SOHOSpeed ADSL2/2+ Ethernet/Wireless Gateway User's Manual

Revision 1.0
July 2006

FCCInformation

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 minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Warning

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

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 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 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 separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice: The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification not expressly approved by the party responsible could void the user's authority to operate the device.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Warranty

Items sold by manufacturer/distributor/agent, hereinafter called "Seller", are warranted only as follows: Except as noted below Seller will correct, either by repair or replacement at its option, any defect of material or workmanship which develops within one year after delivery of the item to the original Buyer provided that evaluation and inspection by Seller discloses that such defect developed under normal and proper use. Repaired or replaced items will be further warranted for the unexpired term of their original warranty. All items claimed defective must be returned to Seller, transportation charges prepaid, and will be returned to the Buyer with transportation charges collect unless evaluation proves the item to be defective and that the Seller is responsible for the defect. In that case, Seller will return to Buyer with transportation charge prepaid. Seller may elect to evaluate and repair defective items at the Buyer's site. Seller may charge Buyer a fee (including travel expenses, if needed) to cover the cost of evaluation if the evaluation shows that the items are not defective or that they are defective for reasons beyond the scope of this warranty.

The Seller makes no warranty concerning components or accessories not manufactured by it. However, in the event of failure of such a part, Seller will give reasonable assistance to Buyer in obtaining from the manufacturer whatever adjustment is reasonable in light of the manufacturer's own warranty. Seller will not assume expense or liability for repairs made outside the factory by other than Seller's employees without Seller's written consent.

SELLER IS NOT RESPONSIBLE FOR DAMAGE TO ANY ASSOCIATED EQUIPMENT, NOR WILL SELLER BE HELD LIABLE FOR INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGES. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE IMPLIED WARRANTY OF "MERCHANTABILITY" AND "FITNESS FOR PARTICULAR PURPOSE."

Trademarks

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Table of Contents

1. Introduction

The SOHOSpeed ADSL2/2+ Ethernet/Wireless Gateway is a high-speed WAN bridge/router that is specifically designed to connect to the Internet and to directly connect to your local area network (LAN) via universal serial bus (USB), wireless LAN (WLAN), or high speed 10/100 Mbps Ethernet. The SOHOSpeed also has full Network Address Translation (NAT) firewall, demilitarized zone (DMZ) services, and WLAN security support to block unwanted users from accessing your network. Quality of Service (QoS) and Policy routing (PR) are also supported.

The SOHOSpeed is fully compatible with PCs and Apple Macs. It also supports 802.11b/g and the following wireless security protocols: WEP, WPA, WPA2, and 802.1x.

1.1 Features

- Equipped with four 10/100 Ethernet ports
- Equipped with one USB Interface
- Equipped with two telephone ports
- Equipped with IEEE 802.11b/g WLAN AP
- High speed wireless connection, up to 54 Mbps
- Connects multiple PCs to the Internet with just one WAN IP Address (when configured in router mode with NAT enabled)
- Configurable through user-friendly web pages
- Supports Single-Session IPSec and PPTP Pass-Through for Virtual Private Network (VPN)
- Several popular games are already pre configured. Just enable the game and the port settings are automatically configured.
- Configurable as a DHCP Server on Your Network
- Compatible with virtually all standard Internet applications
- Industry standard and interoperable DSL interface
- Address Filtering, DMZ Hosting, and Much More
- Support 64, 128 and 256 bits WEP / WPA / WPA-PSK / 802.1x (wireless models)
- Simple web based status page displays a snapshot of your system configuration, and links to the configuration pages
- Downloadable flash software upgrades
- Support for up to 8 Permanent Virtual Circuits (PVC)
- Support for up to 8 PPPoE sessions
- Supports Classical IP over ATM (CLIP or also referred to as RFC1577)
- Cost effective extension ADSL2+ modem design to full-featured ADSL and WLAN router
- System management includes SNMP v1 and v2 command line interface and web interface
- Browse the Internet while talking on the phone simultaneously

1.2 Specification

ADSL Compliance

- Support Multi mode standards (ANSI T1.413 Issue 2, G.dmt, G.lite)
- ADSL2 G.dmt.bis (G.992.3)
- ADSL2 G.lite.bis (G.992.4)
- ADSL2+ (G.992.5)
- Reach Extended ADSL (RE ADSL)

ATM Protocols

- 8 PVC Support
- Adaptation Layers AAL5, AAL2 and AAL0 Support
- OAM F4/F5 Loop Back

PPP Support

- PPP over ATM PVC (RFC 2364&RFC1577)
- PPP over Ethernet (RFC 2516)
- PAP (Password Authentication Protocol), CHAP (Challenge Handshake Authentication Protocol) and MS-CHAP (Microsoft Challenge Handshake Authentication Protocol)

Bridge Mode

- RFC 1483 Bridge
- IEEE 802.1D transparent bridging
- Bridge Filtering

Router Mode

- RFC 1483 Route
- IPoA (RFC1577)
- RIP 1 & 2 supported
- DHCP (RFC1541) Server, Relay and Client
- Network Address Translation (NAT)/ Network Address Port Translation (NAPT)
- DNS relay
- IGMP v1 and v2
- ToS supported

Quality of Service (QoS)

- Constant Bit Rate (CBR), Real-Time Variable Bit Rate (VBR-rt)
- Non-Real-Time Variable Bit Rate (VBR-nrt)
- Unspecified Bit Rate (VBR)

Management

- Remote / Local configuration & management
- Web / Telnet configuration & management
- Firmware upgrade through web management

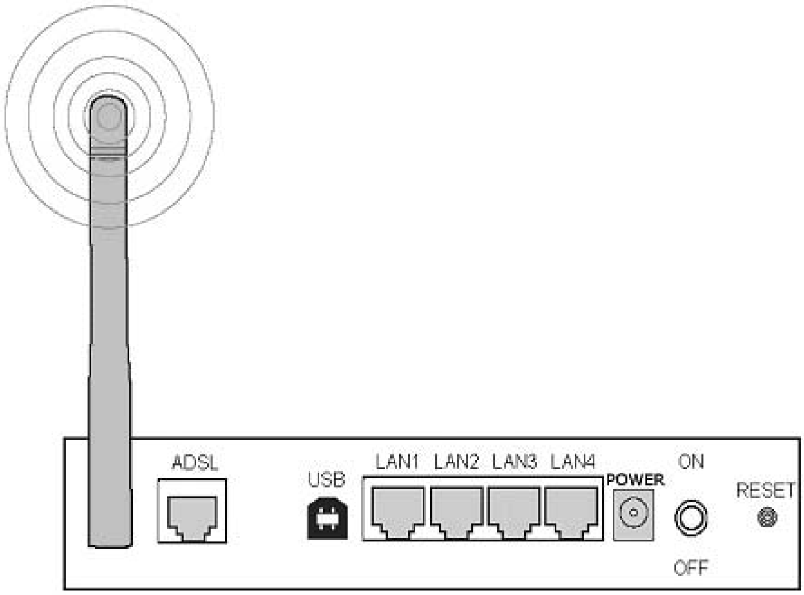
Wireless Specification

- Standard
    - IEEE 802.11b/g for wireless LAN
- Frequency Band
    - 2.400 ~ 2.4835 GHz ISM Band
- Spreading
    - DSSS (Direct Sequence Spread Spectrum)
- Security
    - 64/128-bit WEP Encryption
- Operating Range
    - Open Space: 100 - 300m; Indoor: 35m - 100m
- Supported Bit Rate
    - 54M, 48M, 36M, 24M, 18M, 12M, 11M, 9M, 6M, 5.5M, 2M, 1Mbps
- Modulation
    - OFDM, CCK

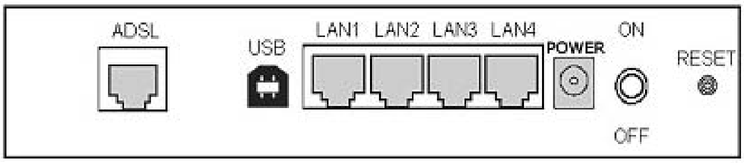
2. SOHOSpeed Overview

Your SOHOSpeed has many ports, switches and LEDs. The features are listed below.

2.1 Ports and Buttons



(4 Ports Wireless Gateway)



(4 Ports Ethernet Gateway)

RESET: The RESET button will set the SOHOSpeed to its factory default setting and reset the SOHOSpeed. You may need to place the SOHOSpeed into its factory defaults if the configuration is changed, you loose the ability to enter the SOHOSpeed via the web interface, or following a software upgrade, and you loose the ability to enter the SOHOSpeed. To reset the SOHOSpeed, simply press the reset button for more than 10 seconds. The SOHOSpeed will be reset to its factory defaults and after about 30 seconds the SOHOSpeed will become operational again.

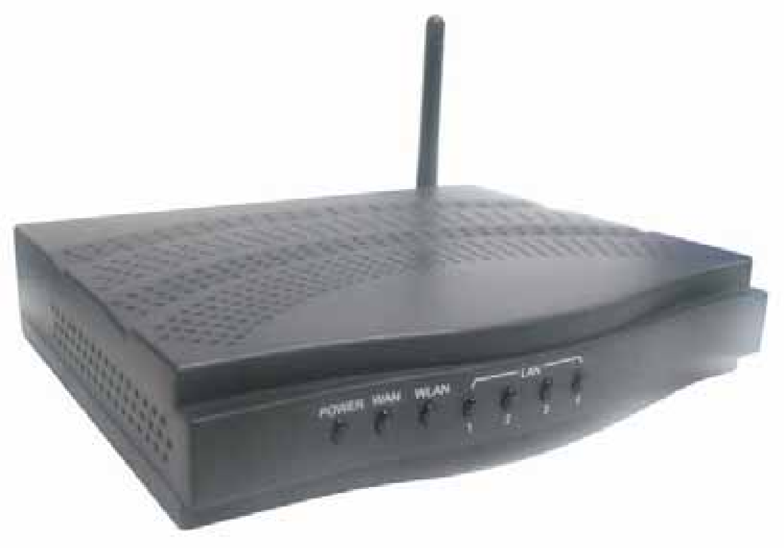
POWER: Connect the power adapter that came the SOHOSpeed. Using a power supply with a different voltage rating will damage this product. Make sure to observe the proper power requirements. The power requirement is 12 volts.

LAN (local area network) port(s): Connect to Ethernet network devices, such as a PC, hub, switch, or router.

USB (universal serial port): Connects this port to a PC's USB port. The SOHOSpeed only supports Window's based PCs via a RNDIS driver (included in the software).

ADSL port: This is the WAN interface which connects directly to your phone line.

2.2 LED Description



Power LED: The LED stays lighted to indicate the system is power on properly.

WAN LED: This LED is lighted when the WAN connection is established and flashes when the WAN port is sending/receiving data.

WLAN LED: This LED is lighted when a wireless link is established and flashes when the data is sending/receiving via wireless.

PPP LED: This LED is lighted when a PPP link is established and flashes when the data is sending/receiving via PPP. (Ethernet models)

LAN LED: The LED is lighted when a connection is established to LAN port and flashes when LAN port is sending/receiving data. (The number of LAN ports depends on your model.)

USB LED: The LED is lighted when a connection is established to USB port and flashes when USB port is sending/receiving data.

2.3 Installing your SOHOSpeed

1. Locate an optimum location for the SOHOSpeed.
2. For connections to the Ethernet and DSL interfaces, refer to the Quick Installation Guide.
3. Connect the AC Power Adapter. Depending upon the type of network, you may want to put the power supply on an uninterruptible supply. Only use the power adapter supplied with the SOHOSpeed. A different adapter may damage the product.

Now that the hardware installation is complete, continue on to set up your SOHOSpeed.

3. Setting up Your SOHOSpeed

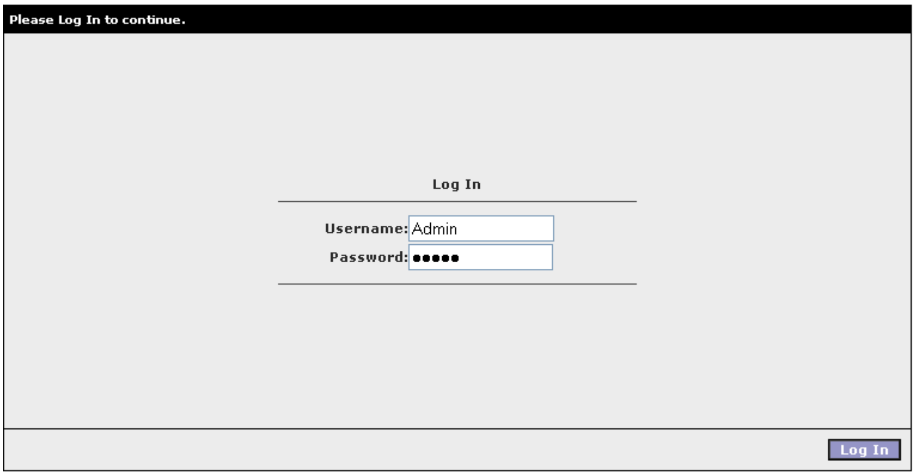
This section guides you through configuring your SOHOSpeed. The SOHOSpeed is shipped with a standard default bridge configuration. Most users would want to change the SOHOSpeed from a bridge to a router.

