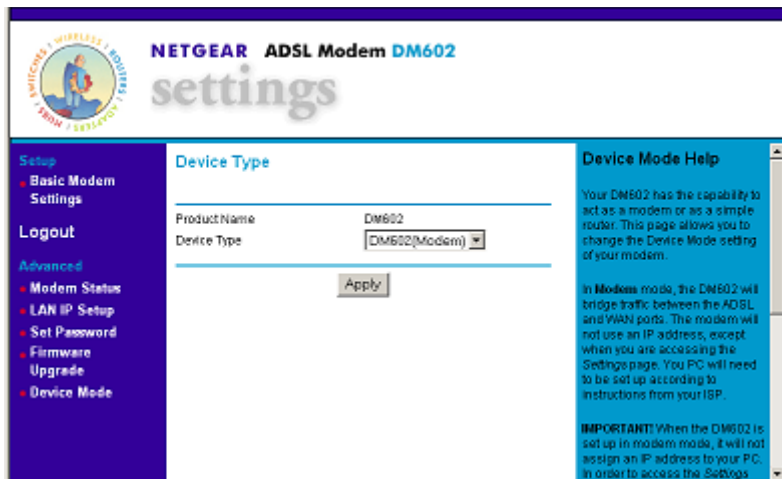
Figure 4-4.   Modem Login window

5. Type **admin** in the User Name box, **password** in the Password box, and then click OK.

6. When the Basic Settings screen appears (see Figure 4-2) click the Advanced Device Mode link to bring up the Device Type selection screen below (see Figure 4-5).

Figure 4-5.   Device Type selection window

7. After selecting Modem Device type, the modem sends the modem's built in Web Configuration Manager screen below (see Figure 4-6) to your browser.
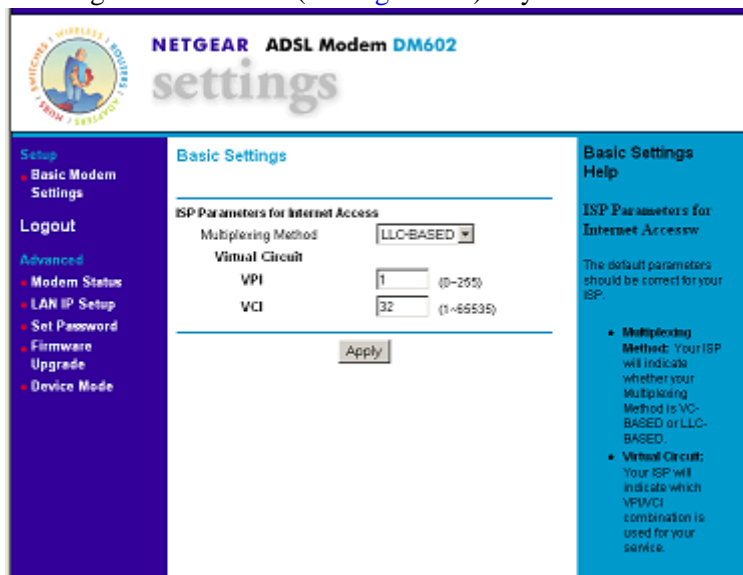
Figure 4-6.   Modem Device Mode Basic Settings window

8. ISP Parameters for Internet Access. Your ISP will indicate whether your Multiplexing Method is VC-BASED or LLC-BASED and which VPI and VCI is used. Enter the information in this screen. The most common Multiplexing Method is LLC-based. If your service provider does not indicate which one is used, use LLC-BASED.

> **Note:** When the DM602 modem is set to operate in Modem Device Mode, your computer must be set with a static IP address in the range of 192.168.0.2-192.168.0.253 with a subnet mask of 255.255.255.0, and a gateway address of 192.168.0.1 in order to be able to access the built-in Web-based Configuration Manager.

9. Click on Apply.

Completing the Configuration

Your modem is now configured to provide Internet access for your computer. The following chapters describe how to configure the Advanced features of your modem, and how to troubleshoot problems that may occur.

