Barricade™ Wireless Broadband Router

Wireless Broadband Router

- Internet access via –
  - 10 Mbps WAN port connection to xDSL/Cable modem, or
  - RS-232 console port connection to ISDN/PSTN modem
- Home networking via –
  - Three 10/100 Mbps Ethernet switch ports, or
  - 11 Mbps wireless interface
- Built-in Print Server
- Automatic IP configuration with DHCP
- Firewall – client privileges, hacker prevention, NAT
- Multi-user access (up to 253), single-user account
- Virtual server with network address translation
- Virtual Private Network using PPTP, L2TP, IPSec

SMC® Networks

User Guide

SMC7004AWBR

Barricade™ Wireless Broadband Router User Guide

From SMC's Barricade line of Broadband Routers

SMC® Networks
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Irvine, CA 92618
Phone: (949) 707-2400

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Part Number: 01-111234-001 R02

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* SMC will provide warranty service for one year following discontinuance from the active SMC price list. Under the limited lifetime warranty, internal and external power supplies, fans, and cables are covered by a standard one-year warranty from date of purchase.

SMC Networks, Inc.
6 Hughes
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

EC Conformance Declaration - Class B

SMC contact for these products in Europe is:

SMC Networks Europe,
Edificio Conata II,
Calle Fructuós Gelabert 6-8, 2º, 4ª,
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 Emission:	*	Limit class B according to EN 55022:1998
	*	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: * EN 60950 (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

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 Netzanschlu 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 authorisiertem 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.

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APPENDICES:

CHAPTER 1
INTRODUCTION

Congratulations on your purchase of the Barricade™ Wireless Broadband Router. SMC is proud to provide you with a powerful yet simple communication device for connecting your local area network (wired or wireless LAN) to the Internet. For those who want to surf the Internet at the lowest possible cost, this Broadband Router provides a convenient and powerful solution.

About the Wireless Barricade

The Wireless Barricade provides Internet access to multiple users by sharing a single-user account. It serves as a wireless Access Point, and includes a dual-port WAN interface which allows you to connect to an xDSL or Cable modem, ISDN TA or PSTN analog modem. The Wireless Barricade provides extensive firewall protection and Virtual Private Network (VPN) services. It also provides print services for any client attached to a LAN port.

The Wireless Barricade supports dial-on-demand for ISDN/PSTN service, automatically connecting to the Internet when there are requests and terminating the connection if no further requests occur. This dual-port design also supports fail-over Internet access through the secondary WAN port (i.e., the serial port can be used for primary or backup Internet access).

This new Wireless Barricade technology provides many cost-effective functions and management benefits. 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 Mbps WAN port
- Internet connection to ISDN TA or PSTN modem via an RS-232 console 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)
- Built-in Print Server for any client attached to the LAN
- DHCP for dynamic IP configuration, and DNS for domain name mapping
- Firewall with client privileges, hacker prevention, 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)
- Virtual Private Network support using PPTP, L2TP or IPSec pass-through
- User-definable application sensing tunnel supports applications requiring multiple connections
- Supports CHAP authentication protocol for dial-up identification

- Supports PPP dial-in connection using standard dial-up program
- 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 Wireless Barricade, such as:

- **Flexible LAN Access**

  The Wireless Barricade 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, Cable, ISDN or PSTN connection. Since many DSL providers use PPPoE to establish communications with end users, the Wireless Barricade includes a built-in client for this protocol, eliminating the need to install this service on your computer.

- **Shared IP Address**

  The Wireless Barricade 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 Wireless Barricade to act as a virtual host for network address translation. Remote users access various services at your site using a constant IP address. Then, depending on the requested service (or port number), the Wireless Barricade 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.

- **User-Definable Application Sensing Tunnel**

  You can define special applications that require multiple connections such as Internet gaming, videoconferencing, and Internet telephony. The Wireless Barricade can then sense the application type and open a multi-port tunnel for it.

- **DMZ Host Support**

  Allows a networked computer to be fully exposed to the Internet. This function is used when the special application sensing tunnel feature is insufficient to allow an application to function correctly.

- **Security**

  The Wireless Barricade 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 Wireless Barricade's 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.

- **Virtual Private Network**

  The Wireless Barricade supports three of the most commonly used VPN protocols – PPTP, L2TP 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 Wireless Barricade 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.
  - Layer Two Tunneling Protocol – Includes most of the features provided by PPTP, but has less overhead and is more suited for managed networks.
  - IP Security – Provides IP network-layer encryption. IPSec can support large encryption networks (such as the Internet) by using digital certificates for device authentication.

CHAPTER 2
INSTALLATION

Before installing the Barricade™ Wireless Broadband 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 Wireless Barricade. After installing the Wireless Barricade, refer to the Web-based configuration program in Chapter 4 for information on configuring the router.

Package Contents

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

- Barricade 4-port Wireless Broadband Router
- Power adapter (5V, 2.4A)
- 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 Wireless Broadband Router is covered by a limited lifetime warranty.

Description of Hardware

The Barricade Wireless Broadband Router can be connected to the Internet or to a remote site using its RJ-45 WAN port or RS-232 serial 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. It can also function as a print server.

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. ISDN can provide up to 128 Kbps when using two bearer channels. And PSTN analog connections can now run up to 56 Kbps. 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, data passing between devices connected to your local area network can run up to 100 Mbps over the Fast Ethernet ports.

The Wireless Barricade 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, one RS-232 serial port, one parallel printer port, as well as two 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 Mbps, full duplex. Use a Category 5 cable to connect this WAN port to a xDSL or Cable modem.

- One RS-232 serial port to connect to an ISDN Terminal Adapter (TA) or to a PSTN analog modem.

- One parallel printer port that can be connected to a printer. This printer can then be shared by any LAN/WLAN users.

- Two antennas (dipole, omni-directional).

The following figure shows the components of the Wireless Barricade:

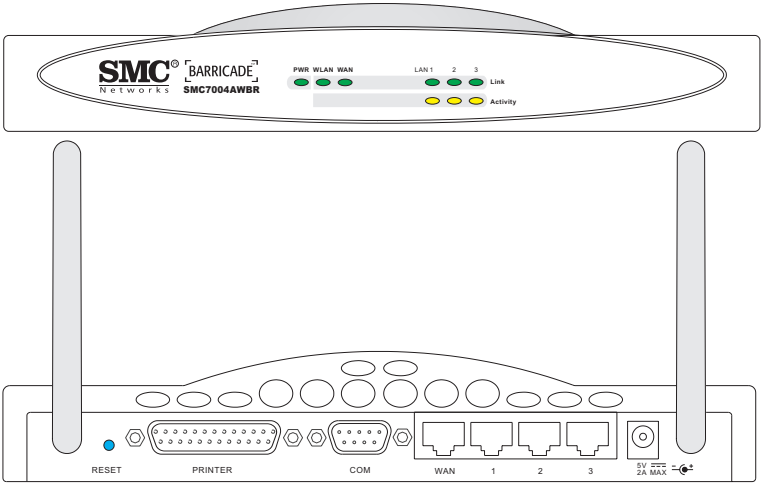


Figure 2-1. Front and Rear Panels

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.
Printer Port	Parallel port (25-pins, D-type, female). Connect the shared printer to this port.
COM Port	Serial port (9-pins, D-type, male). Connect your ISDN TA or 56K analog modem to this port.
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).

Item	Description
Power Inlet	Connect the included power adapter to this inlet. **Warning**: The included power adapter is DC 5V/2A. Using the wrong type of power adapter may cause damage.

System Requirements

You must have an Internet Service Provider (ISP) that meets the following minimum requirements:

- Internet access from your local telephone company or ISP using an xDSL modem, Cable modem, ISDN TA, or PSTN analog modem. You may also have access over the telephone system to an analog modem at another site.
- 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.

Connect the System

The Wireless Barricade 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 Wireless Barricade away from any heating devices.
- Do not place the Wireless Barricade 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 Wireless Barricade.

Basic Installation Procedure

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

   You can also connect the Wireless Barricade to your PC (using a wireless client adapter) via radio signals. Position both antennas on the back of the Wireless Barricade 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 Wireless Barricade to a Cable/xDSL modem or Ethernet router. Prepare a serial cable for connecting the Wireless Barricade to an ISDN TA or PSTN modem.

3. **Connect your printer**: Use standard parallel printer cable to connect your printer to the printer port on the Wireless Barricade.

4. **Power on**: Connect the power adapter to the Wireless Barricade.

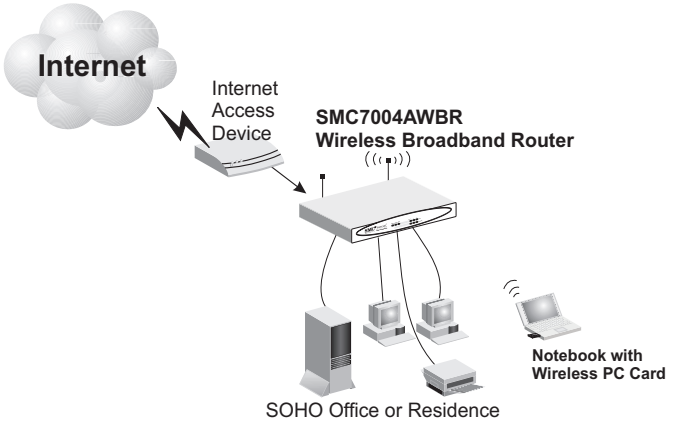


Figure 2-2. Connecting the Wireless Barricade

Attach to Your Network Using Ethernet Cabling

The three LAN ports on the Wireless 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 Wireless 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 Wireless Barricade to an Ethernet adapter on your PC. Otherwise, you can cascade any of LAN ports on the Wireless 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 Wireless Barricade. 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).

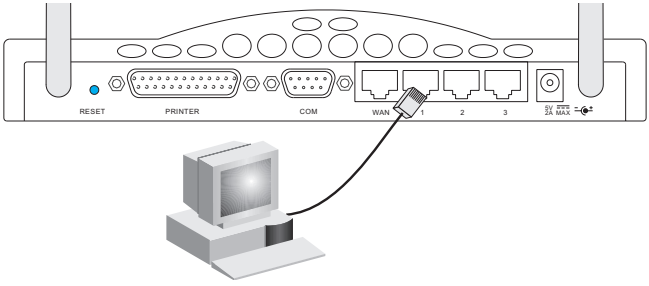


Figure 2-3. Making LAN Connections

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 Wireless Barricade 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 Wireless Barricade 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 Wireless Barricade's 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 Wireless Barricade 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 Wireless Barricade.

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 Wireless Barricade.

