



# SURFboard® SBV4200 VoIP Cable Modem User Guide

Click your selection (there is a complete [Contents](#) on page iv):

## Introduction

Introduces your SURFboard VoIP cable modem and the controls on the [Top and Front Panel](#) and [Rear Panel](#).

## Before You Begin

Lists the items needed to install your SURFboard VoIP cable modem and describes [Precautions](#), [Signing Up for Service](#), and [Computer System Requirements](#).

## Installation and Configuration Overview

Provides an overview and links to cable and configure your SURFboard VoIP cable modem, including [Setting Up a USB Driver](#).

## Troubleshooting

Provides suggestions to fix common problems.

## Contact Us

Provides contact information.

## Frequently Asked Questions

Provides answers to common questions about the SURFboard VoIP cable modem.

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**WARNING:** TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. THE APPARATUS MUST NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, MUST BE PLACED ON THE APPARATUS.

**CAUTION:** TO PREVENT ELECTRICAL SHOCK, IF THE UNIT IS PROVIDED WITH A POLARIZED PLUG, 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.

**CAUTION:** TO ENSURE REGULATORY AND SAFETY COMPLIANCE, USE ONLY THE PROVIDED POWER AND INTERFACE CABLES.

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

It is recommended that the customer install an AC surge arrestor 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.

This product was qualified under test conditions that included the use of the supplied cable between system components. To be in compliance with regulations, the user must use this cable and install it 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 product safety requirements of the country of use.*

Installation of this product must be in accordance with national wiring codes.

To prevent overheating, do not block the ventilation holes on the sides of the unit or lay the unit on its side.

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.

Postpone cable modem installation until there is no risk of thunderstorm or lightning activity in the area. Avoid damaging the cable modem with static by touching the coaxial cable connector 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 you are disconnecting or re-connecting your USB or Ethernet cable from the cable modem or your PC.

This product is provided with a separate 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.
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## Introduction

### Easier!

*Unlike dial-up modems or ISDN, you're always on, always connected. 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.*

Congratulations, you have a 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. Unlike a dial-up modem, your SURFboard VoIP cable modem is always online. *Just open your browser and surf!*

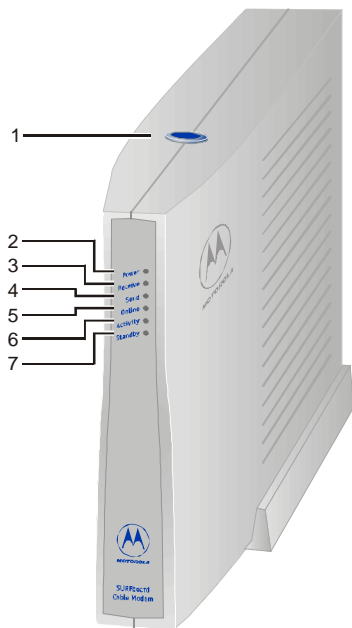
You can use your high-speed, upgradeable VoIP cable modem to connect one or more computers in your home or business to the Internet. You can connect:

- 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 39

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

- Standard features such as caller ID, call waiting, and call forwarding
- Software upgrades over the network to provide new or improved services

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



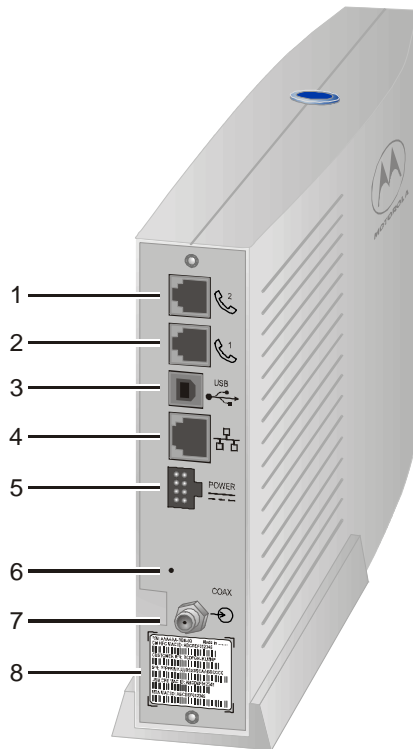
## Top and Front Panel

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

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>Receive</b>	Scanning for a receive (downstream) channel connection	The downstream channel is connected
4	<b>Send</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>PC Activity</b>	Transmitting or receiving data	A device, such a computer or hub, is connected through USB or Ethernet
7	<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 Activity 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 |  | Phone ports 1 and 2 provide connections for up to two telephone lines.  |
| 3     |  | The USB connector provides a connection to <a href="#">USB</a> equipped computers. For the SBV4200E, the cable length must be 3 meters or less.   |
| 4     |  | The Ethernet connector provides a connection to <a href="#">Ethernet</a> equipped computers using a cable terminated with an RJ-45 connector. For the SBV4200E, the cable length must be 3 meters or less.  |
| 5     |  | The POWER connector provides a connection to the power adapter or uninterruptible power source ( <a href="#">UPS</a> ).   |
| 6     |  | If you experience a problem, you can push this recessed button to reset the VoIP cable modem (see " <a href="#">Troubleshooting</a> " on page 41). Resetting may take 5 to 30 minutes because the VoIP cable modem must find and lock on the appropriate communications channels. |
| 7     |  | The COAX connector provides a connection to the <a href="#">coaxial cable</a> outlet.   |
| 8     |   | The barcode label provides the data and telephony <a href="#">MAC addresses</a> .   |



## Before You Begin

### Caution



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

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

#### Item

**Power adapter or cable**



**10/100Base-T Ethernet cable**



**USB cable**



**SURFboard VoIP Cable Modem CD-ROM**



#### Description

The SBV4200 is supplied with *one* of the following powering options:

- A power adapter to connect to the power outlet
- A power cable to connect to an [UPS](#)

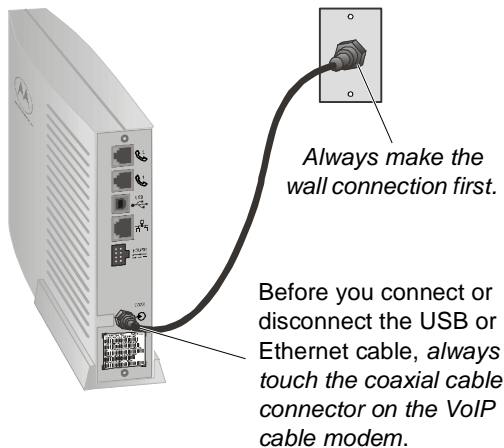
Connects to the [Ethernet](#) port

Connects to the [USB](#) port

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 two additional coaxial cables to use both the TV and the VoIP cable modem. The coaxial cable and RF splitter are available at consumer electronic stores.

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



## ⚡ 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 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



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.

## ❖ 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 rear panel. You can record it here:

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

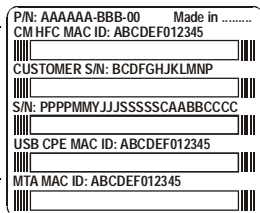
To receive telephone service, you need to provide the MAC address marked **MTA MAC ID**. You can record it here:

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?

Internet MAC



Telephone MAC

## 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 the USB drivers from the Internet. For information, check our website <http://www.motorola.com/broadband>.

