

Installation

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Installation

High Speed Data (HSD) Online

HSD Internet Service is the fastest Internet access for the home. With this increased speed, you're able to download music faster, view video clearer and share photos more easily. HSD Online connects you to the Internet using the same reliable cable that delivers your cable TV service. The connection is always on and doesn't tie up your phone line.

Online Boost

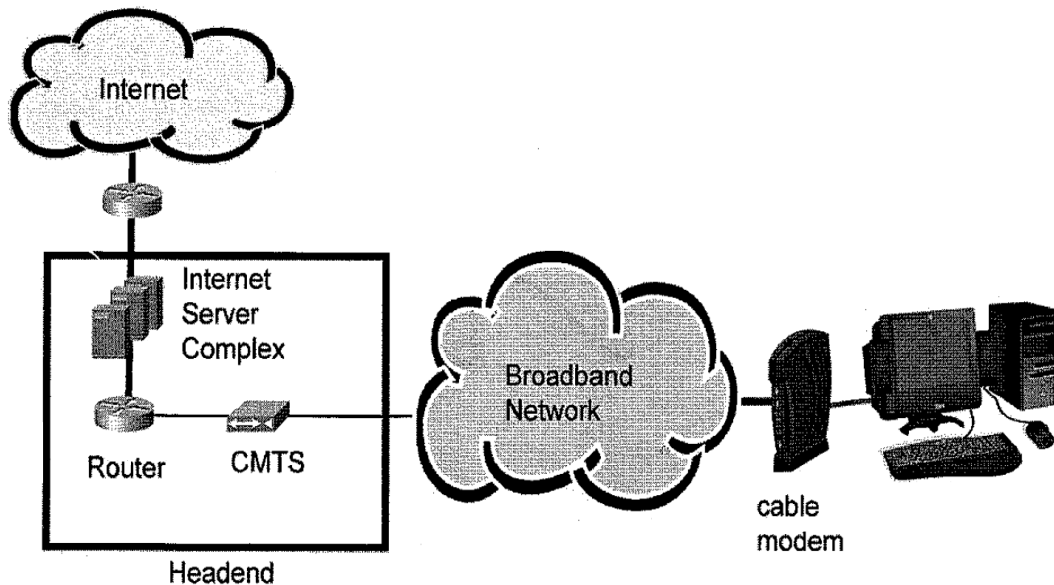
Online Boost offers the same great service and full throttle speed of up to 50 Megabits per second (Mbps) downstream, up to 8 Mbps upstream and several premium features designed for a busy lifestyle, whether it's a growing family or a growing home office.

Online Ultra

The fastest service in the suite of data products is Online Ultra, which offers business customers a dedicated 100 Mbps symmetrical downstream and upstream data service.

How does it work?

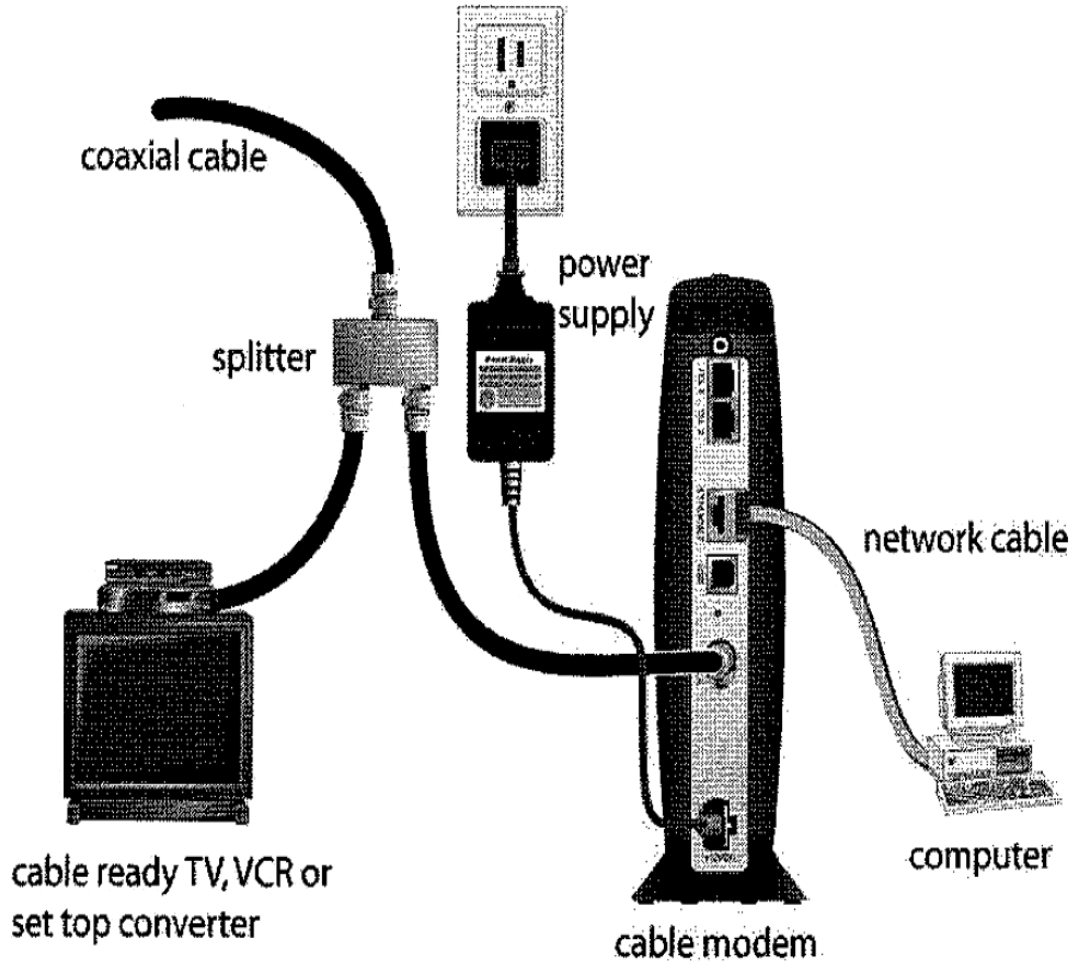
The service is provided over a broadband network and delivered-to the customer through a cable modem.



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Connecting the Cable Modem to the Cable

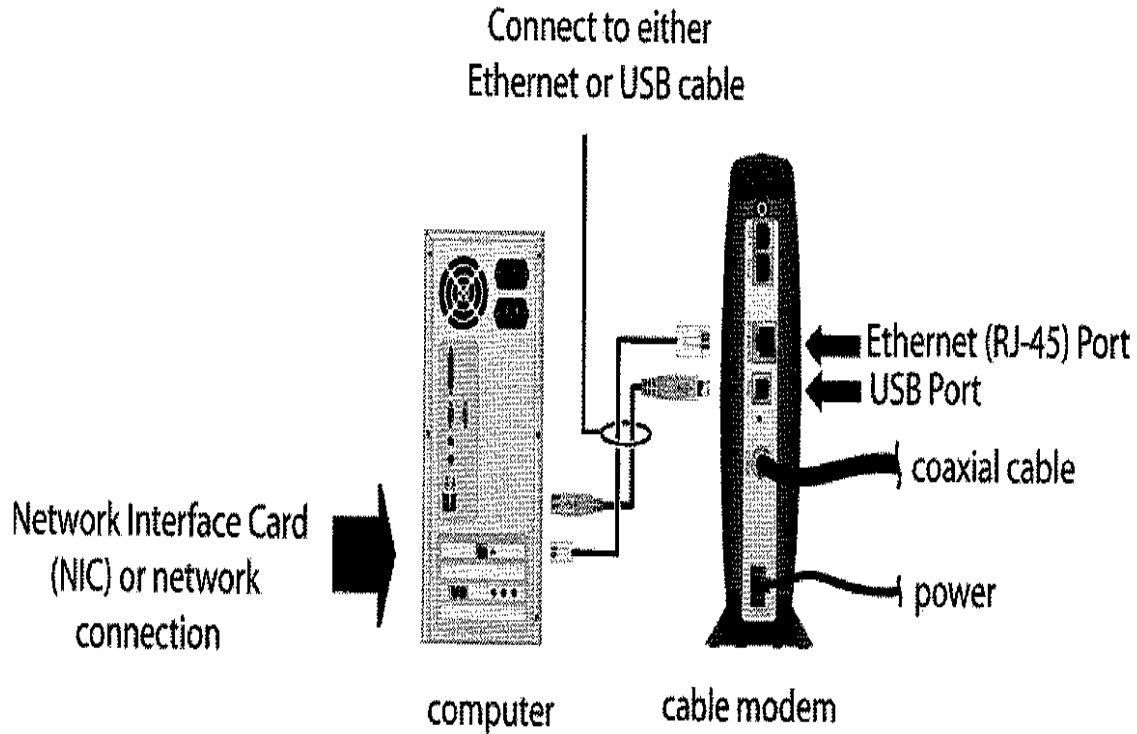
The cable line is split as close as possible to where the cable line first enters the residence of a customer.



Installation

Connecting the Cable Modem to the Computer

The computer is connected to the cable modem using an Ethernet or USB connection. **The Ethernet connection is the recommended connection for the online service.**



Do not connect *both* the Ethernet and USB cables to the same computer.
USB connection not recommended for OL 15/2 and/or Boost Service.




See the modem section for a complete and detail modem installation information.

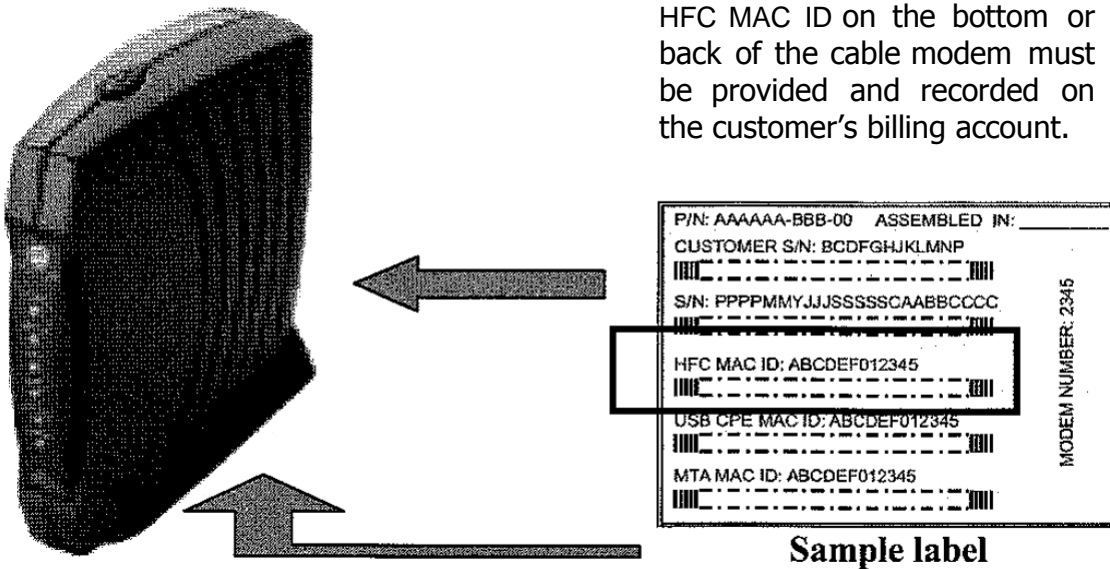
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Cable Modem

Only Data Over Cable System Interface Specification (DOCSIS) cable modems can be used.

 **DOCSIS:** A Telecommunications Industry standard specification that specifies modulation schemes and the protocol for exchanging bi-directional signals *over* cable.


To receive data service, the MAC address printed on the bar code label marked CM HFC MAC ID on the bottom or back of the cable modem must be provided and recorded on the customer's billing account.



Online Computer System Requirements

There are minimum OL service computer system requirements. The minimum requirements are listed below and are not recommended for maximum performance of the service.

