

# *User Guide*

## *SBV5120 Series VoIP Cable Modem*



**MOTOROLA**  
*intelligence everywhere™*



**WARNING:** TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. THE UNIT MUST NOT BE EXPOSED TO DRIPPING OR SPLASHING. DO NOT PLACE OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ON THE UNIT.

**CAUTION:** THIS PRODUCT 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.

**CAUTION:** 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 PRODUCT SAFETY REQUIREMENTS OF THE COUNTRY OF USE.

**CAUTION:** INSTALLATION OF THIS PRODUCT MUST BE IN ACCORDANCE WITH NATIONAL WIRING CODES AND CONFORM TO LOCAL REGULATIONS.

**CAUTION:** DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

**CAUTION:** CHANGES AND MODIFICATIONS NOT EXPRESSLY APPROVED BY MOTOROLA FOR COMPLIANCE COULD VOID USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

*When using this device, 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 equipment. 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 comes with the product.
- Comply with all warning and caution statements in the instructions. Observe all warning and caution symbols that are affixed to this equipment.
- 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 product.
- Place this equipment in a location that is close enough to an electrical outlet to accommodate the length of the power cord.
- Place unit 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, other outlet unless the plug can be fully inserted with no part of the blades exposed.
- Place this equipment on a stable surface.
- Postpone cable modem installation until there is no risk of thunderstorm or lightning activity in the area.
- *Avoid using this product during an electrical storm.* There may be a risk of electric shock from lightning. For added protection for this product during a lightning storm, or when it is left unattended and unused for long

periods of time, unplug it from the wall outlet, and disconnect the cable system. This will prevent damage to the product due to lightning and power surges.

- 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 equipment by local lightning strikes and other electrical surges.
- 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.
- Wipe the unit 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.
- Avoid damaging the cable modem with static by touching the coaxial cable when it is attached to the earth grounded coaxial cable TV wall outlet.
- Always first touch the coaxial cable connector on the cable modem when disconnecting or re-connecting USB or Ethernet cable from the cable modem or the user's PC.
- Operate this product only from the type of power source indicated on the product's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.

Be sure that the outside cable system is grounded, so as to provide some protection against voltage surges and built-up static charges. Article 820-20 of the NEC (Section 54, Part I of the Canadian Electrical Code) provides guidelines for proper grounding and, in particular, specifies the CATV cable ground shall be connected in the grounding system of the building, as close to the point of cable entry as practical.

### **FCC Compliance Class B Digital Device**

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.

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



### Canada - Industry Canada (IC)

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

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

### Regulatory, Safety, Software License, and Warranty Information Card

This product is provided with a separate *Regulatory, Safety, Software License, and Warranty Information* card. If one is not provided with this product, please ask your service provider or point-of-purchase representative, as the case may be.

- THIS PRODUCT IS IN COMPLIANCE WITH ONE OR MORE OF THE STANDARDS LISTED ON THE *REGULATORY, SAFETY, SOFTWARE LICENSE, AND WARRANTY INFORMATION* CARD. NOT ALL STANDARDS APPLY TO ALL MODELS.
- NO WARRANTIES OF ANY KIND ARE PROVIDED BY MOTOROLA WITH RESPECT TO THIS PRODUCT, EXCEPT AS STATED ON THE *REGULATORY, SAFETY, SOFTWARE LICENSE, AND WARRANTY INFORMATION* CARD. MOTOROLA'S WARRANTIES DO NOT APPLY TO PRODUCT THAT HAS BEEN REFURBISHED OR REISSUED BY YOUR SERVICE PROVIDER.

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## Introduction

Congratulations on your new Motorola® SURFboard® Voice over Internet Protocol (VoIP) cable modem! It provides high-speed access to the Internet and other online services. This VoIP cable modem transmits and receives data much faster than traditional dial-up or ISDN modems because it receives data much faster than other modems. Unlike a dial-up modem, your SURFboard VoIP cable modem is always online. *Just open your browser and surf!*

You can use your high-speed, upgradeable VoIP cable modem to connect one or more computers in your home or business to the Internet. You can connect:

- A single computer equipped with a Universal Serial Bus (USB) port directly to the USB port on the SURFboard VoIP cable modem
- A single computer equipped with an Ethernet adapter directly to the Ethernet port on the SURFboard VoIP cable modem
- Two computers, one to the USB port and one to the Ethernet port
- Up to 31 computers to a single SURFboard VoIP cable modem using an Ethernet hub, as shown in “[Cabling for Multiple Users](#)” on page 32

You can connect up to two standard telephone lines using your SURFboard VoIP cable modem, supporting:

- Standard features such as Caller ID, Call Waiting, and Call Forwarding
- Software upgrades over the network to provide new or improved services

### Easier!

*Unlike dial-up modems or ISDN, you're always on, always connected when using coaxial cable for upstream communication. For easiest set-up, use the Installation Assistant on the SURFboard VoIP Cable Modem CD-ROM.*

### Faster!

*Your VoIP cable modem is up to 100 times faster than a dial-up modem. It lets you enjoy surfing the Web without the long wait. Because many network and other factors can affect performance, the actual speed will vary.*

### Better!

*Your VoIP cable modem is made by the company with over 50 years of cable TV expertise.*

## Top and Front Panel

For added security, when using coaxial cable for upstream communication, you can press the Standby button **(1)** to suspend your Internet connection. No data is transmitted or received from the Internet when the Standby light is on. All other front-panel lights turn off until you press the Standby button again except the Tel 1 and Tel 2 LEDs.

*The model number on your VoIP cable modem may be different than in the illustrations and screen images in this guide.*

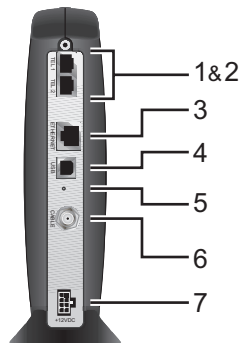


The lights provide information about power, communications, and errors:

Key Light	Flashing	On
2 <b>Power</b>	Startup diagnostics in progress	The VoIP cable modem is powered on.
3 <b>DS (Downstream)</b>	Scanning for a receive (downstream) channel connection	The downstream channel is connected.
4 <b>US (Upstream)</b>	Scanning for a send (upstream) channel connection	The upstream channel is connected.
5 <b>Online</b>	Scanning for a network connection	The startup process is complete.
6 <b>Link</b>	Transmitting or receiving data	A device, such as a computer or hub, is connected to the USB or Ethernet connectors on the back panel.
7 <b>Tel 1</b>	Connected and activated, telephone is off-hook (in use).	Connected and activated, the telephone is on-hook (not in use.)
8 <b>Tel 2</b>	Connected and activated, telephone is off-hook (in use).	Connected and activated, the telephone is on-hook (not in use.)
9 <b>Standby</b>	This light does not flash	Internet service is blocked because the Standby button was pressed. If this light is on, all other lights are off.

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

## Rear Panel






The rear panel provides cabling connectors and the power receptacle.

Key	Item	Description
1 & 2	Tel 1 and Tel 2	Telephone ports 1 and 2 provide connections for two telephone lines.
3	ETHERNET	The Ethernet port provides a connection to Ethernet equipped computers using a cable terminated with an RJ-45 connector.
4	USB	The USB port provides a connection to <a href="#">USB</a> equipped computers.
5	Reset	If you experience a problem, you can push this recessed button to reset the VoIP cable modem (see " <a href="#">Troubleshooting</a> " on page 34). Resetting may take some time (5 to 30 minutes) because the VoIP cable modem must find and lock on the appropriate communications channels.
6	CABLE	The CABLE port provides a connection to the <a href="#">coaxial cable (coax)</a> outlet.
7	+12VDC	This connector provides power to the VoIP cable modem.

## Before You Begin

Before you begin the installation, check that you received the following items with your SURFboard VoIP cable modem:

Item	Description
Power adapter or cable	 <p>Connects to:</p> <ul style="list-style-type: none"> <li>the AC power outlet</li> <li>to a <a href="#">UPS</a></li> </ul>
10/100Base-T Ethernet cable	 <p>Connects to the <a href="#">Ethernet</a> port</p>
USB cable	 <p>Connects to the <a href="#">USB</a> port</p>



## Item

## Description

### Phone wire



Connects the telephone to the cable system to provide telephony service

### **SURFboard VoIP Cable Modem CD-ROM**



Contains the User Guide and USB drivers

You will need 75-ohm [coaxial cable](#) with [F-type connectors](#) to connect your VoIP cable modem to the nearest cable outlet. If a TV is connected to the cable outlet, you may need a 5-900 MHz RF [splitter](#) and a total of three coaxial cables to connect both the TV and the VoIP cable modem. The coaxial cable and RF splitter are available at consumer electronic stores. To connect your VoIP cable modem to an Ethernet hub, see the network description in “[Cabling for Multiple Users](#)” on page 32. Check the documentation provided with your hub.

## Caution



To comply with all national safety regulations, do not route the USB, Ethernet, or telephone cables outside of the building.

## Precautions

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

To avoid damaging the VoIP cable modem with static electricity:

- Always first connect the coaxial cable to the grounded cable TV wall outlet.
- Before you connect or disconnect the USB or Ethernet cable from your VoIP cable modem or PC, always touch the coaxial cable connector on the VoIP cable modem to release any static charges.

**To avoid damaging your VoIP cable modem or PC with static electricity:**




To prevent overheating the VoIP cable modem, do not block the ventilation holes on its sides.

Do not open the VoIP cable modem. Refer all service to your cable service provider.

Wipe the VoIP 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

	<p>Contact your cable service provider before connecting your VoIP cable modem to your existing telephone wiring. Do not connect the telephone wire to a traditional telephone (PSTN) service.</p>
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## Signing Up for Service

You must sign up with a cable service provider to access the Internet and other online services.

To activate your service, call your local cable service provider.

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

00 : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

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

00 : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_



You should ask your cable service provider the following questions:

- Do you have any special system requirements?
- When can I begin to use my VoIP cable modem?

- Are there any files I need to [download](#) after I am connected?
- Do I need a user name or password to access the Internet or use e-mail?

## Computer System Requirements

You can use any Web browser, such as Microsoft® Internet Explorer or Netscape Navigator®, with your SURFboard VoIP cable modem.

For Microsoft Windows computers, the Installation Assistant application automatically checks your system configuration. You can start the Installation Assistant from the Main Menu on the SURFboard VoIP Cable Modem CD-ROM.

Your SURFboard VoIP cable modem is compatible with Microsoft Windows®, Macintosh®, and UNIX® computers.

### Ethernet Card

You can use the Ethernet connection with any Windows, Macintosh, or UNIX computer equipped with a 10Base-T or 10/100Base-T Ethernet card.

Windows® 95, UNIX, or Macintosh computers must use the Ethernet connection.

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

### USB Connection

You can use the USB connection with any PC running Windows® 98, Windows® 2000, Windows Me®, or Windows XP™ that has a USB interface. The USB connection requires special USB driver software that is supplied on the SURFboard VoIP Cable Modem CD-ROM.

You can upgrade your USB drivers from our [Downloads](http://broadband.motorola.com/noflash/usb_drivers.asp) page [http://broadband.motorola.com/noflash/usb\\_drivers.asp](http://broadband.motorola.com/noflash/usb_drivers.asp).

## ❖ Installation and Configuration Overview

To install and configure your VoIP cable modem for a single PC running Microsoft Windows, we recommend using the Installation Assistant. You can start the Installation Assistant from the Main Menu on the *SURFboard VoIP Cable Modem* CD-ROM. In most cases, the Installation Assistant automatically configures your VoIP cable modem.

