MOTOROLA
intelligence everywhere

Quick Installation Guide

SBG940 SURFboard® Wireless Cable Modem Gateway

A home network enables you to access information on two or more computers in your home. You can connect your home network to your cable TV system to connect to the Internet.

Your SURFboard Gateway SBG940 is the central **connection point** between your computers and the Internet**.** It directs (routes) information between the computers on your home network. A built-in **cable modem** transmits information between your home network and the Internet.

The SBG940 provides different **network connection types**. You can use a wireless or a wired connection (or a combination of the two) to connect your computers to the SBG940. Your network can use one or any combination of:

- **Ethernet local area network** (LAN)
- **Wireless LAN** (WLAN) with Wi-Fi® Protected Access (WPA) encryption
- **Universal Serial Bus** (USB)

This guide provides information about:

- Optional accessories and network requirements
- Cable, Ethernet, USB, wireless, and printer connections
- Starting the Setup Program
- Introduction to network security and gaming configuration
- Troubleshooting and contact information

This guide contains an overview *only*. For in-depth information, refer to the interactive *SBG940 User Guide* on the *SBG940 Installation* CD-ROM. If desired, you can print all or part of the user guide.

For normal operation, you do not need to change most default settings.

Optional Accessories

Networks are composed of multiple devices. An SBG940 works with any IEEE 802.11g or 802.11b client product. Motorola supplies a range of accessories for use with the SBG940. Some examples are:

Motorola Wireless
Ethernet Bridge WE800G

Motorola Ethernet
Broadband Router BR700

Motorola Wireless
Notebook Adapter WN825G

Motorola USB
Adapter WU830G

Motorola Wireless
PCI Adapter WPCI810G

For more information about Motorola cable modems, gateways, and related consumer broadband products, visit http://broadband.motorola.com/consumers.

Basic SBG940 Network Requirements

- A **connection** to your cable TV system
- A **subscription** to cable modem service from your cable TV provider
- One or more **computers** with minimum:
    - Pentium® class processor or faster
    - 256 MB of memory
    - 10 MB of hard disk space available
    - Windows® 98, Windows® 98 SE, Windows Me®, Windows® 2000, Windows XP™, Macintosh®, or Linux® with operating system CD-ROM available
- A wired or wireless **network adapter** for each computer on the network
- For wired connections, **Ethernet cables** (one is provided with the SBG940)

We recommend powering the SBG940 with a surge protector or uninterruptible power supply (UPS).

Connecting the SBG940

To connect to **Ethernet** or **USB** on a PC running a supported Windows version, perform the procedures in the following sections in this guide:

Ethernet   A, B, and E

USB   A, C, and E

Wireless   A, D, and E

For Macintosh or Linux computers, follow the instructions in the *SBG940 User Guide* and the operating system documentation.

A. Connect the SBG940 to Your Cable TV System

To activate your high-speed Internet service, you need to call your cable provider. Your cable provider requires the MAC address labeled **CM HFC MAC ID** on the bottom of the SBG940. For reference, you can write your CM HFC MAC ID here:

00 : _____ : _____ : _____ : _____ : _____

Connecting Directly to the Cable Outlet

Connect one end of the **coaxial cable** to the cable TV wall outlet and connect the other end to the cable connector on the SBG940.

Connect one end of the **AC power cord** into the power connector on the SBG940 and plug the other end into an AC wall outlet, surge protector, or UPS. This turns the SBG940 on.

If, after a few minutes, the power, DS, US, and ONLINE lights on the front panel light solid green, continue with Section B, C, or D. Otherwise, contact your cable provider and provide your MAC address.

Connecting to the Cable Outlet Using a Splitter

Connecting an SBG940 to the same cable outlet as a TV requires a
5 to 900 MHz splitter and two additional coaxial cables. If a coaxial cable is
already connecting your TV to the cable wall outlet, disconnect it from the TV.

1 Connect one end of a **coaxial cable** to the cable TV wall outlet and connect
the other end to the splitter input.

2 Connect one end of a **second coaxial cable** to the splitter output and
connect the other end to your TV.

3 Connect one end of a **third coaxial cable** to the other splitter output and
connect the other end to the cable connector on your SBG940.

4 Connect one end of the **AC power cord** into the power connector on the
SBG940 and plug the other end into an AC wall outlet, surge protector,
or UPS. This turns the SBG940 on.

