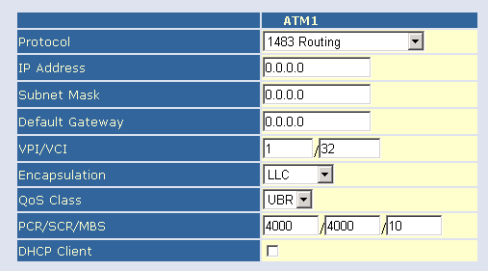
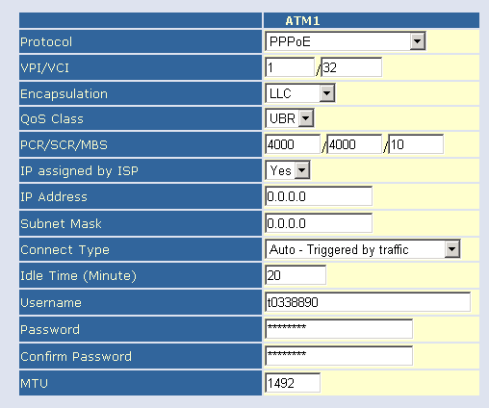
Parameter	Description
Confirm Password	Confirm password
MTU	Leave the Maximum Transmission Unit (MTU) at the default value unless instructed by your ISP

1483 Routing



Parameter	Description
IP Address	Enter the IP address provided by your ISP.
Subnet Mask	Enter the subnet mask address provided by your ISP.
Default Gateway	Enter the gateway address provided by your ISP.
VPI/VCI	Enter the Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) supplied by your ISP.
Encapsulation	Select the encapsulation used by ISP from the drop down list.
QoS Class	ATM QoS classes including CBR, UBR and VBR
PCR/SCR/MBS	QoS Parameters - PCR, SCR and MBS are configurable.
DHCP Client	Check the box if your ISP assigns an IP address dynamically.

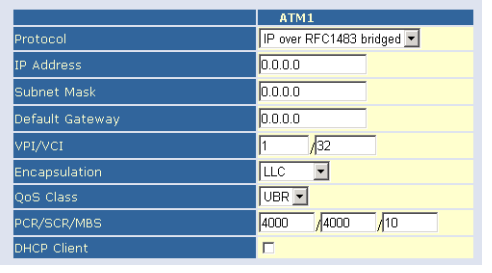
PPPoE



Parameter	Description
VPI/VCI	Enter the Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) supplied by your ISP.
Encapsulation	Select the encapsulation used by ISP from the drop-down menu.
QoS Class	ATM QoS classes including CBR, UBR and VBR
PCR/SCR/MBS	QoS Parameters - PCR, SCR and MBS are configurable.
IP assigned by ISP	Select yes, if your ISP assigns IP address dynamically.
IP Address	If you have selected "No" in the previous field, type in the IP address provided by your ISP.
Subnet Mask	Enter the subnet mask address provided by your ISP.
Connect Type	Sets connection mode to Always connected, Auto-Triggered by traffic or Manual connection. For flat rate services use Always connected.
Idle Time (Minute)	Enter the maximum idle time for the Internet connection. After this time has been exceeded the connection will be terminated. This setting only applies when the Connect Type is set to Auto-Triggered by traffic.
Username	Enter user name.
Password	Enter password.

Parameter	Description
Confirm Password	Confirm password
MTU	Leave the Maximum Transmission Unit (MTU) at the default value unless instructed by your ISP.

IP Over RFC1483 bridged



Parameter	Description
IP Address	Enter the IP address provided by your ISP.
Subnet Mask	Enter the subnet mask address provided by your ISP.
Default Gateway	Enter the gateway address provided by your ISP.
VPI/VCI	Enter the Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) supplied by your ISP.
Encapsulation	Select the encapsulation used by ISP from the drop-down menu.
QoS Class	ATM QoS classes including CBR, UBR and VBR
PCR/SCR/MBS	QoS Parameters - PCR, SCR and MBS are configurable.
DHCP Client	Check the box if your ISP assigns an IP address dynamically.

Clone MAC Address

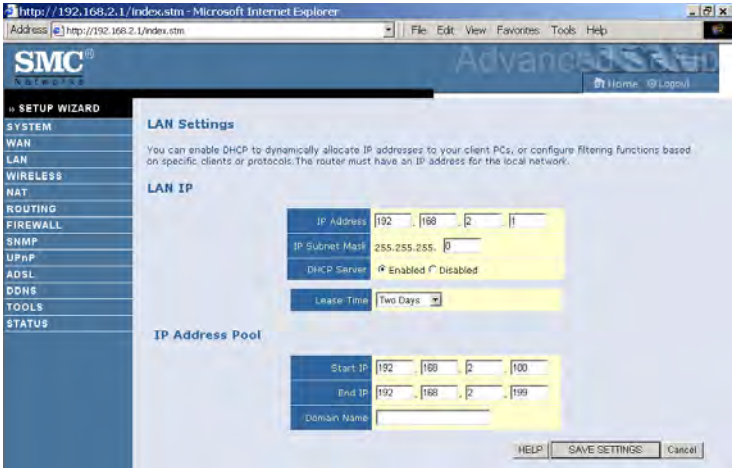
Some ISPs require you to register your MAC address with them. If this is the case, and you have previously registered the MAC address of another device, the MAC address of the Barricade must be changed to the MAC address that you have registered with your ISP.

DNS

A Domain Name Server (DNS) is an index of IP addresses and Web addresses. If you type a Web address into your browser, such as www.smc.com, a DNS server will find that name in its index and find the matching IP address: xxx.xxx.xxx.xxx. Most ISPs provide a DNS server for speed and convenience. Since your Service Provider may connect to the Internet with dynamic IP settings, it is likely that the DNS server IP's are also provided dynamically. However, if there is a DNS server that you would rather use, you need to specify the IP address here.

LAN

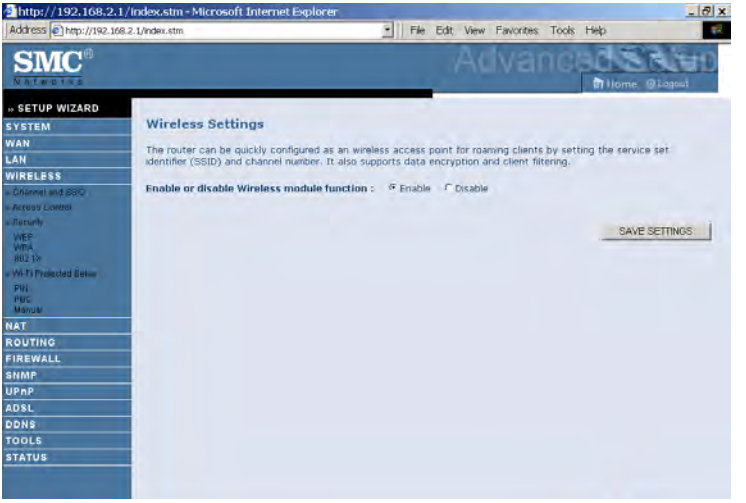
The LAN settings menu allows you to change the default IP address of the Barricade, modify the DHCP server settings.



Parameter	Description
LAN IP	
IP Address	The IP address of the Barricade.
IP Subnet Mask	The subnet mask of the Barricade.
DHCP Server	This option allows you to enable or disable the DHCP server function. By default DHCP is enabled.
Lease Time	Allows you to select a pre-defined lease time for IP addresses assigned using DHCP. For home networks this may be set to Forever, which means there is no time limit on the IP address lease.
IP Address Pool	
Start IP Address/ End IP address	Specify the start/end IP address of the DHCP pool. Do not include the gateway address of the Barricade in the client address pool. If you change the pool range, make sure the first three octets match the gateway's IP address, i.e., 192.168.2.xxx.
Domain Name	If your network uses a domain name, enter it here. Otherwise, leave this field blank.

Wireless

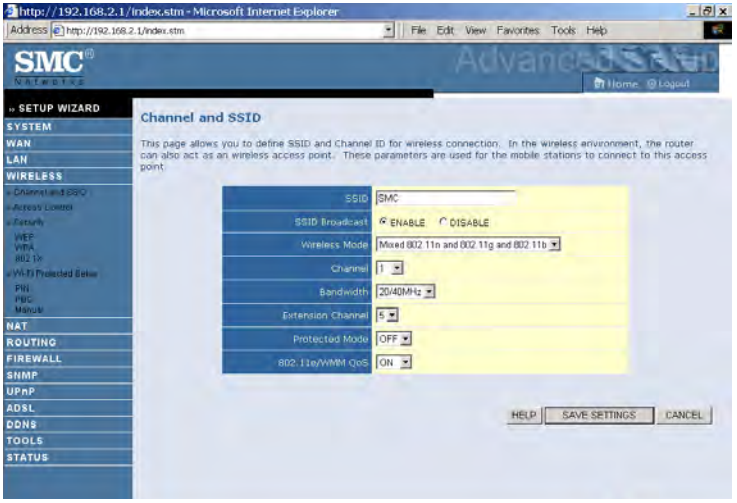
The router also operates as a wireless access point, allowing wireless computers to communicate with each other. To configure this function, all you need to do is enable the wireless function, define the radio channel, the domain identifier, and the security options.



- Enable or disable Wireless module function: select to enable or disable the wireless function.

Channel and SSID

You must specify a common radio channel and SSID (Service Set ID) to be used by the router and all of its wireless clients. Be sure you configure all of its clients to the same values.



Parameter	Description
SSID	This is the Service Set ID. The SSID must be the same on the router and all of its wireless clients.
SSID Broadcast	Select to enable/disable the brocasting of SSID. Enable this function for easy connection for the clients. Disable this function for increased security.
Wireless Mode	The Router supports 11n, 11g, and 11b wireless networks. SMC recommend using "Mixed 802.11n, 802.11g and 802.11b" to provide compatibility with 11n, 11g and 11b wireless clients.
Channel	This is the radio channel used for wireless communication.

