SMC Networks

SMCWBR14-G2
BARRICADE™ 54Mbps G Wireless Broadband Router

USER GUIDE

Wireless Broadband Router User's Guide

From SMC's line of award-winning connectivity solutions

SMC®
Networks
38 Tesla
Irvine, CA 92618
Phone: (949) 679-8000

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COMPLIANCES

Federal Communication Commission Interference Statement

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

- Reorient or relocate the receiving antenna.
- Increase the distance 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.

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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement:

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

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

IMPORTANT NOTE:

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

Industry Canada Statement

Operation is subject to the following two conditions:

1. this device may not cause interference and
2. this device must accept any interference, including interference that may cause undesired operation of the device

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

This device has been designed to operate with an antenna having a maximum gain of 1.5 dBi.

Any antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

EC Declaration of Conformity CE

SMC contact for these products in Europe is:

SMC Networks Europe,

Edificio Conata II,

Calle Fructuos Gelabert 6-8, 2o, 4a,

08970 - Sant Joan Despi,

Barcelona, Spain.

Marking by the above symbol indicates compliance with the Essential Requirements of the R&TTE Directive of the European Union (1999/5/EC). This equipment meets the following conformance standards:

EN 300 328-1 December 2001 V1.3.1

EN 300 328-2 December 2001 V1.2.1

EN 301 489-1 September 2001 V1.4.1

EN 301 489-17 September 2000 V1.2.1

EN 60950 January 2000

Countries of Operation & Conditions of Use in the European Community

This device is intended to be operated in all countries of the European Community. Requirements for indoor vs. outdoor operation, license requirements and allowed channels of operation apply in some countries as described below:

Note: The user must use the configuration utility provided with this product to ensure the channels of operation are in conformance with the spectrum usage rules for European Community countries as described below.

- This device requires that the user or installer properly enter the current country of operation in the command line interface as described in the user guide, before operating this device.
- This device will automatically limit the allowable channels determined by the current country of operation. Incorrectly entering the country of operation may result in illegal operation and may cause harmful interference to other system. The user is obligated to ensure the device is operating according to the channel limitations, indoor/outdoor restrictions and license requirements for each European Community country as described in this document.
- This device may be operated *indoors or outdoors* in all countries of the European Community using the 2.4 GHz band: Channels 1 - 13.

Declaration of Conformity in Languages of the European Community

English	Hereby, SMC Networks, declares that this Radio LAN device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	Valmistaja SMC Networks vakuuttaa täten että Radio LAN device tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart SMC Networks dat het toestel Radio LAN device in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG Bij deze SMC Networks dat deze Radio LAN device voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
French	Par la présente SMC Networks déclare que l'appareil Radio LAN device est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE

Swedish	Härmed intygar SMC Networks att denna Radio LAN device står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Danish	Undertegnede SMC Networks erklærer herved, at følgende udstyr Radio LAN device overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF
German	Hiermit erklärt SMC Networks, dass sich dieser/diese/dieses Radio LAN device in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi) Hiermit erklärt SMC Networks die Übereinstimmung des Gerätes Radio LAN device mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)
Greek	Με την παρουσα smc networks δηλωνει οτι radio LAN device συμμορφωνεται προσ τισ ουσιωδεισ απαιτησεισ και τισ λοιπεσ σΧετικεσ διαταξεισ τησ οδηγιασ 1999/5/εκ
Italian	Con la presente SMC Networks dichiara che questo Radio LAN device è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Spanish	Por medio de la presente SMC Networks declara que el Radio LAN device cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE
Portuguese	SMC Networks declara que este Radio LAN device está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

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 15 A, 125 V
240 Volts (Europe only)	Cord Set with H05VV-F cord having three conductors with minimum diameter of 0.75 mm2
	IEC-320 receptacle
	Male plug rated 10 A, 250 V

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 power adapter.

Information for Power Source

N11846

This unit is to be used with a class 2 or level 3 external power adapter, approved suitable for use in North American equipment installation, having an output voltage rating of 9 V DC, and output current rating of 1.0 A or equivalent. The external AC adapter must be complied with the requirements of LPS (Limited Power Sources).

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 7,5-8 V, 50-60 Hz nicht über oder unterschreiten sowie den minimalen Strom von 1 A nicht unterschreiten.

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

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CHAPTER 1
INTRODUCTION

Congratulations on your purchase of the BARRICADE 54Mbps g Wireless Broadband Router (SMCWBR14-G2). We are 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 router provides a convenient and powerful solution.

About the BARRICADE

The BARRICADE provides Internet access to multiple users by sharing a single-user account. This new technology provides many secure and cost-effective functions. It is simple to configure and can be up and running in minutes.

Features and Benefits

- Local network connection via a 10/100 Mbps Ethernet port
- DHCP for dynamic IP configuration, and DNS for domain name mapping
- Firewall with Stateful Packet Inspection, client privileges, intrusion detection, and NAT
- NAT also enables multi-user Internet access via a single user account, and virtual server functionality (providing protected access to Internet services such as web, FTP, email, and Telnet)
- VPN pass-through (IPSec-ESP Tunnel mode, L2TP, PPTP)
- User-definable application sensing tunnel supports applications requiring multiple connections
- Easy setup through a web browser on any operating system that supports TCP/IP
- Compatible with all popular Internet applications

Applications

Many advanced networking features are provided by this BARRICADE:

- **Wired and Wireless LAN**

  The BARRICADE provides connectivity to 10/100 Mbps devices, and wireless IEEE 802.11g compatible devices, making it easy to create a network in small offices or homes.

- **Internet Access**

  This device supports Internet access through an ADSL connection. Since many ADSL providers use PPPoE or PPPoA to establish communications with end users, the BARRICADE includes built-in clients for these protocols, eliminating the need to install these services on your computer.

- **Shared IP Address**

  The BARRICADE provides Internet access for up to 253 users via a single 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 the 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 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.

- **DMZ Host Support**

  Allows a networked computer to be fully exposed to the Internet. This function is used when NAT and firewall security prevent an Internet application from functioning correctly.

- **Security**

  The BARRICADE supports security features that deny Internet access to specified users, or filter all requests for specific services that the administrator does not want to serve. The BARRICADE's firewall also blocks 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. WPA/WPA2, WEP, SSID, and MAC filtering provide security over the wireless network.

- **Virtual Private Network (VPN Pass-through)**

  The BARRICADE supports three of the most commonly used VPN protocols – PPTP, L2TP, and IPSec. The VPN protocols supported by the 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.
  - L2TP merges the best features of PPTP and L2F – Like PPTP, L2TP requires that the ISP's routers support the protocol.
  - 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, verify that you have all the items listed under "Package Contents." If any of the items are missing or damaged, contact your local distributor. Also be sure that you have all the necessary cabling before installing the BARRICADE. After installing the BARRICADE, refer to "Configuring the BARRICADE" on page 4-1.

Package Contents

After unpacking the BARRICADE, check the contents of the box to be sure you have received the following components:

- BARRICADE 54Mbps g Wireless Broadband Router (SMCWBR14-G2)
- Power adapter
- One CAT-5 Ethernet cable (RJ-45)
- One documentation CD
- Quick Install Guide

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.

System Requirements

You must meet the following minimum requirements:

- Internet access from your local telephone company or Internet Service Provider (ISP) using a DSL modem or cable modem.
- A computer with a CD-ROM drive
- Windows (98 or later), MacOS (9.x)
- An up to date web browser:
    - Internet Explorer 5.5 or later
    - Mozilla 1.7/Firefox 1.0 or later

Hardware Description

The BARRICADE connects to the Internet or to a remote site using its WAN RJ-45 port linked to a modem. It also can be connected directly to your PC or to a local area network using the Fast Ethernet LAN port.

Access speed to the Internet depends on your service type. Full-rate ADSL provides up to 8 Mbps downstream and 1 Mbps upstream. G.lite (or splitterless) ADSL provides up to 1.5 Mbps downstream and 512 kbps upstream. However, you should note that the actual rate provided by specific service providers may vary dramatically from these upper limits.

Data passing between devices connected to your local area network can run at up to 100 Mbps over the Fast Ethernet port and 54 Mbps over the built-in wireless network adapter.

The BARRICADE includes an LED display on the front panel for system power and port indications that simplifies installation and network troubleshooting.

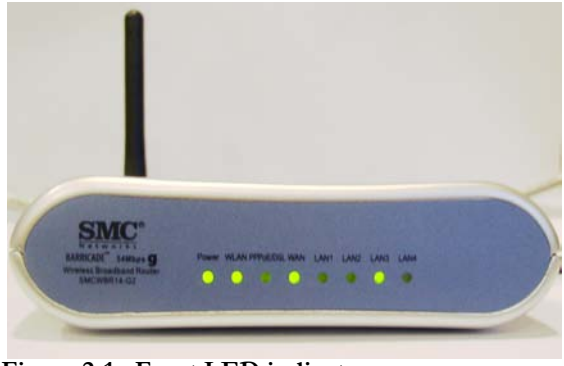


Figure 2-1. Front LED indicators

The power and port LED indicators on the front panel are illustrated by the following table.

LED	Status	Description
Power	On	The BARRICADE is receiving power. Normal operation.
	Off	Power off or failure.
WLAN	On	WLAN link.
	Flashing	The BARRICADE is sending or receiving data via WLAN.
	Off	No WLAN link.
PPPoE/DSL	On	PPPoE/DSL connection is functioning correctly.
	Flashing	The BARRICADE is sending or receiving data via PPPoE/DSL link.
	Off	PPPoE/DSL connection is not established.
WAN	On	WAN link.
	Off	No WAN link.

LED	Status	Description
LAN 1~4	On	Ethernet link.
	Flashing	The LAN port is sending or receiving data.
	Off	No Ethernet link.

The following figure and table shows the rear panel of the BARRICADE.

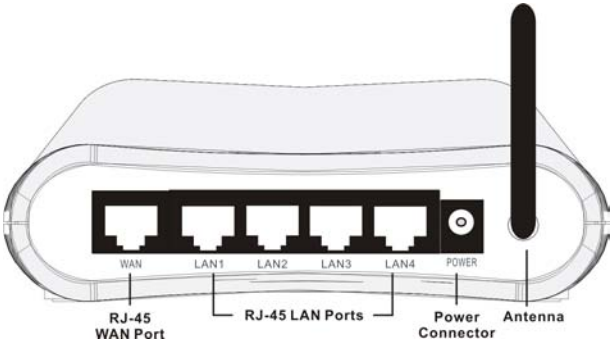


Figure 2-2. Rear Panel

Item	Description
WAN Port	Connect your WAN line to this port. (RJ-45)
LAN Ports	Fast Ethernet ports (RJ-45). Connect devices on your local area network to these ports (i.e., a PC, hub, switch or IP set top box).
Power Inlet	Connect the included power adapter to this inlet. **Warning**: Using the wrong type of power adapter may cause damage.
Antenna	Antenna is connected here.

ISP Settings

Please collect the following information from your ISP before setting up the BARRICADE:

- ISP account user name and password
- Protocol, encapsulation and VPI/VCI circuit numbers
- DNS server address
- IP address, subnet mask and default gateway (for fixed IP users only)

Connect the System

Desktop Installation

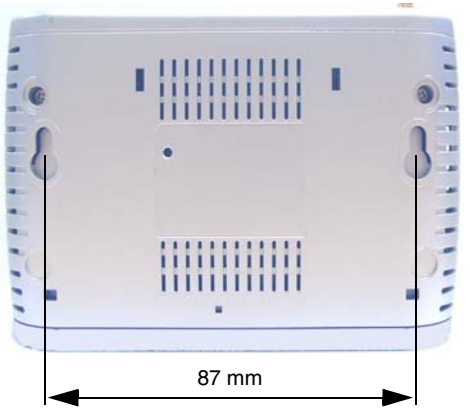
The BARRICADE can be positioned on any convenient flat surface in your office or home. No special wiring or cooling requirements are needed. You should, however, comply with the following guidelines:

- Keep the BARRICADE away from any heating devices.
- Do not place the 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 BARRICADE.

Wall-Mount Installation

There are two wall-mount holes at the bottom of the BARRICADE. Before drilling two holes into the wall, make sure the holes are 87 mm apart.



1. Choose a suitable location for the BARRICADE.

Note: It should be accessible for installing, cabling and maintaining the device.

2. Measure the distance of the two wall-mount holes.
3. Drill two holes into the wall.
4. Insert a screw into each hole.

Note: Leave 5 mm exposed of the screw head.

5. Attach the BARRICADE to the wall with two wall-mount slots, and then slide the device down until the screws fit firmly into the slots of the device.

Connecting the BARRICADE to your LAN

The four LAN ports on the BARRICADE 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.

Use RJ-45 cables to connect any of the four LAN ports on the BARRICADE to an Ethernet adapter on your PC. Otherwise, cascade any of the 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 connector, be sure the tab on the connector clicks into position to ensure that it is properly seated.

Warning: Do not plug a phone jack connector into an RJ-45 port. This may damage the 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 Ethernet ports. 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 length does not exceed 100 meters (328 feet).

Connect the Power Adapter

Plug the power adapter into the power socket on the side panel of the BARRICADE, and the other end into a power outlet.

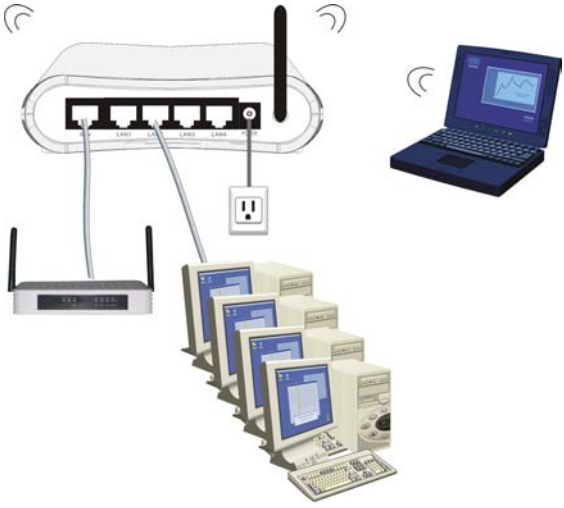
Check the power indicator on the front panel is lit. If the power indicator is not lit, refer to "Troubleshooting" on page A-1.

In case of a power input failure, the BARRICADE will automatically restart and begin to operate once the input power is restored.

If the BARRICADE is properly configured, it will take about 30 seconds to establish a connection with the ADSL service provider after powering up.

Application Example

The following diagram shows a typical network application.



CHAPTER 3
CONFIGURING THE CLIENT PC

After completing hardware setup by connecting all your network devices, you need to configure your computer to connect to the BARRICADE. You can either configure your computer to automatically obtain IP settings (DHCP) or manually configure IP address settings (Static IP).

Depending on your operating system see:

"Windows 2000" on page 3-3,

"Windows XP" on page 3-9,

or

"Configuring Your Macintosh Computer" on page 3-15.

TCP/IP Configuration

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

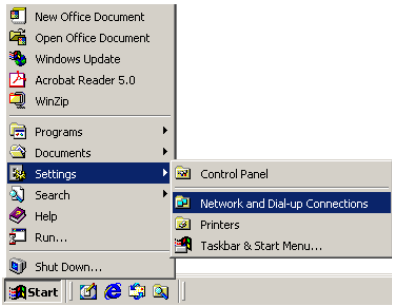
IP Address: 192.168.2.1
Subnet Mask: 255.255.255.0

Note: These settings can be changed to fit your network requirements, but you must first configure at least one computer to access the BARRICADE's web configuration interface in order to make the required changes. (See "Configuring the BARRICADE" on page 4-1 for instructions on configuring the BARRICADE.)

Windows 2000

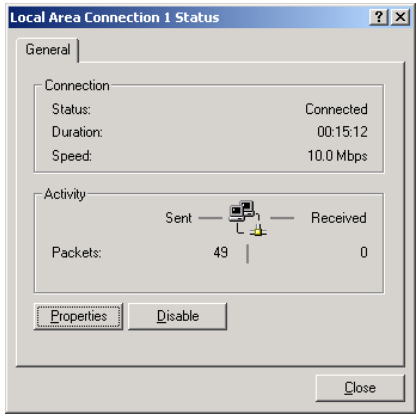
DHCP IP Configuration

1. On the Windows desktop, click **Start**/**Settings**/**Network and Dial-Up Connections**.

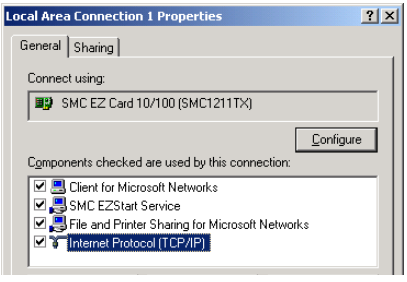


2. Click the icon that corresponds to the connection to your BARRICADE.

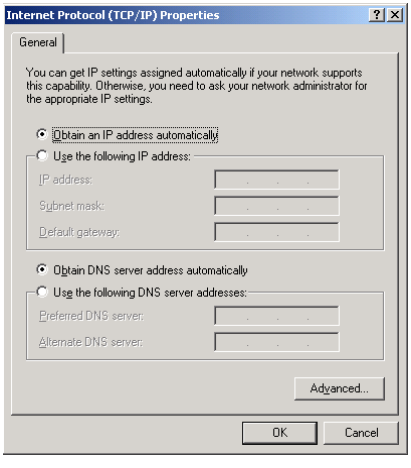
3. The connection status screen will open. Click **Properties**.



4. Double-click **Internet Protocol (TCP/IP)**.



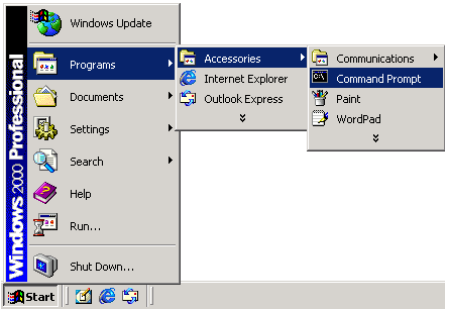
5. If **Obtain an IP address automatically** and **Obtain DNS server address automatically** are already selected, your computer is already configured for DHCP. If not, select these options now and click **OK**.



