SB6120

SURFboard® DOCSIS® 3.0 Cable Modem

MOTOROLA

SAFETY AND REGULATORY INFORMATION

IMPORTANT SAFETY INSTRUCTIONS — when using your equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Read all of the instructions listed here and/or in the user manual before you operate this device. Give particular attention to all safety precautions. Retain the instructions for future reference.

- This device must be installed and used in strict accordance with manufacturer's instructions as described in the user documentation that is included with the device.

- Comply with all warning and caution statements in the instructions. Observe all warning and caution symbols that are affixed to this device.

- To prevent fire or shock hazard, do not expose this device to rain or moisture. The device must not be exposed to dripping or splashing. Do not place objects filled with liquids, such as vases, on the device.

- This device was qualified under test conditions that included the use of the supplied cables between systems components. To ensure regulatory and safety compliance, use only the provided power and interface cables and install them properly.

- Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all applicable device safety requirements of the country of use.

- Installation of this device must be in accordance with national wiring codes and conform to local regulations.

- Operate this device only from the type of power source indicated on the device's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.

- Do not overload outlets or extension cords, as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation, and broken plugs are dangerous. They may result in a shock or fire hazard.

- Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords where they are attached to plugs and convenience receptacles, and examine the point where they exit from the device.

- Place this device in a location that is close enough to an electrical outlet to accommodate the length of the power cord.

- Place device to allow for easy access when disconnecting the power cord of the device from the AC wall outlet.

- Do not connect the plug into an extension cord, receptacle, or other outlet unless the plug can be fully inserted with no part of the blades exposed.

- Place this device on a stable surface.

- It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damaging the device by local lightning strikes and other electrical surges. It is recommended that all devices connected to the modem also be protected by using an AC surge protector.

- Postpone installation until there is no risk of thunderstorm or lightning activity in the area.

- Do not cover the device, or block the airflow to the device with any other objects. Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.

i

- Wipe the device with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the device or use forced air to remove dust.

- Do not use this product near water; for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.

- Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in safe operating condition.

- Do not open the device. Do not perform any servicing other than that contained in the installation and troubleshooting instructions. Refer all servicing to qualified service personnel.

- This device should not be used in an environment that exceeds 40 ℃.

SAVE THESE INSTRUCTIONS

Note to CATV System Installer — This reminder is provided to call the CATV system installer's attention to Section 820.93 of the National Electric Code, which provides guidelines for proper grounding and, in particular, specifies that the Coaxial cable shield shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

FCC STATEMENTS

FCC Interference Statement

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

- Reorient or relocate the receiving antenna.

- Increase the separation between the device and receiver.

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

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

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC CAUTION: Any changes or modifications not expressly approved by Motorola for compliance could void the user's authority to operate the equipment.

FCC DECLARATION OF CONFORMITY

Motorola Inc, 101 Tournament Drive, Horsham, PA 19044, 1-215-323-1000, declares that the SB6120 SURFboard® DOCSIS® 3.0 Cable Modem complies with 47 CFR Parts 2 and 15 of the FCC rules as a Class B digital device..
INDUSTRY CANADA (IC) STATEMENT

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

INTERNATIONAL DECLARATION OF CONFORMITY

We,
Motorola, Inc.
101 Tournament Drive
Horsham, PA, U.S.A.

Declare under our sole responsibility that the
SB6120 SURFboard DOCSIS 3.0 Cable Modem series

To which the declaration relates is in conformity with the following standards:

EN 60950-1

EN 55022

EN 55024

EN 61000-3-2

EN 61000-3-3

The following provisions of the Directive(s) of the Council of the European Union:

EMC Directive 2004/108/EC

Low Voltage Directive 2006/95/EC

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

Restriction of the Use of Certain Hazardous Substances in Electrical Equipment (RoHS) Directive 2002/95/EC

CARING FOR THE ENVIRONMENT BY RECYCLING

When you see this symbol on a Motorola product, do not dispose of the product with residential or commercial waste.

Recycling your Motorola Equipment

Please do not dispose of this product with your residential or commercial waste. Some countries or regions, such as the European Union, have set up systems to collect and recycle electrical and electronic waste items. Contact your local authorities for information about practices established for your region. Please visit www.motorola.com/recycle for instructions on recycling.

SOFTWARE LICENSE

SB6120 SURFboard DOCSIS 3.0 Cable Modem
Motorola, Inc.
Home and Networks Mobility Business ("Motorola")
101 Tournament Drive, Horsham, PA 19044

IMPORTANT: PLEASE READ THIS SOFTWARE LICENSE ("LICENSE") CAREFULLY BEFORE YOU INSTALL, DOWNLOAD, OR USE ANY APPLICATION SOFTWARE, USB DRIVER SOFTWARE, FIRMWARE, AND RELATED DOCUMENTATION ("SOFTWARE") PROVIDED WITH MOTOROLA'S CABLE DATA PRODUCT (THE "CABLE DATA PRODUCT"). BY USING THE CABLE DATA PRODUCT AND/OR INSTALLING, DOWNLOADING, OR USING ANY OF THE SOFTWARE, YOU INDICATE YOUR ACCEPTANCE OF EACH OF THE TERMS OF THIS LICENSE. UPON ACCEPTANCE, THIS LICENSE WILL BE A LEGALLY BINDING AGREEMENT BETWEEN YOU AND MOTOROLA. THE TERMS OF THIS LICENSE APPLY TO YOU AND TO ANY SUBSEQUENT USER OF THIS SOFTWARE.

IF YOU DO NOT AGREE TO ALL OF THE TERMS OF THIS LICENSE (I) DO NOT INSTALL OR USE THE SOFTWARE AND (II) RETURN THE CABLE DATA PRODUCT AND THE SOFTWARE (COLLECTIVELY, "PRODUCT"), INCLUDING ALL COMPONENTS, DOCUMENTATION, AND ANY OTHER MATERIALS PROVIDED WITH THE PRODUCT, TO YOUR POINT OF PURCHASE OR SERVICE PROVIDER, AS THE CASE MAY BE, FOR A FULL REFUND. BY INSTALLING OR USING THE SOFTWARE, YOU AGREE TO BE BOUND BY THE PROVISIONS OF THIS LICENSE AGREEMENT.

The Software includes associated media, any printed materials, and any "on-line" or electronic documentation, as well as any updates, revisions, bug fixes, or drivers obtained by you from Motorola or your service provider. Software provided by 3rd parties may be subject to separate end-user license agreements from the manufacturers of such Software.

The Software is never sold. Motorola licenses the Software to the original customer and to any subsequent licensee for personal use only on the terms of this License. Motorola and its 3rd party licensors retain the ownership of the Software.

You may:

USE the Software only in connection with the operation of the Product.

TRANSFER the Software (including all component parts and printed materials) permanently to another person, but only if the person agrees to accept all of the terms of this License. If you transfer the Software, you must at the same time transfer the Product and all copies of the Software (if applicable) to the same person or destroy any copies not transferred.

TERMINATE this License by destroying the original and all copies of the Software (if applicable) in whatever form.

You may not:

(1) Loan, distribute, rent, lease, give, sublicense, or otherwise transfer the Software, in whole or in part, to any other person, except as permitted under the TRANSFER paragraph above. (2) Copy or translate the User Guide included with the Software, other than for personal use. (3) Copy, alter, translate, decompile, disassemble, or reverse engineer the Software, including, but not limited to, modifying the Software to make it operate on non-compatible hardware. (4) Remove, alter, or cause not to be displayed any copyright notices or startup message contained in the Software programs or documentation. (5) Export the Software or the Product components in violation of any United States export laws.

The Product is not designed or intended for use in on-line control of aircraft, air traffic, aircraft navigation, or aircraft communications; or in design, construction, operation, or maintenance of any nuclear facility. MOTOROLA AND ITS 3rd PARTY LICENSORS DISCLAIM ANY EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR SUCH USES. YOU REPRESENT AND WARRANT THAT YOU SHALL NOT USE THE PRODUCT FOR SUCH PURPOSES.

Title to this Software, including the ownership of all copyrights, mask work rights, patents, trademarks, and all other intellectual property rights subsisting in the foregoing, and all adaptations to and modifications of the foregoing, shall at all times remain with Motorola and its 3rd party licensors.

CONTENTS

1 OVERVIEW

Congratulations, you have a new Motorola SB6120 SURFboard® DOCSIS® 3.0 Cable Modem! It provides high-speed access to the Internet and other online services. Unlike a dial-up modem, your cable modem is always online. Just open your browser and surf!