## **Installation and Configuration Overview**

*To connect a single PC running Microsoft Windows to a SURFboard VoIP cable modem, we recommend using the Installation Assistant application.*

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.

To install and configure your VoIP cable modem for a single PC running Microsoft Windows, you can use the Installation Assistant.

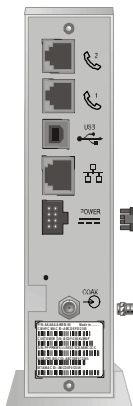
Otherwise, to install and configure your VoIP cable modem:

- 1 Install the cables as described in *one of*:
  - [“Cabling and Startup for a Single User”](#) on page 9
  - [“Cabling for Multiple Users”](#) on page 39
- 2 If you are using the **USB** port *only*, go to [“Setting Up a USB Driver”](#) on page 11. *Ethernet users can skip this step.*
- 3 Configure [TCP/IP](#) and verify the [IP address](#) for your computer following *one of*:
  - [“Configuring TCP/IP”](#) on page 22
  - Your Macintosh or UNIX user manual

## ❖ Cabling and Startup for a Single User

Allow 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 COAX 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 For a power adapter, plug the adapter into the POWER connector on the VoIP cable modem and the electrical outlet. For an 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 the SURFboard VoIP cable modem on. You do not need to unplug it when not in use.*
- 5 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.
  - Online flashes while the VoIP cable modem downloads configuration data and changes to solid green when the download is complete.



To power adapter  
or [UPS](#) (step 4)

To cable outlet  
(step 2)

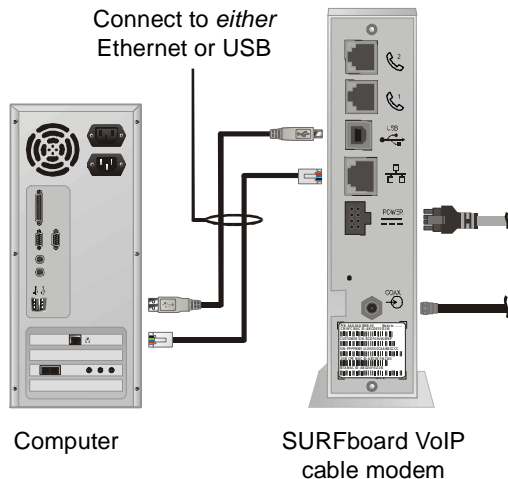
SURFboard VoIP cable modem

## Cabling and Startup for a Single User, continued

### Caution



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



- 6 Connect your computer to the VoIP cable modem using USB or Ethernet:

**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 11.

**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.*

- 7 Perform the procedures for [“Configuring TCP/IP”](#) on page 22.
- 8 To connect the telephone line, plug a phone wire into the phone 1 connector. You can also connect a second telephone line to the phone 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**

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

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

- [“Setting Up a USB Driver in Windows 98”](#) on page 12
- [“Setting Up a USB Driver in Windows 2000”](#) on page 16
- [“Setting Up a USB Driver in Windows Me”](#) on page 20
- [“Setting Up a USB Driver in Windows XP”](#) on page 21

The SURFboard VoIP cable modem USB driver does not support Macintosh or UNIX computers. For those systems, you can 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.*

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

- 1 Click **Next**.
- 2 Be sure "Search for the best driver for your device" is selected as in the window at bottom left.
- 3 Click **Next**.



## Setting Up a USB Driver in Windows 98, continued



4 Be sure “CD-ROM drive” is the only box checked, as in the window at top left.

5 Click **Next**. The message “Please wait while Windows searches for a new driver for this device” is displayed.

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

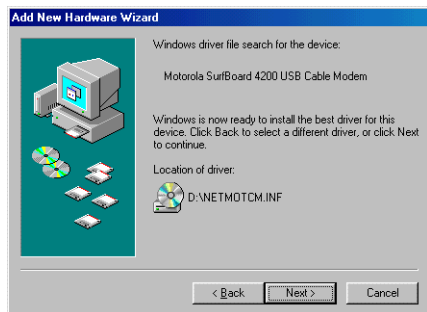
6 If your computer does not locate the driver, the previous window is displayed again. Select **Specify a location** and type the location of your CD-ROM drive as shown at bottom left.

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



7 Click **Next**.

## Setting Up a USB Driver in Windows 98, continued



- 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 Me”](#) on page 44. Then repeat this procedure.

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

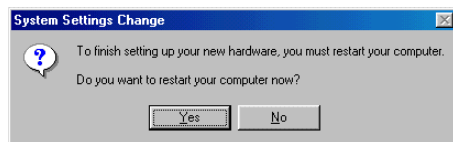
If a window with the message *Copying Files...* displays and asks for your CD-ROM drive, type your CD-ROM drive *letter* (for example, “D:”) and click **OK**.

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.

## Setting Up a USB Driver in Windows 98, continued



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

**10** Click **Finish**. The window at bottom left is displayed.

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

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

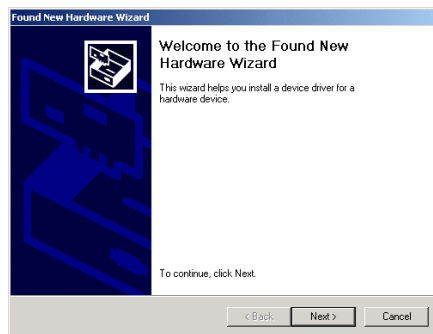
If you have difficulties setting up the USB driver, perform [“Removing the USB Driver from Windows 98 or Me”](#) on page 44 and repeat this procedure. If that does not correct your problem, see the *Regulatory, Safety, Software License, and Warranty Information* card provided with your SURFboard VoIP cable modem for information about obtaining warranty service.

## ❖ Setting Up a USB Driver in Windows 2000

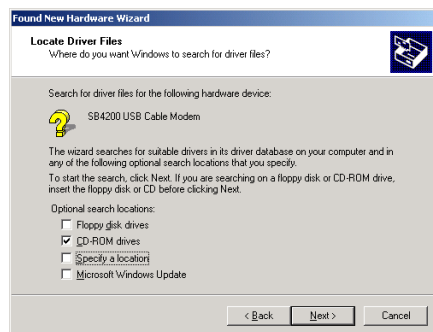
Be sure the *SURFboard VoIP Cable Modem* CD-ROM is inserted into the CD-ROM drive before you plug in the USB cable. A few seconds after you complete the USB connection, the Found New Hardware window is displayed.

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

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



## Setting Up a USB Driver in Windows 2000, continued

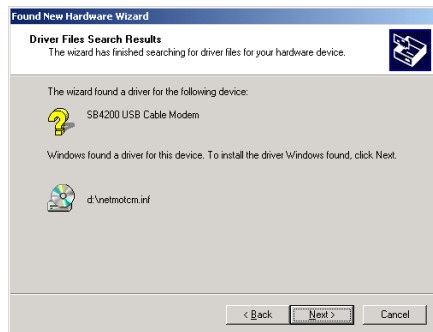


4 Be sure “CD-ROM drives” is the only box checked, as in the window at top left.

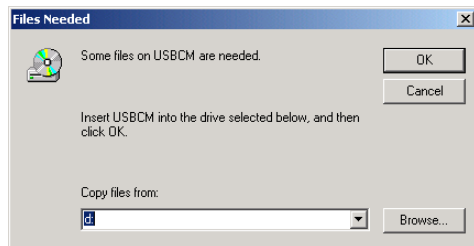
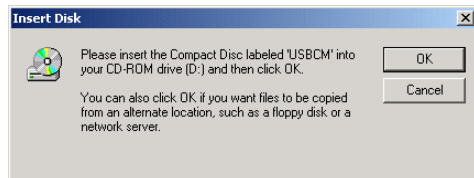
5 Click **Next**. The lower window is displayed.