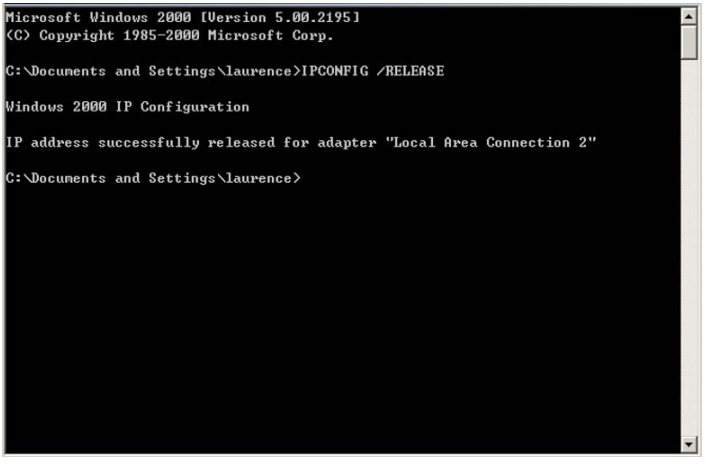
Obtain IP Settings From Your BARRICADE

Now that you have configured your computer to connect to your BARRICADE, it needs to obtain new network settings. By releasing old DHCP IP settings and renewing them with settings from your BARRICADE, you can verify that you have configured your computer correctly.

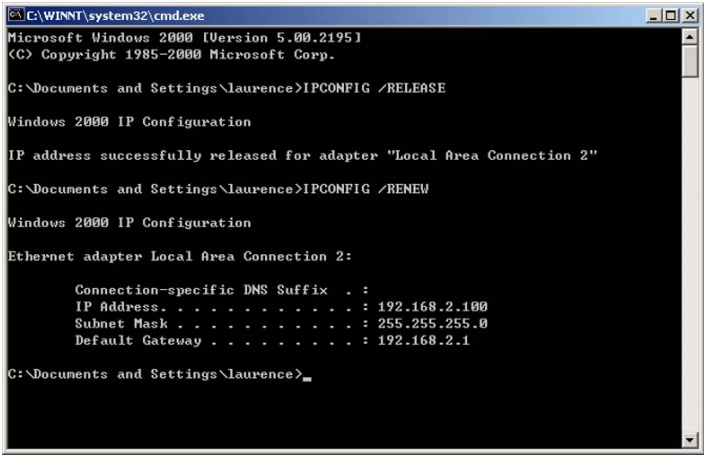
1. On the Windows desktop, click **Start**/**Programs**/**Accessories**/**Command Prompt**.



2. In the Command Prompt window, type "IPCONFIG /RELEASE" and press the **Enter** key.



3. Type "IPCONFIG /RENEW" and press the **Enter** key. Verify that your IP Address is now **192.168.2.xxx**, your Subnet Mask is **255.255.255.0** and your Default Gateway is **192.168.2.1**. These values confirm that your BARRICADE is functioning correctly.

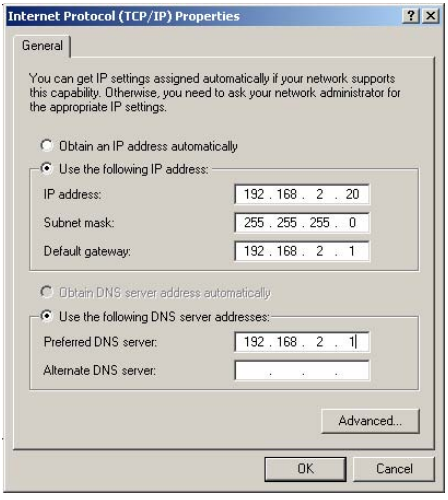


4. Type "EXIT" and press the **Enter** key to close the Command Prompt window.

Manual IP Configuration

1. Follow steps 1-4 in "DHCP IP Configuration" on page 3-3.

2. Select **Use the following IP address**. Enter an IP address based on the default network **192.168.2.x** (where x is between 2 and 254), and use **255.255.255.0** for the subnet mask. Use **192.168.2.1** for the Default gateway field.



3. Select **Use the following DNS server addresses**.

4. Enter the IP address for the BARRICADE in the Preferred DNS server field. This automatically relays DNS requests to the DNS server(s) provided by your ISP. Otherwise, add a specific DNS server into the Alternate DNS Server field and click **OK** to close the dialog boxes.

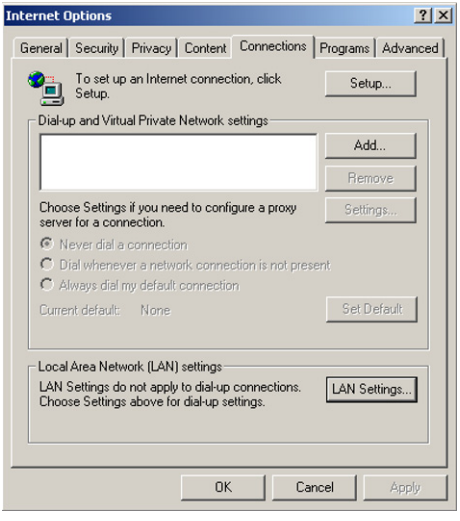
5. Record the configured information in the following table.

TCP/IP Configuration Setting	
IP Address	_____._____._____._____
Subnet Mask	_____._____._____._____
Preferred DNS Server	_____._____._____._____
Alternate DNS Server	_____._____._____._____
Default Gateway	_____._____._____._____

Disable HTTP Proxy

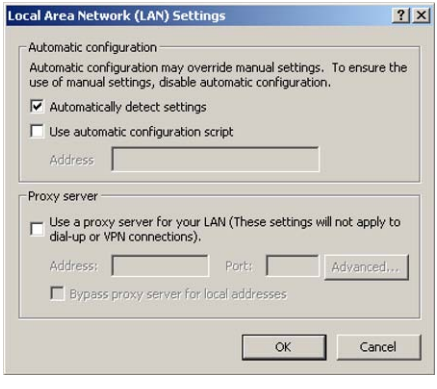
You need to verify that the "HTTP Proxy" feature of your web browser is disabled. This is so that your browser can view the BARRICADE's HTML configuration pages.

1. To disable the proxy in Internet Explorer, click **Tools**. Click **Internet Options...** and then the **Connections** tab, shown on the right. In the Local Area Network (LAN) settings section, click **LAN Settings...** to display the Local Area Network (LAN) Settings pop-up window below.



2. In the Proxy server section, ensure the **Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections)** check box is not ticked.

3. Click **OK**.



Windows XP

DHCP IP Configuration

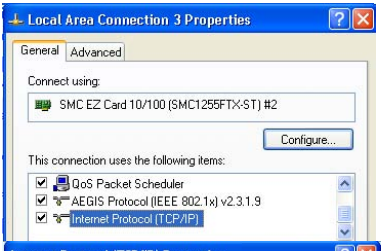
1. On the Windows desktop, click **Start/Control Panel**.

2. In the Control Panel window, click **Network and Internet Connections**.

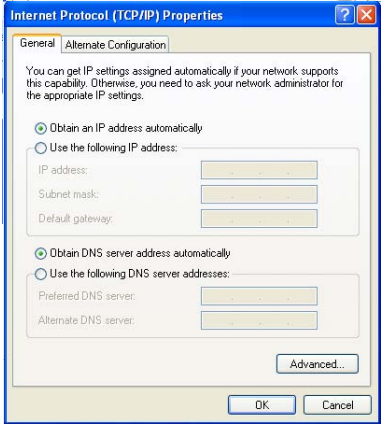
3. The Network Connections window will open. Locate and double-click the **Local Area Connection** icon for the Ethernet adapter that is connected to the BARRICADE.

4. In the connection status screen, click **Properties**.

5. Double-click **Internet Protocol (TCP/IP)**.



6. If **Obtain an IP address automatically** and **Obtain DNS server address automatically** are already selected, your computer is already configured for DHCP. If not, select these options now and click **OK**.

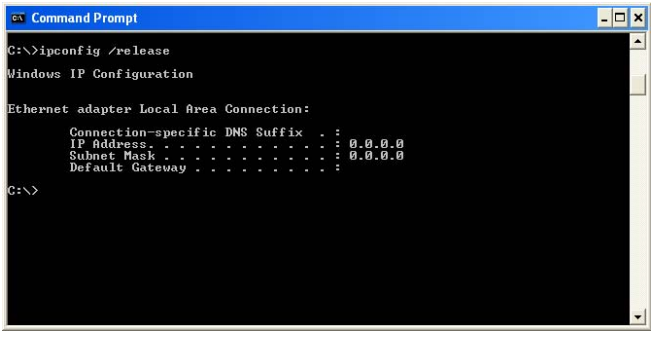


Obtain IP Settings From Your BARRICADE

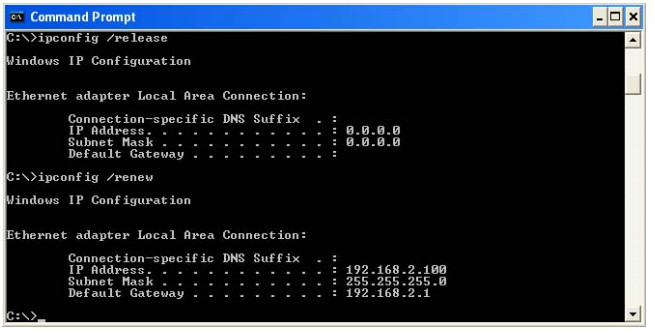
Now that you have configured your computer to connect to your BARRICADE, it needs to obtain new network settings. By releasing old DHCP IP settings and renewing them with settings from your BARRICADE, you can verify that you have configured your computer correctly.

1. On the Windows desktop, click **Start**/**Programs**/**Accessories**/**Command Prompt**.

2. In the Command Prompt window, type "IPCONFIG /RELEASE" and press the **Enter** key.



3. Type "IPCONFIG /RENEW" and press the **Enter** key. Verify that your IP Address is now **192.168.2.xxx**, your Subnet Mask is **255.255.255.0** and your Default Gateway is **192.168.2.1**. These values confirm that your BARRICADE is functioning correctly.



4. Type "EXIT" and press the **Enter** key to close the Command Prompt window.

Your computer is now configured to connect to the BARRICADE.

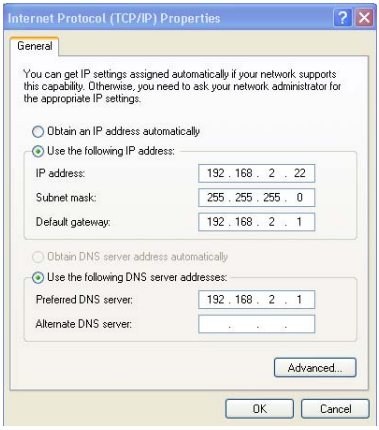
Manual IP Configuration

1. Follow steps 1-5 in "DHCP IP Configuration" on page 3-9.

2. Select **Use the following IP Address**.

3. Enter an IP address based on the default network **192.168.2.x** (where x is between 2 and 254), and use **255.255.255.0** for the subnet mask. Use **192.168.2.1** for the Default gateway field.

4. Select **Use the following DNS server addresses**.



5. Enter the IP address for the BARRICADE in the Preferred DNS server field. This automatically relays DNS requests to the DNS server(s) provided by your ISP. Otherwise, add a specific DNS server into the Alternate DNS Server field and click **OK** to close the dialog boxes.

6. Record the configured information in the following table.

TCP/IP Configuration Setting	
IP Address	_____._____._____._____
Subnet Mask	_____._____._____._____
Preferred DNS Server	_____._____._____._____
Alternate DNS Server	_____._____._____._____
Default Gateway	_____._____._____._____

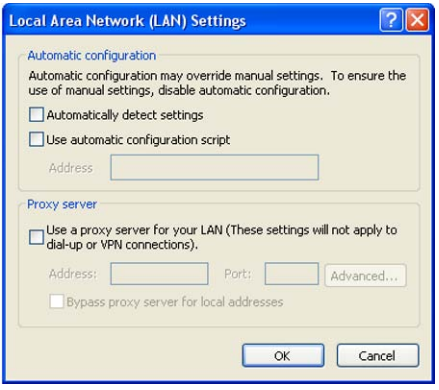
Disable HTTP Proxy

You need to verify that the "HTTP Proxy" feature of your web browser is disabled. This is so that your browser can view the BARRICADE's HTML configuration pages.

1. To disable the proxy in Internet Explorer, click **Tools**. Click **Internet Options...** and then the **Connections** tab, shown on the right. In the Local Area Network (LAN) settings section, click **LAN Settings...** to display the Local Area Network (LAN) Settings pop-up window below.

2. In the Proxy server section, ensure the **Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections)** check box is not ticked.

3. Click **OK**.



Configuring Your Macintosh Computer

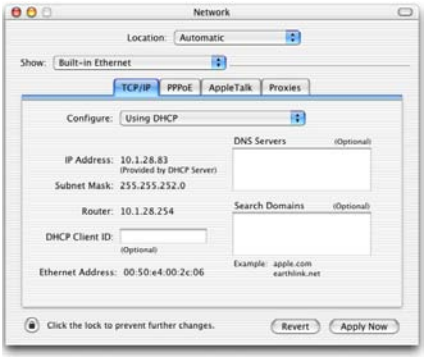
You may find that the instructions here do not exactly match your operating system. This is because these steps and screen shots were created using Mac OS 10.2. Mac OS 7.x and above are similar, but may not be identical to Mac OS 10.2.

Follow these instructions:

1. Pull down the **Apple Menu**. Click **System Preferences**.

2. Double-click the **Network** icon in the Systems Preferences window.

3. If **Using DHCP Server** is already selected in the Configure field, your computer is already configured for DHCP. If not, select this option.



4. Your new settings are shown in the TCP/IP tab. Verify that your IP Address is now **192.168.2.xxx**, your Subnet Mask is **255.255.255.0** and your Default Gateway is **192.168.2.1**. These values confirm that your BARRICADE is functioning.

5. Close the Network window.

Now your computer is configured to connect to the BARRICADE.

Disable HTTP Proxy

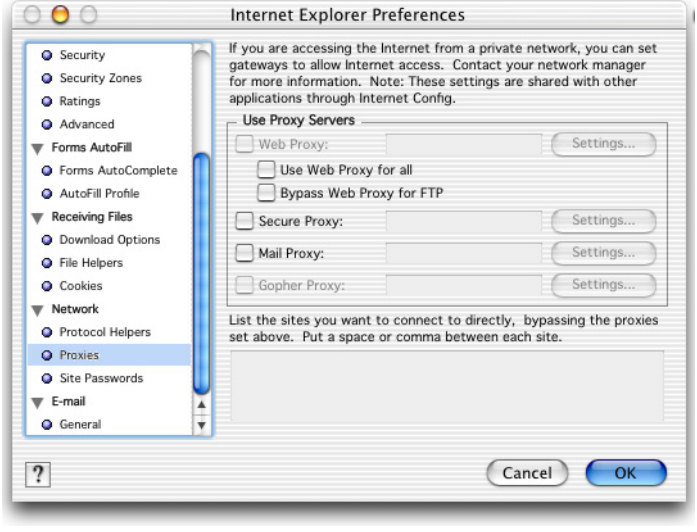
You need to verify that the "HTTP Proxy" feature of your web browser is disabled. This is so that your browser can view the BARRICADE's HTML configuration pages. The following steps are for Internet Explorer.

Internet Explorer

1. Open Internet Explorer and click the **Stop** button. Click **Explorer**/**Preferences**.

2. In the Internet Explorer Preferences window, under Network, select **Proxies**.

3. Uncheck all check boxes and click **OK**.



CHAPTER 4
CONFIGURING THE BARRICADE

After you have configured TCP/IP on a client computer, use a web browser to configure the BARRICADE. The BARRICADE can be configured by any Java-supported browser such as Internet Explorer 5.5 or above. Using the web management interface, you can configure the BARRICADE and view statistics to monitor network activity.

To access the BARRICADE's management interface, enter the IP address of the BARRICADE in your web browser:
http://192.168.2.1
(The BARRICADE automatically switches to Port 80 for management access.)

Navigating the Web Browser Interface

The BARRICADE's management interface consists of a Setup Wizard, a Home Network Settings section, a Security section and an Advanced Settings section.

Setup Wizard: Use the Setup Wizard for quick and easy configuration of your Internet connection and basic LAN settings. Go to "Setup Wizard" on page 4-5.

Home Network Settings: Use the Home Network Settings section to configure your LAN, WAN and wireless settings. Go to "Home Network Settings" on page 4-14.

Security: In this section, you can easily configure your wireless security settings. Go to "Security" on page 4-29.

Advanced Settings: Advanced Settings supports more advanced functions like NAT, system maintenance and UPnP. Go to "Advanced Settings" on page 4-53.

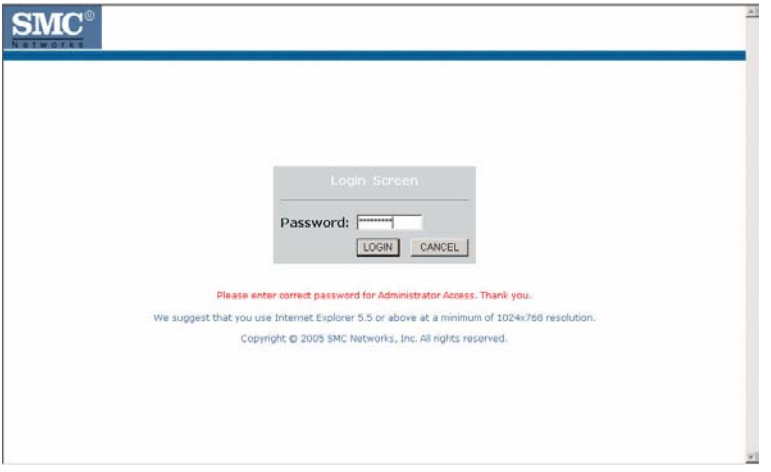
Making Configuration Changes

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 **Apply** or **Save Settings** or **NEXT** button at the bottom of the page to enable the new setting.

Note: To ensure proper screen refresh after a command entry, be sure that Internet Explorer 5.5 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**.

Login Screen

The Login screen automatically appears first.