You can use your high-speed cable modem to directly connect one computer in your home or business to the Internet. Connect a single computer equipped with an Ethernet adapter directly to the Ethernet port on the SB6120 SURFboard DOCSIS 3.0 Cable Modem.

This user guide contains the following sections:

1 Overview — introduces your SB6120 cable modem and the controls on the Front Panel and Rear Panel.

2 Installation — provides an overview and links for cabling and configuring your SB6120 cable modem, lists the items you need to install your SB6120 cable modem, informs you of special precautions, and how to signup for a service.

3 Troubleshooting — provides suggestions to fix common problems.
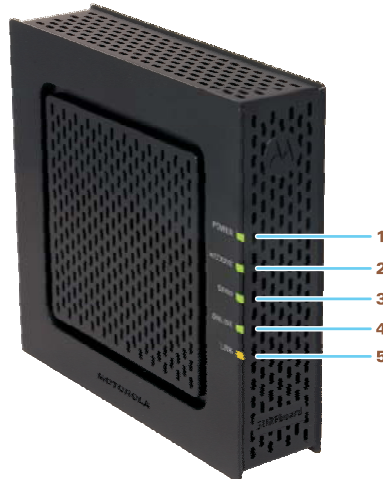
4 Contact Us — provides contact information.

5 Frequently Asked Questions — provides answers to common questions about the SB6120 cable modem.

6 Glossary — contains a list of useful terms with their definitions.

Front Panel

The SB6120 front panel lights provide information about power, communications, and errors.

Key	Light	Off	Flashing	On
1	POWER	Power is disconnected	This light never flashes	Green: Power is properly connected
2	RECEIVE	Receive channel not found	Scanning for a receive (downstream) channel connection	Green: Downstream channel is connected Blue: Downstream channel is connected with bonded channels
3	SEND	Send channel not found	Scanning for a send (upstream) channel connection	Green: Upstream channel is connected Blue: Upstream channel is connected with bonded channels
4	ONLINE	Internet connection failed	Scanning for configuration parameters	Connected to Internet
5	LINK	No connection to the SB6120 Ethernet port detected	Transmitting or receiving data on Ethernet port	Amber: A device, computer or hub, is connected via the Ethernet (10Base-T) or Fast Ethernet (100Base-T) port Blue: High-speed Gigabit Ethernet connection from SB6120 to your PC

During normal operation, the **POWER**, **RECEIVE, SEND**, and **ONLINE** lights are ON. The **LINK** light flashes when the cable modem is transferring data.

Optional LED operation available in some locations:

RECEIVE and **SEND** lights are blue when the downstream and upstream channels are connected with bonded channels.

LINK light is blue for high-speed Ethernet connection (Gigabit) from the SB6120 to your computer.

Rear Panel

The rear panel contains cabling connectors and the power receptacle.
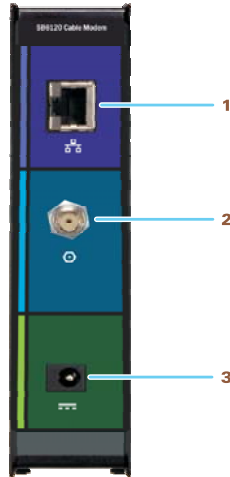
Key	Item	Description
1	ETHERNET	Connection to Ethernet equipped computers using a cable terminated with an RJ-45 connector
2	CABLE	Connection to the coaxial cable (coax) outlet
3	+12VDC	Connection to power for the modem

Bottom Label on the SB6120

The label on the bottom of the SB6120 contains the Media Access Control (MAC) address, a unique, 48-bit value permanently saved in ROM at the factory to identify the cable modem on the network. To receive data service, you will need to provide the MAC address marked HFC MAC ID to your Internet Service Provider.

P/N _____   MADE IN _____
CUSTOMER S/N: BCDFGHJKLMNP
||||| |||||
S/N: PPPPMMYJJJSSSSSCAABBCCCC
||||| |||||
HFC MAC ID: ABCDEF012345
||||| |||||
MODEM NO. 012345678
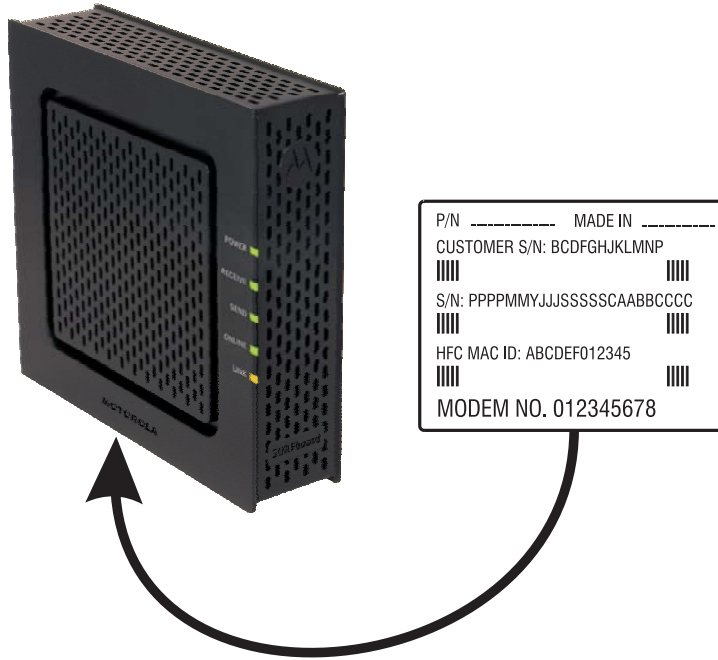
2 INSTALLATION

The following topics provide information about installing the SB6120 hardware:

- Before You Begin

- Precautions

- Signing Up for Service

- Computer System Requirements

- Cabling and Startup for the SB6120

- Wall Mounting Your SB6120

- Configuring TCP/IP

Before You Begin

Before you begin the installation, check that you received the following items with your SB6120 SURFboard DOCSIS 3.0 Cable Modem.

Item		Description
Power cord		Connects the SB6120 to a power adapter that connects to an AC electrical outlet
Ethernet, Fast Ethernet, and Gigabit Ethernet cable		Connects to the Ethernet port
SB6120 Quick Installation Guide		Contains basic information for getting started with the SB6120

You must have the latest service packs and patches installed on your computer for your operating system. You will need a 75-ohm coaxial cable with F-type connectors to connect the SB6120 to the nearest cable outlet. If a TV is connected to the cable outlet, you may need a 5 to 900 MHz RF splitter and two additional coaxial cables to use both the TV and the SB6120. The coaxial cable and RF splitter are available at consumer electronic stores. Contact your Internet Service Provider for advice on obtaining these components.

Precautions

Postpone SB6120 cable modem installation until there is no risk of a thunderstorm or lightning activity in the area.

To avoid damaging the cable modem with static electricity:

- Always connect the coaxial cable to the grounded cable TV wall outlet first.

- Before you connect or disconnect the Ethernet cable from your cable modem or PC, always touch the coaxial cable connector on the cable modem to release any static charges.

To avoid potential shock, always unplug the power cord from the wall outlet or other power source before disconnecting it from the SB6120 rear panel

To prevent overheating the SB6120, do not block the ventilation holes on the sides of the unit. Do not open the unit. Refer all service to Motorola. Contact Motorola Technical Support at:

http://broadband.motorola.com/consumers/support or 1-877-466-8646

The product is capable of operating in an ambient temperature range of 0°C to +40°C.

Wipe the cable modem with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust.
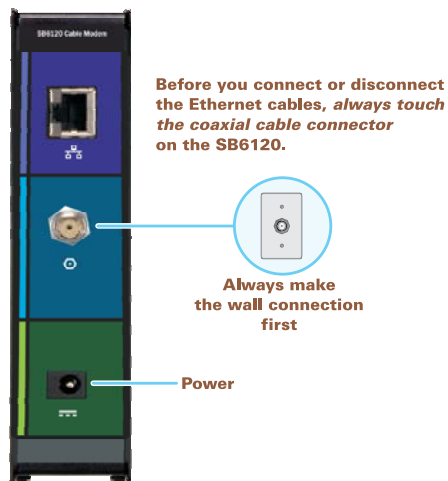
Caution!

⚠	This product is for indoor use only. Do not route the Ethernet cable outside of the building. Exposure of the cables to lightning could create a safety hazard and damage the product.