Before setting up your SOHOSpeed, make sure you have followed the Quick Start Guide. You should have your computers configured for DHCP mode and have proxies disabled on your browser. If you access the router using your web browser and see a log-in redirection page instead of the Log In page, check your browser's settings to verify that JavaScript is enabled. Also, if you do not get the page as shown below, you may need to delete your temporary Internet files by flushing the cached web pages.

3.1 Log into Your SOHOSpeed

Use the following procedures to log in to your SOHOSpeed.

1. Open your web browser.
   You may get an error message. This is normal. Continue on to the next step.
2. Type the default IP address of the SOHOSpeed **192.168.1.1** and press Enter.
   The Log In page appears.



Please Log In to continue.

Log In

Username: Admin

Password: ●●●●●

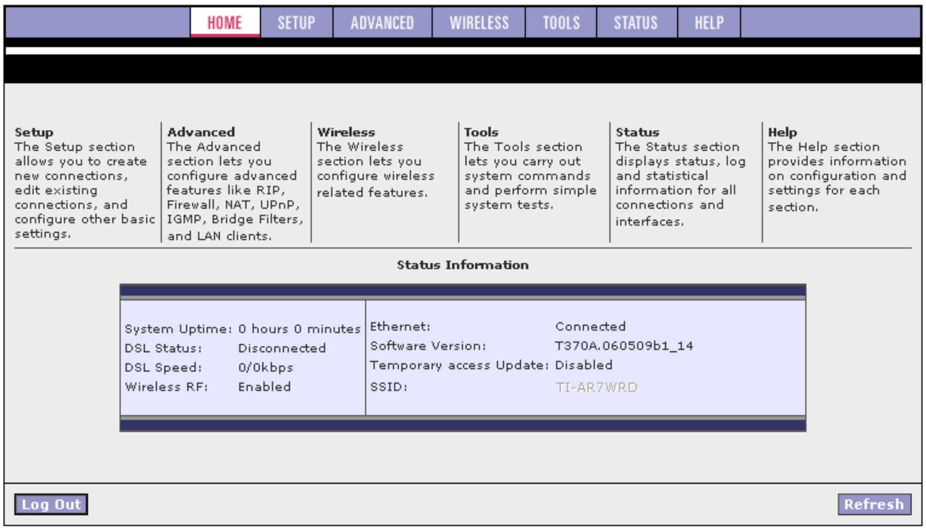
3. Enter the following information:
   - User Name: **Admin**
   - Password: **Admin**

   Note: Both fields are case-sensitive. Admin is the default value. The login name and password can be changed later on using the Tools/User Management menu options.
4. Click **Log In**.
   The main page appears.

3.2 Home Page

The first page is the **Home** page. From this page you can perform the following tasks:

- Setup the SOHOSpeed (configure the LAN and WAN connection(s).
- Configure the advanced configuration options within the SOHOSpeed (security, routing, and filtering).
- Obtain the status of the SOHOSpeed.
- View the extensive online help.



Setup
The Setup section allows you to create new connections, edit existing connections, and configure other basic settings.

Advanced
The Advanced section lets you configure advanced features like RIP, Firewall, NAT, UPnP, IGMP, Bridge Filters, and LAN clients.

Wireless
The Wireless section lets you configure wireless related features.

Tools
The Tools section lets you carry out system commands and perform simple system tests.

Status
The Status section displays status, log and statistical information for all connections and interfaces.

Help
The Help section provides information on configuration and settings for each section.

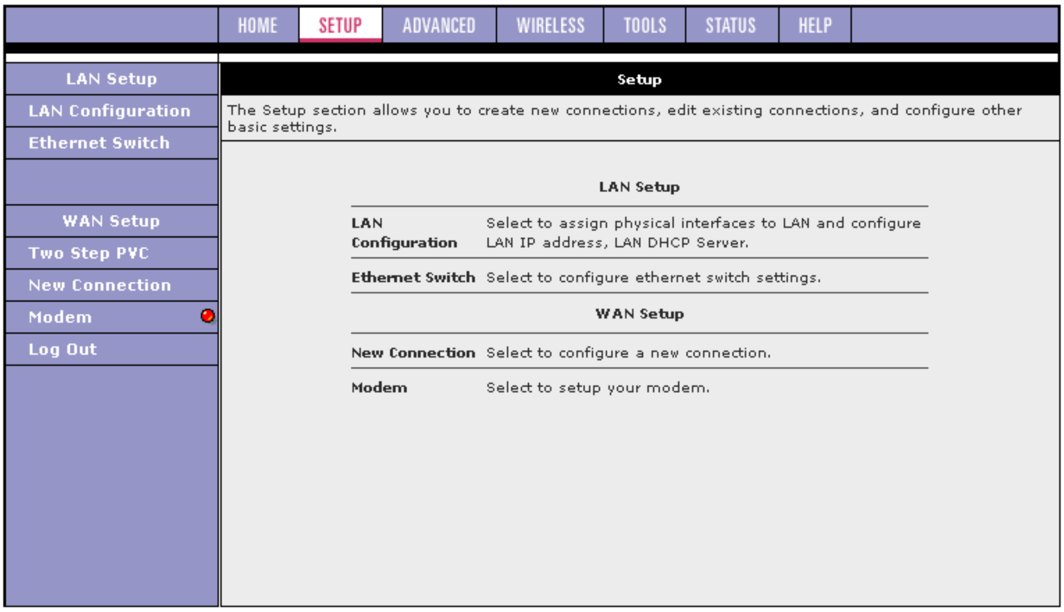
Status Information

System Uptime:	0 hours 0 minutes	Ethernet:	Connected
DSL Status:	Disconnected	Software Version:	T370A.060509b1_14
DSL Speed:	0/0kbps	Temporary access Update:	Disabled
Wireless RF:	Enabled	SSID:	TI-AR7WRD

The basic layout of the Home page consists of a page selection list across the top of the browser window. The lower center part of the page displays the SOHOSpeed status, connection information, and other useful information. The center part of the display provides descriptions of the options supported on the other web interface pages.

3.3 Setup

To setup your SOHOSpeed with a basic configuration, from the Main page, select **Setup**. The figure below illustrates the Setup page. The page is divided into two subsections: the LAN Setup and the WAN Setup.



Setup

The Setup section allows you to create new connections, edit existing connections, and configure other basic settings.

LAN Setup

LAN Configuration	Select to assign physical interfaces to LAN and configure LAN IP address, LAN DHCP Server.
Ethernet Switch	Select to configure ethernet switch settings.

WAN Setup

New Connection	Select to configure a new connection.
Modem	Select to setup your modem.

Before configuring the SOHOSpeed, there are several concepts that you should be familiar with on how your new SOHOSpeed works. Please take a moment to familiarize yourself with these concepts, as it should make the configuration much easier.

3.3.1 Wide Area Network (WAN) Connection

On one side of the SOHOSpeed is the WAN interface, also referred to as a broadband connection. This WAN connection is different for every WAN service provider. Most of the configuration you perform is for the WAN connection.

3.3.2 Local Area Network (LAN) Connection

On the other side of the SOHOSpeed are LAN interfaces. This is where local hosts are connected. The SOHOSpeed is normally configured to automatically provide all the hosts on the LAN network with IP addresses.

3.4 Configuring the WAN

Before the SOHOSpeed passes any data between the LAN interfaces and the WAN interface, the WAN side of the SOHOSpeed must be configured.
You need some (or all) of the information outlined below before you can properly configure the WAN:

- Your DSL line virtual path identifier (VPI) and virtual channel identifier (VCI)
- Your DSL encapsulation type and multiplexing
- Your DSL training mode (default is MultiMode)

For PPPoA or PPPoE users, you also need these values from your ISP:

- Your username and password

For RFC 2684 Static connections, you may need these values from your ISP:

- Your fixed WAN IP address
- Your subnet mask
- Your default gateway
- A set of three DNS IP addresses

Since multiple users can use the SOHOSpeed, the SOHOSpeed can simultaneously support multiple connection types; hence, you must set up different profiles for each connection. The SOHOSpeed supports the following protocols:

- RFC 2516 PPPoE
- RFC 2364 PPPoA
- RFC 2684 Static
- Dynamic host configuration protocol (DHCP)
- Bridged
- RFC 2225 classical IP over ATM (CLIP)

You can create up to eight WAN connections.

3.4.1 Setup a WAN Connection (New Connection)

A new WAN connection is a virtual connection over the physical DSL connection. Your SOHOSpeed can support up to eight different (unique) virtual connections. If you have multiple different virtual connections, you may need to use the static and dynamic routing capabilities of the SOHOSpeed to pass data correctly.
Before you make a new WAN connection, you should make sure you have an available DSL connection.

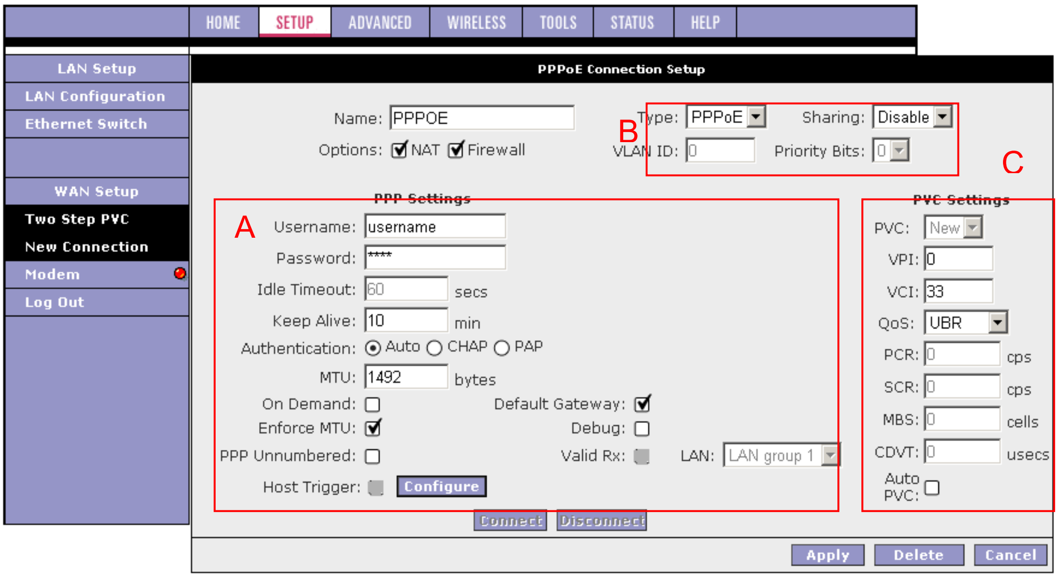
PPPoE

PPP, or point-to-point protocol, is a method of establishing a network connection/session between network hosts. PPPoE is a protocol for encapsulating PPP frames in Ethernet frames and is described in RFC 2516.
PPPoE provides the ability to connect to a network of hosts over a simple bridging access device to a remote access concentrator. With this model, each SOHOSpeed uses its own PPP stack. Access control, billing, and type of service control can all be done on a per-user rather than per-site basis.

The default New Connection Setup page, which defaults to the PPPoE Connection Setup page. Notice this page can be logically divided into three sections:

- Section A includes settings specific to the connection type
- Section B (VLAN settings)
- Section C (PVC settings) remains the same for all six connection types.

For other connection types, we will focus on the fields in Section A.



Name: PPPOE

Options: ☑ NAT ☑ Firewall

Type: PPPoE

Sharing: Disable

VLAN ID: 0

Priority Bits: 0

PPP Settings

Username: username

Password: ****

Idle Timeout: 60 secs

Keep Alive: 10 min

Authentication: ● Auto ○ CHAP ○ PAP

MTU: 1492 bytes

On Demand: □

Default Gateway: ☑

Enforce MTU: ☑

Debug: □

PPP Unnumbered: □

Valid Rx: ▨

LAN: LAN group 1

Host Trigger: ▨ Configure

PVC Settings

PVC: New

VPI: 0

VCI: 33

QoS: UBR

PCR: 0 cps

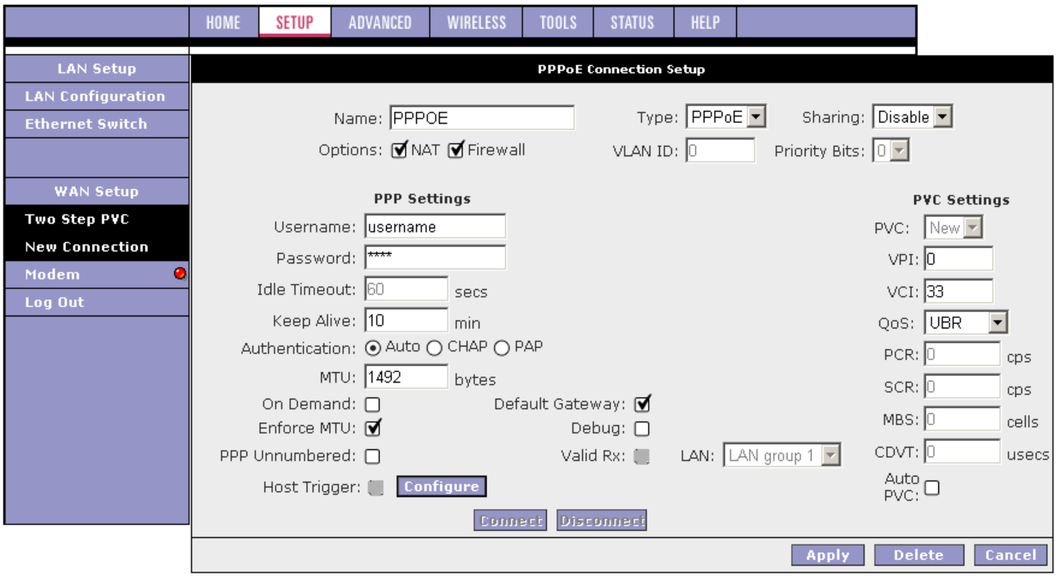
SCR: 0 cps

MBS: 0 cells

CDVT: 0 usecs

Auto PVC: □

1. At the **Setup** main page, click **New Connection**.
   The default PPPoE Connection Setup page is displayed.
2. In the **Name** field, enter a unique name for the PPPoE connection.
   The name must not have spaces and cannot begin with numbers. In this example, the unique name is PPPoE.
3. The **Network Address Translation** (NAT) and the **Firewall** options are enabled by default. Leave these in the default mode.
   Note: NAT enables the IP address on the LAN side to be translated to IP address on the WAN side. If NAT is disabled, you cannot access the Internet.
4. If you want to enable VLAN, refer to the table below to configure the following fields:
   - Sharing: Select VLAN to enable the **VLAN ID** and **Priority Bits** fields.
   - VLAN ID: Enter the VLAN ID.
   - Priority Bits: Select the priority bits of the VLAN.
5. In the **PPP** Settings section, enter values from DSL service provider or your ISP.
6. In the **PVC** Settings section, enter values for the **VPI** and **VCI**.
   Note: Your DSL service provider or your ISP supplies these values. In this example, the DSL service provider is using 0,33.
7. Select the **Quality of Service** (QoS).
   Leave the default value if you are unsure or if the ISP did not provide this information.
8. Click **Apply** to complete the connection setup. This temporarily activates this connection.