If, after a few minutes, the power, DS, US, and ONLINE lights on the front
panel light solid green, continue with Section B, C, or D. Otherwise,
contact your cable provider and provide your MAC address.
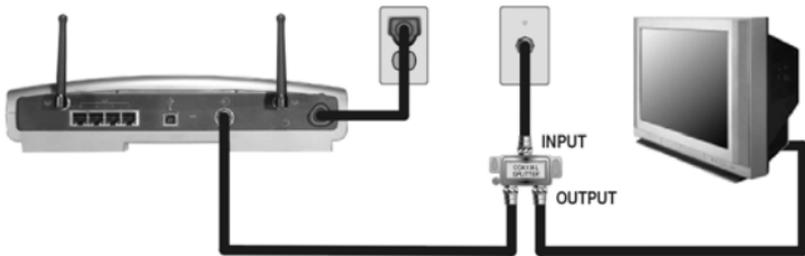
B. Ethernet Connections

Computers using the Ethernet connection require an Ethernet adapter installed and a wired connection to the SBG940. If necessary, install the adapter hardware and driver software according to the manufacturer's instructions. You can also connect Xbox® and PlayStation® 2 gaming machines to the SBG940. You can use Ethernet hubs or routers to connect up to 253 computers or gaming machines to the SBG940.

1   Plug one end of the Ethernet cable into the Ethernet connector on the computer or gaming machine.
2   Plug the other end into Ethernet connector 1 to 4 on the SBG940 or an Ethernet hub or router connected to the SBG940, as shown in the illustrated sample LAN below.
3   Restart your computer to obtain an IP address from the SBG940. Continue with Section E to secure your Internet connection.

Sample Ethernet LAN
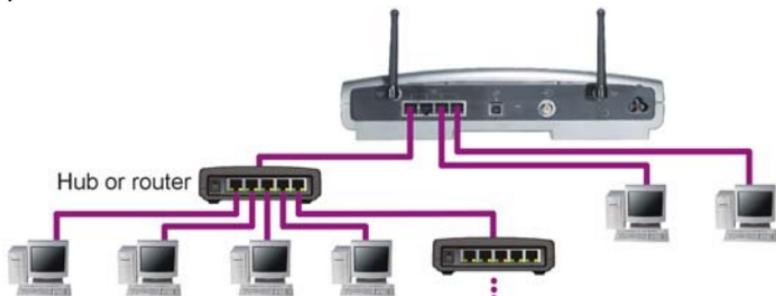
Add additional hubs or routers for further expansion.

C. USB Connection

You can connect one PC running Windows 98, Windows Me, Windows 2000, or Windows XP to the SBG940 USB port. The USB connection requires special driver software supplied on the *SBG940 Installation* CD-ROM.

1   Insert the *SBG940 Installation* CD-ROM into the CD-ROM drive. *Be sure the SBG940 is not connected to your PC.*

2   Install the USB driver software and restart your PC.

3   Connect the USB cable to the USB connector on the SBG940 and connect its other end to the USB connector on the PC. Continue with Section E to secure your Internet connection.

Insert the *SBG940 Installation* CD
before you connect the USB cable

If you experience problems with the USB connection, uninstall the USB driver following the instructions in the *SBG940 User Guide*.

D. Wireless Network Setup

Computers or other devices using a wireless connection require an IEEE 802.11g or 802.11b wireless adapter connected to the USB, PCI, or PCMCIA port. For information about Motorola wireless peripherals, visit http://broadband.motorola.com/consumers/home_networking.asp.

To provide an initial wireless connection to your network and the Internet:

1 Connect the SBG940 to the cable TV system as described in Section A.

2 On each wireless client computer, install the wireless adapter hardware and driver software according to the manufacturer's instructions.

3 On each wireless client, set up a wireless adapter profile to connect to the SBG940. The procedure depends on your wireless adapter and computer operating system. Follow the manufacturer's instructions.

In your initial profile, use the SBG940 default wireless Network Name (ESSID) **Motorola** (case-sensitive).

4 Continue with Section E to secure your Internet connection.

> ⚠️ *The default SBG940 settings provide no wireless security.* After your wireless LAN is operational, be sure to enable security as described on pages 11 to 13.

E. Start the SBG940 Setup Program

1 On a computer wired to the SBG940 USB or Ethernet port, open your web browser (for example, Microsoft Internet Explorer or Netscape Navigator®).

2 Type **http://192.168.100.1** or the default gateway address **http://192.168.0.1** and press **ENTER** to display the login window.

3 In the **User ID** field, type **admin** (case-sensitive).

4 In the **Password** field, type **motorola** (case-sensitive) and click **Log In** to display the SBG940 Setup Program main window.