Chapter 5
Advanced Configuration of the Modem

This chapter describes how to configure the advanced features of your Model DM602 ADSL Modem . These features can be found under the Advanced heading in the Main Menu of the browser interface.

Router Device Mode Status

The Router Status menu provides a limited amount of status information. From the Main Menu of the browser interface, click on Router or Modem Status, depending on what mode the device is in. Then the System Status screen, shown in Figure 5-1 will appear.

Figure 5-1.   Router Mode Status screen

This screen shows the following parameters:

Table 5-1.   Router Status Fields

Field	Description
Firmware Version	This field displays the modem firmware version.
LAN Port	These IP parameters apply to the Local Area Network (LAN) of the modem.
MAC Address	This field displays the Ethernet MAC address being used by the LAN port of the modem.
IP Address	This field displays the IP address being used by the ADSL (WAN) port of the modem. If no address is shown, the modem cannot connect to the Internet.
IP Subnet Mask	This field displays the IP Subnet Mask being used by the ADSL(WAN) port of the modem.
Modem	These parameters apply to the ADSL modem section of the modem.
ADSL Firmware Version	This field displays the ADSL chipset firmware version.
Modem Status	This field displays the state of the ADSL connection to your service provider, either "Connecting" or "Connected"
Connect Mode	This field displays the protocol used to connect to your service provider. When the ADSL link comes up, the connection will be either "Fast" or "Interleaved", depending on the way the telephone company has configured its equipment
Down Stream	This field displays the connection rate from the service provider to the modem in bits per second
Up Stream	This field displays the connection rate from the modem to the service provider in bits per second
VPI	This field displays the VPI entered in the Setup Wizard or Basic Settings screen
VCI	This field displays the VCI entered in the Setup Wizard or Basic Settings screen

Click on the "Show Statistics" button to display modem usage statistics, as shown in Figure 5-2 below:
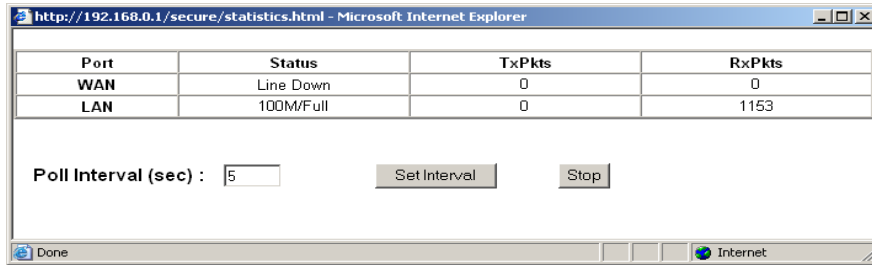
Figure 5-2.   Show Statistics screen

This screen shows the following statistics:.

Table 5-2.   Router Statistics Fields

Field	Description
Port	The statistics for the ADSL WAN (Internet) and LAN (local) ports.
Status	The link status of the port.
TxPkts	The number of packets transmitted on this port since reset or manual clear.
RxPkts	The number of packets received on this port since reset or manual clear.
Poll Interval	Specifies the intervals at which the statistics are updated in this window. Click on Stop to freeze the display.

Click the "PPP Status" button to display the progress of the PPPoE or PPPoA connection, as shown in Figure 5-3, below.
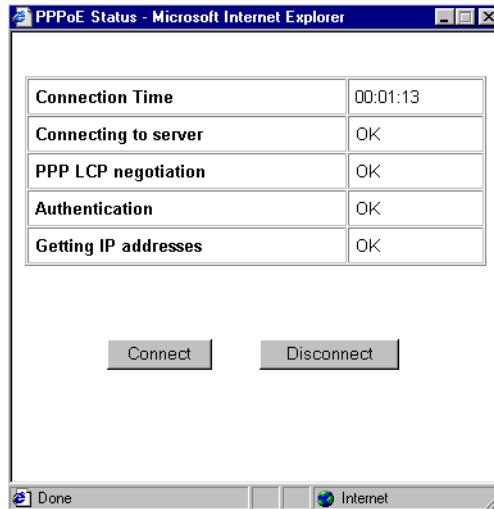
Figure 5-3.   PPP Status screen

The modem will automatically authenticate with the PPPoE or PPPoA network when you have data to transmit. You can manually connect to the network by clicking on the Connect button.

