

## ❖ Setting Up the Wireless LAN

You can use the Motorola SBG1000 Wireless Cable Modem Gateway as an [access point](#) for an [IEEE 802.11b](#) wireless [LAN](#) without changing its default settings. This section describes:

- [Configuring a Unique Wireless Network Name](#) (see page 68)
- [Configuring Basic Wireless LAN Security](#) (see page 69)
- [Configuring Wireless Clients](#) (see page 70)
- [Wireless Pages in the SBG1000 Setup Program](#) (see page 70)

### Caution!



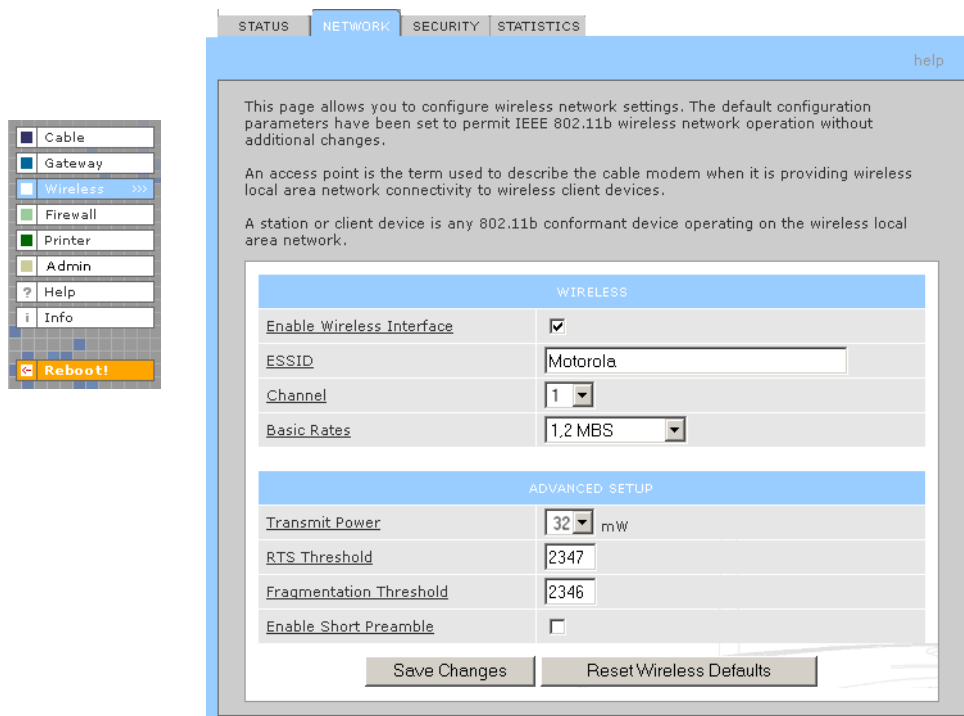
The default Wired Equivalent Privacy (WEP) Authentication setting *Disable WEP* provides no security for wireless data. After the wireless LAN is operational, be sure to configure WEP as described in "[Configuring Basic Wireless LAN Security](#)" on page 69.

## Configuring a Unique Wireless Network Name

All [clients](#) (stations) on the wireless LAN must have the same network name (ESSID) as the [access point](#) on the SBG1000. *You must configure the same ESSID on all IEEE 802.11b LAN clients.*

To configure the ESSID:

- 1 Start the SBG1000 Setup Program as described in [“Starting the SBG1000 Setup Program”](#) on page 32.
- 2 On the left frame, click **Wireless**.
- 3 Click the **NETWORK** tab to display:



The screenshot shows the SBG1000 Setup Program interface. On the left is a sidebar with navigation links: Cable, Gateway, **Wireless** (highlighted), Firewall, Printer, Admin, Help, and Info. At the bottom of the sidebar is a 'Reboot!' button. The main window has four tabs: STATUS, **NETWORK**, SECURITY, and STATISTICS. The NETWORK tab is active, displaying a 'WIRELESS' section with the following settings:

- Enable Wireless Interface:** ☒
- ESSID:** Motorola
- Channel:** 1
- Basic Rates:** 1.2 MBS

Below the WIRELESS section is an 'ADVANCED SETUP' section with the following settings:

- Transmit Power:** 32 mW
- RTS Threshold:** 2347
- Fragmentation Threshold:** 2346
- Enable Short Preamble:** ☐

At the bottom of the main window are two buttons: 'Save Changes' and 'Reset Wireless Defaults'.

- 4 In the ESSID field, type a *name*. It can be any alphanumeric, case-sensitive string up to 32 characters. The default is "Motorola." *Do not use the default ESSID.*
- 5 Click **Save Changes** to save your changes.

## Configuring Basic Wireless LAN Security

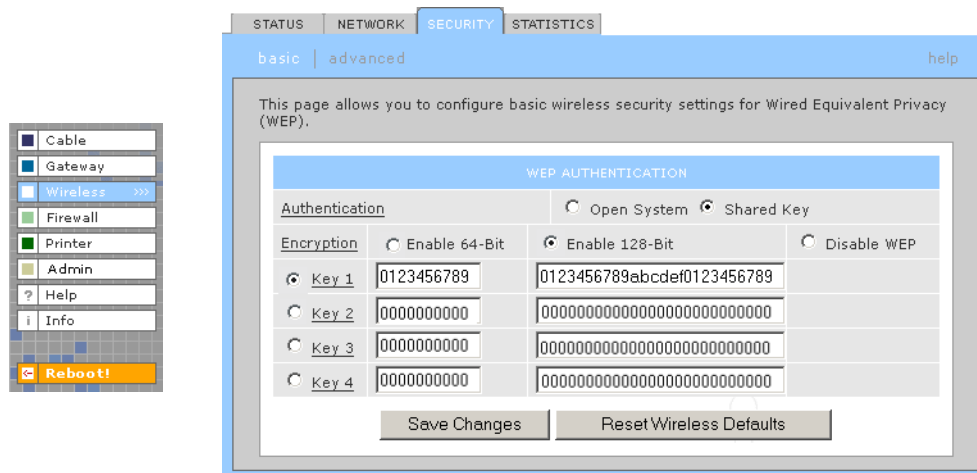
### Caution!



The default settings provide no security for wireless data. After the wireless LAN is operational, be sure to enable Shared Key Authentication and Wired Equivalent Privacy (WEP) encryption. You must configure the same WEP key on the SBG1000 [access point](#) and all wireless [clients](#) (stations).

To enable WEP and set the key on the SBG1000:

- 1 On the SBG1000 Setup Program left frame, click **Wireless**.
- 2 Click the **SECURITY** tab to display the Wireless > SECURITY — basic screen:



- 3 Set the following:

**Authentication** Sets whether shared key authentication is enabled to provide data privacy on the wireless LAN:

- Open System — Any wireless LAN [client](#) can transmit data to any other client without authentication. *Open authentication provides no security for transmitted data.*
- Shared Key — All data transmitted over the wireless LAN is [encrypted](#). The SBG1000 authenticates and transfers data to and from all clients having shared key authentication enabled and an identical WEP key.

*For optimal security, we recommend changing the WEP keys frequently.* The default is Open System.

**Encryption** Use a WEP key length that is compatible with your wireless client adapters. Choose *one* of:

- Enable 64-Bit — Use only if you have wireless clients that do not support 128-bit encryption
- Enable 128-Bit — The recommended setting for stronger encryption; supported by the Motorola PCC11b wireless card, USB11b wireless adapter, and most current wireless adapters
- Disable WEP — Recommended during network setup *only*

**Key 1 to Key 4** Sets the active WEP key. You can enter up to four 64-bit or 128-bit WEP keys containing the non-case-sensitive [hexadecimal](#) characters 0 to 9 and A to F. Only *one* key can be active:

- For 64-bit encryption, the key must be 10 characters long.
- For 128-bit encryption, the key must be 26 characters long.

- 4 If necessary, click Reset Wireless Defaults to reset the wireless defaults.

- 5 Click **Save Changes** to save your changes.

## Configuring Wireless Clients

For each wireless client computer (station), install the wireless client card or adapter — such as a Motorola PCC11b wireless card or Motorola USB11b wireless adapter — following the instructions supplied with the card or adapter.

Configure the card or adapter to obtain an IP address automatically. The Motorola PCC11b wireless card and Motorola USB11b wireless adapter are supplied with a client configuration program called Wireless Client Manager, which is installed in the Windows Startup group.

If Wireless Client Manager is running, the  icon is displayed on the Windows task bar. Double-click the icon to launch the utility.

To distinguish it from other nearby IEEE 802.11b wireless LANs, each wireless LAN is identified by a unique network name (also known as a network identifier or ESSID). When prompted for the network identifier, network name, or ESSID, type the *name* set in the ESSID field on the Wireless > NETWORK window in the SBG1000 Setup Program. For more information, see [“Configuring a Unique Wireless Network Name”](#) on page 68.

After you specify the network name, the wireless card or adapter automatically scans for an [IEEE 802.11b access point](#) such as the SBG1000 and the proper channel and data rate.

If shared key authentication is enabled and a WEP key is set on the SBG1000 as described in [“Configuring Basic Wireless LAN Security”](#) on page 69, you must enter the same WEP key on the wireless client. The SBG1000 cannot authenticate a client if:

- Shared key authentication is enabled on the SBG1000 but not on the client
- The client WEP key does not match the SBG1000 WEP key

### Caution!



*If shared key authentication is not enabled and no WEP key is set, there is no security for wireless data. You must configure the same WEP key on the SBG1000 and all wireless [clients](#).*

After you correctly set the network name and WEP key on the client computer, you should be able to use it to surf the Internet.

## Wireless Pages in the SBG1000 Setup Program

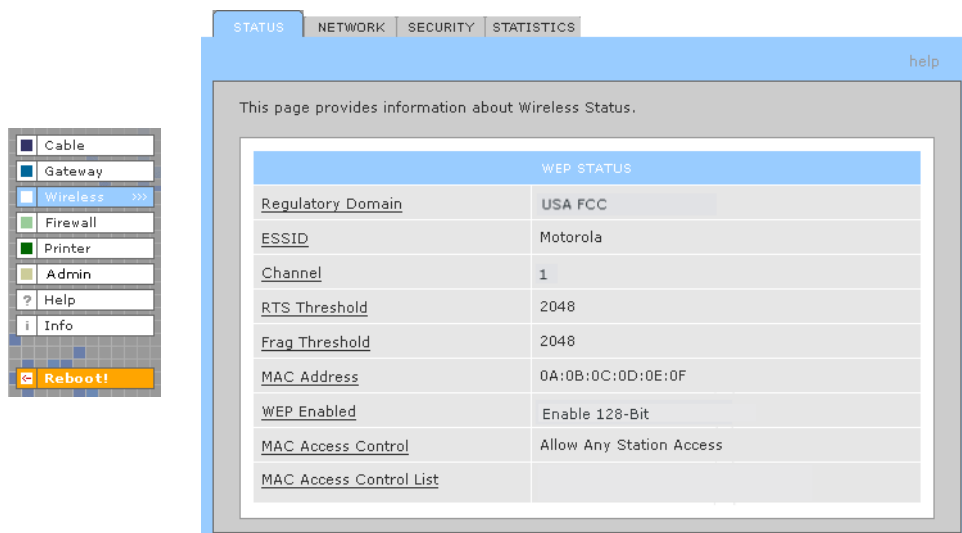
Use the Wireless pages to control and monitor the wireless interface:

- [Wireless > STATUS Page](#) (see page 71)
- [Wireless > NETWORK Page](#) (see page 72)
- [Wireless > SECURITY — basic Page](#) (see page 73)
- [Wireless > SECURITY — advanced Page](#) (see page 74)
- [Wireless > STATISTICS page](#) (see page 75)

*For some settings, after you edit the field and click Apply, you are warned that you must **Reboot** for your change to take effect. Rebooting takes 10 to 15 seconds. After rebooting, you must log-in again.*

## Wireless > STATUS Page

Use this page to view the wireless interface status.



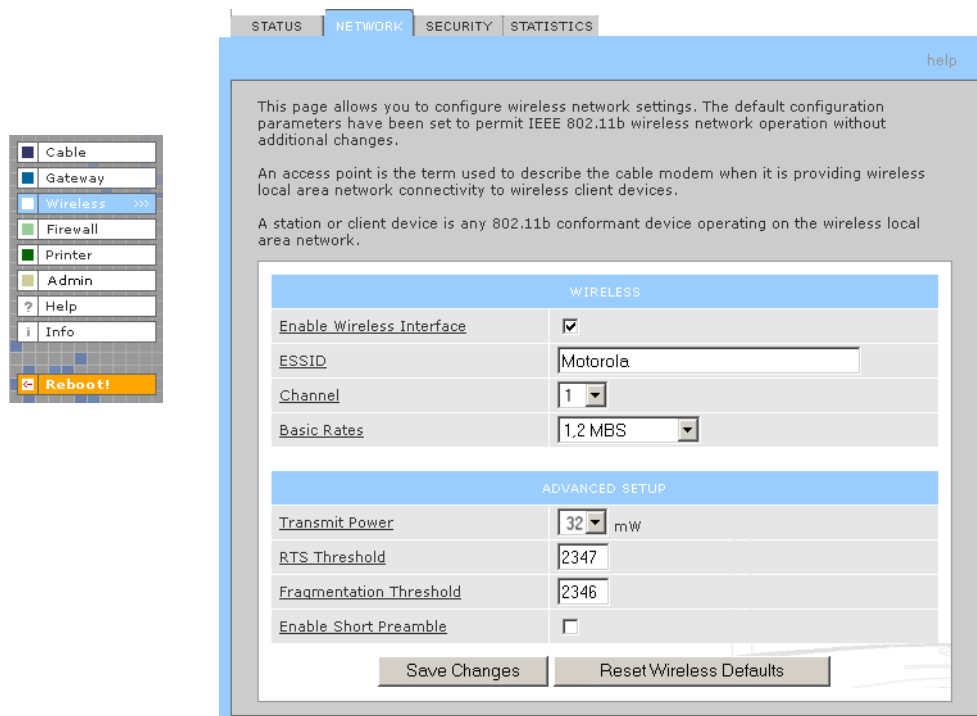
### Wireless > STATUS Page Fields

|                                |                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regulatory Domain</b>       | Indicates the country the SBG1000 is manufactured for. The list of channels depends on the country's standards for operation of IEEE 802.11b devices. Depending on the domain set at the factory, you may see FCC USA, Europe, Spain, France, Japan, or some other country name in this field.                                                                                        |
| <b>ESSID (Network Name)</b>    | Displays the network name set on Wireless > Network page. For more information, see <a href="#">"Configuring a Unique Wireless Network Name"</a> on page 68.                                                                                                                                                                                                                          |
| <b>Channel</b>                 | Displays the radio channel for the access point. If you encounter interference, you can set a different channel on the <a href="#">Wireless &gt; NETWORK Page</a> (see page 72).                                                                                                                                                                                                      |
| <b>RTS Threshold</b>           | Displays the RTS Threshold set on the <a href="#">Wireless &gt; NETWORK Page</a> .                                                                                                                                                                                                                                                                                                    |
| <b>Fragmentation Threshold</b> | Displays the Fragmentation Threshold set on the <a href="#">Wireless &gt; NETWORK Page</a> .                                                                                                                                                                                                                                                                                          |
| <b>MAC Address</b>             | Displays the SBG1000 MAC address.                                                                                                                                                                                                                                                                                                                                                     |
| <b>WEP Enabled</b>             | Displays the type of Wired Equivalent Privacy (WEP) that is enabled. For more information, see <a href="#">"Configuring Basic Wireless LAN Security"</a> on page 69.                                                                                                                                                                                                                  |
| <b>MAC Access Control</b>      | Displays the state of MAC access control setting. It is set on the <a href="#">Wireless &gt; SECURITY — advanced Page</a> (see page 74). <ul style="list-style-type: none"> <li>Allow Listed — Only IEEE 802.11b stations in the MAC access control list can access the wireless LAN.</li> <li>Allow Any Station Access — Any 802.11b station can access the wireless LAN.</li> </ul> |
| <b>MAC ACCESS CONTROL LIST</b> | Displays the <a href="#">MAC addresses</a> of wireless clients having access. The list is set on the <a href="#">Wireless &gt; SECURITY — advanced Page</a> .                                                                                                                                                                                                                         |

## Wireless > NETWORK Page

Use this page to configure wireless LAN settings.

You can use the Motorola SBG1000 Wireless Cable Modem Gateway to operate an IEEE 802.11b wireless LAN without changing its default settings.



### Wireless > NETWORK page fields

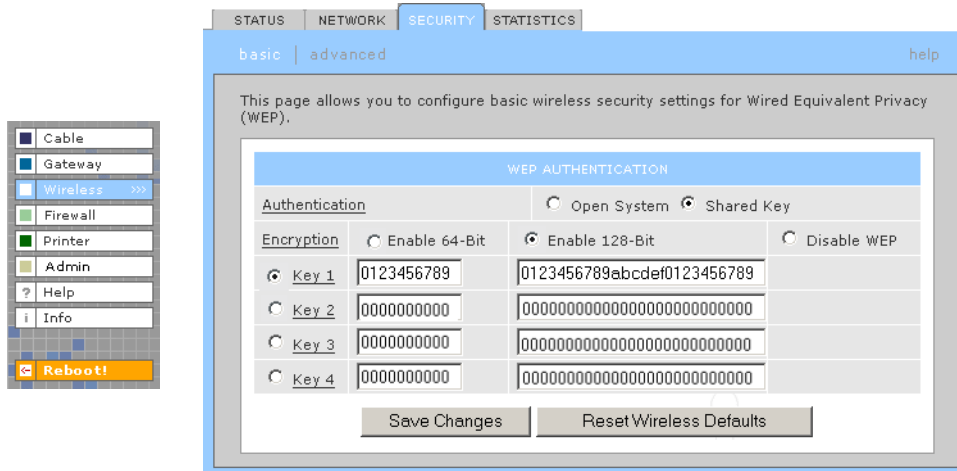
| Field                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Wireless Interface</b> | Check this box to enable the wireless interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>ESSID</b>                     | Sets a unique identifier to associate wireless clients with the SBG1000 access point. This distinguishes between multiple wireless LANs in the same area. All clients on wireless LAN must have the same Network Name as the access point. It can be any alphanumeric, case-sensitive string up to 32 characters. The default is "Motorola." <i>We strongly recommend not using the default.</i>                                                                                                                                                                                                                         |
| <b>Channel</b>                   | Sets the wireless radio channel. You can change the channel if you encounter interference on the default channel. The default is 1 (one), except in countries where the first channel permitted for IEEE 802.11b wireless operation is not one.                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Basic Rate</b>                | <p>Sets the wireless data transmission rates that all wireless LAN clients must be able to receive:</p> <ul style="list-style-type: none"> <li>• 1, 2 Mbps. The SBG1000 attempts to transmit at 2 Mbps. Use this setting if the wireless LAN has only legacy IEEE 802.11b clients.</li> <li>• 1, 2, 5.5, and 11 Mbps. The SBG1000 attempts to transmit at 11 Mbps. If there are obstacles or interference, it automatically steps down to the highest rate that allows transmission. Use this setting if the wireless LAN has fully-compliant IEEE 802.11b clients.</li> </ul> <p>The default is 1, 2, 5.5, 11 Mbps.</p> |

## Wireless > NETWORK page fields (continued)

| Field                          | Description                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transmit Power</b>          | Sets the transmit power on the SBG1000 wireless access point — 1, 2, 5, 10, 25, 50, or 100 mW. The default is 32 mW. Transmit power control is an optional IEEE 802.11b feature.                                                                                                                                                                                                                                         |
| <b>RTS Threshold</b>           | The Request To Send Threshold sets the packet size at which the access point issues an <a href="#">RTS</a> before sending the packet. A low RTS can help when many clients are associated with the SBG1000 or when the clients are far apart and can detect the SBG1000 but not each other. The value can be 0 to 2347 bytes. The default is 2347.                                                                       |
| <b>Fragmentation Threshold</b> | Sets the size at which packets are fragmented (sent as several packets instead of as one packet). A low Fragmentation Threshold can help when communication is poor or when there is a significant interference.<br>The default is 2346. The value can be 256 to 2346 bytes.                                                                                                                                             |
| <b>Enable Short Preamble</b>   | Short preamble can improve throughput when the SBG1000 access point and associated clients operate at 2, 5.5, or 11 Mbps. If you enable short preamble, be sure all wireless clients also support short preamble. Short preamble is an optional IEEE 802.11b feature that is useful if maximum throughput is important and interoperability with legacy IEEE 802.11b equipment is not required. The default is Disabled. |

## Wireless > SECURITY — basic Page

Use this page to configure basic Wired Equivalent Privacy (WEP) settings.