Otherwise, to install and configure your VoIP cable modem:

- 1 Install the cables as described for your situation:
  - “Cabling and Startup for a Single User” on page 7
  - “Cabling for Multiple Users” on page 32
- 2 If you are using the [USB port only](#), go to “Setting Up a USB Driver” on page 9. *Ethernet users can skip this step.*
- 3 Configure [TCP/IP](#) and verify the [IP address](#) for your computer as described for your situation:
  - “Configuring TCP/IP” on page 19
  - Refer to your Macintosh or UNIX user manual for information regarding TCP/IP and IP Address configuration.

### Cabling and Startup for a Single User

Allow some time (5 to 30 minutes) to power up the first time because the SURFboard VoIP cable modem must find and lock on the appropriate channels for communications.



- 1 Be sure your computer is on and the VoIP cable modem is unplugged.
- 2 Connect one end of the coaxial cable to the cable outlet or splitter. Connect the other end of the coaxial cable to the CABLE connector on the VoIP cable modem. *Hand-tighten the connectors to avoid damaging them.*
- 3 Insert the *SURFboard VoIP Cable Modem* CD-ROM into your CD-ROM drive.
- 4 Connect one end of the telephone wire to the dial-up modem connector on the VoIP cable modem. Connect the other end to a telephone jack.

- 5 Plug the power cord into the +12VDC connector on the VoIP cable modem and the electrical outlet. For an Uninterruptible Power Supply (UPS), plug the cord into the +12VDC connector on the VoIP cable modem and the UPS and plug the UPS into the electrical outlet.

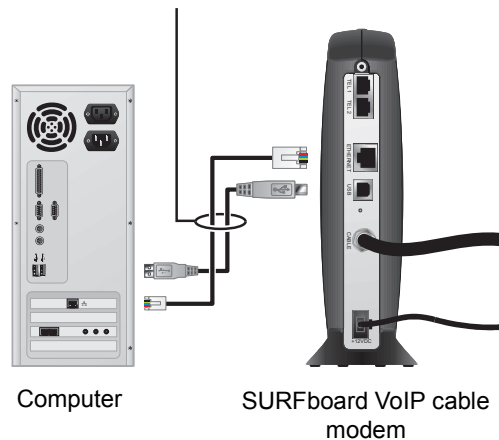
For a power adapter, plug the adapter into the POWER connector on the VoIP cable modem and the electrical outlet. For a UPS, plug the cord into the POWER connector on the VoIP cable modem and the UPS and plug the UPS into the electrical outlet. This turns on the SURFboard VoIP cable modem. You do not need to unplug it when not in use.

- 6 Check that the lights on the VoIP cable modem front cycle through this sequence:
- Power flashes during the self-test and changes to solid green when the self-test is successfully complete.
  - Receive flashes while scanning for the receive ([downstream](#)) channel and changes to solid green when it is connected.
  - Send flashes while scanning for the send ([upstream](#)) channel and changes to solid green when it is connected. If you use the internal dial-up modem for upstream communication, you may hear it dial-up and connect.
  - Online flashes while the VoIP cable modem downloads configuration data and changes to solid green when the download is complete.
- 7 Connect your computer to the VoIP cable modem using USB or Ethernet:

### Caution



Do not connect *both* the Ethernet and USB cables to the same computer. Connect to either Ethernet or USB



**USB:** Be sure the SURFboard VoIP Cable Modem CD-ROM is inserted in your CD-ROM drive. Connect the USB cable to the USB port on the VoIP cable modem. Connect the other end to the USB port on your computer. Then perform "[Setting Up a USB Driver](#)" on page 9.

**Ethernet:** Connect the provided straight-through Ethernet cable to the Ethernet connector on the VoIP cable modem. Connect the other end to the Ethernet port on your computer. *Ethernet users do not need to set up USB.*

- 8 Perform the procedures for "[Configuring TCP/IP](#)" on page 19.

- 9 To connect the telephone line, plug a phone wire into the Tel 1 connector. You can also connect a second telephone line to the Tel 2 connector.

**Caution**

Contact your cable service provider before connecting your VoIP cable modem to your existing telephone wiring. Do not connect the telephone wire to a traditional telephone (PSTN) service.

Be sure the phone connectors are neither connected together nor connected to wall jacks on the same network.

## Setting Up a USB Driver

The following subsections describe setting up a USB driver. Perform the appropriate procedure for your Windows version:

*Be sure the SURFboard VoIP Cable Modem CD-ROM is inserted in your CD-ROM drive before you plug in the USB cable.*

- “Setting Up a USB Driver in Windows 98” on page 10
- “Setting Up a USB Driver in Windows 2000” on page 15
- “Setting Up a USB Driver in Windows Me” on page 14
- “Setting Up a USB Driver in Windows XP” on page 18

When you finish setting up the USB driver, you can continue with “Configuring TCP/IP” on page 19.

The SURFboard VoIP cable modem USB driver does not support Macintosh or UNIX computers. For those systems connect through Ethernet *only*.

## Setting Up a USB Driver in Windows 98

Be sure the SURFboard VoIP Cable Modem CD-ROM is inserted in your 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 VoIP cable modem to the PC.

Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

- 1 Connect the VoIP cable modem to your computer with a USB cable. For further instructions, see [“Cabling and Startup for a Single User”](#) on page 7. A few seconds after you complete the USB connection, the Add New Hardware Wizard window is displayed:



- 2 Click **Next**.



- 3 Be sure “Search for the best driver for your device” is selected and click **Next**.

- 4 Be sure “CD-ROM drive” is the only box checked.



- 5 Click **Next**.

The message “Please wait while Windows searches for a new driver for this device” is displayed:

- 6 If your computer successfully locates the driver, skip to step 8.

If your computer does not locate the driver, the previous window is displayed again. Select **Specify a location** and type the location of your CD-ROM drive.

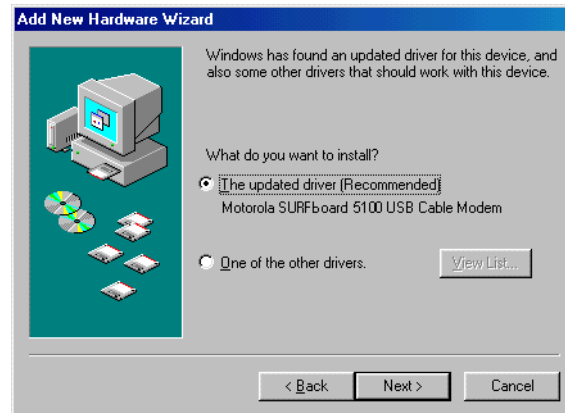


To load the driver successfully, you may need to click **Browse** to manually select the driver file from the CD-ROM. For the SBV5120, select the **NetMotCM.sys** file.

- 7 Click **Next**.



- 8 Select **The updated driver...** and click **Next**.



If this window is not displayed, verify that the *SURFboard VoIP Cable Modem* 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 34. Then repeat this procedure.

- 9 After the window is displayed, click **Next**.



If a window with the message *Copying Files...* displays and asks for your CD-ROM drive, type your 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**.

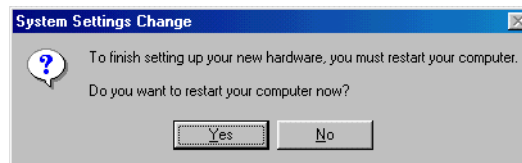


Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

After all the necessary files are loaded, the window is displayed confirming a successful installation.



**10** Click **Finish**. The following window is displayed:



**11** Click **Yes** to restart your computer.

When you finish setting up the USB driver, you can continue with [“Configuring TCP/IP in Windows 95, 98, or Windows Me”](#) on page 20.

If you have difficulties setting up the USB driver, perform [“Removing the USB Driver from Windows 98 or Windows Me”](#) on page 34 and repeat this procedure. If that does not correct your problem, see the *Regulatory, Safety, Software License, and Warranty Information* card provided with your SURFboard VoIP cable modem for information about obtaining warranty service.

## Setting Up a USB Driver in Windows Me

Be sure the *SURFboard VoIP Cable Modem* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable.

Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

- 1 Connect the VoIP cable modem to your computer with a USB cable. For further instructions, see [“Cabling and Startup for a Single User”](#) on page 7. A few seconds after you complete the USB connection, the Add New Hardware Wizard window is displayed:



- 2 Click **Next**. Windows automatically searches for the correct USB drivers and installs them. If the installation is successful, the following window is displayed. Otherwise, be sure the *SURFboard VoIP Cable Modem* CD-ROM is correctly inserted in your CD-ROM drive.



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

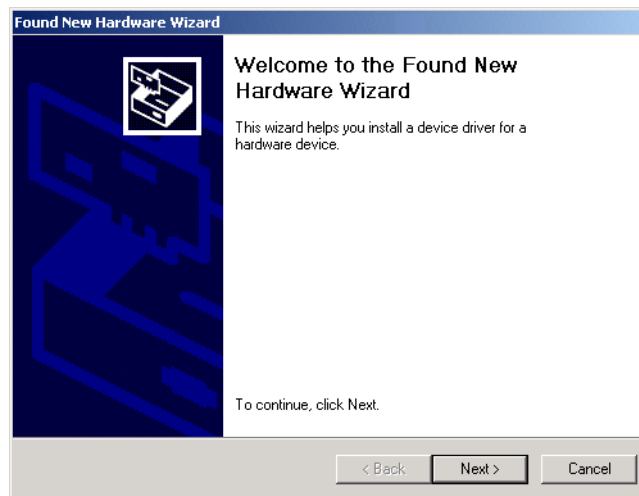
When you finish setting up the USB driver, you can continue with [“Configuring TCP/IP in Windows 95, 98, or Windows Me”](#) on page 20.

## Setting Up a USB Driver in Windows 2000

Be sure the *SURFboard VoIP Cable Modem* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable.

Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

- 1 Connect the VoIP cable modem to your computer with a USB cable. For further instructions, see [“Cabling and Startup for a Single User”](#) on page 7. A few seconds after you complete the USB connection, the Found New Hardware Wizard window is displayed:

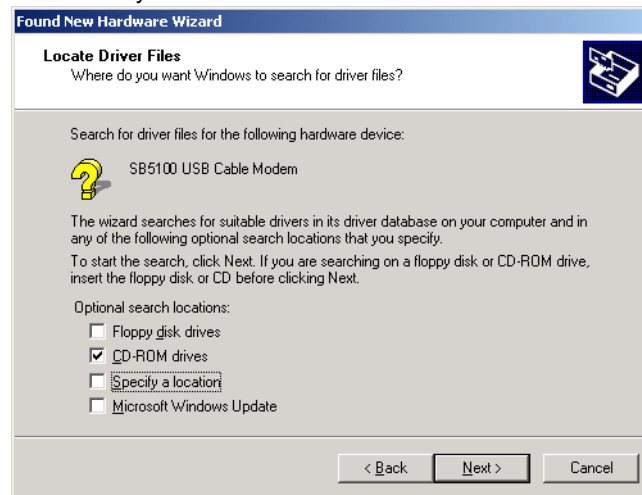


- 2 Click **Next**.
- 3 Be sure “Search for a suitable driver for my device” is selected.



- 4 Click **Next**.

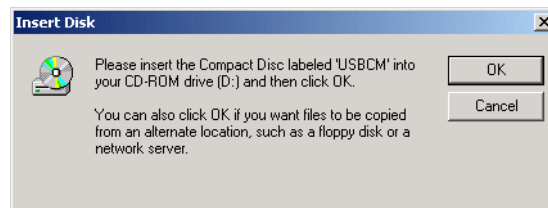
- 5 Be sure “CD-ROM drives” is the only box checked.



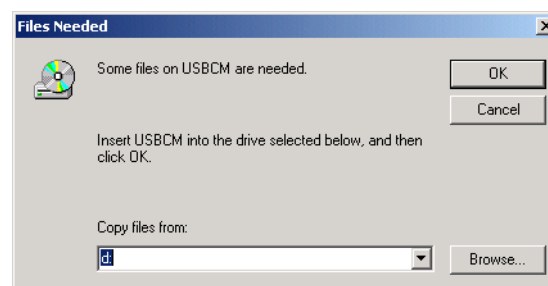
- 6 Click **Next**.