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

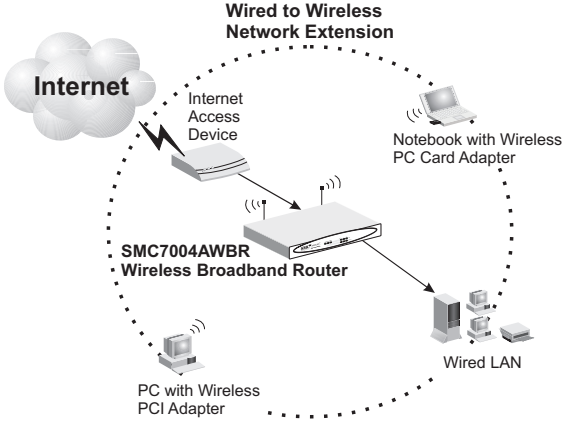


Figure 2-4. Making WLAN Connections

Attach the Wireless Barricade 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 Wireless Barricade. Use either straight-through or crossover cable depending on the port type provided by the modem (see Appendix B). For ISDN or PSTN service, attach the access device to the RS-232 serial port on the Wireless Barricade.

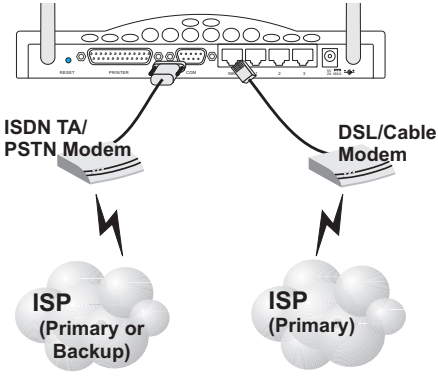


Figure 2-5. Making WAN Connections

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.

Connect the Wireless Barricade to a Printer

If you connect a printer to the Wireless Barricade, all the computer users connected to your LAN can have access to the printer. Connect a standard parallel printer cable to the Printer port on the Wireless Barricade, and configure the printer server as described on page 6-1.

Connecting the Power Adapter

Plug the power adapter into the power socket on the Wireless Barricade, 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.
LAN		
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.

CHAPTER 3
CONFIGURING CLIENT PCS

TCP/IP Configuration

To access the Internet through the Barricade™ Wireless Broadband Router, you must configure the network settings of the computers on your LAN to use the same IP subnet as the Wireless Barricade. The default network settings for the Wireless Barricade are:

IP Address: 192.168.2.1
Subnet Mask: 255.255.255.0

Note: These settings can be changed to fit your network requirements, but you must first configure at least one computer as described in Chapter 5 to access the Wireless Barricade's Web configuration interface. (See Chapter 4 for information on configuring the Wireless Barricade.)

If you have not previously configured TCP/IP for your computer, refer to "Installing TCP/IP Protocol in Your PC" on page 5-1.

All PCs connected to the Wireless Barricade must be set to the same IP subnet as the Wireless Barricade. The default IP address pool of the Wireless Barricade is 192.168.2.X (where X means 2–254) and the subnet mask is 255.255.255.0. You can set the IP address for client PCs either by automatically obtaining an IP address from the Wireless Barricade's DHCP service or by manual configuration. See "Setting TCP/IP to Work with the Barricade" on page 5-3.

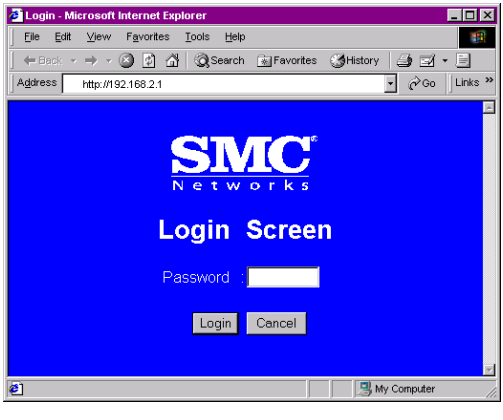
Printer Client Installation

If you need to provide print services for devices attached to the Wireless Barricade, then install the Port Monitor program from the CD (for Windows 95/98/NT), and configure the print server on each network station. The Wireless Barricade print server supports Windows 95/98/ME/NT/2000 and Unix platforms. Refer to Chapter 6: "Configuring Printer Services."

CHAPTER 4
CONFIGURING THE BARRICADE

After you have configured TCP/IP on a client computer, you can use a Web browser to configure the Barricade™ Wireless Broadband Router. The Wireless Barricade can be configured by any Java-supported browser including Internet Explorer 4.0 or above, or Netscape Navigator 4.0 or above. Using the Web management interface, you can configure the Wireless Barricade and view statistics to monitor network activity.

To access the Wireless Barricade's management interface, enter the IP address of the Wireless Barricade in your Web browser's "Address" field (http://192.168.2.1). The Wireless Barricade login screen will appear. Leave the Password field blank and click on "login." (There is no password by default.) The home page displays the Main Menu on the left-hand side of the screen and descriptive information on the right-hand side. The Main Menu links are used to navigate to other menus that display configuration parameters and statistics.



Navigating the Web Browser Interface

The Wireless Barricade's management interface includes four key menus – Status, Help, Tools, and Setup. The Status and Help menus provide general information on the current settings and how to configure the Wireless Barricade. The Setup menu is used to configure the LAN, WAN and wireless interface, as well as other advanced functions. The Tools menu is used to reset the Wireless Barricade, restore the factory settings, or upgrade firmware.

Setting a Password

If this is your first time to access the Wireless Barricade, you should define a new Administrator password, record it and put it in a safe place. From the Main Menu, select "Setup," then "Change Password" and follow the instructions on the screen (see page 4-6). Note that passwords can consist of 3 to 12 alphanumeric characters and are case-sensitive.

Making Configuration Changes

Configurable parameters have a dialog box or a drop-down list. Once a configuration change has been made on a page, be sure to click the "Enter" button at the bottom of the page to confirm the new setting.

Note: To ensure proper screen refresh after a command entry, be sure that Internet Explorer 5.0 is configured as follows: Under the menu "Tools / Internet Options / General / Temporary Internet Files / Settings," the setting for "Check for newer versions of stored pages" should be "Every visit to the page."

Main Menu

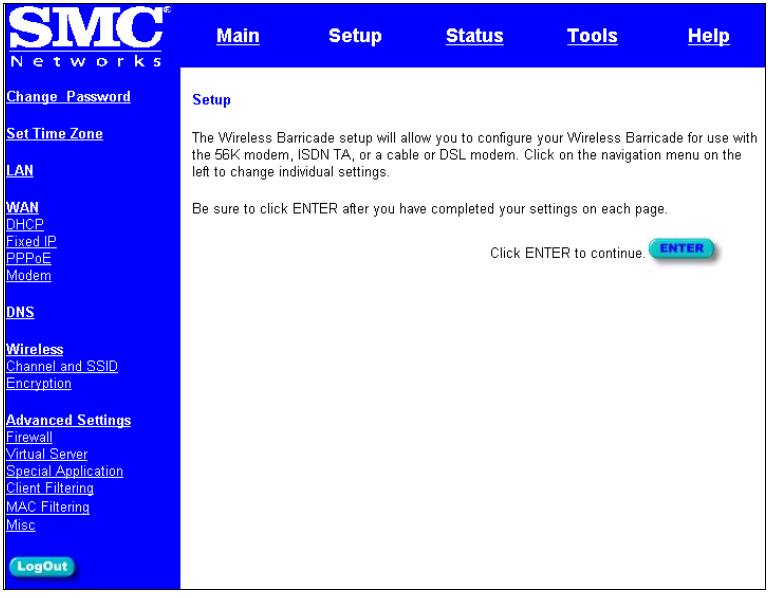
Using the Web management interface, you can define system parameters, manage and control the Wireless Barricade and its ports, or monitor network conditions. The following table briefly describes the selections available from this program.

Menu	Description
Setup Menu	Configures TCP/IP settings and client services.
Change Password	Sets the password for administrator access.
Set Time Zone	Sets the local time zone.
LAN	Sets the TCP/IP configuration for the Wireless Barricade LAN interface and all DHCP clients.
WAN	Specifies the Internet connection type: (1) DHCP host configuration, (2) fixed IP and gateway address, (3) PPPoE configuration, or (4) dial-up modem.
DNS	Specifies DNS servers to use for domain name resolution.
Wireless	Configures the radio frequency, domain, and encryption for wireless communications.
Advanced Settings	Configures a variety of packet filtering and specialized functions, including: Firewall Virtual Server Special Application Client Filtering MAC Filtering Misc

Menu	Description
Status Menu	Displays connection status, key interface settings, as well as the firmware and hardware version numbers.
INTERNET	Displays WAN connection type and status.
GATEWAY	Displays system IP settings, the status for DHCP, and Firewall services, as well as the wireless interface settings.
INFORMATION	Displays the number of attached clients, the firmware versions, the physical MAC address for each media interface, as well as the hardware version and serial number.
Security Log	Displays any illegal attempts to access your network.
DHCP Client Log	Displays information on all DHCP clients attached to your network.
Tools Menu	Contains options to reset the system, restore configuration settings, or update system firmware.
Reset Barricade	Reboots the system and retains all of your configuration settings.
Restore Factory Defaults	Restores all configuration settings to the factory defaults
Update Firmware	Upgrades the system with the latest firmware obtained from SMC's website at www.smc.com
Help Menu	Contains information for product support, troubleshooting, and network terminology.

Networking and Client Services

Use the Setup menu to configure the LAN interface (including TCP/IP parameters for the Wireless Barricade's gateway address, DHCP address pool for dynamic client address allocation), the WAN connection options, DNS domain name mapping, the wireless interface, and other advanced services.



You can use the Setup Wizard by clicking the "Enter" button at the bottom of the page and changing the required settings, or you can select the specific items you need to change from the Setup menu on the left side of the screen.

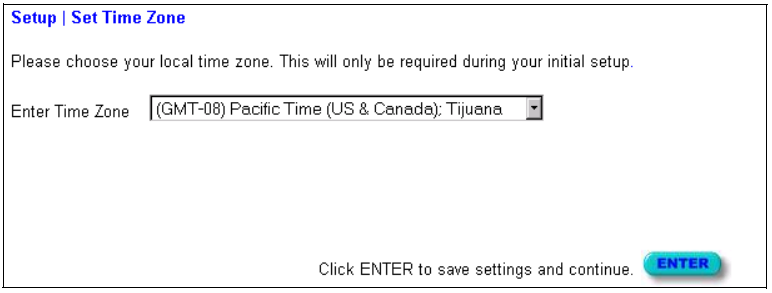
Change Password

Use this menu to restrict management access based on a specific password. You must enter a password to access the configuration options provided by the menus. By default, there is no password. So, please assign a password to the Administrator as soon as possible, and store it in a safe place.

Passwords can contain from 3–12 alphanumeric characters, and are case sensitive.