### CAUTION!



The default Authentication setting of Disable WEP provides no security for transmitted data.

For information about using this page, see [“Configuring Basic Wireless LAN Security”](#) on page 69.



## Wireless > SECURITY — advanced Page

Use this page to configure advanced wireless security settings.

STATUS NETWORK **SECURITY** STATISTICS

basic | advanced help

This page allows you to configure advanced wireless security settings.

☐ Closed Network

MAC ACCESS CONTROL LIST

☒ Allow Any Station Access  
☐ Allow Only Listed Stations Access

Apply

| # | Listed Stations   | Delete                          |
|---|-------------------|---------------------------------|
| 1 | 01:02:03:04:05:A1 | <input type="checkbox"/> delete |
| 2 | 01:02:03:04:05:A2 | <input type="checkbox"/> delete |
| 3 | 01:02:03:04:05:A3 | <input type="checkbox"/> delete |
| 4 | 01:02:03:04:05:A4 | <input type="checkbox"/> delete |

Delete

ADD NEW STATION

New Station

Add Station

### Wireless > Security — ADVANCED page fields

| Field or Button                   | Description                                                                                                                                                                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Closed Network</b>             | If you enable closed network operation, only wireless <a href="#">clients</a> configured with the Network Name can associate with the SBG1000. Closed network operation is a SBG1000 enhancement to IEEE 802.11b. The default is Disabled. |
| <b>MAC ACCESS CONTROL LIST</b>    | The MAC access control list restricts wireless LAN access to identified 802.11b station MAC addresses. Up to five 802.11b station MAC addresses can be entered.                                                                            |
| <b>Allow Any Station Access</b>   | Any 802.11b station can access the wireless network.                                                                                                                                                                                       |
| <b>Allow Only Listed Stations</b> | Only 802.11b stations in the MAC access control list can access the wireless network.                                                                                                                                                      |
| <b>Apply</b>                      | Click to apply your changes.                                                                                                                                                                                                               |
| <b>Listed Stations</b>            | Displays stations that have restricted wireless access by their <a href="#">MAC addresses</a> .                                                                                                                                            |
| <b>Delete</b>                     | Click to select a station to be removed from the control list.                                                                                                                                                                             |

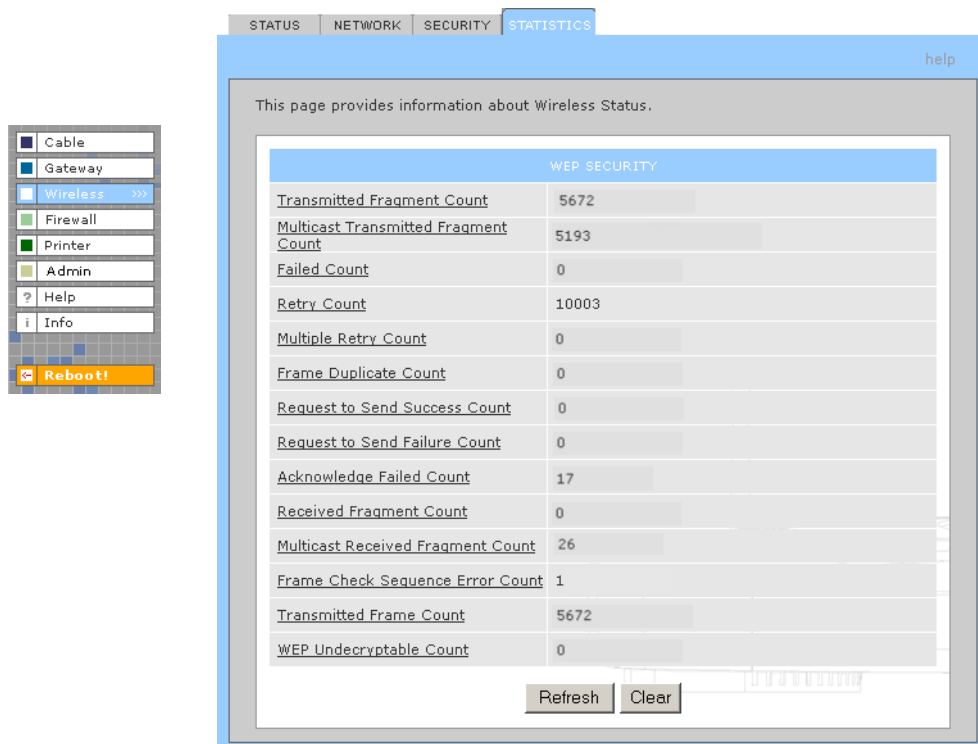
## Wireless > Security — ADVANCED page fields (continued)

### Field or Button Description

|                    |                                                                                          |
|--------------------|------------------------------------------------------------------------------------------|
| <b>New Station</b> | Enter the MAC address of a station that you want to add to the list of allowed stations. |
| <b>Add Station</b> | Click to add the new station.                                                            |

## Wireless > STATISTICS page

Use this page to display wireless statistics.



| WEP SECURITY                         |       |
|--------------------------------------|-------|
| Transmitted Fragment Count           | 5672  |
| Multicast Transmitted Fragment Count | 5193  |
| Failed Count                         | 0     |
| Retry Count                          | 10003 |
| Multiple Retry Count                 | 0     |
| Frame Duplicate Count                | 0     |
| Request to Send Success Count        | 0     |
| Request to Send Failure Count        | 0     |
| Acknowledge Failed Count             | 17    |
| Received Fragment Count              | 0     |
| Multicast Received Fragment Count    | 26    |
| Frame Check Sequence Error Count     | 1     |
| Transmitted Frame Count              | 5672  |
| WEP Undecryptable Count              | 0     |

## Wireless > STATISTICS page fields

### Field or Button Description

|                                             |                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transmitted Fragment Count</b>           | The number of acknowledged MAC protocol data units (MPDUs) with an address in the address 1 field or an MPDU with a <b>multicast</b> address in the address 1 field of type data or management.                                                                                                                           |
| <b>Multicast Transmitted Fragment Count</b> | The number of transmitted fragments when the multicast bit is set in the destination MAC address of a successfully transmitted MAC service data unit (MSDU). When operating as a STA in an ESS, where these <b>frames</b> are directed to the AP, this implies having received an acknowledgment to all associated MPDUs. |
| <b>Failed Count</b>                         | The number of MSDUs not transmitted successfully because the number of transmit attempts exceeded the <b>IEEE 802.11b</b> short or long retry limit.                                                                                                                                                                      |
| <b>Retry Count</b>                          | The number of successfully transmitted MSDUs after one or more retransmissions.                                                                                                                                                                                                                                           |
| <b>Multiple Retry Count</b>                 | The number of successfully transmitted MSDUs after more than one retransmission.                                                                                                                                                                                                                                          |

## Wireless > STATISTICS page fields (continued)

| Field or Button                          | Description                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Frame Duplicate Count</b>             | The number of frames received where the Sequence Control field indicated the frame was a duplicate.                                                                                                                                                                                                                                |
| <b>Request To Send Success Count</b>     | The number of <a href="#">CTS</a> messages received in response to <a href="#">RTS</a> messages.                                                                                                                                                                                                                                   |
| <b>Request To Send Failure Count</b>     | The number of CTS messages not received in response to RTS messages.                                                                                                                                                                                                                                                               |
| <b>Acknowledgement Failed Count</b>      | The number of acknowledgment messages not received when expected from a data message transmission.                                                                                                                                                                                                                                 |
| <b>Received Fragment Count</b>           | The number of successfully received MPDUs of type Data or Management.                                                                                                                                                                                                                                                              |
| <b>Multicast Received Fragment Count</b> | The number of MSDUs received when the multicast bit was set in the destination MAC address.                                                                                                                                                                                                                                        |
| <b>Frame Check Sequence Error Count</b>  | The number of <a href="#">FCS</a> errors detected in a received MPDU.                                                                                                                                                                                                                                                              |
| <b>Transmitted Frame Count</b>           | The number of successfully transmitted MSDUs.                                                                                                                                                                                                                                                                                      |
| <b>WEP Undecryptable Count</b>           | This number of frames received with the <a href="#">WEP</a> subfield of the Frame Control field set to one and the WEP On key value mapped to the client MAC address. This indicates that the frame should not have been <a href="#">encrypted</a> or that frame was discarded due to the receiving client not having WEP enabled. |
| <b>Refresh</b>                           | Click to collect new data.                                                                                                                                                                                                                                                                                                         |

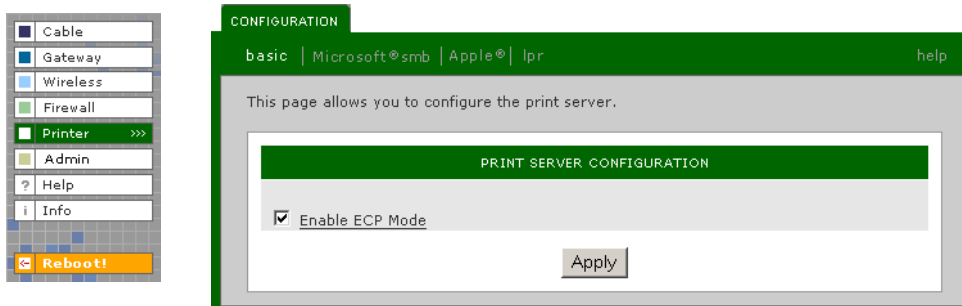
## ❖ Configuring the Print Server

The SBG1000 print server supports a printer connected to its printer port using Microsoft, UNIX (Linux), or Apple printing. Configuring printing consists of:

- [Configuring the SBG1000 Print Server](#)
- Connecting the printer to the SBG1000 as shown in “[Installation](#)” on page 19
- Adding a printer to each PC following *one* of:
  - “[Adding a Printer in Windows 98 or Windows Me](#)” on page 80
  - “[Adding a Printer in Windows 2000](#)” on page 86

### Configuring the SBG1000 Print Server

- 1 Start the SBG1000 Setup Program as described in “[Starting the SBG1000 Setup Program](#)” on page 32.
- 2 On the left frame, click Printer to display the Printer CONFIGURATION > basic page:



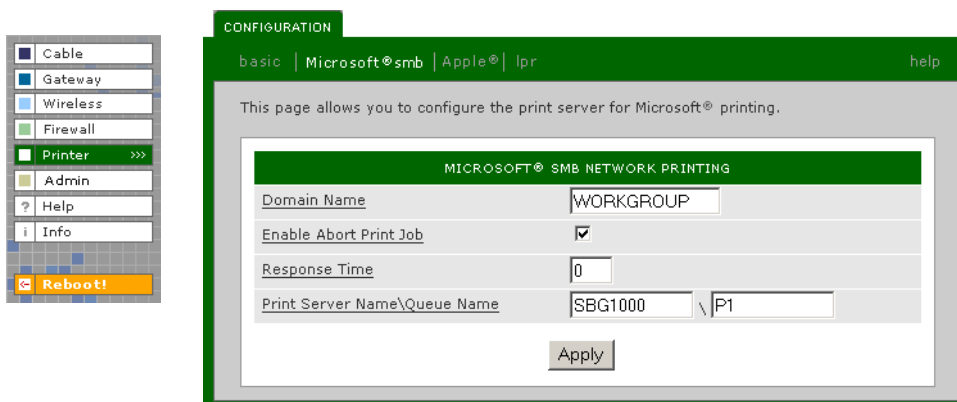
- 3 (Optional) For a printer that supports bi-directional communication, you can enable Extended Capabilities Port (ECP) Mode, which can provide a performance benefit over a standard port.
- 4 Use the following pages to configure the print server for the necessary platform(s):
 

|                     |                                                                               |
|---------------------|-------------------------------------------------------------------------------|
| <b>Windows</b>      | <a href="#">Printer &gt; CONFIGURATION — Microsoft smb Page</a> (see page 78) |
| <b>Macintosh</b>    | <a href="#">Printer &gt; CONFIGURATION — Apple Page</a> (see page 79)         |
| <b>UNIX (Linux)</b> | <a href="#">Printer &gt; CONFIGURATION — lpr Page</a> (see page 80)           |
- 5 Power off the SBG1000.
- 6 Connect the printer to the printer port on the SBG1000 [Rear Panel](#) as shown in “[Installation](#)” on page 19.
- 7 Power on the printer.
- 8 Power on the SBG1000. If printer configuration was successful, the printer icon displays on the SBG1000 front panel.

If the printer icon is not displayed, check the printer cable connection and power the printer and the SBG1000 off and on again. Verify that Enable printer is checked on the Printer CONFIGURATON > basic page.

## Printer > CONFIGURATION — Microsoft smb Page

Use this page to configure the print server for Microsoft printing:

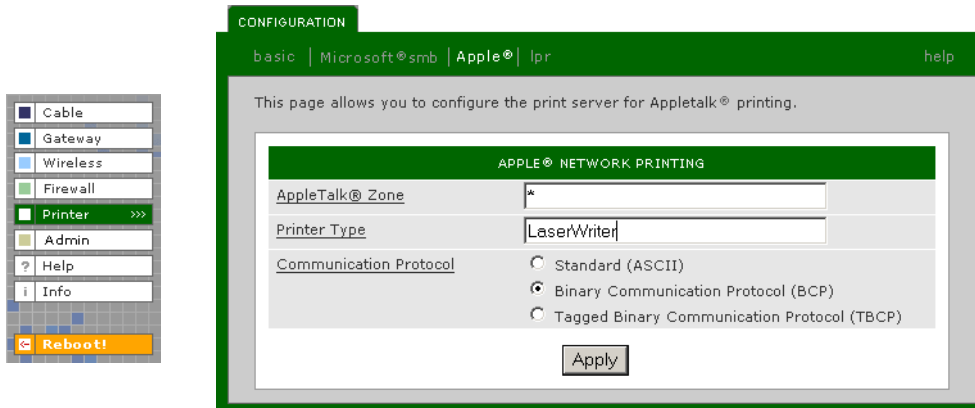


### Printer > CONFIGURATION — Microsoft smb page fields

| Field                                 | Description                                                                                                                                                                                                 |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Domain Name</b>                    | Sets the Microsoft <i>workgroup</i> for the SBG1000 print server. <i>You must use this setting for the Workgroup when you add the printer connected to the SBG1000 to each client PC running Windows.</i>   |
| <b>Enable Abort Print Job</b>         | Check this box to abort a print job if the printer runs out of paper. When this is disabled, the print server waits to resume printing the job until you add paper to the printer. The default is Disabled. |
| <b>Response Time</b>                  | Sets the response time if you need to slow down the response to a Microsoft SMB client for a slow legacy printer. The value can be from 0 (no wait) to 255 seconds. The default is 0 (zero).                |
| <b>Print Server Name \ Queue Name</b> | Sets the print server name and queue.                                                                                                                                                                       |
| <b>Apply</b>                          | Click to apply your changes.                                                                                                                                                                                |

## Printer > CONFIGURATION — Apple Page

Use this page to configure the print server for AppleTalk printing:

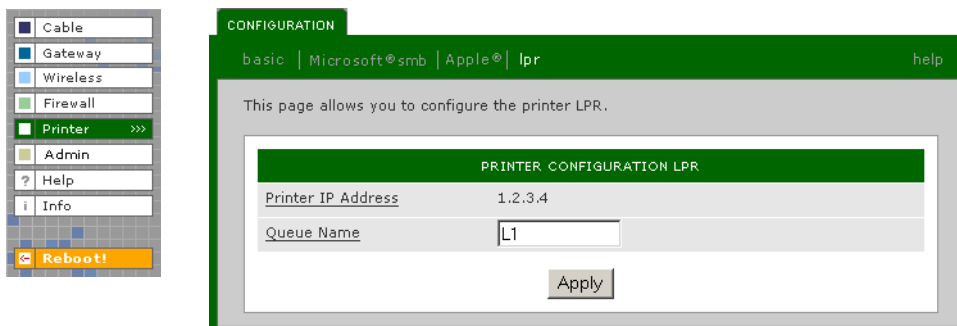


## Printer > CONFIGURATION — apple page fields

| Field                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AppleTalk Zone</b>         | Sets the AppleTalk zone having access to the print server. The zone name can be up to 32 characters long. The default "*" enables all AppleTalk zones to use the printer(s) connected to the print server.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Printer Type</b>           | Sets the printer type. The default, LaserWriter, is used for most AppleTalk printers. If you have an Epson printer that supports AppleTalk, it has a different printer type, found in the Epson printer manual or web site. The SBG1000 print server only responds to the Chooser if the AppleTalk zone and printer type are the same.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Communication Protocol</b> | <p>Choose Standard if the printer uses a communication protocol that supports sending and receiving ASCII data. The Standard protocol is typically supported on devices using RS-232 and centronics channels. The default is ASCII.</p> <p>Choose Binary Communication Protocol (<b>BCP</b>) if the printer can send and receive binary data. BCP is used by some devices for flow control, status request, abort job, and end of file functions. BCP can provide a significant performance advantage over ASCII printing on serial and parallel ports.</p> <p>Choose Tagged Binary Communication Protocol (TBCP) for a printer containing a language-independent feature to determine which language interprets a print job. TBCP is typically supported by <b>PJL</b> printers.</p> <p>To determine the protocol a printer supports, see the documentation provided with the printer.</p> |
| <b>Apply</b>                  | Click to apply your changes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Printer > CONFIGURATION — lpr Page

Use this page to configure the print server for UNIX printing:

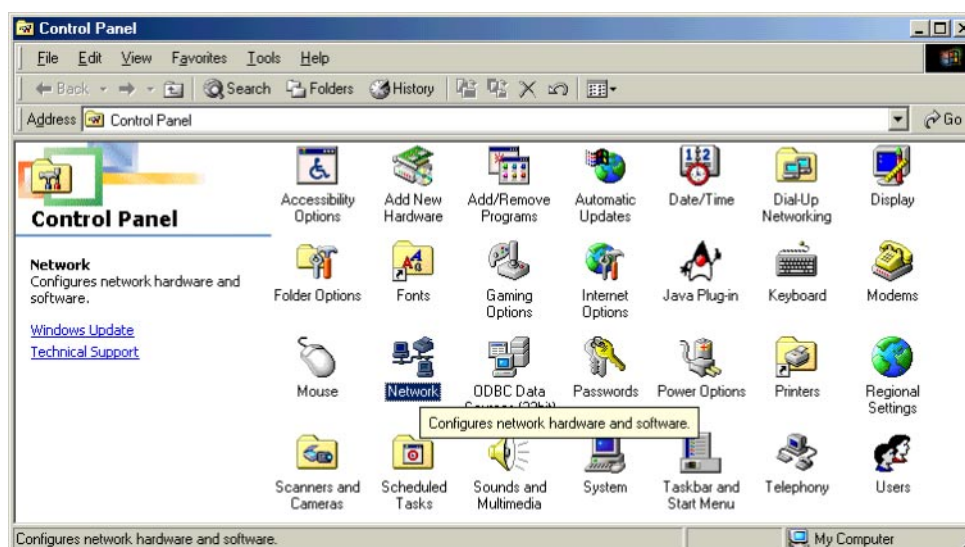


## Printer > CONFIGURATION — lpr page fields

| Field              | Description                                                 |
|--------------------|-------------------------------------------------------------|
| Printer IP Address | Displays the SBG1000 IP address; by default 192.168.100.1   |
| Queue Name         | Sets the queue name; typically lpx; where x is 0, 1, 2, ... |
| Apply              | Click to apply your changes                                 |

## Adding a Printer in Windows 98 or Windows Me

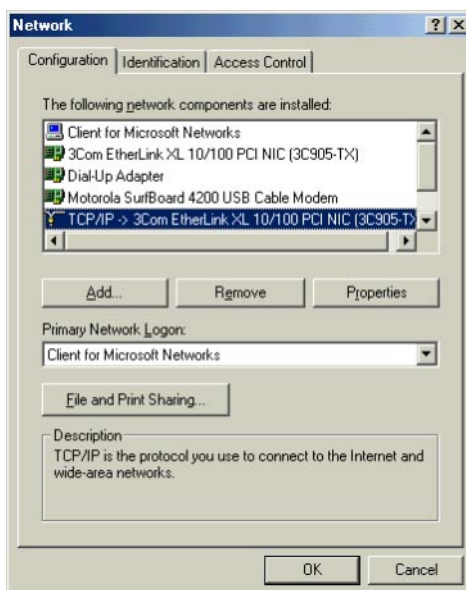
- 1 On the Windows desktop, click **Start**.
- 2 Click **Settings**.
- 3 Click **Control Panel** to display the Control Panel window:



- 4 Double-click the **Network** icon to display the Network window.
- 5 Click the **Identification** tab:

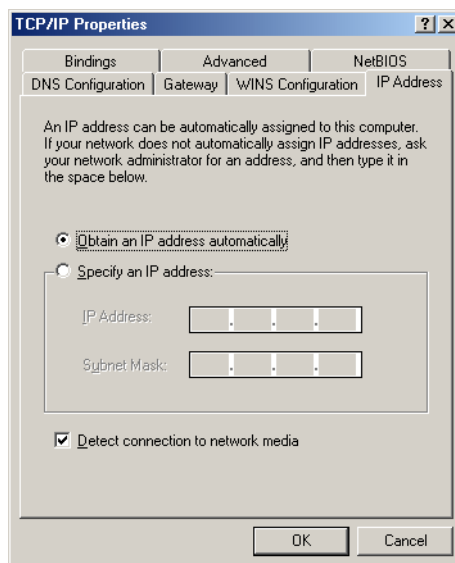


- 6 In the **Workgroup** field, type the Workgroup name. Be sure it matches the "Domain Name" configured on the SBG1000 [Printer > CONFIGURATION — Microsoft smb Page](#) (see page 78).
- 7 Click the **Configuration** tab to display the Configuration page:



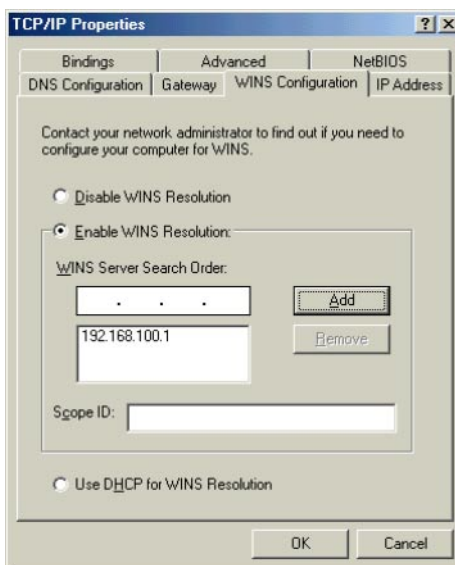
- 8 Select the TCP/IP for the SBG1000 network interface, as shown above.