This screen gives you more detailed information about your PPPoE or PPPoA link. When the connection is up and working, the amount of time that has elapsed since it came up is indicated in the Connection Time field. The DM602 modem goes through the following steps to bring up a PPPoE or PPPoA connection.

1. The WAN LED indicates whether the ADSL physical layer can connect to the telephone company's ADSL equipment, called a DSL Access Multiplexor (DSLAM). The WAN LED will be solid green when this connection is made.

2. "Connecting to server", "PPP LCP negotiation" and "Authentication" indicate whether the modem is able to reach the PPPoE or PPPoA server and authenticate the User Name and Password. If one of these steps fail it may indicate that the values entered in the Setup Wizard or Basic Settings screens are not correct.

3. "Getting IP addresses" indicates whether the modem has successfully received a DHCP assignment from the DHCP server. This step is not necessary if a static IP address has been assigned.

Modem Device Mode Status

In Modem Device Mode, from the Main Menu of the browser interface, click on Modem Status to display the System Status screen, shown in Figure 5-4 will appear.

Figure 5-4.   Modem Status screen

This screen shows the following parameters:

Table 5-3.   Router Status Fields

Field	Description
Firmware Version	This field displays the modem firmware version.
LAN Port	These IP parameters apply to the Local Area Network (LAN) of the modem.
MAC Address	This field displays the Ethernet MAC address being used by the LAN port of the modem.
IP Address	This field displays the IP address being used by the ADSL (WAN) port of the modem. If no address is shown, the modem cannot connect to the Internet.
IP Subnet Mask	This field displays the IP Subnet Mask being used by the ADSL(WAN) port of the modem.

Table 5-3.   **Router Status Fields**

Field	Description
Modem	These parameters apply to the ADSL modem section of the modem.
ADSL Firmware Version	This field displays the ADSL chipset firmware version.
Modem Status	This field displays the state of the ADSL connection to your service provider, either "Connecting" or "Connected"
Connect Mode	This field displays the protocol used to connect to your service provider. When the ADSL link comes up, the connection will be either "Fast" or "Interleaved", depending on the way the telephone company has configured its equipment
Down Stream	This field displays the connection rate from the service provider to the modem in bits per second
Up Stream	This field displays the connection rate from the modem to the service provider in bits per second
VPI	This field displays the VPI entered in the Setup Wizard or Basic Settings screen
VCI	This field displays the VCI entered in the Setup Wizard or Basic Settings screen

Click on the "Show Statistics" button to display modem usage statistics, as shown in Figure 5-5 below:

Figure 5-5.   **Show Statistics screen**

This screen shows the following statistics:.

Table 5-4.   **Modem Statistics Fields**

Field	Description
Port	The statistics for the ADSL WAN (Internet) and LAN (local) ports.
Status	The link status of the port.

Table 5-4.   Modem Statistics Fields (continued)

Field	Description
TxPkts	The number of packets transmitted on this port since reset or manual clear.
RxPkts	The number of packets received on this port since reset or manual clear.
Poll Interval	Specifies the intervals at which the statistics are updated in this window. Click on Stop to freeze the display.

LAN IP Setup

The LAN IP Setup menu allows configuration of LAN IP services such as DHCP. From the Main Menu of the browser interface, under Advanced, click on LAN IP Setup to view the LAN IP Setup menu, shown in Figure 5-6

LAN TCP/IP Setup

IP Address   192 . 168 . 0 . 1

IP Subnet Mask   255 . 255 . 255 . 0

Figure 5-6.   LAN IP Setup Menu

The modem is shipped preconfigured to use private IP addresses on the LAN side, and to act as a DHCP server. The modem's default LAN IP configuration is:

• LAN IP addresses—192.168.0.1
• Subnet mask—255.255.255.0

These addresses are part of the IETF-designated private address range for use in private networks, and should be suitable in most applications. If your network has a requirement to use a different IP addressing scheme, you can make those changes in this menu.