PPPoE Connection Setup

Name: PPPOE Type: PPPoE Sharing: Disable

Options: ☑ NAT ☑ Firewall VLAN ID: 0 Priority Bits: 0

PPP Settings

Username: username

Password: ****

Idle Timeout: 60 secs

Keep Alive: 10 min

Authentication: ● Auto ○ CHAP ○ PAP

MTU: 1492 bytes

On Demand: □ Default Gateway: ☑

Enforce MTU: ☑ Debug: □

PPP Unnumbered: □ Valid Rx: □ LAN: LAN group 1

Host Trigger: □

PVC Settings

PVC: New

VPI: 0

VCI: 33

QoS: UBR

PCR: 0 cps

SCR: 0 cps

MBS: 0 cells

CDVT: 0 usecs

Auto PVC: □

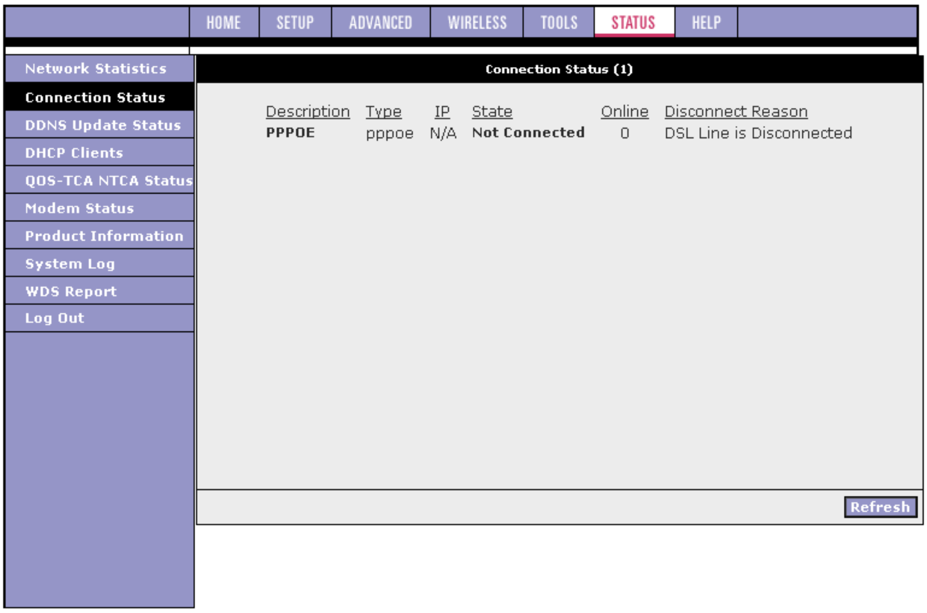
A new link is created for this connection in the left-hand column. You can connect, disconnect, apply, delete, or cancel this connection using the buttons at the bottom of this page.

Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

9. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.

10. At the **System Commands** page, click **Save All**.

11. To check the status, click **Status** at the top of the page and select **Connection Status**. The figure below shows the Connection Status page.



Connection Status (1)

Description	Type	IP	State	Online	Disconnect Reason
PPPOE	pppoe	N/A	Not Connected	0	DSL Line is Disconnected

Field Description

Field	Definition/Description
Username	Your user name for the PPPoE access provided by your DSL service provider or your ISP. This field is alpha-numeric and the maximum length is 64 characters. It cannot start with a number. The character type restrictions do not apply for CLI-based configuration.

Password	Your password for the PPPoE access provided by your DSL service provider or your ISP. This field is alpha-numeric and the maximum length is 128 characters. The character type restrictions do not apply for CLI-based configuration.
Idle Timeout	Specifies that PPPoE connection should disconnect if the link has no activity detected for n seconds. This field is used in conjunction with the On-Demand feature and is enabled only when the On Demand field is checked. To ensure that the link is always active, enter a 0 in this field. You can also enter a value larger than 10 (secs).
Keep Alive	When the On Demand option is not enabled, this value specifies the time to wait without being connected to your provider before terminating the connection. To ensure that the link is always active, enter a 0 in this field. You can also enter any positive integer value in this field.
Authentication	Three authentication options are available: ● Auto ● Challenge handshake authentication protocol (CHAP) ● Password authentication protocol (PAP) Microsoft CHAP v2 is also supported in the Auto and CHAP options. However, MS CHAP v1 is not supported.
MTU	Maximum transmit unit the DSL connection can transmit. It is a negotiated value that packets of no more than n bytes can be sent to the service provider. The PPPoE interface default MTU is 1492 (max) and PPPoA default MTU is 1500 (max). The minimum MTU value is 64.
On Demand	Enables On Demand mode. The connection disconnects if no activity is detected after the specified idle timeout value. When checked, this field enables the following fields: ● Idle Timeout ● Host Trigger ● Valid Rx
Default Gateway	If checked, this WAN connection acts as the default gateway to the Internet.
Enforce MTU	This feature is enabled by default. It forces all TCP traffic to conform with PPP MTU by changing TCP maximum segment size to PPP MTU. If it is disabled, you may have issues accessing some Internet sites.
Debug	Enables PPPoE connection debugging facilities. This option is used by ISP technical support and ODM/OEM testers to simulate packets going through the network from the WAN side.
PPP Unnumbered	PPP Unnumbered is a special feature. It enables the ISP to designate a block of public IP addresses to the customer where it is statically assigned on the LAN side. PPP Unnumbered is, in essence, like a bridged connection.
LAN	The LAN field is associated with the PPP Unnumbered field and is enabled when the PPP Unnumbered field is checked. You can specify the LAN group the packets need to go to when the PPP Unnumbered feature is activated.

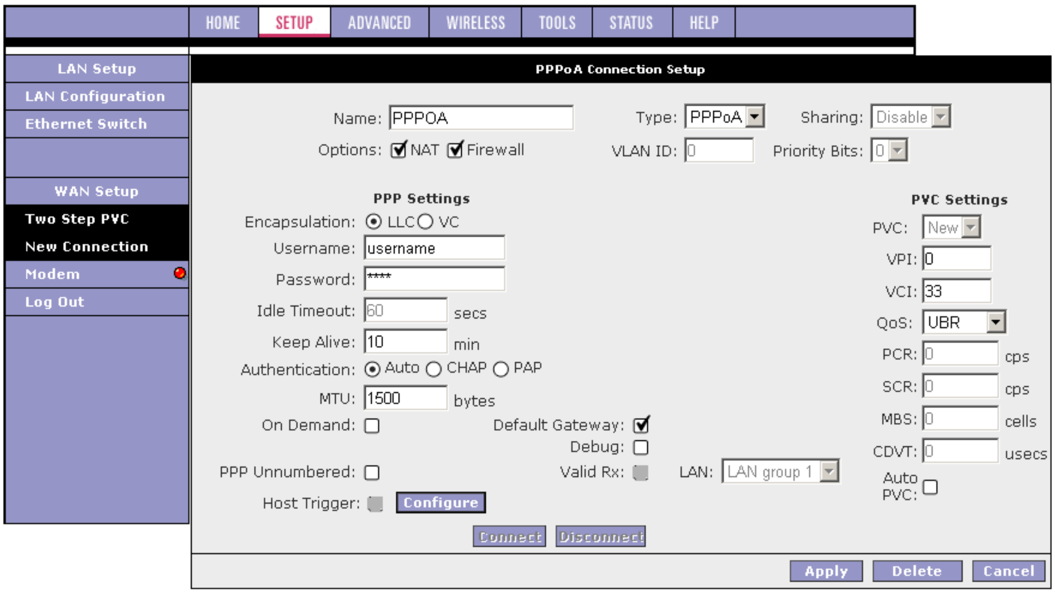
Field	**Definition/Description**
Sharing	The following options are available: ● Disable: Disables connection sharing. ● Enable: Enables connection sharing. ● VLAN: The VLAN ID and Priority Bits fields are activated when VLAN is selected, which enable you to create VLAN.
VLAN ID	VLAN Identification. Multiple connections over the same PVC are supported, which requires the WAN network to have VLAN support and for the DSLAMS and Routers on the ISP to handle VLAN Tags. Extended support is also available, which allows multiple connections to be placed over the single PVC without VLAN support (VLAN Tag of 0 is this special case). In this mode of operation, a received packet is flooded on all the connections that reside over it.

Priority Bits	Priority is given to a VLAN connection from 0-7. All packets sent over the VLAN connection have the Priority bits set to the configured value.
PVC	Permanent virtual circuit. This is a fixed virtual circuit between two users. It is the public data network equivalent of a leased line. No call setup or clearing procedures are needed.
VPI	Virtual path identifier, equivalent to the virtual path connection (VPC).
VCI	Virtual channel identifier. A 16-bit field in the header of an ATM cell. The VCI, together with the VPI, is used to identify the next destination of a cell as it passes through to the ATM switch.
QoS	Quality of service, a characteristic of data transmission that measures how accurately and how quickly a message or data is transferred from a source host to a destination host over a network. The three QoS options are: ● Undefined Bit Rate (UBR): When UBR is selected, the PCR, SCR, MBS, and CDVT fields are disabled. ● Constant Bit Rate (CBR): When CBR is selected, the PCR and CDVT fields are enabled. ● Variable Bit Rate (VBR): When VBR is selected, the PCR, SCR, MBS, and CDVT fields are enabled.
PCR	Peak Cell Rate, measured in cells/sec, is the cell rate which the source may never exceed.
SCR	Sustained cell rate, measured in cells/sec, is the average cell rate over the duration of the connection.
MBS	Maximum burst size, a traffic parameter that specifies the maximum number of cells that can be transmitted at the Peak Cell Rate.
CDVT	Cell delay variation tolerance, the maximum amount of cell delay variation that can be accommodated. Cell delay variation measures the random inter-arrival times of cells within an ATM connection due to cell transfer delay caused by buffering, multiplexing, and so on.
Auto PVC	Auto-Sensing permanent virtual circuit. The overall operation of the auto-sensing PVC feature relies on end-to-end OAM pings to defined PVCs. There are two groups of PVCs: customer default PVCs which are defined by the OEM/ISP and the backup PVCs. The customer default must have 0/35 as the first default PVC. The backup list of PVCs must be of the following VPI/VCI: 0/35, 8/35, 0/43, 0/51, 0/59, 8/43, 8/51, and 8/59. The list of PVCs is defined in XML and is configurable. The Auto-Sensing PVC feature itself is also configurable in that the auto-search mechanism can be disabled. Upon DSL synchronization, end-to-end OAM pings will be conducted for every defined PVC. The result of the pings will be recorded in an array for later use to determine the usability of the particular PVC for connectivity. This list helps the PVC manage the available PVC for use, and needs to be synchronized with connections made without Auto-Sensing PVC. Update to this list is performed for any change in DSL synchronization. During connection establishment, the PVC module will first search through the list of defined default PVCs. If a PVC is found from the default list that is ping-able and not in use, the PVC module will update for that particular PVC as in-use from the list and continues processing. If a PVC is not found in the default, the backup PVC list is used. If no PVC is found again, the module will let the end-user know that no available VCC was found. With the connection established, the PVC is stored in flash as the connection default PVC. Therefore upon reboot, this PVC is automatically chosen as the PVC for that connection. This saved PVC in environment space of flash overrides

	the PVC connection saved in XML configuration space of flash for that connection. During the connection establishment processing, the saved PVC will be checked to see whether a connection can be made with the PVC. If the PVC is OAM ping-able, the connection process continues. If the PVC is not OAM ping-able, the search for an available PVC starts. The process of PVC selection is the same as described above. The list of default PVCs and backup PVCs need to be global for the management of all connections, non Auto-Sensing PVC connection, as well as, Auto-Sensing PVC connections. These lists allow the end-users to establish connectivity without keeping track of the PVC used.