Enter the default password "smcadmin" and then click **LOGIN**.

Note: Your password is case sensitive.

Setup Wizard

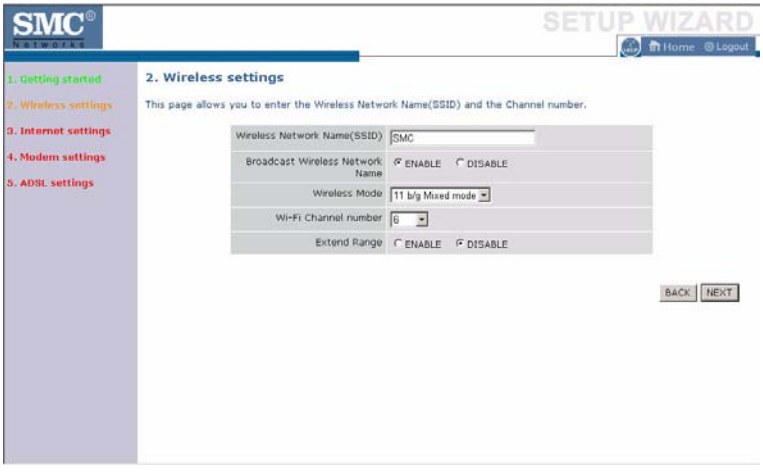
Getting Started

The Setup Wizard automatically appears by clicking on the **Setup Wizard** button of the left-hand menu. The first item in the Setup Wizard is Getting Started.

Simply click **NEXT** to proceed to the following screen and configure your Wireless Settings.

Wireless Settings

Enter your wireless network settings on this page. You must specify a common radio channel and SSID (Service Set ID) to be used by the BARRICADE and all of its wireless clients. Be sure you configure all of its clients to the same value. For security purposes, you should change the default SSID immediately.

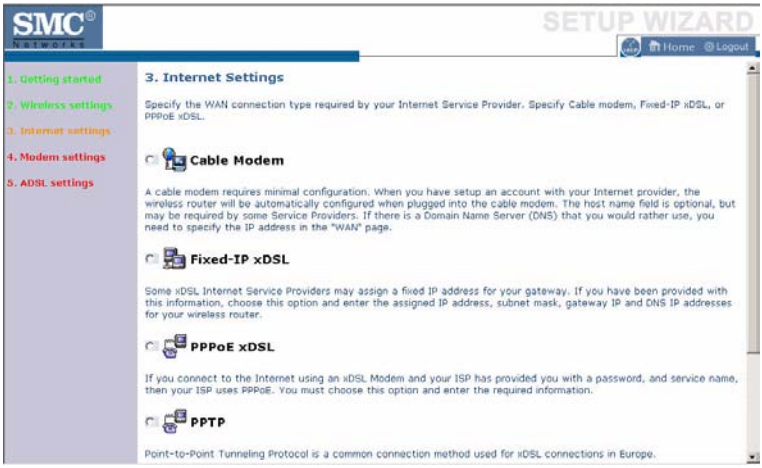


Parameter	Description
Wireless Network Name (SSID)	The Service Set ID (SSID) is the name of your wireless network. The SSID must be the same on the BARRICADE and all of its wireless clients. (Default: SMC)
Broadcast Wireless Network Name	Enable or disable the broadcasting of the SSID. If you disable broadcast of the SSID, only devices that have the correct SSID can connect. This nullifies the wireless network "discovery" feature of some products such as Windows XP. (Default: Enable)
Wireless Mode	This device supports the following modes: 11g only, 11b only, and 11b/g mixed mode. (Default: 11b/g Mixed mode)

Parameter	Description
Wi-Fi Channel Number	The radio channel used by the BARRICADE and its clients to communicate with each other. This channel must be the same on the BARRICADE and all of its wireless clients. The BARRICADE will automatically assign itself a radio channel, or you may select one manually. (Default channel: 6)
Extend Range	Increases the range of the BARRICADE. (Default: Disable)

Internet Settings

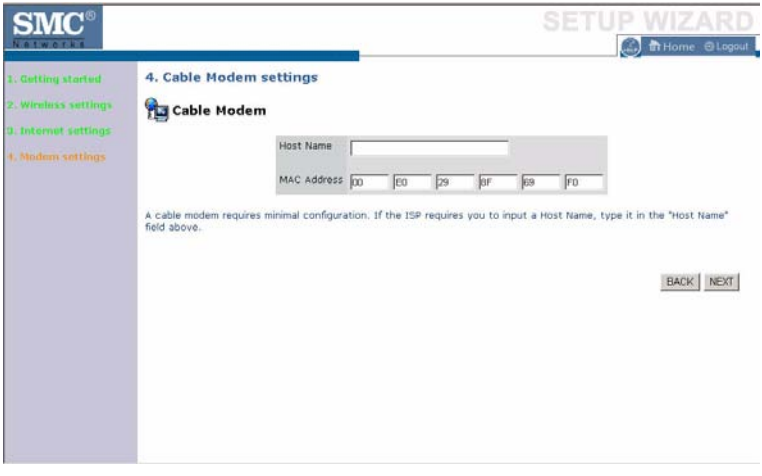
Specify the WAN connection type required by your Internet Service Provider. Specify Cable modem, Fixed-IP xDSL, PPPoE xDSL, PPTP or BigPond.



Select your connection type to proceed. Click **BACK** to go back and change your settings.

Cable Modem Settings

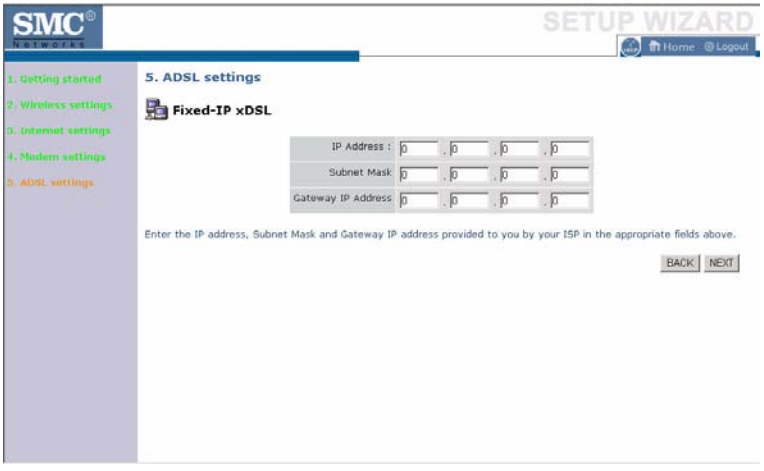
If the ISP requires you to input a Host Name, type it in the Host Name field. The MAC Address field will be filled automatically.



Click **NEXT** to proceed, or **BACK** to change your settings.

ADSL Settings - Fixed-IP xDSL

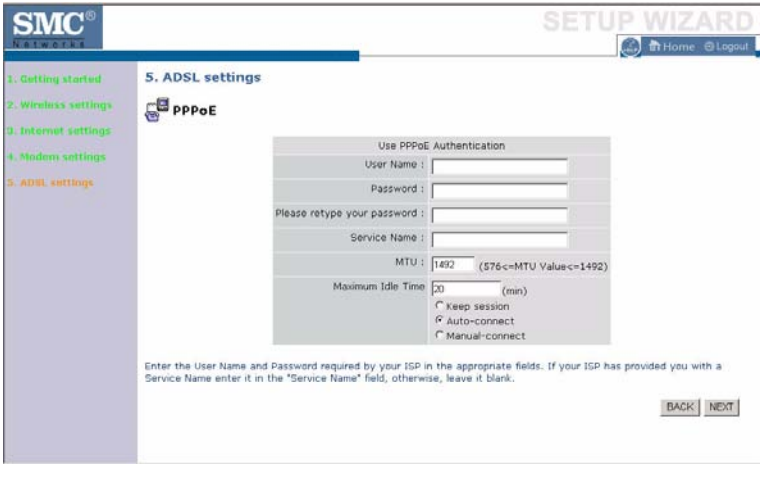
Enter the IP address, Subnet Mask, and Gateway IP address provided to you by your ISP in the appropriate fields below.



Click **NEXT** to proceed, or **BACK** to change your settings.

ADSL Settings - PPPoE

Enter the User Name and Password required by your ISP in the appropriate fields. If your ISP has provided you with a Service Name enter it in the Service Name field, otherwise, leave it blank. Leave the Maximum Transmission Unit (MTU) at the default value (1454) unless you have a particular reason to change it. Enter the maximum idle time for the Internet connection. After this time has been exceeded the connection will be terminated. Check **Keep session** to keep the session alive. Check the **Auto-connect** check box to automatically re-establish the connection as soon as you attempt to access the Internet again. Check the **Manual-connect** check box to manually re-establish the connection.

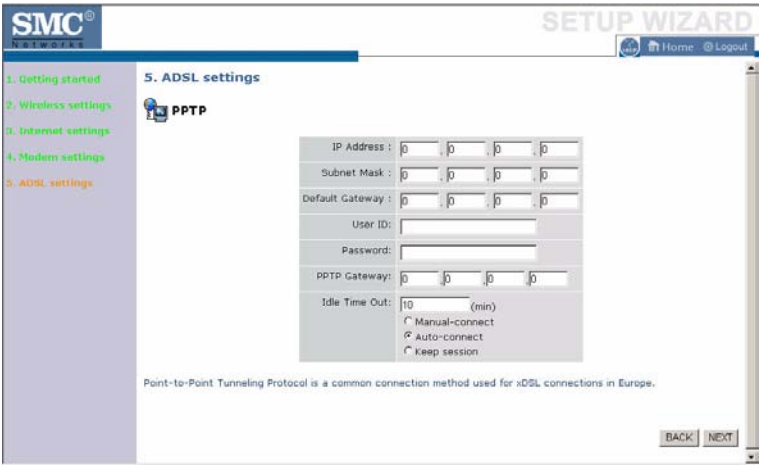


Click **NEXT** to proceed, or **BACK** to change your settings.

Note: Clicking **NEXT** will not automatically connect the BARRICADE to the Internet. The BARRICADE will only connect when you explicitly request it to, for example, by launching your web browser.

ADSL Settings - PPTP

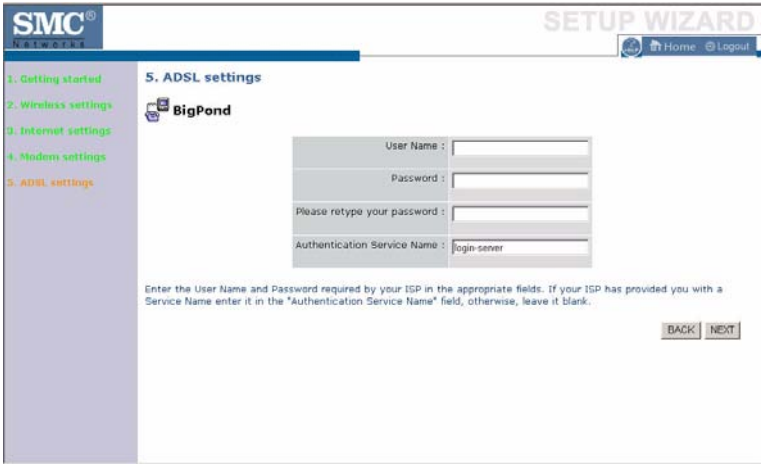
Enter the User ID and Password required by your ISP in the appropriate fields. Enter the Idle Time Out for the Internet connection. This is the period of time for which the connection to the Internet is maintained during inactivity. The default setting is 10 minutes. If your ISP charges you by the minute, you should change the Idle Time Out to one minute. After the Idle Time Out has expired, set the action you wish the BARRICADE to take. You can tell the device to connect manually or automatically as soon as you try to access the Internet again, or to keep the session alive.



Click **NEXT** to proceed, or **BACK** to change your settings.

ADSL Settings - BigPond

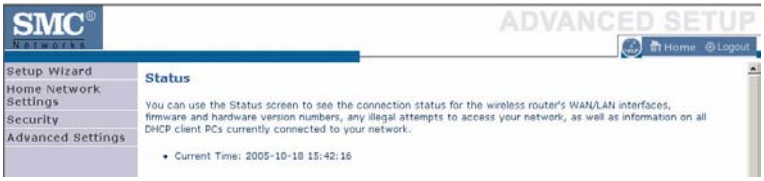
If you use the BigPond Internet Service which is available in Australia, enter the the User Name, Password and Authentication Service Name for BigPond authentication.



Click **NEXT** to proceed, or **BACK** to change your settings.

Home Network Settings

Clicking the **Home** icon at any time, returns you to this home page. The Main Menu links are used to navigate to other menus that display configuration parameters and statistics.

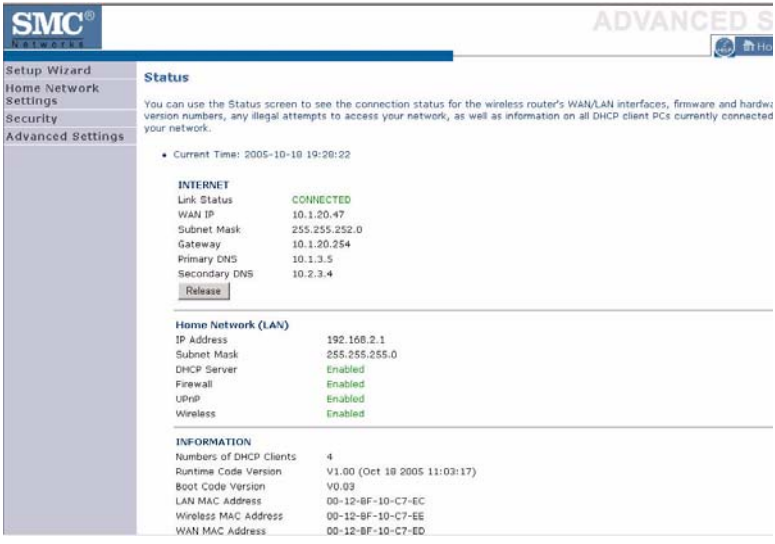


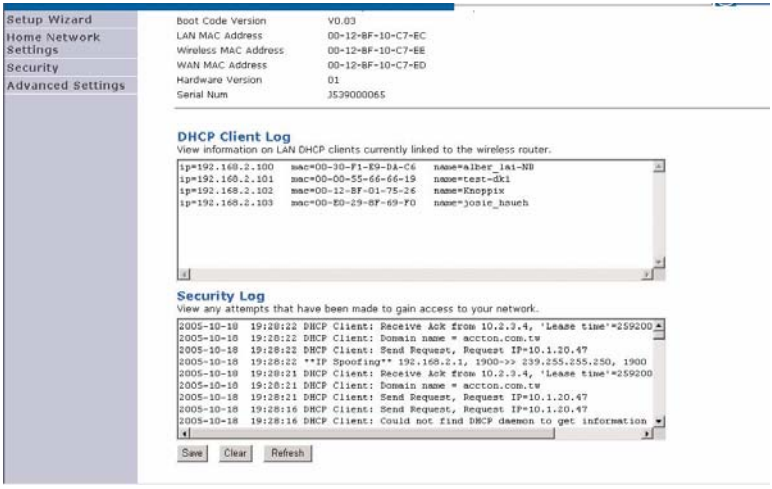
The BARRICADE's **Home Network Settings** interface contains four main menu items as described in the following table.

Menu	Description
Status	Provides WAN connection type and status, firmware and hardware version numbers, system IP settings, as well as DHCP, NAT, and firewall information.
	Displays the number of attached clients, the firmware versions, the physical MAC address for each media interface, and the hardware version and serial number.
	Shows the security and DHCP client log.
LAN Settings	Sets the TCP/IP configuration for the BARRICADE LAN interface and DHCP clients.
WAN Settings	Specifies the Internet connection settings.
Wireless	Configures the radio frequency, SSID, and security for wireless communications.

Status

The Status screen displays WAN/LAN connection status, firmware and hardware version numbers, as well as information on DHCP clients connected to your network. You can also view the Security Log.





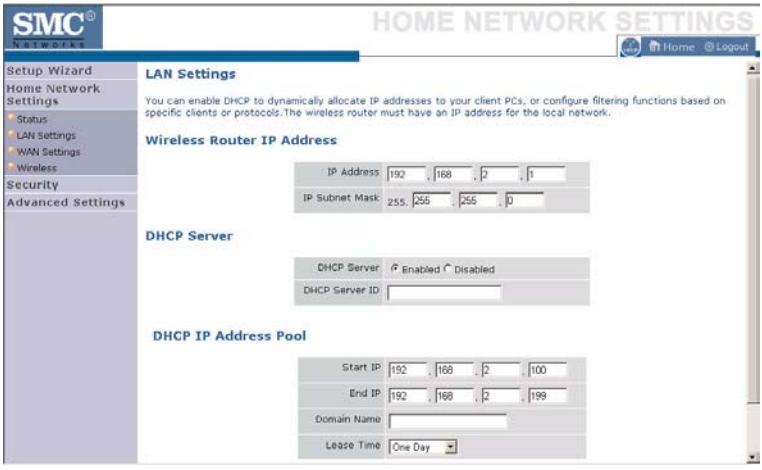
The security file, SMCWBR14G2_logfile.log, may be saved by clicking **Save** and choosing a location.

The following items are included on the Status screen:

Parameter	Description
Current Time	Displays the current time.
INTERNET	Displays WAN connection status.
Renew	Click on this button to establish a connection to the WAN.
Home Network (LAN)	Displays system IP settings, as well as DHCP Server, Firewall, UPnP and Wireless status.
INFORMATION	Displays the number of attached clients, the firmware versions, the physical MAC address for each media interface and for the BARRICADE, as well as the hardware version and serial number.
DHCP Client Log	Displays information on DHCP clients on your network.
Security Log	Displays illegal attempts to access your network.
Save	Click on this button to save the security log file.
Clear	Click on this button to delete the access log.
Refresh	Click on this button to refresh the screen.

LAN Settings

You can enable DHCP to dynamically allocate IP addresses to your client PCs, or configure filtering functions based on specific clients or protocols. The BARRICADE must have an IP address for the local network.