→	**Note:** If you change the LAN IP address of the modem while connected through the browser, you will be disconnected. You must then open a new connection to the new IP address and log in again.

Changing the Modem Access Password

The default user name is **admin** and the password for the modem's Web Configuration Manager is **password**. Netgear recommends that you change this user name and password to a more secure combination.

From the Main Menu of the browser interface, under the Maintenance heading, select Set Password to bring up the menu shown in Figure 5-7.

Set Password

Old Password	
Repeat New Password	
New Password	

Apply   Cancel

Figure 5-7.   Set Password menu

To change the password, first enter the old password, and then enter the new password twice. Click Apply.

Firmware Upgrade

The software of the DM602 modem is stored in FLASH memory, and can be upgraded as new software is released by NETGEAR. Upgrade files can be downloaded from Netgear's website. If the upgrade file is compressed (.ZIP file), you must first extract the binary (.BIN) file before sending it to the modem. The upgrade file can be sent to the modem using your browser.

> ➡️ **Note:** The Web browser used to upload new firmware into the DM602 modem must support HTTP uploads. NETGEAR recommends using Microsoft Internet Explorer 4 or Netscape Navigator 4.0 or above.

From the Main Menu of the browser interface, under the Maintenance heading, select the Firmware Upgrade heading to display the menu shown in Figure 5-8.

Locate And Select The Upgrade File From Your Hard Disk:

[   ] Browse...

Upload   Cancel

Figure 5-8.   Firmware Upgrade menu

To upload new firmware:

1. Download and unzip the new software file from NETGEAR.

2. In the Firmware Upgrade menu, click the Browse button and browse to the location of the binary (.BIN) upgrade file

3. Click Upload.

   Note: When uploading software to the DM602 modem, it is important not to interrupt the Web browser by closing the window, clicking a link, or loading a new page. If the browser is interrupted, it may corrupt the software. When the upload is complete, your modem will automatically restart. The upgrade process will typically take about one minute.

In some cases, you may need to reconfigure the modem after upgrading.

DMZ

Incoming traffic from the Internet is normally discarded by the modem unless the traffic is a response to one of your local computers or a service that you have configured in the Port Forwarding menu. Instead of discarding this traffic, you can have it forwarded to one computer on your network. This computer is called the Default DMZ Server.

The Default DMZ Server feature is helpful when using some online games and videoconferencing applications that are incompatible with NAT. The modem is programmed to recognize some of these applications and to work properly with them, but there are other applications that may not function well. In some cases, one local PC can run the application properly if that PC's IP address is entered as the Default DMZ Server.

The Security menu, shown in Figure 5-9, allows the configuration of a Default DMZ Server.

DMZ

☐ Default DMZ Server   ☐ . ☐ . ☐ . ☐

Apply   Cancel

Figure 5-9.   DMZ menu.

> ➡ **Note:** For security, you should avoid using the DMZ Server feature. When a computer is designated as the Default DMZ Server, it loses much of the protection of the modem, and is exposed to many exploits from the Internet.

To assign a computer or server to be a Default DMZ server:

1. Check the check box to enable the DMZ feature

2. Type the IP address for that server.

3. Click Apply.

> ➡ **Note:** If you need to delete the IP address of the DMZ server, you must enter 0.0.0.0 as the address, and then click the Apply button.

Device Mode

The modem includes a limited feature router to make the process of configuring your connection easier and more secure. You can change the operation of the modem from Modem Device Mode to Router Device Mode.

In Modem Device Mode, the modem operates like a DSL modem, passing all the Internet communications directly to your computer where you must then configure your settings and logon settings as needed.

In Router Device Mode, the modem provides limited router functionality which allows you to have the modem perform any logon steps your ISP may require. In this mode, it is also easier to configure your computer by taking advantage of the automatic configuration capabilities of DHCP which the router provides.