Signing Up for Service

You must sign up with an Internet Service Provider to access the Internet and other online services. To activate your service, call your local Internet Service Provider.

To receive data service, you need to provide the MAC address printed on the bar code label marked HFC MAC ID on the bottom of the cable modem. You can record it here:

00 : _____ : _____ : _____ : _____ : _____

You should ask your Internet Service Provider the following questions:

- Do you have any special system requirements?

- When can I begin to use my SB6120?

- Are there any files I need to download after connecting the SB6120?

- Do I need a user name or password to access the Internet or use e-mail?

The SB6120 works with any standard data service offered by your Internet Service Provider.

Computer System Requirements

Your SB6120 SURFboard DOCSIS 3.0 Cable Modem is compatible with Windows® 2000, Windows XP™, Windows Vista®, Macintosh®, Linux®, or UNIX® operating systems.

Caution!

⚠	You must have the latest version of your operating system installed with all current patches and revisions.

Ethernet Card

You can use the Ethernet connection with any Windows 2000, Windows XP, Windows Vista, Macintosh, Linux, or UNIX computer equipped with an Ethernet, Fast Ethernet, or Gigabit Ethernet card.

Your Ethernet card must be installed in your computer before you install the cable modem. If it is not installed, follow the installation instructions provided with your Ethernet card.

A Gigabit Ethernet Network Interface Card (GigE) is needed to achieve the maximum data throughput rates.

Additional Requirements

Your computer must meet the following requirements:

- PC with Pentium® class processor or better

- Windows 2000, Windows XP, Windows Vista, Macintosh, Linux, or UNIX operating system with an available operating system CD-ROM

- Minimum 256 MB RAM recommended
- 10 MB available hard disk space

There are no web browser restrictions for the SB6120.

Cabling and Startup for the SB6120

Be sure your computer is on and the cable modem is unplugged.

1. Connect one end of the coaxial cable to the cable outlet or splitter.

2. Connect the other end of the coaxial cable to the **CABLE** connector on the cable modem. *Hand-tighten the connectors to avoid damaging them.*

3. Plug the power adapter cord into the +**12VDC** connector on the cable modem and the electrical outlet.
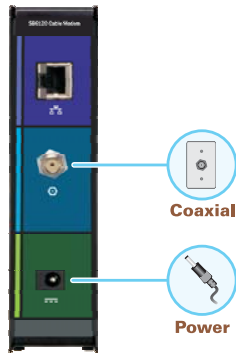
4. Plug the power cord into the electrical outlet.

5. Connect the provided Ethernet cable to the cable modem and your computer.
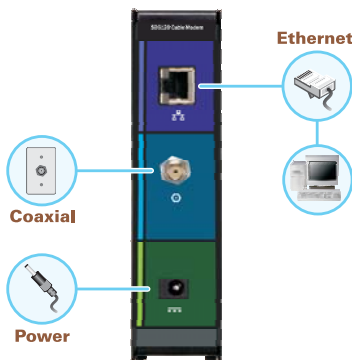
6. Perform the procedures for Configuring TCP/IP.

You may wall-mount your SB6120 by following the steps on the following pages.

7. Check that the lights on the front panel cycle through this sequence:

POWER	Turns on when AC power is connected to the SB6120.

POWER	Turns on when AC power is connected to the SB6120.
RECEIVE	Flashes while scanning for the downstream receive channel.
	Changes to solid green when the receive channel is locked.
SEND	Flashes while scanning for the upstream send channel.
	Changes to solid green when the send channel is locked.
ONLINE	Flashes during SB6120 registration and configuration.
	Changes to solid green when the SB6120 is registered.

Optional LED operation available in some locations:

RECEIVE and **SEND** lights are blue when the downstream and upstream channels are connected with bonded channels.

Wall Mounting Your SB6120

If you mount your SB6120 on the wall, you must:

- Locate the unit as specified by the local or national codes governing residential or business cable TV and communications services.

- Follow all local standards for installing a network interface unit/network interface device (NIU/NID).

If possible, mount the unit to concrete, masonry, a wooden stud, or some other very solid wall material. Use anchors if necessary (for example, if you must mount the unit on drywall).

Caution!

| ⚠	Before drilling holes, check the structure for potential damage to water, gas, or electric lines.
	If necessary, seat an anchor in each hole.

Make sure the AC power plug is disconnected from the wall outlet and all cables are removed from the back of the SB6120 before starting the installation.

You can mount the SB6120 horizontally or vertically. Do the following to mount your SB6120 on the wall:

1. See the Wall Mounting Template to print a copy of the template.

2. Click **Print** or choose Print from the File menu to display the Print dialog box.

   The sample Print dialogue window shown below may vary slightly on your computer, depending upon your operating system.
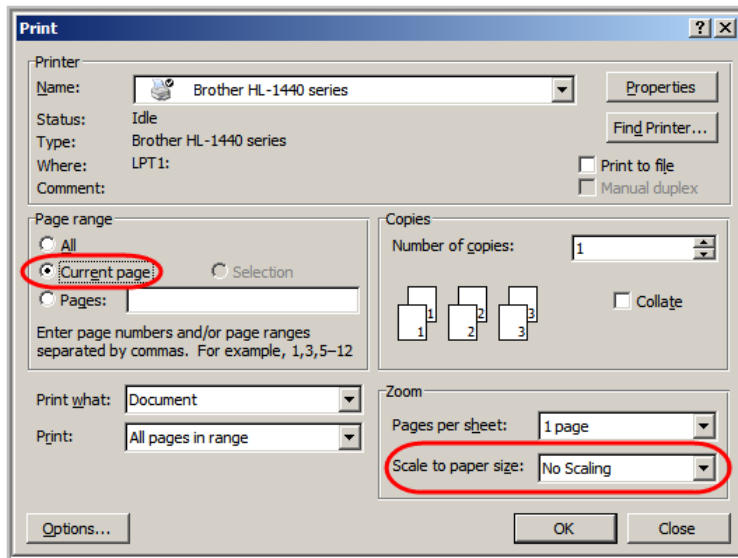
   To print the template only, select Current page as the Print Range. Be sure you print the template at 100% scale. Be sure No Scaling is selected for Scale to paper size.

3. Click **OK** to print the template.

4. Measure the printed template with a ruler to ensure that it is the correct size.

5. Use a center punch to mark the center of the holes.

6. On the wall, locate the marks for the mounting holes.

7. Drill the holes to a depth of at least 1 1/2 inches (3.8 cm). Use M3.5 x 38 mm (#6 x 11/2 inch) screws with a flat underside and maximum screw head diameter of 9.0 mm to mount the SB6120.

8. Using a screwdriver, turn each screw until part of it protrudes from the wall, as shown in the following illustration.

6.0 mm (.24 inches) maximum

9.0 mm (.35 inches) maximum
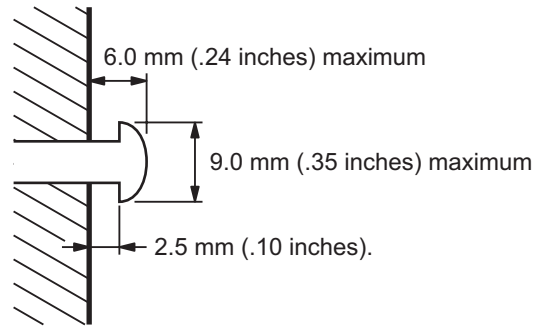
2.5 mm (.10 inches).

There must be .10 inches (2.5 mm) between the wall and the underside of the screw head.