- 9 Click **Properties** to display the TCP/IP Properties window:



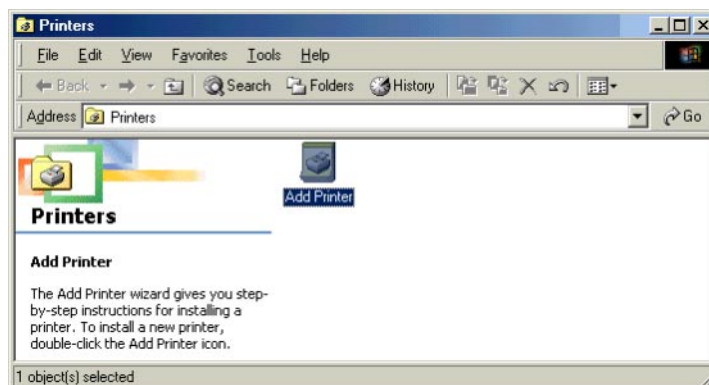
Be sure **Obtain an IP address automatically** is selected.

- 10 Click the **WINS Configuration** tab to display:



- 11 To **Enable WINS Resolution**, select its radio button.
- 12 In the **WINS Server Search Order** field, type **192.168.100.1** and click **Add**.
- 13 Click **OK** to exit the TCP/IP Properties window.
- 14 Click **OK** to exit the Network window.
- 15 On the Windows desktop, click **Start**.
- 16 Click **Settings**.

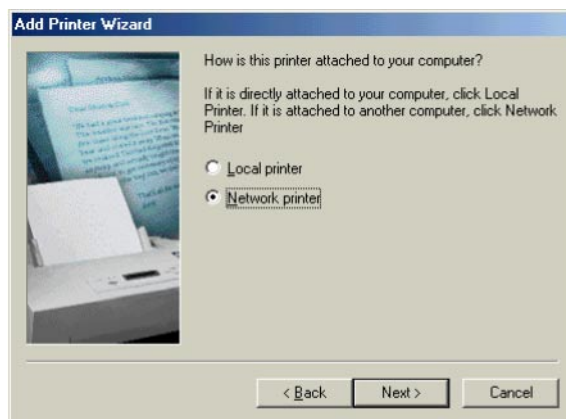
17 Click **Printer** to display the Printers window:



18 Double-click the **Add Printer** icon to start the Add Printer Wizard:

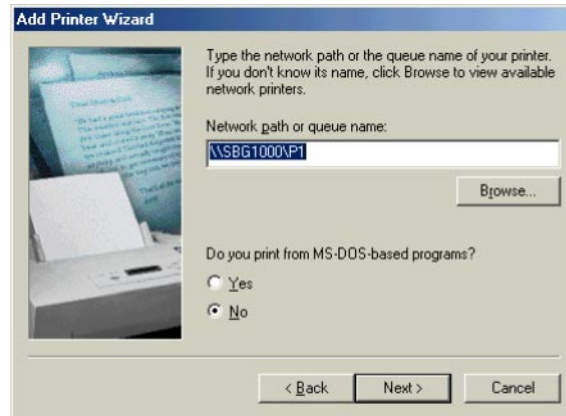


19 Click **Next**:

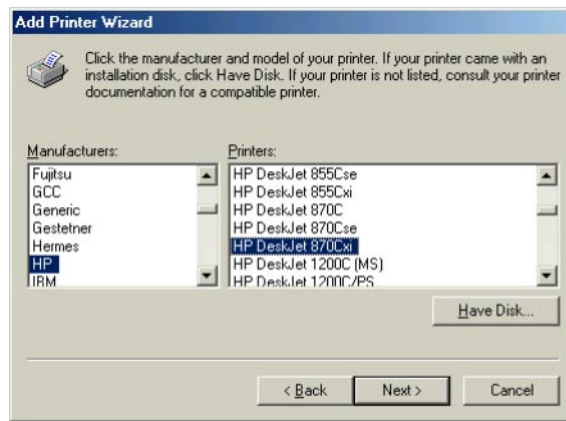




- 20 Select **Network printer** by clicking its radio button and click **Next**:



- 21 In the **Network path or queue name** field, type \\Print Server Name\Queue Name and click **Next**. It must match the Print Server Name\Queue Name set on the SBG1000 [Printer > CONFIGURATION — Microsoft smb Page](#) (see page 78). The default is \\SBG1000\\P1.



- 22 In the **Manufacturers** field, click the *manufacturer* of the printer connected to the SBG1000.

- 23 In the **Printers** field, click the printer *model*.

*If your printer is not listed, its [driver](#) software is not installed in Windows on the PC. You need to provide the driver from a disk or download the driver from the Internet.*

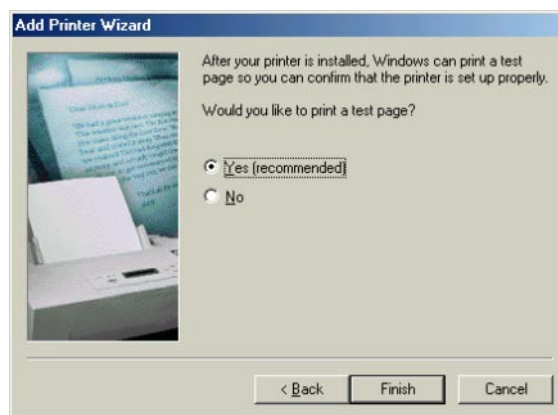
**24** Click **Next**.



**25** Click **Next** to accept the default printer name.

or

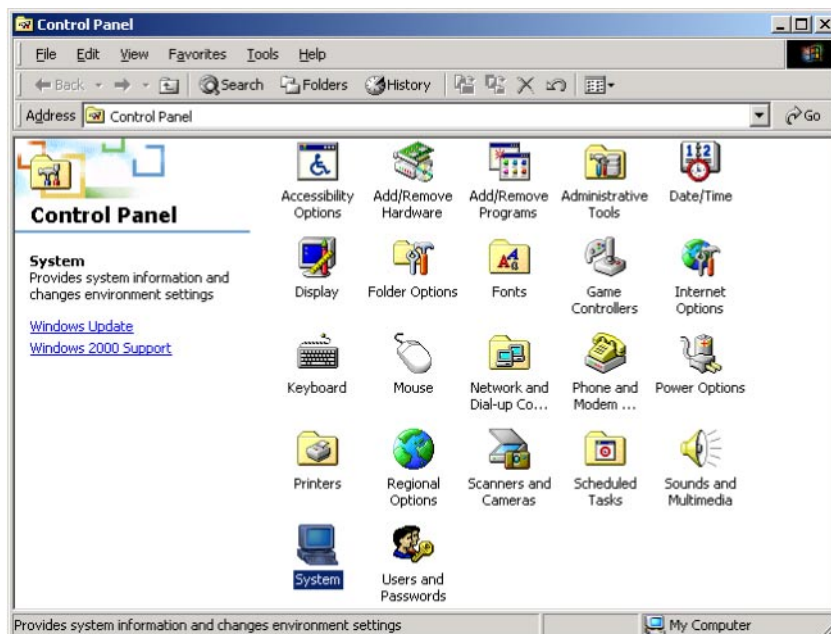
Type the *name* and click **Next**.



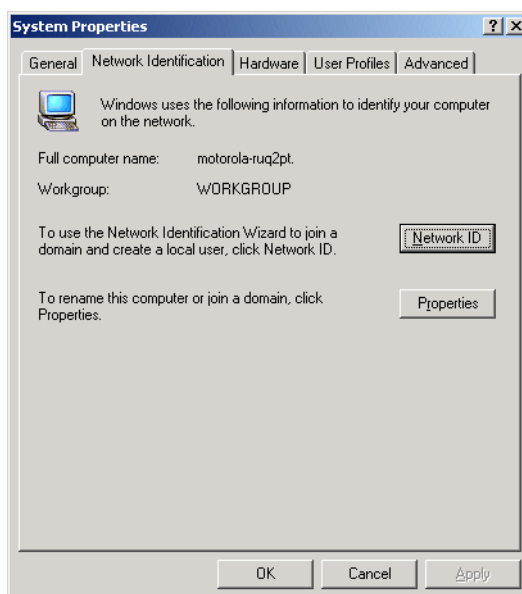
**26** Click **Finish** to complete printer installation and print a test page.

## Adding a Printer in Windows 2000

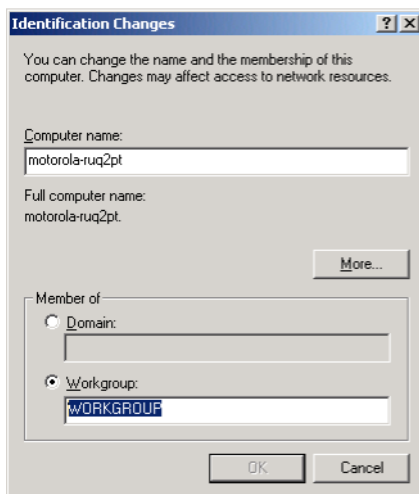
- 1 On the Windows desktop, click **Start**.
- 2 Click **Settings**.
- 3 Click **Control Panel** to display the Control Panel window:



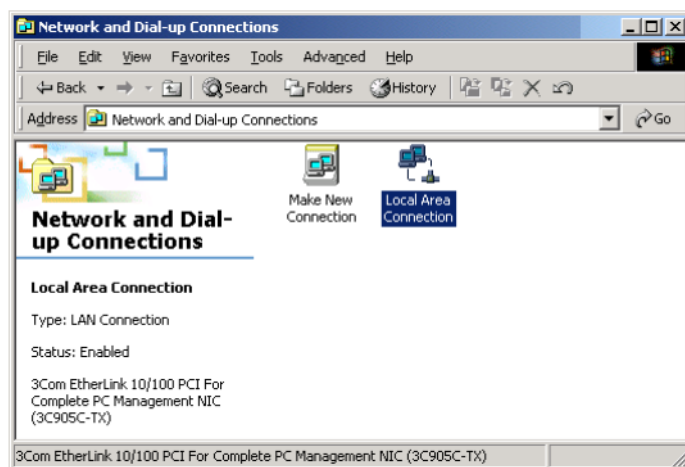
- 4 Double-click the **System** icon to display the System Properties window.
- 5 Click the **Network Identification** tab:



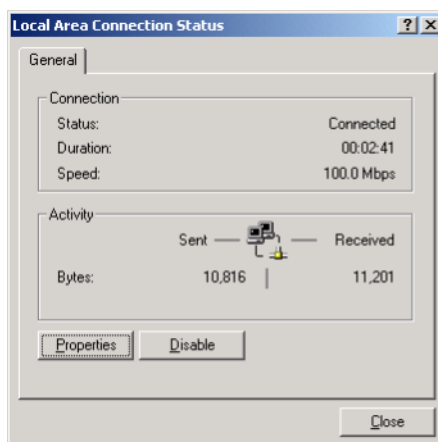
- 6 Click Properties. The Identification Changes window is displayed:



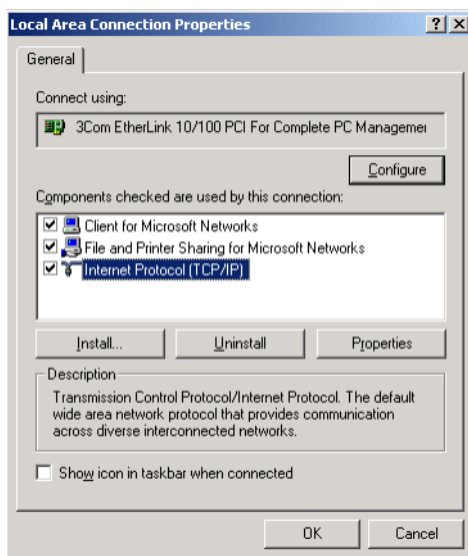
- 7 In the **Workgroup** field, type the Workgroup name. Be sure it matches the "Domain Name" configured on the SBG1000 Printer > CONFIGURATION — Microsoft smb Page (see page 78).
- 8 Click **OK**.
- 9 On the System Properties window, click **OK**. You are prompted to reboot your computer.
- 10 Click **Yes** to reboot.
- 11 After the PC reboots, click **Start**.
- 12 Click **Settings**.
- 13 Click **Control Panel** to display the Control Panel window:
- 14 Double-click the **Network and Dial-up Connections** icon.



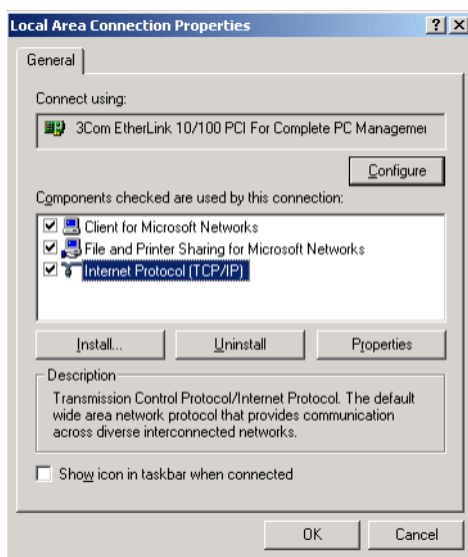
- 15 Double-click the **Local Area Connection** icon. If more than one is present, be sure you select the one connected to the SBG1000. The Local Area Connection Status window is displayed:



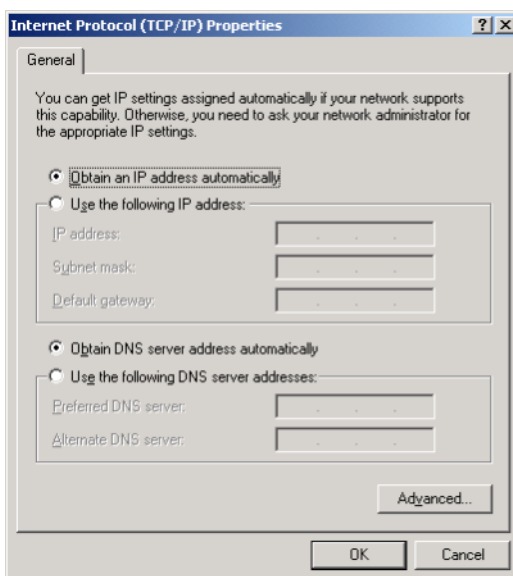
- 16 Click **Properties**. The Local Area Connection Properties window is displayed:



- 17 Click **Internet Protocol TCP/IP** and click the **Properties** button. The Local Area Connection Properties window is displayed:



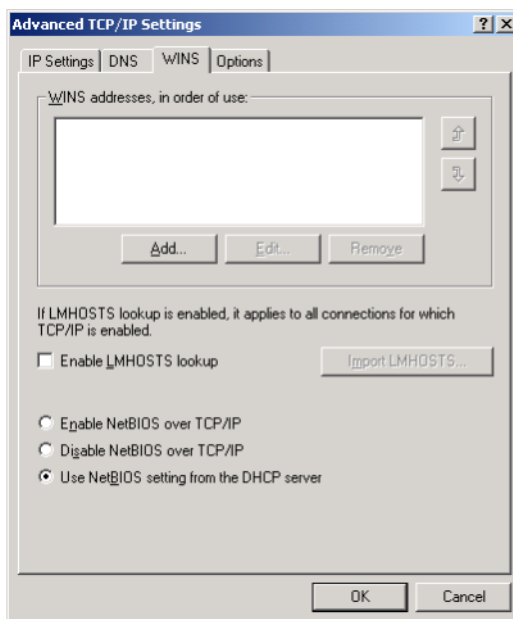
- 18 Click **Properties**. The Internet Protocol (TCP/IP) Properties window is displayed:



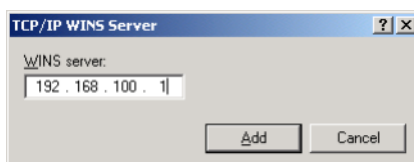
Be sure **Obtain an IP address automatically** is selected.

- 19 Click **Advanced** to display the Advanced TCP/IP Settings window.

20 Click the **WINS** tab:



21 Click **Add**. The TCP/IP WINS Server window is displayed:



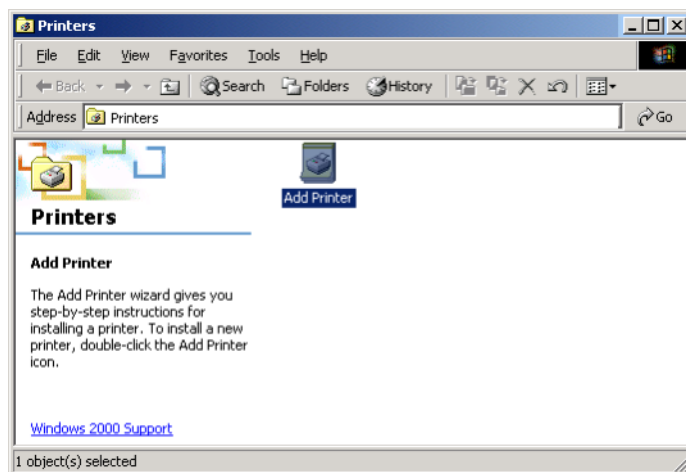
22 In the **WINS server** field, type **192.168.100.1** click **Add**.

23 Click **OK** three times to close the Advanced TCP/IP Settings window, the Internet Protocol (TCP/IP) Properties window, and the Local Area Connection Properties window.