The Device Mode menu, shown in Figure 5-10, allows the configuration of modem in router mode or modem mode.

Device Mode

Product Name	DM602
Device Type	DM602(Modem) ▼

Apply

Figure 5-10.   Device Mode menu.

To change the mode of the modem, follow these steps:

1. Select the Device Type from the list.

2. Click Apply.The modem will reconfigure itself accordingly.

> → **Note:** If you change the modem from Router Mode to Modem Mode, your computer must configured with a static IP address of 192.168.0.2-192.168.0.253, a Subnet Mask of 255.255.255.0, and a Gateway Address of 192.168.0.1 to be able to connect to the modem's built-in configuration pages.

Advanced Configuration of the Modem

Chapter 6
Troubleshooting

This chapter gives information about troubleshooting your Model DM602 ADSL Modem . After each problem description, instructions are provided to help you diagnose and solve the problem.

Basic Functioning

After you turn on power to the modem, the following sequence of events should occur:

1. When power is first applied, verify that the Power LED ⏻ is on.

2. After approximately 10 seconds, verify that the LAN port LEDs are lit for any local ports that are connected.
   If a port's LED is lit, a link has been established to the connected device. If a LAN port is connected to a 100 Mbps device, verify that the port's LED is green. If the port is 10 Mbps, the LED will be amber.

If any of these conditions does not occur, refer to the appropriate following section.

PWR LED Not On

If the PWR and other LEDs are off when your modem is turned on:

• Make sure that the power cord is properly connected to your modem and that the power supply adapter is properly connected to a functioning power outlet.

• Check that you are using the 15 V AC power adapter supplied by NETGEAR for this product.

If the error persists, you have a hardware problem and should contact technical support.

Troubleshooting the Modem's Web Configuration Interface

If you are unable to access the modem's Web Configuration interface from a PC, check the following:

• Check the Ethernet connection between your PC and the modem as described in the previous section.

• Make sure your PC's IP address is on the same subnet as the modem. If you are using the recommended addressing scheme, your PC's address should be 192.168.0.2. Refer to "Verifying TCP/IP Properties (Windows)" on page 3-5 or "Verifying TCP/IP Properties for Macintosh Computers" on page 3-8 to find your PC's IP address. Follow the instructions in Chapter 3 to configure your PC.

   Note: If your PC's IP address is shown as 169.254.x.x:
   Recent versions of Windows and MacOS will generate and assign an IP address if the computer cannot reach a DHCP server. These auto-generated addresses are in the range of 169.254.x.x. If your IP address is in this range, check the connection from the PC to the modem and reboot your PC.

• The modem's default configuration is set to be in Router Device Mode. If it gets reset to Modem Device Mode, your PC will need to be configured with a static IP address of 192.168.0.2, a Subnet Mask of 255.255.255.0, and a Gateway Address of 192.168.0.1 to be able to connect to the modem's built-in configuration pages. Otherwise, you can use the reset button at the back of the modem to put it back in Router Device mode, and connect from a computer set to automatically get it's TCP/IP settings via the DHCP server in the mode.

• Make sure your browser has Java, JavaScript, or ActiveX enabled. If you are using Internet Explorer, click Refresh to be sure the Java applet is loaded.

• Try quitting the browser and launching it again.

• Make sure you are using the correct login information. The factory default login name is **admin** and the password is **password**. Make sure that CAPS LOCK is off when entering this information.

If the modem does not save changes you have made in the Web Configuration Interface, check the following:

• When entering configuration settings, be sure to click the APPLY button before moving to another menu or tab, or your changes are lost.

• Click the Refresh or Reload button in the Web browser. The changes may have occurred, but the Web browser may be caching the old configuration.

Troubleshooting the ISP Connection

ADSL link

If your modem is unable to access the Internet, you should first determine whether you have an ADSL link with the service provider. The state of this connection is indicated with the WAN LED.