9.   Place the SB6120 so the keyholes on the back of the unit are aligned above the mounting screws.

10. Slide the SB6120 down until it stops against the top of the keyhole opening.

After mounting, reconnect the coaxial cable input and Ethernet connection. Plug the power cord into the +12VDC connector on the cable modem and the electrical outlet. Route the cables so that they are not a safety problem.
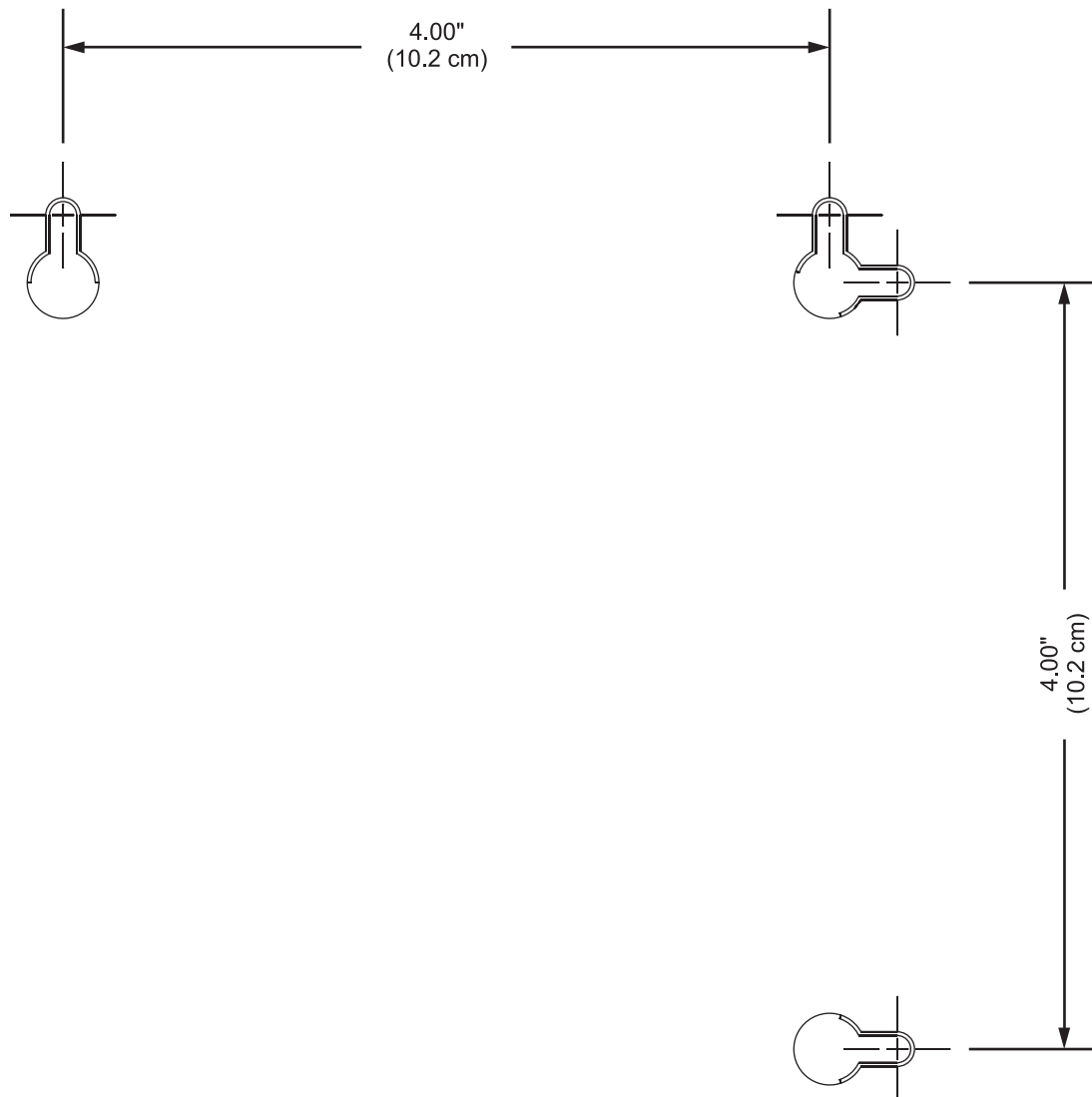
Wall Mounting Template

You can print the following page to use as a wall mounting template.

Be sure you print it at 100% scale. In the Print dialogue window, be sure that **Fit To Page** is not selected in the Print dialog box.

Measure the printed template with a ruler to ensure that it is the correct size.

4.00"
(10.2 cm)

4.00"
(10.2 cm)

Configuring TCP/IP

Make sure all client computers are configured for TCP/IP, which is a protocol for communication between computers. Perform one of the following for the operating system you are running:

- Configuring TCP/IP in Windows 2000

- Configuring TCP/IP in Windows XP

- Configuring TCP/IP in Windows Vista

- For Macintosh or UNIX systems, follow the instructions in the applicable Macintosh or UNIX user documentation.

After configuring TCP/IP on your computer, you must verify the IP address. Perform one of the following:
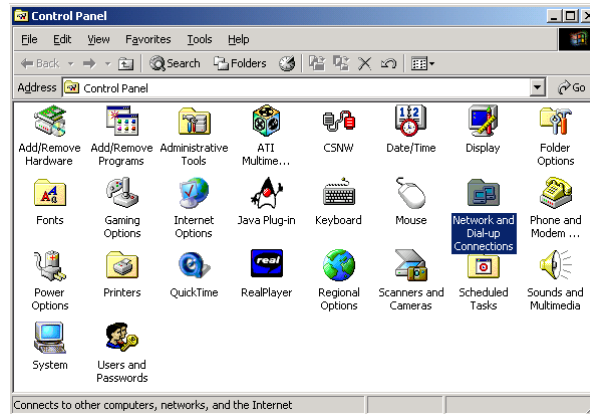
- Verifying the IP Address in Windows 2000 or Windows XP

- Verifying the IP Address in Windows Vista

- For Macintosh or UNIX systems, follow the instructions in the applicable Macintosh or UNIX user documentation.

Configuring TCP/IP in Windows 2000

1. Select Control Panel from either the Windows Start menu or Windows Desktop to display the Control Panel window.


2. Double-click **Network and Dial-up Connections** to display the Network and Dial-up Connections window.
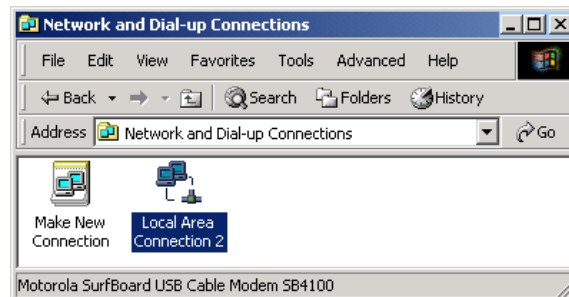

   In the steps that follow, a connection number such as 1, 2, or 3 represents PCs with multiple network interfaces. PCs having only one network interface may be represented as "Local Area Connection."

3. Double-click **Local Area Connection number** to display the Local Area Connection number Status window. The value of number varies from system to system.
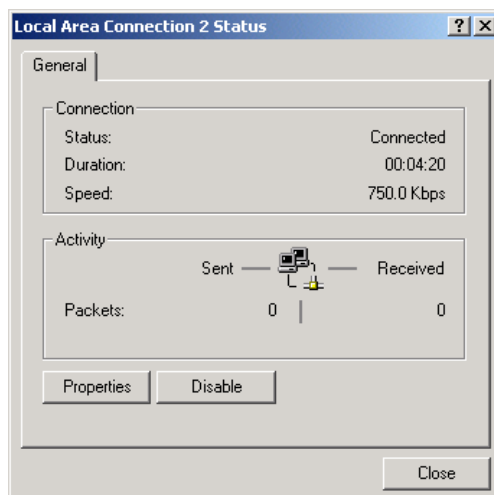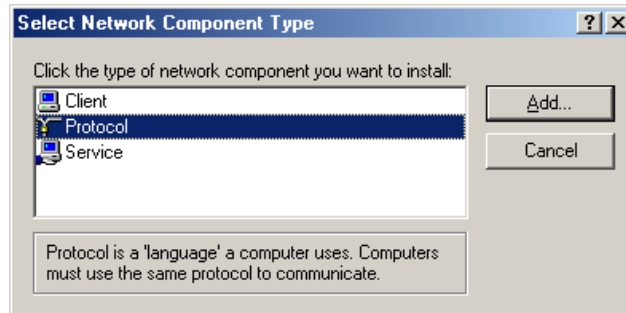
4. Click **Properties** to display the Local Area Connection number Properties window. Information similar to the following is displayed.
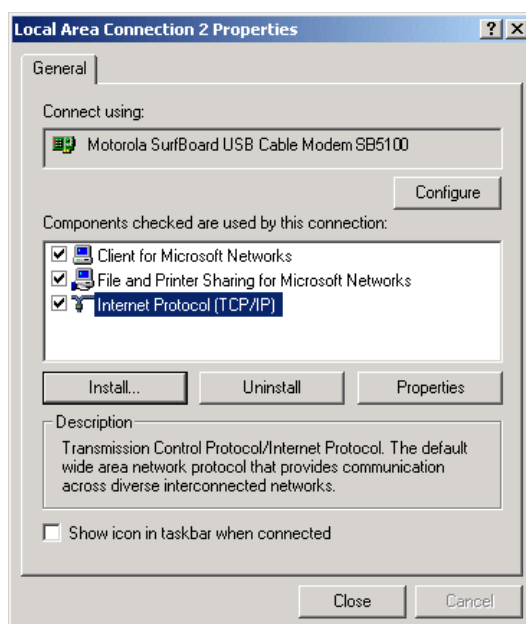
5. If Internet Protocol (TCP/IP) is in the list of components, TCP/IP is installed. You can skip to step 8.