- 7 If the Insert Disk window is displayed, be sure the *SURFboard VoIP Cable Modem* CD-ROM is in the CD-ROM drive and follow steps 8 to 12. Otherwise, if the Completing the Found New Hardware window is displayed, you can skip to step 12.

- 8 On the Insert Disk window, click **OK**.

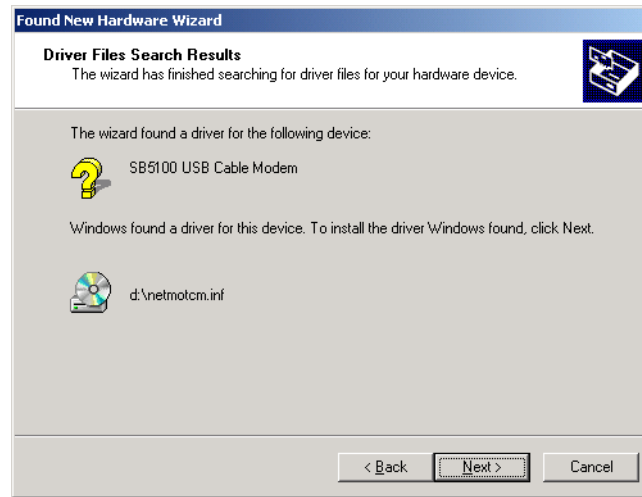


- 9 If necessary, select your CD-ROM drive in the “Copy files from” list.

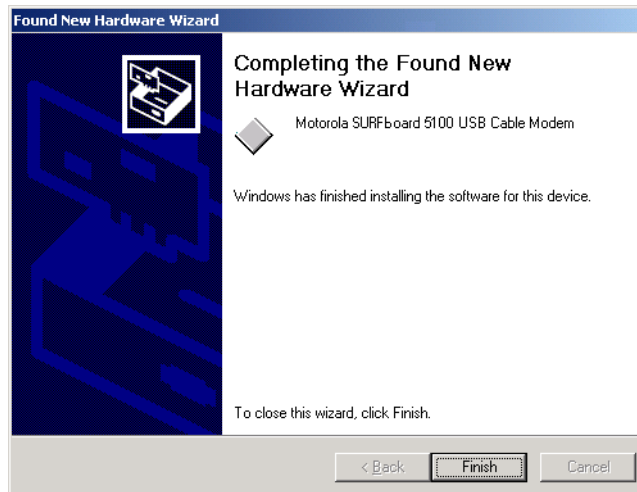


- 10 Click **Browse**.

- 11** Locate and double-click the **NetMotCM.sys** file in the CD-ROM root directory. The Files Needed window is displayed:



- 12** Click **OK**. The Found New Hardware Wizard window is displayed:



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

When you finish setting up the USB driver, you can continue with [“Configuring TCP/IP in Windows 2000”](#) on page 22.

If you have any difficulties setting up the USB driver, perform [“Removing the USB Driver from Windows 2000”](#) on page 36 and repeat this procedure.

## Setting Up a USB Driver in Windows XP

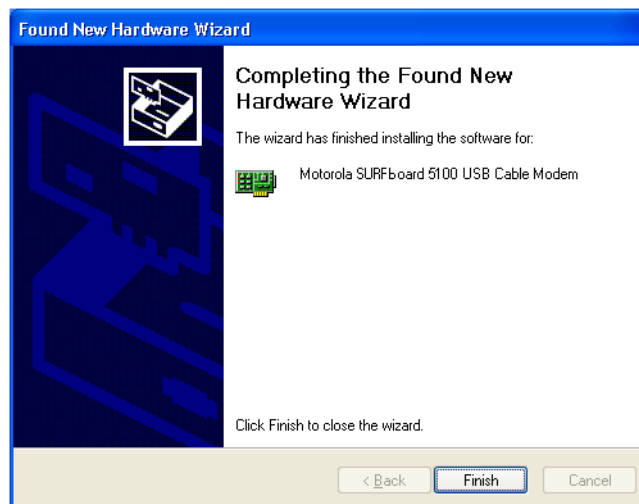
Be sure the *SURFboard VoIP Cable Modem* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable.

Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

- 1 Connect the VoIP cable modem to your computer with a USB cable. For further instructions, see [“Cabling and Startup for a Single User”](#) on page 7. A few seconds after you complete the USB connection, the Found New Hardware Wizard window is displayed:



- 2 Be sure “Install the software automatically” is selected.
- 3 Click **Next**. Windows automatically searches for the correct USB drivers and installs them.



- 4 Click **Finish** to complete the installation. Otherwise, be sure the *SURFboard VoIP Cable Modem* CD-ROM is correctly inserted in your CD-ROM drive.



When you finish setting up the USB driver, you can continue with [“Configuring TCP/IP in Windows XP”](#) on page 26.

Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

## Configuring TCP/IP

The SURFboard VoIP cable modem contains all required software. You do not need to configure the VoIP cable modem, but you must be sure that your computer is configured for [TCP/IP](#) (a protocol for communication between computers). Perform *one* of the following:

- [“Configuring TCP/IP in Windows 95, 98, or Windows Me”](#) on page 20
- [“Configuring TCP/IP in Windows 2000”](#) on page 22
- [“Configuring TCP/IP in Windows XP”](#) on page 26
- Follow the instructions in your Macintosh or UNIX user manual

After configuring TCP/IP, perform *one* of the following to verify the [IP address](#):

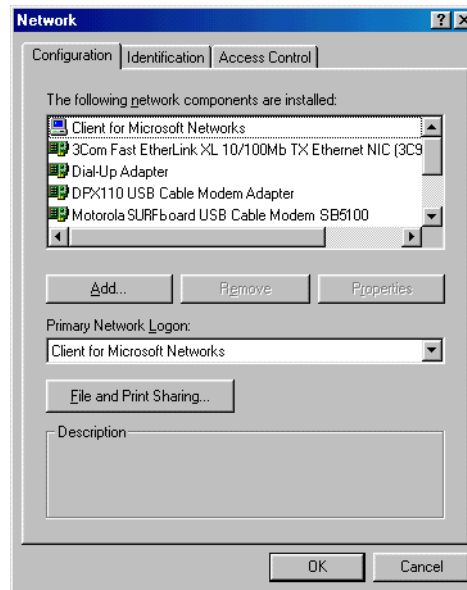
- [“Verifying the IP Address in Windows 95, Windows 98, or Windows Me”](#) on page 29
- [“Verifying the IP Address in Windows 2000 or Windows XP”](#) on page 30
- Follow the instructions in your Macintosh or UNIX user manual

Your cable service provider may provide additional instructions to set up your computer.

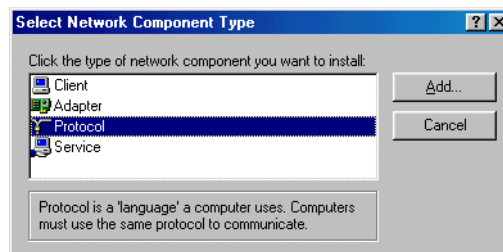


## Configuring TCP/IP in Windows 95, 98, or Windows Me

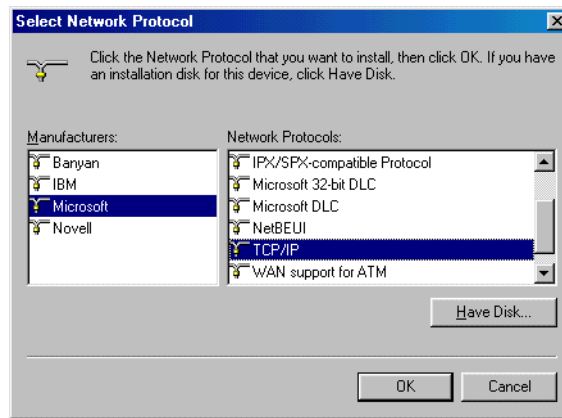
- 1 On the Windows Desktop, click **Start**.
- 2 Select **Settings** and then **Control Panel** from the pop-up menus.
- 3 Double-click the **Network** icon on the Control Panel window. The Network window is displayed:



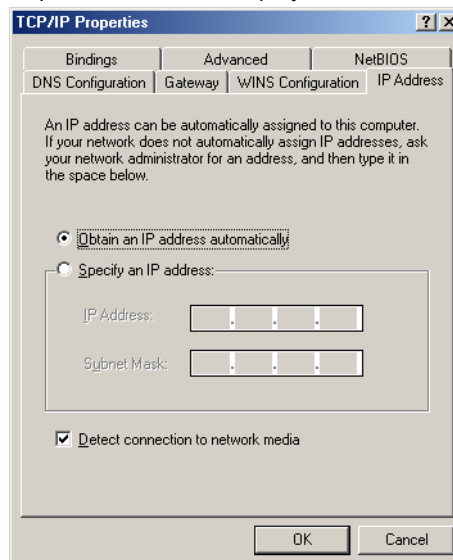
- 4 Select the **Configuration** tab.
- 5 Verify that TCP/IP is installed for the adapter that will be used to connect to the VoIP cable modem by looking for TCP/IP. If found, TCP/IP is installed. Skip to step 10. If TCP/IP is not installed for the adapter, continue with step 6.
- 6 Select the adapter to be used for the SURFboard cable modem connection and then click **Add**. The Select Network Component Type window is displayed:



- 7 Select the **Protocol** option and click **Add**. The Select Network Protocol window is displayed:



- 8 Click **Microsoft** in the Manufacturers section and click **TCP/IP** in the Network Protocol section of Select Network Protocol window.
- 9 Click **OK**.
- 10 Click **TCP/IP** on the Network window. If there is more than one TCP/IP entry, choose the one for the Ethernet card or USB port connected to the VoIP cable modem.
- 11 Click **Properties**. The TCP/IP Properties window is displayed:

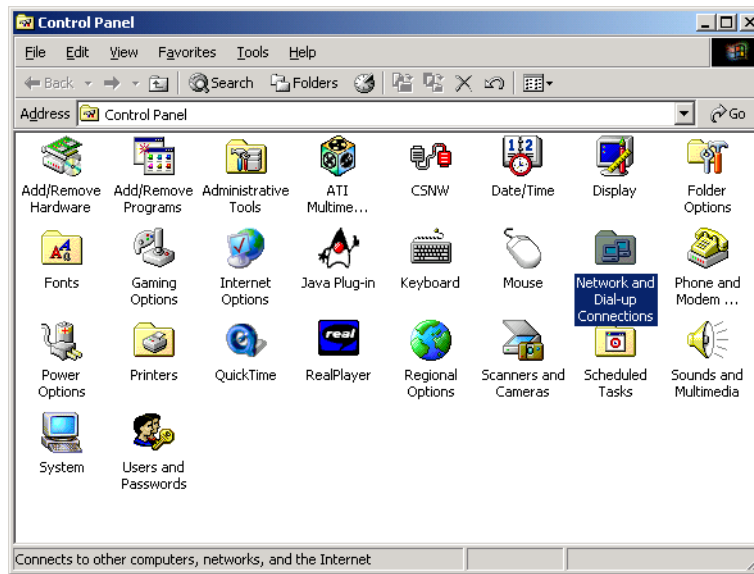


- 12 Click the **IP Address** tab.
- 13 Click **Obtain an IP address automatically**.
- 14 Click **OK** to accept the TCP/IP settings.
- 15 Click **OK** to close the Network window.
- 16 Click **OK** when prompted to restart your computer and click **OK** again.