6 Click **Next**.

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 7 to 12. Otherwise, you can skip to step 13.



## Setting Up a USB Driver in Windows 2000, continued



7 On the Insert Disk window, click **OK**. The Files Needed window is displayed.

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

9 Click **Browse**.

10 Locate the NetMotCM.sys file in the CD-ROM root directory.

11 Double-click the **NetMotCM.sys** file. The Files Needed window is displayed.

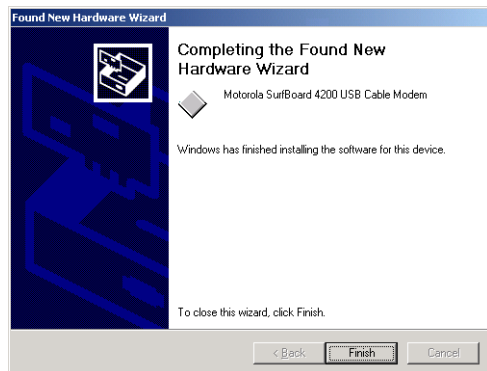
12 Click **OK**. The Found New Hardware Wizard window is displayed.

## Setting Up a USB Driver in Windows 2000, continued

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

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

If you have any difficulties setting up the USB driver, perform “[Removing the USB Driver from Windows 2000](#)” on page 48 and repeat this procedure.





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

- 1 Click **Next**. Windows automatically searches for the correct USB drivers and installs them. If the installation is successful, the window at bottom left is displayed.
- 2 If the window at bottom left is displayed, click **Finish**. 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](#)” on page 22.



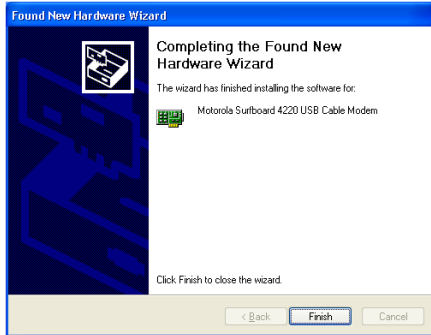
Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.

## ❖ 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. A few seconds after you complete the USB connection, the Found New Hardware Wizard window is displayed.

- 1 Be sure “Install the software automatically” is selected.
- 2 Click **Next**. Windows automatically searches for the correct USB drivers and installs them. If the installation is successful, the window at bottom left is displayed.
- 3 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](#)” on page 22.



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:

- [“Configuring TCP/IP in Windows 95, 98, or Me”](#) on page 23
- [“Configuring TCP/IP in Windows 2000”](#) on page 26
- [“Configuring TCP/IP in Windows XP”](#) on page 30
- Follow the instructions in your Macintosh or UNIX user manual

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

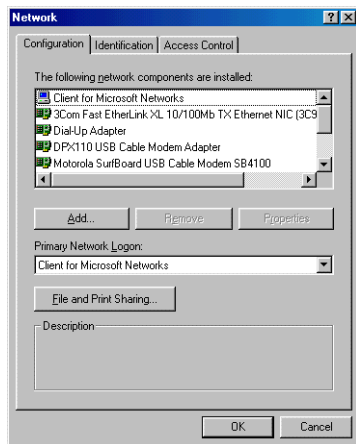
- [“Verifying the IP Address in Windows 95, 98, or Me”](#) on page 36
- [“Verifying the IP Address in Windows 2000 or XP”](#) on page 37
- Follow the instructions in your Macintosh or UNIX user manual

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

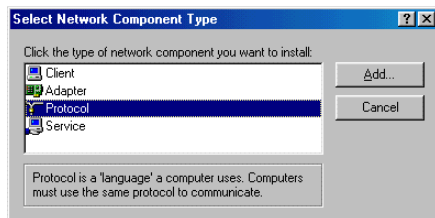
## ❖ Configuring TCP/IP in Windows 95, 98, or Me

- 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.
- 4 Select the **Configuration** tab on the Network window.
- 5 If TCP/IP is displayed in the list of network components, it is installed and you can skip to step 10. If TCP/IP is not displayed on the list, continue with step 6.

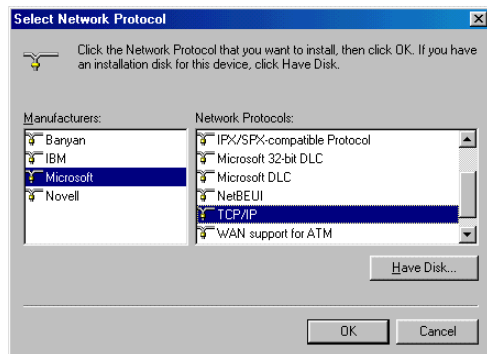
Although your SURFboard VoIP cable modem model number may be different than in the images in this guide, the procedure is the same.



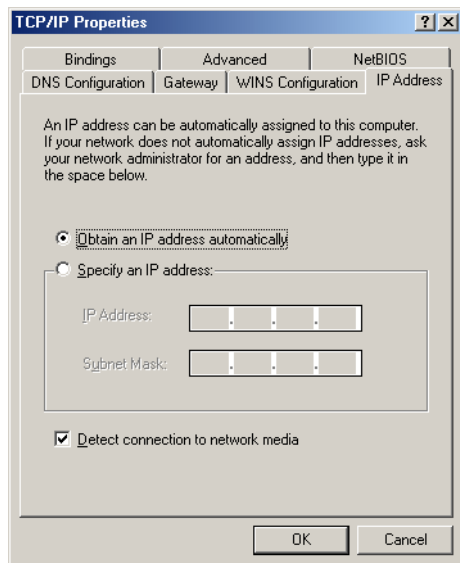
## Configuring TCP/IP in Windows 95, 98, or Me, continued



- 6 Click **Add**.
- 7 Double-click the **Protocol** option on Select Network Component Type window.
- 8 Click **Microsoft** in the Manufacturers section and click **TCP/IP** in the Network Protocol section of Select Network Protocol window.
- 9 Click **OK**.



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

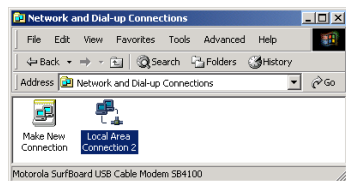
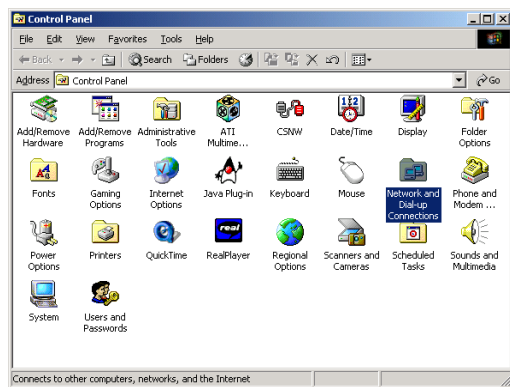


- 10 Click **TCP/IP** on the Network window. If there is more than one TCP/IP entry, choose the one for the Ethernet card or USB port connected to the VoIP cable modem.
- 11 Click **Properties**. The TCP/IP window is displayed.
- 12 Click the **IP Address** tab.
- 13 Click **Obtain an IP address automatically**.
- 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.