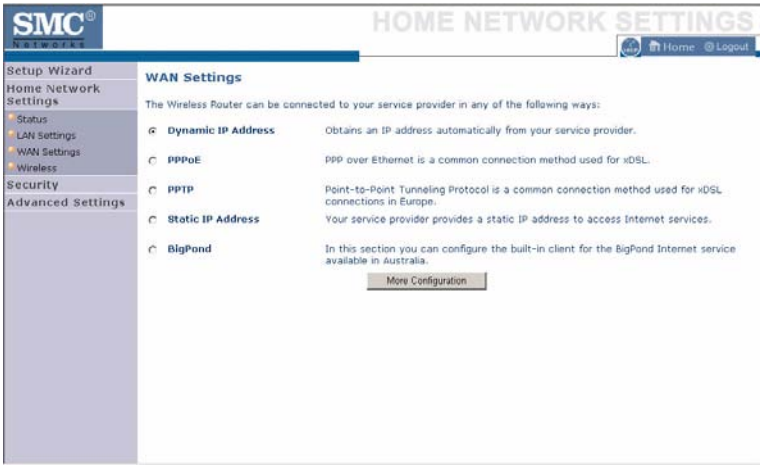
The LAN Settings parameters are listed below.

Parameter	Description
Wireless Router IP Address	
IP Address	The IP address of the BARRICADE.
IP Subnet Mask	The IP subnet mask.
DHCP Server	
DHCP Server	DHCP allows individual computers to obtain the TCP/IP configuration at startup from a centralized DHCP server. To dynamically assign an IP address to a client PC, enable the DHCP (Dynamic Host Configuration Protocol) function.
DHCP Server ID	Enter the DHCP Server ID here.

Parameter	Description
DHCP IP Address Pool	The DHCP IP Address Pool is the range of IP addresses set aside for dynamic assignment to the computers on your network.
Start IP	This field indicates the first of the contiguous IP addresses in the IP address pool.
End IP	This field indicates the last of the contiguous IP addresses in the IP address pool.
Domain Name	The domain name is the name you assign to your network.
Lease Time	The length of time the DHCP server will reserve the IP address for each computer. Setting lease times for shorter intervals such as one day or one hour frees IP addresses after the specified period of time. This also means that a particular computer's IP address may change over time. If you have set any advanced features such as DMZ, this is dependent on the IP address. For this reason, you will not want the IP address to change.

WAN Settings

Specify the WAN connection type required by your Internet Service Provider. Specify **Dynamic IP Address**, **PPPoE**, **PPTP**, **Static IP Address** or **BigPond**.



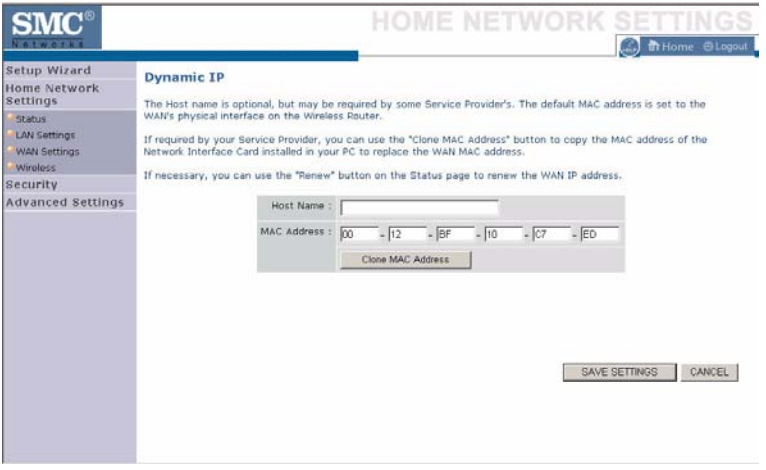
Select the connection type and click **More Configuration**.

Dynamic IP

The Host name is optional, but may be required by some Service Provider's. The default MAC address is set to the WAN's physical interface on the BARRICADE.

If required by your Service Provider, you can use the **Clone MAC Address** button to copy the MAC address of the Network Interface Card (NIC) installed in your PC to replace the WAN MAC address.

If necessary, you can use the **Renew** button on the Status page to renew the WAN IP address.

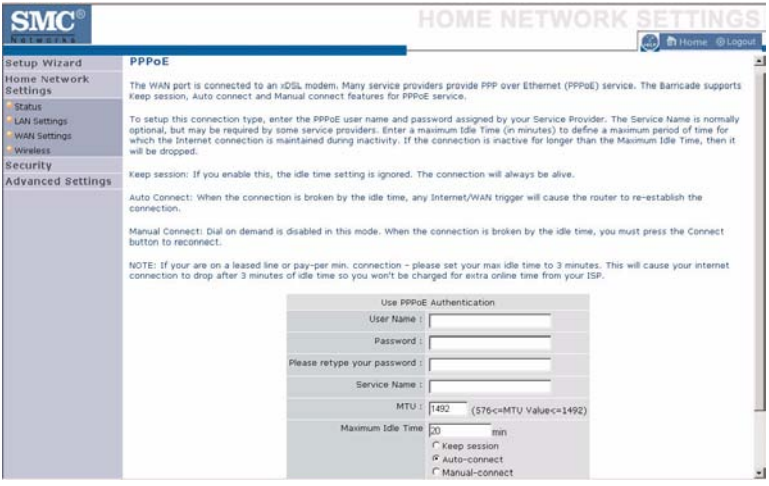


Note: Make sure you record the MAC address that you clone, so that if you lose your settings you will be able to re-connect to the Internet.

Click **Save Settings** to proceed, or **Cancel** to change your settings.

PPPoE

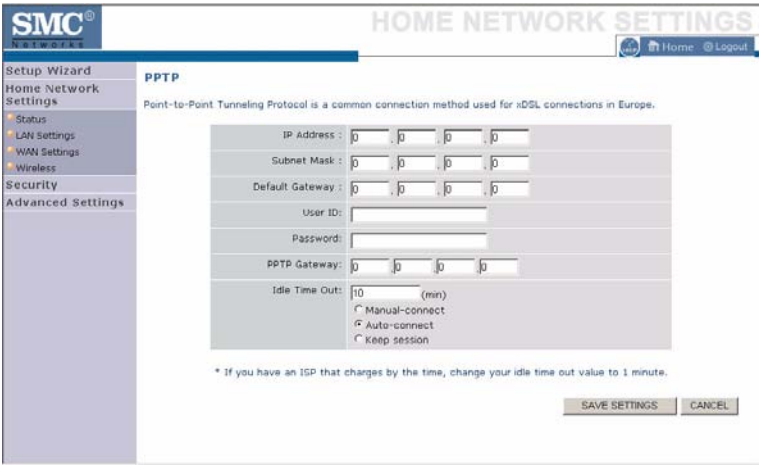
Enter the PPPoE user name and password assigned by your Service Provider. The Service Name is normally optional, but may be required by some service providers. Enter a Maximum Idle Time (in minutes) to define a maximum period of time for which the Internet connection is maintained during inactivity. If the connection is inactive for longer than the Maximum Idle Time, then it will be dropped. You can enable the **Auto-reconnect** option to automatically re-establish the connection as soon as you attempt to access the Internet again.



Click **Save Settings** to proceed, or **Cancel** to change your settings.

PPTP

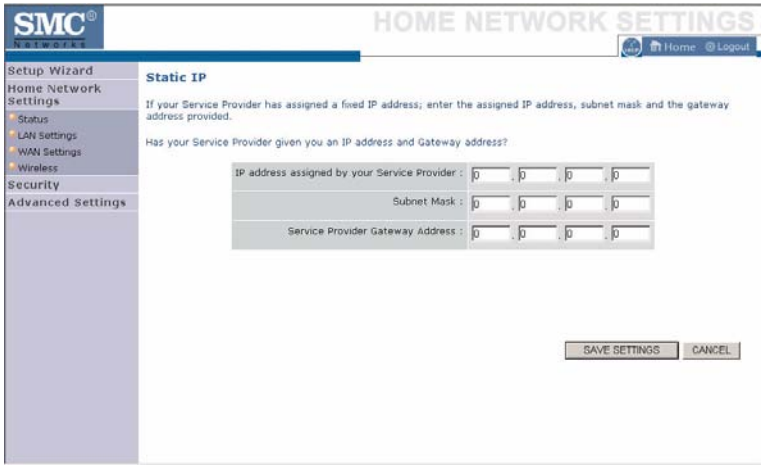
The PPTP screen displays the IP Address, Subnet Mask and Default Gateway of your BARRICADE. Enter the User ID and Password assigned by your ISP in the appropriate fields. Enter the Idle Time Out for the Internet connection. This is the period of time for which the connection to the Internet is maintained during inactivity. The default setting is 10 minutes. If your ISP charges you by the minute, you should change the Idle Time Out to one minute. After the Idle Time Out has expired, set the action you wish the BARRICADE to take. You can tell the device to connect manually or automatically as soon as you try to access the Internet again, or to keep the session alive.



Click **Save Settings** to proceed, or **Cancel** to change your settings.

Static IP

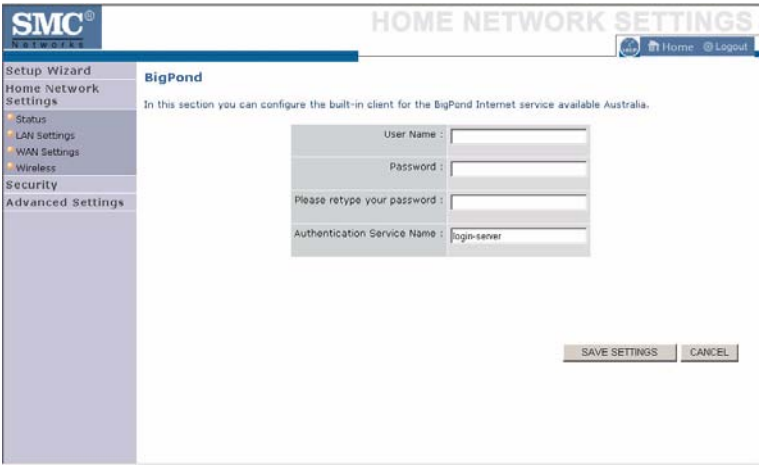
If your Service Provider has assigned a fixed IP address, enter the assigned IP address, subnet mask and the gateway address on this screen.



Click **Save Settings** to proceed, or **Cancel** to change your settings.

BigPond

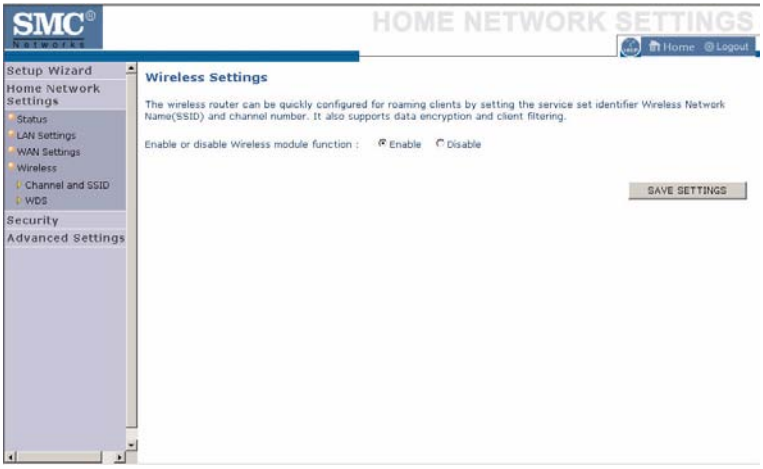
BigPond is a service provider in Australia that uses a heartbeat system to maintain the Internet connection. Configure the built-in client with your user name, password and service name to get on line.



Click **Save Settings** to proceed, or **Cancel** to change your settings.

Wireless

The BARRICADE can be quickly configured for roaming clients by setting the Service Set Identifier (SSID) and channel number. It supports data encryption and client filtering.

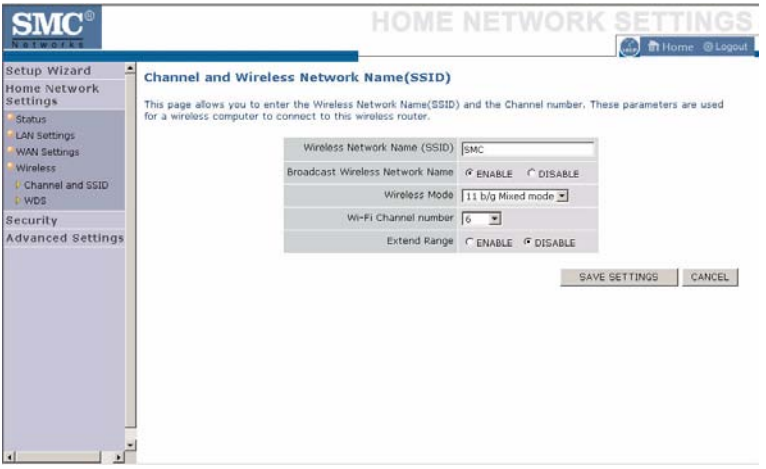


To use the wireless feature, check the **Enable** check box and click **Save Settings**. After clicking **Save Settings**, you will be asked to log in again.

See "Security" on page 4-29 for details on how to configure wireless security.

Channel and SSID

Enter your wireless network settings on this screen. You must specify a common radio channel and SSID (Service Set ID) to be used by the BARRICADE and all of its wireless clients. Be sure you configure all of its clients to the same value. For security purposes, you should change the default SSID immediately.

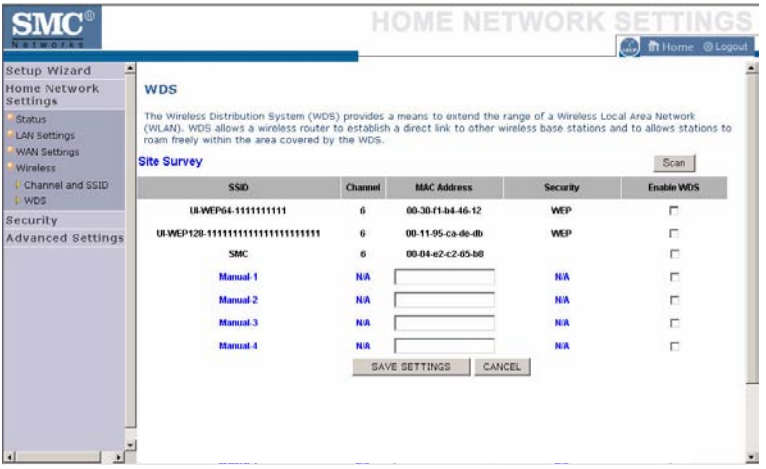


Parameter	Description
Wireless Network Name (SSID)	The Service Set ID (SSID) is the name of your wireless network. The SSID must be the same on the BARRICADE and all of its wireless clients. (Default: SMC)
Broadcast Wireless Network Name	Enable or disable the broadcasting of the SSID. If you disable broadcast of the SSID, only devices that have the correct SSID can connect. This nullifies the wireless network "discovery" feature of some products such as Windows XP. (Default: Enable)
Wireless Mode	This device supports the following modes; 11g only, 11b only, and 11b/g mixed mode. (Default: 11b/g mixed mode)

Parameter	Description
Wi-Fi Channel Number	The radio channel used by the BARRICADE and its clients to communicate with each other. This channel must be the same on the BARRICADE and all of its wireless clients. The BARRICADE will automatically assign itself a radio channel, or you may select one manually. (Default: 6)
Extend Range	Extends the range of the BARRICADE. (Default: Disable)

WDS

The Wireless Distribution System (WDS) provides a means to extend the range of a Wireless Local Area Network (WLAN). WDS allows the BARRICADE to establish a direct link to other wireless base stations and allows clients to roam freely within the area covered by the WDS. To carry out a site survey of available wireless base stations, click **Scan**.



Parameter	Description
SSID	The Service Set ID (SSID) is the name of your wireless network. The SSID must be the same on the BARRICADE and all of its wireless clients.
Channel	This device supports the following modes 11g only, 11b only, and 11b/g mixed mode.
MAC Address	The media access control address (MAC address) is a unique identifier attached to each wireless base station.
Security	Displays the security mechanism in use.
Enable WDS	Enables the WDS feature. When enabled, up to 4 WDS links can be set by specifying their Wireless MAC addresses in the MAC address table. Make sure the same channel is in use on all devices. (Default: Disable)

Security

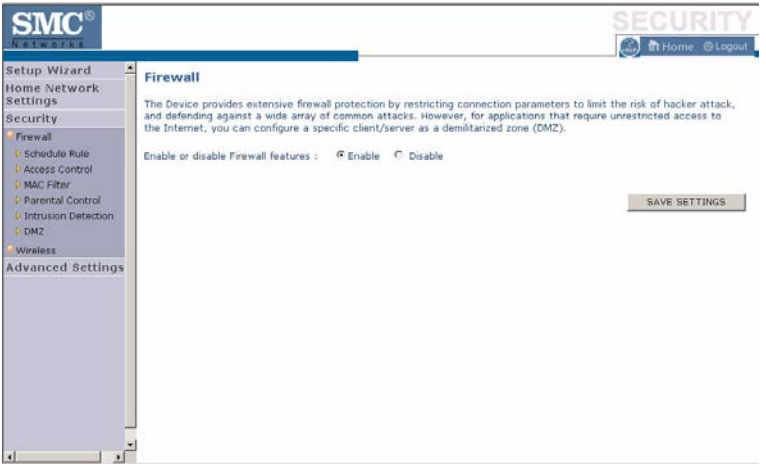
The first menu item in the Security section is Firewall. The BARRICADE provides a stateful inspection firewall which is designed to protect against Denial of Service (DoS) attacks when activated. Its purpose is to allow a private local area network (LAN) to be securely connected to the Internet.

The second menu item is Wireless. This section allows you to configure wireless security settings according to your environment and the privacy level required.

To configure your firewall settings, click **Firewall** in the left-hand menu.

Firewall

The BARRICADE's firewall inspects packets at the application layer, maintains TCP and UDP session information including time-outs and the number of active sessions, and provides the ability to detect and prevent certain types of network attacks.



Network attacks that deny access to a network device are called Denial-of-Service (DoS) attacks. DoS attacks are aimed at devices and networks with a connection to the Internet. Their goal is not to steal information, but to disable a device or network so users no longer have access to network resources.