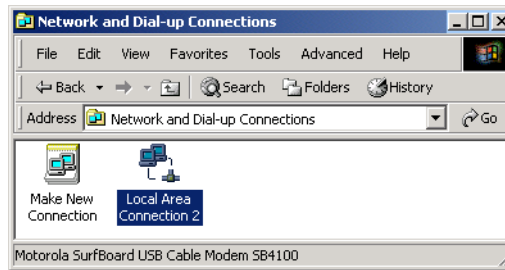
When you complete TCP/IP configuration, go to [“Verifying the IP Address in Windows 95, Windows 98, or Windows Me”](#) on page 29.

## Configuring TCP/IP in Windows 2000

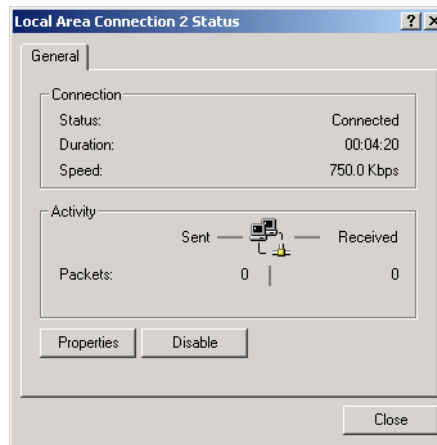
- 1 On the Windows Desktop, click **Start**.
- 2 Select **Settings** and then **Control Panel** from the pop-up menus. The Control Panel window is displayed:



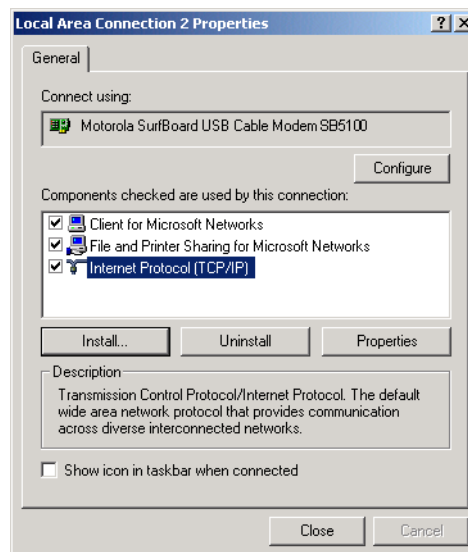
- 3 Double-click the **Network and Dial-up Connections** icon on the Control Panel window. The Network and Dial-up Connections window is displayed:



- 4 Double-click **Local Area Connection number**. The value of *number* varies from system to system. The Local Area Connection *number* Status window is displayed:

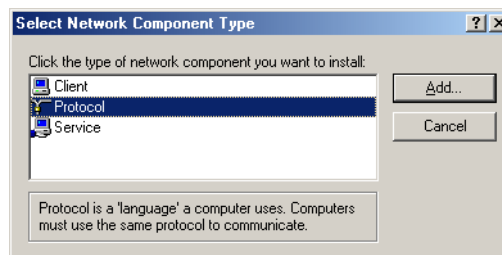


- 5 Click **Properties**. The Local Area Connection Properties window is displayed:

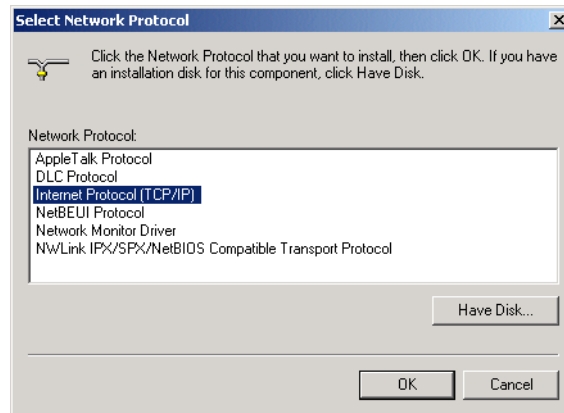


- 6 If Internet Protocol (TCP/IP) is in the list of components, TCP/IP is installed. You can skip to step 10.

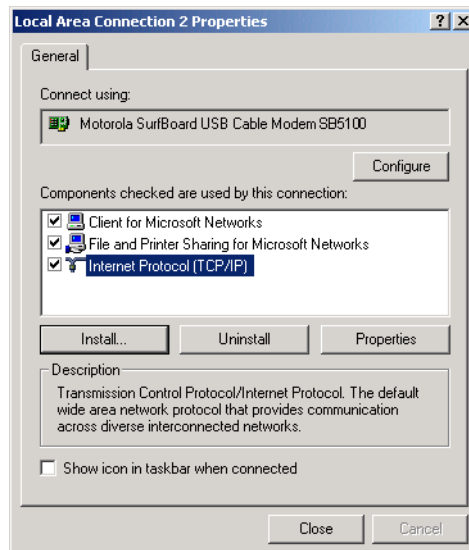
If Internet Protocol (TCP/IP) is not in the list, click **Install**. The Select Network Component Type window is displayed: Continue with step 7.



- 7 Click **Protocol** on the Select Network Component Type window and click **Add**. The Select Network Protocol window is displayed:

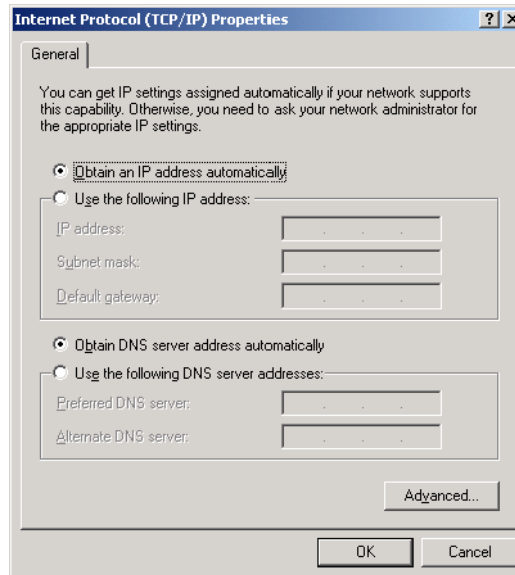


- 8 Click **Internet Protocol (TCP/IP)** in the Network Protocol section on the Select Network Protocol window.
- 9 Click **OK**. The Local Area Connection *number* Properties window is re-displayed.



- 10 On the Local Area Connection *number* Properties window, be sure the box next to **Internet Protocol (TCP/IP)** is checked.

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

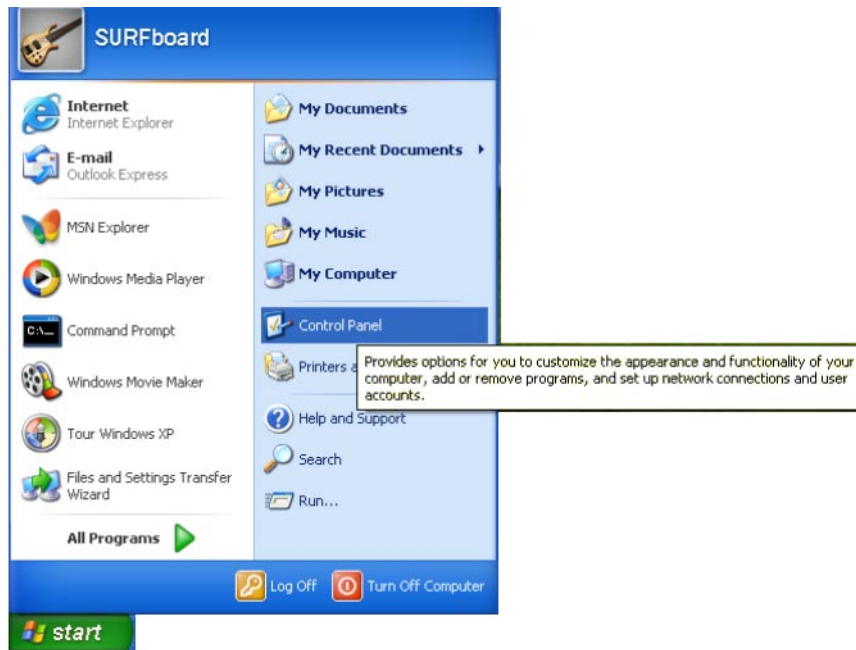


- 12** Be sure **Obtain IP address automatically** and **Obtain DNS server address automatically** are selected. Click **OK** to accept the TCP/IP settings.
- 13** Click **OK** to close the Local Area Connection *number* Properties window.
- 14** Click **OK** when prompted to restart your computer and click **OK** again.

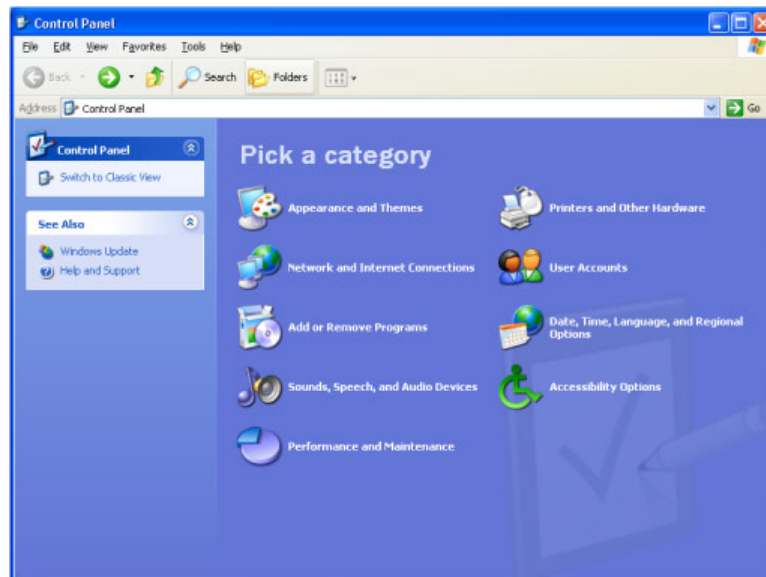
When you complete the TCP/IP configuration, go to [“Verifying the IP Address in Windows 2000 or Windows XP”](#) on page 30.

## Configuring TCP/IP in Windows XP

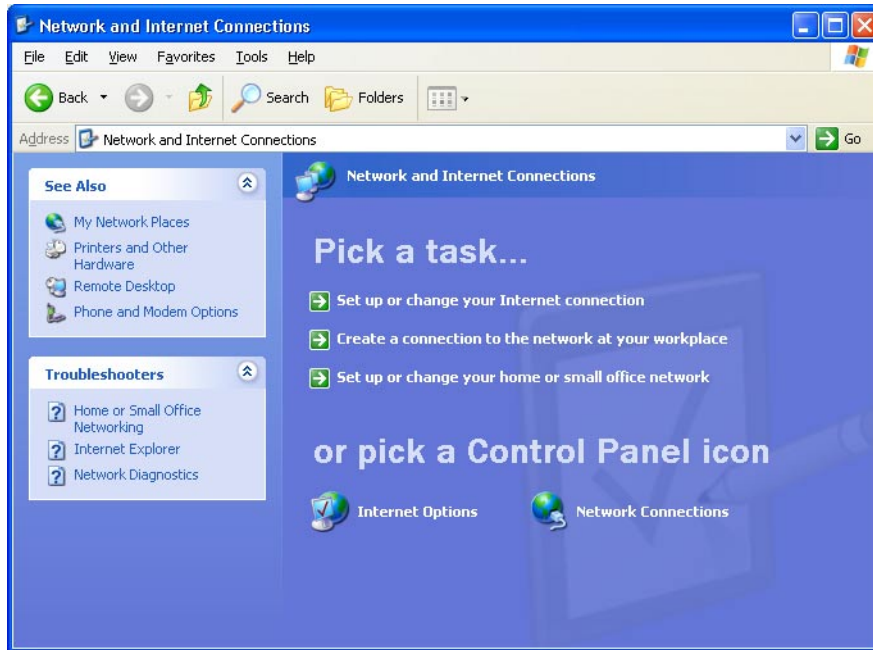
- 1 On the Windows desktop, click **Start** to display the Start window shown.



