

Barricade™ Plus

Wireless Firewall Router

Wireless Firewall Router

- ◆ IEEE 802.11b Compliant
- ◆ Wireless Operation at 11, 5.5, 2, or 1 Mbps
- ◆ Internet Access via –
 - 10/100 Mbps WAN port connection to xDSL/Cable modem
- ◆ Home Networking via –
 - Three 10/100 Mbps Ethernet switch ports with MDI/MDI-X auto-negotiation
- ◆ Stateful Packet Inspection (SPI) Firewall
- ◆ Firewall – Client Privileges, Hacker Prevention, NAT
- ◆ 1 VPN Tunnel built-in
- ◆ Multi-user Access (up to 253), Single-user Account

SMIC®
Networks

User Guide

SMC7004WFW



Barricade™ Plus

Wireless Firewall Router

User Guide

From SMC's Barricade line of Broadband Routers

SMC®

Networks

38 Tesla

Irvine, CA 92618

Phone: (949) 679-8000

April 2002

Revision Number: R01

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38 Tesla
Irvine, CA 92618

COMPLIANCES

FCC - Class B

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 instructions, may cause harmful interference to radio communications. However, there is no guarantee that the 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 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

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

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.

"This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter."

EC Conformance Declaration - Class B

SMC contact for these products in Europe is:

SMC Networks Europe,
Edificio Conata II,
Calle Fructuós Gelabert 6-8, 2^o, 4^a,
08970 - Sant Joan Despí,
Barcelona, Spain.

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

- RFI * Limit class B according to EN 55022:1998
- Emission: * Limit class A for harmonic current emission according to EN 61000-3-2/1995
- * Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3/1995
- Immunity: * Product family standard according to EN 55024:1998
- * Electrostatic Discharge according to EN 61000-4-2:1995 (Contact Discharge: ±4 kV, Air Discharge: ±8 kV)
- * Radio-frequency electromagnetic field according to EN 61000-4-3: 1996 (80 - 1000MHz with 1kHz AM 80% Modulation: 3V/m)
- * Electrical fast transient/burst according to EN 61000-4-4:1995 (AC/DC power supply: ±1kV, Data/Signal lines: ±0.5kV)
- * Surge immunity test according to EN 61000-4-5:1995 (AC/DC Line to Line: ±1kV, AC/DC Line to Earth: ±2kV)
- * Immunity to conducted disturbances, Induced by radio-frequency fields: EN 61000-4-6:1996 (0.15 - 80MHz with 1kHz AM 80% Modulation: 3V/m)
- * Power frequency magnetic field immunity test according to EN 61000-4-8:1993 (1A/m at frequency 50Hz)
- * Voltage dips, short interruptions and voltage variations immunity test according to EN 61000-4-11:1994 (>95% Reduction @10ms, 30% Reduction @500ms, >95% Reduction @5000ms)
- LVD: * EN60950 (A1/1992; A2/1993; A3/1993; A4/1995; A11/1997)

Industry Canada - Class B

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par le ministère des Communications.

Japan VCCI Class B

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取り扱い説明書に従って正しい取り扱いをして下さい。

Australia AS/NZS 3548 (1995) - Class B



ACN 069 351 613

SMC contact for products in Australia is:

SMC Communications Pty. Ltd.
Suite 18, 12 Tryon Road,
Lindfield NSW2070,
Phone: 61-2-94160437
Fax: 61-2-94160474

Safety Compliance

Underwriters Laboratories Compliance Statement

Important! Before making connections, make sure you have the correct cord set. Check it (read the label on the cable) against the following:

Operating Voltage	Cord Set Specifications
120 Volts	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG
	Type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Parallel blade, grounding type attachment plug rated 15A, 125V
240 Volts (Europe only)	Cord Set with H05VV-F cord having three conductors with minimum diameter of 0.75 mm ²
	IEC-320 receptacle
	Male plug rated 10A, 250V

The unit automatically matches the connected input voltage. Therefore, no additional adjustments are necessary when connecting it to any input voltage within the range marked on the rear panel.

Wichtige Sicherheitshinweise (Germany)

1. Bitte lesen Sie diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssigoder Aerosolreiniger. Am besten eignet sich ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlus ßsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Beschädigungen hervorrufen.
7. Die Belüftungsöffnungen dienen der Luftzirkulation, die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen, die sich am Gerät befinden, sind zu beachten.