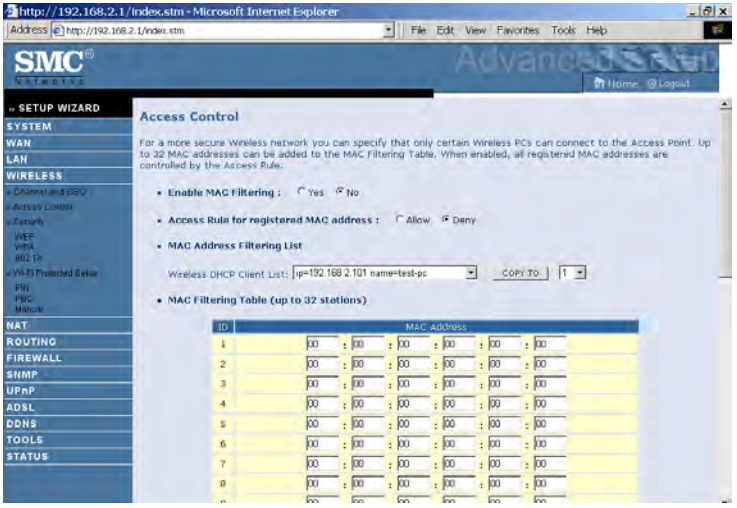
Parameter	Description
Bandwidth	Select the bandwidth: •20 MHz: Sets the operation bandwidth as 20 MHz. when 20 MHz is selected, there would be no extension channel available. •20/40 MHz: Allows automatic detection of the operation bandwidth between 20 and 40 MHz. Choosing this mode allows you to use the extension channel.
Extension Channel	This is the optional channel for use. Setting the Bandwith to 20/40 MHz allows you to use this extension channel as the secondary channel for doubling the bandwith of your wireless network.
Protected Mode	In most situations, best performance is achieved with Protected Mode turning Off. If you are operating in an environment with heavy 802.11b traffic or interference, best performance may be achieved with Protected Mode turning On.
802.11e/WMM QoS	Select to turn on/turn off the QoS function.

Notes: 1. When bandwidth is set to 20 MHz, there would be no extension channel that can be selected. The extension channel is based on the main or primary channel. When the main channel is set to channel 1, channel 5 will be used as the extension channel. When the main channel is set to 9, the extension channel can be channel 5 or 13.

2. The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

Access Control

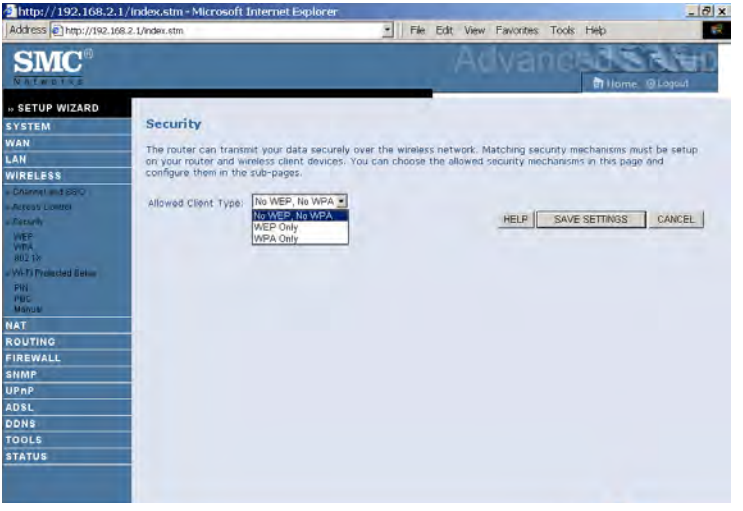
Using the Access Control functionality, you can restrict access based on MAC address. Each PC has a unique identifier known as a Medium Access Control (MAC) address. With MAC filtering enabled, the computers whose MAC address you have listed in the filtering table will be able to connect (or will be denied access) to the router.



- Enable MAC Filtering: select to enable or disable this function.
- Access Rule for registered MAC address: select to allow/deny access for the registered MAC addresses. Selecting Allow means only MAC addresses registered here will be able to connect to the router. Selecting Deny means only the MAC addresses registered here will be denied access to the router.
- Wireless DHCP Client List: use the drop down list to quickly copy the current entry to the table.
- MAC Filtering Table: you can enter up to 32 stations to the table.

Security

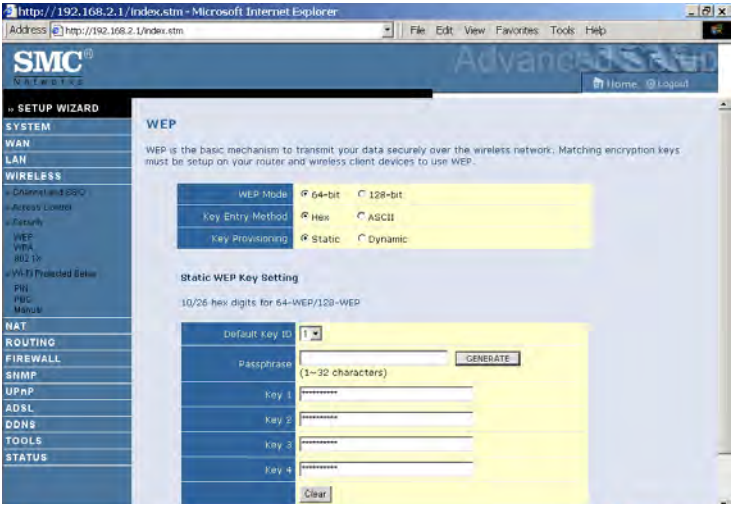
To make your wireless network safe, you should turn on the security function.



Allowed Client Type:

- No WEP, No WPA - this means no security mechanism will be used on your wireless network.
- WEP only - this menas only WEP will be used for your wireless communication.
- WPA only - this means only WPA will be used for the wireless network.

WEP



Parameter	Description
WEP Mode	Select 64 bit, or 128 bit.
Key Entry Method	Select Hex, or ASCII.
Key Provisioning	Select Static, or Dynamic. If you select Static, you will need to configure the Static WEP Key Setting section. If you choose Dynamic, then 802.1X authentication should be enabled.

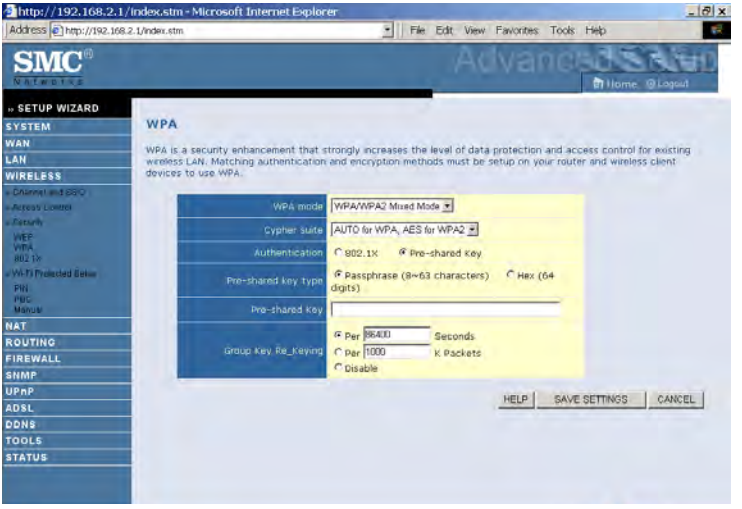
To automatically generate encryption keys using the passphrase function, when Key Entry Method is set to **Hex**, enter a string into the passphrase field, then click **Generate**. Select the **Default Key ID** from the drop-down menu and click **SAVE SETTINGS**.

To manually configure the encryption key, enter five hexadecimal pairs of digits for each 64-bit key, or enter 13 pairs for the single 128-bit key.

Note: A hexadecimal digit is a number or letter in the range 0-9 or A-F. The passphrase can consist of up to 32 alphanumeric characters.

WPA

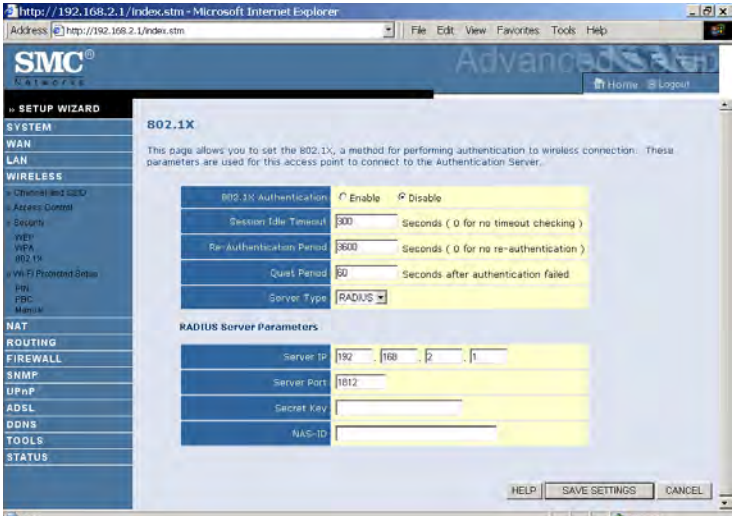
Wi-Fi Protected Access (WPA) combines temporal key integrity protocol (TKIP) and 802.1X mechanisms. It provides dynamic key encryption and 802.1X authentication service. The router supports both WPA and WPA2.



Parameter	Description
WPA mode	Select WPA, WPA2 or mixed mode.
Cypher suite	Select the encryption cypher for use.
Authentication	Choose 802.1X or Pre-shared Key to use as 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	Enter the key string here.
Group Key Re_Keying	Define the time period for re-obtain the key.

802.1X

If 802.1X is used in your network, then you should enable this function for the router.

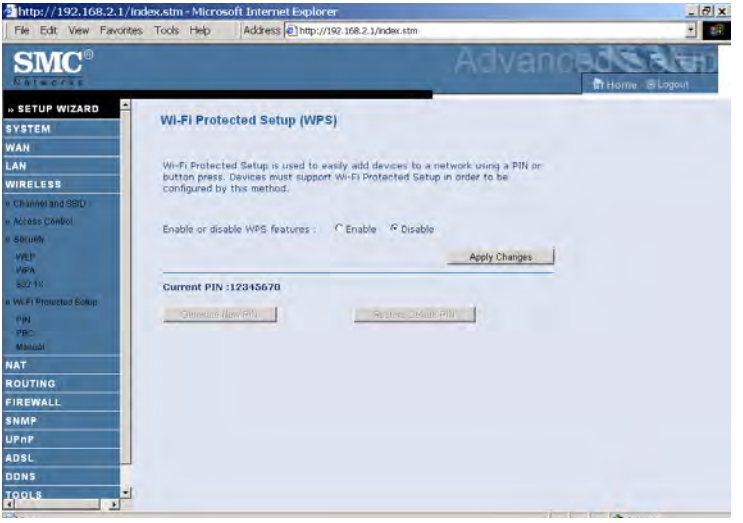


Parameter	Description
802.1X authentication	Choose to enable or disable this function.
Session Idle Timeout	Defines a maximum period of time for which the connection is maintained during inactivity.
Re-Authentication Period	Defines a maximum period of time for which the authentication server will dynamically re-assign a session key to a connected client.
Quiet Period	Defines a maximum period of time for which the router will wait between failed authentications.
Server Type	Select RADIUS.
RADIUS Server Parameters	
Server IP	Enter the authentication server IP address.
Server Port	Enter the port number.

Parameter	Description
Secret Key	The secret key shared between the authentication server and its clients.
NAS-ID	Defines the request identifier of the Network Access Server.