The BARRICADE protects against the following DoS attacks: 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. (See "Intrusion Detection" on page 4-37 for details.)

The firewall does not significantly affect system performance, so we advise leaving it enabled to protect your network.

Enable the firewall feature, and click **Save Settings** to proceed.

Schedule Rule

The first item listed in the Firewall section is Schedule Rule. You may filter Internet access for local clients based on rules.

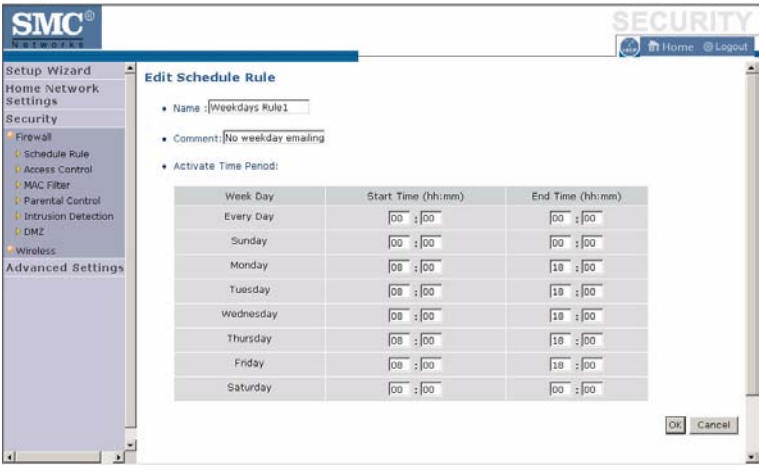
You may filter Internet access for local clients based on rules.

Each access control rule may be activated at a scheduled time. First, define the schedule on the Schedule Rule page, then apply the rule on the Access Control page.

To add a new rule, click **Add Schedule Rule**. Proceed to the following page.

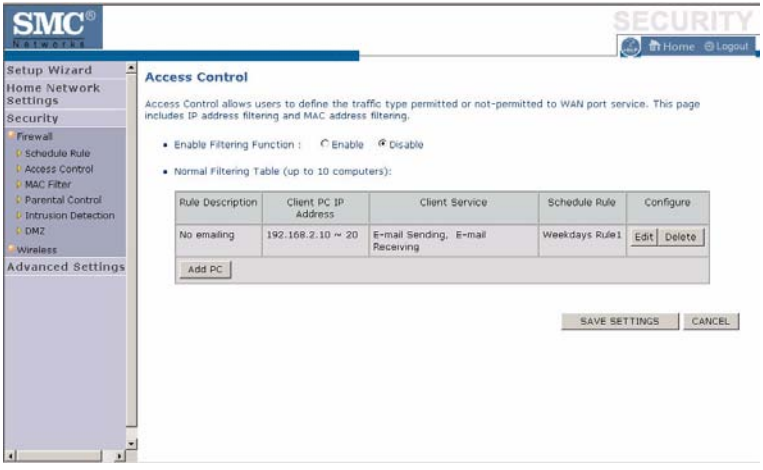
Edit Schedule Rule

1. Define the appropriate settings for a schedule rule (as shown on the following screen).



2. Upon completion, click **OK** to save your schedule rules, and then click **Save Settings** to make your settings to take effect.

Access Control



Used in conjunction with the Schedule Rule screen, the Access Control screen allows users to define the outgoing traffic permitted or not-permitted. The default is to permit all outgoing traffic.

The BARRICADE can also limit the access of hosts within the local area network (LAN). The MAC Filtering Table allows the BARRICADE to enter up to 32 MAC addresses that are not allowed access to the WAN port.

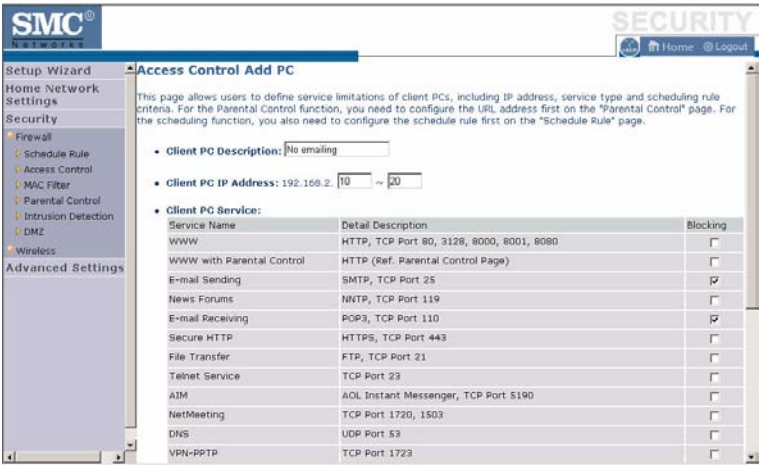
1. Click **Add PC** on the Access Control screen.
2. Define the appropriate settings for client PC services (as shown on the following screen).
3. Click **OK** and then click **Apply** to save your settings.

The following items are displayed on the Access Control screen:

Parameter	Description
Enable Filtering Function	Enables or disables the filtering function.
Normal Filtering Table (up to 10 computers)	Displays the IP address (or an IP address range) filtering table.

Access Control Add PC

Define the access control list in this page. The settings in the screen shot below will block all email sending and receiving during weekdays (except Friday). See "Schedule Rule" on page 4-31.



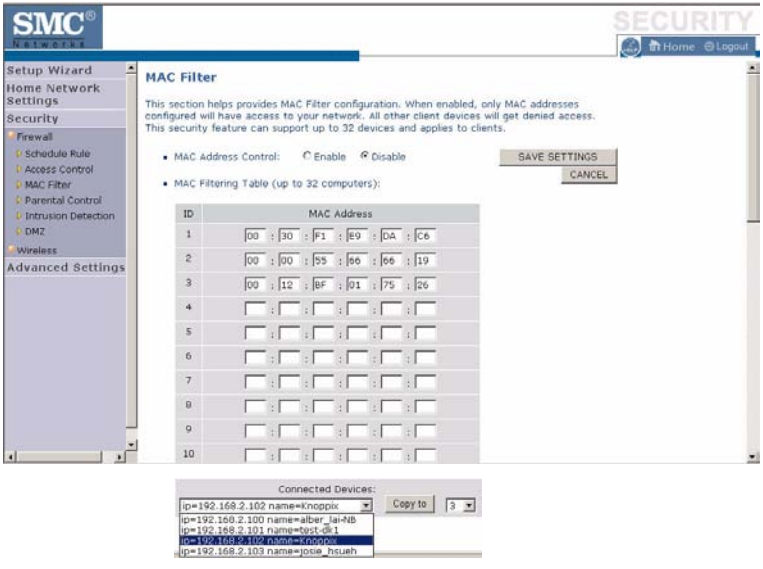
Define the appropriate settings for client PC services (as shown above). At the bottom of this screen, you can set the scheduling function. You can set this function to **Always Blocking** or to whatever schedule you have defined in the Schedule Rule screen. Click **OK** to save your settings. The added PC will now appear in the Access Control page.

For the URL/keyword blocking function, you will need to configure the URL address or blocked keyword on the Parental Control page first. Click **Parental Control** to add to the list of disallowed URL's and keywords.

To enable scheduling, you also need to configure the schedule rule first. Click **Schedule Rule** in the left-hand menu to set the times for which you wish to enforce the rule.

MAC Filter

Use this page to block access to your network using MAC addresses.

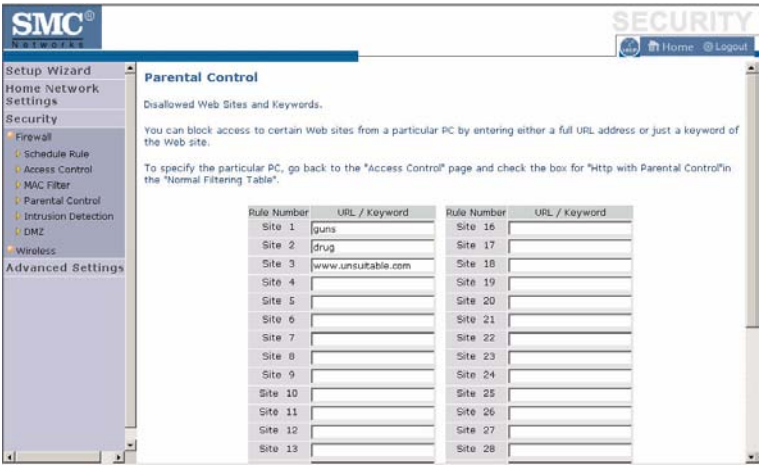


The BARRICADE can also limit the access of hosts within the local area network (LAN). The MAC Filtering Table allows the BARRICADE to enter up to 32 MAC addresses that are allowed access to the WAN port. All other devices will be denied access. By default, this feature is disabled.

Click **Save Settings** to proceed, or **Cancel** to change your settings.

Parental Control

The BARRICADE allows the user to block access to web sites from a particular PC by entering either a full URL address or just a keyword. This feature can be used to protect children from accessing violent or pornographic web sites.



You can define up to 30 sites or keywords here. To configure the Parental Control feature, use the table to specify the web sites (www.somesite.com) and/or keywords you want to block on your network.

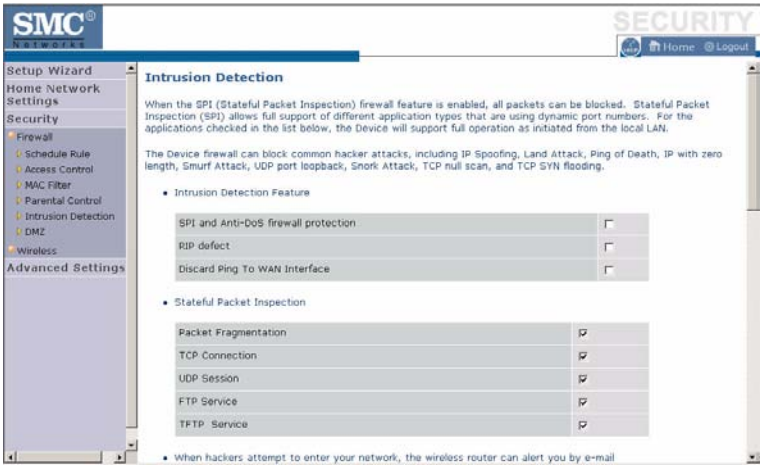
To complete this configuration, you will need to create or modify an access rule in "Access Control Add PC" on page 4-34. To modify an existing rule, click the **Edit** option next to the rule you want to modify. To create a new rule, click on the **Add PC** option.

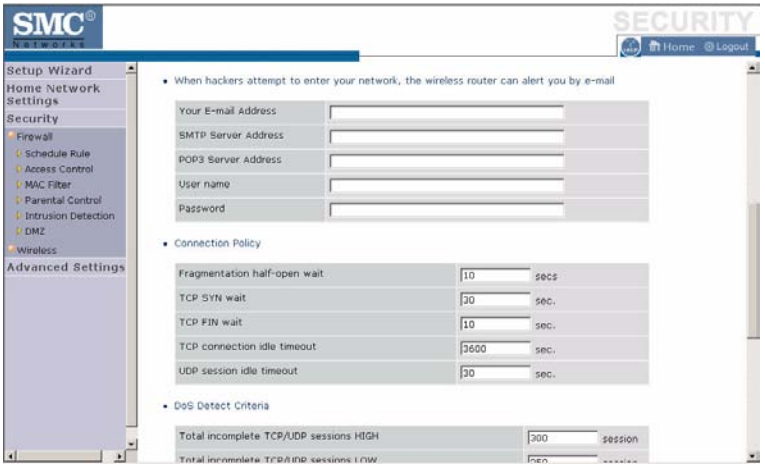
From the Access Control, Add PC section, check the option for **WWW with Parental Control** in the Client PC Service table to filter out the web sites and keywords selected below, on a specific PC.

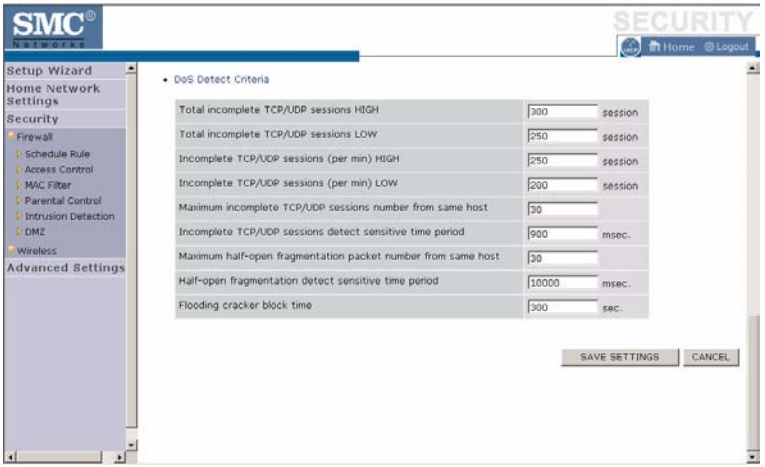
Click **Save Settings** to proceed, or **Cancel** to change your settings.

Intrusion Detection

The BARRICADE's firewall inspects packets at the application layer, maintains TCP and UDP session information including timeouts and number of active sessions, and provides the ability to detect and prevent certain types of network attacks such as Denial-of-Service (DoS) attacks.







Network attacks that deny access to a network device are called DoS attacks. DoS attacks are aimed at devices and networks with a connection to the Internet. Their goal is not to steal information, but to disable a device or network so users no longer have access to network resources.

The BARRICADE protects against DoS attacks including: Ping of Death (Ping flood) attack, SYN flood attack, IP fragment attack (Teardrop Attack), Brute-force attack, Land Attack, IP Spoofing attack, IP with zero length, TCP null scan (Port Scan Attack), UDP port loopback, Snork Attack.

Note: The firewall does not significantly affect system performance, so we advise enabling the prevention features to protect your network.

The table below lists the Intrusion Detection parameters and their descriptions.

Parameter	Defaults	Description
Intrusion Detection Feature		
SPI and Anti-DoS firewall protection	No	The Intrusion Detection feature of the BARRICADE limits the access of incoming traffic at the WAN port. When the Stateful Packet Inspection (SPI) feature is turned on, all incoming packets are blocked except those types marked with a check in the SPI section at the top of the screen.
RIP Defect	Disabled	If the router does not reply to an IPX RIP request packet, it will stay in the input queue and not be released. Accumulated packets could cause the input queue to fill, causing severe problems for all protocols. Enabling this feature prevents the packets accumulating.
Discard Ping to WAN	Don't discard	Prevents a ping on the router's WAN port from being routed to the network.

Parameter	Defaults	Description
Stateful Packet Inspection	Enabled	This option allows you to select different application types that are using dynamic port numbers. If you wish to use Stateful Packet Inspection (SPI) for blocking packets, click on the Yes radio button in the "Enable SPI and Anti-DoS firewall protection" field and then check the inspection type that you need, such as Packet Fragmentation, TCP Connection, UDP Session, FTP Service and TFTP Service. It is called a "stateful" packet inspection because it examines the contents of the packet to determine the state of the communication; i.e., it ensures that the stated destination computer has previously requested the current communication. This is a way of ensuring that all communications are initiated by the recipient computer and are taking place only with sources that are known and trusted from previous interactions. In addition to being more rigorous in their inspection of packets, stateful inspection firewalls also close off ports until a connection to the specific port is requested. When particular types of traffic are checked, only the particular type of traffic initiated from the internal LAN will be allowed. For example, if the user only checks FTP Service in the Stateful Packet Inspection section, all incoming traffic will be blocked except for FTP connections initiated from the local LAN.
When hackers attempt to enter your network, we can alert you by email		
Your E-mail Address		Enter your email address.
SMTP Server Address		Enter your SMTP server address (usually the part of the email address following the "@" sign).
POP3 Server Address		Enter your POP3 server address (usually the part of the email address following the "@" sign).
User Name		Enter your email account user name.

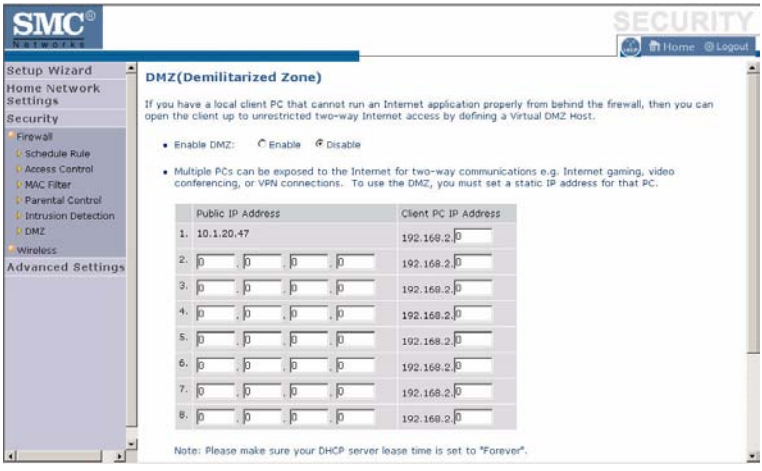
Parameter	Defaults	Description
Password		Enter your email account password.
Connection Policy		
Fragmentation half-open wait	10 secs	Configures the number of seconds that a packet state structure remains active. When the timeout value expires, the router drops the unassembled packet, freeing that structure for use by another packet.
TCP SYN wait	30 secs	Defines how long the software will wait for a TCP session to reach an established state before dropping the session.
TCP FIN wait	5 secs	Specifies how long a TCP session will be managed after the firewall detects a FIN-exchange.
TCP connection idle timeout	3600 secs (1 hour)	The length of time for which a TCP session will be managed if there is no activity.
UDP session idle timeout	30 secs	The length of time for which a UDP session will be managed if there is no activity.
DoS Detect Criteria		
Total incomplete TCP/UDP sessions HIGH	300 sessions	Defines the rate of new unestablished sessions that will cause the software to *start* deleting half-open sessions.
Total incomplete TCP/UDP sessions LOW	250 sessions	Defines the rate of new unestablished sessions that will cause the software to *stop* deleting half-open sessions.
Incomplete TCP/UDP sessions (per min.) HIGH	250 sessions	Maximum number of allowed incomplete TCP/UDP sessions per minute.
Incomplete TCP/UDP sessions (per min.) LOW	200 sessions	Minimum number of allowed incomplete TCP/UDP sessions per minute.
Maximum incomplete TCP/UDP sessions number from same host	10 sessions	Maximum number of incomplete TCP/UDP sessions from the same host.