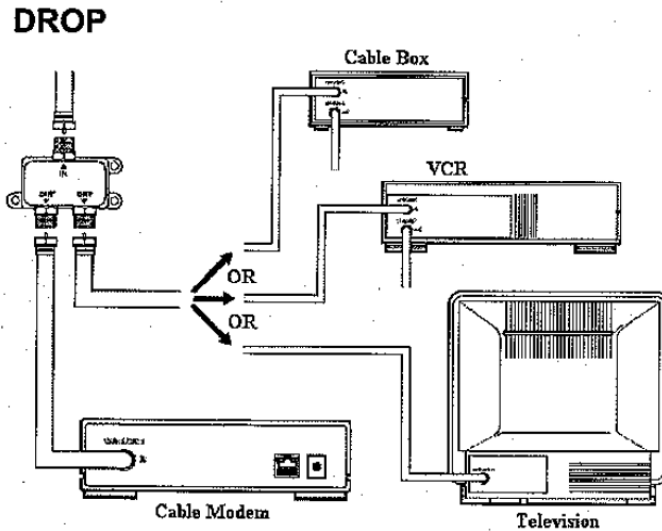
- 166 MHz Pentium processor
- Windows 95, 98, 2000, ME, XP or NT Workstation 4.0
- 32MB of memory (64MB recommended)
- 150MB of hard disk space (350MB recommended)
- CD-ROM Drive
- Network Card or free USB port. (Use of USB requires Windows 98, 2000 or XP)

 USB connection not recommended for OL 15/2 and/or Boost Service.

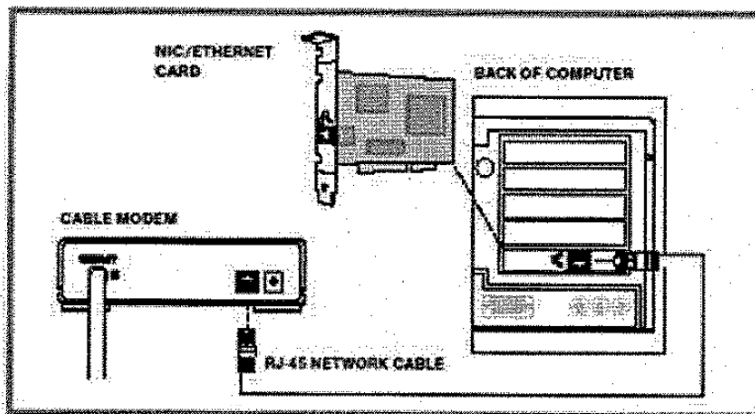
Installation

Installing OL Boost Service and OL 15/2

Our standard procedure for drop certification on installation and splitter configuration shall be followed. **It is recommended that the modem be connected to the first split after the ground block.** This is to ensure that the modem signal level, dynamic range and upstream transmit levels are not affected by the higher modulation rates. It is important to follow proper drop craftsmanship, connector installation and proper tightening of all company equipment (connectors, ground block, splitter, etc).



Some cable modems offer you an option to connect via USB or Ethernet/NIC. It is also recommended the all installation for service is connected from the cable modem via the Ethernet "RJ-45" connection to the customer's computer. This is important because the higher speed for Boost cannot be achieved via the USB connection.



Recommended cable to computer connection



The cable modem signal CANNOT be transmitted over telephone wire. DO NOT use phone wire in place of the supplied RJ-45 cable or USB cable.

Installation

SB 5100 Cable Modem



OL 15/2 and Boost Complaint

Front and Top Panel

For added security, you can press the **Standby button (1)** to suspend your Internet connection. No data is transmitted or received from the Internet when the Standby light is on. All other front panel lights turn off until you press the Standby button again.

| | Key Light Flashing On | | | |
|--|------------------------------|--------------------|--|--|
| | Key | Light | Flashing | On |
| | 2 | Power | Start diagnostic in progress. | The cable modem is powered on. |
| | 3 | Receive | Scanning for a receive (downstream) channel connection. The downstream channel is connected. | The downstream channel is connected. |
| | 4 | Send | Scanning for a network connection. | The upstream channel is connected. |
| | 5 | Online | Scanning for a network connection. | The startup process is complete. |
| | 6 | PC/Activity | Transmitting or receiving data. | A device, such as a computer or hub, is connected through USB or Ethernet. |
| | 7 | Standby | This light does not flash. | Internet service is blocked because the Standby button was pressed. If this light is on, all other lights are off. |

During normal operation, the Power, Receive, Send and Online lights are on and the Activity light flashes when the cable modem is transferring data.

Rear Panel

| | Key Item Description | | |
|--|-----------------------------|-----------------|---|
| | Key | Item | Description |
| | 1 | ETHERNET | The Ethernet port provides a connection to Ethernet equipped computers using a cable terminated with a RJ-45 connector. |
| | 2 | USB | The USB port provides a connection to USB equipped computers. |
| | 3 | CABLE | The CABLE port provides a connection to the coaxial cable (coax) outlet. |
| | 4 | POWER | The POWER connector provides power to the cable modem. |




Do not connect both the Ethernet and USB cables to the same computer.

Installation

| Troubleshooting the Motorola SB-5100 | |
|---|---|
| Green POWER light is off | <ul style="list-style-type: none"> • Check that the power cord is properly plugged into the electrical outlet and the cable modem. • Check that the electrical outlet is working. • If the Standby button is on, the Internet connection is off. Press the Standby button to reconnect to the Internet. |
| Cannot send or receive data | <ul style="list-style-type: none"> • Check the lights on the front panel. Note the first light from top to bottom that is off. This light indicates where the error occurred as described in "Front Panel Lights and Error Conditions" section below. • If all lights are off except the Standby light, the cable modem is in Standby mode. Press the Standby button to reconnect your Internet service. • If you have cable TV, check that your TV is working and the picture is clear. If you cannot receive your regular TV channels, your data service will not function. • Check the coaxial cable at the cable modem and wall outlet. Hand-tighten, if necessary. • Check the IP address. • Check that the USB or Ethernet cable is properly connected to the cable modem and the computer. |
| Problems related to unsuccessful USB driver installation | Remove the USB driver. Follow the instructions in the SB-5100 manual. |

| Front Panel Lights and Error Corrections | | |
|---|---|---|
| Light | Turns Off During Start-up if | Turns Off During Normal Operation if |
| <i>Receive</i> | The receive channel cannot be acquired | The receive channel is lost |
| <i>Send</i> | The send channel cannot be acquired | The send channel is lost |
| <i>Online</i> | IP registration is unsuccessful | The IP registration is lost |
| <i>Power</i> | The cable modem is not properly plugged into the power outlet | The cable modem is unplugged or is in Standby mode. Press the Standby button. |

 If the solutions listed here do not solve your problem, try pressing the reset button on the rear panel. Resetting the cable modem may take 5 to 30 minutes.

Installation

Cable Modem Troubleshooting Tools

Checking Modem Lights

DOCSIS modems have several lights that indicate the modem status. Some simple troubleshooting can be performed by watching the modem lights. If the modem is currently not running, have the customer power the modem first and then start the computer.

Connection Troubleshooting Tips

Before troubleshooting the cable modem lights follow some of the tips listed below:

Ethernet Connection Tips

- Ensure that the power is off on the modem before making your physical connections.
- Ensure that the proper cabling is used for connections to your computer and modem.
- Ensure that the coax connections are tight for proper connectivity and signal levels.

Ensure that the coax connections are tight for proper connectivity and signal levels.

Field Operations Non-Compliant Modems Swap Policy

All company owned non-compliant modems will be collected and returned to the warehouse.

All customer-owned non-compliant modems should be left with the customer and advised that it is not compatible with the current service.

OL & Boost Specification

OL Boost will use DOCSIS 3.0

Signal Specifications

| Cablevision Signal Specifications | |
|---|--|
| HSD/VoIP Modem Input (Receive) Levels | Minimum: -10 dBmv Maximum: +10 dBmv |
| HSD/VoIP Modem Output (Transmit) Levels | Minimum: +30 dBmv Maximum: +54 dBmv |
| HSD/VoIP Modem Carrier/Noise Ratio | Minimum: +31 dBmv Maximum: +50 dBmv |

DOCSIS Frequencies

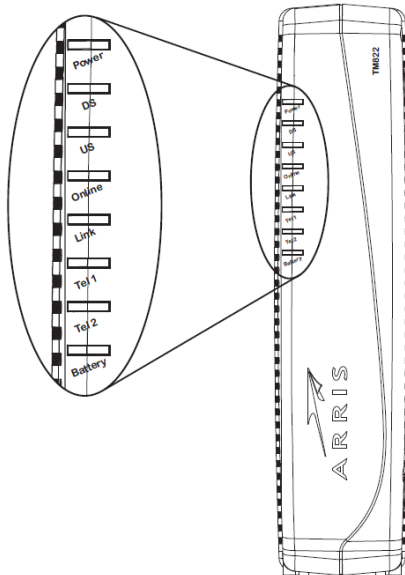
| DOCSIS Frequencies | |
|--------------------|------------|
| Service | Downstream |
| OL | 603 MHz |
| OL Boost | 609 MHz |

Installation

Customer Premise Equipment Throughput Evaluation

The connection speed is only as fast as the slowest connection/device (i.e., computer, network card, router, etc). Make sure that the customer peripherals support the maximum speed available for the customer.

TM822 3.0 VoiP CM Front Panel



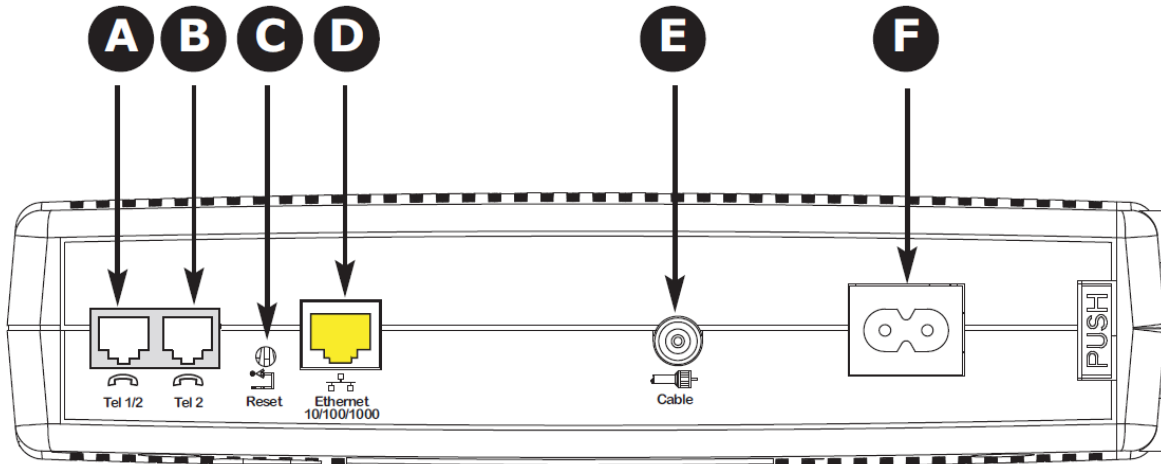
The indicator lights (right to left): Normal Operation

| LED | OFF | FLASHING | ON |
|------------------------------|---|---|---|
| POWER | Power is disconnected. | Not applicable. | Green: Voice modem's power is properly connected. |
| DS (Downstream) | Receive channel not found. | Scanning for a downstream channel connection. | Yellow: Downstream channel is connected. Green: High-speed Internet connection with bonded channels. |
| US (Upstream) | Send channel not found. | Scanning for an upstream channel connection. | Yellow: Upstream channel is connected. Green: High-speed Internet connection with bonded channels. |
| ONLINE | Internet connection failed. | Scanning for an Internet connection. | Green: Startup process completed. |
| LINK | No connection to TM822 Ethernet port detected. | LAN activity: transmitting or receiving data. | Yellow: A device is connected to the Ethernet (10Base-T) or Fast Ethernet (100Base-T) port. Green: High-speed Gigabit Ethernet (1000Base-T) connection from the TM822. |
| TEL 1 TEL 2 | Telephone line is not set up for voice service. | Telephone is off-hook; dialing or in use; telephone service is not provisioned. | Green: Telephone service is provisioned; on hook. |
| BATTERY | Battery not installed. | | Green: Power is on and battery is in good condition. |

Installation

TM822 3.0 VoIP CM Rear Panel

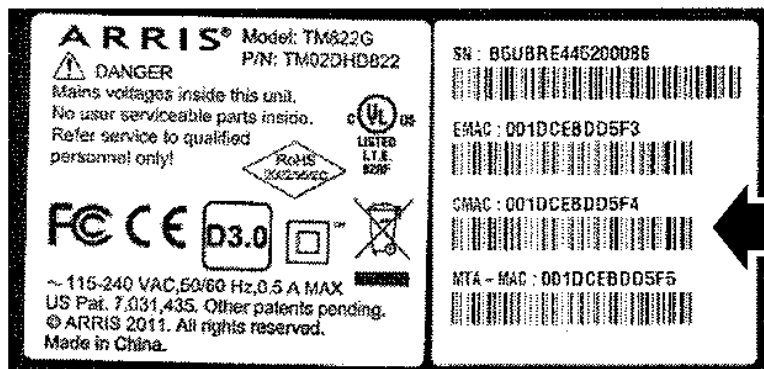
The rear of the cable modem has the following connectors and controls.



| Port | Description |
|-------------------|--|
| A Tel 1/2 | Telephone Ports 1 & 2: VoIP connection for a single or two-line telephone. |
| B Tel 2 | Telephone Port 2: VoIP connection for a single-line telephone. |
| C Reset | Reset Switch: Push this recessed button to reboot the VoIP cable modem. Rebooting may take some time (5 to 30 minutes) because the VoIP cable modem must find and lock on the appropriate communications channel. |
| D Ethernet | Ethernet Port: Bridged RJ-45 Gigabit Ethernet port connects to the Ethernet port on a PC or other network device. This port also supports 10/100/1000Base-T connections. |
| E Cable | Cable Connector: Provides a connection to the coaxial cable outlet. |
| F Power | Power Connector: Connects the cable modem to the power adapter that is provided with the cable modem. |

Label on the TM822 3.0 VoIP CM

The label with the MAC address can be found on the bottom of the modem.