WPS (Wi-Fi Protected Setup)

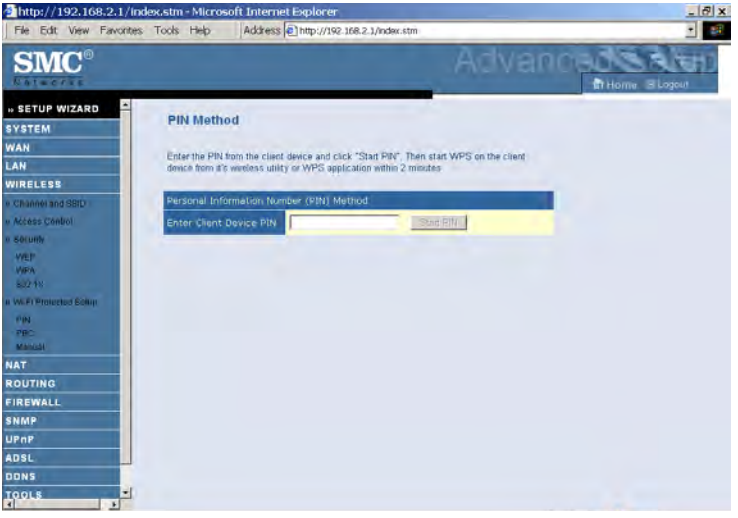
The Barricade was implemented with the ease-of-use Wi-Fi Protected Setup (WPS). WPS makes a secure wireless network much easier to achieve by using a PIN number and the Push Button Control (PBC).



- Enable or disable WPS features: select to enable or disable.
- Generate New PIN: click this button to create a new PIN.
- Restore Default PIN: click this button to restore the PIN.

PIN

Enter the PIN of the client device and click **Start PIN**. Then start WPS on the client device from it's wireless utility or WPS application within 2 minutes.

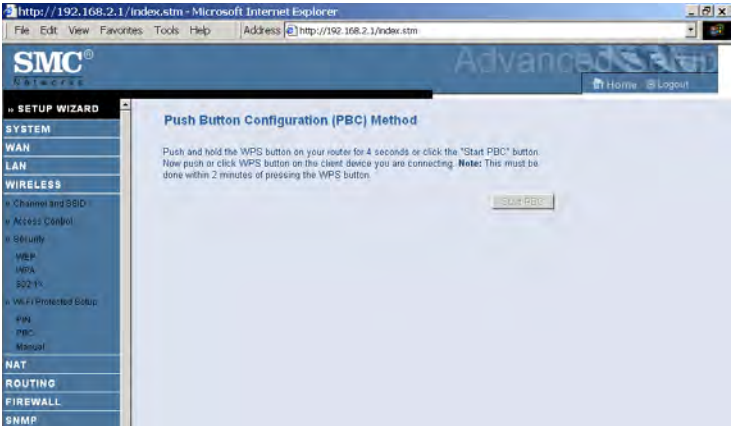


Take the following steps for easy network security settings.

1. Power on your client device supporting WPS PIN code method.
2. Start WPS PIN process on client device. For instructions on how to do this refer to the client devices user manual.
3. Enter the PIN code of client device. Note: The PIN code is generally printed on the bottom of the unit or displayed in the utility.
4. Click the **Start PIN** button on the screen.

PBC (Push Button Configuration)

To achieve successful WPS connection, you can use one of the following ways:



(1) push and hold the WPS button on this router for 4 seconds

or

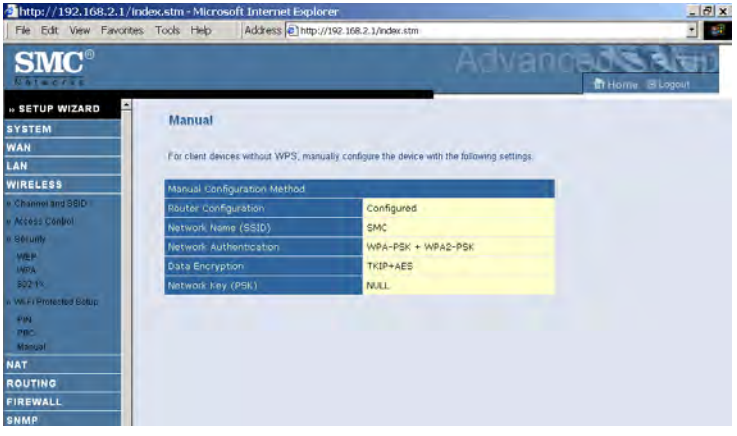
(2) click the **Start PBC** button on this screen.

Now click the WPS button on the client device which you are connecting. Make sure the client device is powered on.

Note: This connection procedure must be done within 2 minutes after pressing the WPS button on the router.

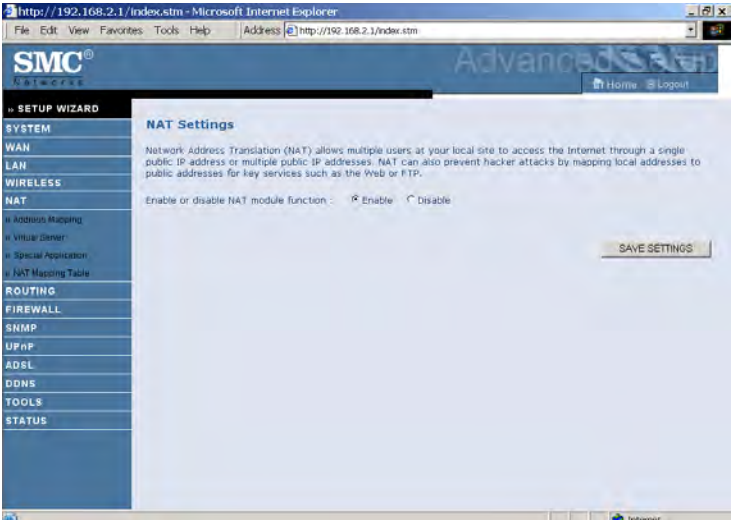
Manual

For client devices without the WPS function, you should manually configure the client device with the settings on this screen.



NAT

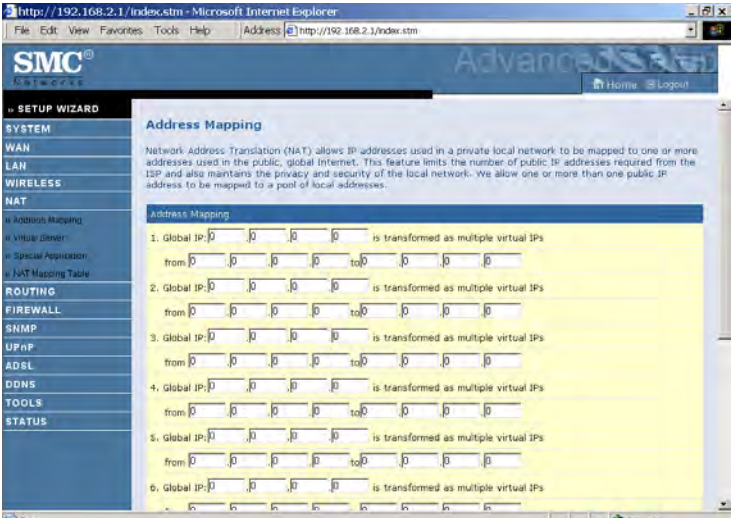
Network Address Translation (NAT) allows multiple users to access the Internet sharing one public IP.



- Enable or disable NAT module function: select to enable or disable this function.

Address Mapping

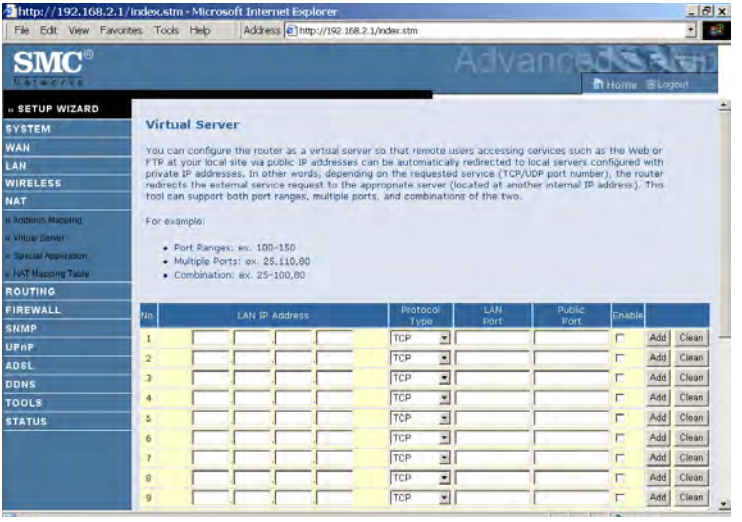
Allows one or more public IP addresses to be shared by multiple internal users. This also hides the internal network for increased privacy and security.



- Enter the Public IP address you wish to share into the Global IP field.
- Enter a range of internal IPs that will share the global IP into the "from" field.

Virtual Server

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.

A list of ports is maintained at the following link:
http://www.iana.org/assignments/port-numbers.

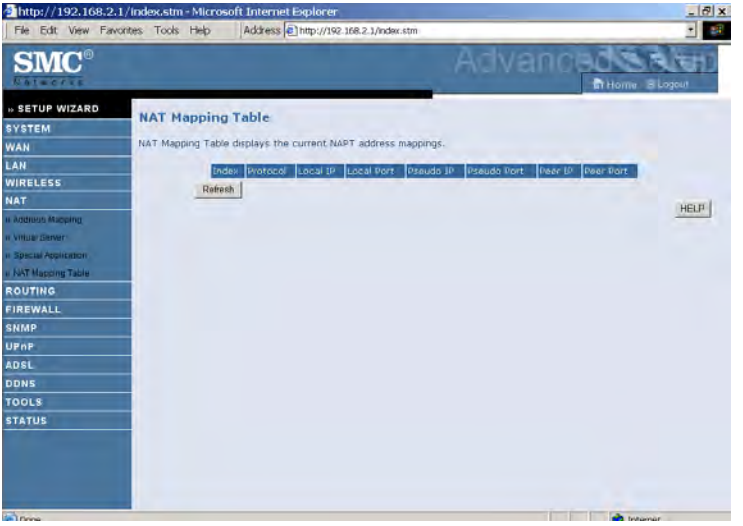
Special Application

Some applications require multiple connections, such as Internet gaming, video-conferencing, and Internet telephony. These applications may not work when Network Address Translation (NAT) is enabled. If you need to run applications that require multiple connections, use these screens to specify the additional public ports to be opened for each application.

- Use the Popular applications drop down menu to quickly copy the entry to the table.