Parameter	Defaults	Description
Incomplete TCP/UDP sessions detect sensitive time period	300 msecs	Length of time before an incomplete TCP/UDP session is detected as incomplete.
Maximum half-open fragmentation packet number from same host	30 sessions	Maximum number of half-open fragmentation packets from the same host.
Half-open fragmentation detect sensitive time period	1 sec	Length of time before a half-open fragmentation session is detected as half-open.
Flooding cracker block time	300 secs	Length of time from detecting a flood attack to blocking the attack.

Note: We do not recommend modifying the default parameters shown above.

Click **Save Settings** to proceed, or **Cancel** to change your settings.

DMZ

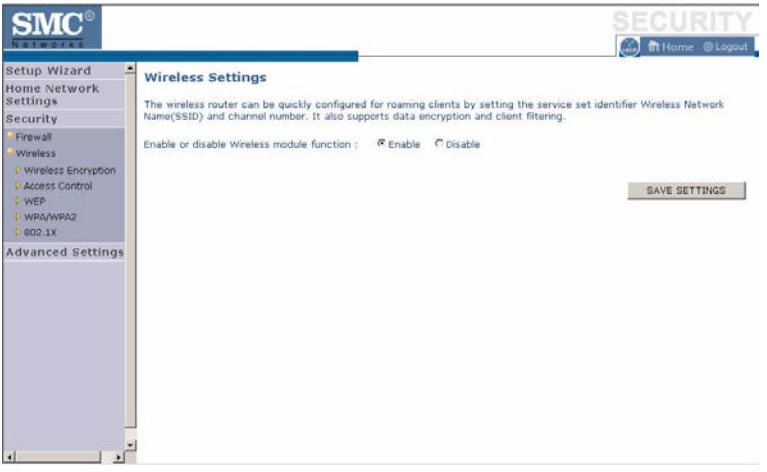


If you have a client PC that cannot run an Internet application properly from behind the firewall, you can open the client up to unrestricted two-way Internet access. Enter the IP address of a DMZ (Demilitarized Zone) host on this screen. Adding a client to the DMZ may expose your local network to a variety of security risks, so only use this option as a last resort.

Wireless

The BARRICADE can be quickly configured for roaming clients by setting the Service Set Identifier (SSID) and channel number. It supports data encryption and client filtering.

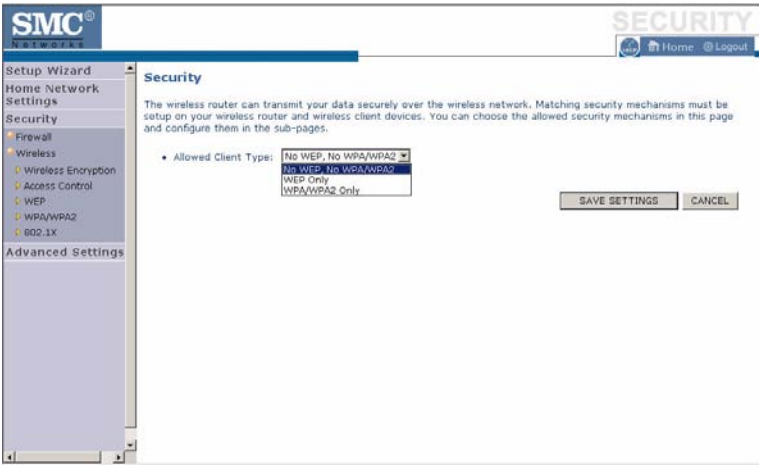
To use the wireless feature, check the **Enable** check box and click **Save Settings**.



To begin configuring your wireless security settings, click **Wireless Encryption**.

Wireless Encryption

The BARRICADE can transmit your data securely over a wireless network. Matching security mechanisms must be set up on your BARRICADE and your wireless client devices. Select the most suitable security mechanism from the drop-down list on this screen.

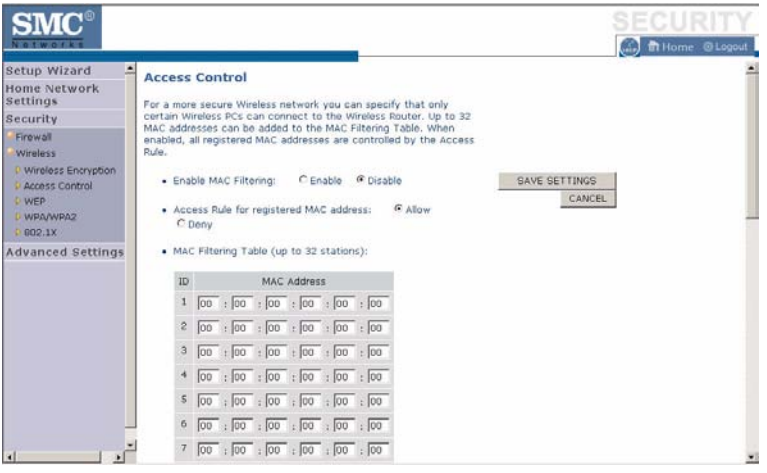


Parameter	Description
No WEP, No WPA/WPA2	Disables all wireless security. To make it easier to set up your wireless network, we recommend enabling this setting initially. By default, wireless security is disabled.
WEP Only	Once you have your wireless network in place, the minimum security we recommend is to enable the legacy security standard, Wired Equivalent Privacy (WEP). See "WEP" on page 4-47.
WPA/WPA2 Only	For maximum wireless security, you should enable the WPA/WPA2 option. See "WPA/WPA2" on page 4-49.

Click **Save Settings** to proceed, or **Cancel** to change your settings.

Access Control

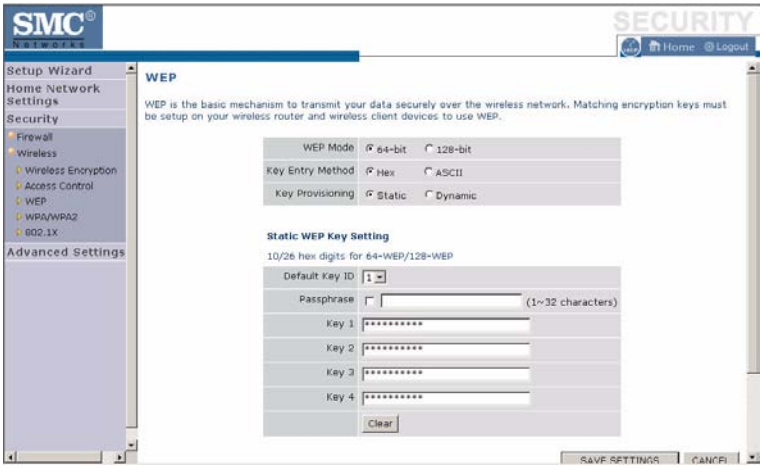
For a more secure wireless network you can specify that only certain wireless clients can connect to the BARRICADE. Up to 32 MAC addresses can be added to the MAC Filtering Table. When enabled, all registered MAC addresses are controlled by the Access Rule.



By default, this MAC filtering feature is disabled.

WEP

WEP is the basic mechanism to transmit your data securely over a wireless network. Matching encryption keys must be set up on your BARRICADE and and each of your wireless client devices.



Parameter	Description
WEP Mode	Select 64-bit or 128-bit key to use for encryption.
Key Entry Method	Select hexadecimal (Hex) or ASCII for the key entry method.
Key Provisioning	Select Static if there is only one fixed key for encryption. If you want to select Dynamic, you need to enable 802.1X function first.
Default Key ID	Choose which key to use as default.
Passphrase	Check the Passphrase check box to generate a key automatically.
Key 1~4	The BARRICADE supports up to 4 keys. You select the default key.

You may automatically generate encryption keys or manually enter the keys. To generate the key automatically with passphrase, check the **Passphrase** box, and enter a string of characters. Select the default key from the drop-down menu. Click **APPLY**.

Note: The passphrase can consist of up to 63 alphanumeric characters.

Hexadecimal Keys

A hexadecimal key is a mixture of numbers and letters from A-F and 0-9. 64-bit keys are 10 digits long and can be divided into five two-digit numbers. 128-bit keys are 26 digits long and can be divided into 13 two-digit numbers.

ASCII Keys

There are 95 printable ASCII characters:

!"#$%&'()*+,-./0123456789:;<=>?

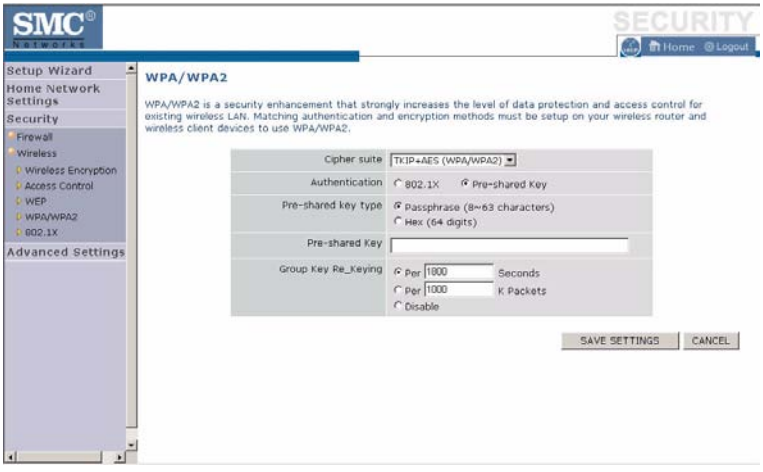
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_

`abcdefghijklmnopqrstuvwxyz{|}~

Having selected and recorded your key, click **Save Settings** to proceed, or **Cancel** to go back.

WPA/WPA2

WPA/WPA2 is a security enhancement that strongly increases the level of data protection and access control for existing wireless LAN. Matching authentication and encryption methods must be set up on your BARRICADE and wireless client devices to use WPA/WPA2. To use WPA, your wireless network cards must be equipped with software that supports WPA. A security patch from Microsoft is available for free download (for XP only).



Parameter	Description
Cipher Suite	The security mechanism used in WPA for encryption. Select TKIP+AES (WPA/WPA2) or AES WPA2 Only.
Authentication	Select 802.1X or Pre-shared Key for the authentication method. - 802.1X: for the enterprise network with a RADIUS server. - Pre-shared key: for the SOHO network environment without an authentication server.
Pre-shared key type	Select the key type to be used in the Pre-shared Key.
Pre-shared Key	Type the key here.
Group Key Re_Keying	The period of renewing the broadcast/multicast key.

WPA

WPA addresses all known vulnerabilities in WEP, the original, less secure 40 or 104-bit encryption scheme in the IEEE 802.11 standard. WPA also provides user authentication, since WEP lacks any means of authentication. Designed to secure present and future versions of IEEE 802.11 devices, WPA is a subset of the IEEE 802.11i specification.

WPA replaces WEP with a strong new encryption technology called Temporal Key Integrity Protocol (TKIP) with Message Integrity Check (MIC). It also provides a scheme of mutual authentication using either IEEE 802.1X/Extensible Authentication Protocol (EAP) authentication or pre-shared key (PSK) technology. The passphrase can consist of up to 32 alphanumeric characters.

WPA2

Launched in September 2004 by the Wi-Fi Alliance, WPA2 is the certified interoperable version of the full IEEE 802.11i specification which was ratified in June 2004. Like WPA, WPA2 supports IEEE 802.1X/EAP authentication or PSK technology. It also includes a new advanced encryption mechanism using the Counter-Mode/CBC-MAC Protocol (CCMP) called the Advanced Encryption Standard (AES).

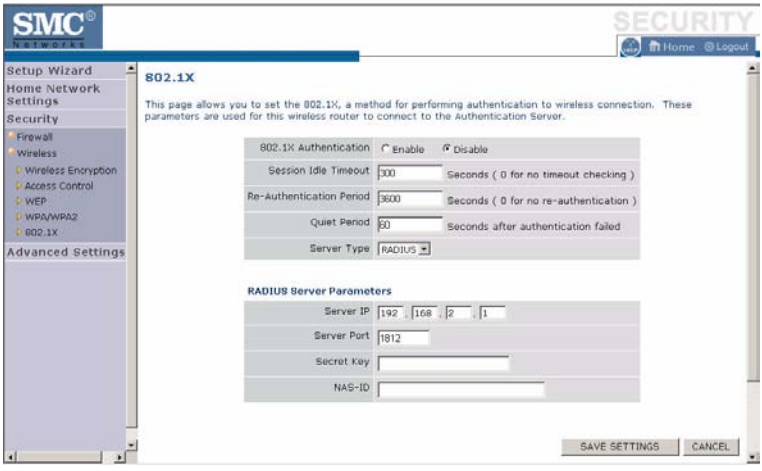
WPA and WPA2 Mode Types

	WPA	**WPA2**
Enterprise Mode	Authentication: IEEE 802.1X/EAP	Authentication: IEEE 802.1X/EAP
	Encryption: TKIP/MIC	Encryption: AES-CCMP
SOHO Mode	Authentication: PSK	Authentication: PSK
	Encryption: TKIP/MIC	Encryption: AES-CCMP

Click **Save Settings** to proceed, or **Cancel** to change your settings.

802.1X

If 802.1X is used in your network, then you should enable this function for the BARRICADE. This screen allows you to set the 802.1X parameters. 802.1X is a method of authenticating a client wireless connection. Enter the parameters below to connect the BARRICADE to the Authentication Server.



Parameter	Description
802.1X Authentication	Enable or disable the authentication function.
Session Idle Timeout	This is the time (in seconds) that a session will sit inactive before terminating. Set to 0 if you do not want the session to timeout. (Default: 300 seconds)
Re-Authentication Period	The interval time (in seconds) after which the client will be asked to re-authenticate. For example, if you set this to 30 seconds, the client will have to re-authenticate every 30 seconds. Set to 0 for no re-authentication. (Default: 3600 seconds)
Quiet Period	This is the interval time (in seconds) for which the BARRICADE will wait between failed authentications. (Default: 60 seconds)
Server Type	Sets the authentication server type.
Server IP	Set the IP address of your RADIUS server.

Parameter	Description
Server Port	Set the connection port that is configured on the radius server.
Secret Key	The 802.1X secret key used to configure the BARRICADE.
NAS-ID	Defines the request identifier of the Network Access Server.

The use of IEEE 802.1X offers an effective framework for authenticating and controlling user traffic to a protected network, as well as dynamically varying encryption keys. 802.1X ties EAP (Extensible Authentication Protocol) to both the wired and wireless LAN media and supports multiple authentication methods, such as token cards, Kerberos, one-time passwords, certificates, and public key authentication.

Click **Save Settings** to proceed, or **Cancel** to change your settings.

Advanced Settings

To configure the advanced settings such as NAT, Maintenance, System settings and UPnP, click **Advanced Settings**.

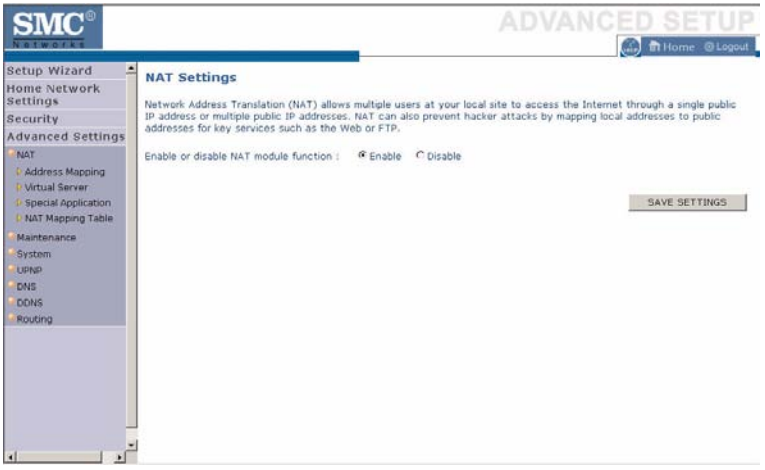
Note: Changing some of the device settings in the Advanced Settings mode may cause the BARRICADE to become unresponsive.

The BARRICADE's advanced management interface contains 6 main menu items as described in the following table.

Menu	Description
NAT	Shares a single ISP account with multiple users, sets up virtual servers.
Maintenance	Allows you to backup, restore, reset, and upgrade the BARRICADE's firmware.
System	Sets the local time zone, the password for administrator access, the IP address of a PC that will be allowed to manage the BARRICADE remotely, and the IP address of a Syslog Server.
UPnP	Universal Plug and Play (UPnP) allows for simple and robust connectivity between external devices and your PC.
DNS	Sets the IP address of a Domain Name Server.
DDNS	Dynamic DNS provides users on the Internet with a method to tie their domain name to a computer or server.
Routing	Sets routing parameters and displays the current routing table.

NAT

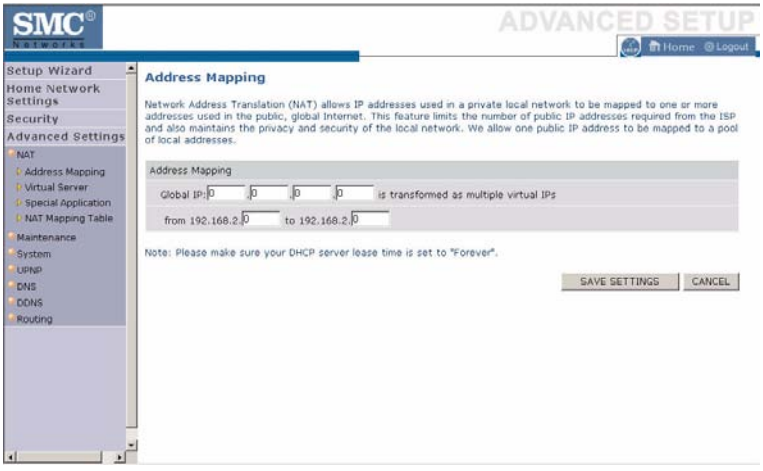
The first menu item in the Advanced Settings section is Network Address Translation (NAT). This process allows all of the computers on your home network to use one IP address. Using the NAT capability of the BARRICADE, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.