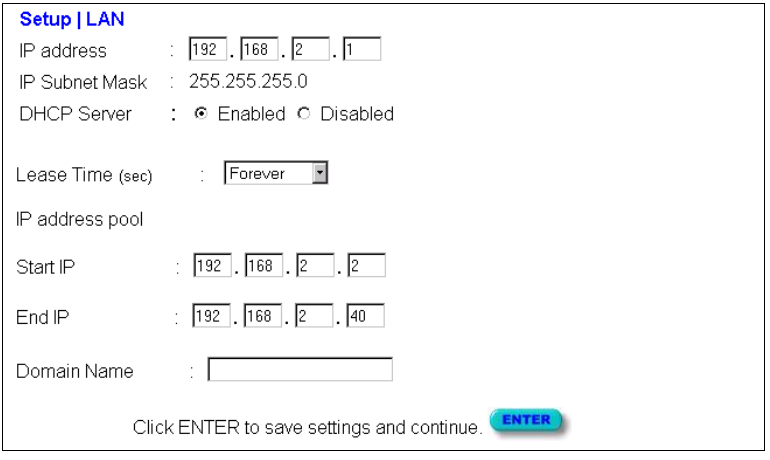
Note: If your password is lost, or you cannot gain access to the management interface, press the Reset button on the front panel (holding it down for at least five seconds) to restore the factory defaults.

Set Time Zone



Set the time zone for the Wireless Barricade. This information is used for log entries and client filtering.

LAN Gateway and DHCP Settings



Configure the gateway address of the Wireless Barricade. To dynamically assign the IP address for client PCs, enable the DHCP Server, set the lease time, and then specify the address range. Also remember to configure all of your client PCs for dynamic address allocation.

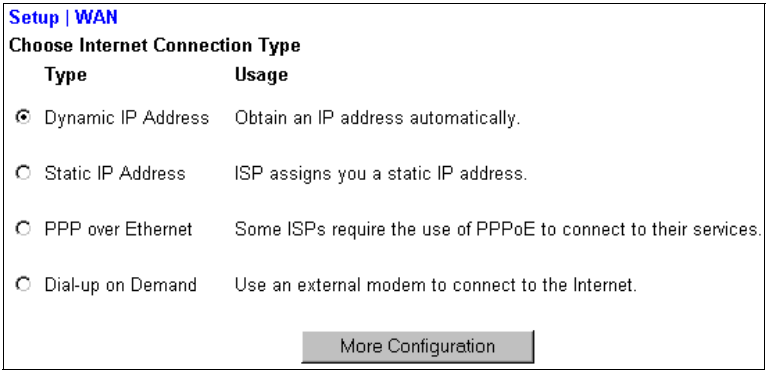
Valid IP addresses consist of four numbers, and are separated by periods. The first three fields are the network portion, and can be

from 0–255, while the last field is the host portion and can be from 1–254. However, remember not to include the gateway address of the Wireless Barricade in the client address pool.

The Domain Name is optional, but this information may be specified so that it can be passed to the client PCs.

WAN Configuration

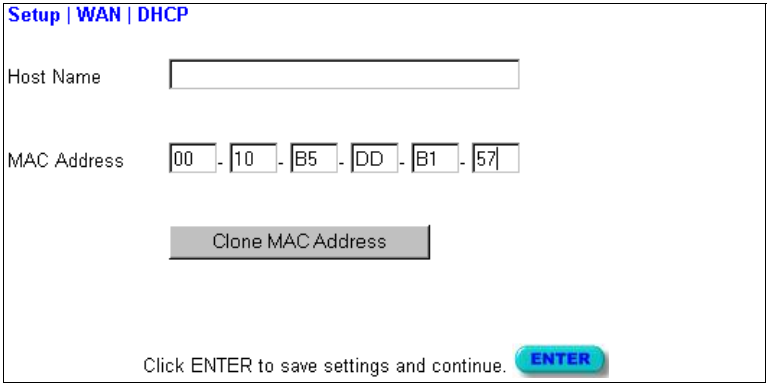
Specify the WAN connection type required by your Internet Service Provider, then click "More Configuration" to provide detailed configuration parameters for the selected connection type.



Specify one of the first three options to configure a WAN connection through the RJ-45 port (i.e., a connection to an xDSL modem or Cable modem). Specify the "Dial-up on Demand" option to configure a WAN connection through the serial port (i.e., a connection to an ISDN TA or PSTN modem).

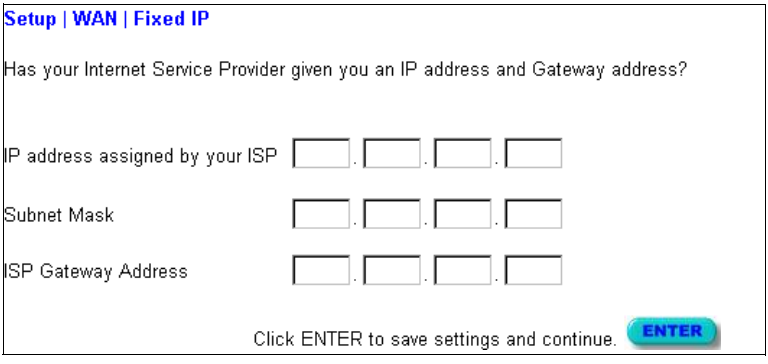
Note: If WAN connections are configured for both the RJ-45 and serial port, the serial port will be used as a backup Internet connection if the primary RJ-45 WAN connection fails.

Dynamic IP Address – DHCP



The Host Name is optional, but may be required by some ISPs. The default MAC address is set to the WAN's physical interface on the Wireless Barricade. Use this address when registering for Internet service, and do not change it unless required by your ISP. You can use the "Clone MAC Address" button to copy the MAC address of the Ethernet Card installed by your ISP (in your PC) and replace the WAN MAC address with this MAC address.

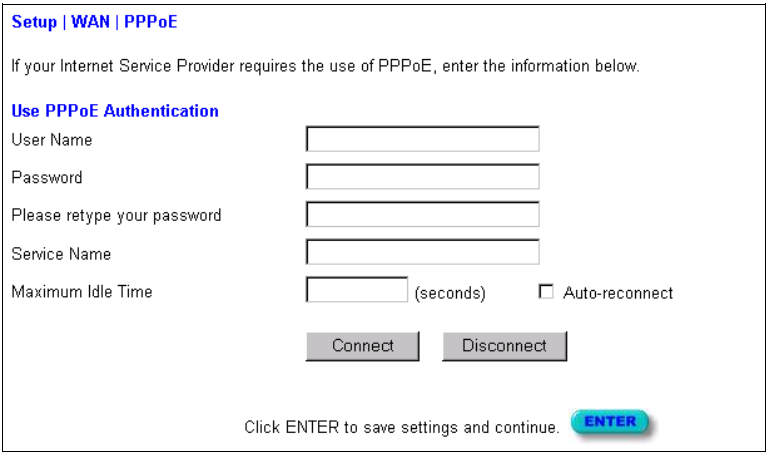
Static IP Address – Fixed IP



If your Internet Service Provider has assigned a fixed address, enter the assigned address and subnet mask for the Wireless Barricade, then enter the gateway address of your ISP.

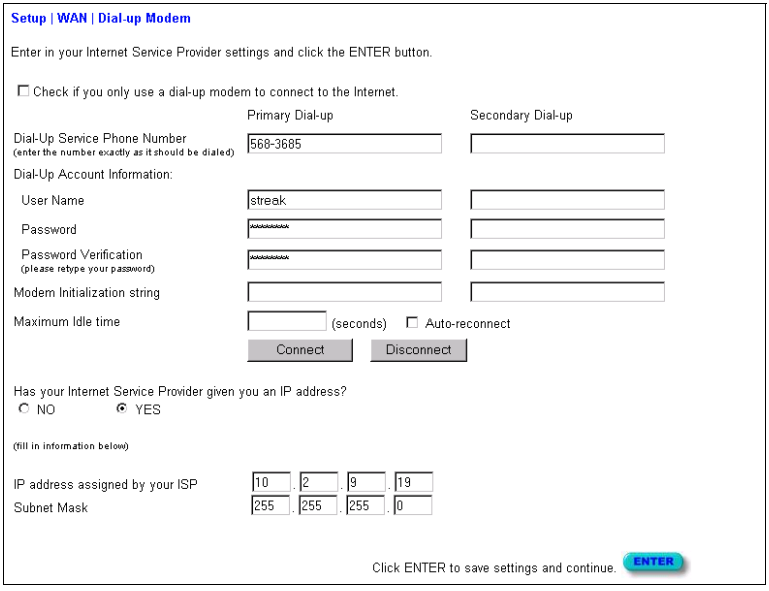
Note: You may need a fixed address if you want to provide Internet services, such as a Web server or FTP server.

PPP over Ethernet – PPPoE



Enter the PPPoE user name and password assigned by your ISP. The Service Name is normally optional, but may be required by some providers.

Dial-up on Demand – Modem



If you are accessing the Internet via an ISDN TA or PSTN modem attached to the serial port on the Wireless Barricade, then you must specify your account information on this screen as described below.

Check if you only use a dial-up modem to connect to the Internet. – If the serial port is used for primary Internet access, then mark this item. If not marked, then this connection will only be used for backup access if the primary WAN link fails.

Dial-Up Service Phone Number – Enter the phone number your service provider has given to you for Internet access.

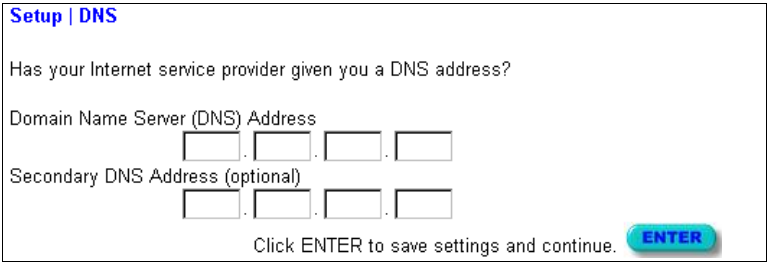
Dial-Up Account Information – Enter your ISP account user name and password.

Has your Internet Service Provider given you an IP address? – If you are assigned a dynamic IP address every time you dial up, mark "No" for this item. However, if your ISP has assigned a fixed

IP address for you to use, mark "Yes" for this item and enter the IP address and subnet mask.

Note: If your ISP has given you a secondary phone number, or if you have a secondary Internet service account, then fill in the relevant fields under "Secondary Dial-up."

DNS Configuration



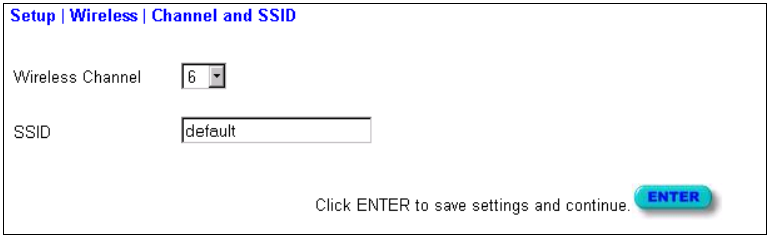
Domain Name Servers are used to map an IP address to the equivalent domain name (e.g., www.smc.com). Your ISP should provide the IP address for one or more domain name servers. Enter those addresses on this screen.