24 Click **Start**.

25 Click **Settings**.

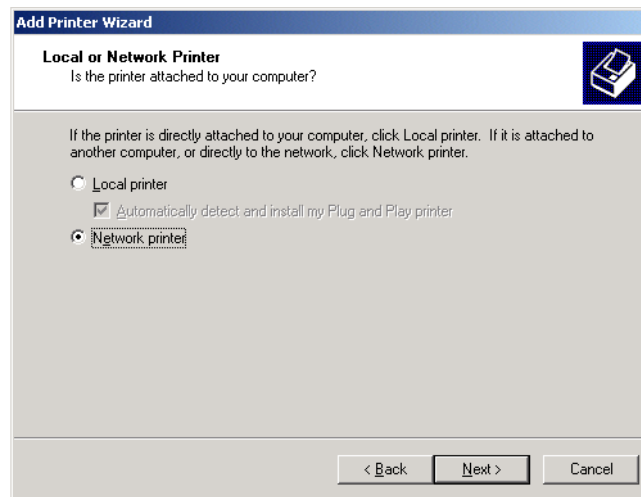
26 Click **Printers** to display the Printers window:



27 Double-click the **Add Printer** icon to start the Add Printer Wizard:



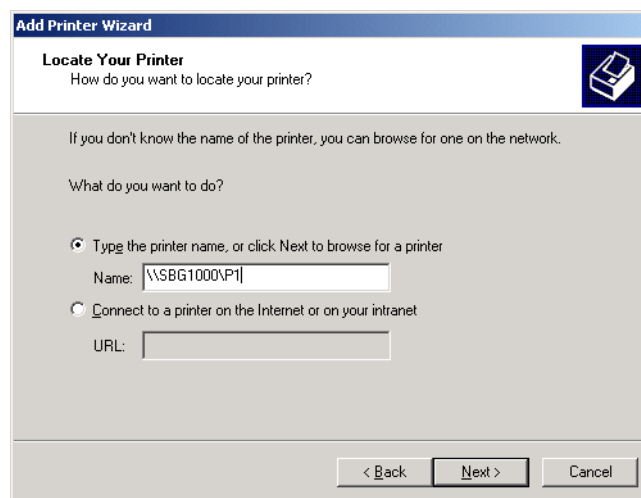
28 Click **Next**:



29 Click the **Network printer** radio button to select it and click **Next**:

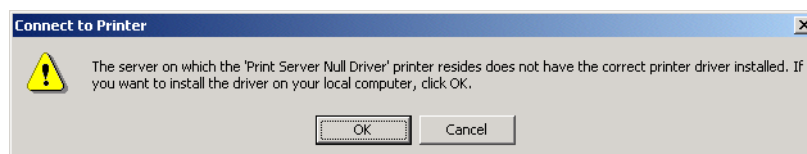
30 Click **Next** to browse the network for the SBG1000 printer. This step will fail but is necessary.

31 Click **Back** to return to the following window:

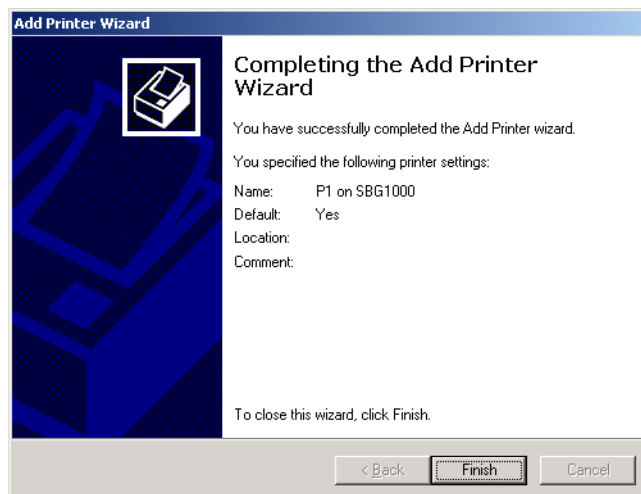


32 In the **Type the printer name,...** field, type `\\Print Server Name\Queue Name` and click **Next**. It must match the Print Server Name\Queue Name set on the SBG1000 [Printer > CONFIGURATION — Microsoft smb Page](#) (see page 78). The default is `\\SBG1000\\P1`.

If a message such as the following displays, indicating that the printer driver is not present, insert the driver disk provided with your printer in the drive and click **OK**.



The following message should display:



**33** Click **Finish** to complete printer installation.



## Setting Up a USB Driver

The following subsections describe setting up a USB driver if you connect a PC to the USB port on the SBG1000. Perform one of the following procedures based on your Windows version:

- [“Setting Up a USB Driver in Windows 98”](#) on page 96
- [“Setting Up a USB Driver in Windows 2000”](#) on page 100
- [“Setting Up a USB Driver in Windows Me”](#) on page 103
- [“Setting Up a USB Driver in Windows XP”](#) on page 104

The SBG1000 USB driver does not support Macintosh or UNIX computers. For those systems, you can connect through Ethernet *only*.

### CAUTION!



*Be sure the Motorola SBG1000 Wireless Cable Modem Gateway CD-ROM is inserted in the CD-ROM drive before you plug in the USB cable.*

If you have a problem setting up the USB driver, remove it by performing *one* of the following procedures:

- [“Removing the USB Driver from Windows 98 or Windows Me”](#) on page 105
- [“Removing the USB Driver from Windows 2000”](#) on page 108
- [“Removing the USB Driver from Windows XP”](#) on page 111



## Setting Up a USB Driver in Windows 98

Be sure the Motorola SBG1000 Wireless Cable Modem Gateway CD-ROM is inserted in the CD-ROM drive before you plug in the USB cable. This CD contains the USB drivers and must be inserted and read by the PC before you connect the SBG1000 to the PC.

A few seconds after you complete the USB connection, the Add New Hardware Wizard window is displayed:



- 1 Click **Next**. The following window is displayed:



Be sure “Search for the best driver for your device” is selected.

- 2 Click **Next**. The following window is displayed:



Be sure "CD-ROM drive" is the only box checked.

- 3 Click **Next**. The message "Please wait while Windows searches for a new driver for this device" is displayed. If the computer successfully locates the driver, you can skip to step 6. If the computer does not locate the driver, the previous window is displayed again.
- 4 Select **Specify a location** and type the location of the CD-ROM drive:



To load the driver successfully, you may need to click **Browse** to manually select the NetMotCM.sys file on the CD-ROM.



- 5 Click **Next**. The following window is displayed:



- 6 Select **The updated driver...** and click **Next**. If the following window is not displayed, verify that the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is properly inserted in the CD-ROM drive. If you still cannot find the correct driver file, click **Cancel** to cancel the installation and perform the procedure for [“Removing the USB Driver from Windows 98 or Windows Me”](#) on page 105. Then repeat this procedure.

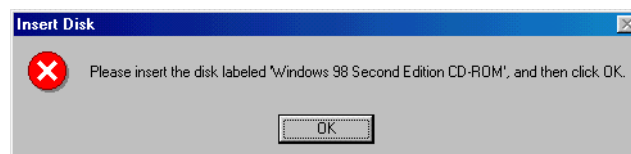


Although your SBG model number may be different than in the images in this guide, the procedure is the same.

- 7 After the window shown under step 6 is displayed, click **Next**.

If a window with the message *Copying Files...* displays and asks for the CD-ROM drive, type the CD-ROM drive *letter* (for example, "D:") and click **OK**.

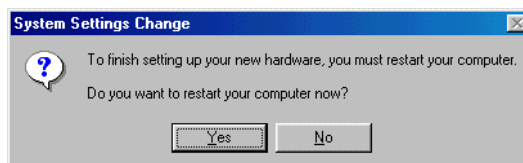
If an Insert Disk window similar to the one below is displayed, Windows 98 system files are needed to complete the installation. To install the files, insert your Windows 98 CD-ROM in the CD-ROM drive and click **OK**.



After all the necessary files are loaded, the following window is displayed to confirm a successful installation:



- 8 Click **Finish**. The Systems Settings Change window is displayed:



- 9 Click **Yes** to restart the computer.

When you finish setting up the USB driver, you can continue with [“Configuring TCP/IP”](#) on page 53.

If you have difficulties setting up the USB driver, perform [“Removing the USB Driver from Windows 98 or Windows Me”](#) on page 105 and repeat this procedure. If that does not correct the problem, see the *Regulatory, Safety, Software License, and Warranty Information* card provided with the SBG1000 for information about obtaining warranty service.

## Setting Up a USB Driver in Windows 2000

Be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable. A few seconds after you complete the USB connection, the Found New Hardware window is displayed:



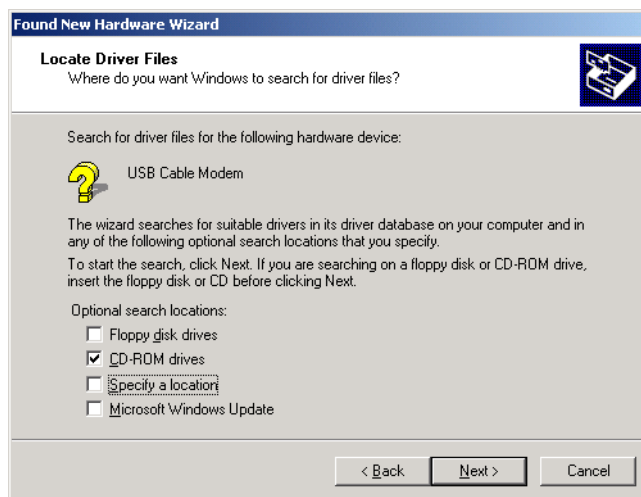
- 1 Click **Next**. The following window is displayed:



Although your SBG model number may be different than in the images in this guide, the procedure is the same.

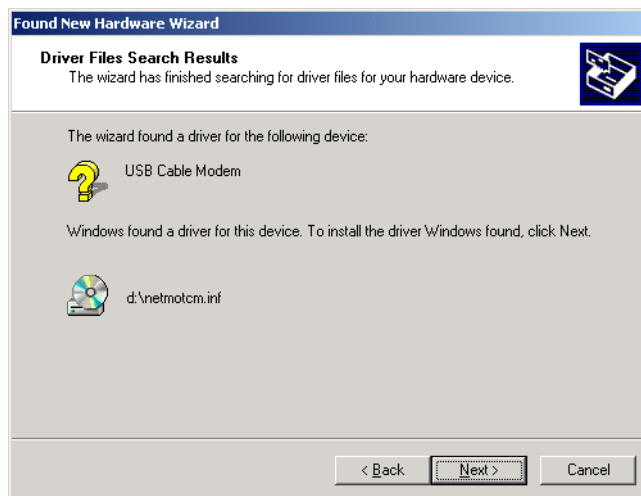
Be sure "Search for a suitable driver for my device" is selected.

- 2 Click **Next**. The following window is displayed:



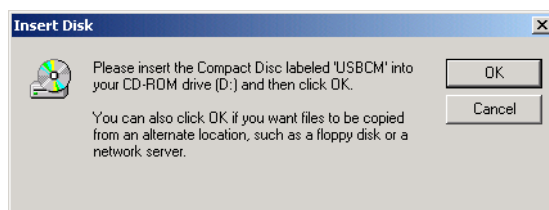
Be sure "CD-ROM drives" is the only box checked.

- 3 Click **Next**. The following window is displayed:

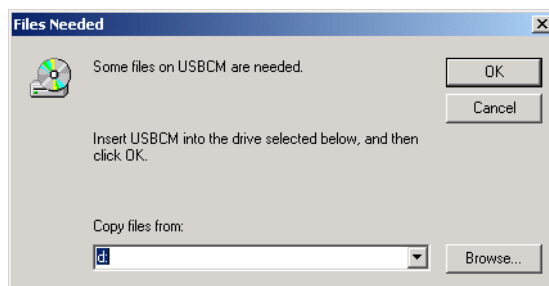


- 4 Click **Next**.

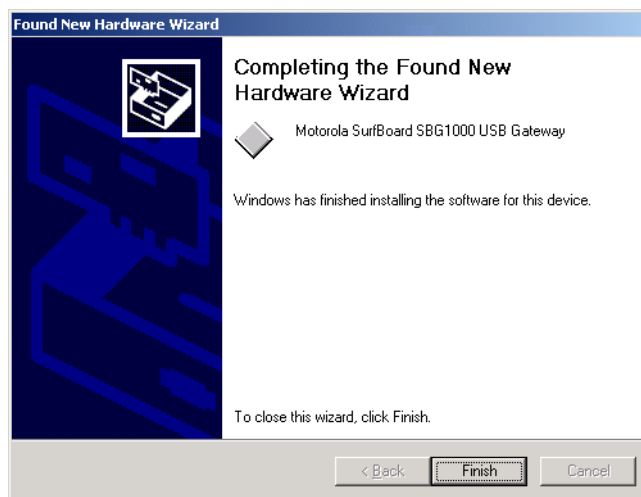
If the Insert Disk window is displayed, be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is in the CD-ROM drive and follow steps 5 to 10. Otherwise, you can skip to step 11.



- 5 On the Insert Disk window, click **OK**. The Files Needed window is displayed:



- 6 If necessary, select the CD-ROM drive in the Copy files from list.
- 7 Click **Browse**.
- 8 Locate the NetMotCM.sys file in the CD-ROM root directory.
- 9 Double-click the **NetMotCM.sys** file. The Files Needed window is displayed.
- 10 Click **OK**. The Found New Hardware Wizard window is displayed:



- 11 Click **Finish** to complete the installation.

When you finish setting up the USB driver, you can continue with ["Configuring TCP/IP"](#) on page 53.

If you have any difficulties setting up the USB driver, perform ["Removing the USB Driver from Windows 2000"](#) on page 108 and repeat this procedure.

## Setting Up a USB Driver in Windows Me

Be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable. A few seconds after you complete the USB connection, the Add New Hardware Wizard window is displayed:



- 1 Click **Next**. Windows automatically searches for the correct USB drivers and installs them. If the installation is successful, the following window is displayed:



Although your SBG model number may be different than in the images in this guide, the procedure is the same.

- 2 If the window above is displayed, click **Finish**. Otherwise, be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is correctly inserted in the CD-ROM drive.

When you finish setting up the USB driver, you can continue with ["Configuring TCP/IP"](#) on page 53.



## Setting Up a USB Driver in Windows XP

Be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable. A few seconds after you complete the USB connection, the Found New Hardware Wizard window is displayed:



- 1 Be sure "Install the software automatically" is selected.
- 2 Click **Next**. Windows automatically searches for the correct USB drivers and installs them. If the installation is successful, the following window is displayed:



Although your SBG model number may be different than in the images in this guide, the procedure is the same.

- 3 Click **Finish** to complete the installation. Otherwise, be sure the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM is correctly inserted in the CD-ROM drive.

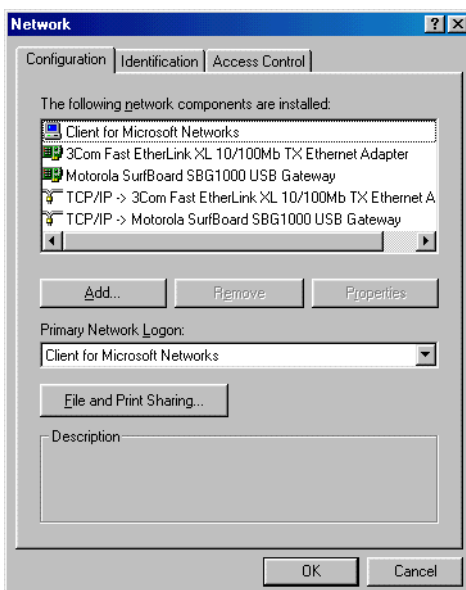
When you finish setting up the USB driver, you can continue with "[Configuring TCP/IP](#)" on page 53.

## Removing the USB Driver from Windows 98 or Windows Me

1 On the Windows Desktop, right-click *one* of:

- In Windows 98, the **Network Neighborhood** icon
- In Windows ME, the **My Network Places** icon

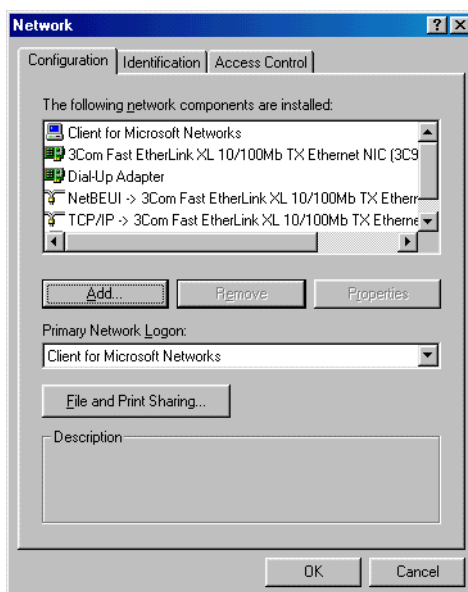
The Network window is displayed:



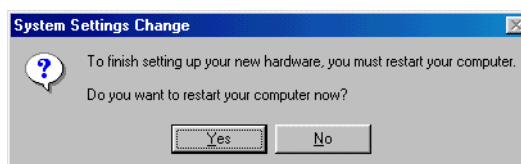
Although your SBG model number may be different than in the images in this guide, the procedure is the same.

2 Click the **Motorola SurfBoard SBG1000 USB Gateway**.

- 3 Click **Remove**. The Network window no longer displays Motorola SurfBoard SBG1000 USB Gateway in the list:

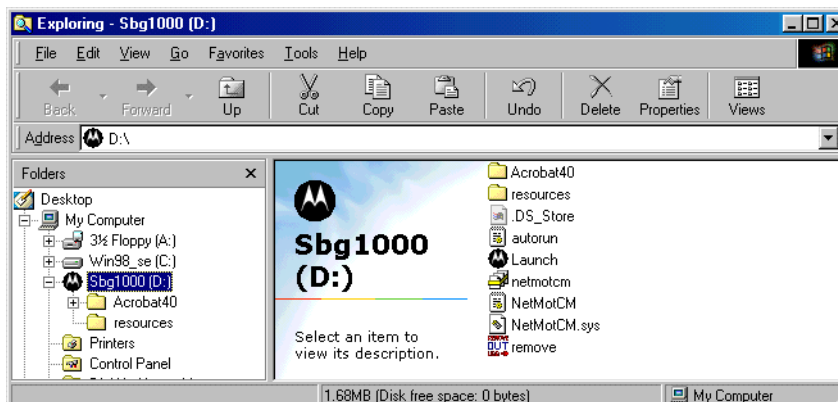


- 4 Click **OK**. The System Settings Change window is displayed:



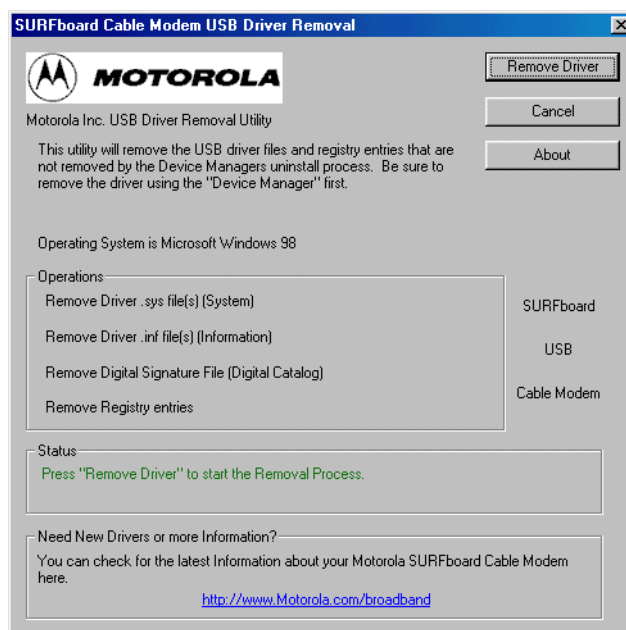
- 5 *Disconnect the USB cable from the PC or SBG1000.*
- 6 Click **Yes** to restart the computer.
- 7 Insert the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.
- 8 Press the **Esc** key on the keyboard to exit the start-up screens.
- 9 To start Windows Explorer, click **Start** and select **Run**.

- 10 In the Run window, type **explorer** and click **OK**. The Exploring window is displayed:



*Windows Explorer may appear different than in the image. There are variations between Windows versions and you can configure Windows Explorer as you like.*

- 11 Double-click the **Motorola SBG1000** CD-ROM drive (D: in the image above).
- 12 Double-click **remove** or **remove.exe** to run the Remove utility from the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed:



- 13 Click **Remove Driver**.