To use the NAT feature, check the **Enable** radio button and click **Save Settings**.

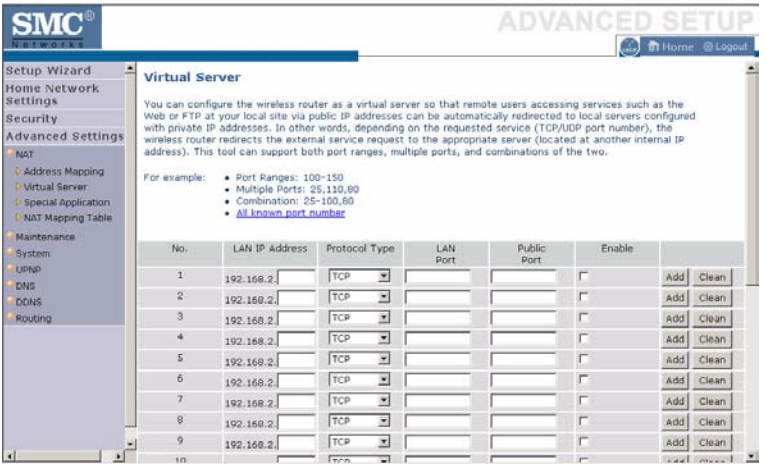
Address Mapping

Network Address Translation (NAT) allows IP addresses used in a private local network to be mapped to one or more addresses used in the public, global Internet. This feature limits the number of public IP addresses required from the ISP and also maintains the privacy and security of the local network. We allow one public IP address to be mapped to a pool of local addresses.



Click **Save Settings** to proceed, or **Cancel** to change your settings.

Virtual Server



Using this feature, you can put PCs with public IPs and PCs with private IPs in the same LAN area.

If you configure the 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 BARRICADE redirects the external service request to the appropriate server (located at another internal IP address).

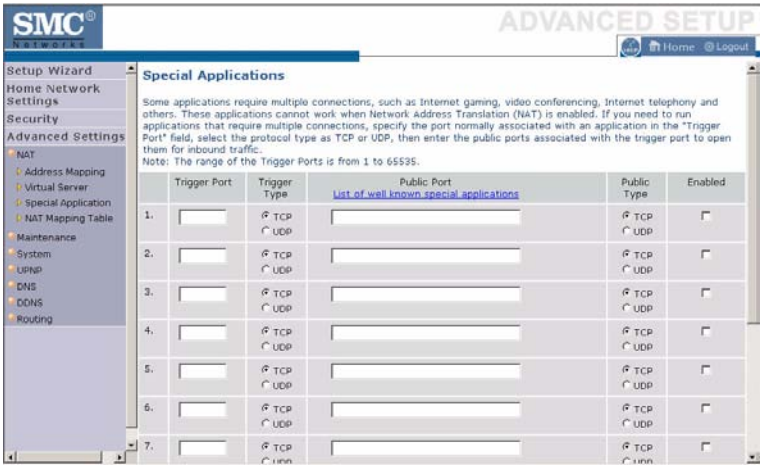
For example, if you set Type/Public Port to TCP/80 (HTTP or web) and the Private IP/Port to 192.168.2.2/80, then all HTTP requests from outside users will be transferred to 192.168.2.2 on port 80. Therefore, by just entering the IP address provided by the ISP, Internet users can access the service they need at the local address to which you redirect them.

The more common TCP service ports include: HTTP: 80, FTP: 21, Telnet: 23, and POP3: 110. Click **All known port number** for more information about public service ports.

Special Applications

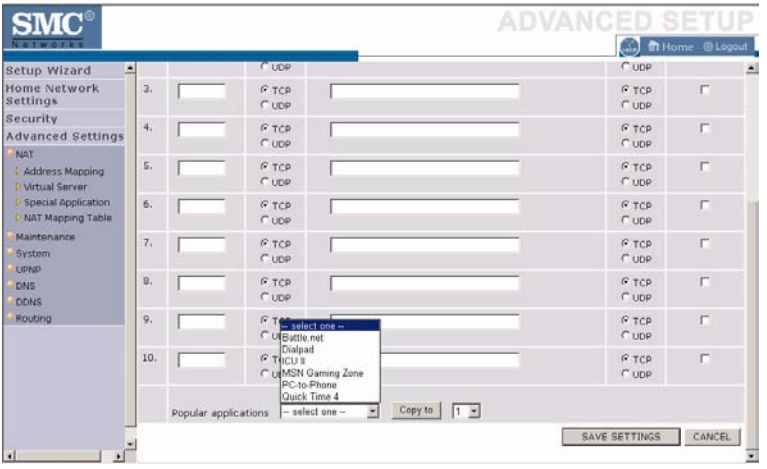
Some applications, such as Internet gaming, videoconferencing, Internet telephony and others, require multiple connections. These applications cannot work with Network Address Translation (NAT) enabled. If you need to run applications that require multiple connections, use the following screen to specify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

Click the **List of well known special applications** link for more information.



Specify the public port number normally associated with an application in the Trigger Port field. Set the protocol type to **TCP** or **UDP**, then enter the ports that the application requires. The ports may be in the format of a single port, or in a range, e.g., 72-96, or a combination of both.

Popular applications requiring multiple ports are listed in the Popular Applications field. From the drop-down list, choose the application and then choose a row number to copy this data into.

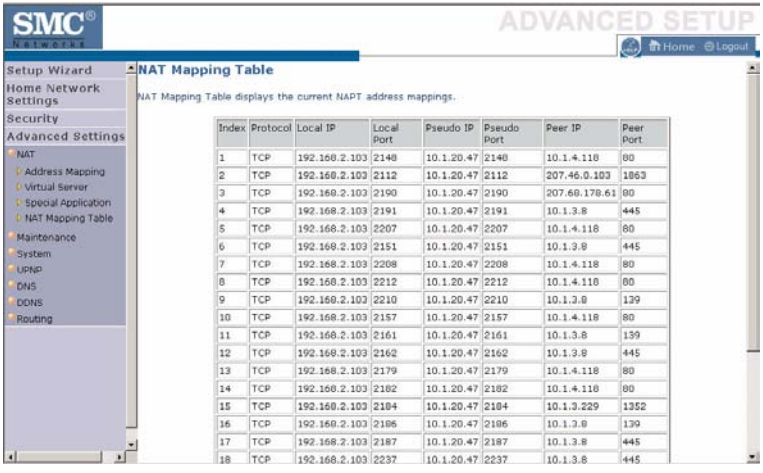


Note: Choosing a row that already contains data will overwrite the current settings.

For a full list of ports and the services that run on them, see www.iana.org/assignments/port-numbers

NAT Mapping Table

This page displays the current NAPT (Network Address Port Translation) address mappings.



Index	Protocol	Local IP	Local Port	Pseudo IP	Pseudo Port	Peer IP	Peer Port
1	TCP	192.168.2.103	2148	10.1.20.47	2148	10.1.4.118	80
2	TCP	192.168.2.103	2112	10.1.20.47	2112	207.46.0.103	1863
3	TCP	192.168.2.103	2190	10.1.20.47	2190	207.68.178.61	80
4	TCP	192.168.2.103	2191	10.1.20.47	2191	10.1.3.8	445
5	TCP	192.168.2.103	2207	10.1.20.47	2207	10.1.4.118	80
6	TCP	192.168.2.103	2151	10.1.20.47	2151	10.1.3.8	445
7	TCP	192.168.2.103	2208	10.1.20.47	2208	10.1.4.118	80
8	TCP	192.168.2.103	2212	10.1.20.47	2212	10.1.4.118	80
9	TCP	192.168.2.103	2210	10.1.20.47	2210	10.1.3.8	139
10	TCP	192.168.2.103	2157	10.1.20.47	2157	10.1.4.118	80
11	TCP	192.168.2.103	2161	10.1.20.47	2161	10.1.3.8	139
12	TCP	192.168.2.103	2162	10.1.20.47	2162	10.1.3.8	445
13	TCP	192.168.2.103	2179	10.1.20.47	2179	10.1.4.118	80
14	TCP	192.168.2.103	2182	10.1.20.47	2182	10.1.4.118	80
15	TCP	192.168.2.103	2184	10.1.20.47	2184	10.1.3.229	1352
16	TCP	192.168.2.103	2186	10.1.20.47	2186	10.1.3.8	139
17	TCP	192.168.2.103	2187	10.1.20.47	2187	10.1.3.8	445
18	TCP	192.168.2.103	2237	10.1.20.47	2237	10.1.3.8	445

The NAT address mappings are listed 20 lines per page, click the control buttons to move forwards and backwards. As the NAT mapping is dynamic, a **Refresh** button is provided to refresh the NAT Mapping Table with the most updated values.

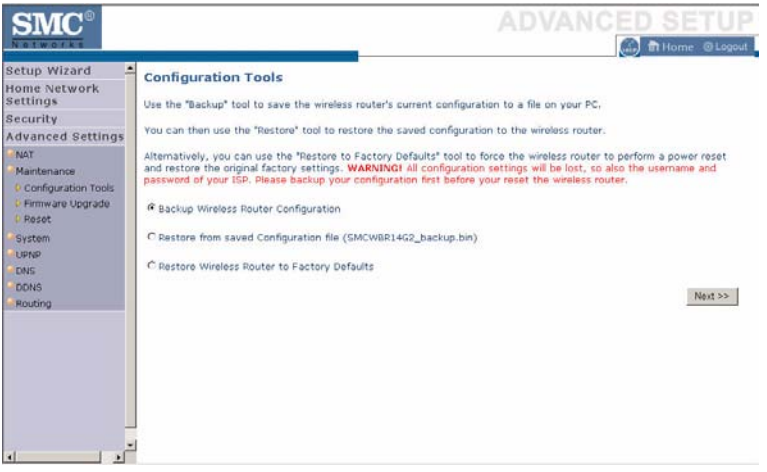
The content of the NAT Mapping Table is described as follows:

- Protocol - protocol of the flow.
- Local IP - local (LAN) host's IP address for the flow.
- Local Port - local (LAN) host's port number for the flow.
- Pseudo IP - translated IP address for the flow.
- Pseudo Port - translated port number for the flow.
- Peer IP - remote (WAN) host's IP address for the flow.
- Peer Port - remote (WAN) host's port number for the flow.

Maintenance

Use the Maintenance menu to back up the current settings, to restore previously saved settings, or to restore the factory default settings.

Configuration Tools



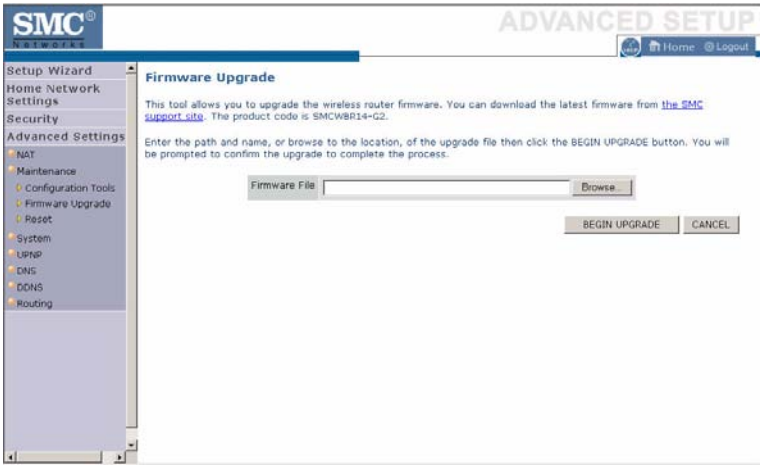
Check **Backup Wireless Router Configuration** and click **NEXT** to save your BARRICADE's configuration to a file named config.bin on your PC.

You can then check the **Restore from saved Configuration file (SMCWBR14-G2_backup.bin)** radio button and click **NEXT** to restore the saved backup configuration file.

To restore the factory settings, check **Restore Wireless Router to Factory Defaults** and click **NEXT**. You will be asked to confirm your decision.

Firmware Upgrade

Use this screen to update the firmware to the latest version.



Go to www.smc.com to find the latest firmware. Download the firmware to your hard drive first. Click **Browse...** to locate the saved file. After locating the new firmware file, click **BEGIN UPGRADE**. Follow the instructions to complete the upgrade. After restarting, check the Status page to make sure the device is running the new code.

Reset

Perform a reset from this screen.

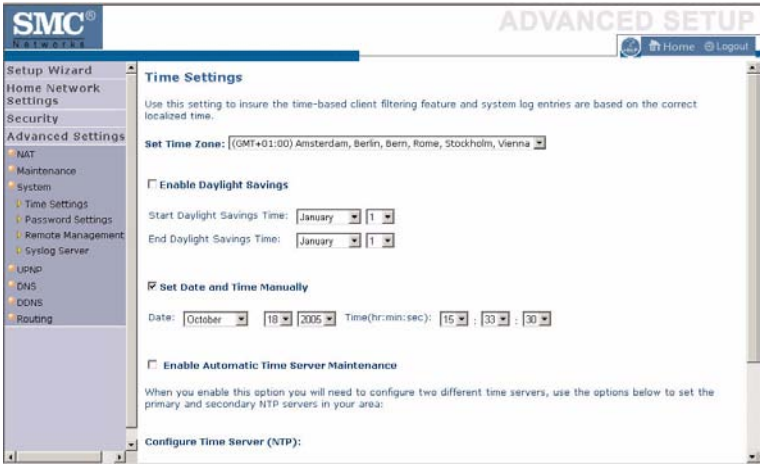
To perform a system reset, click the **Reboot Wireless Router** button in the screen above. The configurations that you have set previously will not be changed back to the factory default settings.

Note: You may also use the reset button on the bottom of the BARRICADE to perform a reset. Push for one second to perform a reboot. All of your settings will remain upon restarting. Push for six seconds to return the BARRICADE to factory default settings.

System

This section includes all the basic configuration tools for the BARRICADE, such as time settings, password settings, and remote management.

Time Settings



Set the time zone and time server for the BARRICADE. This information is used for log entries and client access control.

- Set Time Zone

  Select your time zone from the drop-down list

- Enable Daylight Savings

  Check **Enable Daylight Savings**, and set the start and end dates if your area requires daylight savings.

- Set Date and Time Manually

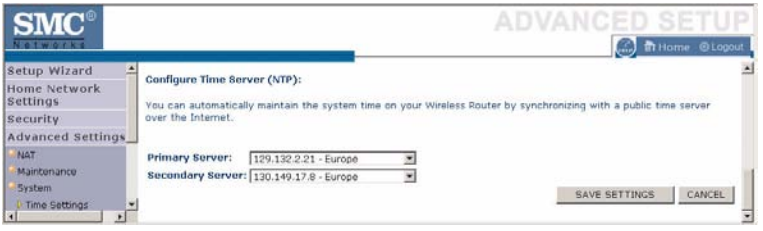
  For manually setting the date and time, configure the date and time by selecting the options from the drop-down list.

- Enable Automatic Time Server Maintenance

  Check **Enable Automatic Time Server Maintenance** to automatically maintain the BARRICADE's system time by synchronizing with a public time server over the Internet.

- Configure Time Server (NTP):

  Configure two different time servers by selecting the options in the Primary Server and Secondary Server fields.



Password Settings

Use this page to restrict access based on a password. For security you should assign one before exposing the BARRICADE to the Internet.

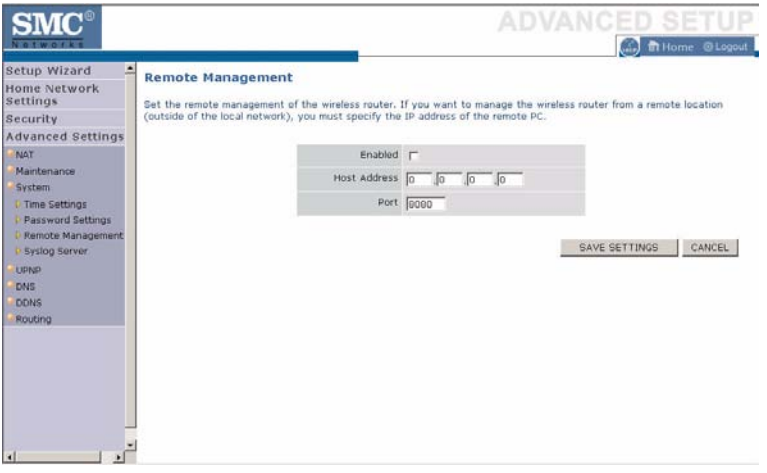
Passwords can contain from 3 to12 alphanumeric characters and are case sensitive.

Note: If your password is lost, or you cannot gain access to the user interface, press the **Reset** button on the bottom panel (holding it down for at least six seconds) to restore the factory defaults. The default password is **smcadmin**.

Enter a maximum Idle Time Out (in minutes) to define a maximum period of time an inactive login session will be maintained. If the connection is inactive for longer than the maximum idle time, it will be logged out, and you will have to log in to the web management system again. Setting the idle time to 0, will mean the connection never times out.
(Default: 10 minutes)

Remote Management

By default, management access is only available to users on your local network. However, you can also manage the BARRICADE from a remote host by entering the IP address of a remote computer on this screen. Check the **Enabled** check box, and enter the IP address of the remote host and click **Save Settings**.



Note: If you check **Enabled** and specify an IP address of 0.0.0.0, any host can manage the BARRICADE.

For remote management via WAN IP address you need to connect using port 8080. Simply enter WAN IP address followed by :8080 in the address field of your web browser, for example, 212.120.68.20:8080.