Wireless Configuration

To configure the Wireless Barricade as a wireless access point for wireless clients (either stationary or roaming), all you need to do is define the radio channel, the domain identifier, and encryption options.

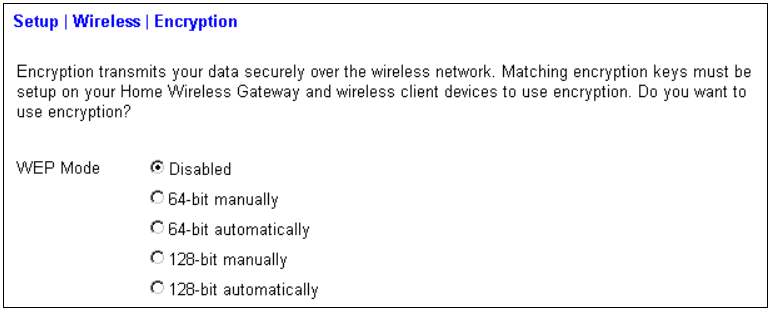
You can use the Setup Wizard by clicking the "Enter" button at the bottom of the page and changing the required settings, or you can select "Channel and SSID" or "Encryption" from the Setup menu on the left side of the screen.

Channel and SSID



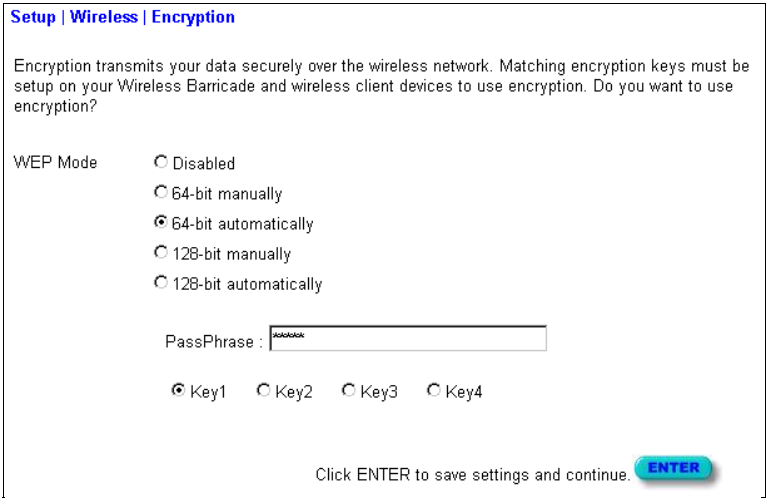
You must specify a common radio channel and service domain (i.e., Service Set ID) to be used by the Wireless Barricade and all of your wireless clients. Be sure you configure all of your clients to the same values.

Encryption



If you are transmitting sensitive data across wireless channels, you should enable encryption. Encryption requires you to use the same set of encryption/decryption keys for the Wireless Barricade and all of your wireless clients. You can choose between standard 64-bit or the more robust 128-bit encryption keys. However, please be aware that the extra processing time required for encryption may affect the throughput for wireless communications.

You can automatically generate encryption keys or you can manually enter the keys. For automatic 64-bit security, you enter a passphrase that is used to create four keys (as shown below). The automatic 128-bit security generates a single key by entering a passphrase. To manually configure the keys, enter five hexadecimal pairs for each 64-bit key, or enter 13 pairs for the single 128-bit key. (A hexadecimal digit is a number or letter in the range 0-9 or A-F.)



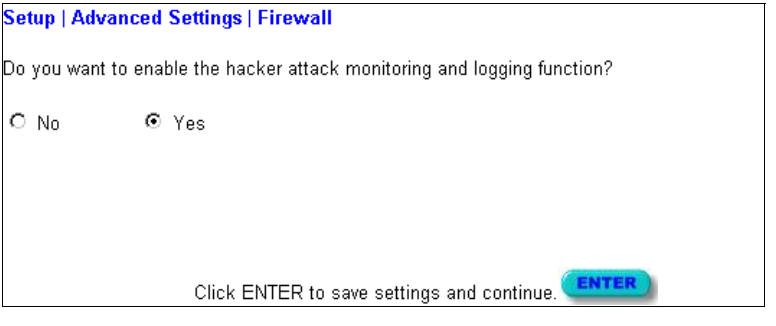
If you use encryption, then configure the same keys used for the Wireless Barricade on each of your wireless clients. Note that the Wired Equivalent Privacy (WEP) protects data transmitted between wireless nodes, but does not protect any transmissions over your wired network or over the Internet.

Configuring Client Services

The Wireless Barricade includes a broad range of client services, including firewall protection, network address translation, virtual server, connection support for special applications, and restricted Internet access for specified clients. You can configure these functions using the Setup Wizard by clicking "Enter" at the bottom of the Advanced Settings screen, or by selecting specific items from the menu on the left of the screen.

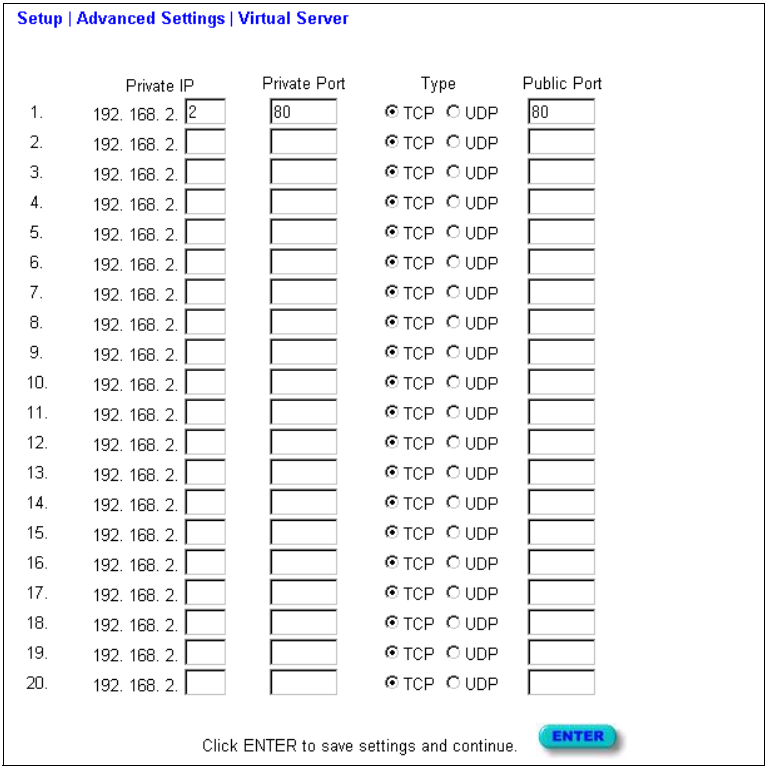
Firewall Protection

The Wireless Barricade's firewall can 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. The firewall does not significantly affect system performance, so we advise leaving it enabled to protect your network users.



Virtual Server

If you configure the Wireless Barricade as a virtual server, remote users accessing services such as Web or FTP at your local site via public IP addresses can be automatically redirected to local servers configured with private IP addresses. In other words, depending on the requested service (TCP/UDP port number), the Wireless Barricade redirects the external service request to the appropriate server (located at another internal IP address).



The WAN interface must have a fixed IP address to utilize this function. For example, if you set Type/Public Port to TCP/80 (HTTP or Web) and the Private IP/Port to 192.168.2.2/80, then all

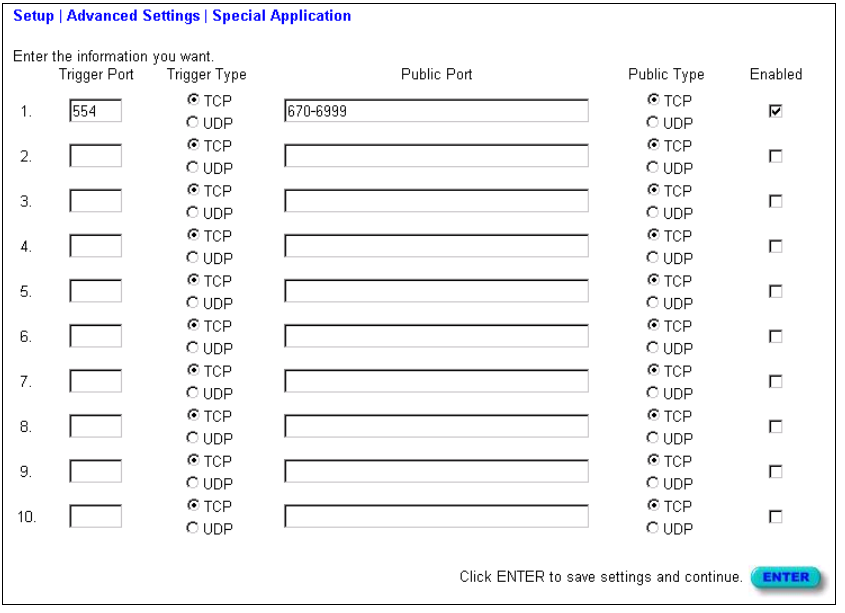
HTTP request from outside users will be transferred to 192.168.2.2. Therefore, by just entering the IP Address provided by the ISP, Internet users can access the service they need at the local address to which you redirect them.

Some of the more common TCP service ports include:

HTTP: 80, FTP: 21, Telnet: 23 and POP3: 110.

Enabling Special Applications

Some applications require multiple connections, such as Internet gaming, videoconferencing, Internet telephony and others. These applications cannot work with Network Address Translation (NAT) enabled. If you need to run applications that require multiple connections, use the following screen to specify the additional public ports to be opened for each application.

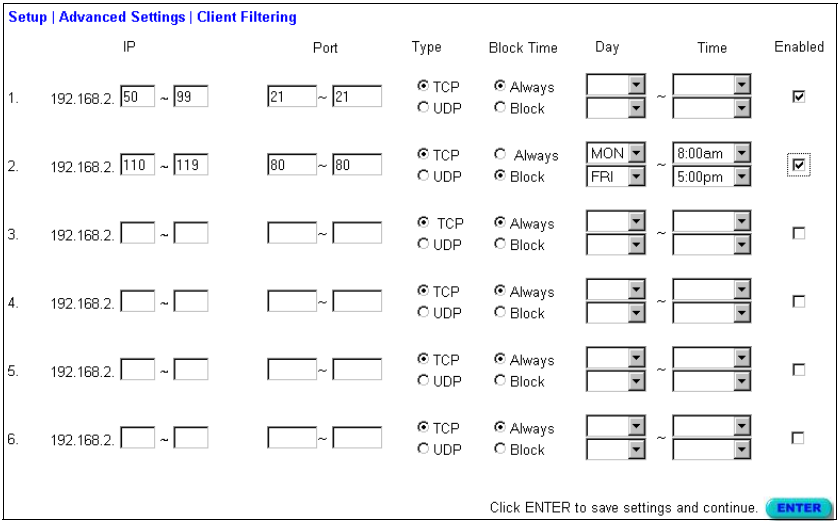


Specify the port normally associated with an application in the "Trigger Port" field, select the protocol type as TCP or UDP, then enter the public ports associated with the trigger port to open them for inbound traffic.