Installation

TM822 Basic Battery Installation and Replacement

The TM822 cable modem has the ability to provide battery backup in the event of a local power loss. The battery backup is not intended to take the place of AC power.



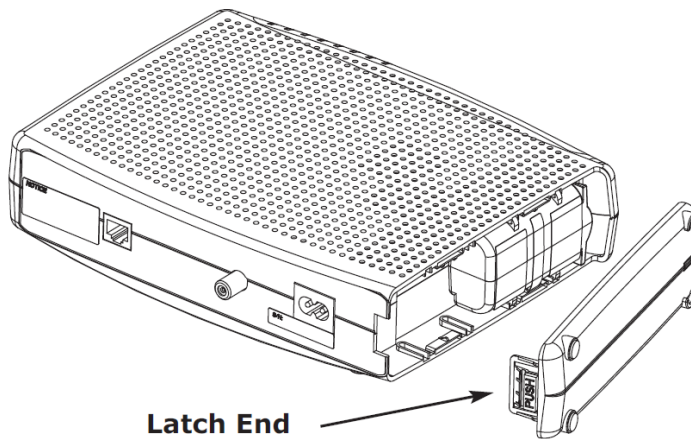
Use this procedure to install and to replace the backup battery:

- Press down and pull back on the latch holding the battery door (on the bottom of the Cable Modem).
- Pull the door toward you. Set the door aside in a safe place.



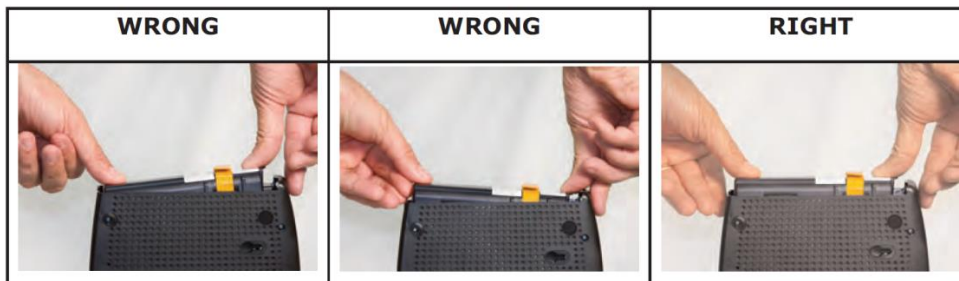
CAUTION: Risk of equipment damage.

Improperly inserting the battery may damage the battery connector in the cable modem. Carefully follow the instructions in the next step to avoid damage.

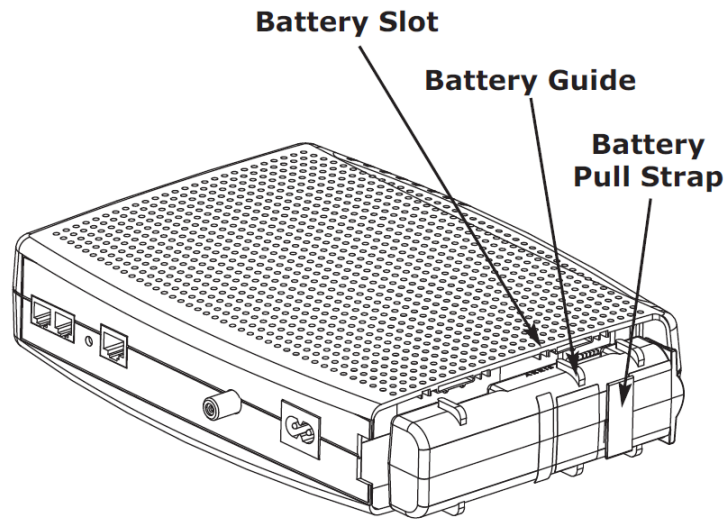


Hold the battery pack so that the guides on the battery align with the slots on the cable modem and slide the battery into the bay. The diagram below shows the proper orientation.

Batteries will not insert completely into the modem if not oriented correctly. The battery should slide into the bay without significant force. Line up the slots in the battery bay with the guides on the battery and apply pressure on both ends of the battery.



Installation

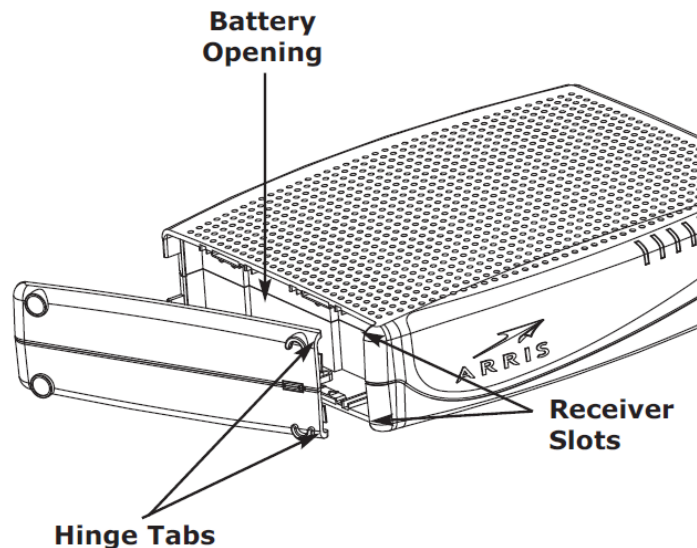


Push the battery pack into the bay until it seats into place. If you are taking the battery out of the cable modem, use the battery pull strap to dislodge the battery.



The cable modem will not begin operating until you apply AC power.

Replace the door. To do so, place the hinge tabs on the battery door into the receiver slot inside the cable modem battery compartment on the opposite end of the battery opening slot. Rotate the door toward the unit until the latch snaps back into place.



The cable modem uses a Lithium-ion battery pack. Please recycle or dispose of the battery responsibly and in accordance with local ordinances.

Installation

Installing and Connecting Your TM822G 3.0 VoIP CM

The following diagram illustrates one of the various networking options that are available to you.



CAUTION: Risk of equipment damage.

Only qualified installation technicians should connect the cable modem to house wiring. Incumbent telephone service must be physically disconnected at the outside interface box before making any connections.

Mounting the Cable Modem

You can either mount the cable modem on a wall or place it on a desktop. For wall-mount applications, you can mount the cable modem with the indicators facing upward (vertical) or to the side (horizontal).

Tools and Materials

For wall-mounted installations, make sure you have the following tools and materials before proceeding:

- For mounting on drywall:
 - Two 1/4" (6mm) drywall anchors and a drill with 1/4" (6mm) bit (not included)
- For mounting on plywood or studs:
 - Two #6 x 1.5" (38.1 mm) self-tapping screws (not included)
- Screwdriver (flat-blade or Phillips, depending on what kind of screws you use)
- Wall-mount template (included with the cable modem installation guide)
- transparent tape: for temporarily securing the mounting template to the wall (not included)

Location

Always position the cable modem:

- Within reach of an AC outlet. The power cord must reach the outlet without stretching and without adding extension cords.
- Near a cable outlet (to avoid long cable runs).

Installation

Wall-Mounting instructions



When mounting the cable modem on drywall, try to position the cable modem so at least one of the screws is fastened on a stud. This may prevent the cable modem from pulling out of the wall in the future. To prevent overheating the cable modem, do not block the ventilation holes on the side of the unit.

1. Position the mounting template on the surface where you intend to mount the cable modem and secure in place with transparent tape.



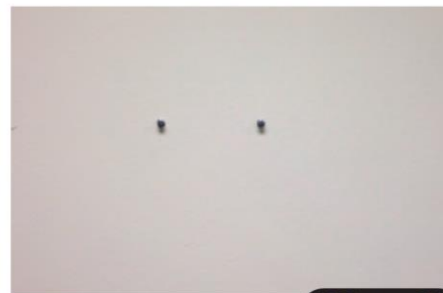
Step 1

2. Drill holes through the template in the specified locations for the mounting screws. After drilling holes, remove the template from the surface.



Step 2

3. If using drywall anchors, set them into the wall. Then, drive the screws into the wall leaving a gap of about 1/8" (3 mm) between the screw head and the wall. If not using anchors, just drive the screws.



Step 3

4. Orient the cable modem with the indicator lights facing up or right, as desired. Slip both mounting slots (in the back of the Telephony Modem) over the screws then slide the case down until the narrow end of the keyhole slot contacts the screw shaft.



Step 4

5. Proceed to Connecting the cable modem.

Installation

Desktop mounting instructions

1. Position the cable modem so that:
 - air flows freely around it
 - the back faces the nearest wall
 - it will not fall to the floor if bumped or moved
 - the ventilation holes on the side of the unit are not blocked
2. Proceed to Connecting the Cable Modem.

Connecting the Telephony Modem



WARNING: Risk of injury or equipment damage

Connecting the cable modem to the home's existing telephone wiring should only be performed by a professional installer. Physical connections to the previous telephone provider must be removed and the wiring must be checked; there must not be any voltage. Cancellation of telephone service is not adequate. Failure to do so may result in loss of service and/or permanent damage to the cable modem.

1. Connect one end of the coax cable to the cable outlet or splitter and the other end to the cable modem's cable connector. Tighten the connections by hand, then tighten an additional 1/8 turn with a wrench.
2. Insert the plug from the power cord into the power connector on the cable modem.

Making Ethernet Connections

3. Connect one end of the yellow Ethernet cable to the yellow port on the back of the cable modem labeled "Ethernet 10/100/1000," and the other end to the Ethernet port on a computer, hub, or broadband router.

Making Telephone Connections

4. Connect one end of the telephone cable to one of the grey telephone ports on the back of the cable modem. Connect the other end to the telephone.
5. Insert the power cord into a convenient AC outlet.
6. The cable modem will begin an automatic search to locate and sign on to the broadband data network. This process may take up to 5 to 30 minutes.
7. The modem will be ready for use when the ONLINE RED status indicator on the front panel stops blinking and illuminates continuously.
8. Provision the cable modem for OL service and OV, if applicable, per Standard Provisioning Process.

Installation

Troubleshooting the TM822G 3.0 VoIP CM

Wiring Problems

If the cable modem begins flashing all its lights for more than 10 seconds, this indicates a problem with the telephone wiring—the red and green wires may be shorted (touching) or there may be undesired voltage on the lines. If this pattern persists for more than 10 seconds, disconnect the telephone lines from the cable modem, then troubleshoot the telephone, follow standard wiring troubleshooting process.

Battery Mismatch

If the cable modem alternates flashing the Battery light and all other lights, the installed battery is incompatible with the cable modem. Remove the battery and install one of the batteries described in Battery Installation and Replacement.

Indicator Lights: Normal Operation

The following table shows light patterns during normal operation. If colors are not indicated, they do not affect the status.

| MODE | | | | |
|------------------------------|--|---|---------------------------|---------------------|
| Light | AC Power Good | No AC Power Battery Installed | No AC Power No Battery | Firmware Upgrade |
| Power | On | Flash | Off | On |
| DS (Downstream) | Yellow: Downstream channel is connected. Green: High-speed Internet connection with bonded channels. Flash: <i>Not connected to the Internet.</i> | Off | Off | Flash |
| US (Upstream) | Yellow: Upstream channel is connected. Green: High-speed Internet connection with bonded channels. Flash: <i>Not connected to the Internet.</i> | Off | Off | Flash |
| ONLINE | On Off: Internet not available | Off | Off | On |
| LINK | Yellow: 10Base-T or 100Base-T Ethernet Green: 1000Base-T connected. Flash: <i>Computer activity.</i> | Off | Off | Normal Operation |
| TEL 1 TEL 2 | On: On-hook Flash: <i>Off-hook</i> Off: Disabled | On: On-hook Flash: Off-hook Off: Disabled | Off | Normal Operation |
| BATTERY | On: Battery good or low Flash: <i>Battery missing or MTA not registered</i> Off: Battery bad | Off: Battery power Flash: Battery bad or low | Off | Normal Operation |

Using the Reset Button

Use the Reset button, on the back of the cable modem, to reset the modem as if you power cycled the unit.