WAN LED Green or Blinking Green

If your WAN LED is green or blinking green, then you have a good ADSL connection. You can be confident that the service provider has connected you line correctly and that your wiring is correct.

WAN LED Blinking Yellow

If your WAN LED is blinking yellow then your modem is attempting to make an ADSL connection with the service provider. The LED should turn green within several minutes.

If the WAN LED does not turn green, disconnect all telephones on the line. If this solves the problem, reconnect the telephones one at a time, being careful to use a microfilter on each telephone. If the microfilters are connected correctly, you should be able to connect all your telephones.

If disconnecting telephones does not result in a green WAN LED there may be a problem with your wiring. If the telephone company has tested the ADSL signal at your Network Interface Device (NID), then you may have poor quality wiring in your house.

WAN LED Off

If the WAN LED is off, disconnect all telephones on the line. If this solves the problem, reconnect the telephones one at a time, being careful to use a microfilter on each telephone. If the microfilters are connected correctly, you should be able to connect all your telephones.

If disconnecting telephones does not result in a green WAN LED the problem may be one of the following:

- Check that the telephone company has made the connection to your line and tested it.

- Verify that you are connected to the correct telephone line. If you have more than one phone line, be sure that you are connected to the line with the ADSL service. It may be necessary to use a swapper if you ADSL signal is on pins 1 and 4 or the RJ-11 jack. The Model DM602 modem uses pins 2 and 3.

Obtaining a WAN IP Address

If your modem is unable to access the internet, and your WAN LED is green or blinking green, you should determine whether the modem is able to obtain a WAN IP address from the ISP. Unless you have been assigned a static IP address, your modem must request an IP address from the ISP. You can determine whether the request was successful using the browser interface.

To check the WAN IP address from the browser interface:

1. Launch your browser and select an external site such as www.netgear.com

2. Access the Main Menu of the modem's configuration at http://192.168.0.1

3. Under the Maintenance heading check that an IP address is shown for the WAN Port
   If 0.0.0.0 is shown, your modem has not obtained an IP address from your ISP.

If your modem is unable to obtain an IP address from the ISP, the problem may be one of the following:

- Your ISP may require a login program.
  Ask your ISP whether they require PPP over Ethernet (PPPoE) or PPP over ATM (PPPOA) login.

- If you have selected a login program, you may have incorrectly set the Service Name, User Name and Password. See "Troubleshooting PPPoE or PPPoA", below.

- Your ISP may check for your PC's host name.
  Assign the PC Host Name of your ISP account to the modem in the browser-based Setup Wizard.

- Your ISP only allows one MAC address to connect to Internet, and may check for your PC's MAC address. In this case, inform your ISP that you have bought a new network device, and ask them to use the modem's MAC address.

Troubleshooting PPPoE or PPPoA

The PPPoA or PPPoA connection can be debugged as follows:

1. Access the Main Menu of the modems configuration at http://192.168.0.1.

2. Under the Maintenance heading, click the "Show PPPoE Status" or "Show PPPoA Status" button, depending on your connection type.

3. If all of the steps indicate "OK" then your PPPoE or PPPoA connection is up and working.

4. If any of the steps indicates "Failed", you can attempt to reconnect by clicking "Connect". The modem will continue to attempt to connect indefinitely.

If you cannot connect after several minutes, you may be using an incorrect Service Name, User Name or Password. There also may be a provisioning problem with your ISP.

Troubleshooting Internet Browsing

If your modem can obtain an IP address but your PC is unable to load any web pages from the Internet:

• Your PC may not recognize any DNS server addresses.

A DNS server is a host on the Internet that translates Internet names (such as www addresses) to numeric IP addresses. Typically your ISP will provide the addresses of one or two DNS servers for your use. If you entered a DNS address during the modem's configuration, reboot your PC and verify the DNS address as described in "Verifying TCP/IP Properties (Windows)" on page 3-5. Alternatively, you may configure your PC manually with DNS addresses, as explained in your operating system documentation.

• Your PC may not have the modem configured as its TCP/IP gateway.