Note: If an application still cannot function correctly after enabling multiple ports via the Special Application screen, you may have to open the client PC for full Internet access using the DMZ Host option on the "Misc" screen.

Client Filtering

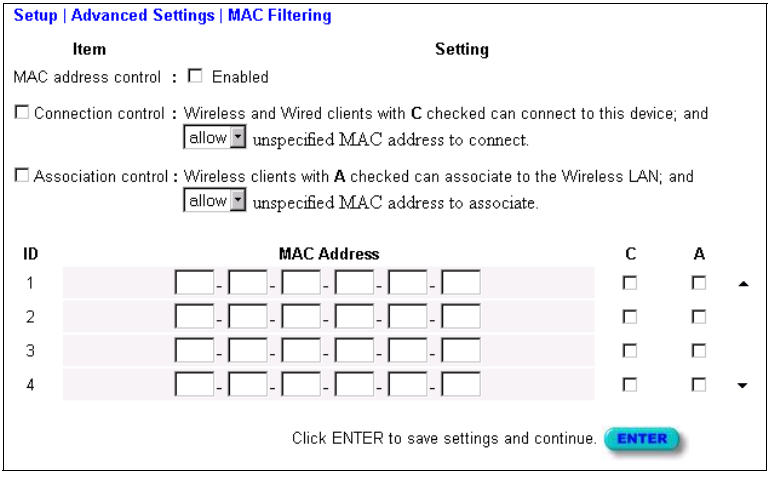
You can filter Internet access for local clients based on IP address, application type (i.e., HTTP port), and time of day.



For example, this screen shows that clients in the address range 192.168.2.50-99 are permanently restricted from using FTP (Port 21), while clients in the address range 192.168.2.110-119 are blocked from browsing the Internet from Monday through Friday.

MAC Filtering

You can filter Internet access for local wired and wireless clients based on MAC address.



MAC Address Control: Every client that connects to the network has a unique MAC (Media Access Control) address on his or her Ethernet adapter. An administrator can have more control—and more security—over the network by specifying which MAC addresses are allowed to access the Wireless Barricade. You can enable this feature by checking the "Enabled" box.

Connection Control: Connection control allows an administrator to allow or deny clients access to the Wireless Barricade and the Internet. Check "Connection control" to control which of the wired AND wireless clients will be able to "connect" to the Wireless Barricade and to the Internet. If a client is denied "connection" to this device, it means that the client can't access the Internet and some network resources. Choose "Allow" or "Deny" to allow or deny clients whose MAC addresses are not listed in the "Control table."

When a wired client is allowed to "Connect" to the Wireless Barricade, it means that it has full access to the Internet and network resources.

When a wired client is not allowed to "Connect" to the Wireless Barricade, it means that it CAN communicate with the other clients on the wired LAN, but CANNOT:

- Connect to the Internet
- Use the Print Server function
- Communicate with the clients on the wireless LAN
- Use the Wireless Barricade's Web configuration

Association Control: The Association process is the exchange of information between wireless clients and a wireless access point to establish a link between them. A wireless client is capable of transmitting and receiving data to an access point only after the association process is sucessfully completed.

Association control allows an administrator to allow or deny wireless clients from linking to the Wireless Barricade. Check "Association control" to control which of the wireless clients will be able to "associate" to the wireless LAN. If a client is denied "association" to the wireless LAN, it means that the client can't send or receive any data through the Wireless Barricade. Choose "Allow" or "Deny" to allow or deny clients whose MAC addresses are not listed in the "Control table."

When a wireless client is allowed to "Associate" to the wireless LAN, and "Connect" to the Wireless Barricade, that means it can have full access to the Internet and network resources.

When a wireless client is NOT allowed to "Associate" to the wireless LAN, it means that it CANNOT:

- Communicate with any others clients on the LAN (neither wired nor wireless)
- Connect to the Internet
- Use the Print Server function
- Use the Wireless Barricade's Web configuration
- "Connect" to the Wireless Barricade

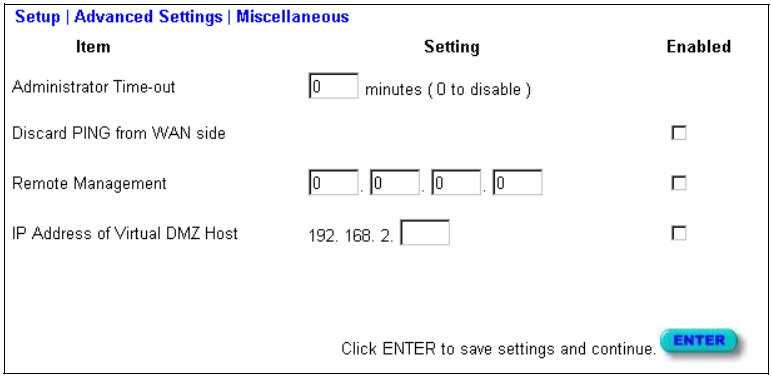
When a wireless client is allowed to "Associate" to the wireless LAN, but NOT "Connect" to the Wirelss Barricade, it means that it can communicate with others clients on the wireless LAN, but CANNOT:

- Communicate with any clients on the wired LAN
- Connect to the Internet
- Use the Print Server function
- Use the Wireless Barricade's Web configuration

Association control has no effect on wired clients.

Miscellaneous Settings – Misc

The Wireless Barricade also allows you set a timeout for administrator access, prevent external PINGs from causing security problems, set up remote management, and configure a Virtual DMZ Host.



Administrator Time-out – Enter a time-out setting in minutes for administrator access protection.

Discard PING from WAN side – You can enhance your network security by preventing any PING on the Barricade's WAN port from being routed to the network.

Remote Management – By default, management access is only available to users on your local network. However, you can also manage the Wireless Barricade from a remote host by adding the IP address of an administrator to this screen.

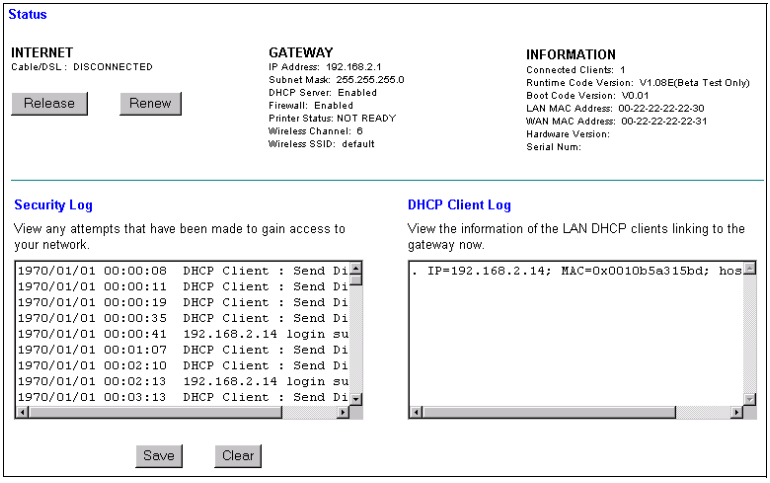
Note: If you specify an IP address of 0.0.0.0, any host can manage the Wireless Barricade.

Virtual DMZ Host – If you have a client PC that cannot run an Internet application properly from behind the NAT firewall or after configuring the Special Applications function, then you can open the client up to unrestricted two-way Internet access.

Enter the IP address of a DMZ host to this screen. Adding a client to the DMZ (Demilitarized Zone) may expose your local network to a variety of security risks, so only use this option as a last resort.

Viewing Network and Device Status

You can use the following screen to display the connection status for the WAN/WLAN/LAN interfaces, firmware and hardware version numbers, any illegal attempts to access your network, as well as information on all DHCP clients connected to your network.

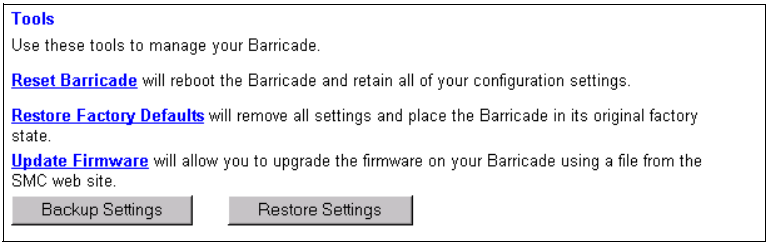


The following items are included in this screen:

Field	Description
INTERNET	Displays WAN connection type and status.
Release	Click on this button to release the WAN IP address.
Renew	Click on this button to renew the WAN IP address.
GATEWAY	Displays system IP settings, the status for DHCP, and Firewall services, as well as the wireless interface settings.
INFORMATION	Displays the number of attached clients, the firmware versions, the physical MAC address for each media interface, as well as the hardware version and serial number.

Field	Description
Security Log	Displays any illegal attempts to access your network.
Save	Click on this button to save the security log to a file.
Clear	Click on this button to clear the security log.
DHCP Client Log	Displays information on all DHCP clients on your network.

Using System Tools



You can use the "Tools" menu to reboot the Wireless Barricade, restore factory settings, or update firmware.

Note: If you use the Reset button on the front panel, the Wireless Barricade performs a power reset and restores the factory settings.

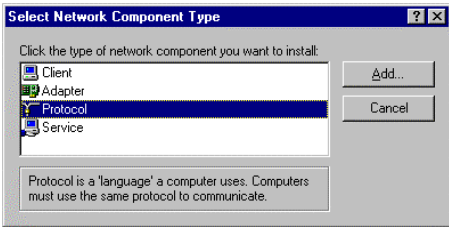
The "Backup Settings" button allows you to save your Wireless Barricade's current configuration to a file named "config.bin" on your PC. You can then click on the "Restore Settings" button to restore the saved configuration to the Barricade.

CHAPTER 5
CONFIGURING CLIENT TCP/IP

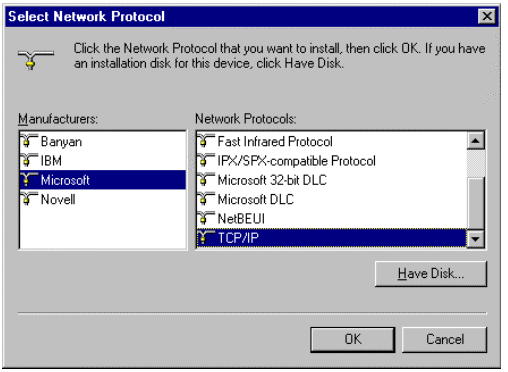
If you have not previously installed the TCP/IP protocol on your client PCs, refer to the following section. If you need information on how to configure a TCP/IP address on a PC, refer to "Setting TCP/IP to Work with the Barricade" on page 5-3.