11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a. Netzkabel oder Netzstecker sind beschädigt.
 - b. Flüssigkeit ist in das Gerät eingedrungen.
 - c. Das Gerät war Feuchtigkeit ausgesetzt.
 - d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
15. Stellen Sie sicher, daß die Stromversorgung dieses Gerätes nach der EN 60950 geprüft ist. Ausgangswerte der Stromversorgung sollten die Werte von AC 7,5-8V, 50-60Hz nicht über oder unterschreiten sowie den minimalen Strom von 1A nicht unterschreiten..

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weniger.

COMPLIANCES

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CHAPTER 1

INTRODUCTION

Congratulations on your purchase of the Barricade™ Plus Wireless Firewall Router. SMC is proud to provide you with a powerful yet simple communication device for connecting your local area network (LAN) to the Internet. For those who want to surf the Internet in the most secure way, this Wireless Firewall Router provides a convenient and powerful solution.

About the Barricade Plus

The Barricade Plus provides Internet access to multiple users by sharing a single-user account. It serves as a wireless Access Point, and includes a 10/100Mbps WAN port which allows you to connect to an xDSL or Cable modem. The most outstanding feature of the Barricade Plus is its extensive firewall protection and Virtual Private Network (VPN) services.

This new Barricade Plus technology provides many secure and cost-effective functions. It is simple to configure and can be up and running in minutes.

Features and Benefits

- Internet connection to xDSL or cable modem via a 10/100 Mbps WAN port
- Local network connection via 10/100 Mbps Ethernet ports or 11 Mbps wireless interface (supporting up to 128 mobile users)
- 802.11b Compliant – interoperable with multiple vendors
- Provides seamless roaming within 802.11b WLAN environment
- Supports 64-bit and 128-bit WEP (Wired Equivalent Privacy)
- DHCP for dynamic IP configuration, and DNS for domain name mapping
- Firewall with Stateful Packet Inspection, client privileges, hacker prevention, VPN, and NAT
- NAT also enables multi-user access with a single-user account, and virtual server functionality (providing protected access to Internet services such as Web, FTP, mail and Telnet)
- Supports 1 VPN (Virtual Private Network) tunnel, IPSec and PPTP
- Easy setup through a Web browser on any operating system that supports TCP/IP
- Compatible with all popular Internet applications

Applications

Many advanced applications are provided by the Barricade Plus, such as:

- **Flexible LAN Access**

The Wireless Barricade Plus provides connectivity to 10/100 Mbps wired devices as well as 11 Mbps wireless mobile users. The wireless interface makes it easy to create a network in difficult-to-wire environments, or to provide quick access to databases for mobile workers.

- **Internet Access**

This device supports Internet access through an xDSL, or Cable connection. Since many DSL providers use PPPoE to establish communications with end users, the Barricade Plus includes a built-in client for this protocol, eliminating the need to install this service on your computer.

- **Shared IP Address**

The Barricade Plus provides Internet access for up to 253 users with a shared IP address. Using only one ISP account, multiple users on your network can browse the Web at the same time.

- **Virtual Server**

If you have a fixed IP address, you can set up the Barricade Plus to act as a virtual host using network address translation (NAT). Remote users access various services at your site using a constant IP address. Then, depending on the requested service (or port number), the Barricade Plus can route the request to the appropriate server (at another internal IP address). This secures your network from direct attack by hackers, and provides more flexible management by allowing you to change internal IP addresses without affecting outside access to your network.

- **DMZ Host Support**

Allows a networked computer to be fully exposed to the Internet.

- **Security**

The Barricade Plus supports security features that can deny Internet access to specified users, or filter all requests for specific services the administrator does not want to serve. The Barricade Plus' firewall can also block common hacker attacks, including IP Spoofing, Land Attack, Ping of Death, IP with zero length, Smurf Attack, UDP port loopback, Snork Attack, TCP null scan, and TCP SYN flooding.

- **Stateful Packet Inspection (SPI)**

Stateful Packet Inspection is one of the firewall features provided by the Barricade Plus. The SPI ensures that the data coming into your network was requested by an end node computer on your network. The Barricade Plus examines the incoming data and compares it to a database of trusted information. As traffic leaves the network, it is defined by certain characteristics. Incoming information is then compared to these sets of characteristics. If the incoming data matches the predefined set of characteristics,

the incoming traffic is allowed. If no match is found, the incoming traffic is discarded.

- **Virtual Private Network (VPN)**

The Barricade Plus supports two of the most commonly used VPN protocols – PPTP and IPSec. These protocols allow remote users to establish a secure connection to their corporate network. If your service provider supports VPNs, then any of these protocols can be used to create an authenticated and encrypted tunnel for passing secure data over the Internet (i.e., a traditionally shared data network). The VPN protocols supported by the Barricade Plus are briefly described below.