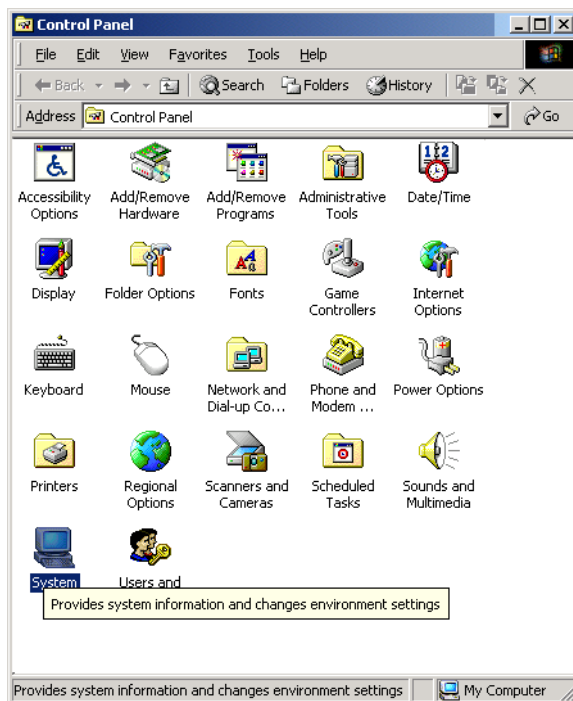
After you remove the USB driver, re-install it on the computer:

- “Setting Up a USB Driver in Windows 98” on page 96
- “Setting Up a USB Driver in Windows Me” on page 103

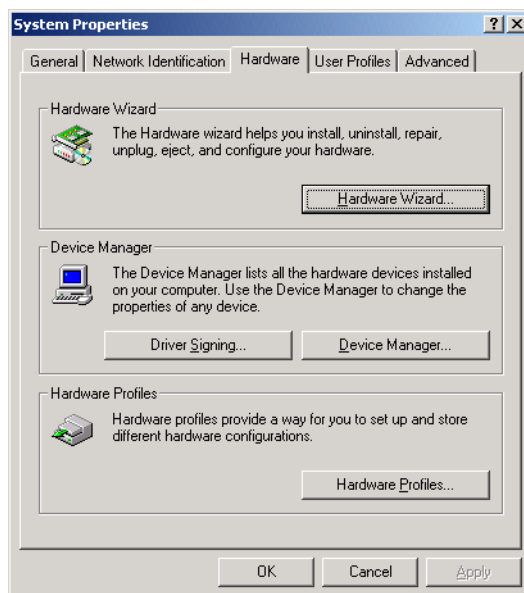
If you continue to have problems, contact your cable service provider.

## Removing the USB Driver from Windows 2000

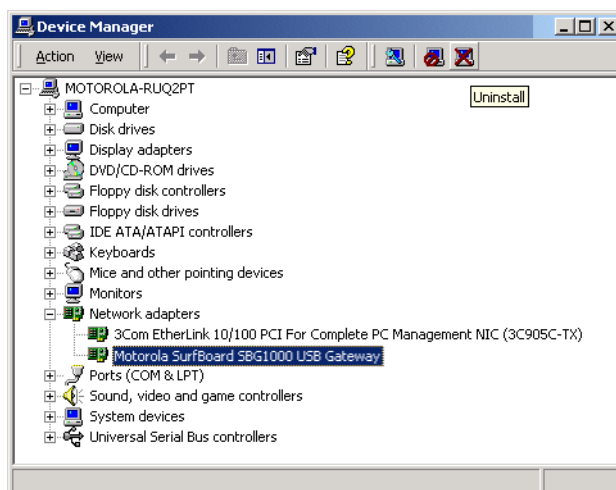
- 1 On the Windows desktop, click **Start**.
- 2 Click **Settings**.
- 3 Click **Control Panel** to display the Control Panel window:



- 4 Double-click **System** to display the System Properties window:



- 5 On the System Properties window, click the **Hardware** tab.
- 6 Click the **Device Manager** button to display the Device Manager window:



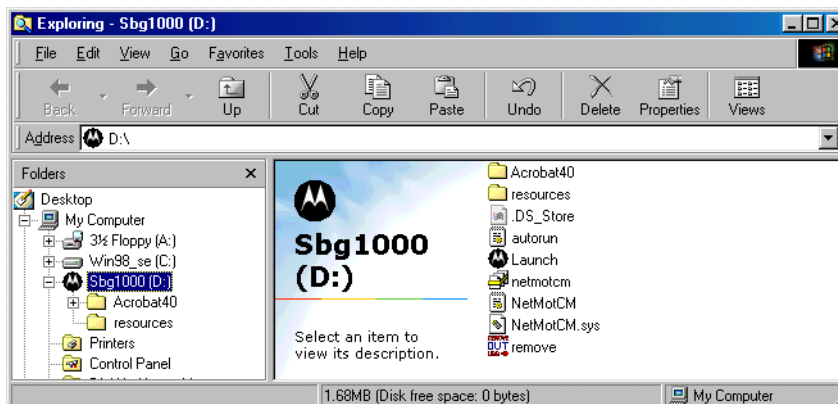
Although your SBG model number may be different than in the images in this guide, the procedure is the same.

- 7 On the Device Manager window, double-click **Network Adapters**.
- 8 Click the **Motorola SurfBoard SBG1000 USB Gateway**. The Uninstall icon displays on the window near the top.
- 9 Click the **Uninstall** icon. The following window is displayed:



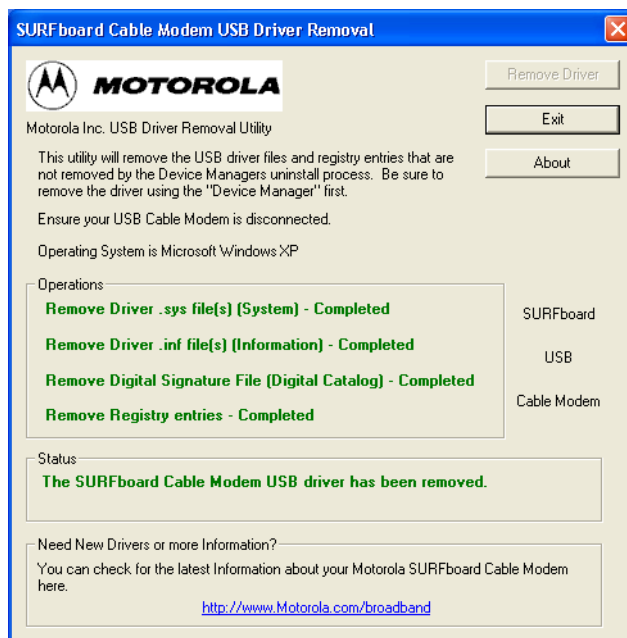
- 10 Click **OK**.
- 11 Close the Device Manager window.
- 12 Close the Control Panel window.
- 13 Insert the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.
- 14 Press the **Esc** key on the keyboard to exit the start-up screens.
- 15 To start Windows Explorer, click **Start** and select **Run** to display the Run window.

- 16 On the Run window, type **explorer** and click **OK** to display Windows Explorer:



*Windows Explorer may appear different than in the image. There are variations between Windows versions and you can configure Windows Explorer as you like.*

- 17 Double-click **My Computer**.
- 18 Double-click the **Motorola SBG1000** CD icon (D: in the image).
- 19 Double-click **remove** or **remove.exe** to run the Remove utility from the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed:



- 20 Be sure the USB cable is disconnected.

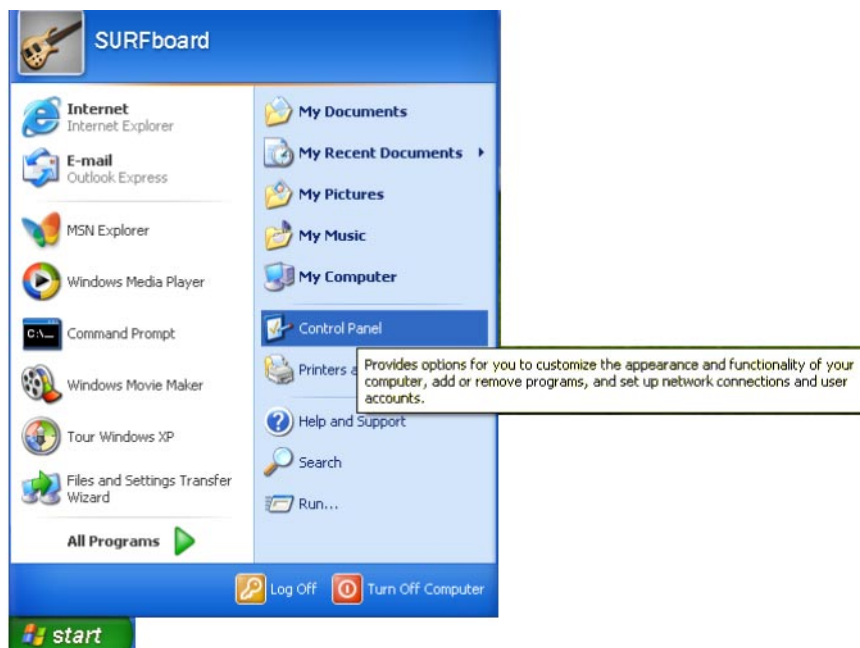
- 21 Click **Remove Driver**.

Informational messages similar to the ones shown are displayed on the SURFboard Cable Modem USB Driver Removal window.

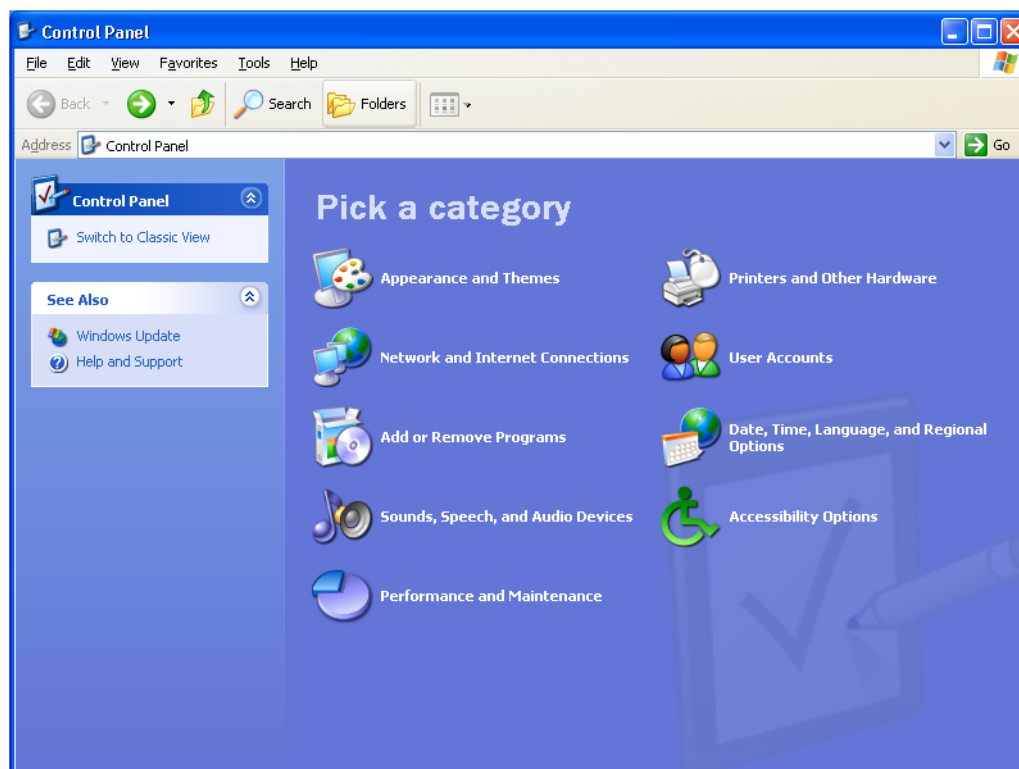
After you remove the USB driver, re-install it following "[Setting Up a USB Driver in Windows 2000](#)" on page 100. If you continue to have problems, contact your cable service provider.

## Removing the USB Driver from Windows XP

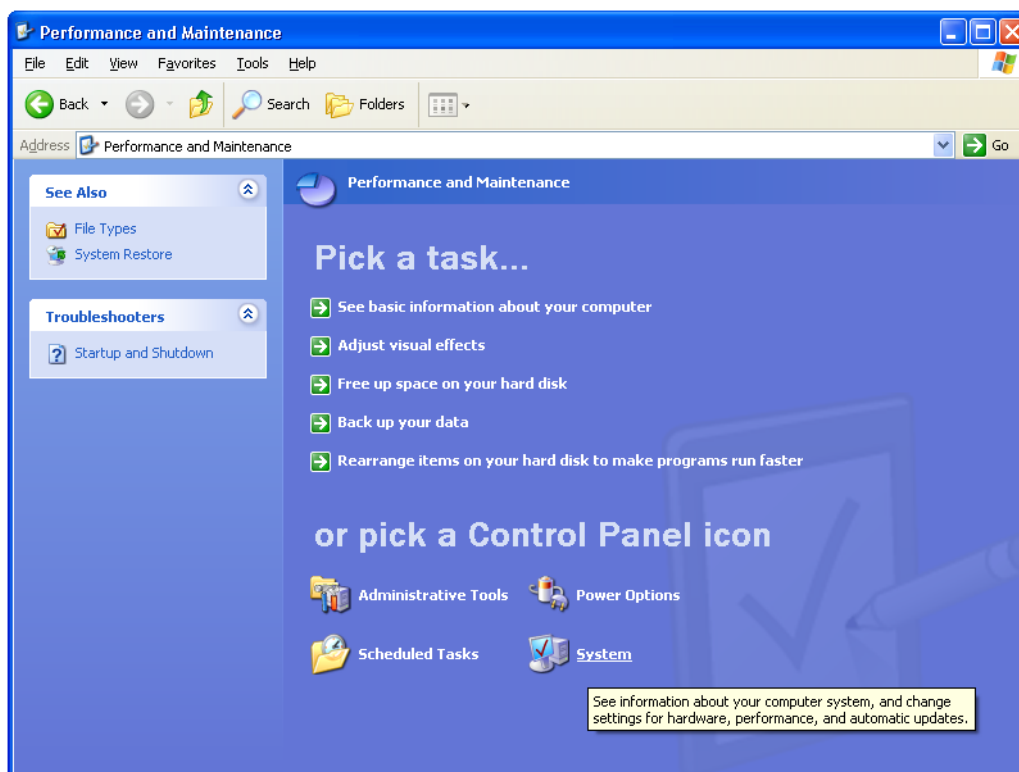
- 1 On the Windows desktop, click **Start** to display the Start window:



- 2 Click **Control Panel** to display the Control Panel window. The display varies, depending on the Windows XP view options:

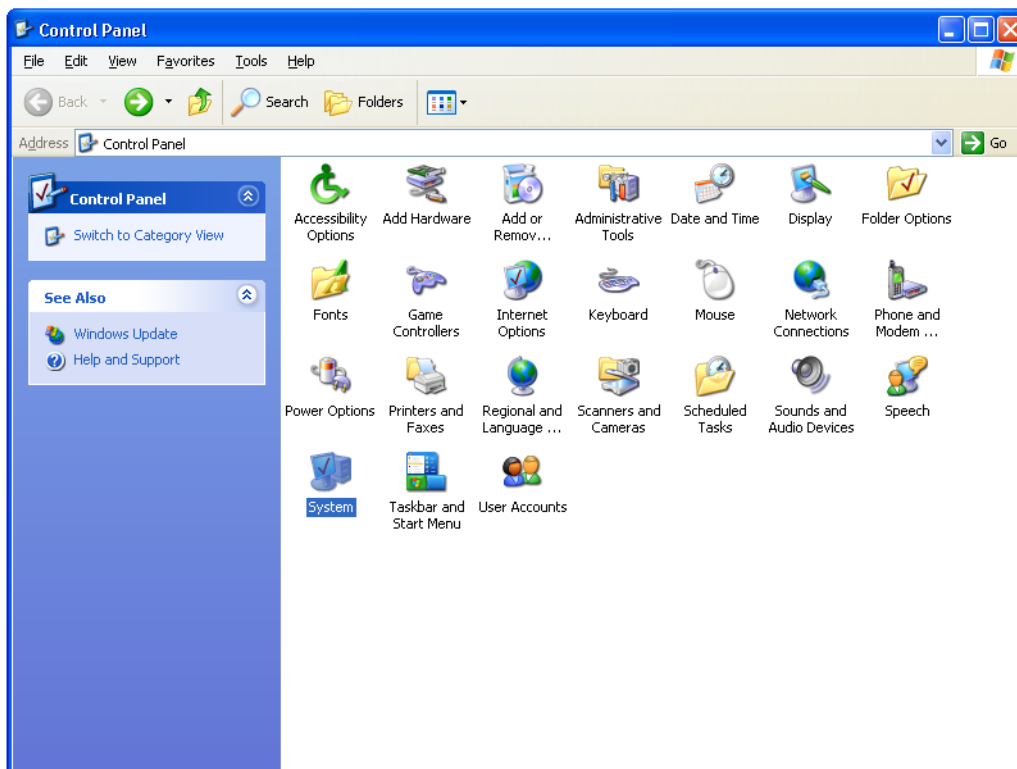


- 3 If a Category view similar to the image under step 2 is displayed, click **Performance and Maintenance** to display the Performance and Maintenance window. Otherwise, skip to step 5.

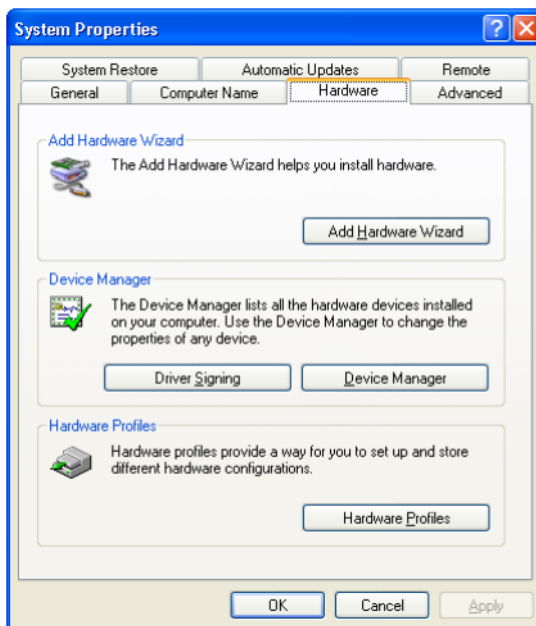


- 4 Click **System** to display the System Properties window. Skip to step 6.

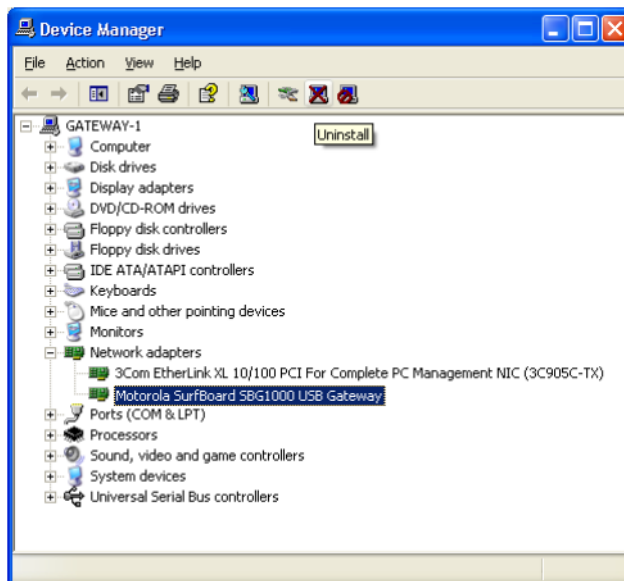
- 5 If a classic view similar to the following is displayed, click System to display the System Properties window:



- 6 On the System Properties window, click the **Hardware** tab to display the Hardware page:



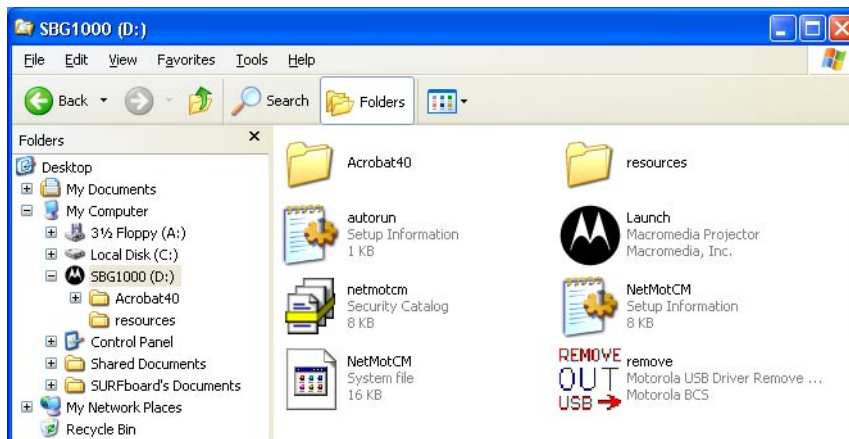
- 7 Double-click the **Device Manager** button to display the Device Manager window:



Although your SBG model number may be different than in the images in this guide, the procedure is the same.

- 8 Double-click **Network adapters**.
- 9 Click the **Motorola SurfBoard SBG1000 USB Gateway**. The Uninstall icon displays on the window near the top.
- 10 Click the **Uninstall** icon.
- 11 Close the Device Manager and Control Panel windows.
- 12 Insert the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.
- 13 Press the **Esc** key on the keyboard to exit the start-up screens.
- 14 To start Windows Explorer, click **Start** and select **Run** to display the Run window.

- 15 Type **explorer** and click **OK** to display Windows Explorer.