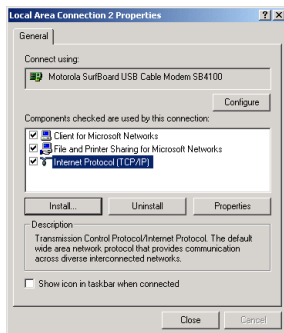
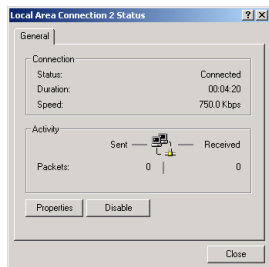
When you complete TCP/IP configuration, go to [“Verifying the IP Address in Windows 95, 98, or Me”](#) on page 36.

## ❖ 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.
- 3 Double-click the **Network and Dial-up Connections** icon on the Control Panel window.
- 4 On the Network and Dial-up Connections window, click **Local Area Connection number**. The value of *number* varies from system to system. The Local Area Connection *number* Status window is displayed.



## Configuring TCP/IP in Windows 2000, continued

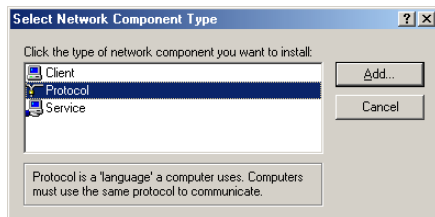


- 5 Click **Properties**. Information similar to the lower window is displayed.
- 6 If Internet Protocol (TCP/IP) is in the list of components, TCP/IP is installed. You can skip to step 10.

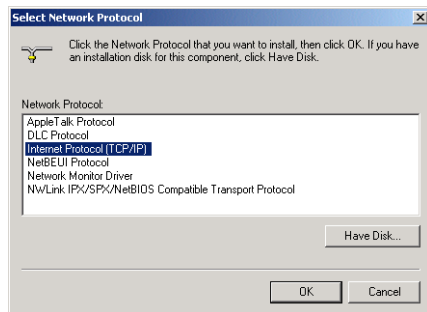
If Internet Protocol (TCP/IP) is not in the list, click **Install**. The Select Network Component Type window is displayed. Continue with step 7.



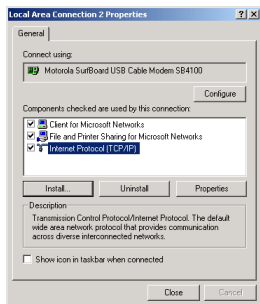
## Configuring TCP/IP in Windows 2000, continued



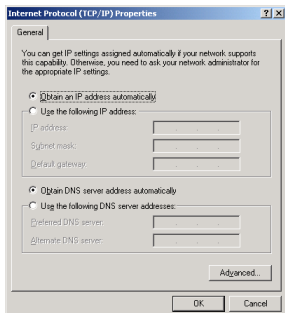
- 7 Click **Protocol** on the Select Network Component Type window and click **Add**. The Select Network Protocol window is displayed.
- 8 Click **Internet Protocol (TCP/IP)** in the Network Protocol section on the Select Network Protocol window.
- 9 Click **OK**. The Local Area Connection *number* Properties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



## Configuring TCP/IP in Windows 2000, continued



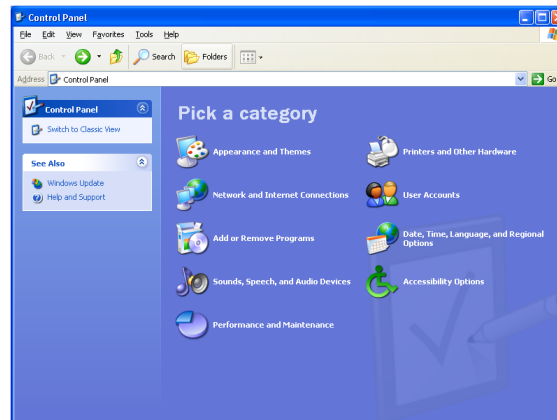
- 10 On the Local Area Connection *number* Properties window, be sure the box next to **Internet Protocol (TCP/IP)** is checked.
- 11 Click **Properties**. The Internet Protocol (TCP/IP) Properties window is displayed as shown at bottom left.
- 12 Be sure **Obtain IP address automatically** and **Obtain DNS server address automatically** are selected.
- 13 Click **OK** to accept the TCP/IP settings.
- 14 Click **OK** to close the Local Area Connection *number* Properties window.
- 15 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 XP”](#) on page 37.

## ❖ Configuring TCP/IP in Windows XP

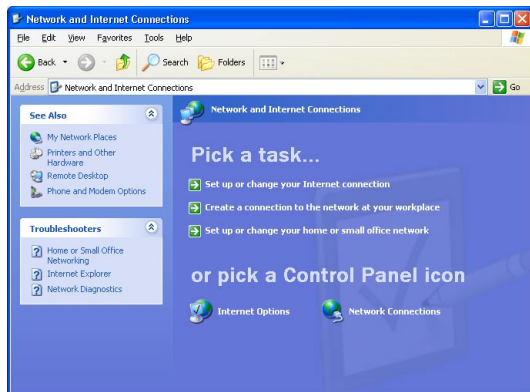
- 1 On the Windows desktop, click **Start** to display the Start window shown at left.
- 2 Click **Control Panel** to display the Control Panel window. The display varies, depending on your Windows XP view options. If the display is a Category view as shown below, continue with step 3. Otherwise, skip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



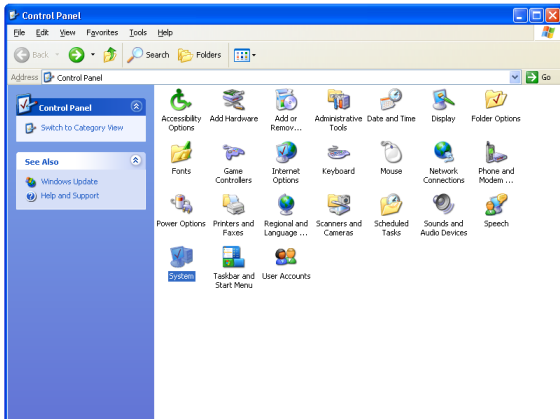
- 3 Click **Network and Internet Connections** to display the Network and Internet Connections window.

## Configuring TCP/IP in Windows XP, continued

- 4 On the Network and Internet Connections Pick a task window, click **Network Connections** to display the LAN or High-speed Internet connections. Skip to step 6.