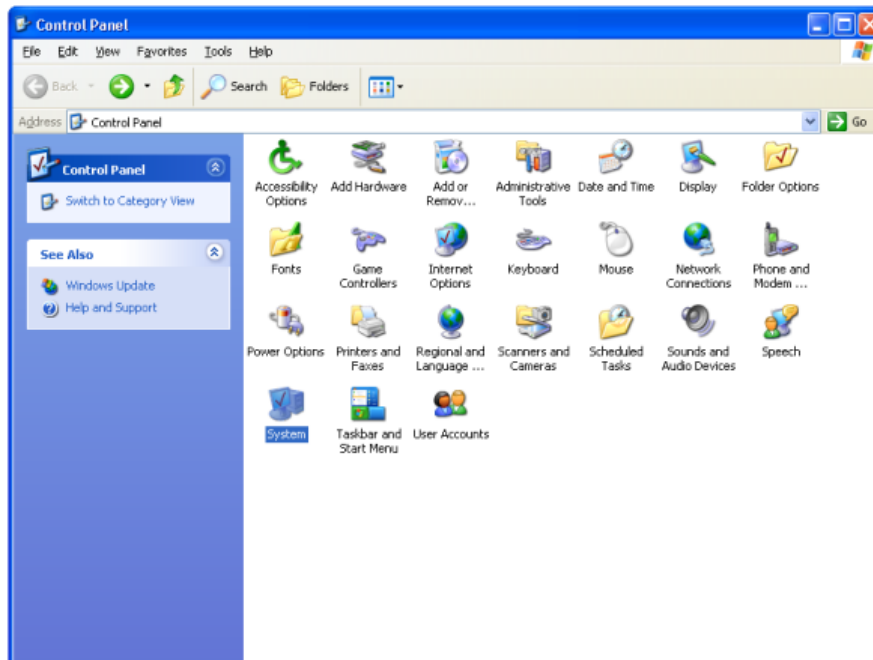
- 2 Click **Control Panel** to display the Control Panel window. The display varies, depending on your Windows XP view options. If the display is a Category view as shown below, continue with step 3. Otherwise, skip to step 5.



- 3 Click **Network and Internet Connections**. The Network and Internet Connections window is displayed.

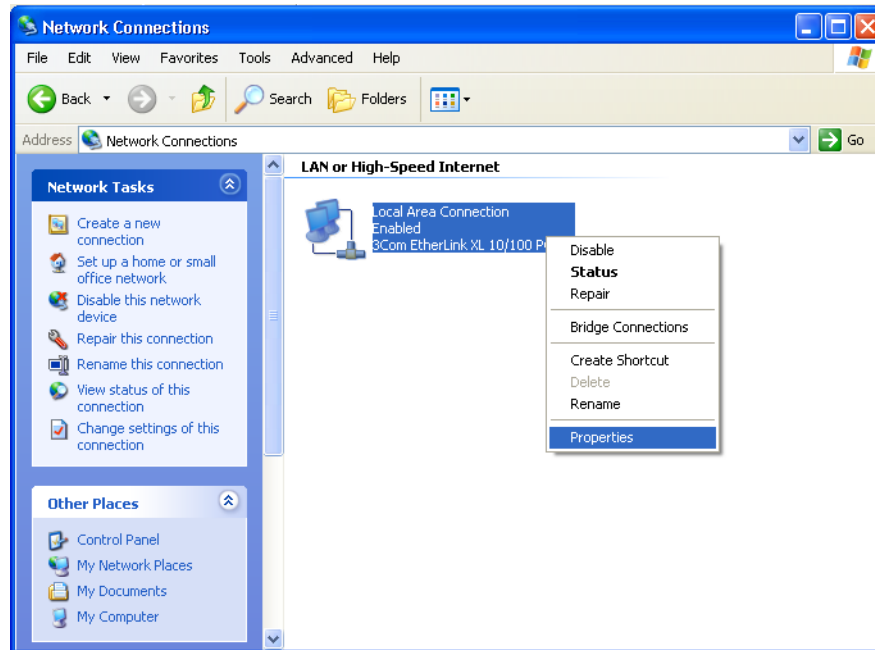


- 4 On the Network and Internet Connections window, click **Network Connections** to display the LAN or High-speed Internet connections. Skip to step 6.
- 5 If a classic view similar to below is displayed, click **Network Connections** to display the LAN or High-speed Internet connections.

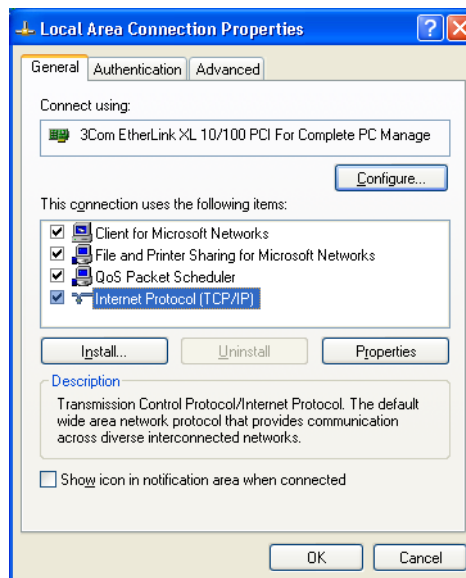




- 6 Right-click on your network connection. If more than one connection is displayed, be sure to select the one for your network interface.

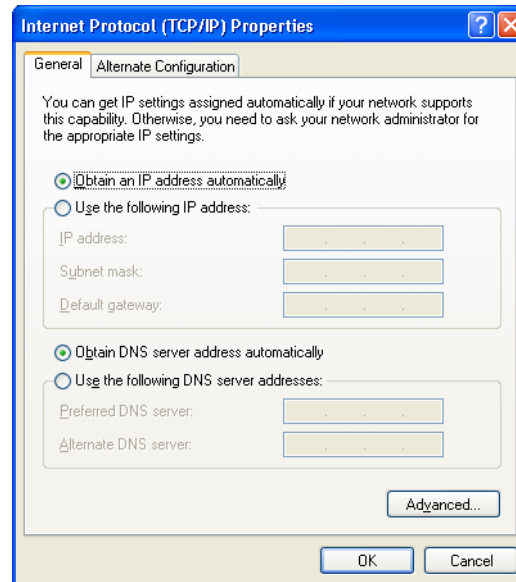


- 7 Select **Properties** from the pop-up menu. The Local Area Connection Properties window is displayed:



- 8 On the Local Area Connection Properties window, be sure Internet Protocol (TCP/IP) is checked. If it is not checked, check it.

- 9 Select **Internet Protocol (TCP/IP)** and click **Properties** to display the Internet Protocol (TCP/IP) Properties window.



- 10 On the Internet Protocol (TCP/IP) Properties window, verify that the settings are correct, as shown.
- 11 Click **OK** to close the TCP/IP Properties window.
- 12 Click **OK** to close 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”](#) on page 30.

## Verifying the IP Address

The following subsections describe verifying an IP Address. Perform the appropriate procedure for you Windows version:

- [“Verifying the IP Address in Windows 95, Windows 98, or Windows Me”](#) on page 29
- [“Verifying the IP Address in Windows 2000 or Windows XP”](#) on page 30

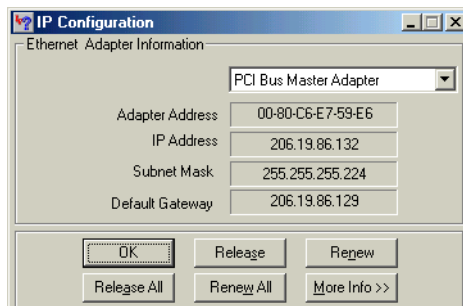
For a Macintosh or UNIX system, refer to your user guide.

### Verifying the IP Address in Windows 95, Windows 98, or Windows Me

To check the IP address:

- 1 On the Windows Desktop, click **Start**.
- 2 Select **Run**. The Run window is displayed.

- 3 Type **winipcfg.exe** and click **OK**. A window similar to the example is displayed:



*The example values for Adapter Address, IP Address, Subnet Mask, and Default Gateway on your PC will be different than in the image above.*

Adapter Address	00-80-C6-E7-59-E6
IP Autoconfiguration Address	169.254.191.251

*In Windows 98, if autoconfiguration is displayed before the IP Address, call your service provider.*

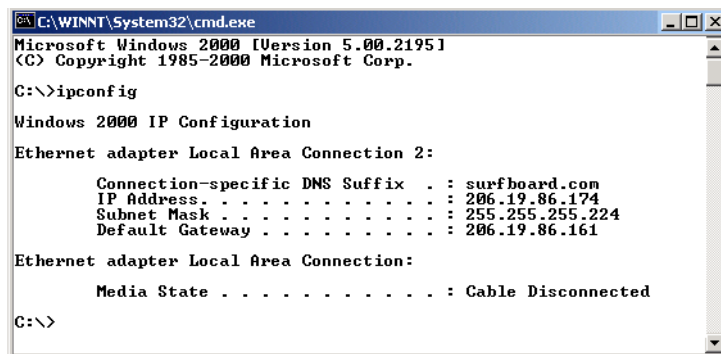
- 4 Select your adapter name — the Ethernet card or USB device.
- 5 Click **Renew**.
- 6 Click **OK** after the system displays an IP address.

If after performing this procedure your computer cannot access the Internet, call your cable service provider for help.

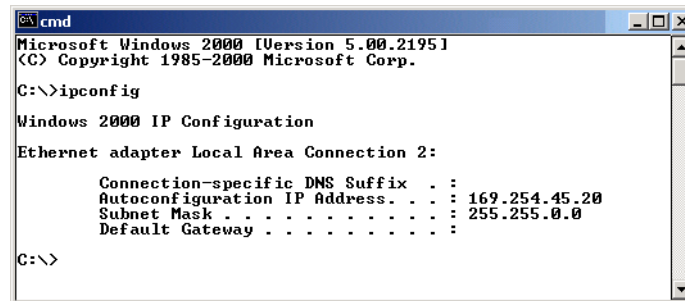
## Verifying the IP Address in Windows 2000 or Windows XP

To check the IP address:

- 1 On the Windows Desktop, click **Start**.
- 2 Select **Run**. The Run window is displayed.
- 3 Type **cmd** and click **OK**.
- 4 Type **ipconfig** and press **ENTER** to display your IP configuration. A display, like below, indicates a normal configuration.



If an Autoconfiguration IP Address is displayed as in the window below, there is an incorrect connection between your PC and the VoIP cable modem or there are cable 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:\>
```

Check:

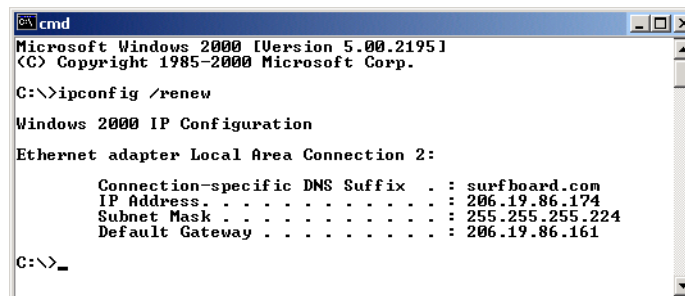
- Your cable connections
- Whether you can see cable-TV channels on your television

After successfully verifying your cable connections and proper cable-TV operation, you can renew your IP address.

## Renewing Your IP Address

To renew your IP address:

- 1 On the Windows Desktop, click **Start**.
- 2 Select **Run**. The Run window is displayed.
- 3 Type **cmd** and click **OK**.
- 4 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:\>_
```

- 5 Type **exit** and press **ENTER** to return to Windows.

If after performing this procedure your computer cannot access the Internet, call your cable service provider for help.