Network Security

The SBG940 firewall and wireless security measures are disabled by default.

> ⚠ The default settings provide neither data security nor protection from Internet attacks or wireless eavesdropping. We recommend protecting your network as described on pages 11 to 13.

Security for All LANs (Wired and Wireless)

As soon as your network is operational, run the SBG940 Setup Program:

To Prevent	Perform	Follow In *User Guide*
Unauthorized configuration	Change the default password used to log in to the SBG940 Setup Program.	"Changing the Default Password"
Internet attacks	Enable the firewall and choose the most secure policy possible for your applications.	"Setting the Firewall Policy"
Eavesdropping	If you are using wired Ethernet or USB connections *only*, disable the wireless interface.	"Setting Up Your Wireless LAN"

For a wireless LAN *only*, also see "Security for Wireless LANs" below and in the *SBG940 User Guide*.

Security for Wireless LANs

For a LAN with one or more wireless clients, enable wireless security. *Because wireless data is transmitted using radio signals, unauthorized people can eavesdrop unless you enable wireless security.* The SBG940 supports several wireless security measures. The ones that make sense for you depend on your needs and networking equipment.

To prevent unauthorized eavesdropping, you must encrypt wireless data transmissions using *one* of:

- If all of your wireless clients support Wi-Fi Protected Access (WPA), Motorola recommends configuring WPA on your SBG940 and wireless clients. *You can use the same WPA Passphrase on the SBG940 and any wireless adapter that supports WPA.*

- Otherwise, configure a Wired Equivalency Privacy (WEP) key on the SBG940 and each wireless client. *You can use the same WEP key on the SBG940 and any Motorola 802.11g wireless adapter.*

To further protect from unauthorized intrusions, you can:

- Configure a MAC access control list to restrict wireless local-area network (WLAN) access to known MAC addresses.

- Disable ESSID broadcasting to prevent unauthorized individuals who scan for unsecured WLANs from accessing your WLAN.

For more information and procedures to enable these security measures, see "Setting Up Your Wireless LAN" in the *SBG940 User Guide*.

Wireless Security on the Clients

After enabling wireless security on the SBG940, as required on each wireless client:

- If you enabled WPA on the SBG940, set the client WPA Passphrase identical to the WPA Passphrase on the SBG940.

- If you enabled WEP on the SBG940, set the client WEP key identical to the WEP key on the SBG940.

- If you disabled ESSID broadcasting on the SBG940, set the client Network Name (ESSID) identical to the ESSID on the SBG940.

Configuration for Gaming

Firewall: By default, the SBG940 firewall is disabled. If you enable the firewall, refer to the game's documentation to ensure that the necessary ports are open for that game. If *low* security policy is enabled, the SBG940 can pass Xbox Live™ by default and no user action is required. If *medium* or *high* security policies are enabled, the firewall must be configured for Xbox *Live* traffic. Xbox *Live* requires UDP 88:88 and UDP/TCP 3074:3074.

Port Triggering: The SBG940 has pre-defined port triggers supporting DirectX® 7 and DirectX® 8, MSN Games by Zone.com, and Battle.net ®.

If your game uses one of these applications, no user action is required. For a list of games supported by Battle Net, visit http://www.battle.net. You can also configure custom port triggers that other games may require to operate properly. If you set custom port triggers and enable the firewall, you must configure the firewall to allow traffic through those ports.

Gaming DMZ: Some games and game devices require the use of random ports or the forwarding of unsolicited traffic. We recommend configuring such a device as the gaming DMZ host. First, reserve a private IP address for the game device's network interface MAC address. Then designate the device as the gaming DMZ host. You can reserve IP addresses for multiple devices, but only one device at a time can be the gaming DMZ host. To use a PlayStation® 2 for PS®2 online gaming, assign it as the gaming DMZ host because the ports required vary from game to game.

For more detailed gaming configuration guidelines, see the *SBG940 User Guide*.

Troubleshooting

If you experience a problem with the SBG940, try the following:

1 Press the reset button on the rear panel. Resetting may take 5 to 30 minutes.

2 Refer to "Troubleshooting" in the *SBG940 User Guide*.

3 If you still cannot resolve the issue, in the United States and Canada:

If you rent or lease your SBG940	Contact your cable provider.
If you own your SBG940	Call **1-877-466-8646** for technical and warranty support available 24 hours a day, 7 days a week.

MGBI

MOTOROLA