Windows Explorer may appear slightly different than in the image. There are variations between Windows versions and you can configure Windows Explorer as you like.

- 16 Double-click **My Computer**.
- 17 Double-click the **Motorola** CD icon (D: in the image).
- 18 Double-click **remove** or **remove.exe** to run the Remove utility from the *Motorola SBG1000 Wireless Cable Modem Gateway* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed:



- 19 Be sure the USB cable is disconnected.
- 20 Click **Remove Driver**. Informational messages similar to the ones shown are displayed on the SURFboard Cable Modem USB Driver Removal window.

After you remove the USB driver, re-install it following "[Setting Up a USB Driver in Windows XP](#)" on page 104. If you continue to have problems, contact your cable service provider.



## ❖ Troubleshooting

If the solutions listed here do not solve the problem, contact your cable service provider. Before calling your cable service provider, try pressing the reset button on the rear panel. Resetting the SBG1000 may take 5 to 30 minutes. Your service provider may ask for the status of the front-panel lights as described in [Front-Panel Lights and Error Conditions](#).

| Problem                                                         | Possible Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Green power icon light is off</b>                            | <p>Check that the power cord is properly plugged into the electrical outlet and the SBG1000.</p> <p>Check that the electrical outlet is working.</p> <p>Press the Reset button.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Cannot send or receive data</b>                              | <p>On the top front panel, note which is the first light (starting from the left) that is off. This light indicates where the error occurred as described in the <a href="#">Front-Panel Lights and Error Conditions</a> table.</p> <p>If you have cable TV, check that the TV is working and the picture is clear. If you cannot receive regular TV channels, the data service will not function.</p> <p>Check the coaxial cable at the SBG1000 and wall outlet. Hand-tighten if necessary.</p> <p>Check the IP address. Follow the steps for <a href="#">Setting Up a USB Driver</a> for your system. Call your cable service provider if you need an IP address.</p> <p>Check that the Ethernet cable is properly connected to the SBG1000 and the computer.</p> |
| <b>Problems related to unsuccessful USB driver installation</b> | <p>Remove the USB driver. Follow the appropriate procedure for your system in "<a href="#">Setting Up a USB Driver</a>" on page 95.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>The printer icon is not displayed</b>                        | <p>Check the printer cable connection and power the printer and SBG1000 off and on again.</p> <p>Verify that Enable printer is checked on the Printer CONFIGURATION &gt; basic page.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Front-Panel Lights and Error Conditions

| Light                                | Turns Off During Startup If                               | Turns Off During Normal Operation If |
|--------------------------------------|-----------------------------------------------------------|--------------------------------------|
| <b>RX (receive)</b>                  | The receive channel cannot be acquired                    | The receive channel is lost          |
| <b>TX (transmit)</b>                 | The send channel cannot be acquired                       | The send channel is lost             |
| <b>LNK light is not on</b>           | IP registration is unsuccessful                           | The IP registration is lost          |
| <b>Green power icon light is off</b> | The SBG1000 is not properly plugged into the power outlet | The SBG1000 is unplugged             |

For more information about the lights, see "[Front Panel](#)" on page 6.





## Contact Us

In the United States and Canada, if you need assistance while working with the SBG1000 and related equipment, call **1-800-942-7721** for technical and warranty support. Support is available 24 hours a day, seven days a week.

For information about customer service, technical support, or warranty claims, see the *Regulatory, Safety, Software License, and Warranty Information* card provided with the SURFboard SBG1000.

For answers to typical questions, see "[Frequently-Asked Questions](#)" on page 121.

For more information about Motorola consumer cable products, education, and support, visit <http://www.motorola.com/broadband>.



## Frequently-Asked Questions

Here are answers to questions our customers frequently ask:

**Q What is high-speed cable Internet access?**

**A** Cable Internet access uses cable television wires instead of telephone lines to connect to the Internet. It is extremely fast and does not tie up telephone lines for incoming or outgoing calls and faxes.

**Q How fast is the Motorola SBG1000 Wireless Cable Modem Gateway?**

**A** Cable modems offer Internet access at speeds up to 100 times faster than a traditional phone modem. You can experience speeds of over 1,000 Kbps. Due to network condition such as traffic volume and the speed of the sites you visit, actual speed may vary. Many network and other factors can affect download speeds.

**Q How many users can one SBG1000 support?**

**A** A single SBG1000 can support up to 253 users, each assigned a unique IP address, on a Class C network.

**Q What is Network Address Translation?**

**A** NAT is a technique to translate private IP addresses on your LAN to a single IP address assigned by your cable service provider that is that is visible to outside users on the Internet.

**Q What is IEEE\_802.11b?**

**A** [IEEE 802.11b](#) is the IEEE wireless network standard.

**Q What type of firewall is provided on the SBG1000?**

**A** The SBG1000 provides a [stateful-inspection](#) firewall.

**Q What wireless security measures are provided on the SBG1000?**

**A** To protect data transmitted over wireless connections, the SBG1000 supports [WEP](#) encryption and [MAC](#) access control lists. For information, see "[Setting Up the Wireless LAN](#)" on page 67.

**Q Why is there no Standby button?**

**A** As a security measure, current Motorola SURFboard cable modems provide a Standby button to temporarily suspend the Internet connection. Because the SBG1000 [firewall](#) provides high security levels while connected, the Standby button is not required.

**Q Can I still watch cable TV while using my Motorola SBG1000 Wireless Cable Modem Gateway?**

**A** Yes, your cable TV line can carry the TV signal while you send and receive information on the Internet.

**Q What are CableLabs Certified, DOCSIS, and Euro-DOCSIS?**

**A** CableLabs Certified, DOCSIS, and Euro-DOCSIS are the industry standards for high-speed data distribution over cable television system networks. They are intended to ensure that all compliant cable modems interface with all compliant cable systems. Your SBG1000 is DOCSIS or Euro-DOCSIS certified.

**Q If I have an SBG1000, can I still use my old 28.8 Kbps or 56 Kbps modem?**

**A** Yes you can. However, once you've experienced the speed of cable Internet access, you'll never again want to wait for traditional dial-up services.

**Q Do I need to change my Internet service provider (ISP)?**

**A** Currently, most Internet service providers do not provide cable Internet access. Contact your cable company for your specific information.

**Q Do I need to subscribe to cable TV to get cable Internet access?**

**A** No, but you will need to subscribe to cable Internet service. Some systems require that you subscribe to basic service before you can get Internet access and/or offer a discount when you use your own SBG1000. Check with your local cable company for specific information.

**Q What type of technical support is available?**

**A** For questions about your Internet service, connection, or SBG1000, call your cable service provider.

**Q What do I do if my SBG1000 stops working?**

**A** "Troubleshooting" on page 117 provides tips to diagnose problems and simple solutions. If you continue to have problems, call your cable service provider.

**Q Can multiple game players on the SBG1000 LAN log onto the same game server and play simultaneously with just one public IP address?**

**A** It depends on the game server.

## Specifications

### General Specifications

#### Wireless

|                             |                                                                  |
|-----------------------------|------------------------------------------------------------------|
| <b>Standards Compliance</b> | IEEE 802.11, 802.11b Direct Sequence Spread Spectrum - DSSS      |
| <b>RF Frequency Range</b>   | Range 2.4 to 2.4835 GHz, 2.4 to 2.497 GHz for Japan              |
| <b>Data Rate</b>            | Auto, 11, 5.5, 2, and 1 Mb/s                                     |
| <b>Modulation</b>           | Auto 11 and 5.5 Mb/s = CCK,<br>2 Mb/s = DQPSK,<br>1 Mb/s = DBPSK |
| <b>Number of channels</b>   | Europe = 13, Spain = 2, France = 4, US = 11, Japan = 14          |
| <b>Transmit Power</b>       | 17.5 dBm (EIRP)                                                  |
| <b>Receive Sensitivity</b>  | -83 dBm at 11 Mbps                                               |

#### Router

|                                      |                         |
|--------------------------------------|-------------------------|
| <b>Ethernet Standards Compliance</b> | IEEE 802.3, IEEE 802.3u |
| <b>Number of Ports</b>               | 5                       |
| <b>Number of Uplink Ports</b>        | 5                       |

#### Electrical

|                            |                            |
|----------------------------|----------------------------|
| <b>Input Voltage Range</b> | -100 – 240 VAC, 50 – 60 Hz |
| <b>Power Consumption</b>   | 18 Watts                   |

|                     |                     |
|---------------------|---------------------|
| <b>Print Server</b> | Windows, Mac, Linux |
|---------------------|---------------------|

#### Environmental

|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| <b>Operating Temperature</b> | 0° C – 40° C, -150 to 10000 ft.                                               |
| <b>Storage Temperature</b>   | -30° C to 80° C                                                               |
| <b>Humidity</b>              | 5 to 95% (non-condensing)                                                     |
| <b>Mechanical Antenna</b>    | 2 External Articulating Antennas, with Unique Connectors per FCC Requirements |

#### LED Indicators

|                          |                                       |
|--------------------------|---------------------------------------|
| Modem                    | Modem Receive, Send, Online, Internet |
| Router (each port 1 – 5) | Activity, 10/100, Half/Full, Link     |
| Access Point             | Wireless                              |
| Other                    | USB, Power, Model Number              |

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| <b>Interfaces</b> | (1) AC Power, (1) F-Type, (5) RJ-45, (2) RJ-11, (1) DB-25 |
|-------------------|-----------------------------------------------------------|

|                   |                           |
|-------------------|---------------------------|
| <b>Dimensions</b> | 290 W x 160 D x 70 H (mm) |
|-------------------|---------------------------|

|               |                     |
|---------------|---------------------|
| <b>Weight</b> | 0.8 lbs (Unit Only) |
|---------------|---------------------|

## Cable Modem Specifications

### Downstream

|                              |                                                              |
|------------------------------|--------------------------------------------------------------|
| <b>Modulation</b>            | 64 <a href="#">QAM</a> or 256 QAM                            |
| <b>Maximum Data rate</b>     | 38 <a href="#">Mbps</a> maximum                              |
| <b>Frequency</b>             | 88 <a href="#">MHz</a> to 860 MHz (30 kHz minimum step size) |
| <b>Bandwidth</b>             | 6 MHz                                                        |
| <b>Symbol rate:</b>          |                                                              |
| 64 QAM                       | 5.069 <a href="#">Msym/s</a> maximum                         |
| 256 QAM                      | 5.361 Msym/s maximum                                         |
| <b>Operating Level Range</b> | -15 <a href="#">dBmV</a> to +15 dBmV                         |
| <b>Input impedance</b>       | 75 <a href="#">ohms</a> (nominal)                            |
| <b>Frequency Range</b>       | 88 to 860 MHz                                                |

### Upstream

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| <b>Modulation</b>             | 16 QAM or <a href="#">QPSK</a> (variable symbol rates) |
| <b>Maximum Data Rate</b>      | 10 Mbps maximum                                        |
| <b>Bandwidth</b>              | 200 <a href="#">kHz</a> to 3200 kHz                    |
| <b>Frequency</b>              | 5 MHz to 42 MHz (edge to edge)                         |
| <b>Symbol rates</b>           | 160, 320, 640, 1280, and 2560 ksym/s                   |
| <b>Operating Level Range:</b> |                                                        |
| 16 QAM                        | +8 dBmV to +55 dBmV                                    |
| QPSK                          | +8 dBmV to +58 dBmV                                    |
| <b>Output impedance</b>       | 75 ohms nominal                                        |

### General

|                              |                                                     |
|------------------------------|-----------------------------------------------------|
| <b>Cable Interface</b>       | F-Connector, female, 75 ohm                         |
| <b>CPE Network Interface</b> | Interface USB, Ethernet 10/100Base-T (auto sensing) |
| <b>Data protocol</b>         | <a href="#">TCP/IP</a>                              |
| <b>Dimensions</b>            | 7.2" H x 2.0" W x 7.8" L                            |
| <b>Power</b>                 | 9 Watts (nominal)                                   |
| <b>Input Power</b>           | <a href="#">100-240 VAC</a> , 50-60 Hz              |

### Environmental

|                              |                              |
|------------------------------|------------------------------|
| <b>Operating temperature</b> | 0 to +40° C                  |
| <b>Storage temperature</b>   | -30° C to +80° C             |
| <b>Operating humidity</b>    | 0% to 95% RH, non-condensing |

## Glossary

This glossary defines terms and lists acronyms used with the Motorola SBG1000 Wireless Cable Modem Gateway.

To return to your previous page, click the Acrobat Go to Previous Page  button.

### A

|                                  |                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>access point</b>              | A device that provides wireless LAN connectivity to wireless clients (stations). The SBG1000 acts as a wireless access point.                                                                                                                                                                                                                                            |
| <b>adapter</b>                   | A device or card that connects a computer, printer, or other peripheral device to the network or to some other device. A <i>wireless adapter</i> connects a computer to the wireless LAN.                                                                                                                                                                                |
| <b>address translation</b>       | See NAT.                                                                                                                                                                                                                                                                                                                                                                 |
| <b>ALG</b>                       | Application level gateway triggers are required by some file transfer (for example, FTP), game, and video conferencing applications to open one or more ports to enable the application to operate properly.                                                                                                                                                             |
| <b>American Wire Gauge (AWG)</b> | A standard system used to designate the size of electrical conductors; gauge numbers are inverse to size.                                                                                                                                                                                                                                                                |
| <b>ANSI</b>                      | The American National Standards Institute is a non-profit, independent organization supported by trade organizations, industry, and professional societies for standards development in the United States. This organization defined ASCII and represents the United States to the International Organization for Standardization.                                       |
| <b>ANX</b>                       | Automotive Network Exchange                                                                                                                                                                                                                                                                                                                                              |
| <b>ARP</b>                       | Address Resolution Protocol broadcasts a datagram to obtain a response containing a MAC address corresponding to the host IP address. When it is first connected to the network, a client sends an ARP message. The SBG1000 responds with a message containing its MAC address. Subsequently, data sent by the computer uses the SBG1000 MAC address as its destination. |
| <b>ASCII</b>                     | The American Standard Code for Information Interchange refers to alphanumeric data for processing and communication compatibility among various devices; normally used for asynchronous transmission.                                                                                                                                                                    |
| <b>asynchronous timing</b>       | The SBG1000 uses synchronous timing for upstream data transmissions. The CMTS broadcasts messages that bandwidth is available. The SBG1000 reserves data bytes requiring x-number of mini-slots. The CMTS replies that it can receive data at a specified time (synchronized). At the specified time, the SBG1000 transmits the x-number of data bytes.                  |
| <b>attenuation</b>               | The difference between transmitted and received power resulting from loss through equipment, transmission lines, or other devices; usually expressed in decibels.                                                                                                                                                                                                        |
| <b>authentication</b>            | A process where the CMTS verifies that access is authorized, using a password, trusted IP address, or serial number.                                                                                                                                                                                                                                                     |
| <b>authorization</b>             | Part of the process between a CMTS and the cable modem or gateway to enable Baseline Privacy.                                                                                                                                                                                                                                                                            |
| <b>auto-MDIX</b>                 | Automatic medium-dependent interface crossover detects and corrects cabling errors by automatically reversing the send and receive pins on any port. It enables the use of straight-through wiring between the SBG1000 Ethernet ports and any computer, printer, or hub.                                                                                                 |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## B

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>bandwidth</b>        | The transmission capacity of a <a href="#">medium</a> in terms of a range of frequencies. Greater bandwidth indicates the ability to transmit more data over a given period of time.                                                                                                                                                                                                                                                                                                                                             |
| <b>Baseline Privacy</b> | An optional feature that <a href="#">encrypts</a> data between the CMTS and the cable modem or gateway. Protection of service is provided by ensuring that a cable modem or gateway, uniquely identified by its MAC address, can only obtain keys for services it is authorized to access.                                                                                                                                                                                                                                       |
| <b>baud</b>             | The analog signaling rate. For complex modulation modes, the digital bit rate is encoded in multiple bits per baud, for example, 64 <a href="#">QAM</a> encodes 6 bits per baud and 16 QAM encodes 4 bits per baud.                                                                                                                                                                                                                                                                                                              |
| <b>BCP</b>              | Binary Communication Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>BER</b>              | The bit error rate is the ratio of the number of erroneous bits or characters received from some fixed number of bits transmitted.                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>binary</b>           | A numbering system that uses two digits, 0 and 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>bit rate</b>         | The number of bits (digital 0s and 1s) transmitted per second in a communications channel. It is usually measured in bits per second bps.                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>BPKM</b>             | Baseline Protocol Key Management encrypts data flows between a cable modem or gateway and the CMTS. The encryption occurs after the cable modem or gateway registers to ensure data privacy across the RF network.                                                                                                                                                                                                                                                                                                               |
| <b>bps</b>              | bits per second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>bridge</b>           | An <a href="#">OSI</a> layer 2 networking device that connects two <a href="#">LANs</a> using similar <a href="#">protocols</a> . It filters frames based on the MAC address to reduce the amount of traffic. A bridge can be placed between two groups of <a href="#">hosts</a> that communicate a lot together, but not so much with the hosts in the other group. The bridge examines the destination of each <a href="#">packet</a> to determine whether to transmit it to the other side. See also <a href="#">switch</a> . |
| <b>broadband</b>        | High bandwidth network technology that multiplexes multiple, independent carriers to carry voice, video, data, and other interactive services over a single cable. A communications medium that can transmit a relatively large amount of data in a given time period. A frequently used synonym for cable TV that can describe any technology capable of delivering multiple channels and services.                                                                                                                             |
| <b>broadcast</b>        | Simultaneous transmission to multiple network devices; a protocol mechanism supporting group and universal addressing. See also <i>multicast</i> and <i>unicast</i> .                                                                                                                                                                                                                                                                                                                                                            |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## C

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CableHome</b>                      | A project of CableLabs and technology suppliers to develop interface specifications for extending high-quality cable-based services to home network devices. It addresses issues such as device interoperability, <a href="#">QoS</a> , and network management. CableHome will enable cable service providers to offer more services over HFC. It will improve consumer convenience by providing cable-delivered services throughout the home. |
| <b>CableLabs</b>                      | A research consortium that defines the interface requirements for cable modems and acknowledges that tested equipment complies with DOCSIS.                                                                                                                                                                                                                                                                                                    |
| <b>cable modem</b>                    | A device installed at a subscriber location to provide data communications over an <a href="#">HFC</a> network. Unless otherwise specified, all references to "cable modem" in this documentation refers to <a href="#">DOCSIS</a> or Euro-DOCSIS cable modems <i>only</i> .                                                                                                                                                                   |
| <b>cable modem configuration file</b> | File containing operational parameters that a cable modem or gateway downloads from the cable service provider TFTP server during registration.                                                                                                                                                                                                                                                                                                |
| <b>circuit-switched</b>               | Network-connection scheme used in the traditional <a href="#">PSTN</a> telephone network where each connection requires a dedicated path for its duration. An alternative is <a href="#">packet-switched</a> .                                                                                                                                                                                                                                 |
| <b>Class C network</b>                | An IP network containing up to 253 <a href="#">hosts</a> . Class C IP addresses are in the form "network.network.network.host."                                                                                                                                                                                                                                                                                                                |
| <b>client</b>                         | <p>In a client/server architecture, a client is a computer that requests files or services such as file transfer, remote login, or printing from the server.</p> <p>On an IEEE 802.11b wireless <a href="#">LAN</a>, a client is any <a href="#">host</a> that can communicate with the access point. Also called a CPE. A wireless client is also called a "station."</p>                                                                     |
| <b>CMTS</b>                           | A cable modem termination system is a device in the cable system <a href="#">headend</a> that interfaces the <a href="#">HFC</a> network to local or remote IP networks to connecting IP <a href="#">hosts</a> , cable modems or gateways, and subscribers. It manages all cable modem bandwidth. It is sometimes called an edge router.                                                                                                       |
| <b>CNR</b>                            | carrier to noise ratio                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>coaxial cable (coax)</b>           | A type of cable consisting of a center wire surrounded by insulation and a grounded shield of braided wire. The shield minimizes electrical and radio frequency interference. Coaxial cable has high bandwidth and can support transmission over long distances.                                                                                                                                                                               |
| <b>CoS</b>                            | Class of service traffic management or scheduling functions are performed when transferring data upstream or downstream on HFC.                                                                                                                                                                                                                                                                                                                |
| <b>CPE</b>                            | Customer premise equipment, typically computers, printers, etc., are connected to the cable modem or gateway at the subscriber location. CPE can be provided by the subscriber or the cable service provider. Also called a client.                                                                                                                                                                                                            |
| <b>crosstalk</b>                      | Undesired signal interfering with the desired signal.                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>CSMA/CD</b>                        | carrier sense multiple access with collision detection                                                                                                                                                                                                                                                                                                                                                                                         |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## D