Use a pointed non-metallic object to press this button.

Installation

Troubleshooting

The cable modem is plugged in, but the power light is off.

- Check all power connections. Is the power cord plugged in firmly at both ends?
- If you plugged the power cord into a power strip, make sure the strip is switched on.
- Avoid using an outlet controlled by a wall switch, if possible.
- Check the outlet by plugging in another device (such as a lamp).

No Internet

- It may take over 30 minutes to establish a connection the first time you power up your cable modem, especially when many people are online.
- Always leave your cable modem plugged into AC power and connected to the cable system.
- Check the front panel lights:
 - The Power and Online lights should be on.
 - The Link light should be either on or blinking.
- Check your cable connections. Connectors should be tight. The coax cable should not be pinched, kinked, or bent sharply—any of these can cause a break or short in the cable (you may have to replace the cable).
- Check the signal level.

No Dial Tone

- Confirm the OV service has been provisioned, follow standard OV provisioning process.
- Is the Power LED lit?
- If not, check to make sure the cable modem is plugged in and the outlet has power.
- If the LED is lit, go to the next step.
- Is the Online LED lit?
- If not, check the coax connection at the cable modem and the wall.
- Ensure they are connected and tight.
- If the Online LED is lit, go to the next step.
- Is the Telephone (Tel 1 or Tel 2) LED lit?
- If not, phone service has not been provisioned on that line.
- If it is blinking, there is a phone off hook somewhere in the house. Find that phone and hang it up.
- If it is lit, go to the next step.
- Is the phone plugged directly into the cable modem?
- Make sure the phone is plugged into the port on the back of the cable modem labeled "Tel 1/2" for line 1, and "Tel 2" for line 2.
- If so, try a different phone. Make sure the new phone is a working phone.
- If a known good phone is used and you still don't have dial tone, try a different phone cable. If a new phone and cable do not restore dial tone, possible provisioning issue.
- Is the cable modem plugged into the existing telephone wiring?
- If so, unplug the RJ-11 connector at the back of the cable port and plug in a known working phone. If you now have dial tone, the problem is with the existing wiring.
- If you still do not have dial tone, troubleshoot.

Installation

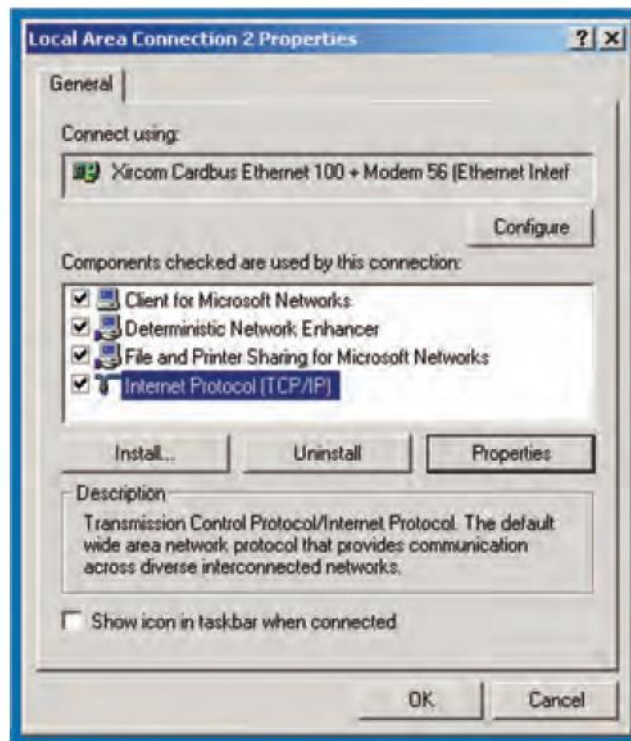
Verification of TCP/IP Addresses

TCP/IP Configuration for Windows 2000

Note: Dialog boxes shown on your computer may differ slightly from those shown in this procedure.

1. From the computer, select Start > Settings > Network and Dial-up Connections > Local Area Connection.
2. In the Local Area Connections Properties window, highlight TCP/IP by clicking on it one time, then click on Properties.

Note: If your computer has more than one Ethernet card, you may have to select the appropriate Ethernet card in the Connect using: area of the Local Area Connection Properties window.



3. Click Obtain an IP address automatically and Obtain DNS server address automatically and click OK.
4. Click OK to accept the new settings, and OK again to close the Configuration window.
5. You may have to restart your computer in order for your computer to obtain a new IP address from the network.

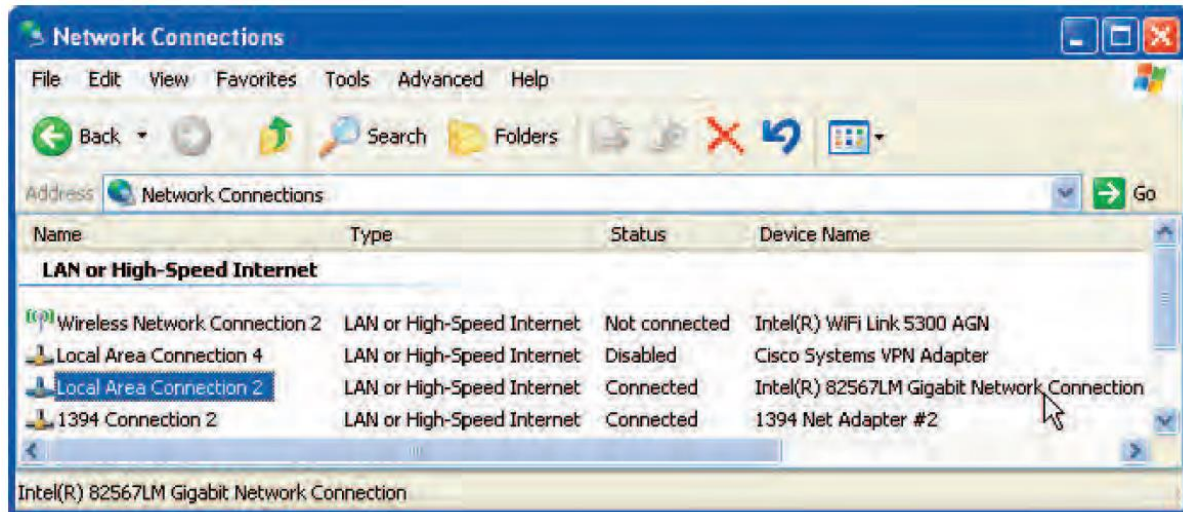
Installation

TCP/IP Configuration for Windows XP

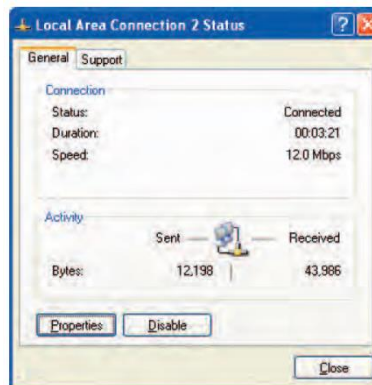
Note: Dialog boxes shown on your computer may differ slightly from those shown in this procedure.

1. From the computer, select Start > Settings > Control Panel and double click Network Connections in the Control Panel.

The Network Connection window displays a list of LAN connections and associated network adapters.

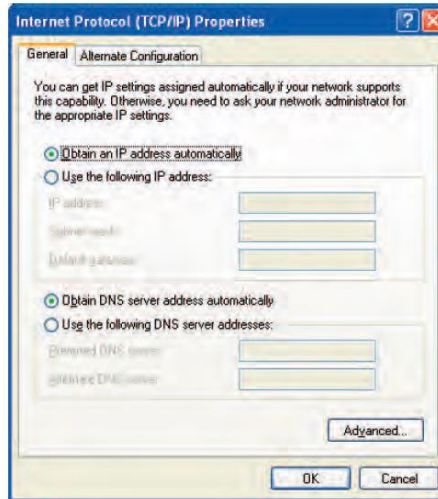


2. Double-click the local area connection to be used for your device's network connection. The Local Area Connection Status window displays.



3. Click Properties.
4. Select TCP/IP by clicking it one time. Then click Properties.
5. Click the General tab. Then click Obtain an IP address automatically and click OK.

Installation



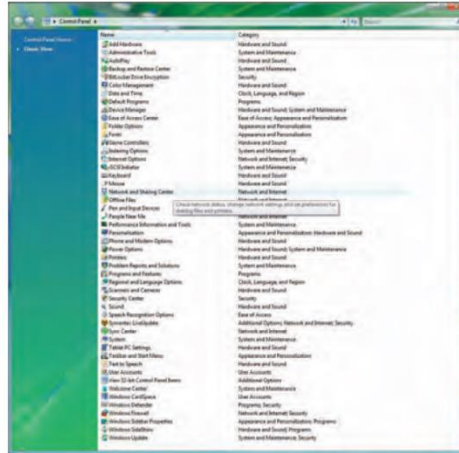
6. Click OK to accept the new settings, and OK again to close the Properties window.
7. You may have to restart your computer in order for your computer to obtain a new IP address from the network.

Installation

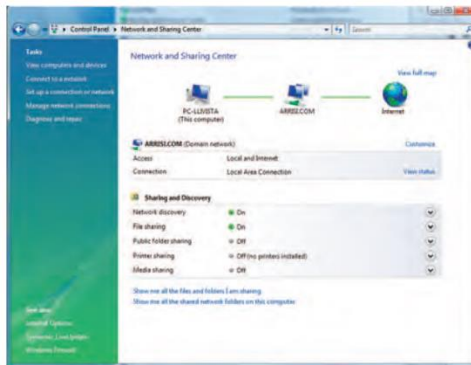
TCP/IP Configuration for Windows Vista

Follow these steps to configure the Ethernet interface on a Windows Vista operating system.

1. Open the Vista Control Panel.

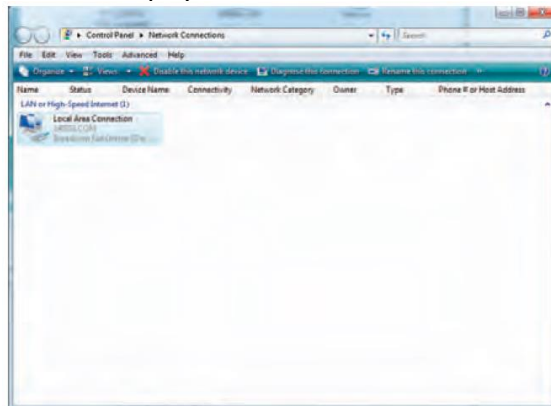


2. Double-click **Network and Sharing Center** to display the Network and Sharing Center Window.



3. Click **Manage network connections**. If prompted for a connection, choose **Local Area Connection**.

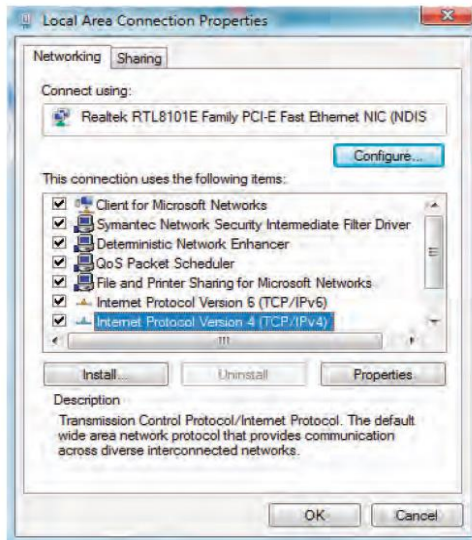
The Network Connections window displays.



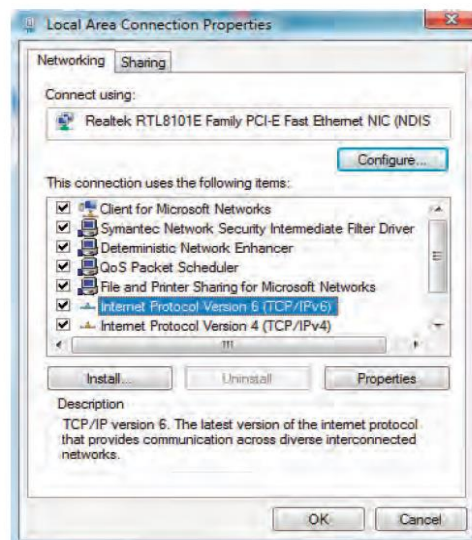
Installation

4. Double-click the **Local Area Connection** to open the Properties window:

Note: If Windows requests permission to continue, click **Continue**.