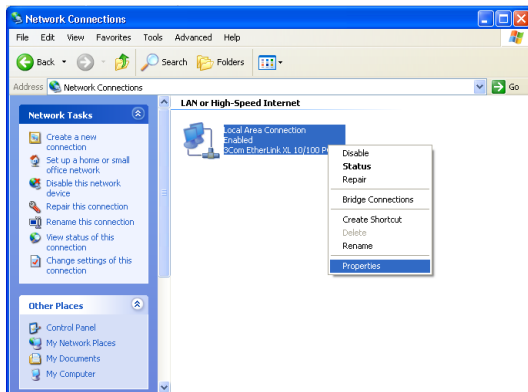


## Configuring TCP/IP in Windows XP, continued



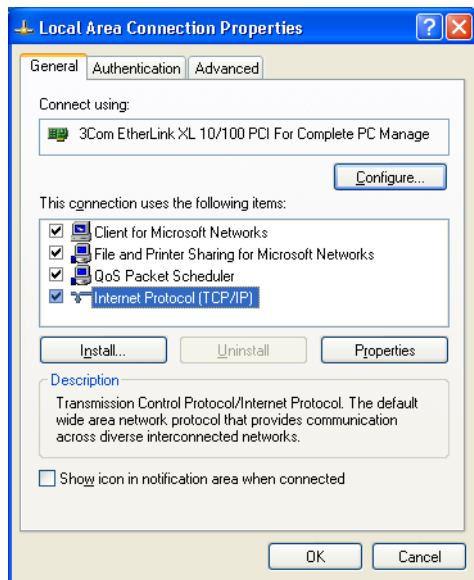
- 5 If a classic view similar to at left is displayed, click **Network Connections** to display the LAN or High-speed Internet connections.

## Configuring TCP/IP in Windows XP, continued



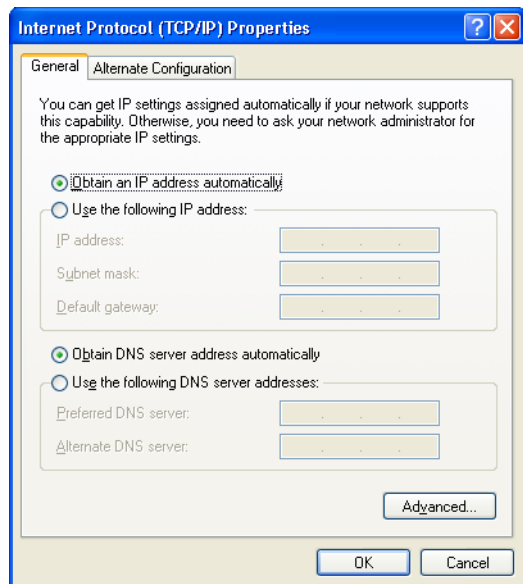
- 6 Right-click on your network connection. If more than one connection is displayed, be sure to select the one for your network interface.
- 7 Select **Properties** from the pop-up menu to display the Local Area Connection Properties window.

## Configuring TCP/IP in Windows XP, continued



- 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.

## Configuring TCP/IP in Windows XP, continued



- 10 On the Internet Protocol (TCP/IP) Properties window, verify that the settings are correct, as shown at left.
- 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 XP”](#) on page 37.



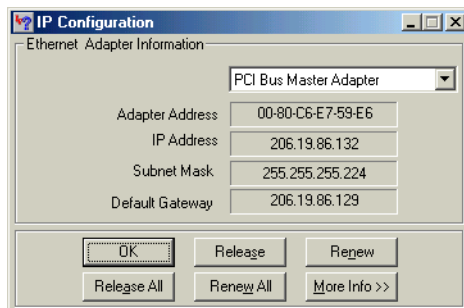
## ❖ Verifying the IP Address in Windows 95, 98, or Me

The following instructions are for Windows 95, 98, or Me. For information about Windows 2000 or XP, see ["Verifying the IP Address in Windows 2000 or XP"](#) on page 37. For a Macintosh or UNIX system, refer to your user guide.

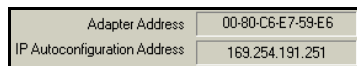
To check the IP address:

- 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 at top left is displayed.
- 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.



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



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

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

The following instructions are for Windows 2000 or Windows XP. For information about Windows 95, 98, or Me, see [“Verifying the IP Address in Windows 95, 98, or Me”](#) on page 36. For a Macintosh or UNIX system, refer to your user guide.

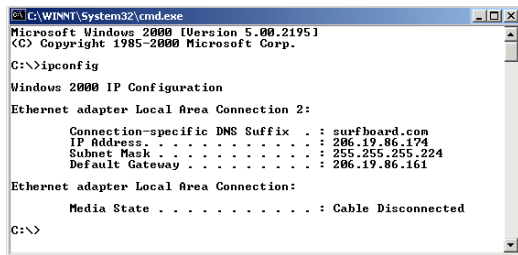
To check the IP address:

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

If an Autoconfiguration IP Address is displayed as in the window at bottom left, there is an incorrect connection between your PC and the VoIP cable modem or there are cable network problems. Check:

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

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



```
C:\WINNT\System32\cmd.exe
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ipconfig

Windows 2000 IP Configuration

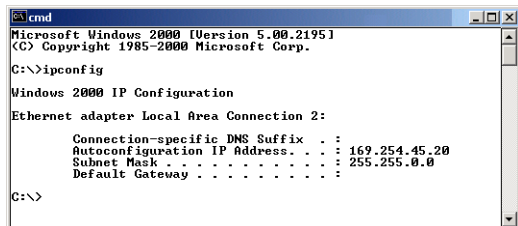
Ethernet adapter Local Area Connection 2:

    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:\>
```



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

C:\>ipconfig

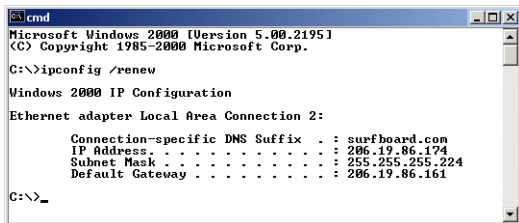
Windows 2000 IP Configuration

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:\>
```

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