NAT Mapping Table

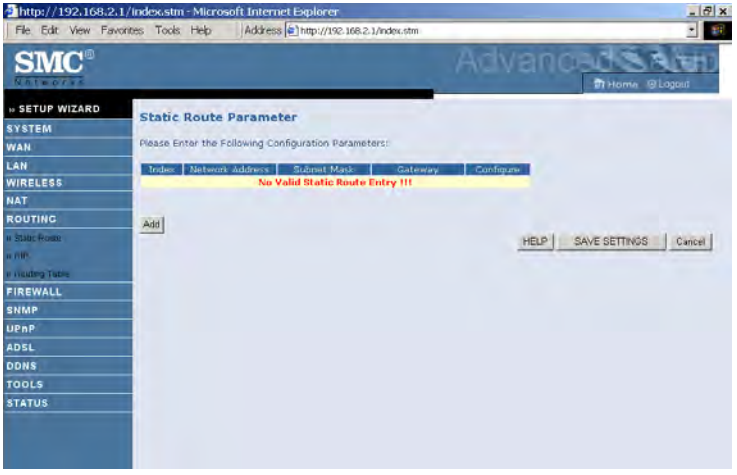
This screen displays the current NAPT (Network Address Port Translation) address mappings. Click **Refresh** to update the table.



Routing

These screens define routing related parameters, including static routes and RIP (Routing Information Protocol) parameters.

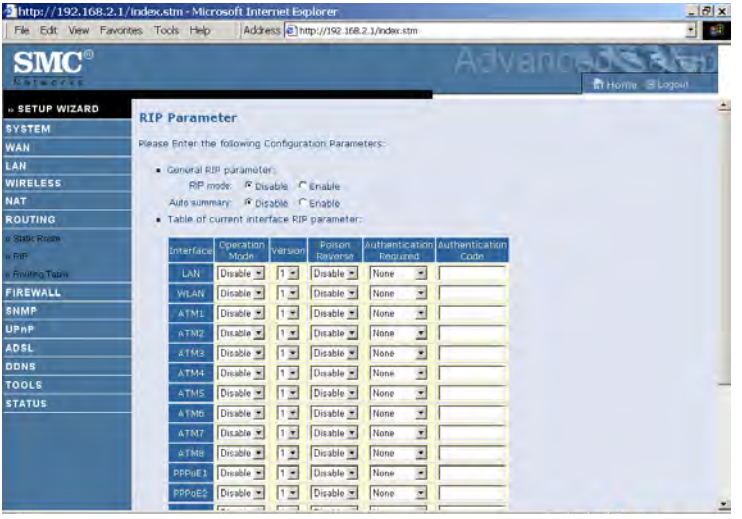
Static Route



Parameter	Description
Index	Check the box of the route you wish to delete or modify.
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.

Click **Add** to add a new static route to the list, or check the box of an already entered route and click **Modify**. Clicking **Delete** will remove an entry from the list.

RIP



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 sub-networks connected to the router. If enabled, this sub-network information will be summarized to one piece of information covering all sub-networks.
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.
Version	Sets the RIP (Routing Information Protocol) version to use on this interface.

Parameter	Description
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. • MD5: An algorithm that is used to verify data integrity through the creation of a 128-bit message digest from data input (which may be a message of any length) that is claimed to be as unique to that specific data as a fingerprint is to a specific individual.
Authentication Code	Password or MD5 Authentication key.

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

Routing Table

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.

Firewall

The Barricade Router'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.

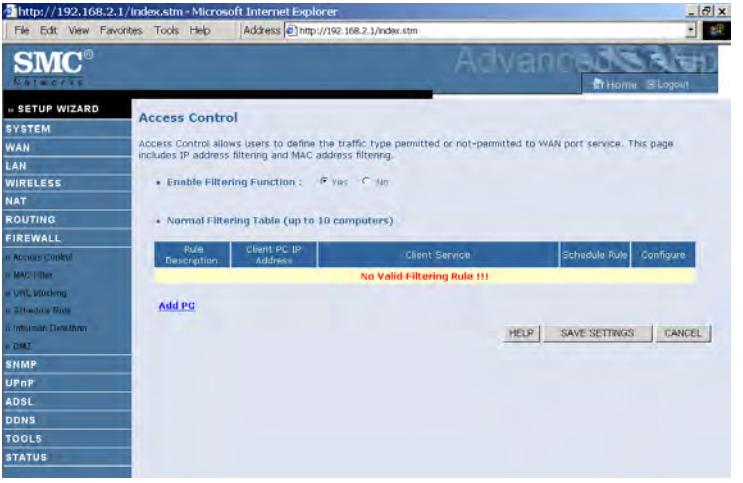
The Barricade protects against the following DoS attacks: IP Spoofing, Land Attack, Ping of Death, IP with zero length, Smurf Attack, UDP port loopback, Snork Attack, TCP null scan, and TCP SYN flooding.
(For details see page 4-60.)

The firewall does not significantly affect system performance, so we advise enabling the function to protect your network.

Select **Enable** and click the **SAVE SETTINGS** button.

Access Control

Access Control allows users to define the outgoing traffic permitted or not-permitted through the WAN interface. The default is to permit all outgoing traffic.



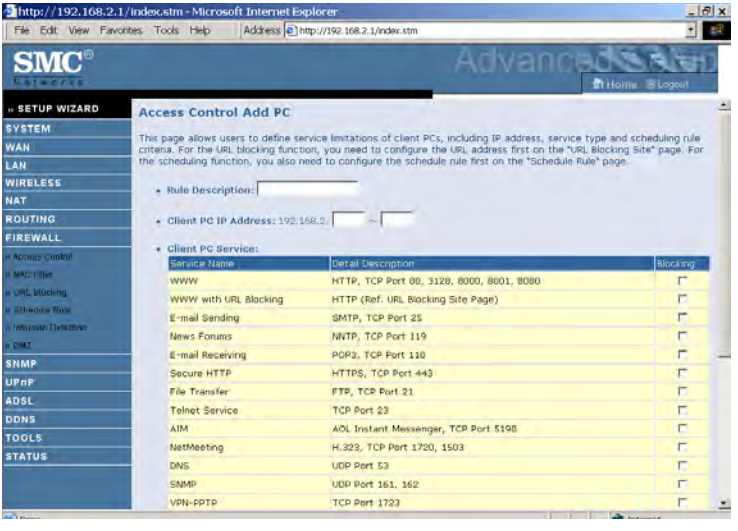
Parameter	Description
Enable Filtering Function	Enable or Disable Access control function.
Normal Filtering Table	Displays descriptive list of filtering rules defined.

To create a new access control rule:

1. Click **Add PC** on the Access Control screen. The Access Control Add PC screen will appear.

2. Define the appropriate rule settings for client PC services.

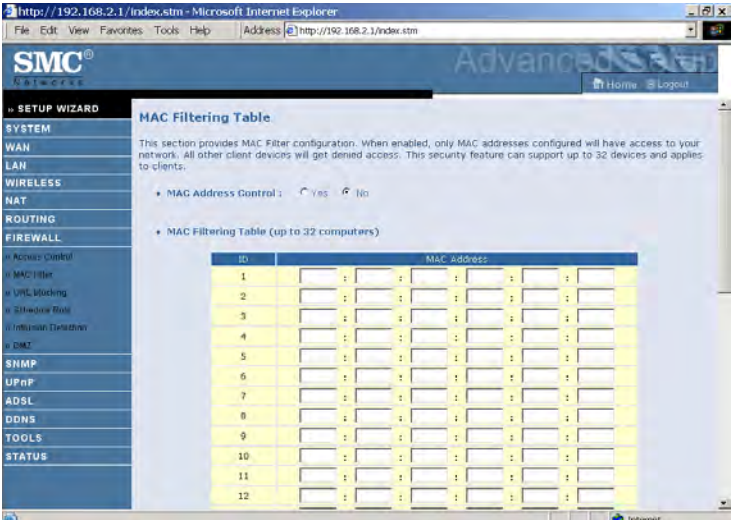
3. Click **OK** and then click **SAVE SETTINGS** to save your settings.



MAC Filter

The MAC Filter allows you to define what client PC's can access the Internet. When filtering function is enabled only the MAC addresses defined in the MAC Filtering table will have access to the Internet. All other client devices will be denied access.

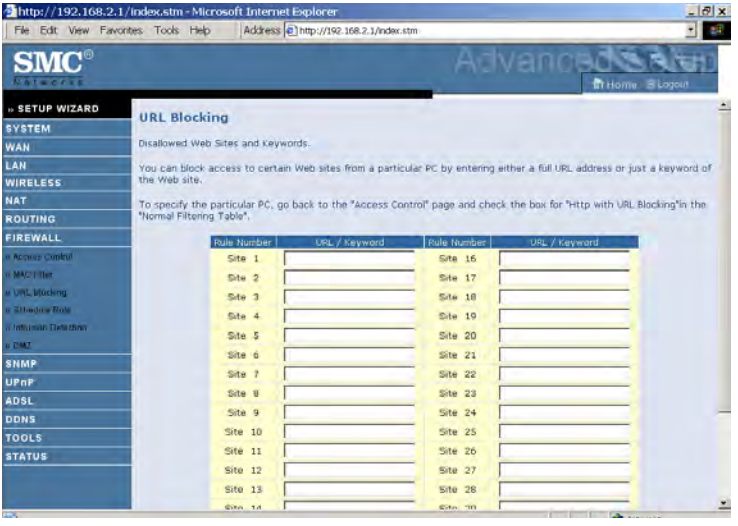
You can enter up to 32 MAC addresses in this table.



- MAC Address Control: select enable or disable.
- MAC Filtering Table: enter the MAC address in the space provided.

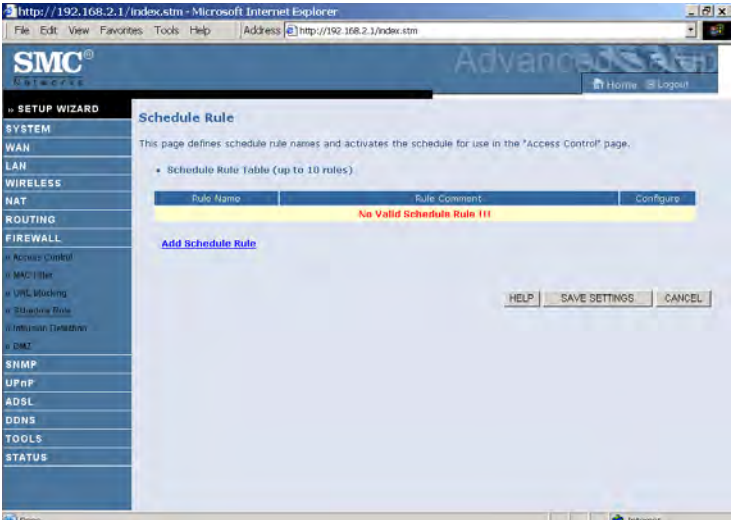
URL Blocking

The Barricade allows the user to block access to web sites 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 here.



Schedule Rule

You may filter Internet access for local clients based on rules. Each access control rule may be activated at a scheduled time. Define the schedule on the Schedule Rule screen, and apply the rule on the Access Control screen.