TCP/IPv4 Selected

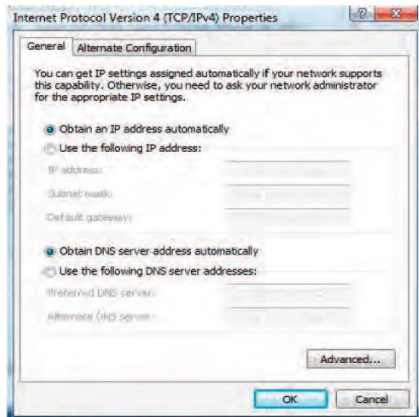


TCP/IPv6 Selected

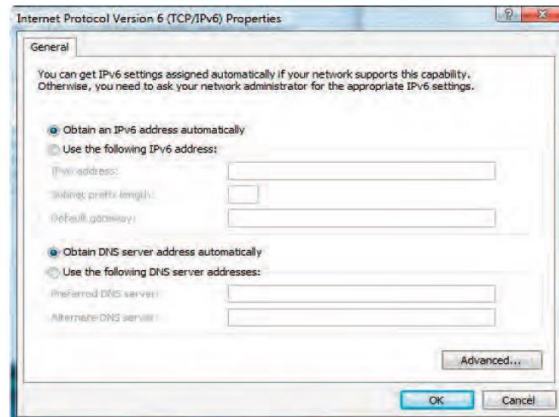
5. Double-click **Internet Protocol Version 4 (TCP/IPv4)** to configure TCP/IPv4.

Note: If your cable provider requires TCP/IP version 6, double-click **Internet Protocol Version 6 (TCP/IPv6)** to configure TCP/IPv6.

The TCP/IP properties window for the version you selected displays.



TCP/IPv4 Properties



TCP/IPv6 Properties

6. For either TCP/IPv4 or TCP/IPv6, select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, unless instructed otherwise by your cable provider.

7. Click **OK** to accept the new settings and close the Properties window.

Installation

TCP/IP Configuration for Windows 7

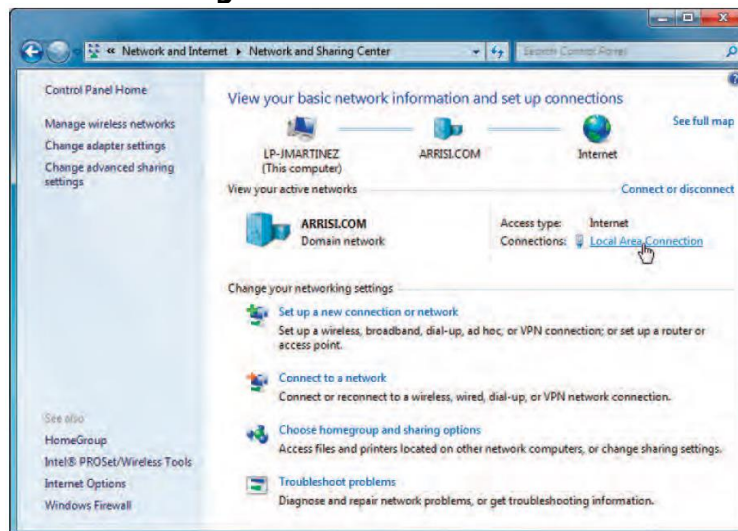
1. Open the Windows 7 Control Panel.



2. Click **Network and Internet**.

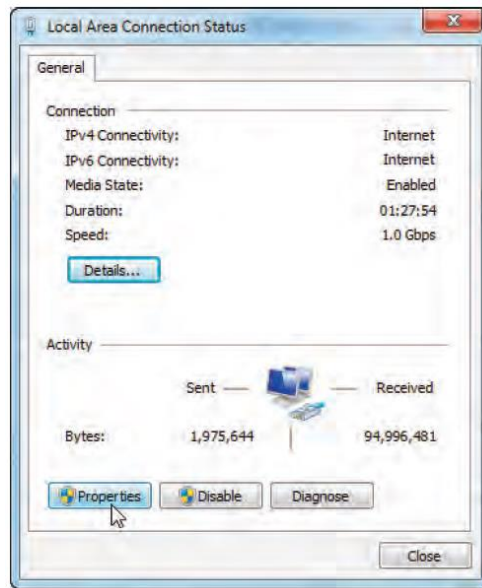


3. Click **Network and Sharing Center**.

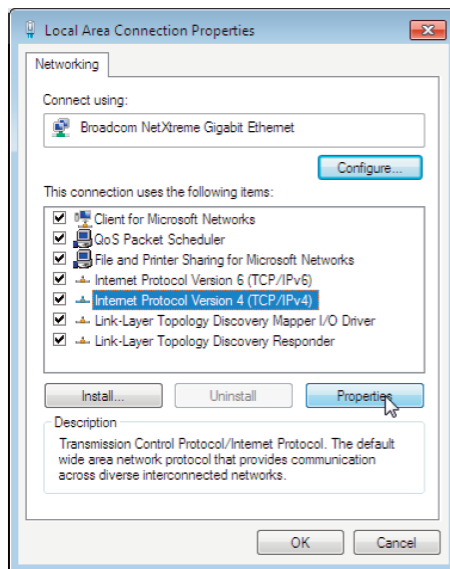


Installation

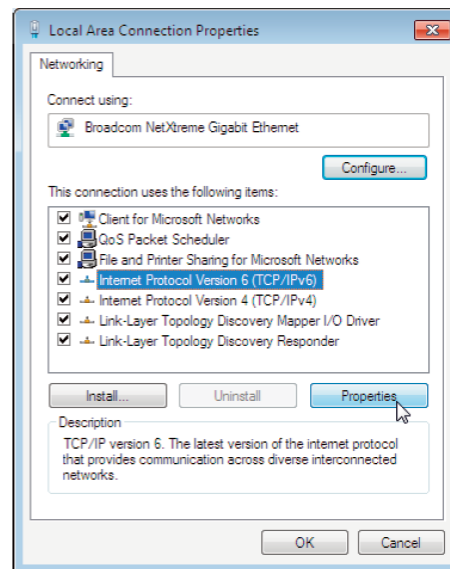
4. Click **Local Area Connection** to open the Status window.



5. Click **Properties** to open the Properties window.



TCP/IPv4 Selected



TCP/IPv6 Selected

Installation

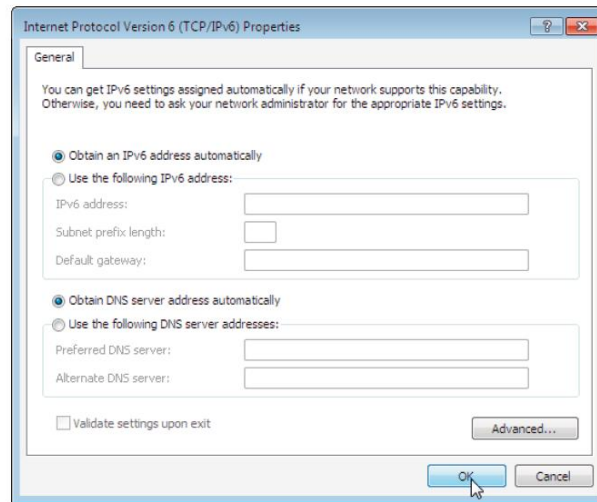
6. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties** to configure TCP/IPv4.

Note: If your cable provider requires TCP/IP version 6, select **Internet Protocol Version 6 (TCP/IPv6)** and click **Properties** to configure TCP/IPv6.

The TCP/IP properties window for the version you selected displays.



TCP/IPv4 Properties



TCP/IPv6 Properties

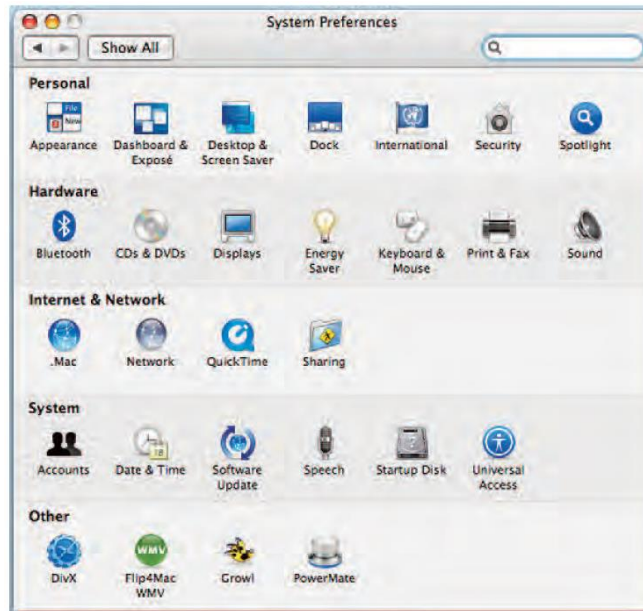
7. For either TCP/IPv4 or TCP/IPv6, select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, unless instructed otherwise by your cable provider.
8. Click **OK** to accept the new settings and close the Properties window. Then click **Close** to back out of the remaining setup screens.

Installation

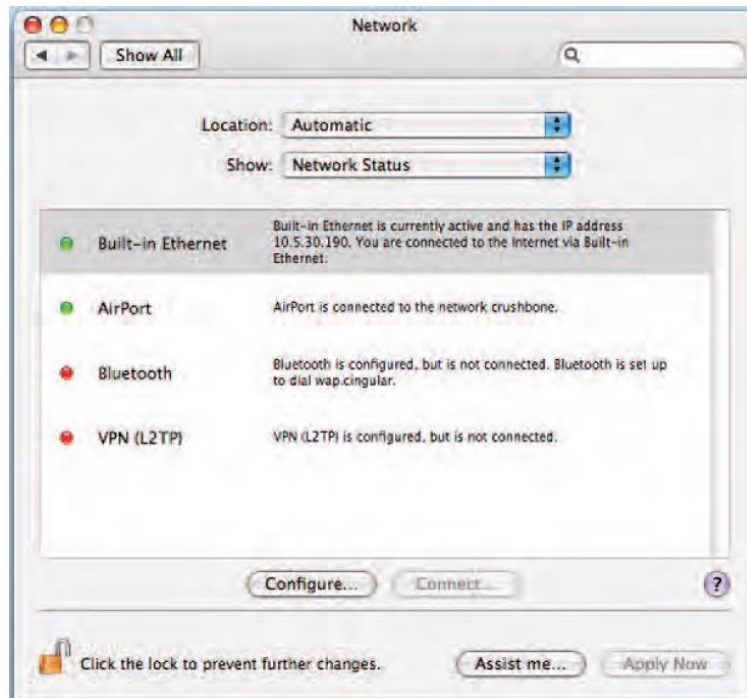
TCP/IP Configuration for MacOS X

Follow these steps to configure the Ethernet interface on a MacOS X operating system.

1. Open System Preferences, either by choosing System Preferences from the Apple menu or by clicking the System Preferences icon in the dock.

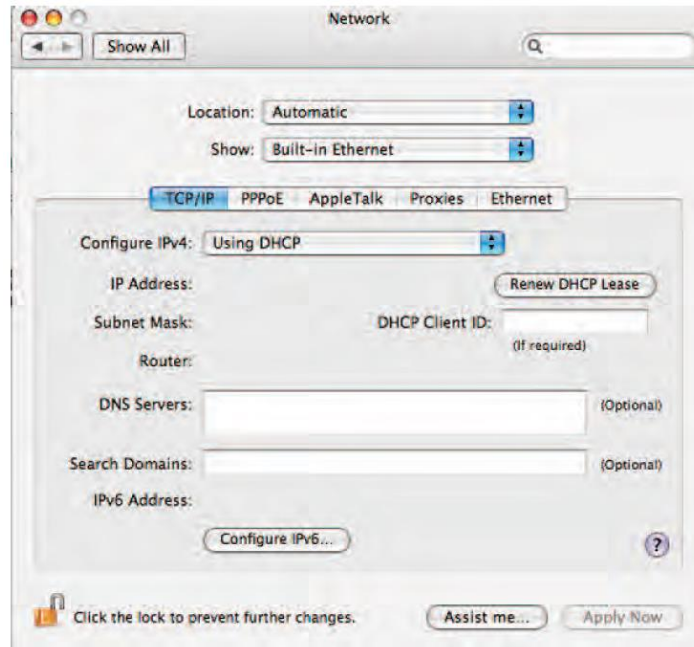


2. Click the **Network** icon.



Installation

3. Choose **Automatic** from the Location drop-down menu, and **Built-in Ethernet** from the Show menu.



4. Choose the TCP/IP tab, if necessary.
If you are using **TCP/IPv4**, go to **step 5**.
If your cable provider requires **TCP/IPv6**, go to **step 8**.
5. Choose **Using DHCP** from the Configure IPv4 menu.
6. If necessary, click the **Renew DHCP Lease** button.
7. Close the System Properties application.
TCP/IPv4 configuration is completed.
8. If you are using **TCP/IPv6**, click Configure IPv6 near the bottom of the previous window.
9. Choose **Automatically** from the Configure IPv6 drop-down menu and click **OK**.
10. Close the System Properties application.