6. If Internet Protocol (TCP/IP) is not in the list of components, click **Install**. The Select Network Component Type window is displayed.

7. Click **Protocol** and then click **Add**. The Select Network Protocol window is displayed.
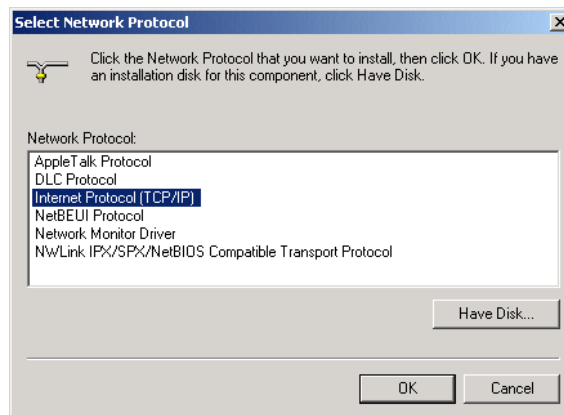
8. Click **Internet Protocol (TCP/IP)**, and then click **OK**. The Local Area Connection number Properties window is redisplayed.

9. Click **Internet Protocol (TCP/IP)**, and then click **Properties** to display the Internet Protocol (TCP/IP) Properties window.

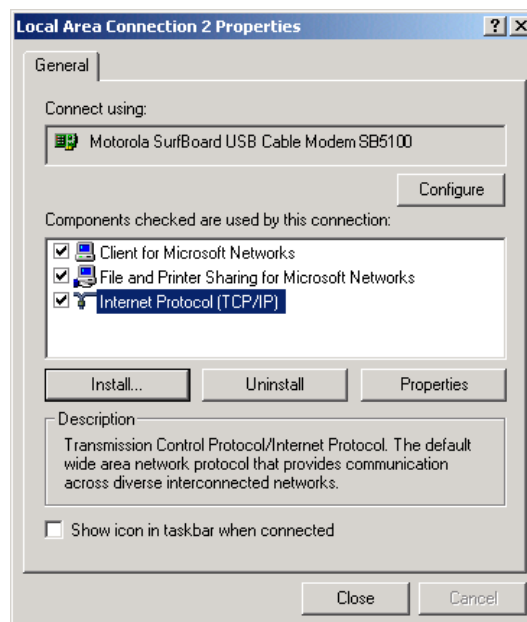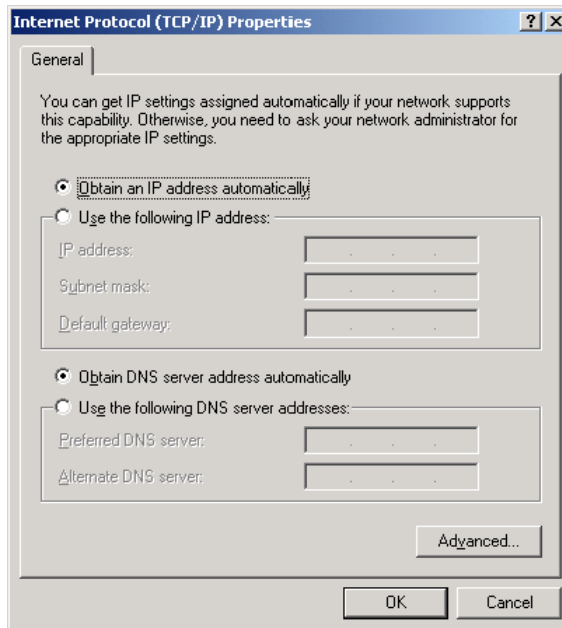10. Be sure **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected.

11. Click **OK** to save the TCP/IP settings and exit the TCP/IP Properties window.

12. Click **OK** to exit the Local Area Connection Properties window.

13. Click **OK** when prompted to restart the computer and click **OK** again.

14. When you complete the TCP/IP configuration, go to Verifying the IP Address in Windows 2000 or Windows XP.

Configuring TCP/IP in Windows XP

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

2. Click **Control Panel** to display the Control Panel window.
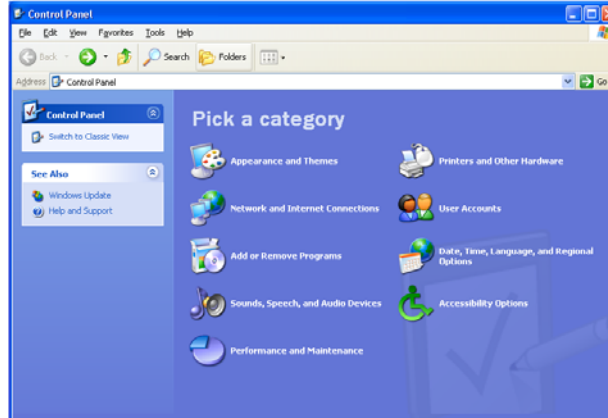
3. Click **Network and Internet Connections** to display the Network and Internet Connections window.
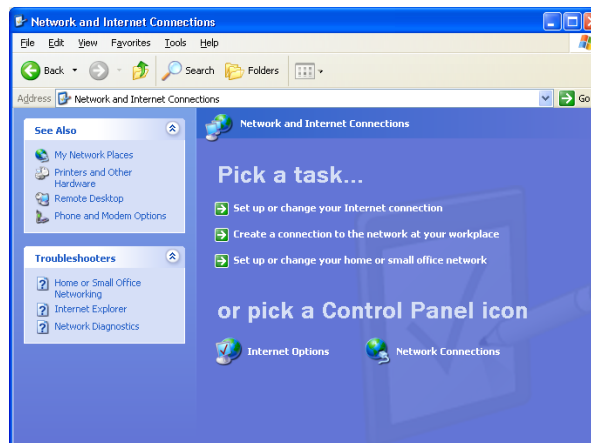
4. Click **Network Connections** to display the LAN or High-Speed connections. You can skip to step 7.

5. Right-click the network connection. If more than one connection is displayed, be sure to select the one for your network interface.
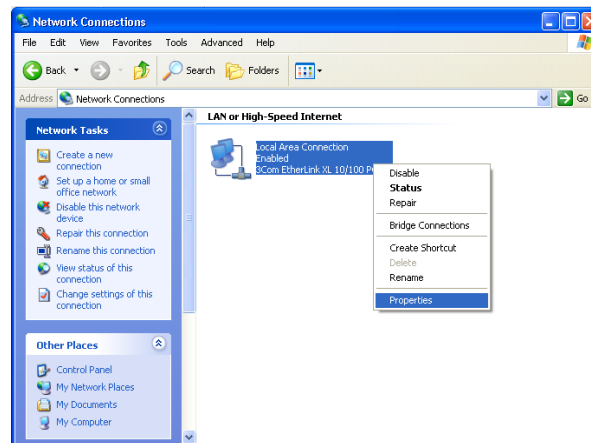
6. Select **Properties** from the drop-down menu to display the Local Area Connection Properties window. Be sure Internet Protocol (TCP/IP) is checked.

17
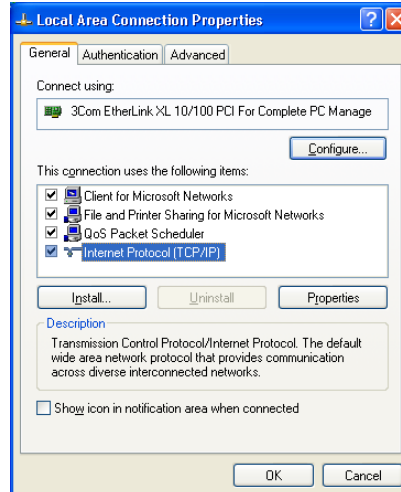
7. Select **Internet Protocol (TCP/IP)** and click **Properties** to display the Internet Protocol (TCP/IP) Properties window.
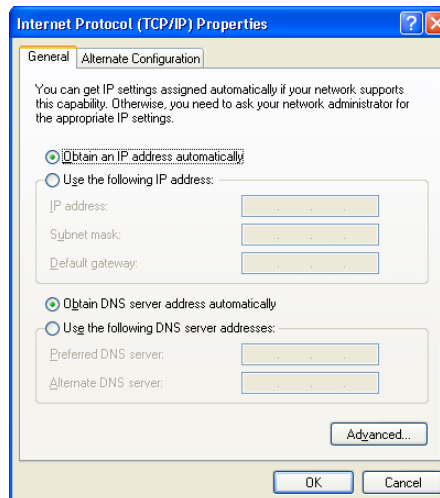
8. Make sure **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected.