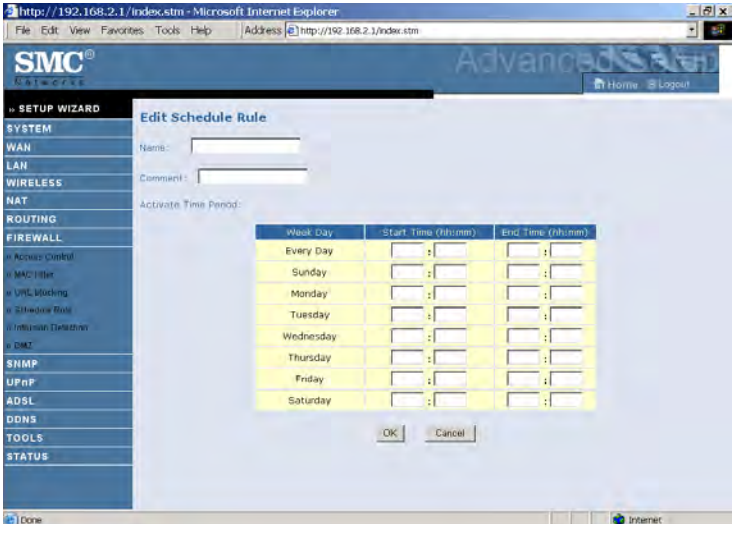


Follow these steps to add a schedule rule:

1. Click **Add Schedule Rule** on the Schedule Rule screen. The Edit Schedule Rule screen will appear.

2. Define the appropriate settings for a schedule rule.

3. Click **OK** and then click **SAVE SETTINGS** to save your settings.



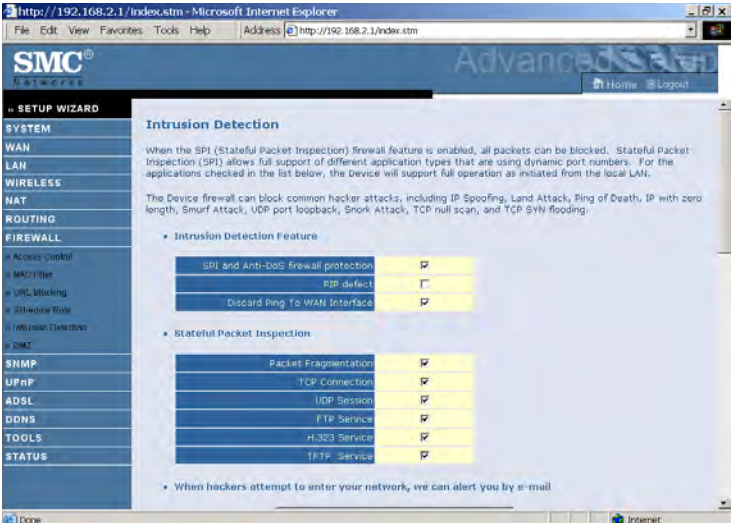
Intrusion Detection

- **Intrusion Detection Feature**

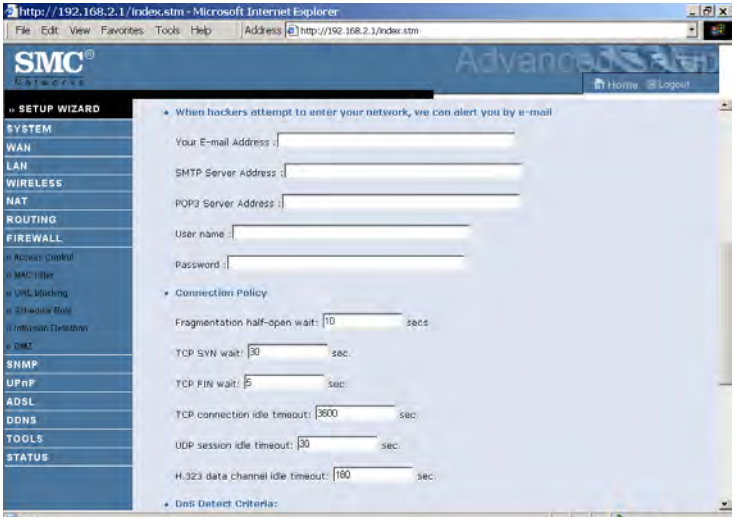
Stateful Packet Inspection (SPI) and Anti-DoS firewall protection (Default: Enabled) — The Intrusion Detection Feature of the Barricade Router limits access for incoming traffic at the WAN port. When the SPI feature is turned on, all incoming packets will be blocked except for those types marked in the Stateful Packet Inspection section.

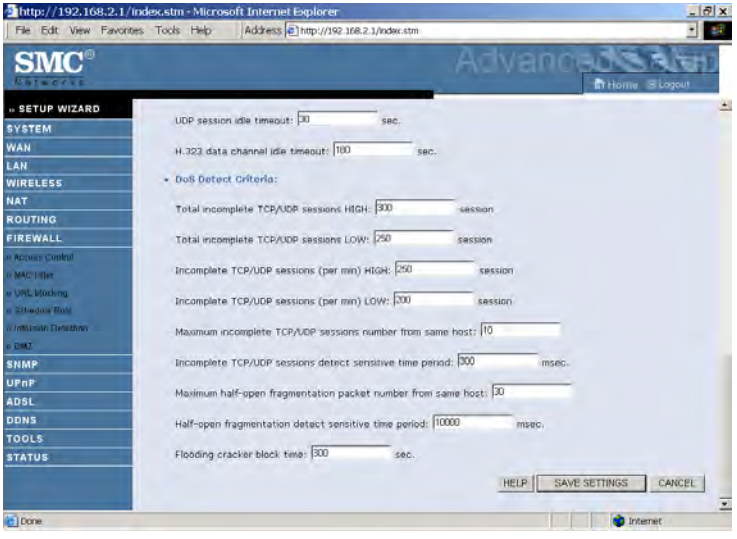
RIP Defect (Default: Enabled) — If an RIP request packet is not acknowledged to by the router, it will stay in the input queue and not be released. Accumulated packets could cause the input queue to fill, causing severe problems for all protocols. Enabling this feature prevents the packets from accumulating.

Discard Ping to WAN (Default: Disabled) — Prevent a ping on the Barricade's WAN port from being routed to the network.



Scroll down to view more information.


http://192.168.2.1/index.stm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://192.168.2.1/index.stm
SMC
Home Logout
» SETUP WIZARD
SYSTEM
WAN
LAN
WIRELESS
NAT
ROUTING
FIREWALL
» Access Control
» MAC Filter
» URL Blocking
» Schedule Rule
» Intrusion Detection
» DMZ
SNMP
UPnP
ADSL
DDNS
TOOLS
STATUS
• When hackers attempt to enter your network, we can alert you by e-mail
Your E-mail Address :
SMTP Server Address :
POP3 Server Address :
User name :
Password :
• Connection Policy
Fragmentation half-open wait: 10 secs
TCP SYN wait: 30 sec.
TCP FIN wait: 5 sec.
TCP connection idle timeout: 3600 sec.
UDP session idle timeout: 30 sec.
H.323 data channel idle timeout: 180 sec.
• DoS Detect Criteria:


http://192.168.2.1/index.stm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://192.168.2.1/index.stm
SMC
Home Logout
» SETUP WIZARD
SYSTEM
WAN
LAN
WIRELESS
NAT
ROUTING
FIREWALL
» Access Control
» MAC Filter
» URL Blocking
» Schedule Rule
» Intrusion Detection
» DMZ
SNMP
UPnP
ADSL
DDNS
TOOLS
STATUS
UDP session idle timeout: 30 sec.
H.323 data channel idle timeout: 180 sec.
• DoS Detect Criteria:
Total incomplete TCP/UDP sessions HIGH: 300 session
Total incomplete TCP/UDP sessions LOW: 250 session
Incomplete TCP/UDP sessions (per min) HIGH: 250 session
Incomplete TCP/UDP sessions (per min) LOW: 200 session
Maximum incomplete TCP/UDP sessions number from same host: 10
Incomplete TCP/UDP sessions detect sensitive time period: 300 msec.
Maximum half-open fragmentation packet number from same host: 30
Half-open fragmentation detect sensitive time period: 10000 msec.
Flooding cracker block time: 300 sec.
HELP
SAVE SETTINGS
CANCEL
Done
Internet

- **Stateful Packet Inspection**

This is called a "stateful" packet inspection because it examines the contents of the packet to determine the state of the communications; 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 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.

Stateful Packet Inspection allows you to select different application types that are using dynamic port numbers. If you wish to use the Stateful Packet Inspection (SPI) to block 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, H.323 Service, or TFTP Service.

- **When hackers attempt to enter your network, we can alert you by e-mail**

Enter your email address. Specify your SMTP and POP3 servers, user name, and password.

- **Connection Policy**

Enter the appropriate values for TCP/UDP sessions as described in the following table.

Parameter	Defaults	Description
Fragmentation half-open wait	10 sec	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 sec	Defines how long the software will wait for a TCP session to synchronize before dropping the session.
TCP FIN wait	5 sec	Specifies how long a TCP session will be maintained after the firewall detects a FIN packet.
TCP connection idle timeout	3600 seconds (1 hour)	The length of time for which a TCP session will be managed if there is no activity.
UDP session idle timeout	30 sec	The length of time for which a UDP session will be managed if there is no activity.
H.323 data channel idle timeout	180 sec	The length of time for which an H.323 session will be managed if there is no activity.

- **DoS Criteria and Port Scan Criteria**

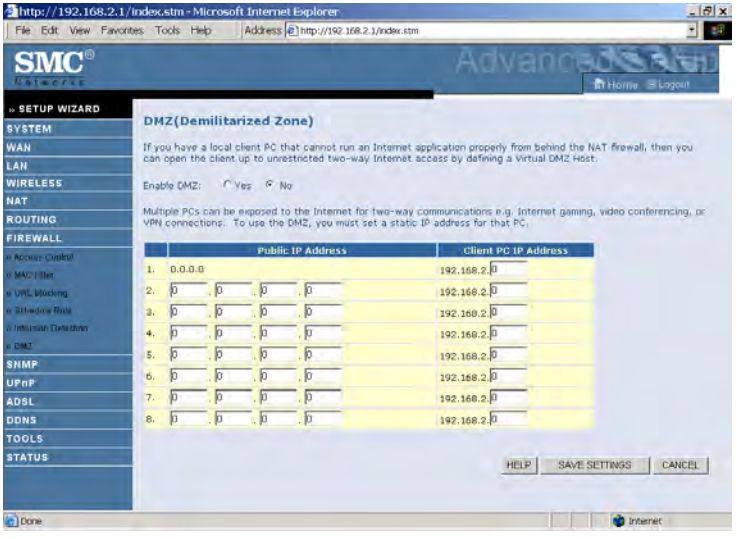
Set up DoS and port scan criteria in the spaces provided (as shown below).

Parameter	Defaults	Description
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	Maximum number of incomplete TCP/UDP sessions from the same host.
Incomplete TCP/UDP sessions detect sensitive time period	300 msec	Length of time before an incomplete TCP/UDP session is detected as incomplete.
Maximum half-open fragmentation packet number from same host	30	Maximum number of half-open fragmentation packets from the same host.
Half-open fragmentation detect sensitive time period	10000 msec	Length of time before a half-open fragmentation session is detected as half-open.
Flooding cracker block time	300 second	Length of time from detecting a flood attack to blocking the attack.