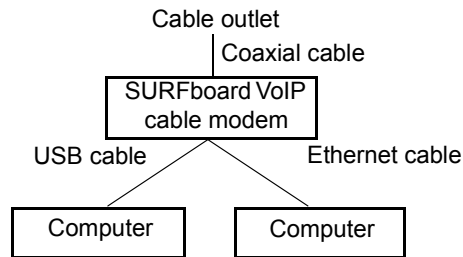
## Cabling for Multiple Users

The SURFboard VoIP cable modem supports several multiple user configurations. Along with an optional hub or router, it can serve as an Internet gateway for up to 31 computers.


Not all service providers support multiple user service. For information about multiple user service, contact your cable service provider.

### Ethernet and USB

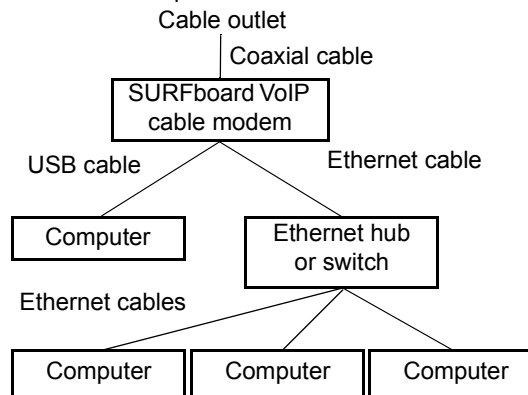
You can connect the USB port on one computer and the Ethernet port on another computer directly to the VoIP cable modem, as shown.



### Caution

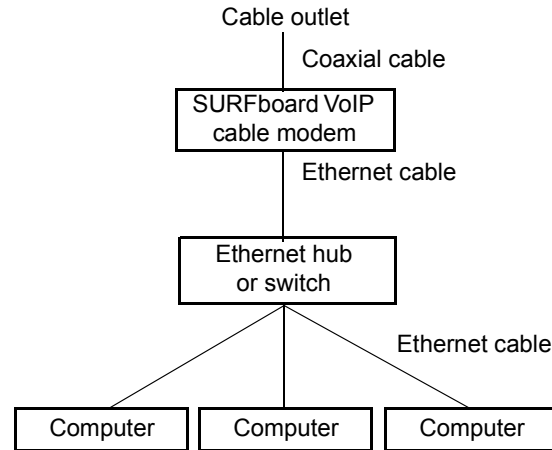
 Do not connect *both* the Ethernet and USB cables to the same computer.

You can connect a single computer to the USB port and from one to 31 remaining users to an Ethernet hub, as shown. You cannot connect more than one computer to the VoIP cable modem through the USB port.



## Ethernet

You can connect up to 31 computers to an Ethernet hub connected to a SURFboard VoIP cable modem, as shown.



## ❖ Troubleshooting

If the solutions listed here do not solve your problem, contact your cable service provider. Before calling your service provider, try unplugging and plugging in the cable modem power cord in the AC wall outlet to restart the cable modem. Restarting the cable modem may take 5 to 30 minutes.

Before calling your service provider, try pressing the reset button on the rear panel. Resetting the VoIP cable modem 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”](#) on page 35.

### Problem

### Possible Solutions

#### Green POWER light is off

- Check that the power cord is properly plugged into the electrical outlet and the VoIP cable modem.
- Check that the electrical outlet is working.
- If the Standby light is on, the Internet connection is off. Press the Standby button to reconnect to the Internet.

#### Cannot send or receive data

- Check the lights on the front panel. Note the first light from top to bottom that is off. This light indicates where the error occurred as described in [“Front-Panel Lights and Error Conditions”](#) on page 35.
- If all lights are off except the Standby light, the VoIP cable modem is in Standby mode. Press the Standby button to reconnect your Internet service. The Standby button does not affect the Tel1/Tel2 LEDs.
- If you have cable TV, check that your TV is working and the picture is clear. If you cannot receive your regular TV channels, your data service will not function.
- Check the coaxial cable at the VoIP cable modem and wall outlet. Hand-tighten if necessary.
- Check the IP address. Follow the steps in [“Verifying the IP Address in Windows 95, Windows 98, or Windows Me”](#) on page 29 or [“Verifying the IP Address in Windows 2000 or Windows XP”](#) on page 30. Call your cable service provider if you need an IP address.
- Check that the USB or Ethernet cable is properly connected to the VoIP cable modem and your computer.

#### Problems related to unsuccessful USB driver installation

Remove the USB driver. Follow the instructions in *one* of:

- [“Removing the USB Driver from Windows 98 or Windows Me”](#) on page 34
- [“Removing the USB Driver from Windows 2000”](#) on page 36
- [“Removing the USB Driver from Windows XP”](#) on page 40

## Front-Panel Lights and Error Conditions

Light	Turns Off During Startup If	Turns Off During Normal Operation If
<b>Power</b>	The VoIP cable modem is not properly plugged into the power outlet	The VoIP cable modem is unplugged or is in standby mode. Press the Standby button
<b>DS (Receive)</b>	The receive channel cannot be acquired	The receive channel is lost
<b>US (Send)</b>	The send channel cannot be acquired	The send channel is lost
<b>Online</b>	IP registration is unsuccessful	The IP registration is lost
<b>Tel 1 and 2</b>	Tel 2 fails to flash during startup, startup telephony configuration has failed.	Connected during a phone call and does not blink, telephone connection is lost.

Note: For Tel 1 and 2, if the LED is not lit and the telephone line is properly connected, the line has not been setup for service by the telephone service provider. Contact your provider.

For more information about the lights, see [“Top and Front Panel”](#) on page 2.

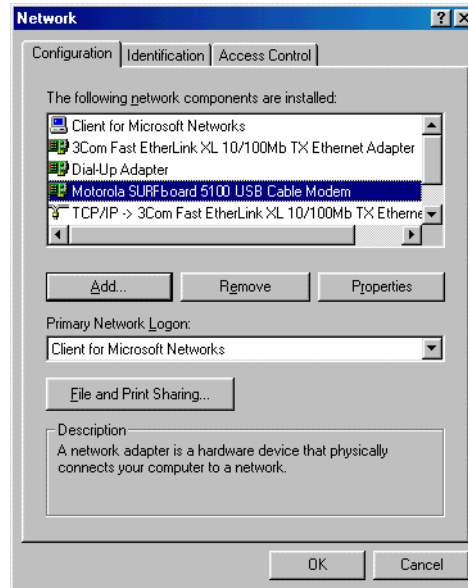


## Removing the USB Driver

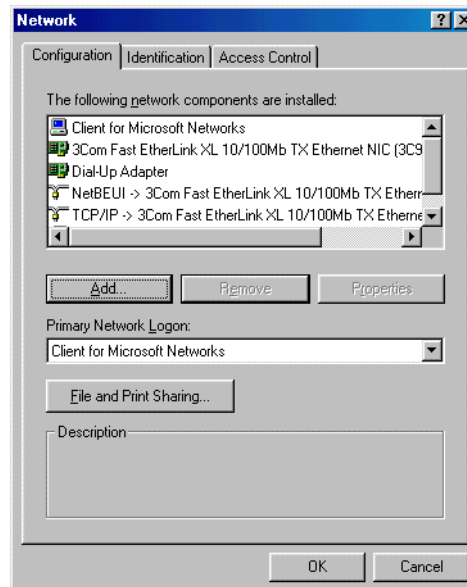
### Removing the USB Driver from Windows 98 or Windows Me

Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

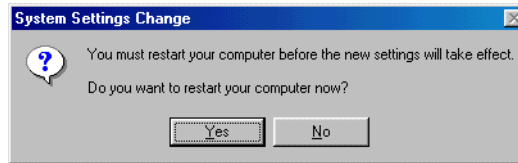
- 1 On your Windows Desktop, right-click the **Network Neighborhood** icon for Windows 98 or **My Network Places** for Windows Me and then select **Properties**. The Network window is displayed:



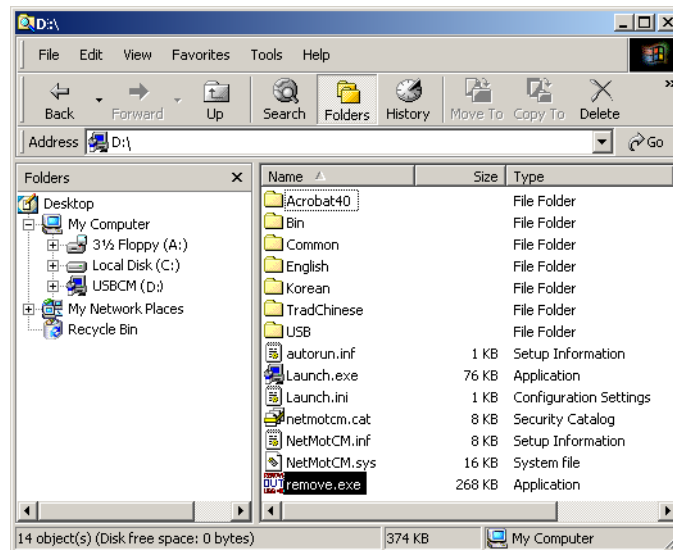
- 2 Click the **Motorola SURFboard USB Cable Modem** and click **Remove**. The Network window no longer displays Motorola SURFboard USB Cable Modem in the list.



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

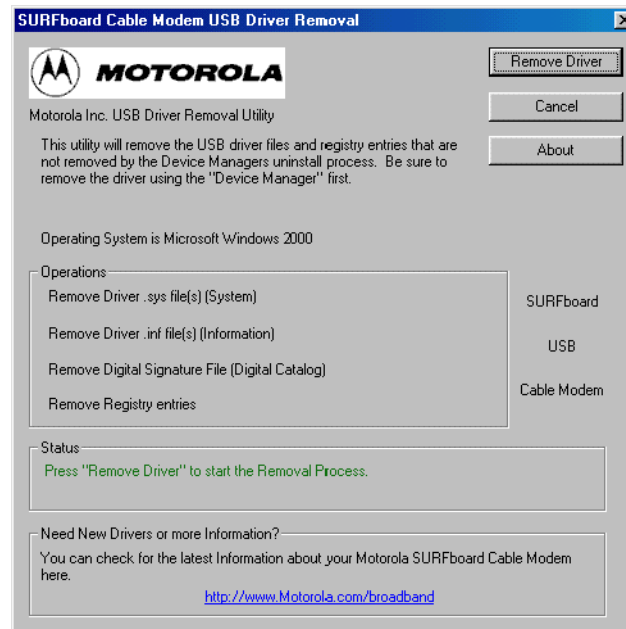


- 4 Disconnect the USB cable from your computer or VoIP cable modem.
- 5 Click **Yes** to restart your computer.
- 6 Insert the *SURFboard VoIP Cable Modem* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.
- 7 Press the **Esc** key on the keyboard to exit the CD-ROM start-up screens.
- 8 Start Windows Explorer. Your Windows Explorer may appear slightly different than here.



- 9 Select your CD-ROM drive (D: in the image).

- 10 Double-click **remove** or **remove.exe** to run the Remove utility from the *SURFboard VoIP Cable Modem* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed:



- 11 Click **Remove Driver** to remove the USB driver.

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

- “Setting Up a USB Driver in Windows 98” on page 10
- “Setting Up a USB Driver in Windows Me” on page 14

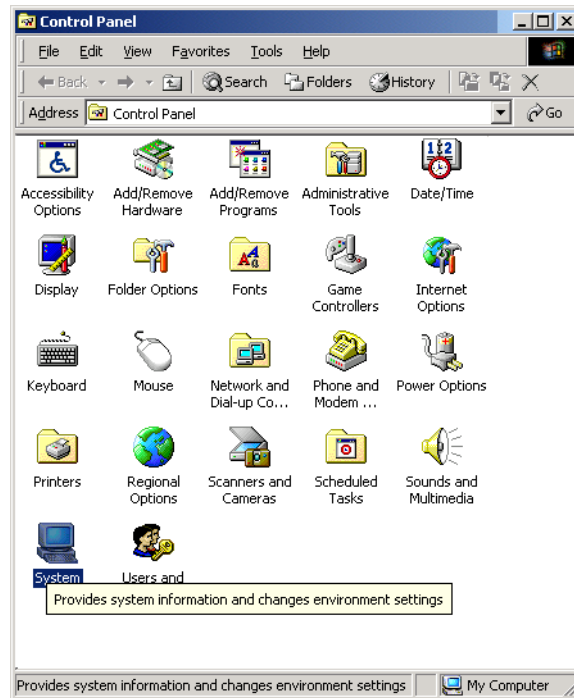
If you continue to have problems, contact your cable service provider.