- Point-to-Point Tunneling Protocol – Provides a secure tunnel for remote client access to a PPTP security gateway. PPTP includes provisions for call origination and flow control required by ISPs.
- IP Security – Provides IP network-layer encryption. IPSec can support large encryption networks (such as the Internet) by using digital certificates for device authentication.

APPLICATIONS

CHAPTER 2

INSTALLATION

Before installing the Barricade™ Plus Wireless Firewall Router, verify that you have all the items listed under “Package Contents.” If any of the items are missing or damaged, contact your local SMC distributor. Also be sure that you have all the necessary cabling before installing the Barricade Plus. After installing the Barricade Plus, refer to the Web-based configuration program in Chapter 4 for information on configuring the router.

Package Contents

After unpacking the Barricade Plus Wireless Firewall Router, check the contents of the box to be sure you’ve received the following components:

- Barricade Plus Wireless Firewall Router
- Power adapter 9V 1A
- One CAT-5 Ethernet cable
- Four rubber feet
- Installation CD with complete User Guide
- Quick Installation Guide
- SMC Warranty Registration Card

Immediately inform your dealer in the event of any incorrect, missing or damaged parts. If possible, please retain the carton and original packing materials in case there is a need to return the product.

Please fill out and return the Warranty Registration Card to SMC or register on SMC's Web site at www.smc.com. The Barricade Plus Wireless Firewall Router is covered by a limited lifetime warranty.

Description of Hardware

The Barricade Plus can be connected to the Internet or to a remote site using its RJ-45 WAN port. It can be connected directly to your PC or to a local area network using any of the three Fast Ethernet LAN ports or through the wireless interface.

Access speed to the Internet depends on your service type. Full-rate ADSL can provide up to 8 Mbps downstream and 640 Mbps upstream. G.lite (or splitterless) ADSL provides up to 1.5 Mbps downstream and 512 Kbps upstream. Cable modems can provide up to 36 Mbps downstream and 2 Mbps upstream. However, you should note that the actual rate provided by specific service providers may vary dramatically from these upper limits.

Although access speed to the Internet is determined by the modem type connected to your Wireless Barricade Plus, data passing between devices connected to your local area network can run up to 100 Mbps over the Fast Ethernet ports.

The Wireless Barricade Plus includes an LED display on the front panel for system power and port indications that simplifies installation and network troubleshooting. It also provides three RJ-45 LAN ports, one RJ-45 WAN port, as well as two detachable antennas on the rear panel.

- Three RJ-45 ports for connection to a 10BASE-T/100BASE-TX Ethernet Local Area Network (LAN). These ports can auto-negotiate the operating speed to 10/100 Mbps, the mode to half/full duplex, and the pin signals to MDI/MDI-X (i.e., allowing these ports to be connected to any network device with straight-through cable). These ports can be connected directly to a PC or to a server equipped with an Ethernet network interface card, or to a networking device such as an Ethernet hub or switch.
- One RJ-45 port for connection to an xDSL or cable modem. This port is fixed at 10/100 Mbps, full duplex. This port only supports MDI-X pin signals, so you will have to use either straight-through or crossover cable depending on the port type used on the modem.
- Two detachable antennas (dipole, omni-directional).

The following figure shows the components of the Barricade Plus:

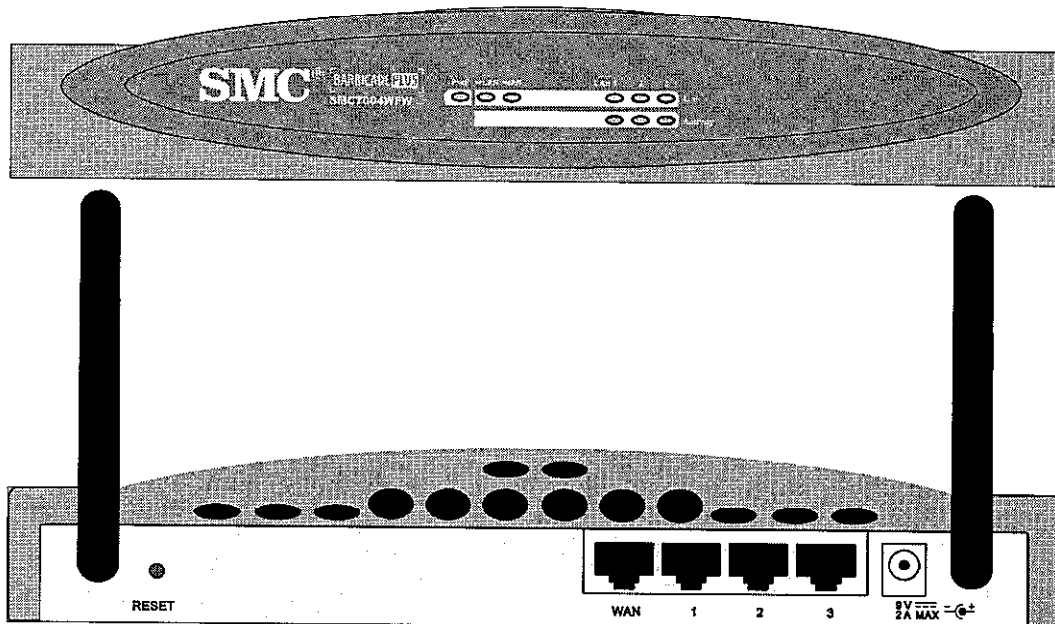


Figure 2-1. Front and Rear Panels

Item	Description
LEDs	Power, WLAN, WAN and LAN port status indicators. (See Verify Port Status on page 2-11.)
Wireless Antennas	Dual antennas provide optimal reception by dynamically choosing the best antenna for each client.
Reset Button	Use this button to reset the power and restore the default factory settings.
WAN Port	WAN port (RJ-45). Connect your Cable modem, xDSL modem, or an Ethernet router to this port.
LAN Ports	Fast Ethernet ports (RJ-45). Connect devices on your local area network to these ports (such as a PC, hub or switch).
Power Inlet	Connect the included power adapter to this inlet. Warning: Using the wrong type of power adapter may cause damage.

System Requirements

You must have an ISP that meets the following minimum requirements:

- Internet access from your Internet Service Provider (ISP) using an xDSL modem, or cable modem.
- A PC using a fixed IP address or dynamic IP address assignment via DHCP, as well as a gateway server address and DNS server address from your service provider.
- For wired LAN connection, you need a computer equipped with a 10 Mbps, 100 Mbps, or 10/100 Mbps Fast Ethernet card, or a USB-to-Ethernet converter. For wireless LAN connections, each computer must have an 11 Mbps wireless adapter.

- TCP/IP network protocol installed on each PC that needs to access the Internet.
- A Java-enabled Web browser, such as Microsoft Internet Explorer 5.0 or above or Netscape Communicator 4.0 or above installed on one PC at your site for configuring the Wireless Barricade Plus.

Connect the System

The Wireless Barricade Plus can be positioned at any convenient location in your office or home. No special wiring or cooling requirements are needed. You should, however, comply with the following guidelines:

- Keep the Barricade Plus away from any heating devices.
- Do not place the Barricade Plus in a dusty or wet environment.

You should also remember to turn off the power, remove the power cord from the outlet, and keep your hands dry when you install the Barricade Plus.

Basic Installation Procedure

1. **Connect the LAN:** You can connect the Barricade Plus to your PC, or to a hub or switch. Run Ethernet cable from one of the LAN ports on the rear of the Barricade Plus to your computer's network adapter or to another network device.

You can also connect the Barricade Plus to your PC (using a wireless client adapter) via radio signals. Position both antennas on the back of the Barricade Plus into the desired positions. For more effective coverage, you may want to position one antenna along the vertical axis and the other antenna along the horizontal axis. **(The antennas emit signals along the toroidal plane—and thus provide more effective coverage when positioned along alternate axes.)**

2. **Connect the WAN:** Prepare an Ethernet cable for connecting the Barricade Plus to a cable/xDSL modem or Ethernet router.
3. **Power on:** Connect the power adapter to the Barricade Plus.