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>datagram</b>              | In <a href="#">RFC 1594</a> , a datagram is defined as “a self-contained, independent entity of data carrying sufficient information to be routed from the source to the destination computer without reliance on earlier exchanges between this source and destination computer and the transporting network.” For the most part, it has been replaced by the term <a href="#">packet</a> .                                                                                                                                                                                                                                                                                                            |
| <b>default route</b>         | The route by which packets are forwarded when other routes in the routing table do not apply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>dB</b>                    | decibel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>dBc</b>                   | Signal level expressed in dB relative to the unmodulated carrier level desired.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>dBm</b>                   | A unit of measurement referenced to one milliwatt across specified impedance. 0dBm = 1 milliwatt across 75 ohms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>dBmV</b>                  | Signal level expressed in dB as the ratio of the signal power in a 75-ohm system to a reference power when 1 mV is across 75 ohms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>demodulation</b>          | An operation to restore a previously modulated wave and separate the multiple signals that were combined and modulated on a subcarrier.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>DHCP</b>                  | <p>A Dynamic Host Configuration Protocol server dynamically assigns IP addresses to client hosts on an IP network. DHCP eliminates the need to manually assign static IP addresses by “leasing” an IP address and subnet mask to each client. It enables the automatic reuse of unused IP addresses: <i>The SBG1000 is simultaneously a DHCP client and a DHCP server.</i></p> <ul style="list-style-type: none"><li>• A DHCP server at the cable system headend assigns a <a href="#">public IP address</a> to the SBG1000 and optionally to clients on the SBG1000 LAN.</li><li>• The SBG1000 contains a built-in DHCP server that assigns <a href="#">private IP addresses</a> to clients.</li></ul> |
| <b>distortion</b>            | An undesired change in signal waveform within a transmission medium. A nonlinear reproduction of the input waveform.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>diversity antennas</b>    | Two identical antennas located a small distance apart to reduce multipath distortion and improve wireless reception. Properly placed diversity antennas improve SBG1000 wireless reception.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>DNS</b>                   | The Domain Name System is the Internet system for converting domain names to IP addresses. A DNS server contains a table matching domain names such as Internetname.com to IP addresses such as 192.169.9.1. When you access the world-wide web, a DNS server translates the URL displayed on the browser to the destination website IP address. The DNS lookup table is a distributed Internet database; no one DNS server lists all domain name to IP address matches.                                                                                                                                                                                                                                |
| <b>DOCSIS</b>                | The CableLabs Data-Over-Cable Service Interface Specification defines interface standards for cable modems, gateways, and supporting equipment to deliver data between an HFC network and a computer systems or television sets. To emphasize its use as a cable modem standard, DOCSIS is now called CableLabs Certified Cable Modems. Euro-DOCSIS is DOCSIS adapted for use in Europe.                                                                                                                                                                                                                                                                                                                |
| <b>domain name</b>           | A unique name, such as motorola.com, that maps to an IP address. Domain names are typically much easier to remember than are IP addresses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>dotted-decimal format</b> | <p>Method of representing an IP address or subnet mask using four decimal numbers called octets. Each octet represents eight bits.</p> <p>In a class C IP address, the octets are “network.network.network.host.” The first three octets together represent the network address and the final octet is the host address. In the SBG1000 LAN default configuration, 192.168.100 represents the network address. In the final octet, the host address can be from 2 to 254.</p>                                                                                                                                                                                                                           |
| <b>download</b>              | To copy a file from one computer to another. You can use the Internet to download files from a server to a computer. A DOCSIS or Euro-DOCSIS cable modem or gateway downloads its configuration file from a TFTP server during start-up.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>downstream</b>            | In a cable data network, the direction of data received by the computer from the Internet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                           |                                                                                                                                                                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>driver</b>             | Software that enables a computer to interact with a network or other device. For example, there are drivers for printers, monitors, graphics adapters, modems, <a href="#">Ethernet</a> , <a href="#">USB</a> , <a href="#">HPNA</a> , and many others. |
| <b>DSL</b>                | Digital Subscriber Line                                                                                                                                                                                                                                 |
| <b>DSSS</b>               | Direct Sequence Spread Spectrum is an IEEE 802.11b RF modulation protocol.                                                                                                                                                                              |
| <b>dynamic IP address</b> | An IP address that is temporarily leased to a <a href="#">host</a> by a <a href="#">DHCP</a> server. The opposite of <i>static IP address</i> .                                                                                                         |

## E

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>encapsulate</b>    | To include data into some other data unit to hide the format of the included data.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>encode</b>         | To alter an electronic signal so that only an authorized user can unscramble it to view the information.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>encrypt</b>        | To encode data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>endpoint</b>       | A <a href="#">VPN</a> endpoint terminates the VPN at the <a href="#">router</a> so that computers on the SBG1000 <a href="#">LAN</a> do not need VPN client software to <a href="#">tunnel</a> through the Internet to the VPN server.                                                                                                                                                                                                                                                                                         |
| <b>ESSID</b>          | The Extended Service Set Identifier or network name is a unique identifier that wireless <a href="#">clients</a> use to associate with an <a href="#">access point</a> to distinguish between multiple wireless LANs in the same area. All clients on a wireless LAN must have the same ESSID as the access point. On the SBG1000, you can set the ESSID on the Wireless > NETWORK page.                                                                                                                                       |
| <b>Ethernet</b>       | The most widely used <a href="#">LAN</a> type, also known as <a href="#">IEEE</a> 802.3. The most common Ethernet networks are 10Base-T, which provide transmission speeds up to 10 <a href="#">Mbps</a> , usually over unshielded, twisted-pair wire terminated with RJ-45 connectors. Fast Ethernet (100Base-T) provides speeds up to 100 Mbps. "Base" means "baseband technology" and "T" means "twisted pair cable."<br>Each Ethernet <a href="#">port</a> has a physical address called the <a href="#">MAC address</a> . |
| <b>Euro-DOCSIS</b>    | A tComLabs standard that is <a href="#">DOCSIS</a> adapted for use in Europe                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>event</b>          | A message generated by a device to inform an operator or the network management system that something has occurred.                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>expansion slot</b> | A connection point in a computer where a circuit board can be inserted to add new capabilities.                                                                                                                                                                                                                                                                                                                                                                                                                                |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## F

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|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FCS</b>              | frame check sequence                                                                                                                                                                                                                                                                                                                                   |
| <b>F-type connector</b> | A type of connector used to connect coaxial cable to equipment such as the SBG1000.                                                                                                                                                                                                                                                                    |
| <b>firewall</b>         | A security software system on the SBG1000 that enforces an access control policy between the Internet and the SBG1000 <a href="#">LAN</a> .                                                                                                                                                                                                            |
| <b>flow</b>             | A data path moving in one direction.                                                                                                                                                                                                                                                                                                                   |
| <b>FEC</b>              | Forward error correction is a technique to correct transmission errors without requiring the transmitter to resend any data.                                                                                                                                                                                                                           |
| <b>FDMA</b>             | Frequency Division Multiple Access is a method to allow multiple users to share a specific radio spectrum. Each active user is assigned an individual RF channel (or carrier) with the carrier frequency of each channel offset from its adjacent channels by an amount equal to the channel spacing, which allows the required bandwidth per channel. |
| <b>frame</b>            | A unit of data transmitted between network <a href="#">nodes</a> that contains addressing and protocol control data. Some control frames contain no data.                                                                                                                                                                                              |
| <b>frequency</b>        | Number of times an electromagnetic signal repeats an identical cycle in a unit of time, usually one second, measured in <a href="#">Hz</a> , kHz, mHz, or <a href="#">GHz</a> .                                                                                                                                                                        |
| <b>FTP</b>              | File Transfer Protocol is a standard Internet <a href="#">protocol</a> for exchanging files between computers. FTP is commonly used to <a href="#">download</a> programs and other files to a computer from web pages on Internet servers.                                                                                                             |
| <b>full-duplex</b>      | The ability to simultaneously transmit and receive data. See also <a href="#">half-duplex</a> .                                                                                                                                                                                                                                                        |

## G

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|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>gateway</b>            | A device that enables communication between networks using different <a href="#">protocols</a> . See also <a href="#">router</a> . The SBG1000 enables up to 253 computers supporting <a href="#">IEEE 802.11b</a> , <a href="#">Ethernet</a> , <a href="#">USB</a> , or <a href="#">HPNA</a> to share a single <a href="#">broadband</a> Internet connection. |
| <b>gateway IP address</b> | The address of the default gateway router on the internet. Also known as the "giaddr."                                                                                                                                                                                                                                                                         |
| <b>GHz</b>                | Gigahertz — one billion cycles per second.                                                                                                                                                                                                                                                                                                                     |
| <b>GUI</b>                | graphical user interface                                                                                                                                                                                                                                                                                                                                       |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## H

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| <b>H.323</b>       | A suite of <a href="#">protocols</a> created by the <a href="#">ITU</a> for interactive video-conferencing, data sharing, and audio applications such as <a href="#">VoIP</a> .                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>half-duplex</b> | Network where only one device at a time can transmit data. See also <a href="#">full-duplex</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>headend</b>     | A location that receives TV programming, radio programming, data, and telephone calls that it modulates onto the HFC network. It also sends return data and telephone transmissions. Headend equipment includes transmitters, preamplifiers, frequency terminals, demodulators, modulators, and other devices that amplify, filter, and convert incoming broadcast TV signals to wireless and cable channels.                                                                                                                                                     |
| <b>header</b>      | The data at the beginning of a <a href="#">packet</a> that identifies what is in the packet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>hexadecimal</b> | A base-sixteen numbering system that uses sixteen sequential numbers (0 to 9 and the letters A to F) as base units before adding a new position. On computers, hexadecimal is a convenient way to express <a href="#">binary</a> numbers.                                                                                                                                                                                                                                                                                                                         |
| <b>HFC</b>         | A hybrid fiber/coaxial cable network uses fiber-optic cable as the <a href="#">trunk</a> and <a href="#">coaxial cable</a> to the subscriber premises.                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>hop</b>         | The interval between two routers on an IP network. The number of hops a <a href="#">packet</a> traverses toward its destination (called the hop count) is saved in the packet header. For example, a hop count of six means the packet has traversed six routers. The packet hop count increases as the time-to-live ( <a href="#">TTL</a> ) value decreases.                                                                                                                                                                                                     |
| <b>host</b>        | <p>In IP, a host is any computer supporting end-user applications or services with full two-way network access. Each host has a unique host number that combined with the network number forms its IP address.</p> <p>Host also can mean:</p> <ul style="list-style-type: none"><li>• A computer running a web server that serves pages for one or more web sites belonging to organization(s) or individuals</li><li>• A company that provides this service</li><li>• In IBM environments, a mainframe computer</li></ul>                                        |
| <b>HPNA</b>        | The Home Phoneline Networking Alliance (HomePNA) standard enables home network devices to interact over existing telephone wiring without disturbing normal voice service. An HPNA network processes, manages, transports, and stores data to enable telephones, fax machines, desktops, laptops, printers, scanners and web cameras to connect and interoperate over home telephone wiring. HPNA uses frequencies that are not used for phone modems or voice communications. HPNA can work on a Digital Subscriber Line (DSL). Motorola is an HPNA participant. |
| <b>HTML</b>        | Hyper Text Markup Language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>hub</b>         | <p>On a <a href="#">LAN</a>, a hub is a device that connects multiple <a href="#">hosts</a> to the LAN. A hub performs no data filtering. See also <a href="#">bridge</a> and <a href="#">router</a>. An IP hub is typically a unit on a rack or desktop.</p> <p>On an HFC network, a hub is a scaled-down <a href="#">headend</a> that performs some or all headend functions for part of the system.</p>                                                                                                                                                        |
| <b>Hz</b>          | Hertz — one cycle per second. The unit to measure the <a href="#">frequency</a> that an alternating electromagnetic signal cycles through its highest and lowest states. Used to define the bands of the electromagnetic spectrum used in voice and data communications, or to define the <a href="#">bandwidth</a> of a transmission <a href="#">medium</a> .                                                                                                                                                                                                    |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## I

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|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IANA</b>          | The Internet Numbering Address Authority (IANA) is an organization under the Internet Architecture Board (IAB) of the Internet Society that oversees IP address allocation. It is under a contract from the U.S. government.                                                                                                                                                                                               |
| <b>ICMP</b>          | Internet Control Message Protocol is a <a href="#">protocol</a> used for error, problem, and informational messages sent between IP <a href="#">hosts</a> and <a href="#">gateways</a> . ICMP messages are processed by the IP software and are not usually apparent to the end-user.                                                                                                                                      |
| <b>ICSA</b>          | The International Computer Security Association is the security industry's main source of research, intelligence, and product certification.                                                                                                                                                                                                                                                                               |
| <b>IEEE</b>          | The Institute of Electrical and Electronics Engineers, Inc. ( <a href="http://www.ieee.org">http://www.ieee.org</a> ) is an organization that produces standards, technical papers, and symposiums for the electrical and electronic industries and is accredited by <a href="#">ANSI</a> .                                                                                                                                |
| <b>IEEE 802.11b</b>  | IEEE wireless network standard.                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>IEEE 802.3</b>    | See <a href="#">Ethernet</a> .                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>IETF</b>          | The Internet Engineering Task Force ( <a href="http://www.ietf.org">http://www.ietf.org</a> ) is an open international community of network designers, operators, vendors, and researchers to develop and maintain Internet architecture. Technical working groups issue working documents called Internet-Drafts. The IETF publishes review versions of the drafts called requests for comments ( <a href="#">RFCs</a> ). |
| <b>IGMP</b>          | Internet Group Membership Protocol the Internet multicasting standard. IGMP establishes and maintains a database of group multicast addresses and interfaces to which a <a href="#">multicast</a> router forwards multicast packets. IGMP runs between multicast <a href="#">hosts</a> and their immediately-neighboring multicast routers.                                                                                |
| <b>IGMP spoofing</b> | A process where a router acts as an IGMP querier for multicast hosts and an IGMP host to a multicast router.                                                                                                                                                                                                                                                                                                               |
| <b>impedance</b>     | The total opposition to ac electron current flow within a device. Impedance is typically 75 ohms for coax cable and other CATV components.                                                                                                                                                                                                                                                                                 |
| <b>impulse noise</b> | Noise of very short in duration, typically of the order of 10 microseconds. It is caused by electrical transients such as voltage spikes, electric motors turning on, and lightning or switching equipment that bleed over to the cable.                                                                                                                                                                                   |
| <b>ingress noise</b> | Noise typically caused by discrete frequencies picked up by the cable plant from radio broadcasts or an improperly grounded or shielded home appliance such as a hair dryer. Ingress is the major source of cable system noise.                                                                                                                                                                                            |
| <b>Internet</b>      | A worldwide collection of interconnected networks using <a href="#">TCP/IP</a> .                                                                                                                                                                                                                                                                                                                                           |
| <b>internetwork</b>  | A collection of interconnected networks allowing communication between all devices connected to any network in the collection.                                                                                                                                                                                                                                                                                             |
| <b>IP</b>            | Internet Protocol is a set of standards that enable different types of computers to communicate with one another and exchange data through the Internet. IP provides the appearance of a single, seamless communication system and makes the Internet a virtual network.                                                                                                                                                   |

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| <b>IP address</b> | <p>A unique 32-bit value that identifies each <a href="#">host</a> on a <a href="#">TCP/IP</a> network. TCP/IP networks route messages based on the destination IP address. An IP address has two parts:</p> <ul style="list-style-type: none"><li>• The network address is assigned by <a href="#">IANA</a>.</li><li>• The SBG1000 network administrator assigns a host address to each host connected to the SBG1000, automatically using its <a href="#">DHCP</a> server or as a <a href="#">static</a> IP address.</li></ul> <p>For a <a href="#">Class C network</a>, the first 24 bits are the network address and the final 8 bits are the host address; in <a href="#">dotted-decimal format</a> it appears "network.network.network.host."</p> <p>If you enable the SBG1000 DHCP client on the WAN page, the cable service provider automatically assigns the network address, <a href="#">subnet mask</a>, <a href="#">domain name</a>, and <a href="#">DNS</a> server to provide a continuous Internet connection.</p> |
| <b>IPSec</b>      | The Internet Protocol Security protocols are <a href="#">IETF</a> authentication and <a href="#">encryption</a> standards for secure <a href="#">packet</a> exchange over the Internet. IPSec works at <a href="#">OSI</a> layer 3 and secures everything on the network.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>IKE</b>        | Internet Key Exchange                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>ISAKMP</b>     | Internet Security Association and Key Management Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>ISDN</b>       | Integrated Services Digital Network                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>ISO</b>        | The International Organization for Standardization ( <a href="http://www.iso.ch">http://www.iso.ch</a> ) is a worldwide federation of national standards bodies from approximately 140 countries. ISO is a non-governmental organization established in 1947 to promote the development of standardization and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological, and economic activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>ISP</b>        | Internet Service Provider                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>ITU</b>        | International Telecommunications Union                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>K</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>kHz</b>        | kilohertz — one thousand cycles per second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## L

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|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>L2F</b>      | Layer 2 Forwarding is an <a href="#">OSI</a> layer 2 <a href="#">protocol</a> that establishes a secure <a href="#">tunnel</a> across the Internet to create a virtual <a href="#">PPP</a> connection between the user and the enterprise network. L2F is the most established and stable layer 2 tunneling protocol.                                                                                                                                                                                                                                                                                                         |
| <b>L2TP</b>     | Layer 2 Tunnel Protocol is a PPP extension that enables ISPs to operate <a href="#">VPNs</a> . L2TP merges the best features of the <a href="#">PPTP</a> and L2F. L2TP is the emerging <a href="#">IETF</a> standard.                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>LAC</b>      | An L2TP access concentrator is a device to which the <a href="#">client</a> directly connects through which PPP frames are tunneled to the LNS. The LAC need only implement the media over which L2TP operates to transmit traffic to one or more LNSs. The LAC may tunnel any protocol carried within PPP. The LAC initiates incoming calls and receives outgoing calls. A LAC is analogous to an L2F NAS.                                                                                                                                                                                                                   |
| <b>LAN</b>      | A local area network provides a full-time, high- <a href="#">bandwidth</a> connection over a limited area, such as a building or campus. <a href="#">Ethernet</a> is the most widely used LAN standard.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>layer</b>    | In networks, layers are software <a href="#">protocol</a> levels. Each layer performs functions for the layers above it. <a href="#">OSI</a> is a reference model having seven functional layers.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>LCP</b>      | Link Control Protocol establishes, configures, and tests data link connections used by <a href="#">PPP</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>latency</b>  | The time required for a signal to pass through a device. It is often expressed in a quantity of symbols.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>LED</b>      | light-emitting diode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>LNS</b>      | An L2TP network server is a termination point for L2TP tunnels where PPP frames are processed and passed to higher layer protocols. An LNS can operate on any platform that terminates PPP. The LNS handles the server side of the L2TP protocol. L2TP relies only on the single media over which L2TP tunnels arrive. The LNS can have a single LAN or WAN interface but can terminate calls arriving at any of the LACs full range of PPP interfaces (asynchronous, synchronous, ISDN, V.120, etc.). The LNS initiates outgoing calls and receives incoming calls. An LNS is analogous to a home gateway in L2F technology. |
| <b>loopback</b> | A test that loops the transmit signal to the receive signal. Usually the loopback test is initiated on a network device. The test is used to verify a path or to measure the quality of a signal on that path.                                                                                                                                                                                                                                                                                                                                                                                                                |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## M

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| <b>MAC address</b> | The Media Access Control address is a unique, 48-bit value permanently saved in <a href="#">ROM</a> at the factory to identify each <a href="#">Ethernet</a> network device. It is expressed as a sequence of 12 <a href="#">hexadecimal</a> digits printed on the SBG1000 rear panel. You need to provide the HFC MAC address to the cable service provider. Also called an Ethernet address, physical address, hardware address, or <a href="#">NIC</a> address. |
| <b>MB</b>          | One megabyte; equals 1,024 x 1,024 bytes, 1,024 kilobytes, or about 8 million bits.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Mbps</b>        | Million bits per second (megabits per second). A rate of data transfer.                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>media</b>       | The various physical environments through which signals pass; for example, coaxial, unshielded twisted-pair (UTP), or fiber-optic cable.                                                                                                                                                                                                                                                                                                                           |
| <b>MIB</b>         | A management information base is a unique hierarchical structure of software objects used by the <a href="#">SNMP</a> manager and agent to configure, monitor, or test a device.                                                                                                                                                                                                                                                                                   |
| <b>MHz</b>         | Megahertz — one million cycles per second. A measure of radio frequency.                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>MPDU</b>        | MAC protocol data unit (PDU)                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>MSDU</b>        | MAC service data unit                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>MSO</b>         | Multiple Systems Operator. A company that owns and operates more than one cable system. Also called a group operator.                                                                                                                                                                                                                                                                                                                                              |
| <b>MTU</b>         | The Maximum Transmission Unit is the largest amount of data that can be transmitted in one discrete message on a given physical network. The MTU places an upper bound on the size of a message that can be transferred by the network in a single frame. Messages exceeding the MTU must be fragmented before transmission, and reassembled at the destination.                                                                                                   |
| <b>multicast</b>   | A data transmission sent from one sender to multiple receivers. See also <a href="#">broadcast</a> and <a href="#">unicast</a> .                                                                                                                                                                                                                                                                                                                                   |
| <b>mW</b>          | milliwatts                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## N