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

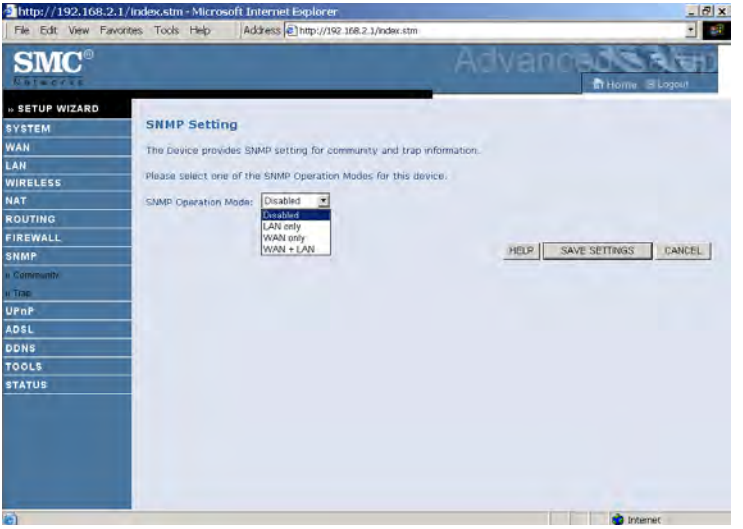
DMZ

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.



SNMP

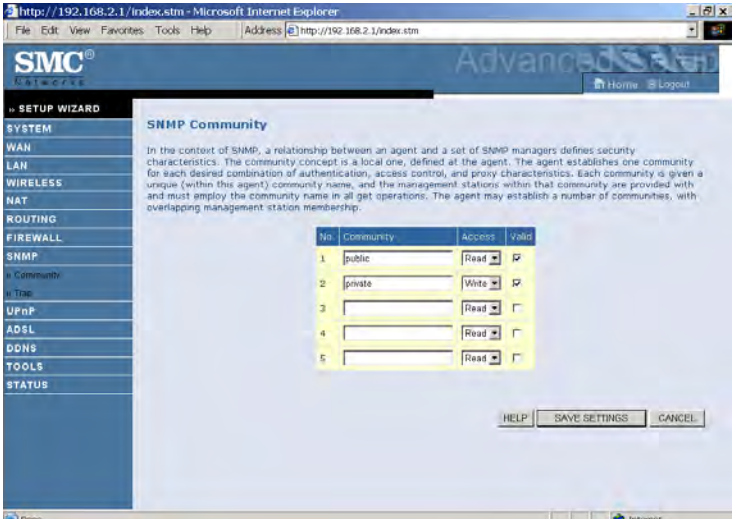
Use the SNMP configuration screen to display and modify parameters for the Simple Network Management Protocol (SNMP).



- Select the SNMP Operation mode from the drop down menu.

Community

A computer attached to the network, called a Network Management Station (NMS), can be used to access this information. Access rights to the agent are controlled by community strings. To communicate with the Barricade, the NMS must first submit a valid community string for authentication.

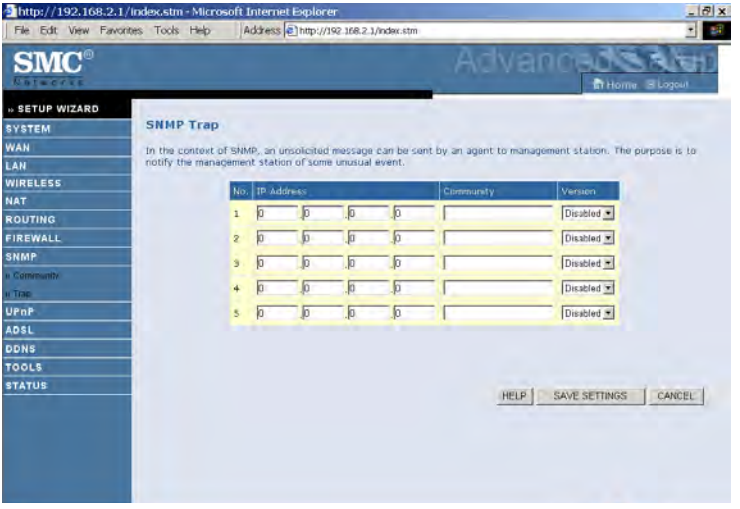


Parameter	Description
Community	A community name authorized for management access.
Access	Management access is restricted to Read Only (Read) or Read/Write (Write).
Valid	Enables/disables the entry.

Note: Up to five community names may be entered.

Trap

Specify the IP address of the NMS to notify when a significant event is detected by the agent. When a trap condition occurs, the SNMP agent sends an SNMP trap message to any NMS specified as a trap receiver.

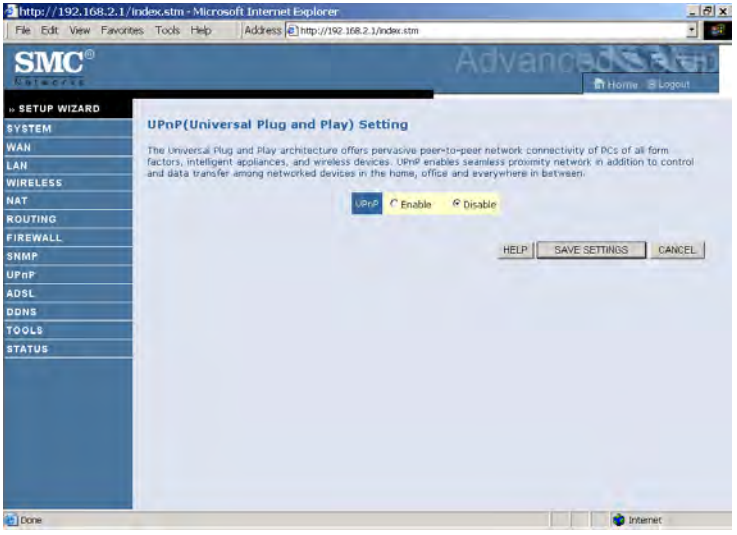


Parameter	Description
IP Address	Traps are sent to this address when errors or specific events occur on the network.
Community	A community string (password) specified for trap management. Enter a word, something other than public or private, to prevent unauthorized individuals from accessing information on your system.
Version	Sets the trap status to disabled, or enabled with V1 or V2c. The v2c protocol was proposed in late 1995 and includes enhancements to v1 that are universally accepted. These include a get-bulk command to reduce network management traffic when retrieving a sequence of MIB variables, and a more elaborate set of error codes for improved reporting to a Network Management Station.

UPnP

The Universal Plug and Play architecture offers pervasive peer-to-peer network connectivity of PCs of all form factors, intelligent appliances, and wireless devices.

UPnP enables seamless proximity network in addition to control and data transfer among networked devices in the office, home and everywhere within your network.



UPnP allows the device to automatically:

- join a network
- obtain an IP address
- convey its capabilities and learn about the presence and capabilities of other devices.

Check **Enable** to activate this function.

ADSL

ADSL (Asymmetric Digital Subscriber Line) is designed to deliver more bandwidth downstream (from the central office to the customer site) than upstream. This section is used to configure the ADSL operation type and shows the ADSL status.

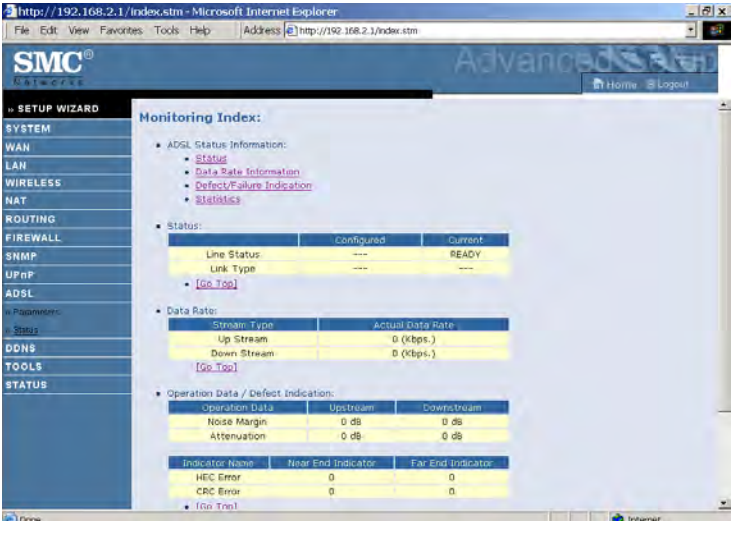
ADSL Parameters

This screen is designed for the engineer to test the ADSL loop condition. Therefore, it is advised that users should not change the settings here at all.

Parameter	Description
Operation Mode	• Automatic • T1.413 Issue 2 • G.992.1 (G.DMT) • G.992.2 (G.Lite) • G.992.3 ADSl2 • G.992.5 ADSL2+

ADSL Status

The Status screen displays information on connection line status, data rate, operation data and defect indication, and statistics.

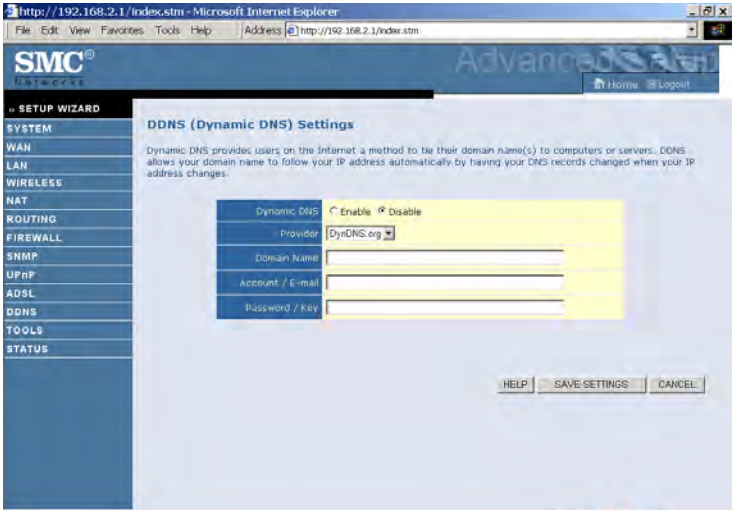


Parameter	Description
Status	
Line Status	Shows the current status of the ADSL line connection.
Data Rate	
Upstream	Maximum upstream data rate.
Downstream	Maximum downstream data rate.
Operation Data/Defect Indication	
Noise Margin	Maximum upstream and downstream noise margin.
Output Power	Maximum fluctuation in the output power.
Attenuation	Maximum reduction in the strength of the upstream and downstream signal.