```
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:\>_
```

To renew your IP address:

- 1 Type **ipconfig /renew** and press ENTER. If a valid IP address is displayed as shown at left, Internet access should be available.
- 2 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

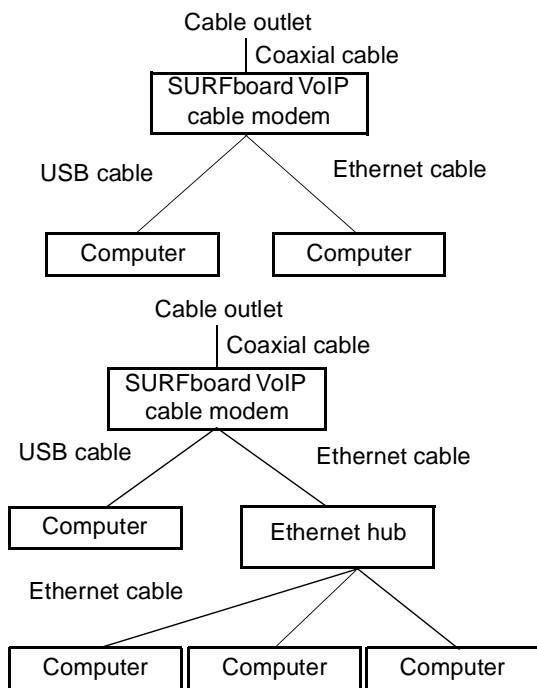
You can connect the USB port on one computer and the Ethernet port on another computer directly to the VoIP cable modem, as shown at top left.

#### Caution



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

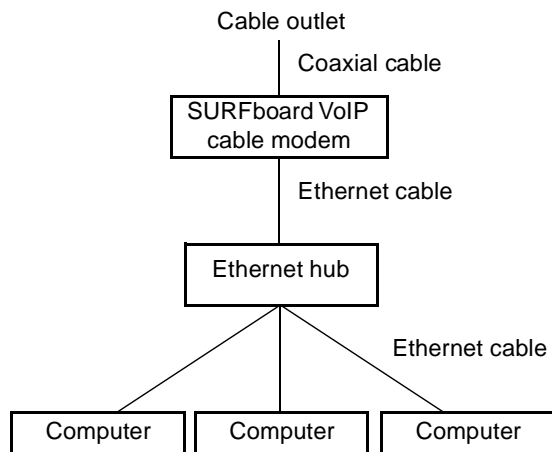
You can connect a single computer to the USB port and from one to 30 remaining users to an Ethernet hub, as shown at bottom left. You cannot connect more than one computer to the VoIP cable modem through the USB port.



## Cabling for Multiple Users, continued

### Ethernet

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



## Troubleshooting

If the solutions listed here do not solve your problem, contact your cable service provider. 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 43.

### Problem

**Green POWER light is off**

### Possible Solutions

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.

Press the Reset button.

## Problem

### Cannot send or receive data

## Possible Solutions

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 43.

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.

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, 98, or Me"](#) on page 36 or ["Verifying the IP Address in Windows 2000 or XP"](#) on page 37. 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 Me"](#) on page 44
- ["Removing the USB Driver from Windows 2000"](#) on page 48
- ["Removing the USB Driver from Windows XP"](#) on page 53

## Front-Panel Lights and Error Conditions

### Light Turns Off During Startup If

**Receive** The receive channel cannot be acquired

**Send** The send channel cannot be acquired

**Online** IP registration is unsuccessful

**Power** The VoIP cable modem is not properly plugged into the power outlet

### Turns Off During Normal Operation If

The receive channel is lost

The send channel is lost

The IP registration is lost

The VoIP cable modem is unplugged or is in standby mode. Press the Standby button

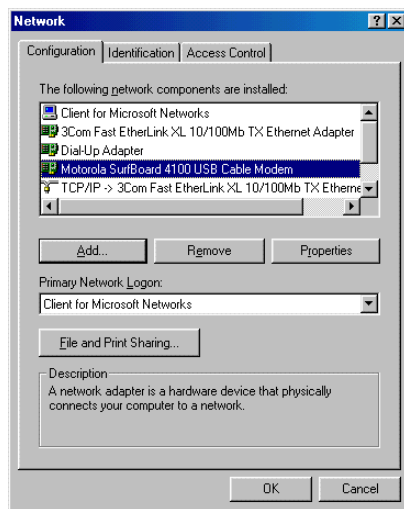
For more information about the lights, see ["Top and Front Panel"](#) on page 2.



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

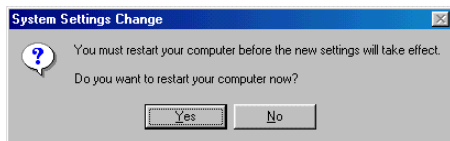
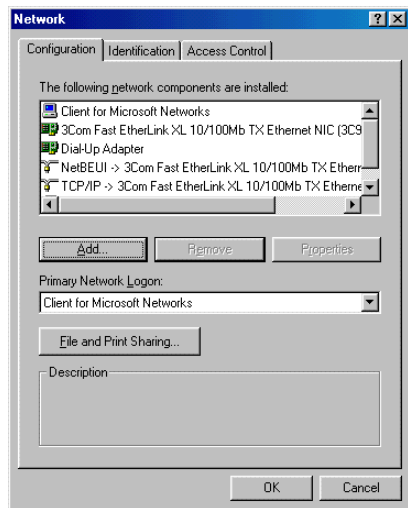
- 1 On your Windows Desktop, right-click the **Network Neighborhood** icon and select **Properties**. The Network window is displayed.
- 2 Click the **Motorola SurfBoard USB Cable Modem**.

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



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

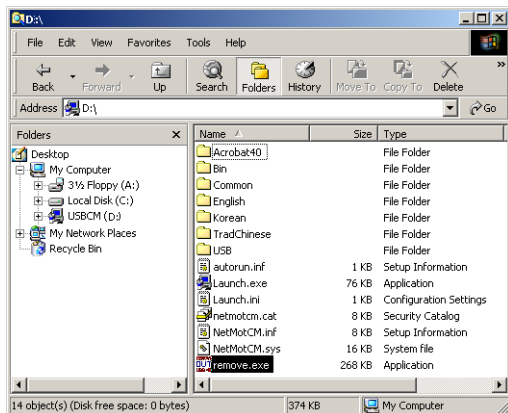
- 3 Click **Remove**. The Network window no longer displays Motorola SurfBoard USB Cable Modem in the list.
- 4 Click **OK**. The System Settings Change window is displayed.
- 5 *Disconnect the USB cable from your PC or VoIP cable modem.*
- 6 Click **Yes** to restart your computer.



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