## Removing the USB Driver from Windows 2000

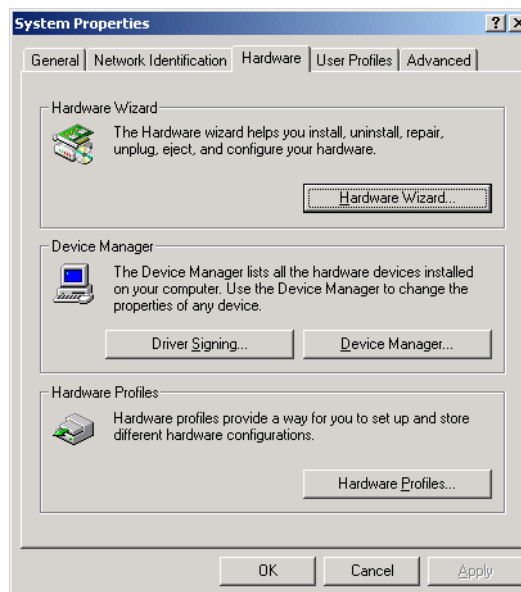
Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

- 1 On your Windows desktop, click **Start**.
- 2 Click **Settings**.

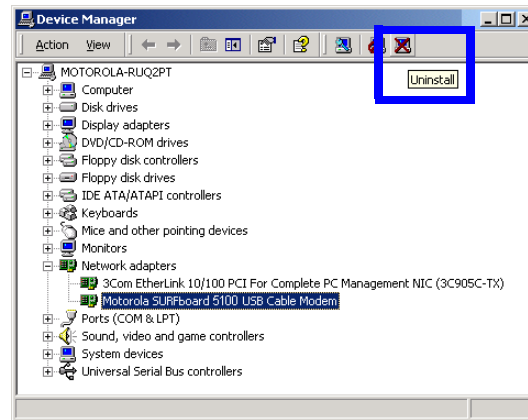
- 3 Double-click **Control Panel**. The Control Panel window is displayed:



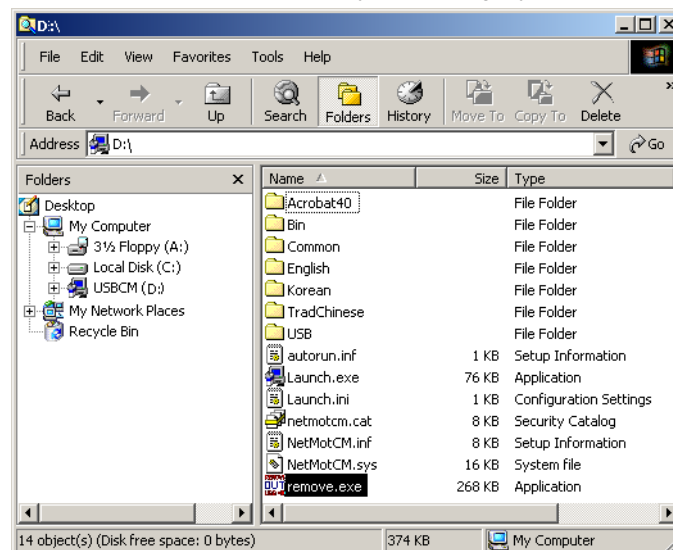
- 4 Double-click **System** to display the System Properties window.
- 5 On the System Properties window, click the **Hardware** tab.



- 6 Click **Device Manager**. The Device Manager window is displayed:

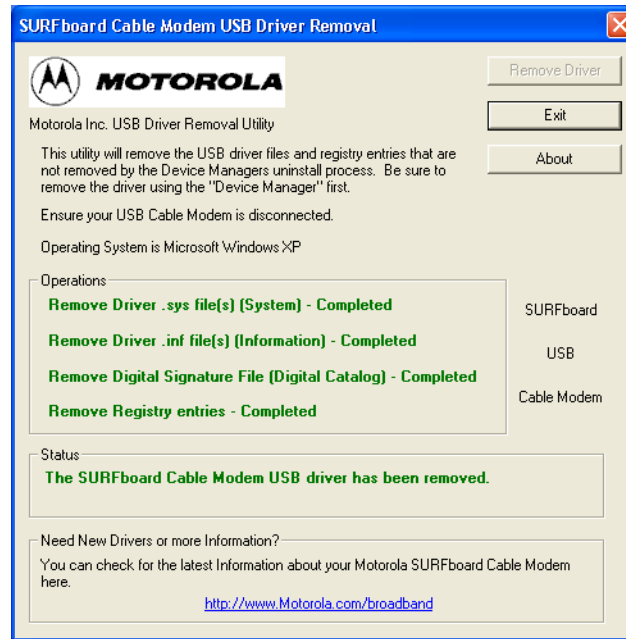


- 7 On the Device Manager window, double-click **Network Adapters**.
- 8 Click the **Motorola SURFboard USB VoIP Cable Modem**. The Uninstall icon is displayed on the window near the top.
- 9 Click **Uninstall**.
- 10 Close the Device Manager window.
- 11 Close the Control Panel window.
- 12 Insert the *SURFboard VoIP Cable Modem* 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 Start **Windows Explorer**. Your Windows Explorer may appear slightly different than here.



- 15 Click **My Computer**.
- 16 Click the **Motorola** CD icon (D: in the example).

- 17** Double-click **remove** or **remove.exe** to run the Remove utility from the *SURFboard VoIP Cable Modem* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed. *Be sure the USB cable is disconnected.*



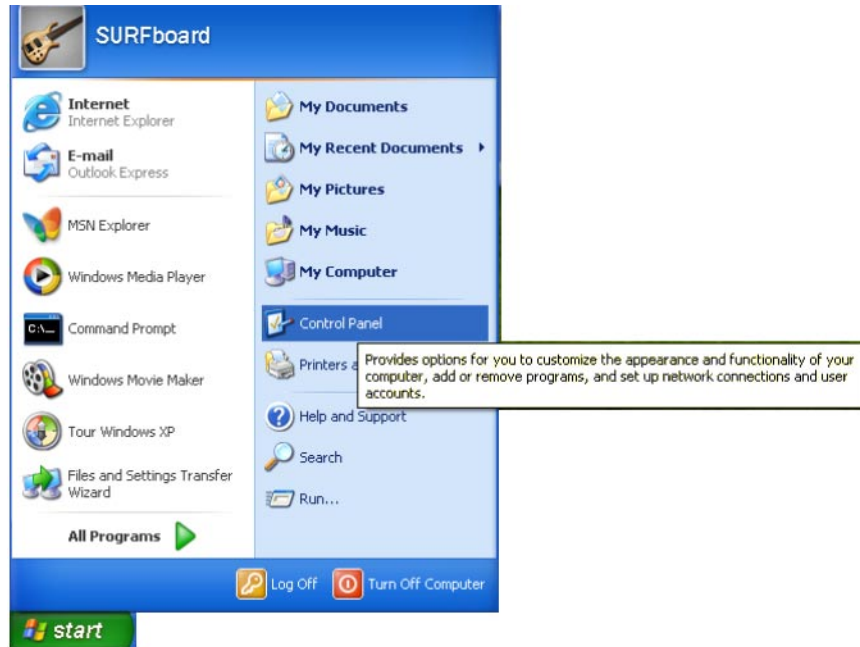
- 18** Click **Remove Driver**.

After you remove the USB driver, re-install the USB driver following “[Setting Up a USB Driver in Windows 2000](#)” on page 15. If you continue to have problems, contact your cable service provider.

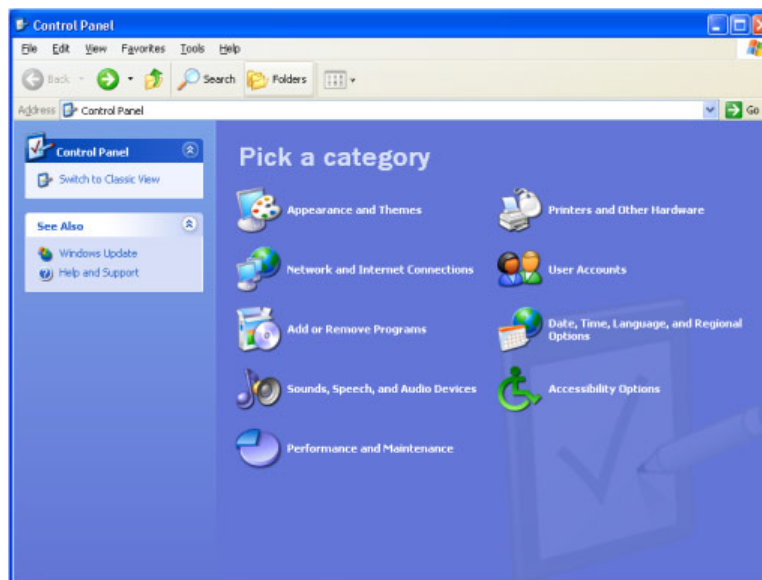
## Removing the USB Driver from Windows XP

Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

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

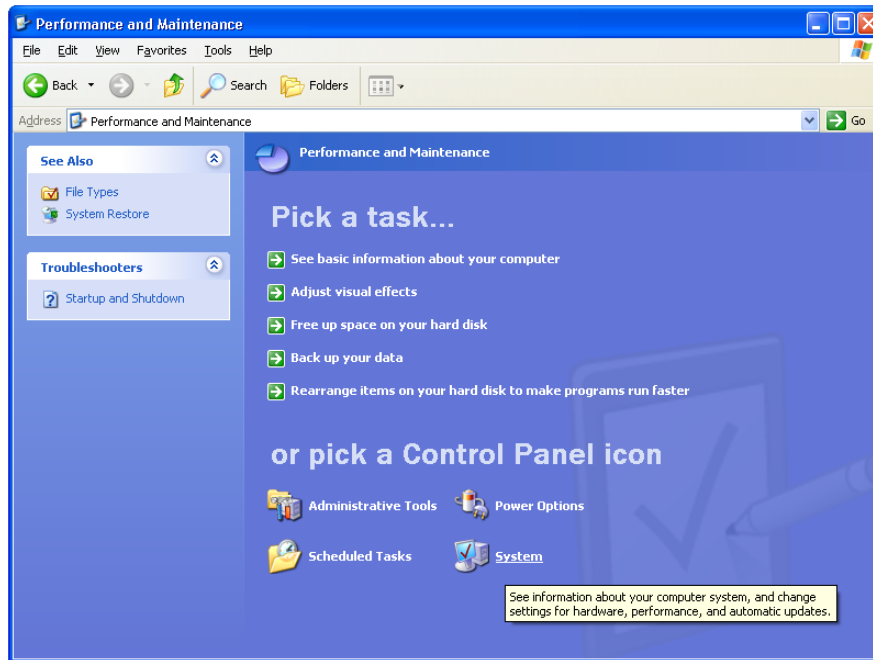


- 2 Click **Control Panel** to display the Control Panel window. The display varies, depending on your Windows XP view options.