Parameter	Description
Fast Path FEC Correction	There are two latency paths that may be used: fast and interleaved. For either path, a forward error correction (FEC) scheme is employed to ensure higher data integrity. For maximum noise immunity, an interleaver may be used to supplement FEC.
Interleaved Path FEC Correction	An interleaver is basically a buffer used to introduce a delay, allowing for additional error correction techniques to handle noise. Interleaving slows the data flow and may not be optimal for real-time signals such as video transmission.
Fast Path CRC Error	The number of Fast Path Cyclic Redundancy Check errors.
Interleaved Path CRC Error	The number of Interleaved Path Cyclic Redundancy Check errors.
Loss of Signal Defect	Momentary signal discontinuities.
Loss of Frame Defect	Failures due to loss of frames.
Loss of Power Defect	Failures due to loss of power.
Fast Path HEC Error	Fast Path Header Error Concealment errors.
Interleaved Path HEC Error	Interleaved Path Header Error Concealment errors.
Statistics	
Received Cells	Number of cells received.
Transmitted Cells	Number of cells transmitted.

DDNS

Dynamic Domain Name Service (DDNS) provides users on the Internet with a method to tie their domain name to a computer or server. DDNS allows your domain name to follow your IP address automatically by having your DNS records changed when your IP address changes. This DNS feature is powered by DynDNS.org or NO-IP.com or TZO.com. With a DDNS connection you can host your own web site, email server, FTP site, and more at your own location even if you have a dynamic IP address.

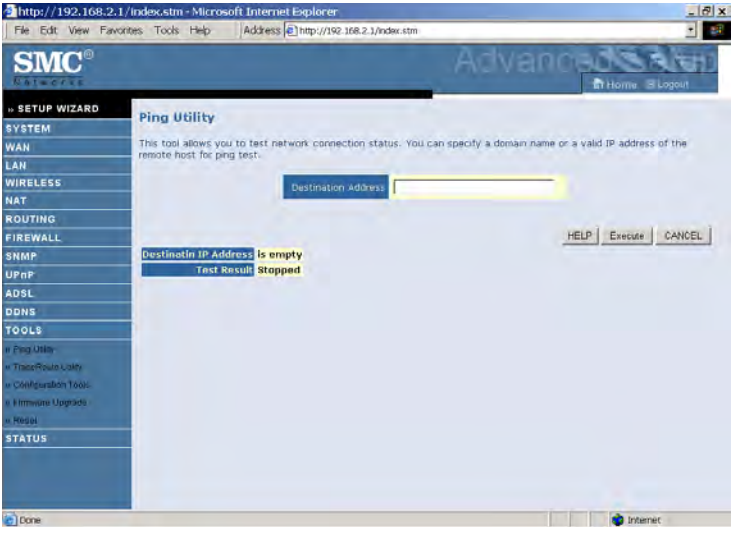


Tools

Use the Tools menu to ping, trace route, backup the current configuration, restore a previously saved configuration, update firmware, and reset the Barricade.

Ping Utility

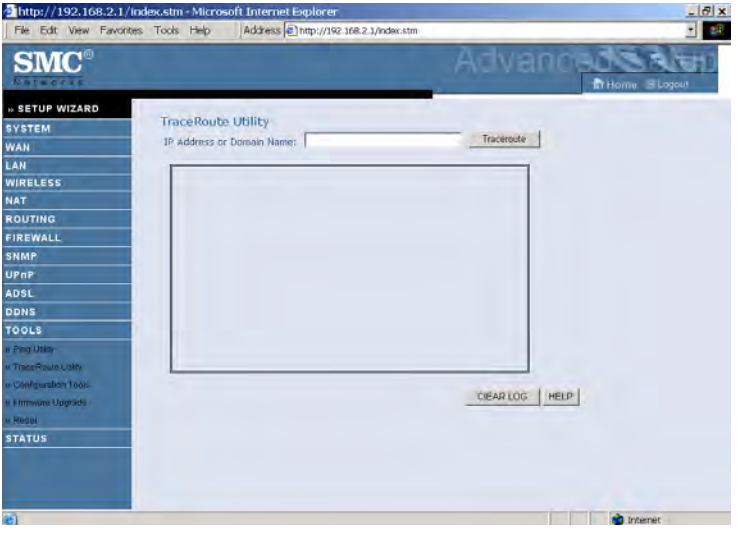
This tool allows you to test your network connection. You can specify a domain name or a valid IP address of the remote host for ping test.



- Enter the address in the Destination address field, then click **Execute**. The result will show in the Test Result area.

Trace Route Utility

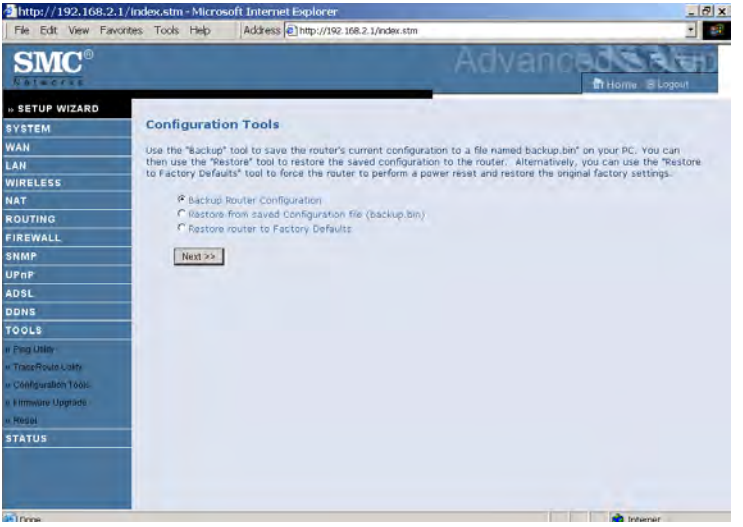
Traceroute is a TCP/IP utility which allows the user to determine the route packets take to reach a particular host.



- Enter the information in the IP Address or Domain Name field, and click the **Traceroute** button.

Configuration Tools

Choose a function and click **Next**.



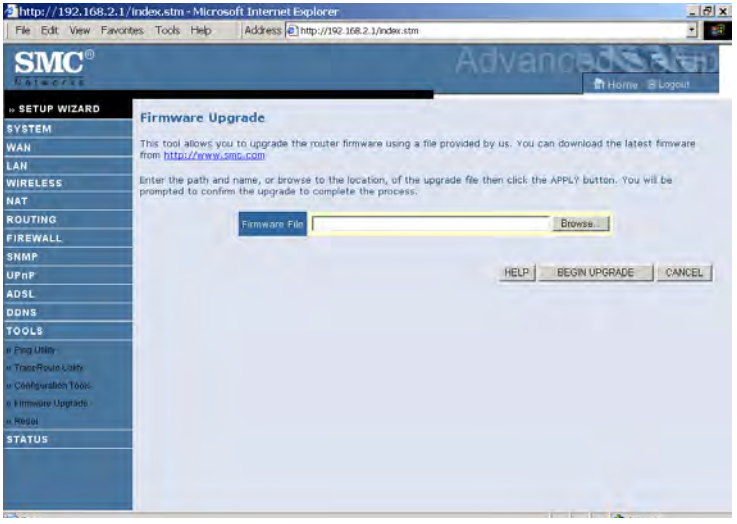
- Backup Router Configuration: this allows you to save the Barricade's configuration to a file.
- Restore from saved Configuration file: this function is used to restore the previously saved backup configuration file.
- Restore router to Factory Defaults: this resets the Barricade back to the original default settings.

Firmware Upgrade

Use this screen to update the firmware or user interface to the latest versions.

1. Download the upgrade file from the SMC web site first, and save it to your hard drive.

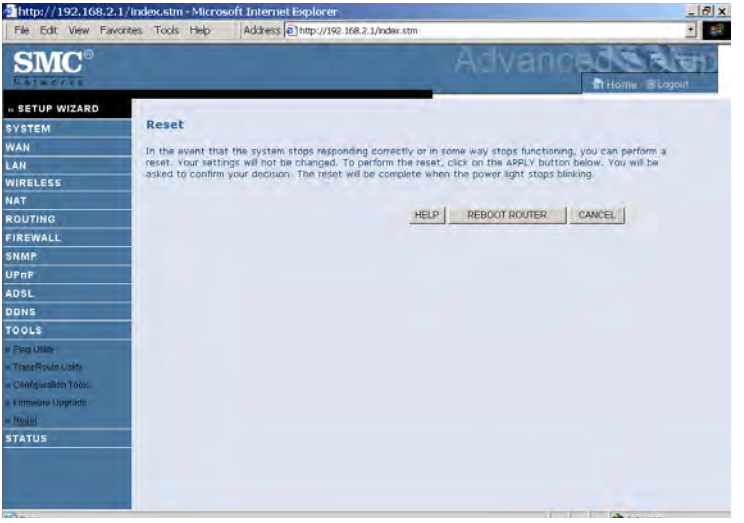
2. Then click **Browse...** to look for the downloaded file. Click **BEGIN UPGRADE**.



Check the Status screen Information section to confirm that the upgrade process was successful.

Reset

Click **REBOOT ROUTER** to reset the Barricade. The reset will be complete when the power LED stops blinking.



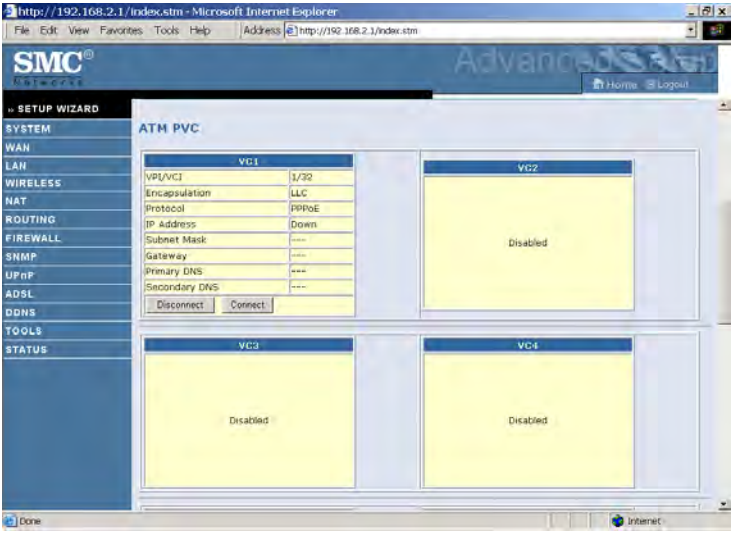
If you perform a reset from this screen, the configurations will not be changed back to the factory default settings.