PPPoA Connection Setup

PPPoA is also known as RFC 2364. It is a method of encapsulating PPP packets in ATM cells that are carried over the DSL line. PPP, or point-to-point protocol, is a method of establishing a network connection/session between network hosts. It usually provides a mechanism of authenticating users. Logical link control (LLC) and virtual circuit (VC) are two different methods of encapsulating the PPP packet. Contact your ISP to determine which encapsulation is being used on your DSL connection.



PPPoA Connection Setup

Name: PPPOA Type: PPPoA Sharing: Disable

Options: ☑ NAT ☑ Firewall VLAN ID: 0 Priority Bits: 0

PPP Settings

Encapsulation: ● LLC ○ VC

Username: username

Password: ****

Idle Timeout: 60 secs

Keep Alive: 10 min

Authentication: ● Auto ○ CHAP ○ PAP

MTU: 1500 bytes

On Demand: □ Default Gateway: ☑

Debug: □

PPP Unnumbered: □ Valid Rx: □ LAN: LAN group 1

Host Trigger: □ Configure

Connect Disconnect

PVC Settings

PVC: New

VPI: 0

VCI: 33

QoS: UBR

PCR: 0 cps

SCR: 0 cps

MBS: 0 cells

CDVT: 0 usecs

Auto PVC: □

Apply Delete Cancel

To configure the SOHOSpeed for PPPoA:

1. On the **Setup** main page, click **New Connection**.
   The default PPPoE Connection Setup page isdisplayed.
2. From **Type** drop-down box, select **PPPoA**.
   The default PPPoA Connection Setup page is displayed.
3. Enter a unique name for the PPPoA connection in the **Name** field.
   The name must not have spaces and cannot begin with numbers. In this example, the unique name is PPPoA.
4. The **Network Address Translation** (NAT) and the **Firewall** options are enabled by default. Leave these in the default mode.
5. If you want to enable VLAN, refer to the table on section 3.4.1 to configure the following fields:
   - Sharing: Select VLAN to enable the **VLAN ID** and **Priority Bits** fields.
   - VLAN ID: Enter the VLAN ID.
   - Priority Bits: Select the priority bits of the VLAN.
6. In the **PPP** Settings section, select the encapsulation type (LLC or VC).
   Note: If you are not sure, just use the default mode.

7. In the **PVC** Settings section, enter values for the **VPI** and **VCI**.
   Note: Your DSL service provider or your ISP supplies these values. In this example, the DSL service provider is using 0,33.
8. Select the **Quality of Service** (QoS). Leave the default value if you are unsure or if the ISP did not provide this information.
   The **PCR**, **SCR**, **MBS**, and **CDVT** fields are enabled/disabled depending on the **QoS** selection. Enter the values provided by the ISP or leave the defaults. Click **Apply** to complete the connection setup. This temporarily activates this connection.
   A new link has been created for this connection in the left-hand column. You can connect, disconnect, apply, delete, or cancel this connection using this page by clicking the Connection Name to return to its Connection Setup page.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
9. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
10. At the **System Commands** page, click **Save All**.
11. To check the status, click **Status** and select **Connection Status**.

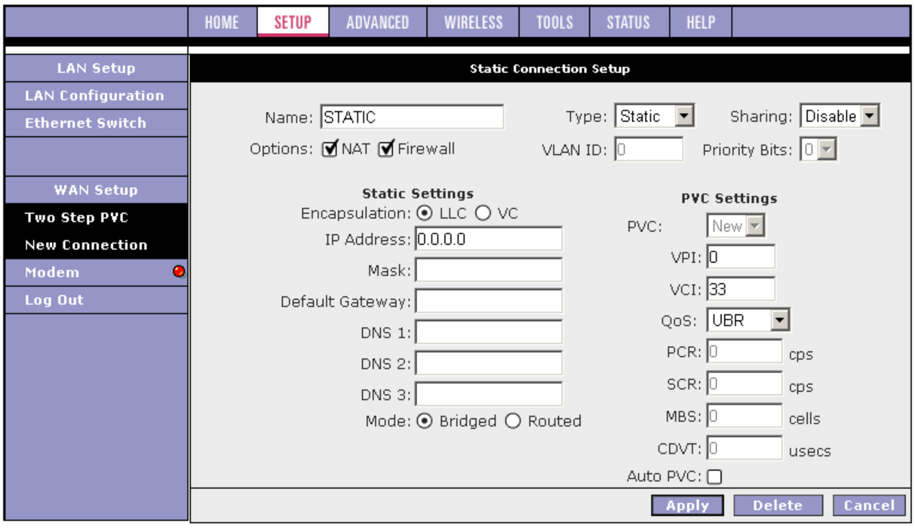
Field Description

Field	**Definition/Description**
Encapsulation	The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the data link layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), followed by the application protocol data. Two options are provided: Logical Link Control (LLC) and Virtual Channel (VC).
Username	Your user name for the PPPoA access provided by your DSL service provider or your ISP. This field is alpha-numeric and the maximum length is 64 characters. It cannot start with a number. The character type restrictions do not apply for CLI-based configuration.
Password	Your password for the PPPoA access provided by your DSL service provider or your ISP. This field is alpha-numeric and the maximum length is 128 characters. The character type restrictions do not apply for CLI-based configuration.
Idle Timeout	Specifies that the PPPoA connection should disconnect if the link has no activity detected for n seconds. This field is used in conjunction with the On Demand feature. To ensure that the link is always active, enter a 0 in this field. You can also enter a value larger than 10 (secs).
Keep Alive	When the On Demand option is not enabled, this value specifies the time to wait without being connected to your provider before terminating the connection. To ensure that the link is always active, enter a 0 in this field. You can also enter any positive integer value in this field. Authentication Three authentication options are available: ● Auto ● Challenge Handshake Authentication protocol (CHAP) ● Password Authentication Protocol (PAP) Microsoft CHAP v2 is also supported in the Auto and CHAP options. However, MS CHAP v1 is not supported.
MTU	Maximum transmit unit the DSL connection can transmit. It is a negotiated value that packets of no more than n bytes can be sent to the service provider. The PPPoE interface default MTU is 1492 (max) and PPPoA default MTU is 1500 (max). The minimum MTU value is 64.
On Demand	Enables On Demand mode. The connection disconnects if no activity is detected after the specified Idle Timeout value.
Default Gateway	If checked, this WAN connection acts as the default gateway to the Internet.

Debug	Enables PPPoA connection debugging facilities. This allows the ISP technical support and ODM/OEM testers to simulate packets going through from WAN side.

For VLAN and PVC field descriptions, please refer to section 3.4.1.

Static Connection Setup
Static connection type is used whenever a known static IP address is assigned to the SOHOSpeed. Additional addressing information such as the subnet mask and the default gateway must also be specified. Up to three domain name server (DNS) addresses can be identified. These servers resolve the name of the computer to the IP address mapped to it and thus enable you to access other web servers by typing the symbolic name (host name).



Static Connection Setup

Name: STATIC Type: Static Sharing: Disable

Options: ☑ NAT ☑ Firewall VLAN ID: 0 Priority Bits: 0

Static Settings

Encapsulation: ● LLC ○ VC
IP Address: 0.0.0.0
Mask:
Default Gateway:
DNS 1:
DNS 2:
DNS 3:
Mode: ● Bridged ○ Routed

PVC Settings

PVC: New
VPI: 0
VCI: 33
QoS: UBR
PCR: 0 cps
SCR: 0 cps
MBS: 0 cells
CDVT: 0 usecs
Auto PVC: ☐

1. At the **Setup** main page, click **New Connection**.
   The default PPPoE Connection Setup page is displayed.
2. At the **Type** field select Static.
   The Static Connection Setup page is displayed.
3. In the **Name** field, enter a unique name for the Static connection.
   The name must not have spaces and cannot begin with numbers. In this example, the unique name is Static.
4. The **Network Address Translation** (NAT) and the **Firewall** options are enabled by default. Leave these in the default mode.
5. In the **Static Settings** section, select the **Encapsulation** Type (LLC or VC).
   Note: If you are not sure, just use the default mode.
6. Based upon the information your DSL/ISP provided, enter your assigned **IP Address**, **Subnet Mask**, **Default Gateway** (if provided), and **Domain Name Services** (DNS) values (if provided).
7. For the static configuration, you can also select a **Bridged** connection or a **Routed** connection.
8. In the **PVC** Settings section, enter values for the **VPI** and **VCI**.
   Note: Your DSL service provider or your ISP supplies these values. In this example, the DSL service provider is using 0,33.
9. Select the **Quality of Service** (QoS). Leave the default value if you are unsure or if the ISP did not provide this information.
   The **PCR**, **SCR**, **MBS**, and **CDVT** fields are enabled/disabled depending on the **QoS** selection. Enter the values provided by the ISP or leave the defaults.
10. Click **Apply** to complete the connection setup. This temporarily activates this connection. A new link has been created for this connection in the left-hand column. You can apply, delete, or cancel this connection using the buttons on this page.

A new link is created for this connection in the left-hand column. You can connect, disconnect, apply, delete, or cancel this connection using the buttons at the bottom of this page.
Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

11. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
12. At the **System Commands** page, click **Save All**.
13. To check the status, click **Status** at the top of the page and select **Connection Status**.

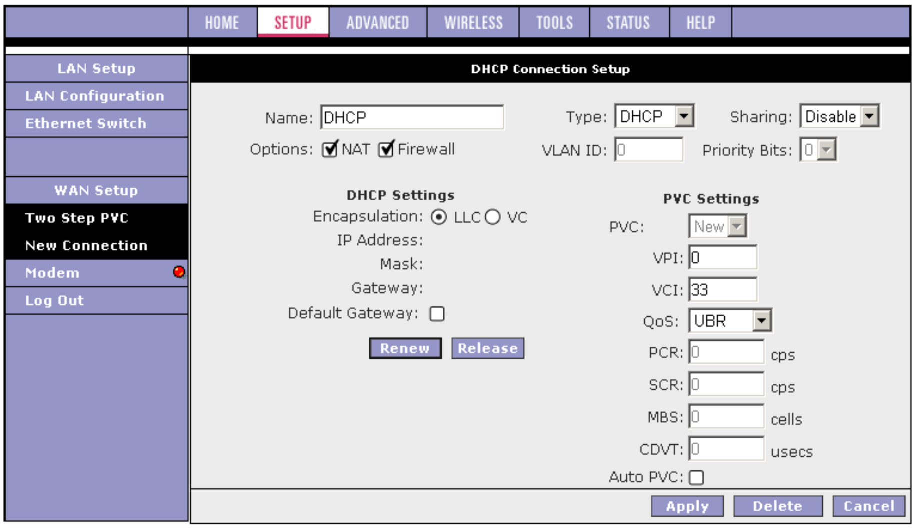
Field Description

Field	Definition/Description
Encapsulation	The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the data link layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), followed by the application protocol data. Two options are provided: Logical Link Control (LLC) and Virtual Channel (VC).
IP Address	IP address of the static connection provided by the ISP.
Mask	Subnet mask provided by your ISP.
Gateway	The IP address of your gateway provided by the ISP.
Default Gateway	The IP address of the default gateway to the Internet provided by the ISP.
DNS	Domain name server IP address provided by your ISP. You can configure up to three DNS IP addresses.
Mode	Two modes are available: Bridged and Routed.

For VLAN and PVC field descriptions, please refer to section 3.4.1.

DHCP Connection Setup

DHCP allows the SOHOSpeed to automatically obtain the IP address from the server. This option is commonly used in situations where the IP is dynamically assigned and is not known prior to assignment.



DHCP Connection Setup

Name: DHCP
Type: DHCP
Sharing: Disable
Options: ☑ NAT ☑ Firewall
VLAN ID: 0
Priority Bits: 0

DHCP Settings
Encapsulation: ● LLC ○ VC
IP Address:
Mask:
Gateway:
Default Gateway: □

PVC Settings
PVC: New
VPI: 0
VCI: 33
QoS: UBR
PCR: 0 cps
SCR: 0 cps
MBS: 0 cells
CDVT: 0 usecs
Auto PVC: □

1. On the **Setup** main page, click **New Connection**.
The default **DHCP Connection Setup** page is displayed.
2. From the **Type** drop-down box, select **DHCP**.
The default **DHCP Connection Setup** page is displayed.

3. Enter a unique name for the DHCP connection in the **Name** field.
   The name must not have spaces and cannot begin with numbers. In this example, the unique name is DHCP.
4. The **Network Address Translation** (NAT) and the **Firewall** options are enabled by default. Leave these in the default mode.
5. If your DSL line is connected and your DSL/IPS provider is supporting DHCP, you can click **Renew** and the SOHOSpeed retrieves an IP Address, Subnet Mask, and Gateway Address.
   At any time, you can release the DHCP address by clicking **Release**, and renew the DHCP address by clicking **Renew**.
6. Under **PVC** Settings, enter values for the **VPI** and **VCI**.
   Note: Your DSL service provider or your ISP supplies these values. In this example, the DSL service provider is using 0,35.
7. Select the **Quality of Service** (QoS). Leave the default value if you are unsure or if the ISP did not provide this information.
   The **PCR**, **SCR**, **MBS**, and **CDVT** fields are enabled/disabled depending on the **QoS** selection. Enter the values provided by the ISP or leave the defaults.
8. Click **Apply** to complete the connection setup. This temporarily activates this connection. A new link has been created for this connection in the left-hand column. You can apply, delete, or cancel this connection using the buttons on this page.
   Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
9. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
10. At the **System Commands** page, click **Save All**.
11. To check the status, click **Status** at the top of the page and select **Connection Status**.