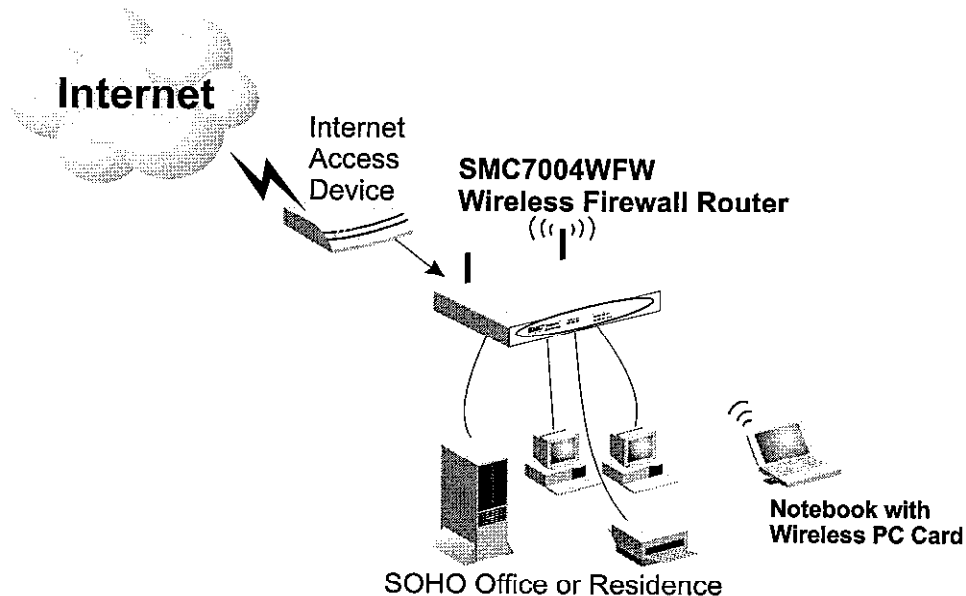


Figure 2-2. Connecting the Wireless Barricade Plus

Attach to Your Network Using Ethernet Cabling

The three LAN ports on the Barricade can auto-negotiate the connection speed to 10 Mbps Ethernet or 100 Mbps Fast Ethernet, as well as the transmission mode to half-duplex or full-duplex. These LAN ports also support auto-configuration for pin signals (auto-MDI/MDI-X) that allows you to use straight-through cable for connecting the Barricade to any network device. (See Appendix B for details on wiring.)

Use twisted-pair cable to connect any of the three LAN ports on the Barricade to an Ethernet adapter on your PC. Otherwise, you can cascade any of LAN ports on the Barricade to an Ethernet hub or switch, and then connect your PC or other network equipment to the hub or switch. When inserting an RJ-45 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated.

Warning: Do not plug a phone jack connector into any RJ-45 port. This may damage the Barricade Plus. Instead, use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

- Notes:**
1. Use 100-ohm shielded or unshielded twisted-pair cable with RJ-45 connectors for all connections. Use Category 3, 4 or 5 for connections that operate at 10 Mbps, and Category 5 for connections that operate at 100 Mbps.
 2. Make sure each twisted-pair cable does not exceed 100 meters (328 feet).

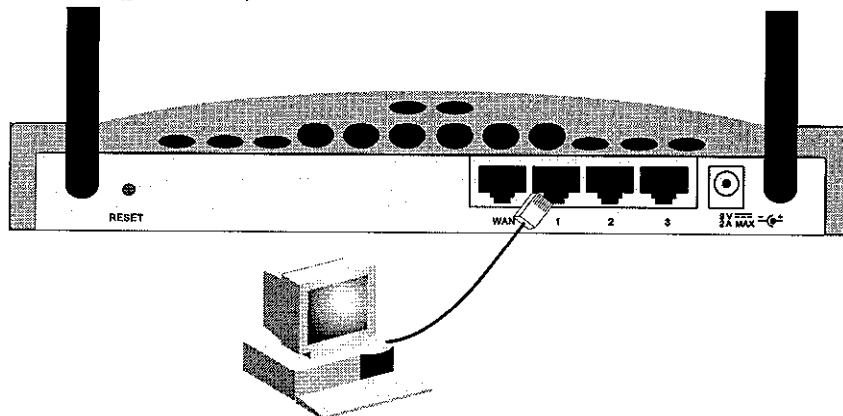


Figure 2-3. Making LAN Connections

Attach to Your Network Using Radio Signals

Install a wireless network adapter in each computer that will be connected to the Internet or your local network via radio signals. SMC currently offers several wireless network cards, including the SMC2602W Wireless PCI card and the SMC2632W Wireless PC card.

Rotate both antennas on the back of the Barricade Plus to the desired position. For more effective coverage, position one antenna along the vertical axis and the other along the horizontal axis. Try to place the Barricade Plus in a position that is located in the center of your wireless network. Normally, the higher you place the antenna, the better the performance. Ensure that the Barricade Plus' location provides optimal reception throughout your home or office.