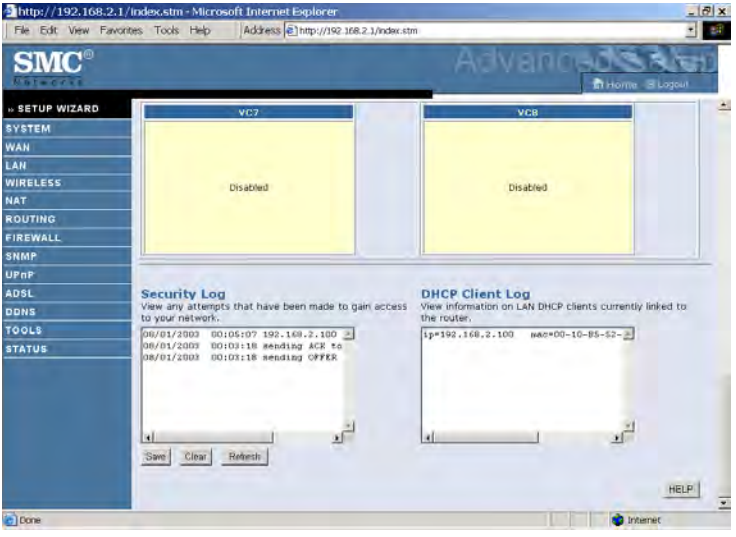
Note: If you use the Reset button on the back panel, the Barricade performs a power reset. If the button is pressed for over 10 seconds, all the LEDs will illuminate and the factory default settings will be restored.

Status

The Status screen displays WAN/LAN connection status, firmware, and hardware version numbers, illegal attempts to access your network, as well as information on DHCP clients connected to your network. The security log may be saved to a file by clicking **Save** and choosing a location.

Scroll down to view more information on the Status screen.


http://192.168.2.1/index.stm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://192.168.2.1/index.stm
SMC
Home Logout
» SETUP WIZARD
SYSTEM
WAN
LAN
WIRELESS
NAT
ROUTING
FIREWALL
SNMP
UPnP
ADSL
DDNS
TOOLS
STATUS
ATM PVC
VC1
VPI/VCI 1/32
Encapsulation LLC
Protocol PPPoE
IP Address Down
Subnet Mask ---
Gateway ---
Primary DNS ---
Secondary DNS ---
Disconnect
Connect
VC2
Disabled
VC3
Disabled
VC4
Disabled
Done
Internet


http://192.168.2.1/index.stm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://192.168.2.1/index.stm
SMC
Home Logout
» SETUP WIZARD
SYSTEM
WAN
LAN
WIRELESS
NAT
ROUTING
FIREWALL
SNMP
UPnP
ADSL
DDNS
TOOLS
STATUS
VC7
Disabled
VC8
Disabled
Security Log
View any attempts that have been made to gain access to your network.
08/01/2003 00:05:07 192.168.2.100
08/01/2003 00:03:18 sending ACK to
08/01/2003 00:03:18 sending OFFER
DHCP Client Log
View information on LAN DHCP clients currently linked to the router.
ip=192.168.2.100 mac=00-10-B5-52-
Save
Clear
Refresh
HELP
Done
Internet

The following items are included on the Status screen:

Parameter	Description
INTERNET	Displays WAN connection type and status.
Release	Click on this button to disconnect from the WAN.
Renew	Click on this button to establish a connection to the WAN.
GATEWAY	Displays system IP settings, as well as DHCP Server and Firewall 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.
ATM PVC	Displays ATM connection type and status.
Disabled	The ATM connection is disabled.
Connect	Click on this button to establish a connection to the ATM connection.
Security Log	Displays 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.
DHCP Client Log	Displays information on DHCP clients on your network.

Finding the MAC address of a Network Card

Windows 2000/XP

Click Start/Programs/Command Prompt. Type "ipconfig /all" and press "ENTER".

The MAC address is listed as the "Physical Address."

Macintosh

Click System Preferences/Network.

The MAC address is listed as the "Ethernet Address" on the TCP/IP tab.

Linux

Run the command "/sbin/ifconfig."

The MAC address is the value after the word "HWaddr."

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	
Link 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	• 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 rear panel (holding it down for at least 10 seconds) to restore the factory defaults.

APPENDIX B
CABLES

Ethernet Cable

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

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.

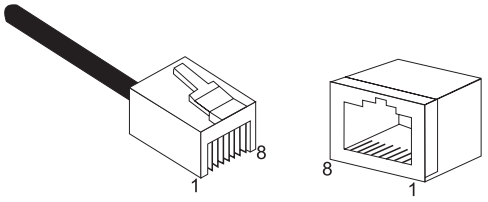


Figure B-1. RJ-45 Ethernet Connector Pin Numbers

RJ-45 Port 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.

AttachedDevicePortType	Connecting Cable Type
MDI-X	Straight-through
MDI	Crossover

Pin Assignments

With 100BASE-TX/10BASE-T 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]
1	Tx+
2	Tx-
3	Rx+
6	Rx-

1: 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-)

ADSL Cable

Use standard telephone cable to connect the RJ-11 telephone wall outlet to the RJ-11 ADSL port on the ADSL Router.

Caution: Do not plug a phone jack connector into an RJ-45 port.

Specifications

Cable Types and Specifications		
Cable	**Type**	**Connector**
ADSL Line	Standard Telephone Cable	RJ-11

Wiring Conventions

For ADSL connections, a cable requires one pair of wires. Each wire is identified by different colors. For example, one wire might be red and the other, red with white stripes. Also, an RJ-11 connector must be attached to both ends of the cable.

Each wire pair must be attached to the RJ-11 connectors in a specific orientation. The following figure illustrates how the pins on the RJ-11 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.

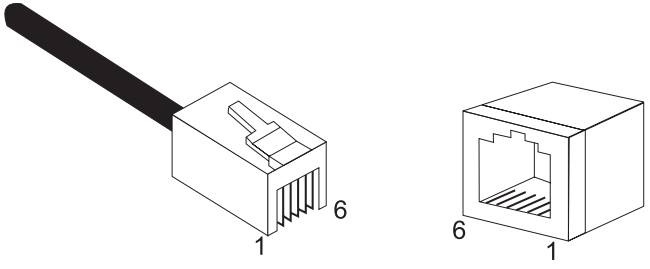
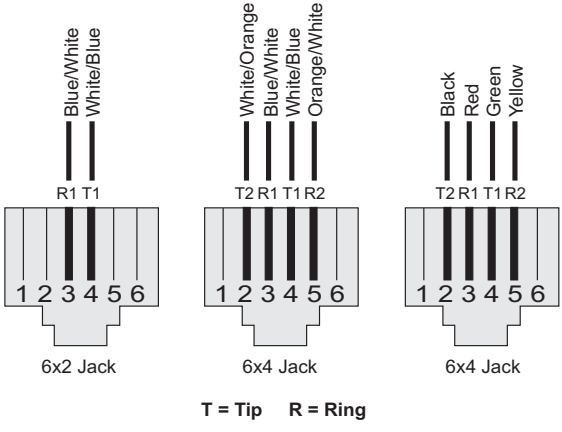


Figure B-2. RJ-11 Connector Pin Numbers



Pin	Signal Name	Wire Color
1	Not used	
2	Line 2 Tip	Black or White/Orange
3	Line 1 Ring	Red or Blue/White
4	Line 1 Tip	Green or White/Blue
5	Line 2 Ring	Yellow or Orange/White
6	Not used	

Figure B-3. RJ-11 Pinouts

APPENDIX C
SPECIFICATIONS

Physical Characteristics

Ports

Four 10/100Mbps RJ-45 ports

One ADSL port (RJ-11)

ADSL Features

Supports DMT line modulation

Supports Annex A Full-Rate ADSL: up to 8 Mbps downstream, up to 1 Mbps upstream (G.992.1 &T1.413, Issue 2) and ADSL2 (G.992.3) and ADSl2+ (G.992.5)

Supports G.Lite ADSL: up to 1.5 Mbps downstream, up to 512 Kbps upstream

Dying GASP support

ATM Features

RFC1483 Encapsulation (IP, Bridging and encapsulated routing)

PPP over ATM (LLC &VC multiplexing) (RFC2364)

Classical IP (RFC1577)

Traffic shaping (UBR, CBR)

OAM F4/F5 support

PPP over Ethernet Client

Management Features

Firmware upgrade via web based management

web based management (configuration)

Power Indicators

Event and History logging

Network Ping

Traceroute

Security Features
Password protected configuration access
User authentication (PAP/CHAP) with PPP
Firewall NAT NAPT
VPN pass through (IPSec-ESP Tunnel mode,L2TP, PPTP)

LAN Features
IEEE 802.1D (self-learning transparent Bridging)
DHCP Server
DNS Proxy
Static Routing, RIPv1 and RIP

Temperature: IEC 68-2-14
0 to 40 degrees C (Standard Operating)
-40 to 70 degree C (Non-operation)

Humidity
10% to 90% (Non-condensing)

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

Shock: IEC 68-2-29

Drop: IEC 68-2-32

Dimensions: 143mm(L) x 94mm(D) x 32mm(H)

Weight: 500 g

Input Power: 15 V 0.8A

IEEE Standards
IEEE 802.3, 802.3u, 802.11g, 802.1D , 802.11 n draft
ITU G.dmt, ITU G.Handshake, ITU T.413 issue 2 - ADSL full rate

Standards Conformance Electromagnetic Compatibility
CE, ETSI, R&TTE, FCC part 15 class B & FCC part 68

Safety
EN 60950-1

Wireless Frequency Band

802.11b/g/n Radio: 2.4 GHz
USA - FCC
2412~2462 MHz (Ch1~Ch11)
Europe - ETSI
2412~2472 MHz (Ch1~Ch13)
France
2457~2472 MHz (Ch10~Ch13)

Modulation Technology: DSSS, OFDM

Operating Channels:
IEEE 802.11b compliant:
11 channels (US, Canada)
13 channels (ETSI)
4 channels (France)

IEEE 802.11g compliant:
11 channels (US, Canada)
13 channels (Europe)

IEEE draft 802.11n 20MHz compliant:
11 channels (US, Canada)
13 channels (Europe)

IEEE draft 802.11n 40MHz compliant:
7 channels (US, Canada)
9 channels (Europe)

Signal Type: DSSS/OFDM
Operating Frequency: 2.412 - 2.462GHz

SMC® Networks

TECHNICAL SUPPORT

From U.S.A. and Canada (24 hours a day, 7 days a week)
Phn: (800) SMC-4-YOU / (949) 679-8000
Fax: (949) 679-1481

ENGLISH
Technical Support information available at www.smc.com

FRENCH
Informations Support Technique sur www.smc.com

DEUTSCH
Technischer Support und weitere Information unter www.smc.com

SPANISH
En www.smc.com Ud. podrá encontrar la información relativa a servicios de soporte técnico

DUTCH
Technische ondersteuningsinformatie beschikbaar op www.smc.com

PORTUGUES
Informações sobre Suporte Técnico em www.smc.com

SWEDISH
Information om Teknisk Support finns tillgängligt på www.smc.com

INTERNET
E-mail address: techsupport@smc.com

Driver updates
http://www.smc.com/index.cfm?action=tech_support_drivers_downloads

World Wide Web
http://www.smc.com/

SMC7904WBRA-N

20 Mason • Irvine, CA 92618 • Phn: (949) 679-8000 • www.smc.com