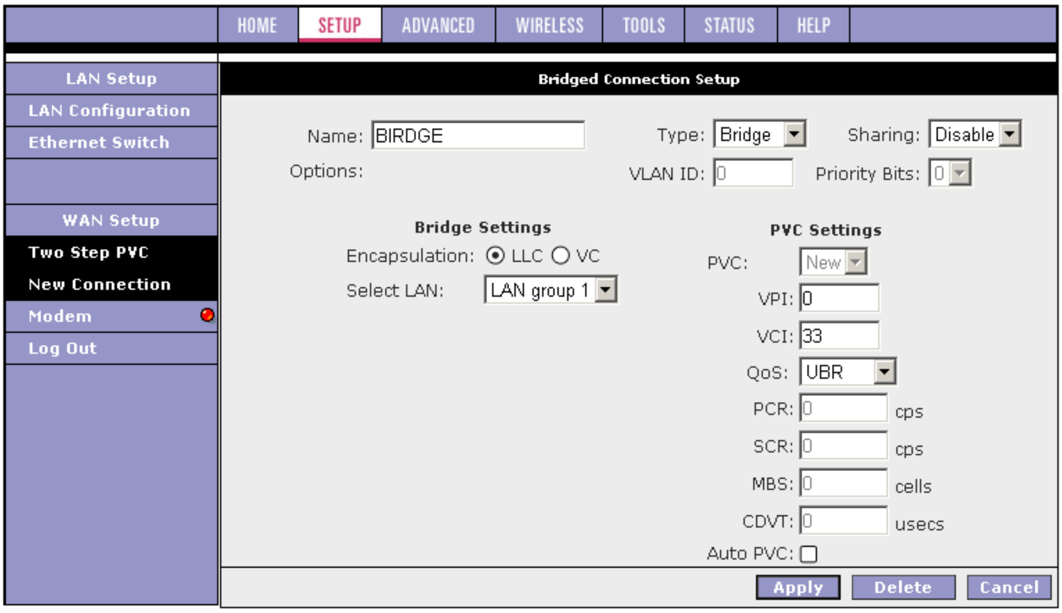
Field Description

Field	**Definition/Description**
Encapsulation	The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the data link layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), followed by the application protocol data. Two options are provided: Logical Link Control (LLC) and Virtual Channel (VC).
IP Address	IP address assigned by the DHCP server.
Mask	The subnet mask assigned by the DHCP server.
Gateway	The IP address of your gateway.
Default Gateway	If checked, this WAN connection acts as the default gateway to the Internet.

For VLAN and PVC field descriptions, please refer to section 3.4.1.

Bridged Profile and Connection

A pure bridged connection does not assign any IP address to the WAN interface. NAT and firewall rules are not enabled. This connection method makes the SOHOSpeed act as a bridge for passing packets between the WAN interface and the LAN interface.



Bridged Connection Setup

Name: BIRDGE
Type: Bridge
Sharing: Disable
Options:
VLAN ID: 0
Priority Bits: 0

Bridge Settings

Encapsulation: ● LLC ○ VC
Select LAN: LAN group 1

PVC Settings

PVC: New
VPI: 0
VCI: 33
QoS: UBR
PCR: 0 cps
SCR: 0 cps
MBS: 0 cells
CDVT: 0 usecs
Auto PVC: □

1. On the **Setup** main page, click **New Connection**.
   The default PPPoE Connection Setup page is displayed.
2. From **Type** drop-down box, select **Bridge**.
   The default **Bridged Connection Setup** page is displayed.
3. Enter a unique name for the Bridged connection in the **Name** field.
   The name must not have spaces and cannot begin with numbers. In this example, the unique name is Bridge.
4. The **Network Address Translation** (NAT) and the **Firewall** options are enabled by default. Leave these in the default mode.
5. In the **Bridge Settings** section, select the **Encapsulation** Type (LLC or VC).
   Note: If you are not sure, just use the default mode.
6. In the **PVC** Settings section, enter values for the **VPI** and **VCI**.
   Note: Your DSL service provider or your ISP supplies these values. In this example, the DSL service provider is using 0,33.
7. Select the **Quality of Service** (QoS). Leave the default value if you are unsure or if the ISP did not provide this information.
   The **PCR**, **SCR**, **MBS**, and **CDVT** fields are enabled/disabled depending on the **QoS** selection. Enter the values provided by the ISP or leave the defaults.
8. Click **Apply** to complete the connection setup. This temporarily activates this connection. A new link has been created for this connection in the left-hand column. You can apply, delete, or cancel this connection using this page.
   Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
9. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
10. At the **System Commands** page, click **Save All**.
11. To check the status, click **Status** and select **Connection Status**.

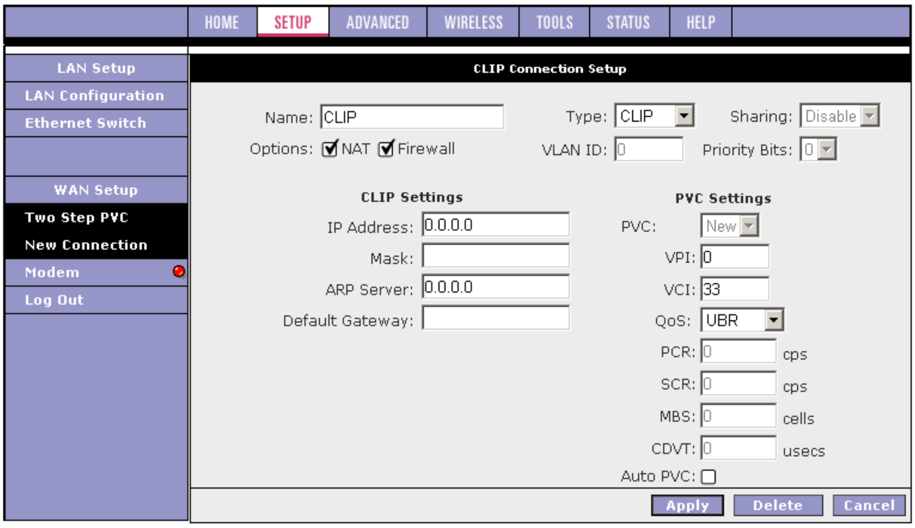
Field Description

Field	Definition/Description
Encapsulation	The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the data link layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), followed by the application protocol data. Two encapsulation options are provided: ● Logical Link Control (LLC) ● Virtual Channel (VC)
Select LAN	Select the LAN group for the bridged connection. The following options are available: ● LAN Group 1 ● LAN Group 2 ● LAN Group 3 ● None This bridged connection will be added to the selected LAN group. If you select None, the connection is not added to any LAN group but to the Interfaces box on the **LAN Configuration** page, which can be configured to a LAN group on the same page.

For VLAN and PVC field descriptions, please refer to section 3.4.1.

Classical IP over ATM Connection Setup

CLIP, defined in RFC 2225, provides the ability to transmit IP packets over an ATM network. This SOHOSpeed's CLIP support encapsulates an IP datagram in an AAL5 PDU frame using RFC 2225 and it uses an ATM-aware version of the address resolution protocol (ATMARP). Its CLIP support only allows support for PVCs, SVCs are not supported by the SOHOSpeed.



CLIP Connection Setup

Name: CLIP Type: CLIP Sharing: Disable

Options: ☑ NAT ☑ Firewall VLAN ID: 0 Priority Bits: 0

CLIP Settings

IP Address: 0.0.0.0

Mask:

ARP Server: 0.0.0.0

Default Gateway:

PVC Settings

PVC: New

VPI: 0

VCI: 33

QoS: UBR

PCR: 0 cps

SCR: 0 cps

MBS: 0 cells

CDVT: 0 usecs

Auto PVC: □

1. On the **Setup** main page, click **New Connection**.
   The default **PPPoE Connection Setup** page is displayed.
2. From **Type** drop-down box, select **CLIP**.
   The default **CLIP Connection Setup** page is displayed.
3. Enter a unique name for the static connection in the **Name** field.
   The name must not have spaces and cannot begin with numbers. In this example, the unique name is Clip.
4. The **Network Address Translation** (NAT) and the **Firewall** options are enabled by default. Leave these in the default mode.
5. Based upon the information your DSL/ISP provided, enter your assigned **IP Address**, **Mask**, **ARP Server**, and **Default Gateway**.

6. In the **PVC** Settings section, enter values for the **VPI** and **VCI**.
   Note: Your DSL service provider or your ISP supplies these values.
7. Select the **Quality of Service** (QoS); leave the default value if you are unsure or if the ISP did not provide this information.
   The **PCR**, **SCR**, **MBS**, and **CDVT** fields are enabled/disabled depending on the **QoS** selection. Enter the values provided by the ISP or leave the defaults.
8. Click **Apply** to complete the connection setup. This temporarily activates this connection. A new link has been created for this connection in the left-hand column. You can apply, delete, or cancel this connection using this page.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
9. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
10. At the **System Commands** page, click **Save All**.
11. To check the status, click **Status** at the top of the page and select **Connection Status**.

Field Description

Field	**Definition/Description**
IP Address	IP address of the CLIP connection provided by your ISP.
Mask	Subnet mask provided by your ISP.
ARP Server	IP address of the Address Resolution Protocol (ARP) server provided by your ISP.
Default Gateway	If checked, this WAN connection acts as the default gateway to the Internet.

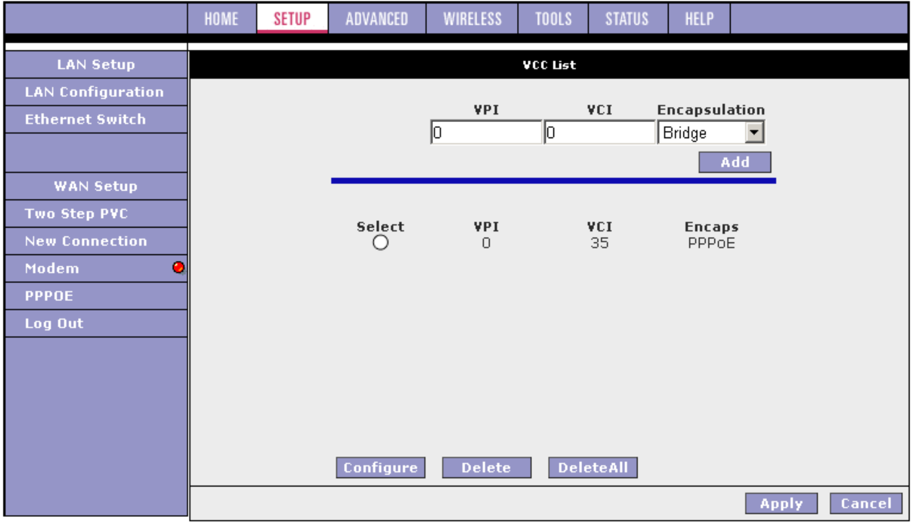
For VLAN and PVC field descriptions, please refer to section 3.4.1.

3.4.2 Tow Step PVC

The Two-step PVC page is added to support the Remote Management /Clear Embedded Operations Channel (EOC) feature, which is a China MII requirement. This page allows WAN connections to be created in two steps:

1. Create multiple PVCs with VPI, VCI values, and encapsulation types. The following encapsulation methods are supported:
   - PPPoA
   - PPPoE
   - Router 1483
   - Bridge
   - Static
   - DHCP
   - CLIP

2. Create a WAN connection from an existing PVC.



VCC List

VPI	VCI	Encapsulation
0	0	Bridge

Select	VPI	VCI	Encaps
○	0	35	PPPoE

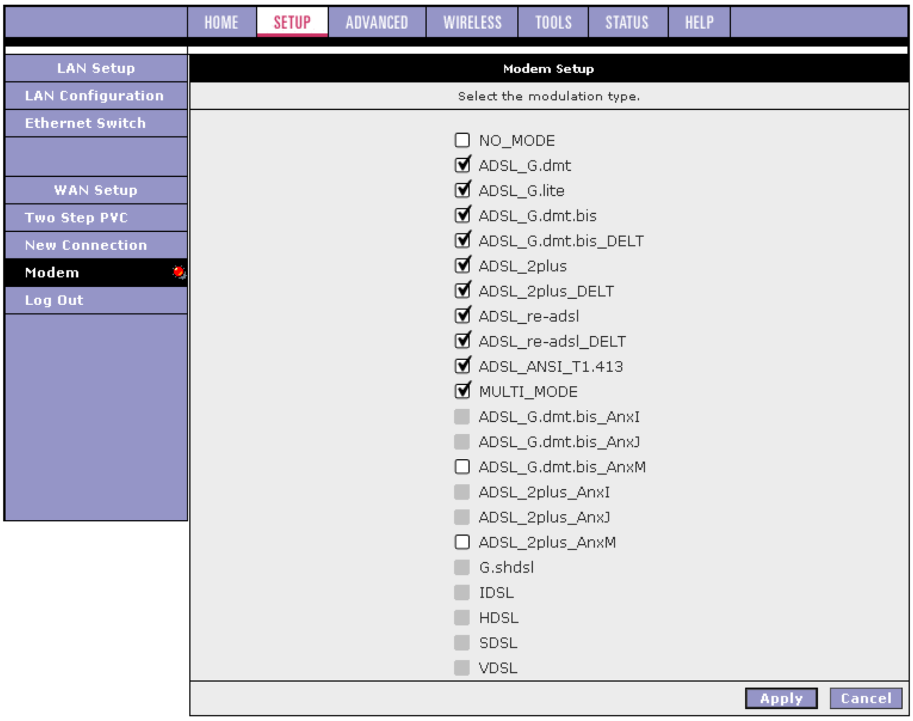
For more information about VPI and VCI, refer to the table in section 3.4.11.