Installation

Cable Modem RF Signal Requirements

Signal Measurements

Check the signals at the tap, at the entrance or ground block, and at the modem using a signal level meter. In addition to the forward power level, check the signal frequency. The meter must be programmed to measure up to 750MHz. The forward acceptable frequency levels are specific to the area of operation. It is very important to record all signal levels throughout the channel range on the work order.

Acceptable RF Ranges

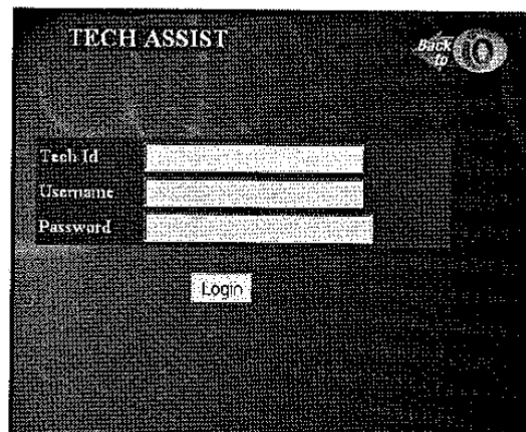
The acceptable forward levels for a cable modem are +10 dBmV to -10 dBmV. The optimum signal level is 0 dBmV.

A return signal that is too high (return signal too hot) can cause cable modem communication problems and may interfere with cable telephony, digital video and other cable modem operation.

Tech Assist: House Health Check (HHC)

Use the Tech Assist: HHC site to poll the account and view signal information. The URL to access the site is as follows:

<https://techassist.cablevision.com>



Check Field Comm.; password changes once a month.

Installation

RF Troubleshooting at the Customer Site

There are several troubleshooting techniques at the customer site that may eliminate common modem problem calls. Inspect the customer's cable wiring from the tap to the modem using the same inspection criteria as a video problem. Check for the following:

Sub-filters

- Orange-coded sub-filters are designed to block noise in the 14 to 40 MHz range. In some areas, the return signal frequency falls within the filter range. Orange-coded sub-filters should be removed.

Use an amp clamp at the ground block

- Improper grounding or customer wiring polarity problems can cause loss of connectivity.
A bad ground results in a meter reading of 0.

Modem should be connected off the first splitter.

If the modem is connected off a second or third split, the power loss through the splitter that may result is unacceptable forward and return signal power at the modem. If the modem wire is connected to a 3-way splitter, the modem wire should be connected to the 3.5 dB leg.

Modem wiring

The cable wiring to the modem should be RG-6 (6u) cable wire. Experience has shown that RG-59 cable wire is not shielded as well as RG-6 (6u) cable wire.

Check for loose fittings

Loose fittings can cause a loss of modem connectivity. Loose fittings can be identified and located by performing a CLI check.

Inspect fittings

It is important that the cable wire conductor is not scored. The higher frequencies used in cable modem communication actually ride on the outer layers of the conductor (further from the conductor center). Use a cable prep tool to make up fittings. Inspect the conductor for nicks and scoring prior to crimping the connector. The modem signal can be degraded or interrupted by nicks or scoring on the conductor.

Check for house amplifiers

Amplifiers tend to increase system noise on the return signal. Unacceptable amps (such as Radio Shack® amps) must be removed. Prior to replacing an unacceptable amp, check the signals throughout the home to see if the amp is still necessary. Typically, systems handling Optimum Online do not require amplifiers in the customer's home. If needed, the amplifier should be installed after splitting to the modem. Only amps provided by Cablevision are acceptable and should only be installed in accordance with CTS policy.

Compare the modem MAC address on the Work Order to the MAC address on the modem

If the MAC address on the Work Order does not match the MAC address on the modem, the modem may be bricked. Write the MAC address found on the modem on the Work Order, and contact Dispatch.

Installation

RF Return Troubleshooting Procedures

Return Injection Levels

Testing the return signal is critical to proper modem operation. The process of testing the return signal can isolate a problem to the system or to the customer's home. A Return Carrier Generator (RCG) is used to test the return signal. There are various manufacturers and models of RCG units issued to technicians.

The return signal should first be tested at the tap. It is important to determine the test signal power before testing the return signal. If a high-test signal (overdriving the signal) is used, other modem, telephony, and headed components could be seriously affected.

The value of 17 dBmV is the minimum level needed by the first active on the return. Ideally, the RCG signal should be between 30 and 55 dBmV, greater than 55 dBmV will overdrive the system. The table below can be used to determine the return injection level.

| RETURN INJECTION LEVELS | |
|-----------------------------|---------------|
| TAP VALUE | CARRIER LEVEL |
| 27 8-way | 44 dBmV |
| 24 8-way | 41 dBmV |
| 21 8-way | 39 dBmV |
| 18 8-way | 37 dBmV |
| 15 8-way | 36 dBmV |
| 12 8-way | 35 dBmV |
| | |
| 26 4-way | 43 dBmV |
| 23 4-way | 40 dBmV |
| 20 4-way | 38 dBmV |
| 17 4-way | 36 dBmV |
| 14 4-way | 35 dBmV |
| 11 4-way | 34 dBmV |
| 8 4-way | 33 dBmV |
| 8 4-way, w/inline equalizer | 42 dBmV |



A general value of 40 dBmV is a good overall number to use.

The RCG should be padded, amplified, or adjusted (if adjustable) to provide the proper signal power level. Prior to any test, check the output of the signal generator with the SLM meter.

Installation

Computer Troubleshooting

If a computer is unable to connect to a network

Verify that the network cable is properly connected to the back of the computer. In addition when checking the connection of the network cable, ensure that the LED's on the network are properly illuminated. For example, generally a network card with a solid green LED or light indicates that the card is either connected or receiving a signal.



Generally when the green light is flashing, this is an indication of data being sent or received.

If the card does not have any lights or has orange/red lights, it is possible that either the card is bad, the card is not connected properly or that the card is not receiving a signal from the network.

Users who are using Windows 95, 98, XP, or ME, 2000 verify that device manager has no conflicts or errors.

If your computer network utilizes a firewall, ensure that all ports required are open. If possible close the firewall software program or disconnect the computer from the firewall to ensure it is not causing the problem.

In some cases it may take a computer some additional time to detect or see the network. After booting the computer you are unable to see the network give the computer 2-3 minutes to detect the network.

Installation

Release and Renew IP Address

If the proper lights are solid on the cable modem but no connection to the Internet can be established, the IP address may need to be released and renewed. IP addresses may need to be released and renewed if the IP address has expired and/or when the computer attached to the modem changes. Depending on which OS you are using, the steps vary. Use the steps listed below:

For Windows XP/NT/2000 only

1. Click on the **Start** button, and select **Run**.
2. When the **Run** pop-up box appears, type **cmd** in the text field and click **OK**.
3. The **Command Prompt** box will now appear. Here you will type **ipconfig/release** and press **Enter**.
4. Next, you will type **ipconfig/renew** and press **Enter**. Numbers will replace the zeros.
5. Type **Exit** and press **Enter** to return to your desktop.
6. Open your **Internet Browser**.

For Windows 95/98/ME:

1. Click on **Start**.
2. Click on **Run**.
3. Type **winipcfg** in the text box, and click **OK**.
4. Click on the **down arrow**, and select your adapter (**USB or Ethernet/NIC**).
5. Click **Release**, then **Renew**. Numbers will replace the zeros.
6. Click **OK**, and then open your **Internet Browser**.

For Macintosh:

From your desktop:

1. Click on the **Apple Menu**, then **Control Panel**, then **TCPIIP**.
2. Click the **Options** key.
3. Make **TCP/IP** inactive and click **OK**.
4. Close out the **TCPIIP** and save the changes.
5. Go to the back of the cable modem and pull out the power cord.
6. After 30 seconds, plug back in the power cord.
7. Wait for the solid green lights to go on. (This may take up to 5 minutes.)
8. Click on **Apple Menu**, then **Control Panel**, then **TCP/IP**.
9. Make **TCP/IP** active and click **OK**.
10. Close **TCP/IP** and save the changes.
11. Start your Internet Browser.



Sometimes the previous process can be avoided by first powering the modem, waiting for it to initialize, wait for the proper lights to go on and then turn the computer on.

Installation

Computer Is Trying To Dial Out Instead Of Using the Cable Modem Connection

Some times when a customer was using a dial-up Internet service, then is installed with a cable modem, the connection setting might need to be changed. What happens is the computer tries to connect to the Internet through the dial-up modem instead of realizing it is now on a network via cable mode.

Following the instructions below to change the settings:

For Windows 95/98/ME/Windows NT Workstation/Windows 2000 Professional:

From your desktop:

1. Click the **Start** button.
2. Highlight **Settings**.
3. Click on **Control Panel**.
4. Double click on the **Internet** or **Internet Options** icon.
5. Click on **Connection** tab.
6. Make sure the following is selected:

Never dial a connection or connect to the Internet using a Local Area Network.

7. Click **OK**.
8. Close the **Control Panel**.
9. Open **Browser**. You should not be prompted for a dial-up connection.

For Windows XP only:

From your desktop:

1. Click the **Start** button then click on the **Control Panel**.
2. Once the **Control Panel** opens, click on **Network and Internet Connections**.
3. Select **Internet Options**.
4. Click on the **Connections** tab then click the **Setup** button.
5. This will launch the **New Connection Wizard**, which will walk you through the rest of your configurations.
6. The first screen is a welcome screen; simply click **Next**.
7. On the **Network Connection Type** screen select **Connect to the Internet** and click **Next**.
8. Click on the second option **Set up my connection manually** and click **Next**.
9. Select **Connect using a broadband connection that is always on** and click **Next**.
10. Click on **Finish** to complete the process. Close the control panel and open your Internet Browser. You should no longer be prompted for a dial-up connection.

Installation

PING Overview

PING Overview

The PING command is used to test TCP/IP connectivity. If you can PING another host or gateway, this proves you can communicate with it and that TCP/IP is configured correctly.

PINGing the Modem

If a customer's modem has all green modem lights yet cannot connect, you are going to PING the computer's IP address. PINGing a customer's computer only proves connectivity and modem communication. If an error message appears during the PING procedure, the computer has a software or hardware problem that should be addressed by basic network troubleshooting.

First, find out whether the customer is using Windows 95/98/Me or Windows NT/2000/XP (since the way to find the customer's IP address will be different for different operating systems). Ask the customer if he/she is running a computer network. If so, ask the customer to disconnect the computer from the network.

How Does the PING Function Work?

PING (Packet Internet Groper) sends a packet to a remote or local host, requesting an echo. If the echo is returned, the site is up. If the echo is not returned, it can indicate that either the site is down or there is some sort of network trouble along the way.

In an IP network, "PING" sends a short data burst - a single packet - and listens for a single packet in reply. Since this tests the most basic function of an IP network (delivery of single packet), it's easy to see how you can learn a lot from some 'PINGs'

PING places a unique sequence number on each packet it transmits and reports, which sequence numbers it receives back. Thus, you can determine if packets have been dropped, duplicated or reordered.

PING places a timestamp in each packet, which is echoed back and can easily be used to compute how long each packet exchange took- the Round Trip Time (RTT).

What can PING tell you?