Installing TCP/IP Protocol in Your PC

1. Click the *Start* button and choose *Settings*, then click *Control Panel*.
2. Double click the *Network* icon and select the *Configuration* tab in the Network window.
3. Click the *Add* button to add the network component to your PC.
4. Double click *Protocol* to add the TCP/IP protocol.



5. Select the *Microsoft* item in the manufacturers list. And choose *TCP/IP* in the Network Protocols. Click the *OK* button to return to the Network window.

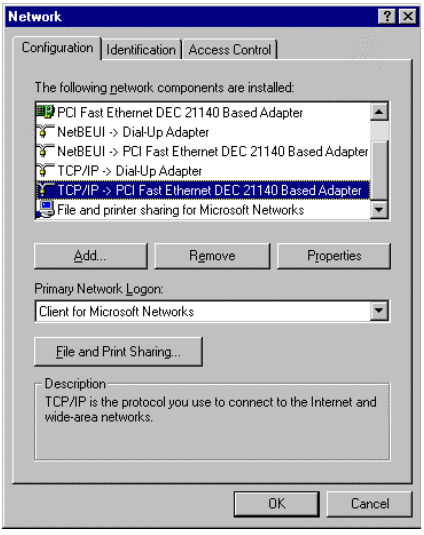


6. The TCP/IP protocol will be listed in the Network window. Click *OK* to complete the install procedure and restart your PC to enable the TCP/IP protocol.

Setting TCP/IP to Work with the Barricade

1. Click the *Start* button and choose *Settings*, then click *Control Panel*.

2. Double click the *Network* icon. Select the TCP/IP line that has been assigned to your network card in the *Configuration* tab of the Network window.

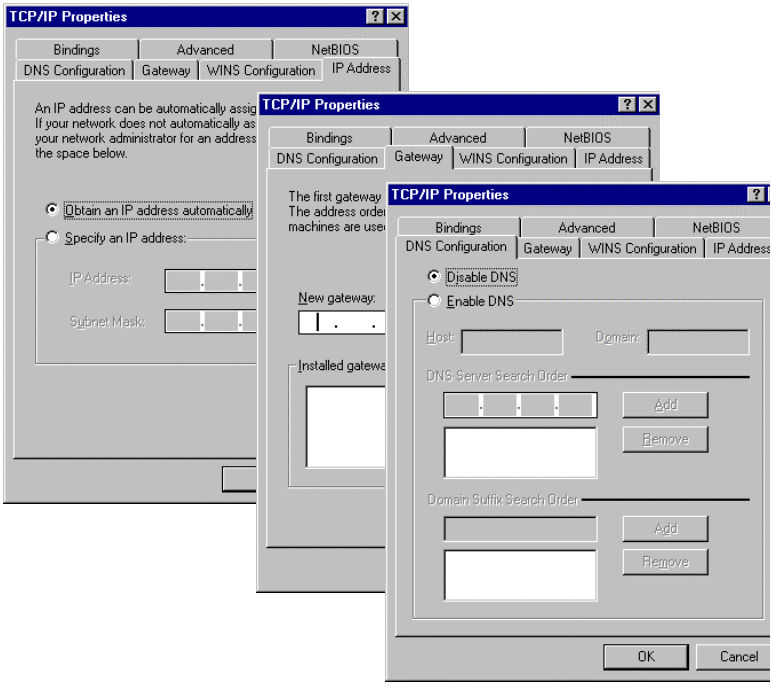


3. Click the *Properties* button to set the TCP/IP protocol for the Wireless Barricade.

4. You can dynamically assign TCP/IP address settings to a client, or you can manually configure a client with address settings to meet your specific network requirements. (Note that the default IP address of the Wireless Barricade is 192.168.2.1.)

Dynamic IP Allocation via a DHCP Server

Select *Obtain an IP address automatically* in the IP Address tab. Do not input any values under the *Gateway* tab, and choose *Disable DNS* in the *DNS Configuration* tab. These settings will be automatically configured by the DHCP server. Click *OK* and reboot your system to implement the changes.

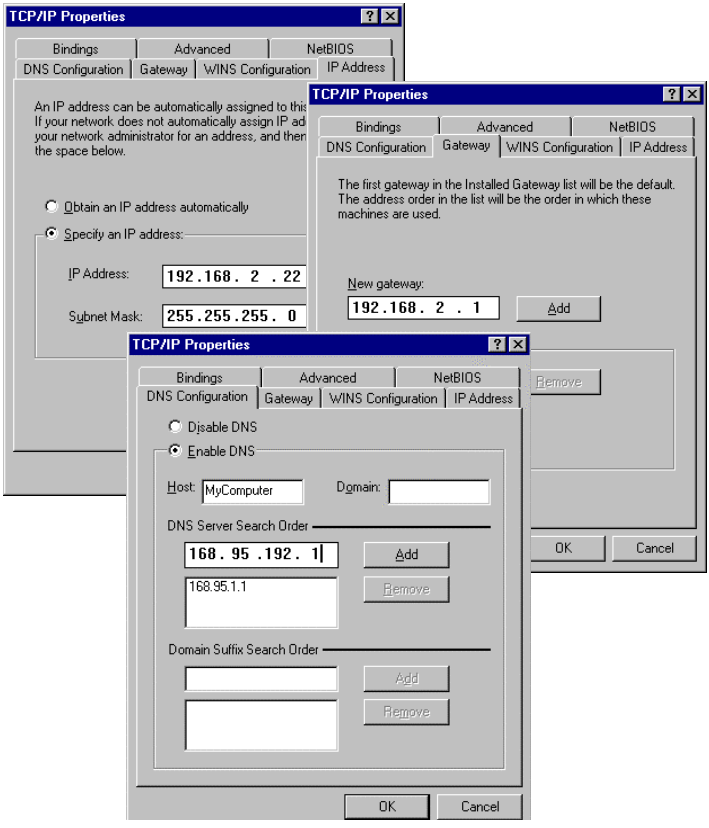


Manual IP Configuration

1. Select *Specify an IP address* in the *IP Address* tab. Select an IP address based on the default network 192.168.2.X (where X is between 1 and 254), and use 255.255.255.0 for the subnet mask.

2. In the *Gateway* tab, add the IP address of the Wireless Barricade (default: 192.168.2.1) in the *New gateway* field and click *Add*.

3. In the *DNS Configuration* tab, add the IP address for the Barricade and click *Add*. This automatically relays DNS requests to the DNS server(s) provided by your ISP. Otherwise, add specific DNS servers into the *DNS Server Search Order* field and click *Add*.



4. After finishing TCP/IP setup, click *OK*, and then reboot the computer. After that, set up other PCs on the LAN according to the procedures described above.

Verifying Your TCP/IP Connection

After installing the TCP/IP communication protocol and configuring an IP address in the same network with the Barricade, you can use the *Ping* command to check if your computer is successfully connected to the Wireless Barricade. The following example shows how the Ping procedure can be executed in an MS-DOS window. First, execute the *Ping* command:

```
ping 192.168.2.1
```

If the following messages appear:

```
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=2ms TTL=64
```

a communication link between your computer and the Wireless Barricade has been successfully established.

Otherwise, if you get the following messages,

```
Pinging 192.168.2.1 with 32 bytes of data:
Request timed out.
```

there may be something wrong in your installation procedure. Check the following items in sequence:

1. Is the Ethernet cable correctly connected between the Wireless Barricade and your computer?

   The LAN LED on the Wireless Barricade and the Link LED of the network card on your computer must be on.

2. Is TCP/IP properly configured on your computer?

   If the IP address of the Wireless Barricade is 192.168.2.1, the IP address of your PC must be from 192.168.2.2 - 192.168.2.254 and the default gateway must be 192.168.2.1.

If you can successfully Ping the Wireless Barricade, then you are now ready to connect to the Internet!

CHAPTER 6
CONFIGURING PRINTER SERVICES

If you want to use the print server built into the Wireless Barricade, then you must first install the Port Monitor program as described in the following section for Windows 95/98/ME/NT/2000.

To configure the Wireless Barricade Print Server for Windows 95/98/ME/NT/2000 or Unix, see "Configure the Print Server" on page 6-4.

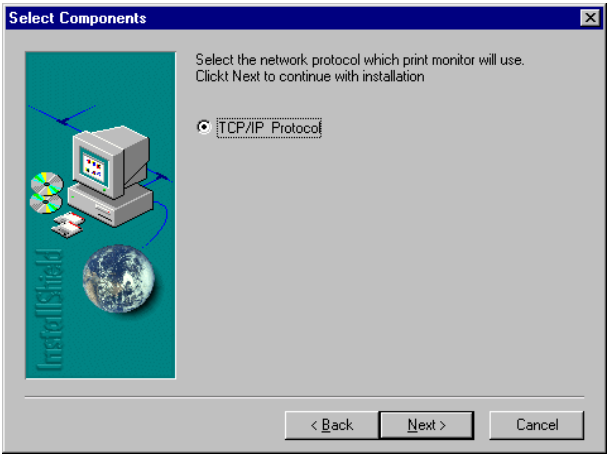
Install the Printer Port Monitor

Skip this section if you are using Unix.

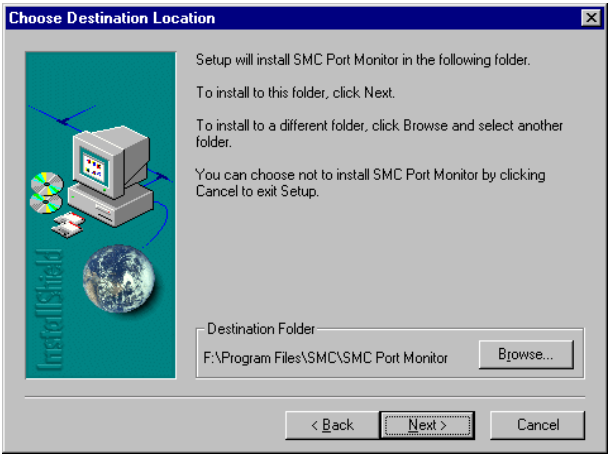
For Windows 95/98/ME/NT/2000 clients, you need to install the port monitor program as described in this section.

1. Insert the installation CD-ROM into your CD-ROM drive. Under the PrintSvr directory, run the "setup.exe" program. The SMC Port Monitor installation program advises you to close all other Windows programs currently running on your computer. Click *Next* to continue.