- 7 Insert the *SURFboard VoIP Cable Modem* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.
- 8 Press the **Esc** key on the keyboard to exit the start-up screens.
- 9 To start Windows Explorer, click **Start** and select **Run**.
- 10 In the Run window, type **explorer** and click **OK**. The Exploring window is displayed.
- 11 Select your CD-ROM drive (D: in the image at left).
- 12 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.

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



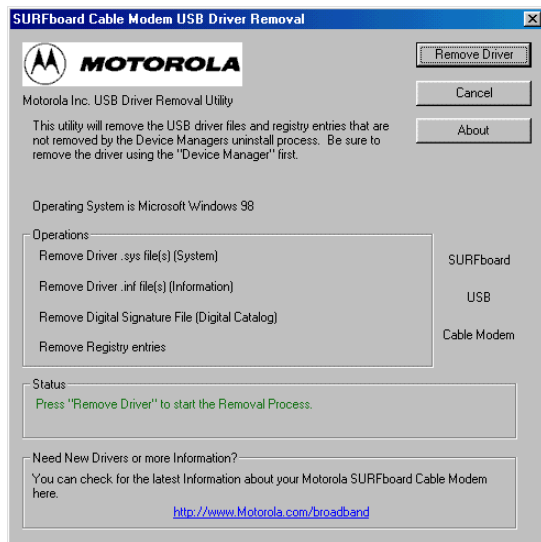
## Removing the USB Driver from Windows 98 or Me, continued

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

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

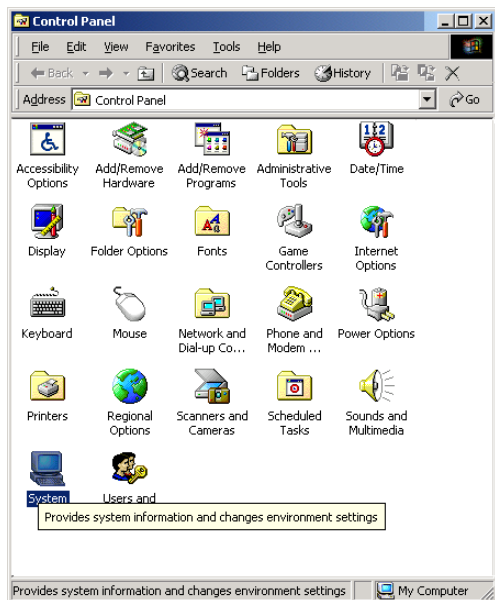
- “Setting Up a USB Driver in Windows 98” on page 12
- “Setting Up a USB Driver in Windows Me” on page 20

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



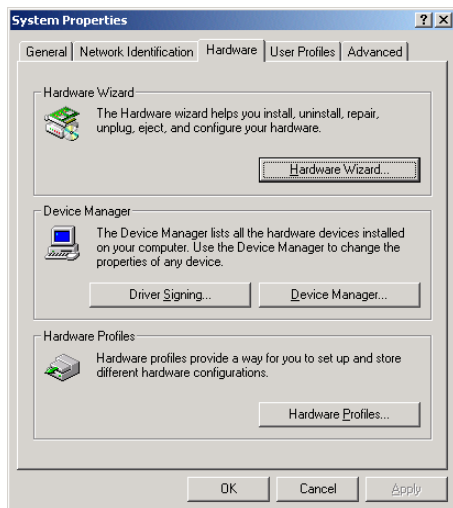
## ❖ Removing the USB Driver from Windows 2000

- 1 On your Windows desktop, click **Start**.
- 2 Click **Settings**.
- 3 Click **Control Panel** to display the Control Panel window.
- 4 Double-click **System** to display the System Properties window.

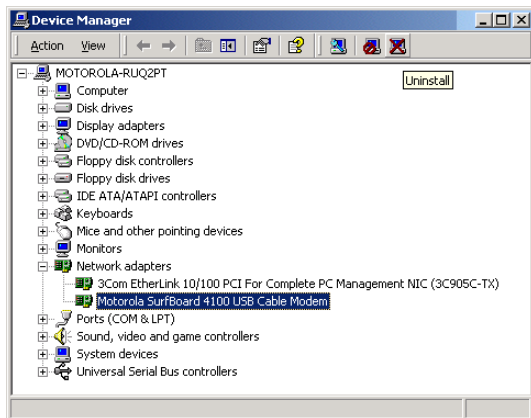


## Removing the USB Driver from Windows 2000, continued

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



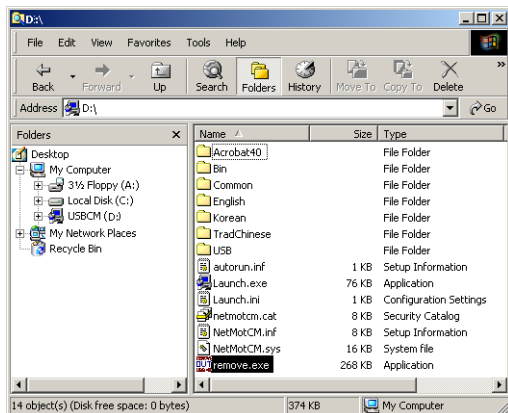
## Removing the USB Driver from Windows 2000, continued



- 7 On the Device Manager window, double-click **Network Adapters**.
- 8 Click the **Motorola SurfBoard USB Cable Modem**. The Uninstall icon is displayed on the window near the top.
- 9 Click the **Uninstall** icon.
- 10 Close the Device Manager window.
- 11 Close the Control Panel window.

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

## Removing the USB Driver from Windows 2000, continued



- 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 To start Windows Explorer, click **Start** and select **Run**.
- 15 In the Run window, type **explorer** and click **OK**.
- 16 Double-click **My Computer**.
- 17 Double-click the **Motorola** CD icon (D: in the image).
- 18 Double-click **remove** or **remove.exe** to run the Remove utility from the *SURFboard VoIP Cable Modem* CD-ROM. The SURFboard Cable Modem USB Driver Removal window is displayed.

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



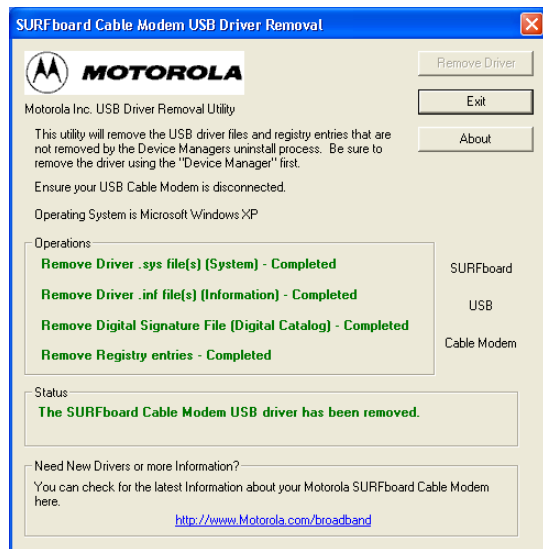
## Removing the USB Driver from Windows 2000, continued

**19** The window on the left is displayed. *Be sure the USB cable is disconnected.*

**20** Click **Remove Driver**.

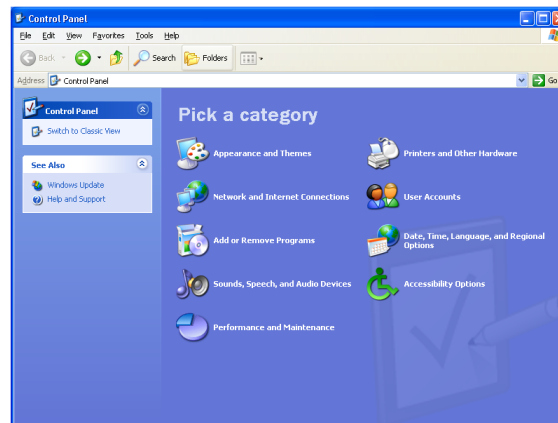
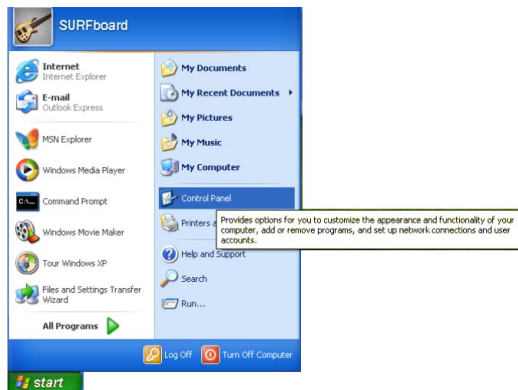
Informational messages similar to the ones shown at left are displayed on the SURFboard Cable Modem USB Driver Removal window.

After you remove the USB driver, re-install the USB driver following “[Setting Up a USB Driver in Windows 2000](#)” on page 16. If you continue to have problems, contact your cable service provider.



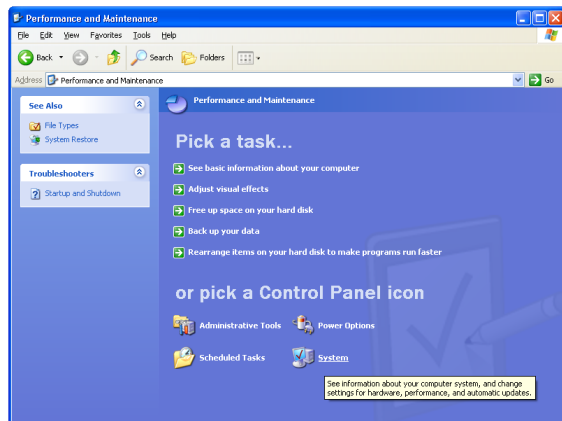
## ❖ Removing the USB Driver from Windows XP

- 1 On the Windows desktop, click **Start** to display the Start window shown at left.
- 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 below is displayed, click **Performance and Maintenance**. Otherwise, skip to step 5.