9. Click **OK** to save the TCP/IP settings and exit the TCP/IP Properties window.

10. Click **OK** to exit the Local Area Connection Properties window.

When you complete the TCP/IP configuration, go to Verifying the IP Address in Windows 2000 or Windows XP.

18

Configuring TCP/IP in Windows Vista

1. On the Windows desktop, click **Start** to display the Start window.
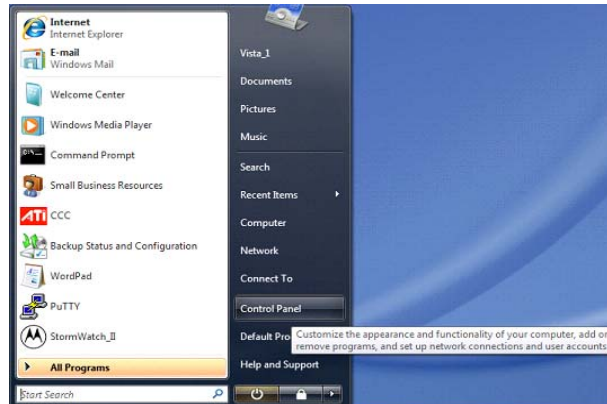
2. Click **Control Panel**.
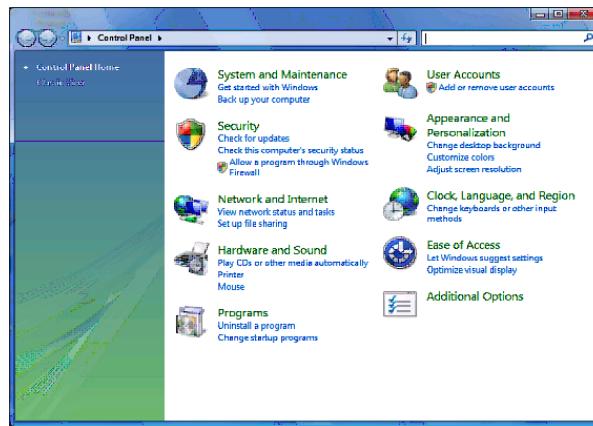
3. Double-click **Network and Internet**.
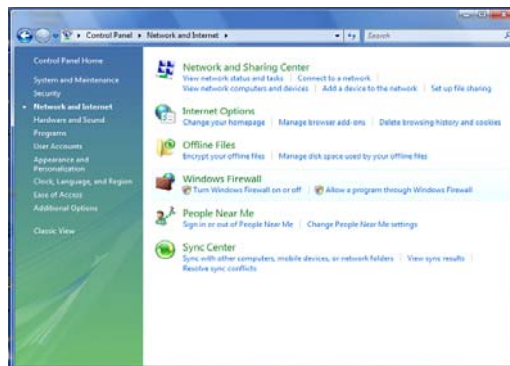
4. Double-click **Network and Sharing Center**.

19
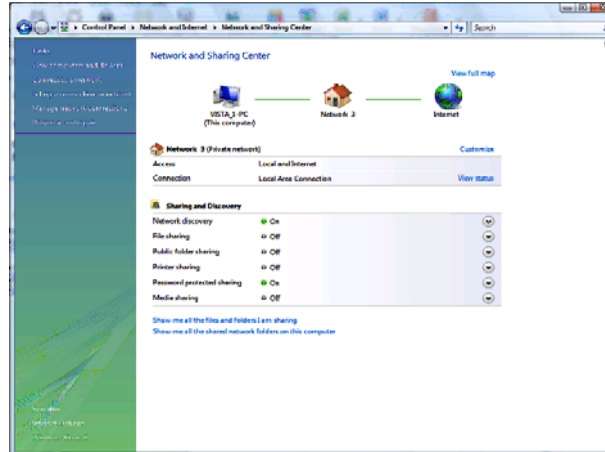
5. Click **Manage network connections**.
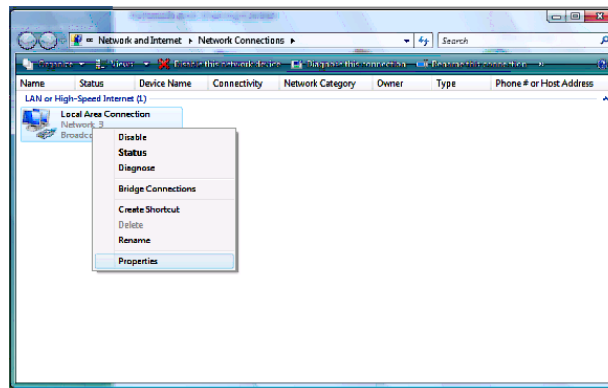
6. Right-click the network connection and select **Properties**.
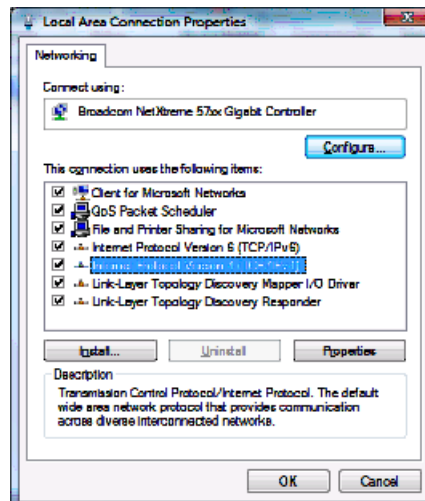
7. If more than one connection is displayed, make sure to select the one for your network interface.

   Vista may prompt you to allow access to the Network Properties Options. If you see the prompt, **User Account Control -- Windows needs your permission to continue**, click **Continue**.

8. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties** to display the Internet Protocol Version 4 (TCP/IPv4) Properties window.
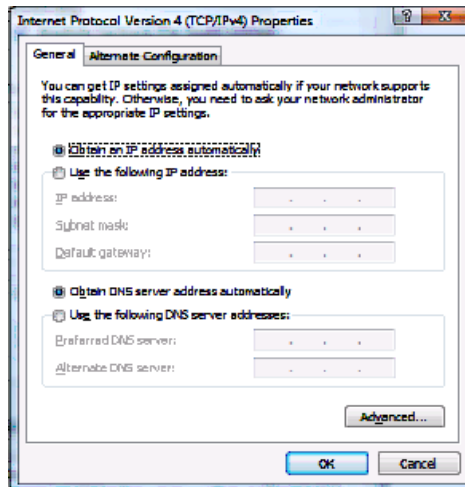

9. Make sure **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected.

10. Click **OK** to save the TCP/IP settings and close the Internet Protocol Version 4 (TCP/IPv4) Properties window.

11. Click **OK** to close the Local Area Connection Properties window.

12. Close the Network Connections window.

13. Exit the Network and Sharing Center window and the Control Panel.

When you complete the TCP/IP configuration, go to Verifying the IP Address in Windows Vista.