If your PC obtains its information from the modem by DHCP, reboot the PC and verify the gateway address as described in "Verifying TCP/IP Properties (Windows)" on page 3-5.

Restoring the Default Configuration and Password

This section explains how to restore the factory default configuration settings, changing the modem's administration password to **password** and the IP address to 192.168.0.1. You can erase the current configuration and restore factory defaults in two ways:

• Use the Default Reset button on the rear panel of the modem. Use this method for cases when the administration password or IP address is not known.

Using the Default Reset button

To restore the factory default configuration settings without knowing the administration password or IP address, you must use the Default Reset button on the rear panel of the modem.

1. Quickly press the Default Reset button three times.

2. The Test LED to turns on (about 10 seconds). Wait for the modem to reboot.

Appendix A
Technical Specifications

This appendix provides technical specifications for the Model DM602 ADSL Modem .

General Specifications

Network Protocol and Standards Compatibility

Data and Routing Protocols:	TCP/IP
	DHCP server and DHCP relay
	RFC 1483, 2684 Bridged Ethernet Encapsulation
	RFC 2516 PPP over Ethernet (PPPoE)
	RFC 2364 PPP over ATM (PPPoA)

Power Adapter

North America:	120V, 60 Hz, input
United Kingdom, Australia:	240V, 50 Hz, input
Europe:	230V, 50 Hz, input
Japan:	100V, 50/60 Hz, input
All regions (output):	15 V AC @ 1.0 A output, 30W maximum

Physical Specifications

Dimensions:	174 by 118 by 28 mm
	6.9 by 4.6 by 1.1 in.
Weight:	0.29 kg
	0.63 lb.

Environmental Specifications

Operating temperature:	0° to 40° C
Operating humidity:	90% maximum relative humidity, noncondensing

Electromagnetic Emissions

Meets requirements of:	FCC Part 15 Class B
	VCCI Class B
	EN 55 022 (CISPR 22), Class B

Interface Specifications

LAN:	10BASE-T or 100BASE-Tx, RJ-45, USB 1.1
WAN:	ADSL, RJ-11, pins 2 and 3
	T1.413, G.DMT, G.Lite
	ITU Annex A

Glossary

10BASE-T	IEEE 802.3 specification for 10 Mbps Ethernet over twisted pair wiring.
100BASE-Tx	IEEE 802.3 specification for 100 Mbps Ethernet over twisted pair wiring.
ADSL	*See* Asymmetric Digital Subscriber Line
Asymmetric Digital Subscriber Line	A technology for sending data over regular telephone lines. ADSL allows data rates up to 8 Mbps downstream and 640 Kbps upstream.
Denial of Service attack	A hacker attack designed to prevent your computer or network from operating or communicating.
DHCP	*See* Dynamic Host Configuration Protocol.
DNS	*See* Domain Name Server.
Domain Name	A descriptive name for an address or group of addresses on the Internet. Domain names are of the form of a registered entity name plus one of a number of predefined top level suffixes such as .com, .edu, .uk, etc. For example, in the address mail.NETGEAR.com, mail is a server name and NETGEAR.com is the domain.
Domain Name Server	A Domain Name Server (DNS) resolves descriptive names of network resources (such as www.NETGEAR.com) to numeric IP addresses.
DSLAM	DSL Access Multiplexor. The piece of equipment at the telephone company central office that provides the ADSL signal.
Dynamic Host Configuration Protocol	DHCP. An Ethernet protocol specifying how a centralized DHCP server can assign network configuration information to multiple DHCP clients. The assigned information includes IP addresses, DNS addresses, and gateway (router) addresses.
IP	*See* Internet Protocol.