2. The next screen indicates that the print client uses TCP/IP network protocol to monitor print requests. Click *Next*.

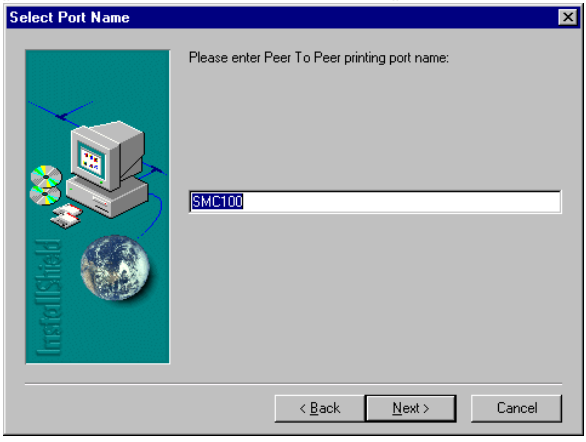


3. Select the destination folder and click on the *Next* button. The setup program will then begin to install the programs into the destination folder.

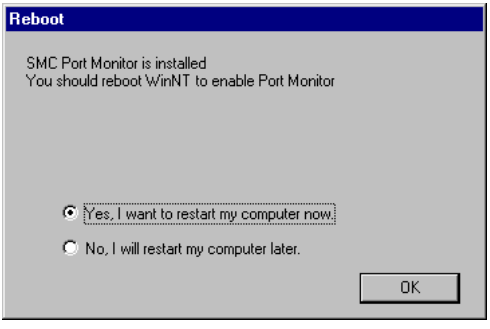


4. Select the Program Folder that will contain the program icon for uninstalling the port monitor, and then click *Next*.

5. Enter the printer port name that will be used to identify the port monitor in your system, and press *Next*.



6. When the setup program finishes installing the port monitor, select the item to restart your computer and then click *OK*.



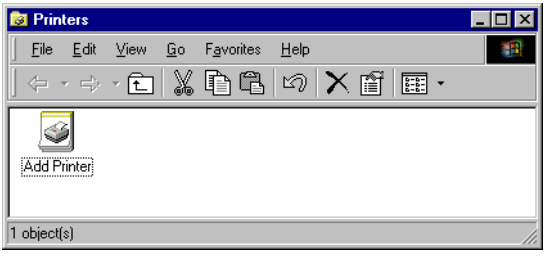
7. After rebooting your computer, add the Wireless Barricade print server to your system as described in the following section.

Configure the Print Server

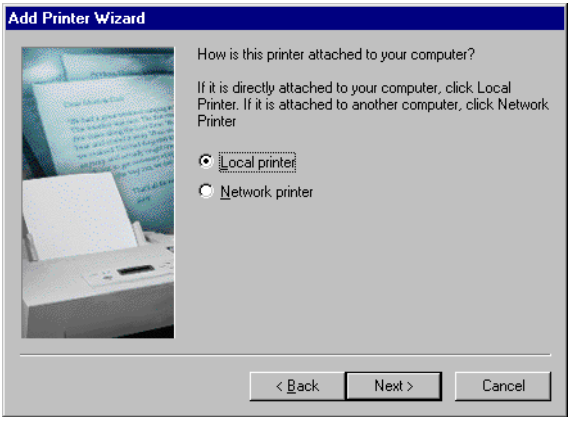
The Wireless Barricade's print server supports Microsoft Windows 95/98/ME/NT/2000 and Unix. If you are using Windows 95/98/ME/NT/2000, first install the port monitor as described in the previous section before adding the Wireless Barricade's print server to your operating system.

Configure the Network Printer in Windows 95/98/ME/2000

1. On a Windows 95/98/ME/2000 platform, open the Printers window in the *My Computer* menu, and double-click the *Add Printer* icon.

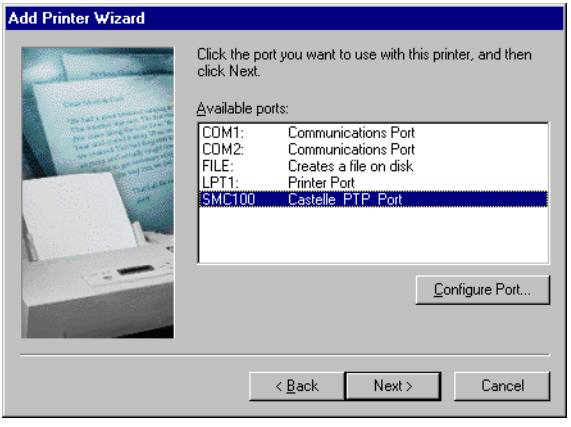


2. Follow the prompts to add a *Local printer* to your system.

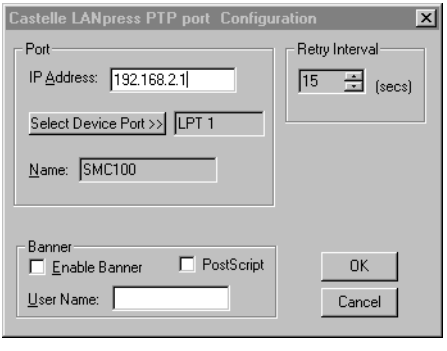


3. Specify the printer type attached to the Wireless Barricade.

4. Select the monitored port. The default port name is "SMC100" and then click the *Configure Port* button.



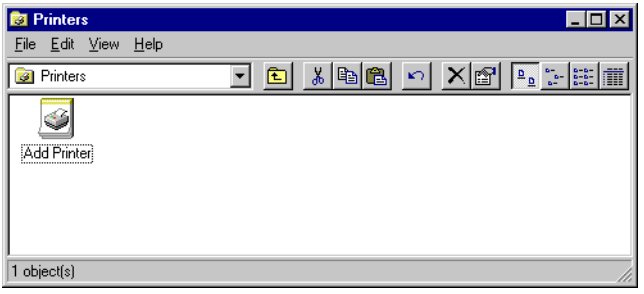
5. Enter the IP address of the Wireless Barricade and click *OK*, and then click *Next* in the Add Printer Wizard dialog box.



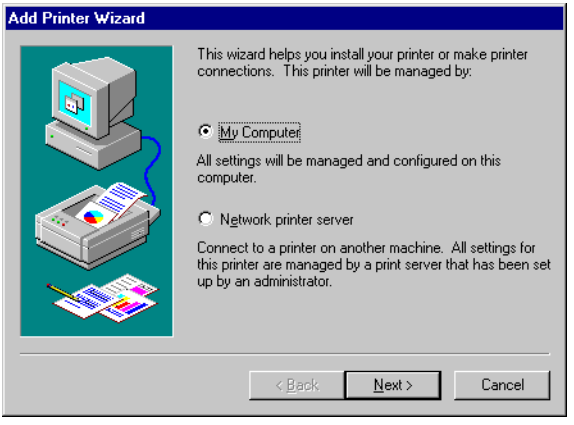
6. Continue following the prompts to finish installing the Wireless Barricade print server. The printer type you specified will now be added to your *Printers* menu.

Configure the Network Printer in Windows NT

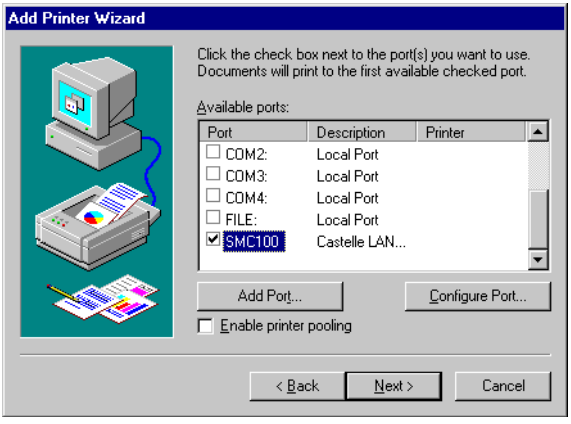
1. On a Windows NT platform, open the Printers window in the My Computer menu, and double-click the *Add Printer* icon.



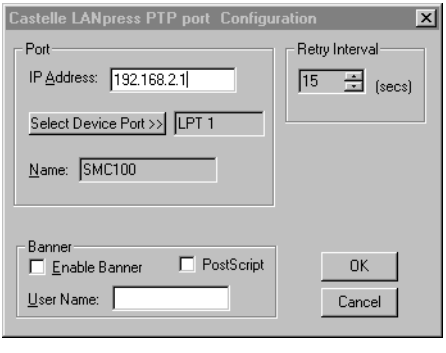
2. Follow the prompts to add a local printer to your system.



3. Select the monitored port. The default port name is "SMC100." Then click the *Configure Port* button.



4. Enter the IP address of the Wireless Barricade and click *OK*, and then click *Next* in the Add Printer Wizard dialog box.



5. Specify the printer type attached to the Wireless Barricade.

6. Continue following the prompts to finish installing the Wireless Barricade print server. The printer type you specified will now be added to your *Printers* menu.

Configure the Network Printer in Unix Systems

Follow the traditional configuration procedure on Unix platforms to set up the Wireless Barricade print server. The printer name is "lpt1."

APPENDIX A
TROUBLESHOOTING

This appendix describes common problems you may encounter and possible solutions. The Wireless Barricade can be easily monitored through panel indicators to identify problems. If you cannot resolve any connection problems after checking the indicators, then refer to the other sections in the following table.

Troubleshooting Chart	
Symptom	**Action**
LED Indicators	
Power LED is Off	• External power supply has failed or is disconnected. • Check connections between the Wireless Barricade, the external power supply, and the wall outlet. • If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or external power supply. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet. If you still cannot isolate the problem, then the external power supply may be defective. In this case, contact SMC Technical Support for assistance.

Troubleshooting Chart	
Symptom	**Action**
LED Indicators	
Link LED is Off	• Verify that the Wireless Barricade and attached device are powered on. • Be sure the cable is plugged into both the Wireless Barricade and the corresponding device. • Verify that the proper cable type is used and its length does not exceed specified limits. • Be sure that the network interface on the attached device is configured for the proper communication speed and duplex mode. • Check the adapter on the attached device and cable connections for possible defects. Replace any defective adapter or cable if necessary.
Network Connection Problems	
Cannot Ping the Wireless Barricade from the attached LAN, or the Wireless Barricade cannot Ping any device on the attached LAN	• Verify that IP addresses are properly configured. For most applications, you should use the Wireless Barricade's DHCP function to dynamically assign IP addresses to any host on the attached LAN. However, if you manually configure any IP addresses on the LAN, verify that the same network address (network component of the IP address) and subnet mask are used for both the Wireless Barricade and attached LAN devices. • Be sure the device you want to ping (or from which you are pinging) has been configured for TCP/IP.