3.4.3 Modify an Existing Connection

1. On the **Setup** main page, select the connection you want to modify from the left-hand column.
   The connections are listed as Connection 1 through Connection 8.
   Note: Up to eight WAN connections of all types are supported.
2. Make modifications on the individual connection page.
   Note: Some fields are disabled after initial creation.
3. Click **Apply** to temporarily activate the changes you made.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

3.4.4 Modem Setup

The Modem Setup page allows you to select any combination of DSL training modes.



Modem Setup

Select the modulation type.

□ NO_MODE
☑ ADSL_G.dmt
☑ ADSL_G.lite
☑ ADSL_G.dmt.bis
☑ ADSL_G.dmt.bis_DELT
☑ ADSL_2plus
☑ ADSL_2plus_DELT
☑ ADSL_re-adsl
☑ ADSL_re-adsl_DELT
☑ ADSL_ANSI_T1.413
☑ MULTI_MODE
□ ADSL_G.dmt.bis_AnxI
□ ADSL_G.dmt.bis_AnxJ
□ ADSL_G.dmt.bis_AnxM
□ ADSL_2plus_AnxI
□ ADSL_2plus_AnxJ
□ ADSL_2plus_AnxM
□ G.shdsl
□ IDSL
□ HDSL
□ SDSL
□ VDSL

3.5 Configuring the LAN

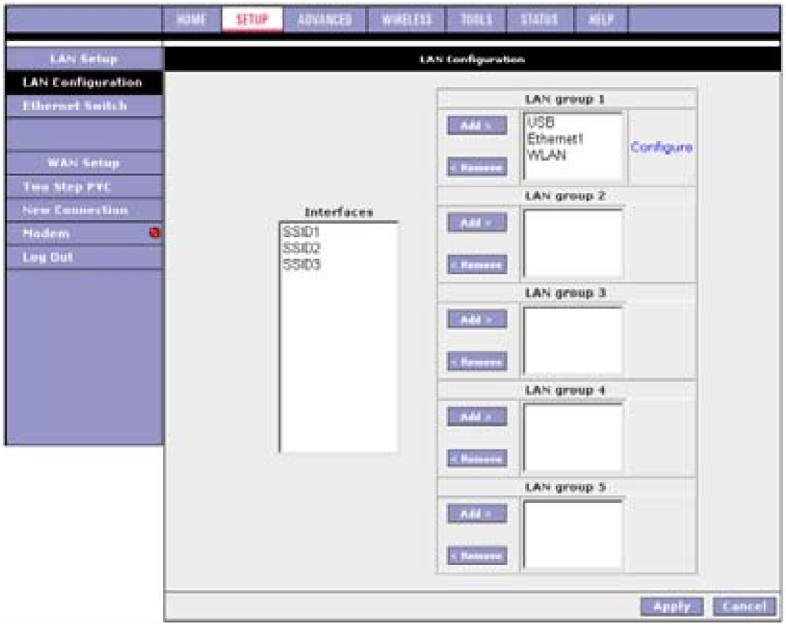
The SOHOSpeed provides LAN configuration for multiple LAN bridge groups. Up to five LAN bridge groups are supported. The LAN interefaces could include: Ethernet, USB, WLAN (Primary SSID), SSID1, SSID2, and SSID3. It is possible to assign any LAN interface to any bridge group but only one group, except that the Ethernet interface needs to stay in LAN group 1. Each LAN group can then be configured with static IP address, dynamic IP address, or be unmanaged (no IP).

The default LAN Configuration page shows the LAN interfaces that belong to a single LAN bridge group (LAN Group 1):

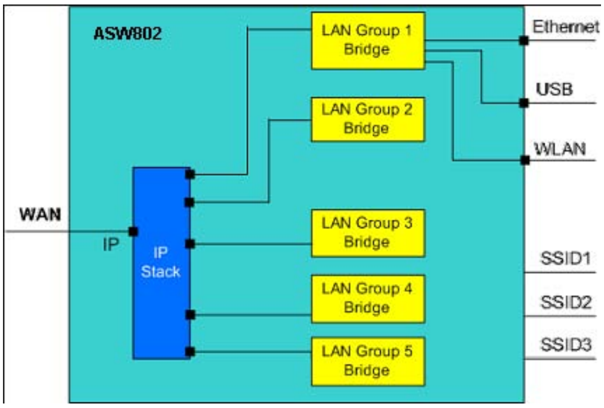
- USB
- Ethernet
- WLAN

Note: The following interfaces are not valid until multiple SSID is enabled and the secondary SSIDs are configured:

- SSID1 (corresponds to the first secondary SSID)
- SSID2 (corresponds to the second secondary SSID)
- SSID3 (corresponds to the third secondary SSID)

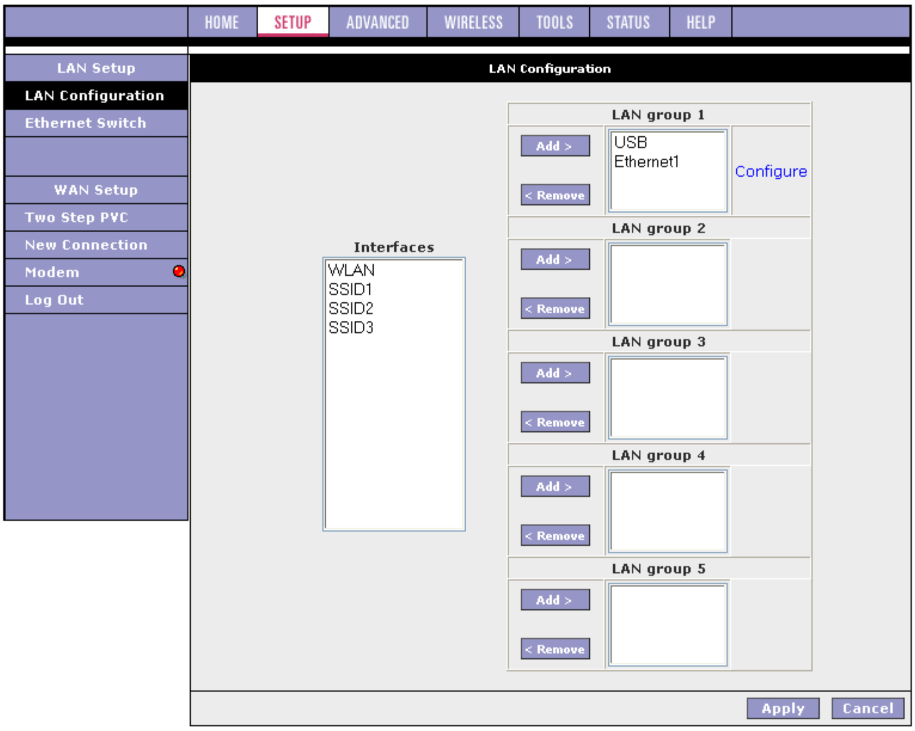


For more information on how to configure multiple SSIDs, refer to "Multiple SSID".
The SOHOSpeed performs routing between the LAN group 1 and the WAN connections as shown in figure below.

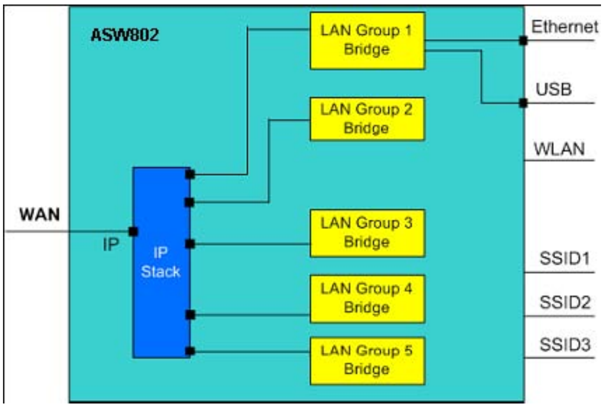


Follow the procedure below to configure LAN group 2.

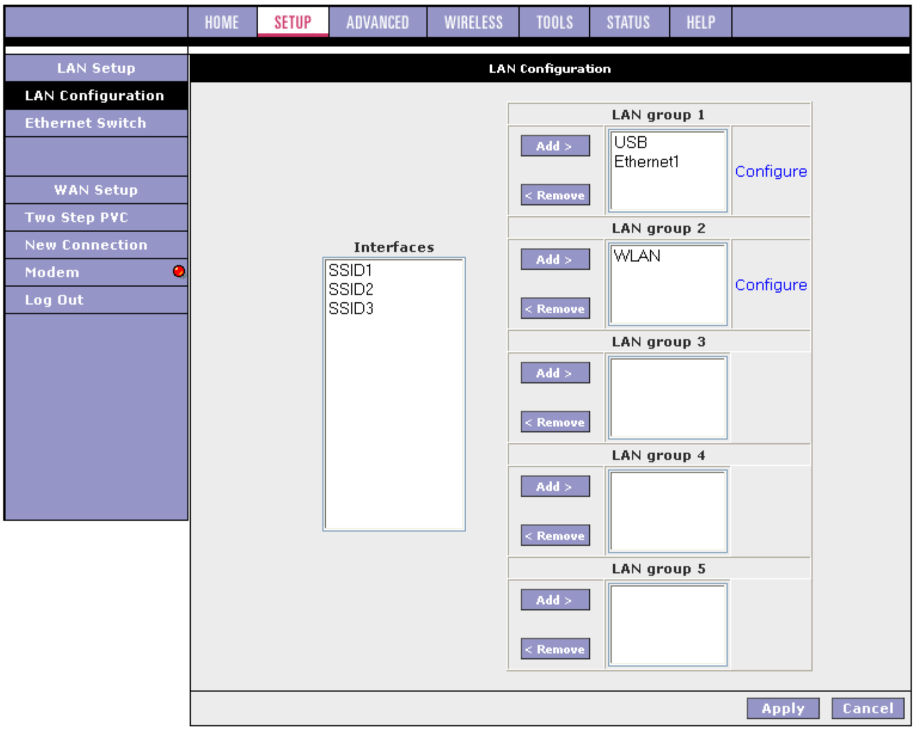
1. Select **WLAN** interface in LAN group 1 and click **Remove**.
   WLAN moves to the **Interfaces** box on the left as shown in figure below.
   Note: You can configure the USB interface and WLAN interfaces to a different LAN group; however, the Ethernet interface is default in LAN group 1 and cannot be moved.



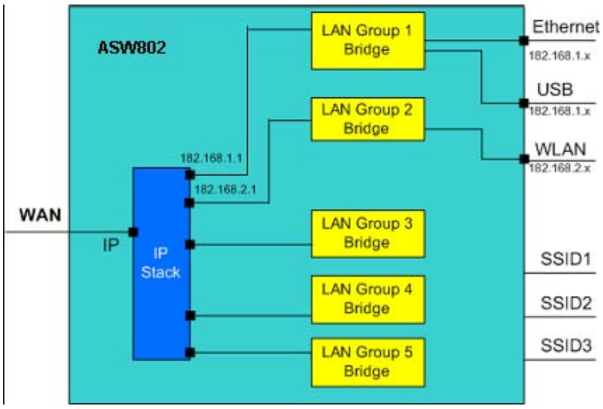
No packets are sent to the WLAN interface as it does not belong to any LAN group. This is shown in figure below.



2. Select **WLAN** in the Interface box and click **Add** next to LAN group 2.
WLAN moves to **LAN** group 2 as shown in figure below. The **Configure** link for LAN group 2 has also been generated, allowing additional configurations for the defined LAN group.



Two LAN segments have been configured as shown in figure below with two sets of IP addresses. The Ethernet and USB interfaces belong to LAN group 1 with an IP of 192.168.1.x. The WLAN interface belongs to LAN group 2 with an IP of 192.168.2.x.



3. Click **Apply** to temporarily activate the changes.
Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

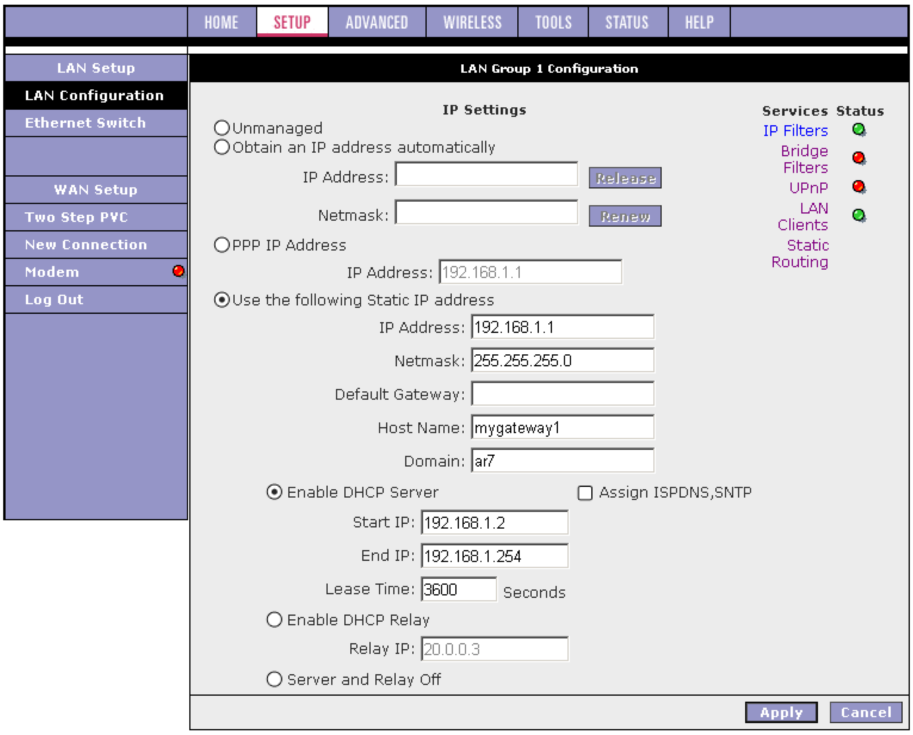
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.