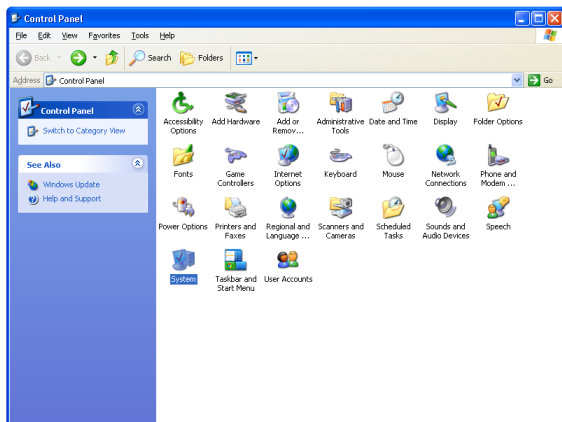
## Removing the USB Driver from Windows XP, continued

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

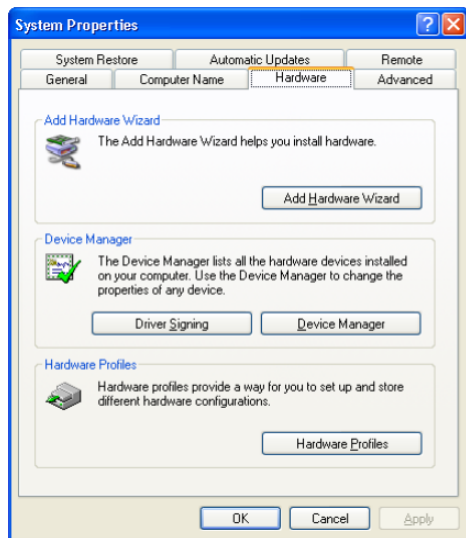


## Removing the USB Driver from Windows XP, continued

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

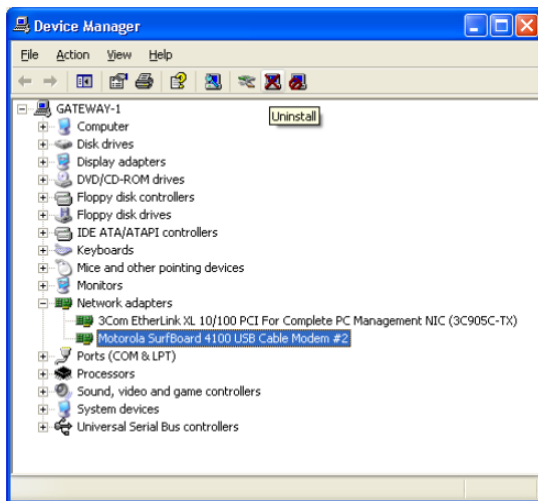


## Removing the USB Driver from Windows XP, continued



- 6 On the System Properties window, click the **Hardware** tab.
- 7 Double-click the **Device Manager** button to display the Device Manager window.

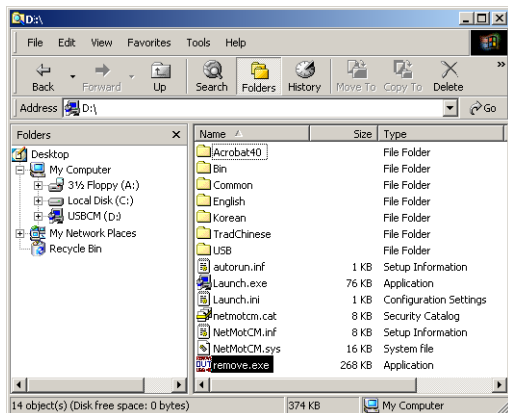
## Removing the USB Driver from Windows XP, continued



- 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.
- 10 Click the **Uninstall** icon.
- 11 Close the Device Manager window.
- 12 Close the Control Panel window.

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

## Removing the USB Driver from Windows XP, continued



- 13 Insert the *SURFboard VoIP Cable Modem* CD-ROM in the CD-ROM drive. After a short time, a window with language choices is displayed.
- 14 Press the **Esc** key on the keyboard to exit the start-up screens.
- 15 To start Windows Explorer, click **Start** and select **Run**.
- 16 In the Run window, type **explorer** and click **OK**.
- 17 Double-click **My Computer**.
- 18 Double-click the **Motorola** CD icon (D: in the image).
- 19 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.

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

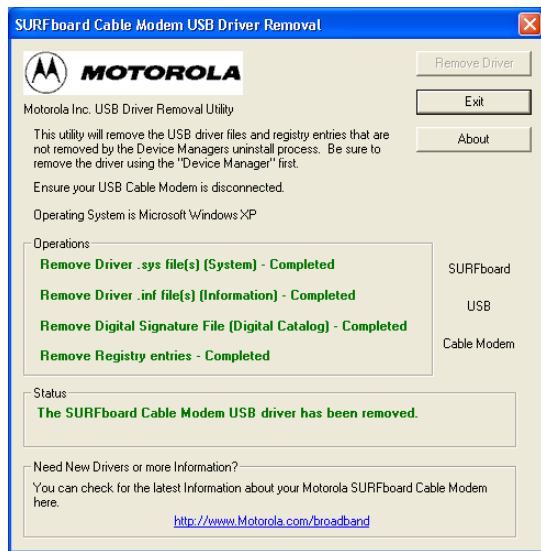
## Removing the USB Driver from Windows XP, continued

**20** The window on the left is displayed. *Be sure the USB cable is disconnected.*

**21** Click **Remove Driver**.

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

After you remove the USB driver, re-install the USB driver following “[Setting Up a USB Driver in Windows XP](#)” on page 21. 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.

For answers to typical questions, see "[Frequently Asked Questions](#)" on page 61.

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

## Frequently Asked Questions

Here are answers to questions our customers frequently ask.

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

**A** Cable Internet access uses cable television wires instead of telephone lines to connect to the Internet. It is extremely fast and 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, call your cable service provider.

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

**A** [“Troubleshooting”](#) on page 41 provides tips to diagnose problems and simple solutions. If you continue to have problems, call your cable service provider.

## 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 cable data 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 or office 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 cable data 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. VoIP is an important part of the convergence of computers, telephones, and television into a single integrated information network.

# Software License

## SURFboard Cable Modems

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Horsham, PA 19044

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