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| <b>NAS</b>            | network access server                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>NAT</b>            | <p>Network Address Translation is an Internet standard for a <a href="#">LAN</a> to use one set of <a href="#">IP addresses</a> for internal traffic and a second set of IP addresses for external traffic. NAT provides some security because the IP addresses of SBG1000 <a href="#">LAN</a> computers are invisible on the Internet.</p> <p>If NAT is enabled on the Gateway page, there is a one-to-one mapping between each public IP address and client IP address.</p> |
| <b>NAPT</b>           | <p>Network Address Port Translation is the most common form of address translation between <a href="#">public</a> and <a href="#">private IP addresses</a>. NAPT is a mapping of one public IP address to many private IP addresses. If NAPT is enabled on the Gateway page, one public IP address is mapped to an individual private IP address for up to 245 LAN clients.</p>                                                                                               |
| <b>NEC</b>            | <p>National Electrical Code (United States) — The regulations for construction and installation of electrical wiring and apparatus, suitable for mandatory application by a wide range of state and local authorities.</p>                                                                                                                                                                                                                                                    |
| <b>network</b>        | <p>Two or more computers connected to communicate with each other. Networks have traditionally been connected using some kind of wiring.</p>                                                                                                                                                                                                                                                                                                                                  |
| <b>network driver</b> | <p>Software packaged with a <a href="#">NIC</a> that enables the computer to communicate with the NIC.</p>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>network layer</b>  | <p>Layer 3 in the <a href="#">OSI</a> architecture that provides services to establish a path between open systems. The network layer knows the address of the neighboring nodes, packages output with the correct network address data, selects routes, and recognizes and forwards to the <a href="#">transport layer</a> incoming messages for local host domains.</p>                                                                                                     |
| <b>NIC</b>            | <p>A network interface card converts computer data to serial data in a <a href="#">packet</a> format that it sends over the <a href="#">LAN</a>. A NIC is installed in an <a href="#">expansion slot</a> or can be built-in. Every <a href="#">Ethernet</a> NIC has a <a href="#">MAC address</a> permanently saved in its <a href="#">ROM</a>.</p>                                                                                                                           |
| <b>node</b>           | <p>On a <a href="#">LAN</a>, a generic term for any network device.</p> <p>On an <a href="#">HFC</a> network, the interface between the fiber-optic <a href="#">trunk</a> and <a href="#">coaxial</a> cable feeders to <a href="#">subscriber</a> locations. A node is typically located in the subscriber neighborhood.</p>                                                                                                                                                  |
| <b>noise</b>          | <p>Random spurts of electrical energy or interface. May produce a salt-and-pepper pattern on a television picture.</p>                                                                                                                                                                                                                                                                                                                                                        |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## O

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|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ohm</b> | A unit of electrical resistance.                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>OSI</b> | <p>The Open Systems Interconnection reference model is an illustrative model describing how data moves from an application on the source <a href="#">host</a> through a network to an application on the destination host. It is a conceptual framework developed by <a href="#">ISO</a> that is now the primary model for intercomputer communications. OSI is a model <i>only</i>; it does not define a specific networking interface.</p> |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## P

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| <b>packet</b>           | The unit of data that is routed between the sender and destination on the Internet or other packet-switched network. When data such as an e-mail message or other file is sent over the Internet, <a href="#">IP</a> on the sender divides the data into uniquely-numbered packets. The packet <a href="#">header</a> contains the source and destination IP addresses. The individual packets may travel different routes. When all packets arrive at the destination, IP at that end reassembles the packets. The header and the data can vary in length. Packet and <a href="#">datagram</a> are similar in meaning. |
| <b>packet-switched</b>  | A scheme to handle transmissions on a connectionless network such as the Internet. An alternative is <a href="#">circuit-switched</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>PacketCable</b>      | A CableLabs®-led project to define a common platform to deliver advanced real-time multimedia services over <a href="#">two-way HFC</a> cable plant. Built on <a href="#">DOCSIS 1.1</a> , PacketCable networks use <a href="#">IP</a> technology as the basis for a highly-capable multimedia architecture.                                                                                                                                                                                                                                                                                                            |
| <b>pass-through</b>     | A pass-through client on the SBG1000 LAN obtains its public IP address from the cable service provider DHCP server.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>PAT</b>              | Port Address Translation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>PCMCIA</b>           | The Personal Computer Memory Card International Association sets international standards for connecting peripherals to portable computers. Laptop computers typically have a PCMCIA slot that can hold one or two PC Cards to provide features such as <a href="#">Ethernet</a> connectivity.                                                                                                                                                                                                                                                                                                                           |
| <b>PDA</b>              | personal desktop assistant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>PDU</b>              | A protocol data unit is a message containing operational instructions used for <a href="#">SNMP</a> . The basic SNMP V2 PDU types are get-request, get-next-request, get-bulk-request, response, set-request, inform-request, and trap.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>periodic ranging</b> | Ranging that is performed on an on-going basis after initial ranging has taken place.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>physical layer</b>   | Layer 1 in the <a href="#">OSI</a> architecture. It provides services to transmit bits or groups of bits over a transmission link between open systems. It entails the electrical, mechanical, and handshaking procedures.                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>piggybacking</b>     | A process that occurs when a cable modem simultaneously transmits data and requests additional <a href="#">bandwidth</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>PING</b>             | A network utility that tests <a href="#">host</a> reachability by sending a small packet to the host and waiting for a reply. If you PING a computer <a href="#">IP address</a> and receive a reply, you know the computer is reachable over the network. It also stands for "Packet InterNet Groper."                                                                                                                                                                                                                                                                                                                  |
| <b>PJL</b>              | (Hewlett-Packard) Printer Job Language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>PMD</b>              | The physical media-dependent sublayer of the physical layer which transmits bits or groups of bits over particular types of transmission links between open systems. It entails the electrical, mechanical, and handshaking procedures.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>point-to-point</b>   | Physical connection made from one point to another.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>POTS</b>             | The "plain old telephone service" offered through the <a href="#">PSTN</a> ; basic analog telephone service. POTS uses the lowest 4 kHz of bandwidth on twisted pair wiring.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>port</b>             | On a computer or other electronic device, a port is a socket or plug used to physically connect it to the network or to other devices.<br>in <a href="#">TCP/IP</a> , a port is a number from 0 to 65536 used logically by a client program to specify a server program. Ports 0 to 1024 are reserved                                                                                                                                                                                                                                                                                                                   |
| <b>port mirroring</b>   | A feature that enables one port (source) on the SBG1000 to be copied to another port (destination) to be studied. The destination mirrors the transmitted (from) or received (to) data on the source port to enable the person managing the network to monitor activity.                                                                                                                                                                                                                                                                                                                                                |

|                           |                                                                                                                                                                                                                                                                                                          |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PPP</b>                | Point-to-Point Protocol is used to transport other protocols, typically for simple links over serial lines. It is most commonly used to access the Internet with a dial-up modem.                                                                                                                        |
| <b>PPTP</b>               | Point-to-Point Tunneling Protocol <a href="#">encapsulates</a> other <a href="#">protocols</a> . It is a new technology to create <a href="#">VPNs</a> developed jointly by several vendors.                                                                                                             |
| <b>private IP address</b> | An <a href="#">IP address</a> assigned to a computer on the SBG1000 LAN by the <a href="#">DHCP</a> server on the SBG1000 for a specified lease time. Private IP addresses are used by the SBG1000 LAN only; they are invisible to devices on the Internet. See also <a href="#">public IP address</a> . |
| <b>protocol</b>           | A formal set of rules and conventions for exchanging data. Different computer types (for example PC, UNIX, or mainframe) can communicate if they support common protocols.                                                                                                                               |
| <b>provisioning</b>       | The process of autodiscovery or manually configuring a cable modem on the <a href="#">CMTS</a> .                                                                                                                                                                                                         |
| <b>PSTN</b>               | The public switched telephone network is the traditional <a href="#">circuit-switched</a> , voice-oriented telephone network. See also <a href="#">POTS</a> .                                                                                                                                            |
| <b>public IP address</b>  | The <a href="#">IP address</a> assigned to the SBG1000 by the cable service provider. A public IP address is visible to devices on the Internet. See also <a href="#">private IP address</a> .                                                                                                           |

## Q

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QAM</b>  | Quadrature Amplitude Modulation uses amplitude and phase modulation to encode multiple bits of data in one signaling element. QAM achieves faster data transfer than amplitude or phase modulation alone, but the signal is more prone to errors caused by <a href="#">noise</a> . QAM requires a transmission circuit with a higher <a href="#">CNR</a> than alternate modulation formats such as QPSK. Two types of QAM are: <ul style="list-style-type: none"><li>• 16 QAM encodes four bits per symbol as one of 16 possible amplitude and phase combinations.</li><li>• 64 QAM encodes six bits per symbol as one of 64 possible amplitude and phase combinations.</li></ul> |
| <b>QPSK</b> | Quadrature Phase Shift Key (QPSK) modulation sends two bits of information per symbol period with one symbol 90 degrees out of phase with other symbols. The four constellation points represented by the coordinates (0,0 - 0,1 - 1,0 - 1,1) represent the four possible combinations.                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>QoS</b>  | Quality of service describes the priority, delay, throughput, and bandwidth of a connection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## R

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RAS</b>           | Remote Access Server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>registration</b>  | How a cable modem makes itself known to the <a href="#">CMTS</a> . The <a href="#">cable modem configuration file</a> and authorization are verified and the <a href="#">CoS</a> is negotiated.                                                                                                                                                                                                                                                                                                                                                                          |
| <b>return loss</b>   | A measurement of the quality of the match of the device to the cable system. Return loss is the ratio of the amount of power reflected by the device. A return loss of 20 dB or greater is preferred.                                                                                                                                                                                                                                                                                                                                                                    |
| <b>RF</b>            | Radio Frequency — signals used by the CMTS transmitter and receiver to send data over HFC. The carrier is modulated to encode the digital data stream for transmission across the cable network.                                                                                                                                                                                                                                                                                                                                                                         |
| <b>RFC</b>           | Request for Comments published on the <a href="#">IETF</a> or other websites. Many RFCs become international standards.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>RJ-11</b>         | The most common type of connector for household or office phones.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>RJ-45</b>         | An 8-pin modular connector; the most common connector type for 10Base-T or 100Base-T <a href="#">Ethernet</a> networks.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>ROM</b>           | read-only memory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>router</b>        | <p>On IP networks, a device connecting at least two networks, which may or may not be similar. A router is typically located at a <a href="#">gateway</a> between networks. A router operates on <a href="#">OSI</a> network layer 3. It filters <a href="#">packets</a> based on the <a href="#">IP address</a>, examining the source and destination IP addresses to determine the best route on which to forward them.</p> <p>A router is often included as part of a network <a href="#">switch</a>. A router can also be implemented as software on a computer.</p> |
| <b>routing table</b> | A table listing available routes that is used by a router to determine the best route for a packet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>RTS</b>           | request to send                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

To return to your previous page, click the Acrobat Go to Previous Page  button.

## S

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>server</b>              | In a client/server architecture, a dedicated computer that supplies files or services such as file transfer, remote login, or printing to <a href="#">clients</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>scope</b>               | The set of <a href="#">IP addresses</a> that a <a href="#">DHCP</a> server can lease to <a href="#">clients</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>service provider</b>    | A company providing cable data services to subscribers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>SID</b>                 | A service ID is a unique 14-bit identifier the <a href="#">CMTS</a> assigns to a cable modem or gateway that identifies the traffic type it carries (for example, data or voice). The SID provides the basis for the CMTS to allocate <a href="#">bandwidth</a> to the cable modem and implement <a href="#">CoS</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>SDU</b>                 | service data unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>SME</b>                 | small and medium enterprise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SMTP</b>                | Simple Mail Transfer Protocol is a standard Internet <a href="#">protocol</a> for transferring e-mail.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>SNMP</b>                | Simple Network Management Protocol is a standard to monitor and manage networks and network devices. Data is exchanged using <a href="#">PDU</a> messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>SOHO</b>                | small office home office                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>spectrum</b>            | A specified range of frequencies used for transmission of electromagnetic signals.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>spectrum allocation</b> | An allocation of portions of the available electromagnetic spectrum for specific services, such as AM, FM, or personal communications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>splitter</b>            | A device that divides the signal from an input cable between two or more cables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>stateful inspection</b> | <p>A type of <a href="#">firewall</a> that tracks each connection traversing all firewall interfaces to ensure validity. In addition to examining the source and destination in the packet header based on static rules, a stateful inspection firewall:</p> <ul style="list-style-type: none"><li>• Examines packet headers on context established by previous packets that traversed the firewall</li><li>• Monitors the connection state and saves it in a table</li><li>• Closes ports until a connection to a specific port is requested</li><li>• May examine the packet contents up through the application layer to determine more than just the source and destination</li></ul> <p>A stateful-inspection firewall is more advanced than a static filter firewall.</p> |
| <b>static filter</b>       | A type of firewall that examines the source and destination in the <a href="#">packet header</a> based on administrator-defined rules <i>only</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>static IP address</b>   | An <a href="#">IP address</a> that is permanently assigned to a <a href="#">host</a> . Normally, a static IP address must be assigned manually. The opposite of <a href="#">dynamic IP address</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>static route</b>        | A manually-defined route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>station</b>             | <a href="#">IEEE 802.11b</a> term for wireless <a href="#">client</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>subscriber</b>          | A home or office user who accesses television, data, or other services from a cable service provider.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>subnet mask</b>         | A bit mask that is logically ANDed with the destination IP address of a packet to determine the network address. A router routes packets using the network address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>subnetwork</b>          | A part of a network; commonly abbreviated "subnet." When subnetting is used, the host portion of the IP address is divided into a subnet and host number. Hosts and routers use the subnet mask to identify the bits used for the network and subnet number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>switch</b>              | On an Ethernet network, a switch filters <a href="#">frames</a> based on the <a href="#">MAC address</a> , in a manner similar to a <a href="#">bridge</a> . A switch is more advanced because it can connect more than two segments.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**symbol rate** Also known as baud rate, is a measure of the number of times per second a signal in a communications channel varies, or makes a transition between states (states being frequencies, voltage levels or phase angles). Usually measured in symbols per second (sps).

**SYSLOG** A de-facto UNIX standard for logging system events.

## T

**TBCP** Tagged Binary Communication Protocol

**TCP** Transmission Control Protocol on [OSI](#) transport layer four, provides reliable transport over the network for data transmitted using [IP](#) (network layer three). It is an end-to-end protocol defining rules and procedures for data exchange between hosts on top of connectionless IP. TCP uses a timer to track outstanding packets, checks error in incoming packets, and retransmits packets if requested.

**TCP/IP** The Transmission Control Protocol/Internet Protocol suite provides standards and rules for data communication between networks on the Internet. It is the worldwide internetworking standard and the basic communications protocol of the Internet.

**TFTP** Trivial File Transfer Protocol is a very simple [protocol](#) used to transfer files.

**transparent bridging** A method to enable all [hosts](#) on the wired [Ethernet](#) LAN, [IEEE 802.11b](#) wireless LAN, [HPNA](#) LAN, and [USB](#) connection to communicate as if they were all connected to the same physical [network](#).

**transport layer** Layer of the OSI concerned with protocols for error recognition and recovery. This layer also regulates information flow.

**trunk** Electronic path over which data is transmitted.

**TTL** The time to live is the number of [routers](#) (or [hops](#)) a [packet](#) can traverse before being discarded. When a router processes an packet, it decreases the TTL by 1. When the TTL reaches zero, the packet is discarded.

**tunnel** To place packets inside other packets to send over a network. The [protocol](#) of the enclosing packet is understood by each endpoint, or tunnel interface, where the packet enters and exits the network. [VPNs](#) rely on tunneling to create a secure network.

Tunneling requires the following protocol types:

- A carrier protocol, such as [TCP](#), used by the network that the data travels over
- An encapsulating protocol, such as [IPSec](#), [L2F](#), [L2TP](#), or [PPTP](#), that is wrapped around the original data
- A passenger protocol, such as [IP](#), for the original data

**two-way** A cable system that can transmit signals in both directions to and from the [headend](#) and the [subscriber](#).

To return to your previous page, click the Acrobat Go to Previous Page  button.

## U-Z

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UDP</b>                          | User Datagram Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>unicast</b>                      | A point-to-point data transmission sent from one sender to one receiver. This the normal way you access websites. See also <a href="#">broadcast</a> and <a href="#">multicast</a> .                                                                                                                                                                                                                                                                                     |
| <b>upstream</b>                     | In a cable data network, upstream describes the direction of data sent from the subscriber computer through the cable modem to the CMTS and the Internet.                                                                                                                                                                                                                                                                                                                |
| <b>USB</b>                          | Universal Serial Bus is a computer interface for add-on devices such as printers, scanners, mice, modems, or keyboards. USB supports data transfer rates of 12 <a href="#">Mbps</a> and plug-and-play installation. You can connect up to 127 devices to a single USB port.                                                                                                                                                                                              |
| <b>UTP</b>                          | unshielded twisted pair (wire)                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>VLAN</b>                         | A virtual local area network is group of devices on different <a href="#">LAN</a> segments that are logically configured to communicate as if they are connected to the same wire.                                                                                                                                                                                                                                                                                       |
| <b>VoIP</b>                         | Voice over Internet Protocol is a method to exchange voice, fax, and other information over the Internet. Voice and fax have traditionally been carried over traditional telephone lines of the <a href="#">PSTN</a> using a dedicated circuit for each line. VoIP enables calls to travel as discrete data packets on shared lines. VoIP is an important part of the convergence of computers, telephones, and television into a single integrated information network. |
| <b>VPN</b>                          | A virtual private network is a private network that uses "virtual" connections ( <a href="#">tunnels</a> ) routed over a public network (usually the Internet) to provide a secure and fast connection; usually to users working remotely at home or in small branch offices. A VPN connection provides security and performance similar to a dedicated link (for example, a leased line), but at much lower cost.                                                       |
| <b>WAN</b>                          | A wide-area network provides a connection over a large geographic area, such as a country or the whole world. The <a href="#">bandwidth</a> depends on need and cost, but is usually much lower than for a <a href="#">LAN</a> .                                                                                                                                                                                                                                         |
| <b>WAP</b>                          | Wireless access point or Wireless Access Protocol. See also <a href="#">access point</a> .                                                                                                                                                                                                                                                                                                                                                                               |
| <b>WECA</b>                         | The Wireless Ethernet Compatibility Alliance is a trade organization that works to ensure that all wireless <a href="#">IEEE 802.11b</a> Wi-Fi devices — computer cards, laptops, air routers, PDAs, etc — can communicate with each other.                                                                                                                                                                                                                              |
| <b>WEP</b>                          | Wired Equivalent Privacy encryption protects the privacy of data transmitted over a wireless <a href="#">LAN</a> . WEP uses keys to encrypt and decrypt transmitted data. The <a href="#">access point</a> must authenticate a <a href="#">client</a> before it can transfer data to another client. WEP is part of <a href="#">IEEE 802.11b</a> .                                                                                                                       |
| <b>Wi-Fi</b>                        | Wireless fidelity (pronounced y-phi) brand name applied to products supporting IEEE 802.11b.                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Wireless Cable Modem Gateway</b> | The Motorola SBG1000 Wireless Cable Modem Gateway is a single device that combines a cable modem, <a href="#">router</a> , <a href="#">Ethernet</a> switch, wireless <a href="#">access point</a> , <a href="#">HPNA</a> connection, print server, and <a href="#">DHCP</a> server for <a href="#">SOHO</a> or <a href="#">SME</a> use.                                                                                                                                  |
| <b>WLAN</b>                         | wireless <a href="#">LAN</a>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>world wide web</b>               | An interface to the Internet that you use to navigate and hyperlink to information.                                                                                                                                                                                                                                                                                                                                                                                      |

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