2 INSTALLATION

Verifying the IP Address in Windows 2000 or Windows XP

Do the following to check the IP address:

1. On the Windows Desktop, click **Start**.

2. Select **Run**.

3. Type **cmd** and click **OK** to display a command prompt window.

4. Type **ipconfig** and press **Enter** to display the IP configuration information. A display similar to the following indicates a normal configuration.
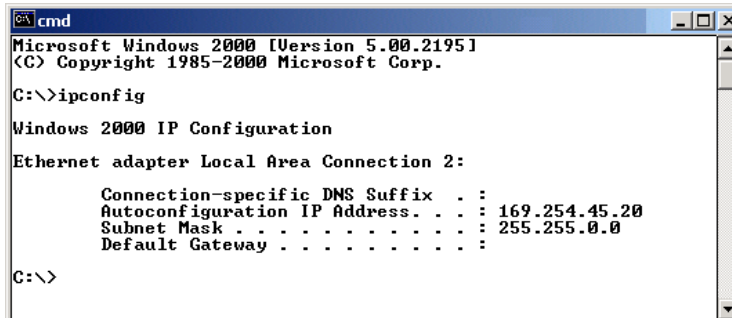
```
C:\WINNT\System32\cmd.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ipconfig

Windows 2000 IP Configuration

Ethernet adapter Local Area Connection 2:

        Connection-specific DNS Suffix  . : surfboard.com
        IP Address. . . . . . . . . . . : 206.19.86.174
        Subnet Mask . . . . . . . . . . : 255.255.255.224
        Default Gateway . . . . . . . . : 206.19.86.161

Ethernet adapter Local Area Connection:

        Media State . . . . . . . . . . : Cable Disconnected

C:\>
```

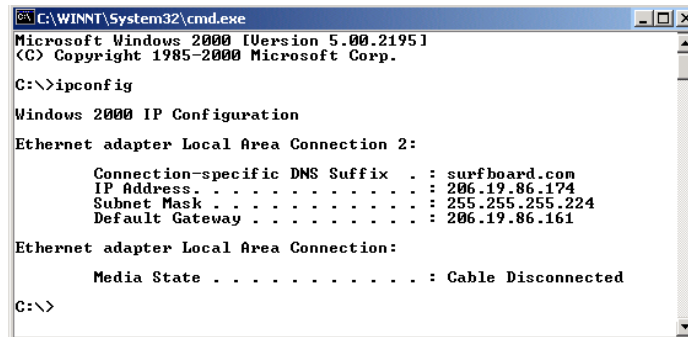5. If, as in the following window, an Autoconfiguration IP Address is displayed, there is an incorrect connection between the PC and the SB6120, or there are broadband network problems.
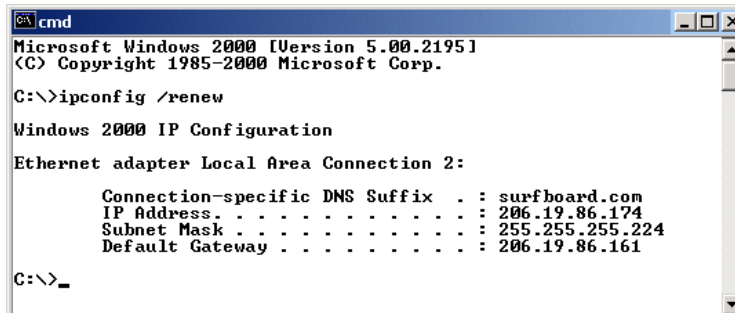
```
cmd
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ipconfig

Windows 2000 IP Configuration

Ethernet adapter Local Area Connection 2:

        Connection-specific DNS Suffix  . :
        Autoconfiguration IP Address. . . : 169.254.45.20
        Subnet Mask . . . . . . . . . . : 255.255.0.0
        Default Gateway . . . . . . . . :

C:\>
```

6. At the command prompt, type **ipconfig /renew** and press **Enter**. If a valid IP address is displayed as shown, Internet access should be available.

```
cmd
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ipconfig /renew

Windows 2000 IP Configuration

Ethernet adapter Local Area Connection 2:

        Connection-specific DNS Suffix  . : surfboard.com
        IP Address. . . . . . . . . . . : 206.19.86.174
        Subnet Mask . . . . . . . . . . : 255.255.255.224
        Default Gateway . . . . . . . . : 206.19.86.161

C:\>
```

7. Type **exit** and press **Enter** to return to Windows.

22

Verifying the IP Address in Windows Vista

Do the following to verify the IP address:

1. On the Windows Vista desktop, click **Start**.

2. Click **All Programs**.
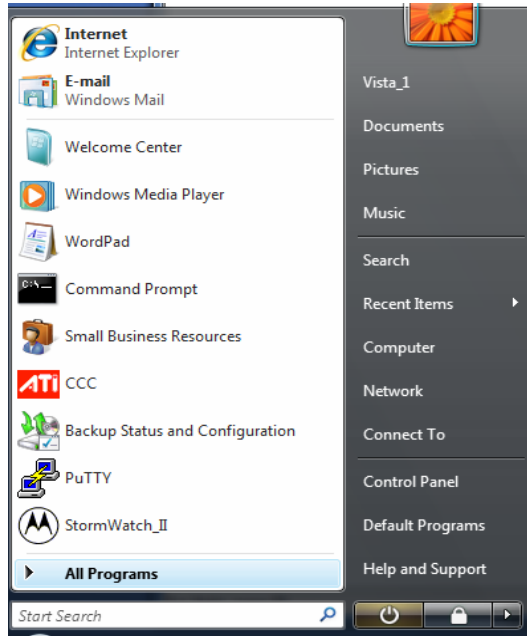
3. Click **Accessories**.
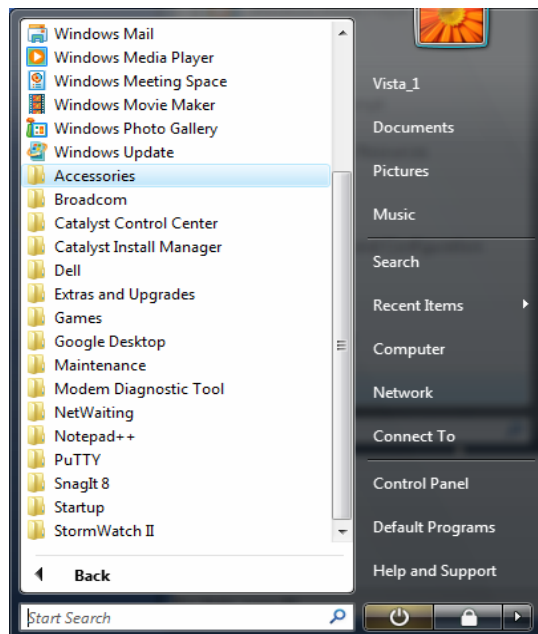
4. Click **Run**.
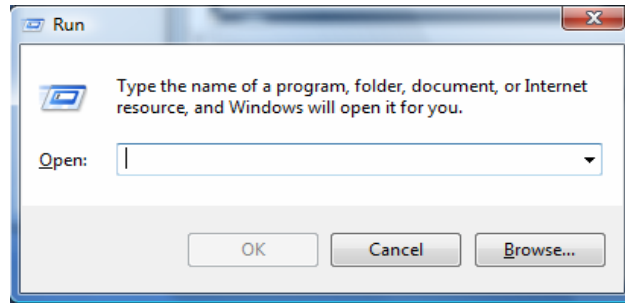
5. Type **cmd** and click **OK** to open a command prompt window.
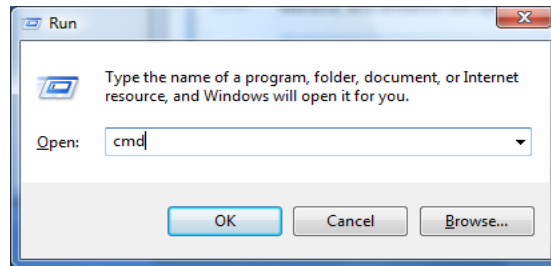
6. Type **ipconfig** and press **Enter**.

    A display similar to the following indicates a normal configuration.

7. If an Autoconfiguration IP Address is displayed, there is an incorrect connection between the PC and the SB6120, or there are broadband network problems.