- Network connectivity, can you talk to another device on the network?
- Problem with DNS
- Routing problem
- An extremely slow or congested network

Installation

Example of a PING result:

```
PING www.optonline.net (66.54.41.147): 5.6 data bytes
```

```
64 bytes from 66.54.41.147: icmp_seq=0 ttl=254 time=35.653 ms
64 bytes from 66.54.41.147: icmp_seq=1 ttl=254 time=28.797 ms
64 bytes from 66.54.41.147: icmp_seq=2 ttl=254 time=28.559 ms
64 bytes from 66.54.41.147: icmp_seq=3 ttl=254 time=39.533 ms
64 bytes from 66.54.41.147: icmp_seq=4 ttl=254 time=28.621 ms
64 bytes from 66.54.41.147: icmp_seq=5 ttl=254 time=28.159 ms

64 bytes from 66.54.41.147: icmp_seq=50 ttl=254 time=848.810 ms
64 bytes from 66.54.41.147: icmp_seq=51 ttl=254 time=828.579 ms
64 bytes from 66.54.41.147: icmp_seq=52 ttl=254 time=753.865 ms
64 bytes from 66.54.41.147: icmp_seq=53 ttl=254 time=778.202 ms
64 bytes from 66.54.41.147: icmp_seq=54 ttl=254 time=29.913 ms
64 bytes from 66.54.41.147: icmp_seq=55 ttl=254 time=220.931 ms
64 bytes from 66.54.41.147: icmp_seq=56 ttl=254 time=173.661 ms
64 bytes from 66.54.41.147: icmp_seq=57 ttl=254 time=144.990 ms
64 bytes from 66.54.41.147: icmp_seq=58 ttl=254 time=28.520 ms
```

Scenarios you will come across:

Dropped packets: An unfortunate fact of life. Detect them by noting when the sequence numbers skip and the missing number does not appear again later.

NOTE: Anything more than about 3% packet loss can be noticed while downloading or surfing.

Troubleshooting Intermittent Connectivity & Slow Response

At the command prompt or DOS prompt type as follows:

```
PING^www.optonline.net ^-|^1024^-n ^100 NOTE: ^ indicates a space below.
```

This command will send 100 packets to our web page and the packet size will be 1 Meg.

Or

```
PING^www.optonline.net^-|^1024^-t
```

This command will send packets to our web page with unlimited packets and packet size is 1 Meg. To stop the pinging, you will need to hold down the Ctrl + C keys on the keyboard.

Installation

Successful PING

```
C:\WINDOWS\system32\cmd.exe - ping www.optonline.net -l 1024 -n 100
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\JEFF>ping www.optonline.net -l 1024 -n 100

Pinging www.optonline.net [66.54.41.147] with 1024 bytes of data:

Reply from 66.54.41.147: bytes=1024 time=19ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=18ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=18ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=18ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=18ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=16ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=18ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=18ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
```

Unsuccessful PING

```
Pinging www.optonline.net [66.54.41.147] with 1024 bytes of data:

Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=18ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=20ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=17ms TTL=237
Request timed out.
Request timed out.
Request timed out.
Reply from 66.54.41.147: bytes=1024 time=38ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=38ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=47ms TTL=237
Reply from 66.54.41.147: bytes=1024 time=42ms TTL=237

Ping statistics for 66.54.41.147:
    Packets: Sent = 12, Received = 9, Lost = 3 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 17ms, Maximum = 47ms, Average = 28ms
Control-C
^C
```

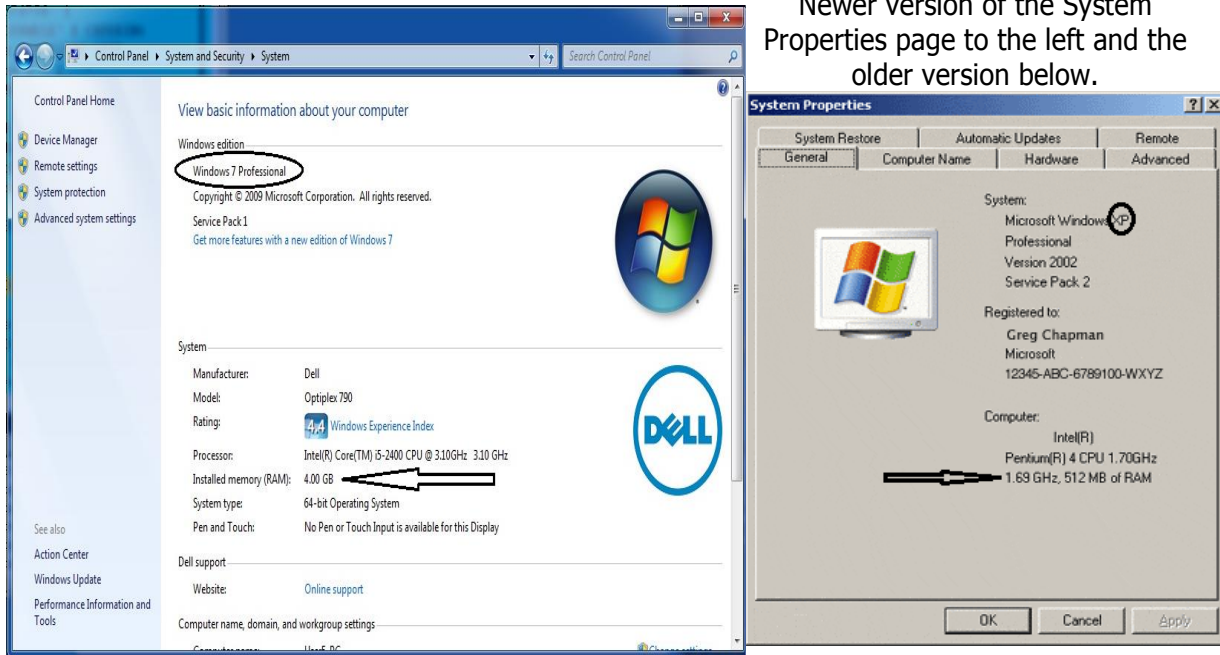
Installation


Determining the Version of Windows

It is important to determine the version of windows especially because of the different in the operating systems.

Follow these steps to determine the version of windows:

Click on my computer icon on your desktop with the right mouse button. Click Properties. In the "system properties" screen, look at the system information under the General tab (circled in the following screen image). The number following the words "Microsoft windows" will be "95," "NT," "XP," "Vista," or "8". This indicates your version of windows. Write this number on the blank form of the customer's checklist.



 This is also a good place to find the amount of RAM Memory that is installed on the computer.

Installation

Undetected Network Card

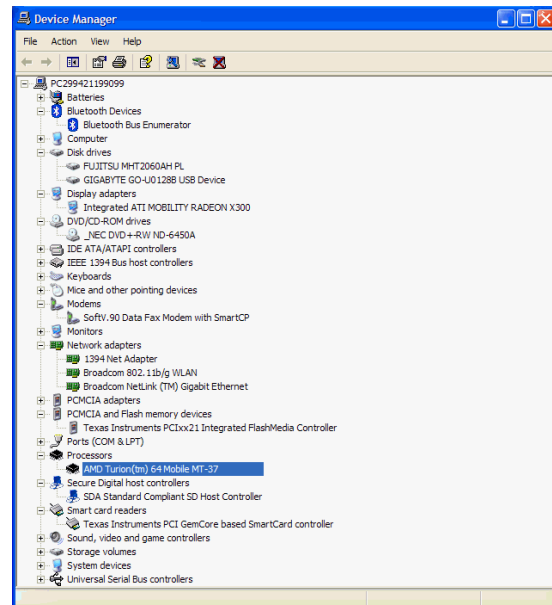
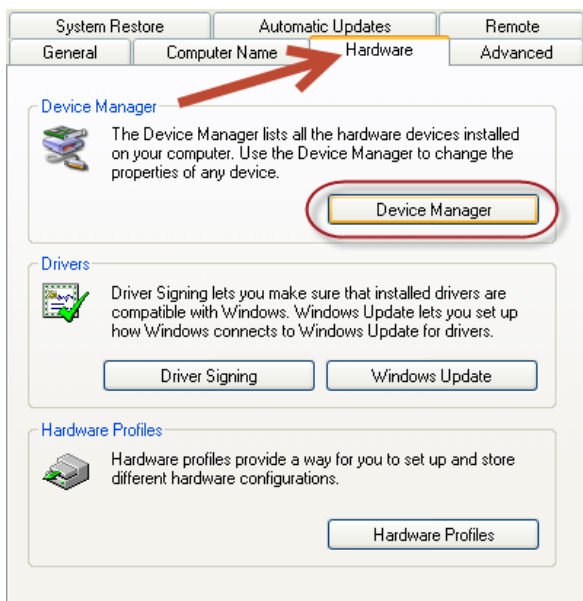
If the operating system is unable to find the installed network card it may be cause by an improperly installed, unseated or defective NIC card.

Install a Defective RJ-45 (Cat. 5) Cable Between the Modem and PC

A defective RJ-45 cable can cause the connection to fail between the Network card and the modem. Checking the link light on most Network cards and the modem can be helpful in troubleshooting this problem. Always be on the lookout for inferior or cheap RJ-45 cables.

Checking in Device Manager in Windows NT, 200 and XP:

- Click on my computer icon on your desktop with the right mouse button.
- Click **Properties**.
- Click the **Hardware** tab.
- Click on the **Device Manager** button.



Email Not Working

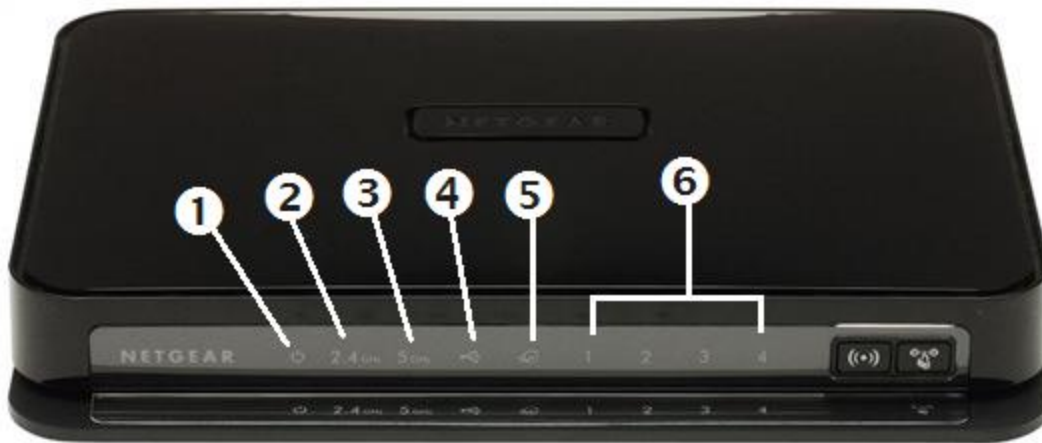
Improper setting of the email program is the most common cause of email failure. Some of the common causes are:

- Incorrect password
- Incorrect mail server name
- Incorrect setup for the email program
- Email account not set up on the Email Server

Installation

Wireless Router

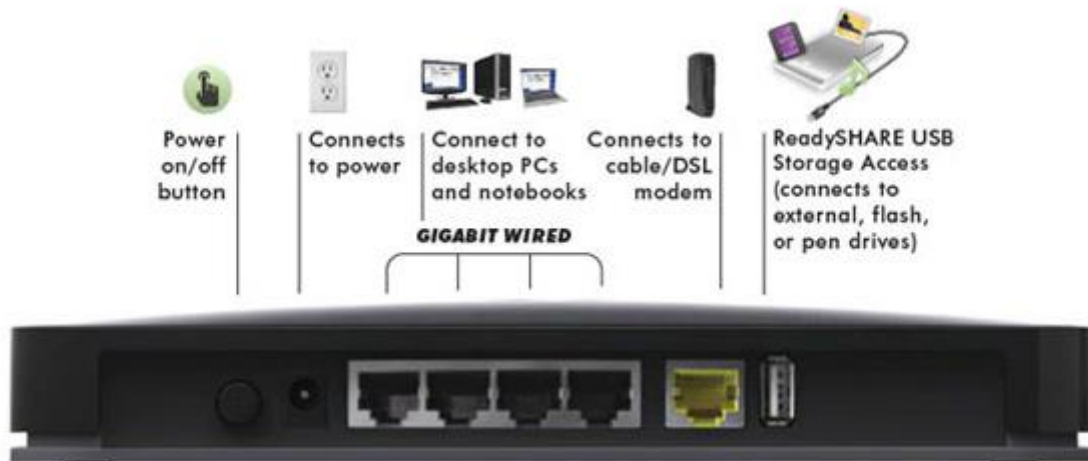
Wireless Router Front Panel



| Item | Function | Activity | Description |
|------|----------------|---------------------|---|
| 1 | Power | Solid Amber | The unit is starting up after being powered on. |
| | | Solid Green | The unit startup has completed; the unit is ready. |
| | | Blinking Green | Firmware is corrupted. See "Checking Basic Router Functions" for instructions on restoring your router firmware. |
| | | Blinking Amber | 1. Firmware is upgrading. 2. Restore factory settings button pressed; restoring factory default settings. |
| | | Off | Power is not supplied to the router. |
| 2 | 2.4 GHz | Off | The 11n mode at 2.4 GHz is off. |
| | | Solid Green | The unit is operating in 11n mode at 2.4 GHz. |
| | | Blinking Green | Data is being communicated over a wireless network. |
| 3 | 5.0 GHz | Off | The 11n mode at 5 GHz is off. |
| | | Solid Green | The unit is operating in 11n mode at 5 GHz. |
| | | Blinking Green | Data is being communicated over the wireless network. |
| 4 | USB | Off | No USB device is connected, or the "Safely Remove Hardware" button has been pressed and it is now safe to remove the attached USB device. |
| | | Solid Green | The USB device has been accepted by the Router and is ready to be used. |
| | | Fast Blinking Green | The USB device is in use. |
| 5 | Internet | Off | No Ethernet cable is connected to the modem. |
| | | Solid Amber | The Ethernet cable connection to the modem has been detected. |
| | | Blinking Amber | Initializing connection and obtaining an IP address. |
| | | Solid Green | An IP address has been received; ready to transmit data. |
| | | Blinking Green | Data is being transmitted and received. |
| 6 | LAN (Port 1-4) | Solid Green | The LAN port has detected a 1 Gbps link with an attached device. |
| | | Blinking Green | Data is being transmitted at 1 Gbps. |
| | | Solid Amber | The LAN port has detected a 10/100 Mbps link with an attached device. |
| | | Blinking Amber | Data is being transmitted at 10/100 Mbps. |
| | | Off | No link is detected on this port. |