5. At the **System Commands** page, click **Save All**.

3.5.1 LAN Group Configuration

The LAN Group Configuration page allows you to configure settings for each defined LAN group.

Notice that you can also view the status of advanced services that can be applied to this LAN group. A green status indicates that the services have been enabled, while a red status indicates that the service is currently disabled.



LAN Group 1 Configuration

IP Settings

○ Unmanaged

○ Obtain an IP address automatically

IP Address:

Netmask:

○ PPP IP Address

IP Address: 192.168.1.1

● Use the following Static IP address

IP Address: 192.168.1.1

Netmask: 255.255.255.0

Default Gateway:

Host Name: mygateway1

Domain: ar7

● Enable DHCP Server □ Assign ISPDNS,SNTP

Start IP: 192.168.1.2

End IP: 192.168.1.254

Lease Time: 3600 Seconds

○ Enable DHCP Relay

Relay IP: 20.0.0.3

○ Server and Relay Off

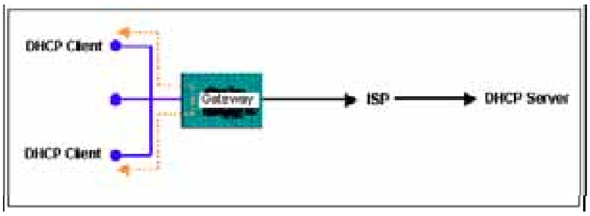
Services	Status
IP Filters	🟢
Bridge Filters	🔴
UPnP	🔴
LAN Clients	🟢
Static Routing	

Field Description

Category/Field	**Field**	**Definition/Description**
Unmanaged		Unmanaged is a state when the LAN group is not configured and no IP address has been assigned to the bridge.
Obtain an IP address automatically		When this function is enabled, your SOHOSpeed acts like a client and requests an IP address from the DHCP server on the LAN side.
	IP Address	You can retrieve/renew an IP address from the DHCP server using the Release and Renew buttons.
	Netmask	The subnet mask of your Gateway.
PPP IP Address		Enables/disables PPP unnumbered feature.
	IP Address	The IP address should be different from, but in the same subnet as the WAN-side IP address.
Use the following Static IP address		This field enables you to change the IP address of the SOHOSpeed.
	IP Address	The default IP address of the SOHOSpeed is 192.168.1.1.
	Netmask	The default subnet mask of your SOHOSpeed is 255.255.255.0. This subnet allows the SOHOSpeed to support 254 users. If you want to support a larger number of users you can change the subnet mask.
	Default Gateway	The default gateway is the routing device used to forward all traffic that is not addressed to a station within the local subnet. Your ISP provides you with the IP address of the default gateway.
	Host Name	The host name is used in conjunction with the domain name to uniquely identify the SOHOSpeed. It can be any alphanumeric word that does not contain spaces.

		Domain The domain name is used in conjunction with the host name to uniquely identify the SOHOSpeed. To access the web pages of the SOHOSpeed you can type 192.168.1.1 (the IP address) or mygateway1.ar7 (Host Name.Domain).
Enable DHCP Server		Enables/disables DHCP. By default, your SOHOSpeed has the DHCP server (LAN side) enabled. If you already have a DHCP server running on your network, you must disable one of the two DHCP servers.
	Assign ISP DNS, SNTP	Enable/disables the **Assign ISP DNS, SNTP** feature when the DHCP server of your SOHOSpeed has been enabled. To learn more about the **Assign ISP DNS, SNTP** feature, refer to ''Assign ISP DNS, SNTP''.
	Start IP	The Start IP Address is where the DHCP server starts issuing IP addresses. This value must be greater than the IP address value of the SOHOSpeed. For example, if the IP address of the SOHOSpeed is 192.168.1.1 (default), then the starting IP address must be 192.168.1.2 (or higher). Note: If you change the start or end values, make sure the values are still within the same subnet as the SOHOSpeed. In other words, if the IP address of the SOHOSpeed is 192.168.1.1 (default) and you change the DHCP start/end IP addresses to be 192.168.1.2/192.168.1.100, you cannot communicate with the SOHOSpeed if your host has DHCP enabled.
	End IP	The End IP Address is where the DHCP server stops issuing IP addresses. The ending address cannot exceed a subnet limit of 254, hence the max value for the default gateway is 192.168.1.254. If the DHCP server runs out of DHCP addresses, users do not get access to network resources. If this happens, you can increase the Ending IP address (to the limit of 254) or reduce the lease time. Note: If you change the start or end values, make sure the values are still within the same subnet as the IP address of the SOHOSpeed. In other words, if the IP address of the SOHOSpeed is 192.168.1.1 (default) and you change the DHCP start/end IP addresses to be 192.168.1.2/192.168.1.100, you cannot communicate with the SOHOSpeed if your host has DHCP enabled.
	Lease Time	The Lease Time is the amount of time that a network user is allowed to maintain a network connection to the SOHOSpeed using the current dynamic IP address. At the end of the Lease Time, the lease is either renewed or a new IP is issued by the DHCP server. The amount of time is in units of seconds. The default value is 3600 seconds (1 hour). The maximum value is 999999 seconds (about 278 hours).
Enable DHCP Relay		In addition to the DHCP server feature, the SOHOSpeed supports the DHCP relay function. When the SOHOSpeed is configured as DHCP server, it assigns the IP addresses to the LAN clients. When the SOHOSpeed is configured as DHCP relay, it is responsible for forwarding the requests and responses negotiated between the DHCP clients and the server.
	Relay IP	The IP address of the DHCP relay server.
Server and Relay Off		When the DHCP server and relay functions are turned off, the network administrator must carefully configure the IP address, Subnet Mask, and DNS settings of every host on your network. Do not assign the same IP address to more than one host. Also, your SOHOSpeed must reside on the same subnet as all the other hosts.

Example of a DHCP Relay configuration



4.6.1.1 Assign ISP DNS, SNTP

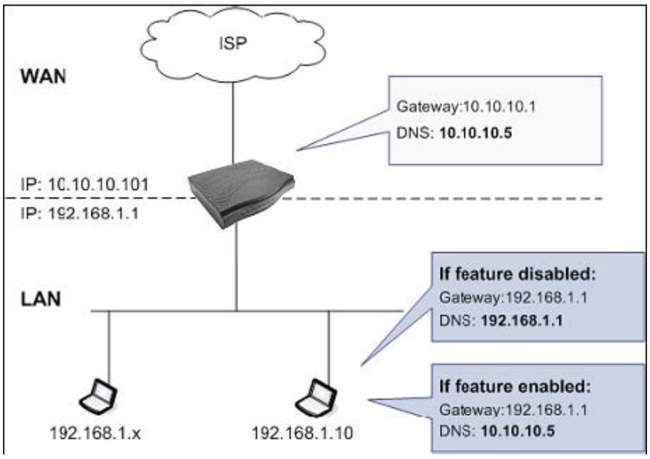
When you enable the DHCP server on the LAN side, the SOHOSpeed dynamically assigns IP addresses to the hosts on the local network. The SOHOSpeed provides its own LAN IP address (192.168.1.1) as both the gateway and the DNS server.
On the WAN side, the SOHOSpeed receives the following data (among other data) from the ISP:

- IP: 10.10.10.101
- Gateway: 10.10.10.1
- DNS: 10.10.10.5

The SOHOSpeed has a choice of advertising its own IP address (192.168.1.1) to the LAN side hosts as the DNS server, or providing the DNS that was received from the WAN side (10.10.10.5). This can be configured by enabling/ disabling Assign ISP DNS SNTP on the LAN Group Configuration page.

Note: This section only applies when you have enabled DHCP server on the LAN Group Configuration page.

External DHCP Options



The default option (feature disabled)
As shown in figure above, when Assign ISP DSN SNTP is disabled, the hosts on the LAN network use the LAN IP address of the SOHOSpeed as the DNS. The following data is provided to the host by the DHCP server.

- IP: 192.168.1.x
- Gateway: 192.168.1.1
- DNS: 192.168.1.1

The external DHCP option (feature enabled)
As shown in figure above, when Assign ISP DSN SNTP is enabled, the host on the LAN network uses the WAN side DNS. The following data is provided to the host:

- IP: 192.168.1.x
- Gateway: 192.168.1.1
- DNS: 10.0.0.5

Note: If the WAN connection is also of DHCP type, the SOHOSpeed receives additional data from the ISP, and if Assign ISP DSN SNTP is enabled, the data is passed on to the LAN side hosts as well. The additional data may include (but not limited to) the following:

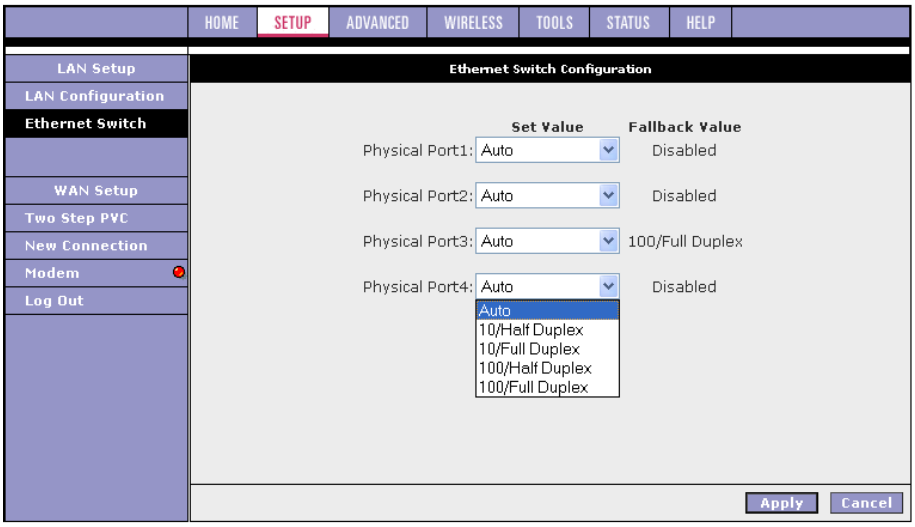
- Time server
- Log server
- Cookie server
- Print server
- NTP server
- WINS server

3.5.2 Ethernet Switch Configuration

Ethernet switch port settings can be configured to meet the requirements of your LAN configuration. As seen in the drop-down menu in figure below, port setting options include:

- Auto detect (default)
- 10 Mbps half duplex
- 10 Mbps full duplex
- 100 Mbps half duplex
- 100 Mbps full duplex

In the example shown, the system has auto-detected an Ethernet cable connected to LAN port 3 and assigned a port setting of 100 Mbps full duplex.



Ethernet Switch Configuration

	Set Value	Fallback Value
Physical Port1:	Auto	Disabled
Physical Port2:	Auto	Disabled
Physical Port3:	Auto	100/Full Duplex
Physical Port4:	Auto	Disabled

Auto
10/Half Duplex
10/Full Duplex
100/Half Duplex
100/Full Duplex

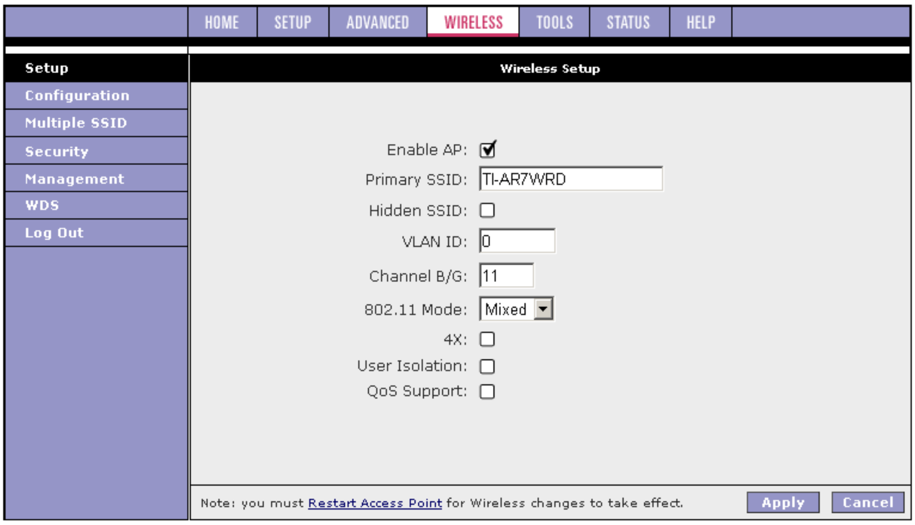
3.6 Configuring the WLAN

The wireless local area networks (WLAN) tab allows you to perform WLAN interface configuration functions.