Troubleshooting Chart	
Symptom	**Action**
Mobile users cannot access the Wireless Barricade	• Make sure that the Wireless Barricade and all mobile users are configured to use the same radio channel, wireless domain (SSID), and encryption keys. • Ensure that all mobile users are within range of the Wireless Barricade as specified in Appendix C.
Management Problems	
Cannot connect using the Web browser	• Be sure to have configured the Wireless Barricade with a valid IP address, subnet mask and default gateway. • Check that you have a valid network connection to the Wireless Barricade and that the port you are using has not been disabled. • Check network cabling between the management station and the Wireless Barricade.
Forgot or lost the password	• Press the RESET button on the rear panel to restore the factory defaults.
Printer Server	
The printer cannot print or prints garbage	• Make sure the parallel cable between the Wireless Barricade and printer is connected and is in good condition

APPENDIX B
CABLES

Ethernet Cable

Specifications

Cable Types and Specifications			
Cable	**Type**	**Max. Length**	**Connector**
10BASE-T	Cat. 3, 4, 5 100-ohm UTP	100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5 100-ohm UTP	100 m (328 ft)	RJ-45

Twisted-pair Cable

Caution: DO-NOT plug a phone jack connector into any RJ-45 port. Use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

For 10BASE-T/100BASE-TX connections, a twisted-pair cable must have two pairs of wires. Each wire pair is identified by two different colors. For example, one wire might be red and the other, red with white stripes. Also, an RJ-45 connector must be attached to both ends of the cable. All RJ-45 ports on the Wireless Barricade, except for the WAN port, support automatic MDI/MDI-X configuration. This means that you can use straight-through cable to attach the LAN ports to any network device. However, when connecting the WAN port to a broadband modem, you will need to use either straight-through or crossover cable, depending on the port type used on the modem.

Figure B-1 illustrates how the pins on the RJ-45 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.

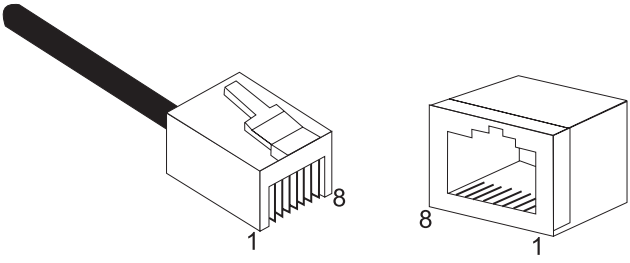


Figure B-1. RJ-45 Connector Pin Numbers

Straight-through Cable

Straight-Through RJ-45 Pin Assignments	
End 1	End 2
1 (TD+)	1 (TD+)
2 (TD-)	2 (TD-)
3 (RD+)	3 (RD+)
6 (RD-)	6 (RD-)

Pins 4, 5, 7 and 8 are not connected.

Crossover Cable

Crossover RJ-45 Pin Assignments	
End 1	End 2
1 (TD+)	3 (RD+)
2 (TD-)	6 (RD-)
3 (RD+)	1 (TD+)
6 (RD-)	2 (TD-)

Pins 4, 5, 7 and 8 are not connected.

RJ-45 Port Pin Assignments

All LAN ports on the Wireless Barricade support automatic MDI/ MDI-X configuration. This means that the pin signals in use will depend on whether the LAN port is operating in MDI or MDI-X mode. However, the WAN port is configured only for MDI-X mode.

Pin	MDI Signal Name*	MDI-X Signal Name*
1	Transmit Data (TD+)	Receive Data (RD+)
2	Transmit Data (TD-)	Receive Data (RD-)
3	Receive Data (RD+)	Transmit Data (TD+)
6	Receive Data (RD-)	Transmit Data (RD-)

Pins 4, 5, 7 and 8 are not connected.

* The "+" and "-" signs represent the polarity of the wires that make up each wire pair.

Serial Port Pin Assignments

The DB-9 serial port on the rear panel is used to connect the Wireless Barricade to an ISDN TA or PSTN modem. The pin assignments used to connect to this port are provided in the following tables.

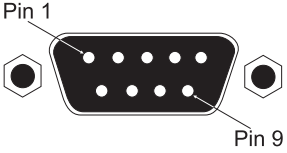


Figure B-2. DB-9 Serial Port Pin Numbers

DB-9 Port Pin Assignments

EIA Circuit	CCITT Signal	Description	Gateway's DB9 DTE Pin #	PC DB9 DTE Pin #	Modem DB25 DCE Pin #	Signal Direction DTE-DCE
CF	109	**DCD** (Data Carrier Detected)	1	1	8	<------
BB	104	**RxD** (Received Data)	2	2	3	<------
BA	103	**TxD** (Transmitted Data)	3	3	2	------>
CD	108.2	**DTR** (Data Terminal Ready)	4	4	20	------>
AB	102	**SG** (Signal Ground)	5	5	7	-------
CC	107	**DSR** (Data Set Ready)	6	6	6	<------
CA	105	**RTS** (Request-to-Send)	7	7	4	------>
CB	106	**CTS** (Clear-to-Send)	8	8	5	<------
CE	125	**RI** (Ring Indicator)	9	9	22	<------

Serial Port to 9-Pin COM Port on PC

Barricade's 9-Pin Serial Port	CCITT Signal	PC's 9-Pin COM Port
1 DCD	---------- DCD ----------	1
2 RXD	<--------- TXD ----------	3
3 TXD	---------- RXD ---------->	2
4 DTR	---------- DSR ---------->	6
5 SGND	---------- SGND ----------	5
6 DSR	---------- DTR ----------	4
7 RTS	---------- CTS ---------->	8
8 CTS	<--------- RTS ----------	7
9 RI	---------- RI ----------	9

Serial Port to 25-Pin DCE Port on Modem

Barricade's 9-Pin Serial Port	CCITT Signal	Modem's 25-Pin DCE Port
1	<--------- DCD ----------	8
2	<--------- RXD ----------	3
3	---------- TXD ---------->	2
4	---------- DTR ---------->	20
5	---------- SGND ----------	7
6	<--------- DSR ----------	6
7	---------- RTS ---------->	4
8	<--------- CTS ----------	5
9	<--------- RI ----------	22

Serial Port to 25-Pin DTE Port on PC

Barricade's 9-Pin Serial Port	Null Modem	PC's 25-Pin DTE Port
1 DCD	1 —— 1	8 DCD
2 RXD	2 —— 3	3 TXD
3 TXD	3 —— 2	2 RXD
4 DTR	4 —— 8	20 DTR
5 SGND	5 —— 20	7 SGND
6 DSR	6 —— 7	6 DSR
7 RTS	7 —— 4	4 RTS
8 CTS	9 —— 5	5 CTS
9 RI	20 —— 6	22 RI

Printer Port Pin Assignments

The DB-25 parallel port on the Wireless Barricade's rear panel is used to connect the Wireless Barricade to a printer. When a printer is attached to this port, any PCs attached to the Wireless Barricade's LAN ports can pass files to the printer. The pin assignments used to connect to the printer port are provided in the following table.

Figure B-3. DB-25 Printer Port Pin Numbers

DB-25 Printer Port Pin Assignments

Pin	Signal Name	Direction
1	-Strobe	To printer
2	+Data 0	To printer
3	+Data 1	To printer
4	+Data 2	To printer
5	+Data 3	To printer
6	+Data 4	To printer
7	+Data 5	To printer
8	+Data 6	To printer
9	+Data 7	To printer
10	- ACK	To print server
11	+ Busy	To print server
12	+ Paper End	To print server
13	+ Select	To print server
14	- Auto Feed	No connection
15	- Error	To print server
16	- Init	To printer
17	- Select	No connection
18-25	GND	Ground

APPENDIX C
SPECIFICATIONS

WAN Interface

10BASE-T, 1 RJ-45 port
Serial, 1 RS-232 DB-9 connector

LAN Interface

10BASE-T/100BASE-TX
3 RJ-45 ports

WLAN Interface

Standard: IEEE 802.11b, Direct Sequence Spread Spectrum (DSSS)
Transmission Rate: 11 Mbps, automatic fallback to 5.5, 2 or 1 Mbps
Maximum Channels: US/Canada: 11, Europe (ETSI): 13
Range: Up to 1000 ft (304.8m)
Frequency: (US/Canada/Europe) 2.400-2.4835 GHz
Sensitivity: 1, 2, 5.5 Mbps: -80 dBm; 11 Mbps: -76 dBm typical
Modulation: CCK, BPSK, QPSK
Encryption: 64-bit/128-bit WEP
Maximum Clients: 128

Printer Interface

Parallel
1 DB-25 printer port

Management

Web management

Advanced Features

Dynamic IP Address Configuration – DHCP, DNS
Firewall – Client privileges, hacker prevention and logging, NAT
Virtual Private Network – PPTP, L2TP, IPSec pass-through
Backup Internet Connection –
Dial-on-demand via secondary WAN port
Print server

Internet Standards

ARP (RFC 826), IP (RFC 791), ICMP (RFC 792), UDP (RFC 768), TCP (RFC 793), Telnet (RFC 854-859), MD5 (RFC 1321), BOOTP Extension (RFC 1497), PPP LCP Extension (RFC 1570), PPPoE (RFC 2516), NAT (RFC 1631), PPP (RFC 1661), HTML (RFC 1866), HTTP (RFC 1945), CHAP (RFC 1944), DHCP (RFC 2131), PPTP (RFC 2637)

Indicator Panel

WAN, WLAN, LAN (Link, Activity), Power

Dimensions

21.91 x 13.34 x 2.54 cm (8.625 x 5.25 x 1 in)

Weight

0.68 kg (1.5 lbs)

Input Power

5V DC (2.0A)

Maximum Current

0.40A RMS max.@110V, 0.87A RMS max.@240V

Power Consumption

10 Watts max. @ 100-240 VAC

Heat Dissipation

34.1 BTU/hr max. @ 100-240 VAC

Temperature

Operating 32 to 104°F (0 to 40°C)
Storage -40 to 158°F (-40 to 70°C)

Humidity

5% to 95% (noncondensing)

Compliances

CE Mark
Emissions
- FCC Class B
- VCCI Class B
- Industry Canada Class B
- EN55022 (CISPR 22) Class B
- C-Tick - AS/NZS 3548 (1995) Class B
- ETS 300 328
- MPT RCR STD-33
- EN 61000-3-2/3

Immunity
- EN 61000-4-2/3/4/5/6/8/11

Safety
- UL 1950
- EN60950 (TÜV)
- CSA 22.2 No. 950

Warranty

Limited Lifetime

APPENDIX D
ORDERING INFORMATION

Barricade Broadband Router Products	
SMC7004ABR	4-port Residential Gateway - WAN/LAN/Print Server
SMC7008ABR	8-port Residential Gateway - WAN/LAN/Print Server
SMC7004AWBR	4-port Residential Gateway - WAN/LAN/WLAN/Print Server

FOR TECHNICAL SUPPORT, CALL:

From U.S.A. and Canada (24 hours, 7 days a week)
(800) SMC-4-YOU; (949) 707-2400; (949) 707-2460 (Fax)
From Europe (8:00 AM - 5:30 PM UK Greenwich Mean Time)
44 (0) 1188 748740; 44 (0) 1189 748741 (Fax)

INTERNET

E-mail addresses:
techsupport@smc.com
european.techsupport@smc-europe.com
Driver updates:
http://www.smc.com/support.html
World Wide Web:
http://www.smc.com/
FTP Site:
ftp.smc.com

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