    Do the following to renew the IP address:

    At the command prompt, type **ipconfig /renew** and press **Enter**. If a valid IP address is displayed as shown, Internet access should be available.

```
C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.0.6000]
Copyright (c) 2006 Microsoft Corporation.  All rights reserved.

C:\Users\Vista_1>ipconfig /renew

Windows IP Configuration

An error occurred while releasing interface Loopback Pseudo-Interface 1 : The sy
stem cannot find the file specified.

Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::5db3:468b:1f5b:7c98%9
   IPv4 Address. . . . . . . . . . . : 192.168.1.4
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.1

Tunnel adapter Local Area Connection* 6:

   Connection-specific DNS Suffix  . :
   IPv6 Address. . . . . . . . . . . : 2001:0:4136:e378:18be:2b35:3f57:fefb
   Link-local IPv6 Address . . . . . : fe80::18be:2b35:3f57:fefb%8
   Default Gateway . . . . . . . . . : ::

Tunnel adapter Local Area Connection* 7:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::5efe:192.168.1.4%10
   Default Gateway . . . . . . . . . :

C:\Users\Vista_1>
```

8. Type **exit** and press **Enter** to return to Windows.

Configuring TCP Window Size

Please go to the Motorola website for instructions for configuring your TCP window size at:

http://broadband.motorola.com/consumers/support

3 TROUBLESHOOTING

If the solutions listed here do not solve your problem, contact Motorola Technical Support at:

http://broadband.motorola.com/consumers/support or 1-877-466-8646

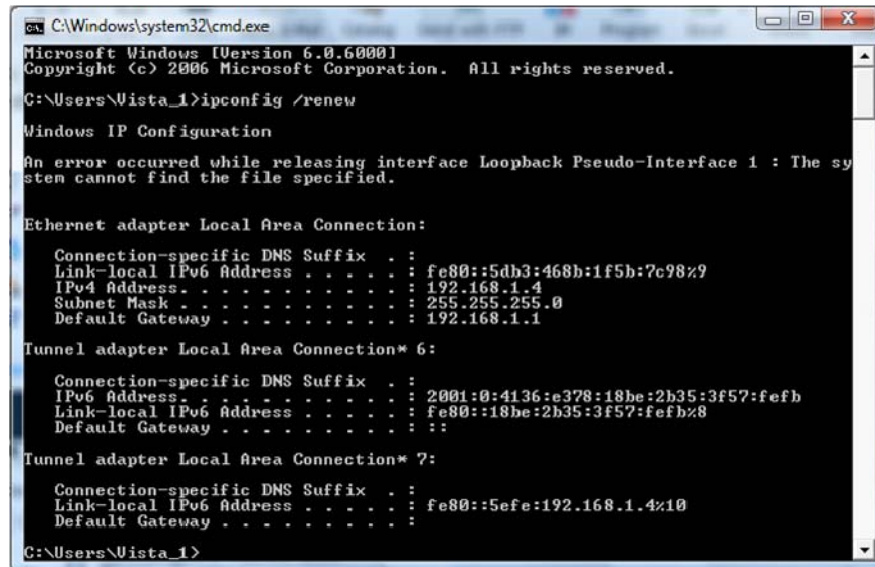Before calling Motorola, power recycle your SB6120 as explained below. This may fix your problem. Resetting the SB6120 may take 5 to 30 minutes. The Motorola representative may ask for the status of the lights as described in Front-Panel Lights and Error Conditions.

Restarting Your SB6120

Most technical issues can be resolved by restarting the power on your cable modem. To restart the power on your SB6120:

1. Shutdown your computer.

2. Unplug the cable modem from the AC wall outlet and wait one minute.

3. Plug the cable modem into the wall outlet.

4. Wait until the Power, Receive, Send, and Online LEDs are solid ON.

5. Restart your computer.

Problem	Possible Solution
Power light is off	Check that the SB6120 is properly plugged into the electrical outlet. Check that the electrical outlet is working.
Cannot send or receive data	On the top front panel, note the first light that is off. This light indicates where the error occurred, as described in Front-Panel Lights and Error Conditions. If you have cable TV, check that the TV is working and the picture is clear. If you cannot receive regular TV channels, your data service will not function. Check the coaxial cable at the SB6120 and wall outlet. Hand-tighten if necessary. Check the IP address. Follow the steps for verifying the IP address for your system described in Configuring TCP/IP. Call your Internet Service Provider if you need an IP address. Disconnect and reconnect the Ethernet cable from the cable modem and your computer to make sure it is properly seated.

Front-Panel Lights and Error Conditions

Light	Turns Off During Startup If:	Turns Off During Normal Operation If:
DS	The downstream receive channel cannot be acquired	The downstream channel is lost
US	The upstream send channel cannot be acquired	The upstream channel is lost
ONLINE	IP registration is unsuccessful	The IP registration is lost
POWER	The SB6120 is not properly plugged into the power outlet	The SB6120 is unplugged

4 CONTACT US

If you need assistance while working with the SB6120, contact Motorola Technical Support at:

http://broadband.motorola.com/consumers/support or 1-877-466-8646

For information about customer service, technical support, or warranty claims, see the Motorola Regulatory, Safety, Software License, and Warranty Information card provided with the SB6120.

For answers to typical questions, see Frequently Asked Questions.

5 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 affordable and does not tie up telephone lines for incoming or outgoing calls and faxes.

Q How fast is a cable modem connection?

A A DOCSIS 3.0 cable modem offers Internet access at speeds up to four times faster than traditional cable modem services and hundreds times faster than a traditional telephone modem. Depending on the service offering you have subscribed to, you can experience speeds of over 100 Mbps. Network conditions such as traffic volume and the speed of the sites you visit can affect download speeds.

Q Can I still watch cable TV while using my cable modem?

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 Motorola SB6120 cable modem is DOCSIS 3.0 certified and Euro-DOCSIS 3.0-based.

Q What is DOCSIS 3.0?

A DOCSIS 3.0 (Data Over Cable System Interface Specification) is the new standard for communication in Cable Networks. Your Internet access via your Cable Network uses channels, much like the TV channels you watch, for data transport. Your DOCSIS 3.0 SB6120 Cable Modem sends and receives information in both directions on these data channels. Using the newest technology, a cable provider can link multiple channels together (channel bonding) to greatly increase data transfer rates to and from your computer using the SB6120 through the Cable Network. The SB6120 operates in either a single-channel mode, or the higher speed 'bonded' mode. Cable Operators have started offering DOCSIS 3.0 service in a number of Cable Systems. Please contact your Internet Service Provider for ultra-broadband (DOCSIS 3.0) availability.

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

A Yes! Although 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 At a minimum you will need to subscribe to cable Internet service. Your Internet Service Provider may have a minimum level of video service you must subscribe to receive the broadband access service. Check with your local cable company for specific information.

Q **I am not getting the data speeds I expected.**

A Contact your Internet Service Provider to verify the data bandwidth available to you.

Q **I can receive files much more quickly than I can send them?**

A This modem has the capability to bond multiple downstream channels, which will increase the capacity to receive data. The upstream data path does not have the same capacity. Please verify the actual bandwidth available to you with your Internet Service Provider.

6 GLOSSARY

This glossary defines terms and lists acronyms used with the SB6120.

TERM	DEFINITION
broadband	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.
CableLabs	A research consortium that defines the interface requirements for cable modems and acknowledges that tested equipment complies with DOCSIS.
client	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. Also called a CPE.
coaxial cable (coax)	A type of wire consisting of a center wire surrounded by insulation and a grounded shield of braided wire. The shield minimizes electrical and radio frequency interference.
DOCSIS	The CableLabs Data-Over-Cable Service Interface Specification defines interface standards for cable modems and supporting equipment.
download	To copy a file from one computer to another. You can use the Internet to download files from a server to your home PC. A DOCSIS cable modem downloads its configuration from a server during start-up.
downstream	In a cable data network, downstream describes the direction of data received by your computer from the Internet.
driver	Software that enables a computer to interact with a network or other device. For example, there are drivers for printers, monitors, graphics adapters, modems, Ethernet, USB, HPNA, and many others.
Ethernet	The most widely used type of local area network (LAN). The most commonly installed Ethernet networks are called 10Base-T. 10Base-T provides transmission speeds up to 10 megabits per second (Mbps), usually over twisted-pair wire. Fast Ethernet (100Base-T) provides transmission speeds up to 100 Mbps. Gigabit (GigE) Ethernet provides speeds up to 1 gigabit.

TERM	DEFINITION
expansion slot	An opening in a computer where a circuit board can be inserted to add new capabilities.
F-type connector	A type of connector used to connect coaxial cable to equipment such as the SB6120.
IP address	An Internet Protocol address is an identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the destination IP address. Your Internet Service Provider assigns your cable modem an IP address to provide a continuous Internet connection.
MAC address	The Media Access Control Address uniquely identifies each device that can be connected to an Ethernet network. It is permanently written to read-only memory (ROM) at the factory and printed on the rear panel of your SB6120 SURFboard DOCSIS 3.0 Cable Modem. You need to provide the MAC address to your Internet Service Provider.
MHz	Mega Hertz. A measure of radio frequency - millions of cycles per second. One MHz means one million cycles per second.
RJ-45	The most common type of connector for Ethernet networks.
splitter	A splitter is a device that divides the signal power from an input cable equally between two or more signals, each carrying a selected frequency range.
TCP/IP	Transmission Control Protocol/Internet Protocol is a set of protocols that provides standards and rules for communication between networks.
two-way	A cable or fiber optic system that can transmit signals in both directions to and from the headend and the cable modem.
upstream	In a cable data network, upstream describes the direction of data sent from your computer to the Internet.

MOTOROLA