Installation

Wireless Router Back Panel



| Item | Description |
|------|---|
| 1 | Power On/Off button |
| 2 | AC power adapter outlet |
| 3 | Four local (LAN) 10/100/1000 Mbps Ethernet ports for connecting the router to local computers. |
| 4 | An Internet (WAN) 10/100/1000 Mbps Ethernet port for connecting the router to a cable or DSL modem. |
| 5 | USB 2.0 port (backward compatible to USB 1.0/1.1) for attaching a USB storage device. |

Top Panel



The top of the wireless router includes a dome that performs two functions:

1. **Antenna display lights.** The lights identify the activity of the eight internal antennas, flashing to show which combination of antennas is receiving the strongest signals. These status lights are off by default but can be turned on.
2. **Push 'N' Connect (WPS), not applicable.** The dome acts as a push-button for the router to enable WPS security with other WPS-enabled devices. Pushing on the dome for over 5 seconds opens a 2-minute window for the router to connect with other WPS-enabled devices.

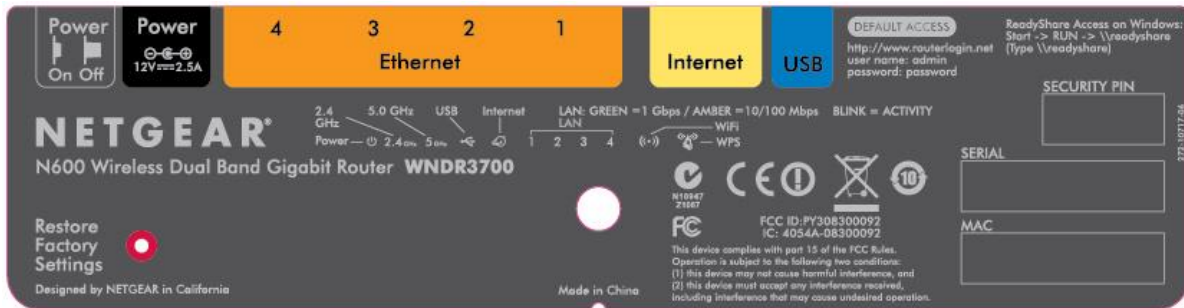
To turn the antenna display lights on or off:

Push the dome, then release. If lights are off, they will turn on.
Push the dome, then release. If lights are on, they will turn off.

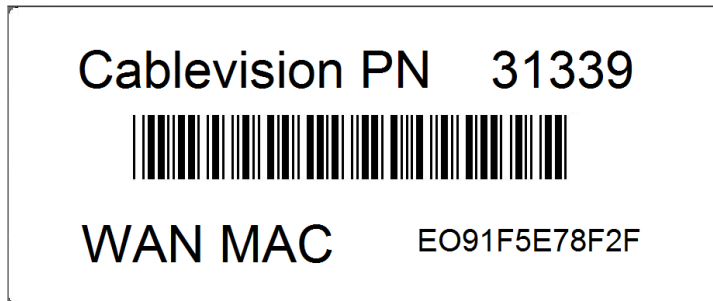
Installation

Wireless Router Label

The label on the bottom of the wireless router shows the MAC address, serial number and the security PIN.



The Cablevision label will be on the router box and have spares.



Installation

Positioning Your Wireless Router

The wireless router lets you access your network from virtually anywhere within the operating range of your wireless network. However, the operating distance or range of your wireless connection can vary significantly depending on the physical placement of your router. For example, the thickness and number of walls the wireless signal must pass through may limit the range. For best results, place your router:

- Near the center of the area where your computers and other devices will operate, preferably within line of sight to your wireless devices.
- Accessible to an AC power outlet and near Ethernet cables for wired computers.
- In an elevated location such as a high shelf, keeping the number of walls and ceilings between wireless router and your other devices to a minimum.
- Away from electrical devices which are potential sources of interference, such as ceiling fans, home security systems, microwaves or the base for a cordless phone.
- Away from any large metal surfaces, such as a solid metal door or aluminum studs. Large expanses of other materials such as glass, insulated walls, fish tanks, mirrors, brick and concrete can also affect your wireless signal.
- Failure to follow these guidelines can result in significant performance degradation or an inability to wirelessly connect to the Internet.



Do not install this device on top of any other electrical equipment or install any other equipment on top of this device. Keep this device away from any heat sources such as direct sunlight, heaters, radiators or other A/V receivers or devices that emit heat.

Installation

Connecting the Wireless Router

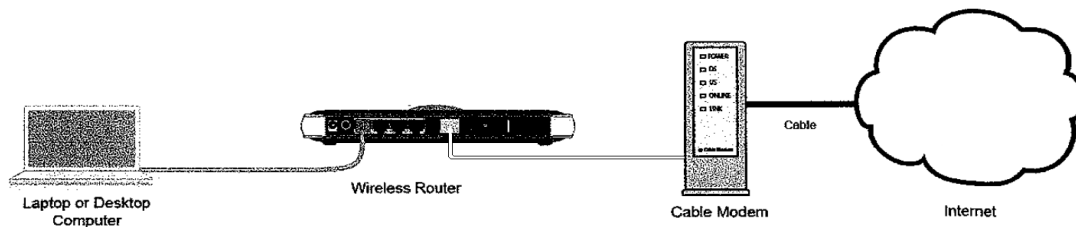


Before installing the wireless router, make sure that the online service has been provisioned and is working properly.

If you are replacing an existing router, disconnect it completely from the network and set it aside before starting to install the new router.

To connect the wireless router, the computer, and the modem:

1. Turn off and unplug the power to the cable modem.
2. Locate the Ethernet cable that connects the computer to the cable modem.
3. Disconnect the Ethernet cable at the cable modem end only.
4. Locate the Ethernet cable that came with the NETGEAR Wireless Router. Securely insert one end of the Ethernet cable into the modem and the other end into the Internet port of the wireless router. The Ethernet cable and the Internet port label are color coded.
5. Locate the Ethernet cable that is still attached to the computer. Securely insert the other end of the Ethernet cable into a port on the router, such as port 4, as shown below.



6. Connect any additional wired devices to the router by inserting an Ethernet cable from a device into one of the three remaining LAN ports.
7. Ensure that the network is now setup in the order shown in Figure above.
8. Start the network in the correct sequence, as described in "To start your network:" Failure to start or restart the network in the correct sequence could prevent you from accessing the Internet.

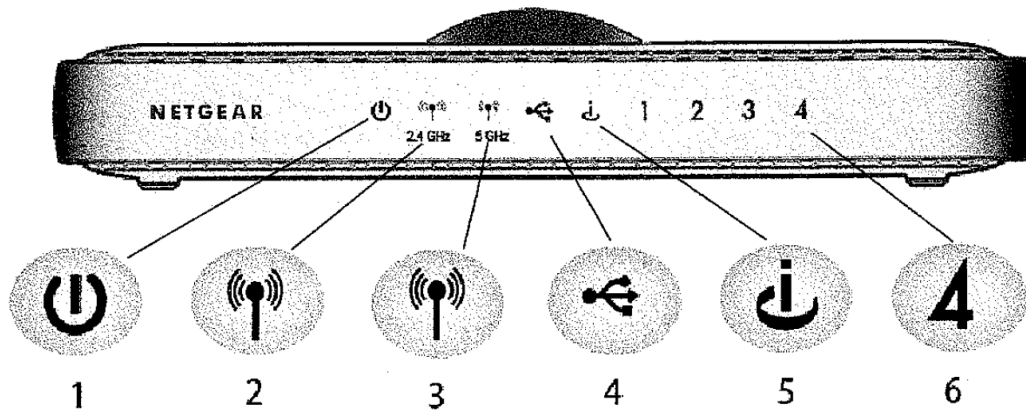
To Start the Network

1. Plug in the power of the cable modem. Wait for all the proper lights to come on.
2. Plug the end of the power adapter cord into the wall or a power strip, and insert the other end into the power adapter outlet of your wireless router.
3. Make sure that the Power button on the back of the router is in the power-on state. (The button is depressed when in power-on mode.) Wait 1 minute. Turn on the computer. It will take several minutes for the router to establish a connection with the computer and the Internet.
4. Verify that the router is connected correctly by checking the wireless router status lights (as shown on the next page.)

Installation

Verifying the Wireless Router Connection

Verify that the router is connected correctly by checking the wireless router status lights.



Check the wireless router status lights to verify the following:

- **Power:** The Power light **(1)** should turn solid green. If it does not, see "Checking Basic Router Functions" on page 31.
- **Operating Mode:** The 2.4 GHz N-Band light **(2)** should be on; the 5.0 GHz N-Band light **(3)** should be off.
- **USB:** The USB light **(4)** should be off if no USB device is connected; it will be solid green if a USB device is connected.
- **Internet:** The Internet port light (S) should be lit. If it is not, make sure that the Ethernet cable is securely attached to the wireless router Internet port and that the modem, and that the modem is powered on.
- **LAN:** A LAN light **(6)** should be lit. Green indicates that your computer is communicating at 100 Mbps; amber indicates 10 Mbps. If a LAN light is not lit, check that the Ethernet cable from the computer to the router is securely attached at both ends, and that the computer is turned on.

Setting Up the Router for Internet Access

Use the software to setup the wireless router.

Installation

Troubleshooting

Troubleshooting the Cable Modem

Follow standard cable modem troubleshooting procedure.

Troubleshooting Ethernet Cable

- Check Ethernet cable is properly connected to all devices
- Check Ethernet cable was properly made and not damaged
 - Use cable tester to wire connectivity and check pairs

Troubleshooting the Router

If you have difficulties accessing the Internet, use the Basic Troubleshooting Checklist below to make sure that the router is connected and set up correctly. If the basic setup is correct, then look for the problem in one of the subsequent sections.

Basic Troubleshooting Checklist

The following items are the most common errors made when initially setting up a router. Carefully review the checklist to make sure that the following recommended procedures were followed.

- Be sure to always start the network in this sequence:
 - Turn off and unplug the modem from the power outlet. Next, turn off the wireless router and computer.
 - Turn on the modem and wait for proper modem lockup.
 - Turn on the wireless router and wait 1minute.
 - Turn on the computer.
- Make sure the Ethernet cables are securely plugged in.
 - The Internet status light on the wireless router will be lit if the Ethernet cable to the wireless router from the modem is plugged in securely and the modem and wireless router are both turned on.
 - For each powered-on computer connected to the wireless router with a securely plugged-in Ethernet cable, the corresponding wireless router LAN port status light will be lit. The label on the back of the wireless router identifies the number of each LAN port.
- Make sure the network settings of the computer are correct.
 - LAN connected computer(s) must be configured to obtain an IP address automatically using DHCP.
- Check the router status lights to verify correct router operation.
 - If the Power light does not turn solid green within 2 minutes after turning the router on, reset the router according to the instructions in the wireless router manual.

Installation

Checking Basic Router Functions

After turning on power to the router, check that the following sequence of events has occurred:

1. When power is first applied, verify that the power light is on.
2. Verify that the power light turns amber within a few seconds, indicating that the self-test procedure is running.
3. After approximately 20 seconds, verify that:
 - Power light changes to green.
4. LAN port lights are lit for any local ports that are connected.
 - If a port's light 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 light is green.
 - If the port is 10 Mbps, the light will be amber.
5. Internet port is connected and its light is lit.