Computers equipped with a wireless adapter can communicate with each other as an independent wireless LAN by configuring each

computer to the same radio channel. However, the Barricade Plus can provide access to your wired/wireless LAN or to the Internet for all wireless workstations. Each wireless PC in this network infrastructure can talk to any computer in the wireless group via a radio link, or access other computers or network resources in the wired LAN infrastructure or over the Internet via the Barricade Plus.

The wireless infrastructure configuration not only extends the accessibility of wireless PCs to the wired LAN, but also doubles the effective wireless transmission range for wireless PCs by retransmitting incoming radio signals through the Barricade Plus.

A wireless infrastructure can be used for access to a central database, or for connection between mobile workers, as shown in the following figure:

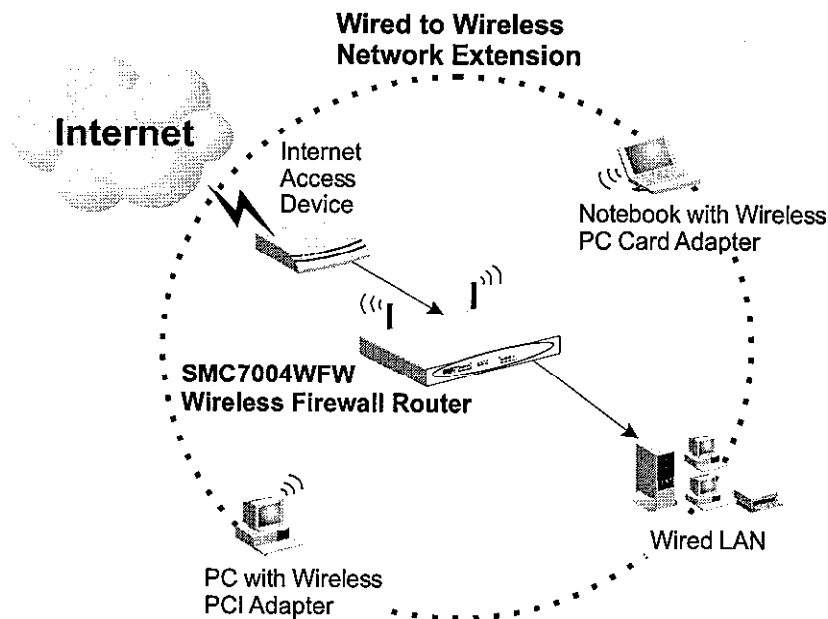


Figure 2-4. Making WLAN Connections

Attach the Barricade Plus to the Internet

If Internet services are provided through an xDSL or cable modem, use unshielded or shielded twisted-pair Ethernet cable (Category 3 or greater) with RJ-45 plugs to connect the broadband modem directly to the WAN port on the Barricade Plus. Use either straight through or crossover cabling depending on the port type provided by the modem (see Appendix B).

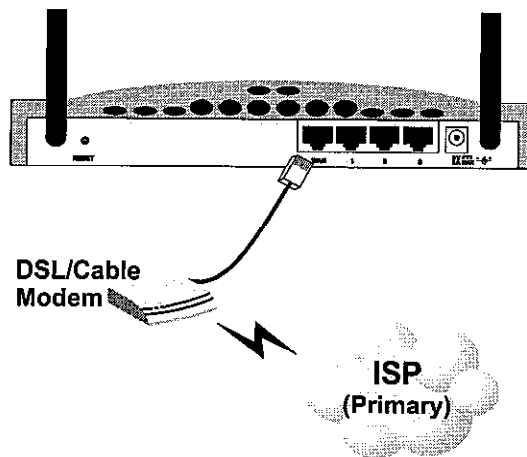


Figure 2-5. Making WAN Connection

Note: When connecting to the WAN port, use 100-ohm Category 3, 4 or 5 shielded or unshielded twisted-pair cable with RJ-45 connectors at both ends for all connections.

Connecting the Power Adapter

Plug the power adapter into the power socket on the Barricade Plus, and the other end into a power outlet. Check the indicator marked Power on the front panel to be sure it is on. If the Power indicator does not light up, refer to Troubleshooting in Appendix A.

Verify Port Status

Check the power and port indicators as shown in the following table.

LED	Condition	Status
Power (Green)	On	Wireless Barricade is receiving power.
WLAN (Green)	On	The Wireless Barricade has established a valid wireless connection.
WAN (Green)	On	The WAN port has established a valid network connection.
<i>LAN</i>		
Link (Green)	On	The indicated LAN port has established a valid network connection.
Activity (Amber)	Flashing	The indicated LAN port is transmitting or receiving traffic.

INSTALLATION