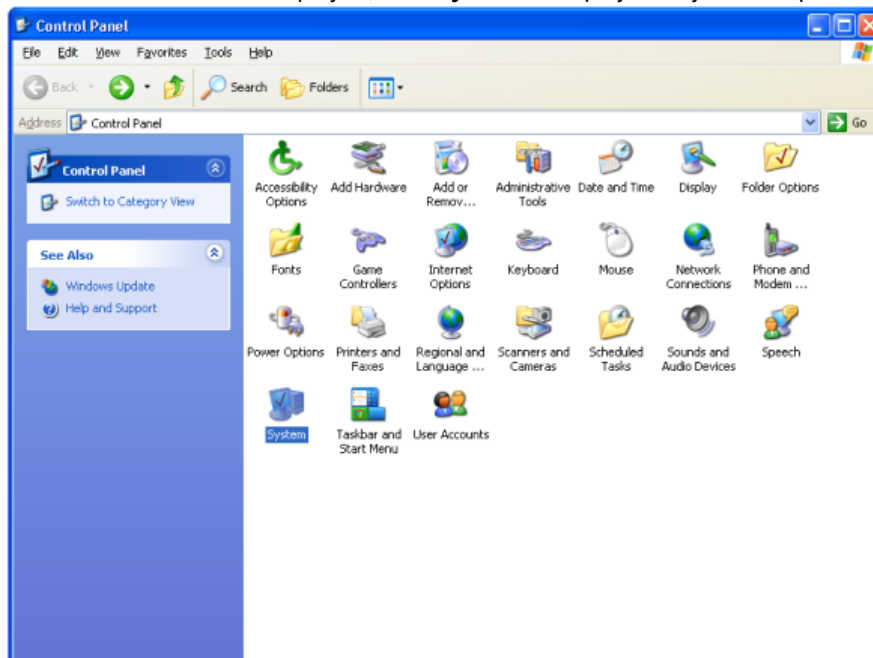


- 3 If a Category view similar to above is displayed, click **Performance and Maintenance**. Otherwise, skip to step 5.

- 4 On the Performance and Maintenance window, click **System** to display the System Properties window. Skip to step 6.

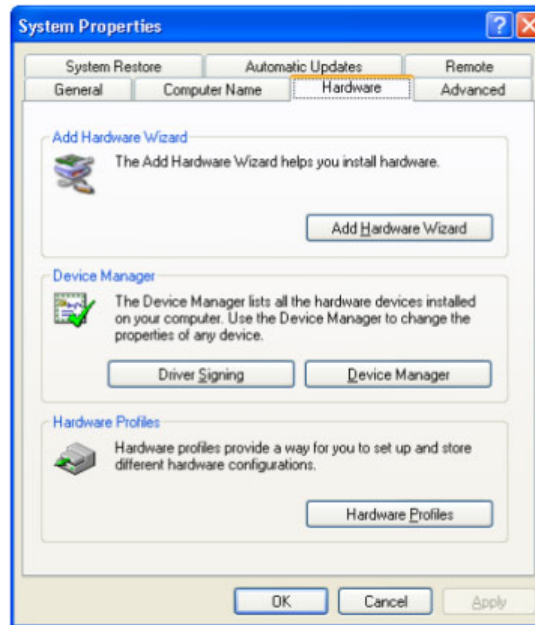


- 5 If a classic view similar to below is displayed, click **System** to display the System Properties window.

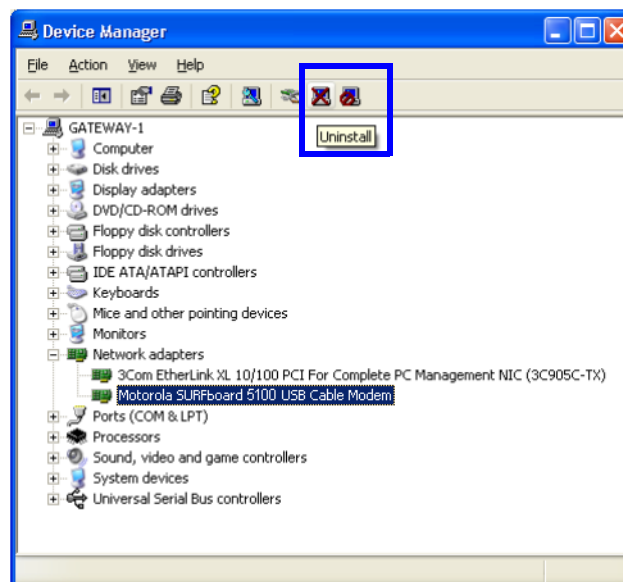




- 6 On the System Properties window, click the **Hardware** tab.

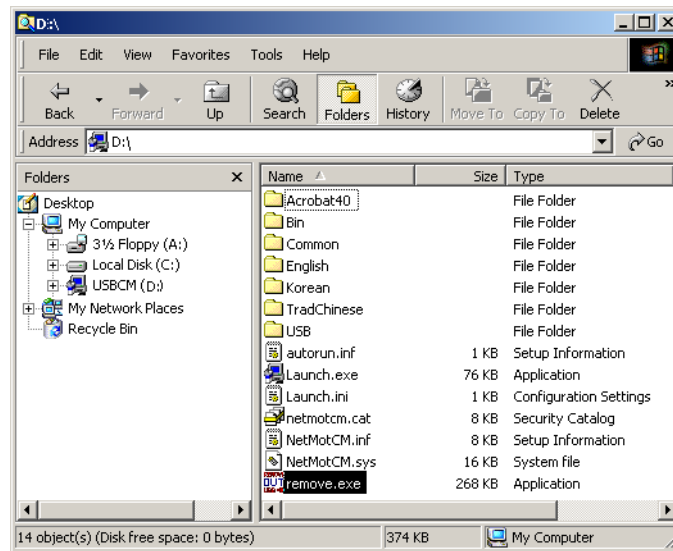


- 7 Click **Device Manager** to display the Device Manager window.
- 8 On the Device Manager window, double-click **Network adapters**.
- 9 Click the **Motorola SURFboard USB Cable Modem**. The Uninstall icon is displayed on the window near the top. Click **Uninstall**.

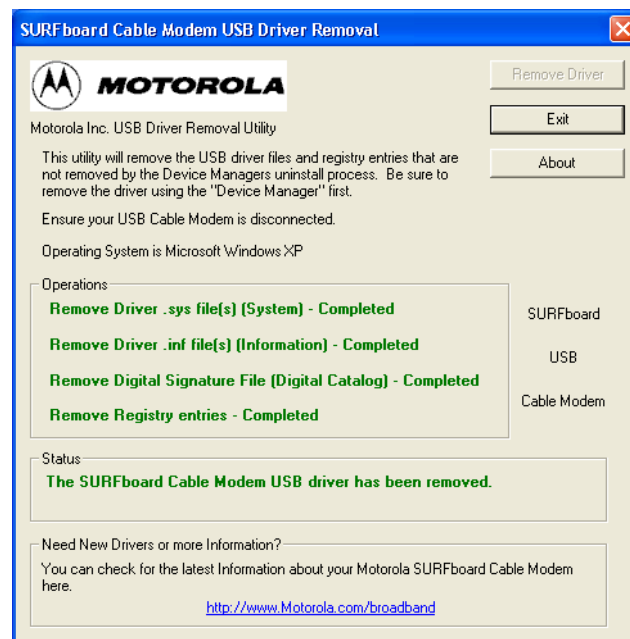


- 10 Close the Device Manager window.
- 11 Close the Control Panel window.
- 12 Insert the *SURFboard VoIP Cable Modem* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.

- 13 Press the **Esc** key on the keyboard to exit the CD-ROM start-up screens.
- 14 Start Windows Explorer. Your Windows Explorer may appear slightly different than here.



- 15 Click **My Computer**.
- 16 Click the **Motorola** CD icon (D: in the image).
- 17 Double-click **remove** or **remove.exe** to run the Remove utility from the *SURFboard VoIP Cable Modem* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed. *Be sure the USB cable is disconnected.*



- 18 Click **Remove Driver**.

After you remove the USB driver, re-install the USB driver following “[Setting Up a USB Driver in Windows XP](#)” on page 18. If you continue to have problems, contact your cable service provider.



## Contact Us

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

In the United States and Canada, if you need assistance while working with the SURFboard VoIP cable modem and related equipment supplied by Motorola:

**If you rent or lease your SURFboard VoIP cable modem** Contact your cable service provider.

**If you own your SURFboard VoIP cable modem** Call **1-877-466-8646** for technical and warranty support. Support is available 24 hours a day, seven days a week.

For answers to typical questions, see “[Frequently Asked Questions](#)” on page 47.

For information about Motorola consumer cable products, education, and support, visit [www.motorola.com/broadband/consumers](http://www.motorola.com/broadband/consumers).

## 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 What is voice over Internet Protocol (VoIP)?**

**A** VoIP uses cable television wires instead of traditional telephone lines to provide voice and fax service.

**Q How fast are VoIP cable modems?**

**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 Can I still watch cable TV while using my VoIP 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 VoIP cable modems interface with all compliant cable systems. Your Motorola SURFboard VoIP cable modem is DOCSIS or Euro-DOCSIS certified.

**Q What is PacketCable?**

**A** PacketCable™ is an evolving set of interface specifications for delivering advanced, real-time multimedia services over cable; for example VoIP, multimedia conferencing, and interactive gaming.

**Q If I have a VoIP 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 I have more than one computer. Do I need more than one SURFboard VoIP cable modem?**

**A** No, not if your computers are connected on a network. The SURFboard VoIP cable modem supports current Internet connection sharing technologies to enable you to connect up to 31 computers to the Internet using a single VoIP cable modem.

**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 VoIP cable modem. 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 VoIP cable modem, contact your cable service provider.

**Q What do I do if my SURFboard VoIP cable modem stops working?**

**A** “[Troubleshooting](#)” on page 34 provides tips to diagnose problems and simple solutions. If you continue to have problems, contact your cable service provider or Motorola as described in “[Contact Us](#)” on page 46.

## Glossary

<b>coaxial cable (coax)</b>	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.
<b>DOCSIS</b>	The CableLabs Data-Over-Cable Service Interface Specification defines interface standards for VoIP cable modems and supporting equipment.
<b>download</b>	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 VoIP cable modem downloads its configuration from a server during start-up.
<b>downstream</b>	In a network, downstream describes the direction of data received by your computer from the Internet.
<b>Ethernet</b>	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.
<b>expansion slot</b>	An opening in a computer where a circuit board can be inserted to add new capabilities.
<b>F-type connector</b>	A connector used to connect coaxial cable to equipment.
<b>IP address</b>	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 cable service provider assigns your VoIP cable modem an IP address to provide a continuous Internet connection.
<b>MAC address</b>	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 SURFboard VoIP cable modem. You need to provide the MAC address to your cable service provider.
<b>MHz</b>	Mega Hertz. A measure of radio frequency - millions of cycles per second. One MHz means one million cycles per second.
<b>PSTN</b>	The public switched telephone network is the traditional circuit-switched, voice-oriented telephone network originally invented by Alexander Graham Bell. It is sometimes referred to as plain old telephone service (POTS).
<b>RJ-11</b>	The most common type of connector for household phones.
<b>RJ-45</b>	The most common type of connector for Ethernet networks.
<b>splitter</b>	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.
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol is a set of protocols that provides standards and rules for communication between networks.
<b>upstream</b>	In a network, upstream describes the direction of data sent from your computer to the Internet.
<b>UPS</b>	An uninterruptible power source is a power supply designed to protect mission-critical networks against power outages, brownouts, surges, and spikes.
<b>USB</b>	Universal Serial Bus is a computer interface for add-on devices such as printers, scanners, and VoIP cable modems. When you connect your SURFboard VoIP cable modem to the USB port, Windows 98 and later versions automatically recognize the VoIP cable modem.
<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 using a dedicated circuit for each line. VoIP enables calls to travel as discrete data packets on shared lines.

## Software License

### SURFboard Cable Modems

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101 Tournament Drive  
Horsham, PA 19044

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