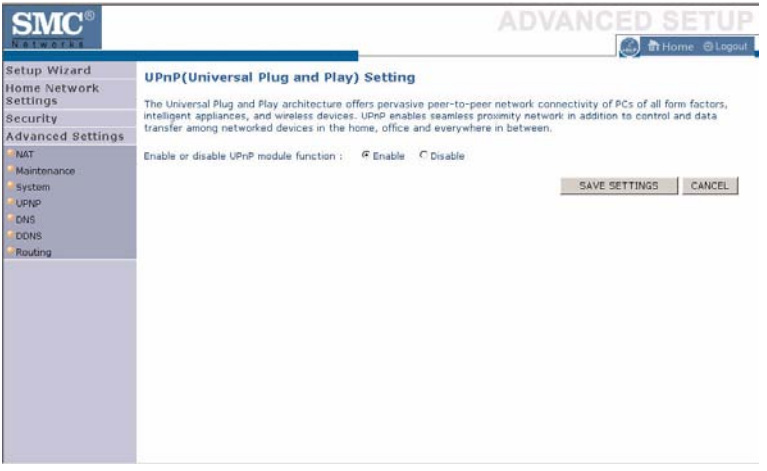
Syslog Server

The Syslog Server downloads the BARRICADE log file to the server with the IP address specified on this screen. Syslog servers offer the possibility to capture the live logs of the router on a PC. There are many shareware syslogs servers available on the web. (Default: Disabled)

UPnP

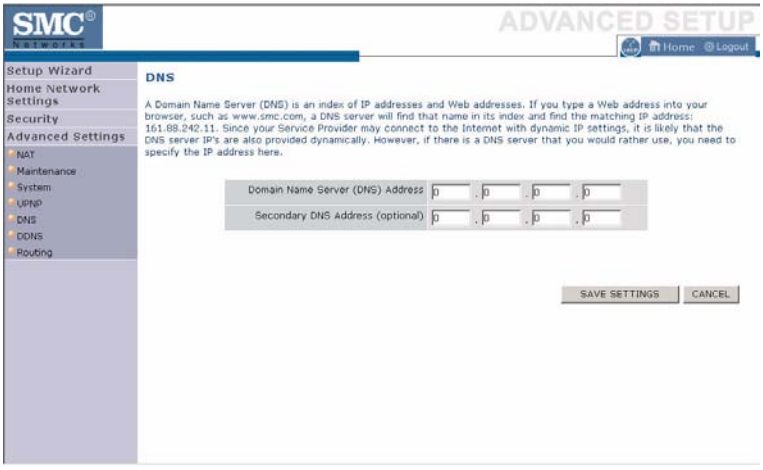
Universal Plug and Play technology makes home networking simple and affordable. This architecture offers pervasive peer-to-peer network connectivity of PCs of all form factors, intelligent appliances, and wireless devices. UPnP architecture leverages TCP/IP and the web to enable seamless proximity networking in addition to control and data transfer among networked devices in the home, office, and everywhere in between.

Click **Enable** to turn on the Universal Plug and Play function of the BARRICADE. This function allows the device to automatically and dynamically join a network.



Click **Save Settings** to proceed, or **Cancel** to change your settings.

DNS (Domain Name Server)

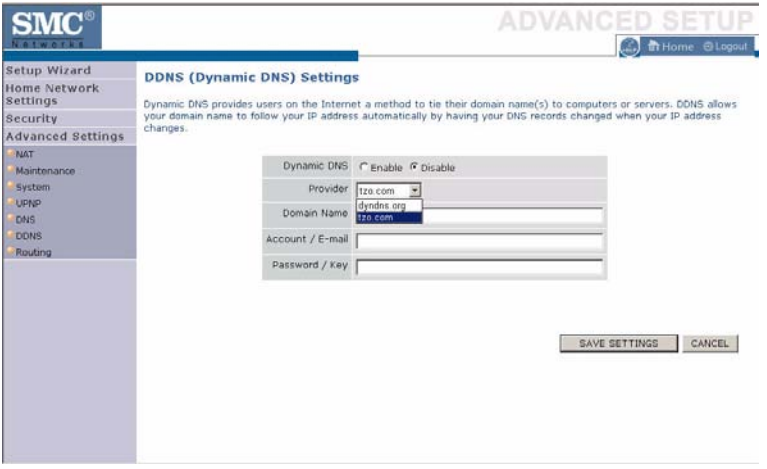


Domain Name Servers are used to map a domain name (e.g., www.somesite.com) to the equivalent numerical IP address (e.g., 64.147.25.20). Your ISP should provide the IP address of one or more Domain Name Servers. Enter those addresses on this page.

DDNS (Dynamic DNS)

Dynamic DNS (DDNS) provides users on the Internet with a method to tie their domain name to the router or server. DDNS allows your domain name to follow your IP address automatically by having your DNS records changed when your IP address changes. (Default: Disabled)

The DDNS service dynamically updates DNS information to a static hostname, provided by the DDNS service provider, as clients' IP addresses change.



Note: Please visit the web sites of the DDNS providers for details.

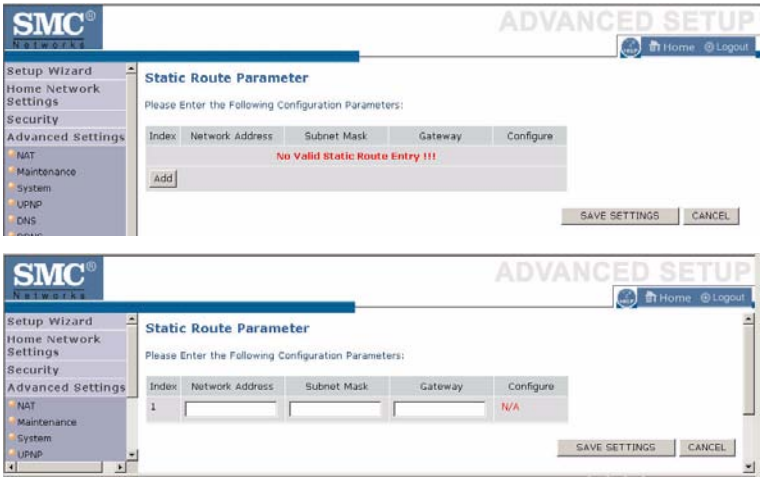
DDNS Service Provider	Web Site
DynDNS.org	http://www.dyndns.org
TZO.com	http://www.tzo.com

For using DDNS, click on the enable radio button, select the DDNS Service type, and then enter the Domain Name, Account/E-mail address, and Password/Key.

Routing

This section defines routing related parameters, including static routes and RIP (Routing Information Protocol) parameters.

Static Route



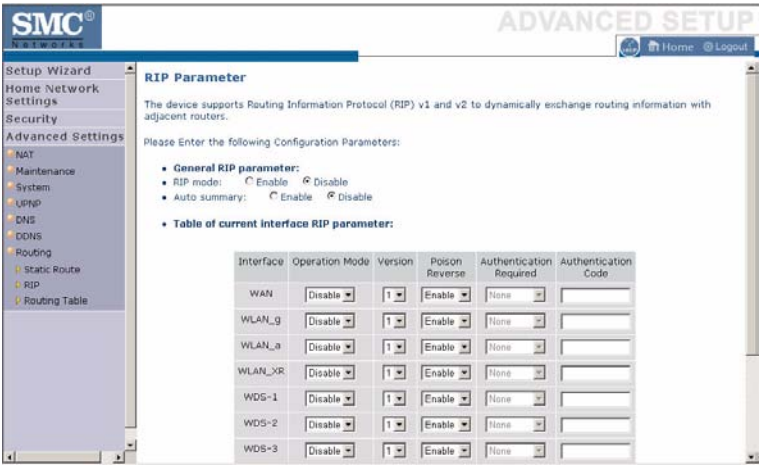
Click **Add** to add a new static route to the list.

Parameter	Description
Index	Index number of the route.
Network Address	Enter the IP address of the remote computer for which to set a static route.
Subnet Mask	Enter the subnet mask of the remote network for which to set a static route.
Gateway	Enter the WAN IP address of the gateway to the remote network.
Configure	Allows you to edit existing routes.

Click **Save Settings** to save the configuration.

RIP

RIP sends routing-update messages at regular intervals and when the network topology changes.



Parameter	Description
General RIP Parameters	
RIP mode	Globally enables or disables RIP.
Auto summary	If Auto summary is disabled, then RIP packets will include sub-network information from all subnetworks connected to the router. If enabled, this sub-network information will be summarized to one piece of information covering all subnetworks.
Table of current Interface RIP parameter	
Interface	The WAN interface to be configured.
Operation Mode	Disable: RIP disabled on this interface. Enable: RIP enabled on this interface. Silent: Listens for route broadcasts and updates its route table. It does not participate in sending route broadcasts.

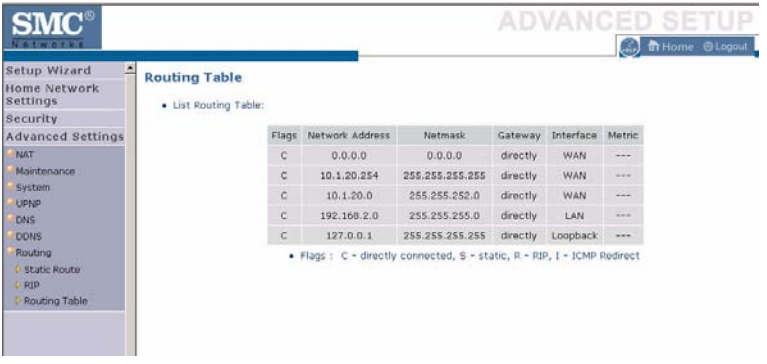
Parameter	Description
Version	Sets the RIP (Routing Information Protocol) version to use on this interface.
Poison Reverse	A method for preventing loops that would cause endless retransmission of data traffic.
Authentication Required	None: No authentication. Password: A password authentication key is included in the packet. If this does not match what is expected, the packet will be discarded. This method provides very little security as it is possible to learn the authentication key by watching RIP packets.
Authentication Code	Password Authentication key.

When a router receives a routing update that includes changes to an entry, it updates its routing table to reflect the new route. RIP routers maintain only the best route to a destination. After updating its routing table, the router immediately begins transmitting routing updates to inform other network routers of the change.

Click **Save Settings** to proceed, or **Cancel** to change your settings.

Routing Table

Click **Routing Table** to view the screen below.



Parameter	Description
Flags	Indicates the route status: C = Direct connection on the same subnet. S = Static route. R = RIP (Routing Information Protocol) assigned route. I = ICMP (Internet Control Message Protocol) Redirect route.
Network Address	Destination IP address.
Netmask	The subnetwork associated with the destination. This is a template that identifies the address bits in the destination address used for routing to specific subnets. Each bit that corresponds to a "1" is part of the subnet mask number; each bit that corresponds to "0" is part of the host number.
Gateway	The IP address of the router at the next hop to which frames are forwarded.
Interface	The local interface through which the next hop of this route is reached.
Metric	When a router receives a routing update that contains a new or changed destination network entry, the router adds 1 to the metric value indicated in the update and enters the network in the routing table.

APPENDIX A
TROUBLESHOOTING

This section describes common problems you may encounter and possible solutions to them. The BARRICADE can be easily monitored through panel indicators to identify problems.

Troubleshooting Chart	
Symptom	**Action**
LED Indicators	
Power LED is off	• Check connections between the 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 Technical Support for assistance.

Troubleshooting Chart	
Symptom	**Action**
LED Indicators	
LAN LED is Off	• Verify that the BARRICADE and attached device are powered on. • Be sure the cable is plugged into both the BARRICADE and the corresponding device. • Verify that the proper cable type is used and that its length does not exceed the 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 BARRICADE from the attached LAN, or the BARRICADE cannot ping any device on the attached LAN	• Verify that the IP addresses are properly configured. For most applications, you should use the BARRICADE's DHCP function to dynamically assign IP addresses to hosts on the attached LAN. However, if you manually configure 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 BARRICADE and any 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**
Management Problems	
Cannot connect using the web browser	• Be sure to have configured the BARRICADE with a valid IP address, subnet mask, and default gateway. • Check that you have a valid network connection to the BARRICADE and that the port you are using has not been disabled. • Check the network cabling between the management station and the BARRICADE.
Forgot or lost the password	• Press the **Reset** button on the bottom panel (holding it down for at least six seconds) to restore the factory defaults.

Troubleshooting Chart	
Symptom	**Action**
Wireless Problems	
A wireless PC cannot associate with the BARRICADE.	• Make sure the wireless PC has the same SSID settings as the BARRICADE. See "Channel and SSID" on page 4-26. • You need to have the same security settings on the clients and the BARRICADE. See "Security" on page 4-29.
The wireless network is often interrupted.	• Move your wireless PC closer to the BARRICADE to find a better signal. If the signal is still weak, change the angle of the antenna. • There may be interference, possibly caused by microwave ovens or wireless phones. Change the location of the possible sources of interference or change the location of the BARRICADE. • Change the wireless channel on the BARRICADE. See "Channel and SSID" on page 4-26. • Check that the antenna, connectors, and cabling are firmly connected.
The BARRICADE cannot be detected by a wireless client.	• The distance between the BARRICADE and wireless PC is too great. • Make sure the wireless PC has the same SSID and security settings as the BARRICADE. See "Channel and SSID" on page 4-26 and "Security" on page 4-29.

APPENDIX B
CABLES

Ethernet Cable

Caution: Do not plug a phone jack connector into an RJ-45 port. For Ethernet connections, use only twisted-pair cables with RJ-45 connectors that conform to FCC standards.

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

Wiring Conventions

For Ethernet 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.

Each wire pair must be attached to the RJ-45 connectors in a specific orientation. The following figure illustrates how the pins on an Ethernet RJ-45 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.

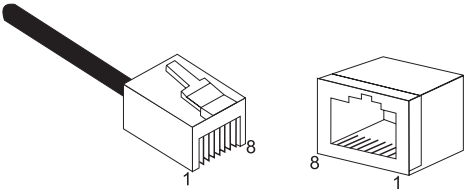


Figure B-1. RJ-45 Ethernet Connector Pin Numbers

RJ-45 Port Ethernet Connection

Use the straight-through CAT -5 Ethernet cable provided in the package to connect the BARRICADE to your PC. When connecting to other network devices such as an Ethernet switch, use the cable type shown in the following table.

Attached Device Port Type	Connecting Cable Type
MDI-X	Straight-through
MDI	Crossover

Pin Assignments

With 10BASE-T/100BASE-TX cable, pins 1 and 2 are used for transmitting data, and pins 3 and 6 for receiving data.

RJ-45 Pin Assignments	
Pin Number	Assignment*
1	Tx+
2	Tx-
3	Rx+
6	Rx-

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

Straight-Through Wiring

If the port on the attached device has internal crossover wiring (MDI-X), then use straight-through cable.

Straight-Through Cable Pin Assignments	
End 1	End 2
1 (Tx+)	1 (Tx+)
2 (Tx-)	2 (Tx-)
3 (Rx+)	3 (Rx+)
6 (Rx-)	6 (Rx-)

Crossover Wiring

If the port on the attached device has straight-through wiring (MDI), use crossover cable.

Crossover Cable Pin Assignments	
End 1	End 2
1 (Tx+)	3 (Rx+)
2 (Tx-)	6 (Rx-)
3 (Rx+)	1 (Tx+)
6 (Rx-)	2 (Tx-)

APPENDIX C
SPECIFICATIONS

IEEE Standards
IEEE 802.3 10 BASE-T Ethernet
IEEE 802.3u 100 BASE-TX Fast Ethernet
IEEE 802.3, 802.3u, 802.11g, 802.1D
ITU G.dmt
ITU G.Handshake
ITU T.413 issue 2 - ADSL full rate

LAN Interface
4 RJ-45 10 BASE-T/100 BASE-TX ports
Auto-negotiates the connection speed to 10 Mbps Ethernet or 100 Mbps Fast Ethernet, and the transmission mode to half-duplex or full-duplex

WAN Interface
1 ADSL RJ-45 port

Indicator Panel
LAN 1~4, WLAN, PPPoE/DSL, WAN, Power

Dimensions
124.18 x 115.93 x 33.51 mm (4.89 x 4.56 x 1.32 in)

Weight
0.175 kg (0.469 lbs)

Input Power
9 V 1 A
DVE EU DV-91AUP, US DV-91A
Leader EU 48090100-C5, US 480910OO3CT

Power Consumption
8 Watts maximum

Advanced Features

Dynamic IP Address Configuration – DHCP, DNS, DDNS

Firewall – Client privileges, hacker prevention and logging, Stateful Packet Inspection

Virtual Private Network – PPTP, IPSec pass-through, VPN pass-through, VLAN Ping

Internet Standards

RFC 826 ARP, RFC 791 IP, RFC 792 ICMP, RFC 768 UDP, RFC 793 TCP, RFC 783 TFTP, RFC 1483 AAL5 Encapsulation, RFC 1661 PPP, RFC 1866 HTML, RFC 2068 HTTP, RFC 2364 PPP over ATM

Radio Features

Wireless RF module Frequency Band

802.11g Radio: 2.4GHz

802.11b Radio: 2.4GHz

USA - FCC

2412~2462MHz (Ch1~Ch11)

Canada - IC

2412~2462MHz (Ch1~Ch11)

Europe - ETSI

2412~2472MHz (Ch1~Ch13)

Japan - STD-T66/STD-33

2412~2484MHz (Ch1~Ch14)

Modulation Type

OFDM, CCK

Operating Channels IEEE 802.11b Compliant:

11 channels (US, Canada)

13 channels (ETSI)

14 channels (Japan)

Operating Channels IEEE 802.11g Compliant:

13 channels (US, Canada, Europe, Japan)

RF Output Power Modulation Rate-Output Power (dBm)
802.11b - 1Mbps 17
802.11b - 2Mbps 17
802.11b - 5.5Mbps 17
802.11b - 11Mbps 17

Modulation Rate-Output Power (dBm)
802.11g - 6Mbps 16
802.11g - 9Mbps 16
802.11g - 12Mbps 16
802.11g - 18Mbps 16
802.11g- 24Mbps 16
802.11g - 36Mbps 16
802.11g- 48Mbps 14
802.11g - 54Mbps 12

Standards Compliance

Environmental
CE Mark

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

Humidity
5% to 95% (non-condensing)

Vibration
IEC 68-2-36, IEC 68-2-6

Shock
IEC 68-2-29

Drop
IEC 68-2-32

FOR TECHNICAL SUPPORT, CALL:
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http://www.smc.com/index.cfm?action=tech_support_drivers_downloads
http://www.smc-asia.com/index.php?option=com_downloads&Itemid=50)

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India:	91-11-51436361/62	Fax 91-11-51601838
Thailand:	(66) 2 651 8733	Fax (66) 2 651 8737
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