IP Address	A four-byte number uniquely defining each host on the Internet. Ranges of addresses are assigned by Internic, an organization formed for this purpose. Usually written in dotted-decimal notation with periods separating the bytes (for example, 134.177.244.57).
IPSec	Internet Protocol Security. IPSec is a series of guidelines for securing private information transmitted over public networks. IPSec is a VPN method providing a higher level of security than PPTP.
IPX	*See* Internet Packet Exchange.
ISP	Internet service provider.
Internet Protocol	The main internetworking protocol used in the Internet. Used in conjunction with the Transfer Control Protocol (TCP) to form TCP/IP.
LAN	*See* local area network.
Local Area Network	LAN. A communications network serving users within a limited area, such as one floor of a building. A LAN typically connects multiple personal computers and shared network devices such as storage and printers. Although many technologies exist to implement a LAN, Ethernet is the most common for connecting personal computers.
MAC address	Media Access Control address. A unique 48-bit hardware address assigned to every Ethernet node. Usually written in the form 01:23:45:67:89:ab.
MSB	*See* Most Significant Bit or Most Significant Byte.
MRU	*See* Maximum Receive Unit.
Maximum Receive Unit	The size in bytes of the largest packet that can be sent or received.
Most Significant Bit or Most Significant Byte	The portion of a number, address, or field that is farthest left when written as a single number in conventional hexadecimal ordinary notation. The part of the number having the most value.
NAT	*See* Network Address Translation.
Netmask	A number that explains which part of an IP address comprises the network address and which part is the host address on that network. It can be expressed in dotted-decimal notation or as a number appended to the IP address. For example, a 28-bit mask starting from the MSB can be shown as 255.255.255.192 or as /28 appended to the IP address.

Network Address Translation	A technique by which several hosts share a single IP address for access to the Internet.
NID	Network Interface Device. The point of demarcation, where the telephone line comes into the house.
Packet	A block of information sent over a network. A packet typically contains a source and destination network address, some protocol and length information, a block of data, and a checksum.
PPP	*See* Point-to-Point Protocol.
PPPoA	*See* PPP over ATM
PPPoE	*See* PPP over Ethernet
PPP over ATM	PPPoA. PPP over ATM is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
PPP over Ethernet	PPPoE. PPP over Ethernet is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
PPTP	Point-to-Point Tunneling Protocol. A method for establishing a virtual private network (VPN) by embedding Microsoft's network protocol into Internet packets.
PSTN	Public Switched Telephone Network.
Point-to-Point Protocol	PPP. A protocol allowing a computer using TCP/IP to connect directly to the Internet.
RFC	Request For Comment. Refers to documents published by the Internet Engineering Task Force (IETF) proposing standard protocols and procedures for the Internet. RFCs can be found at www.ietf.org.
RIP	*See* Routing Information Protocol.
Router	A device that forwards data between networks. An IP router forwards data based on IP source and destination addresses.
Routing Information Protocol	A protocol in which routers periodically exchange information with one another so that they can determine minimum distance paths between sources and destinations.
Subnet Mask	*See* netmask.

USB	Universal Serial Bus. An external bus standard that supports data transfer rates of 12 Mbps. A single USB port can be used to connect up to 127 peripheral devices, such as network interface adapters, mice, modems, and keyboards. USB also supports Plug-and-Play installation and hot plugging.
UTP	Unshielded twisted pair. The cable used by 10BASE-T and 100BASE-Tx Ethernet networks.
VCI	Virtual Channel Identifier. Together with the VPI, defines a Virtual Channel through an ATM network. Used by ATM switching equipment to route data through the network.
VPI	Virtual Path Identifier. Together with the VCI, defines a Virtual Channel through an ATM network. Used by ATM switching equipment to route data through the network.
VPN	Virtual Private Network. A method for securely transporting data between two private networks by using a public network such as the Internet as a connection.
WAN	*See* wide area network.
Wide Area Network	WAN. A long distance link used to extend or connect remotely located local area networks. The Internet is a large WAN.
Windows Internet Naming Service	WINS. Windows Internet Naming Service is a server process for resolving Windows-based computer names to IP addresses. If a remote network contains a WINS server, your Windows PCs can gather information from that WINS server about its local hosts. This allows your PCs to browse that remote network using Network Neighborhood.
WINS	*See* Windows Internet Naming Service.

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