3.6.1 WIRELESS Setup

The default Wireless Setup page which is accessed by clicking the Setup link. This page provides basic access point (AP) parameter settings.

Note: you must Restart Access Point for Wireless changes to take effect.



Wireless Setup

Enable AP: ☑

Primary SSID: TI-AR7WRD

Hidden SSID: □

VLAN ID: 0

Channel B/G: 11

802.11 Mode: Mixed

4X: □

User Isolation: □

QoS Support: □

Note: you must Restart Access Point for Wireless changes to take effect.

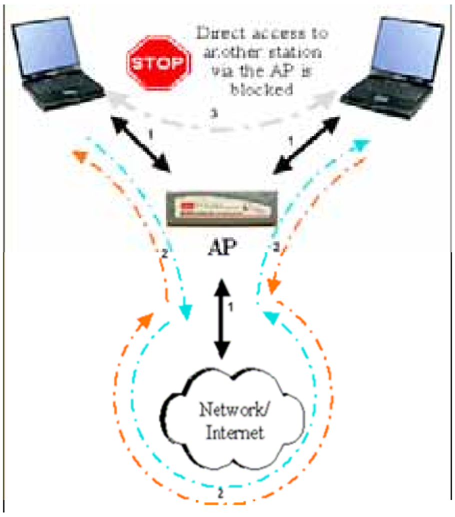
Field Description

Field	**Definition/Description**
Enable AP	Enables/disables the access point.
Primary SSID	The primary service set identifier of the AP, which is the only SSID your AP broadcasts (if hidden SSID is disabled). The default is TI-AR7WRD and you can assign a unique SSID to your AP. The SSID is up to 32 characters.
Hidden SSID	Enables/disables the hidden SSID feature. When hidden SSID is enabled, the SSID is removed from the beacon frames the AP transmits, thus the AP will not be seen by any other station.
VLAN ID	The VLAN ID for the primary SSID. By default, multiple SSID is disabled and the VLAN ID of the primary SSID is 0. When you enable multiple SSID, you are prompted to change the VLAN ID of the primary SSID to a unique value between 1 - 4095. For more information on enabling multiple SSID, refer to "Multiple SSID".
Channel B/G	The channel on which the AP and the wireless stations communicate. Different domains have different ranges of channels. For FCC in 2.4 GHz, the default channel is 11.
802.11 Mode	You can select from the following modes: ● **Mixed mode:** Both 802.11b and g modes are supported. The legacy supported rates information element (SR IE) contains the 802.11b legacy supported rates and the additional OFDM supported rates. Extended SR IE contains the extended supported rates, if present. Beacon & Probe Response Frames are sent in b rate. ● **11b only Mode:** The legacy SR IE contains only the 802.11b legacy supported rates. The extended SR IE is not present. ● **11b+ Mode:** Similar to the 802.11b-only mode except that 22Mbps PBCC rate/modulation is included, which is TI proprietary. ● **11g only Mode:** The legacy SR IE contains only the OFDM additional supported rates. The extended SR IE contains the extended supported rates, if present.

4X	Enables/disables the 4x feature for 802.11g mode. This function is SOHOSpeed proprietary and is only available when both TI wireless station card and SOHOSpeed are used.
User Isolation	When checked, wireless users will not be able to directly access other wireless users. More details on User Isolation are discussed in "User Isolation".
QoS	Support Refer to "WLAN QoS Support" for more information.

User Isolation
When user isolation is enabled, wireless users will not be able to directly access other wireless users. Access can be controlled by the AP.
The figure below illustrates the three states of enabling the user isolation feature:

1. AP disabled basic service set (BSS) bridging: Before user isolation is enabled, the stations can exchange data via the AP. This is disabled when user isolation is enabled.
2. All data is sent to WAN.
3. Enable/disable flag: No station has direct access to other stations as a result of user isolation.



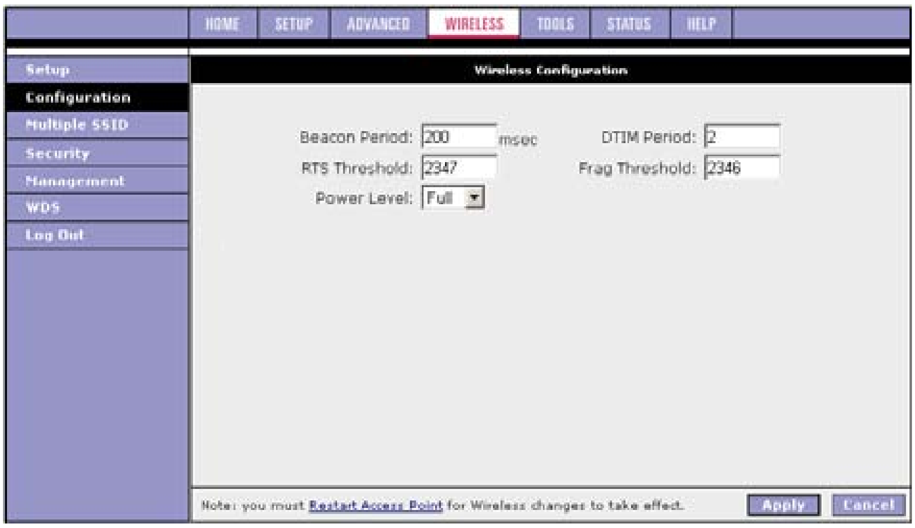
Follow the procedure below to save changes you have made on the Wireless Setup page.

1. Click **Apply**.
2. Click **Restart Access Point** at the bottom of the page, which takes you to the **System Commands page**.
   Note: An alternative way to access the **System Commands** page is to select **Tools** at the top of the page, then click the **System Commands** link.
3. On the **System Commands** page, click **Save All.**
   This temporarily saves all the changes you have made. You will still need to restart the access point for any changes to take effect.
4. Click **Restart Access Point** for changes to the WLAN settings to take effect.

CAUTION: Any changes you make to the WLAN page do NOT get saved automatically. Clicking Apply on the individual page is not sufficient for the changes you made to take effect. For changes you made to any WLAN page to take effect, you must perform the steps as described above.

3.6.2 Wireless Configuration

This page provides the advanced wireless network parameter settings.



Wireless Configuration

Beacon Period: 200 msec

DTIM Period: 2

RTS Threshold: 2347

Frag Threshold: 2346

Power Level: Full

Note: you must Restart Access Point for Wireless changes to take effect.

Note: The highlighted area relates to the multi domain capability function, which cannot be configured by the end user is an reserved function.

Field Description

Field	**Definition/Description**
Beacon Period	The time interval between beacon frame transmissions, which ranges from 0 - 65535 msec. The default value of this field is 200 msec.
DTIM period	Delivery traffic identification map period: The number of beacon frame transmissions before frames that are targeted for stations operating in low-power mode, will be transmitted. The default value of this field is 2.
RTS threshold	Request to send threshold: The number of bytes in a Mac protocol data unit (MPDU) below which an RTS/CTS handshake will not be performed. The default value is 2347; however, when 4x is enabled on the setup page, the RTS threshold value changes to 4096.
Fragmentation	Threshold The minimum length of a frame that will be fragmented. The default value is 2346; however, when 4x is enabled on the Setup page, the fragmentation threshold value changes to 4096.
Power Level	The Tx output power percentage compared to the maximum Tx power: full, 75%, 50%, 25%, and 6%. Default is Full power.

Follow the procedure below to save changes you have made on the Wireless Setup page.

1. Click **Apply**.
2. Click **Restart Access Point** at the bottom of the page, which takes you to the **System Commands page**.
   Note: An alternative way to access the **System Commands** page is to select **Tools** at the top of the page, then click the **System Commands** link.
3. On the **System Commands** page, click **Save All.**
   This temporarily saves all the changes you have made. You will still need to restart the access point for any changes to take effect.
4. Click **Restart Access Point** for changes to the WLAN settings to take effect.

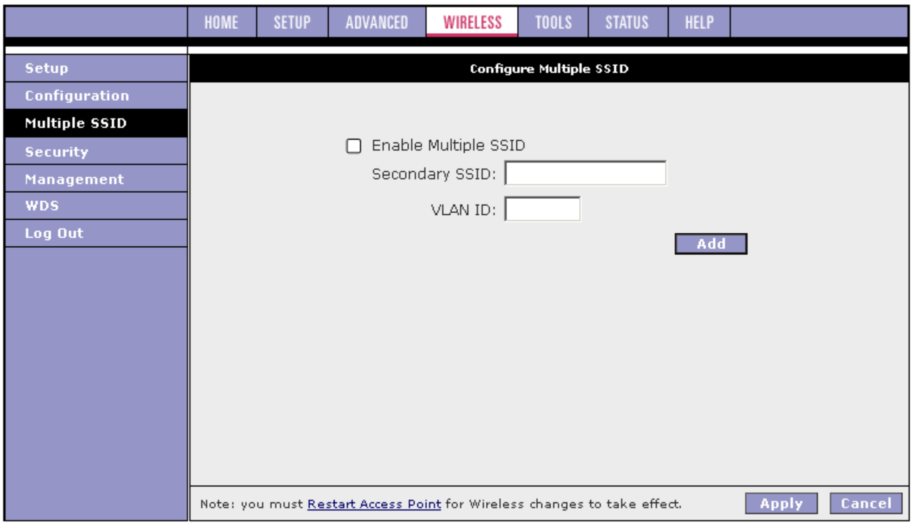
CAUTION: Any changes you make to the WLAN page do NOT get saved automatically. Clicking Apply on the individual page is not sufficient for the changes you made to take effect. For changes you made to any WLAN page to take effect, you must perform the steps as described above.

3.6.3 Multi SSID

The Enable SSID field allows you to create multiple SSIDs for the AP. The Multiple SSID feature supports up to two SSID (one primary and one secondary). You can see from Figure 4-6 that Multiple SSID feature is enabled by default and a secondary SSID has been created:

- Secondary SSID: TI-Voice_SSID
- VLAN ID: 2

You can disable multiple SSID or re-configure the secondary SSID; however, it is recommended that you keep the default setting so that voice data over WLAN is given the highest priority. To learn more about how WLAN QoS is handled, refer to ''WLAN QoS Support'.



Configure Multiple SSID

☐ Enable Multiple SSID

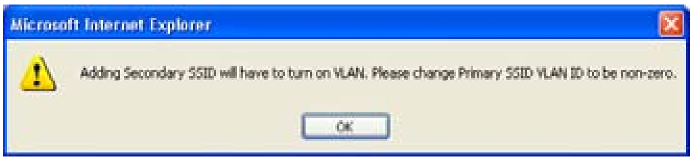
Secondary SSID:

VLAN ID:

Note: you must Restart Access Point for Wireless changes to take effect.

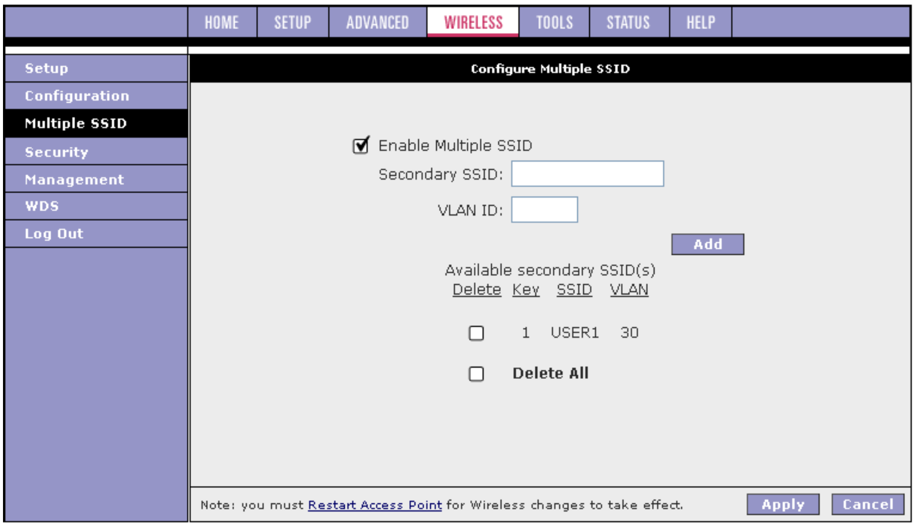
You can create multiple SSIDs using the procedure describe below:

1. Check **Enable Multiple SSID**.
2. Enter the Secondary SSID and VLAN ID. Then click **Add**.
3. A pop-up message appears requesting you to change the Primary SSID's VLAN ID to be no-zero.



Adding Secondary SSID will have to turn on VLAN. Please change Primary SSID VLAN ID to be non-zero.

4. Click **OK**. The SSID appears as shown in figure below.



Configure Multiple SSID

☑ Enable Multiple SSID

Secondary SSID:

VLAN ID:

Available secondary SSID(s)

Delete	Key	SSID	VLAN
□	1	USER1	30

□ Delete All

Note: you must Restart Access Point for Wireless changes to take effect.

Note: The SSID field takes up to 32 alpha-numeric characters.

5. Go to WLAN Configuration page, and change the VLAN ID to a number different from zero (between 1 and 4095).

6. Repeat first part of step 2 to add more SSID.
   Note: Up to 3 secondary SSIDs are supported (in addition to the primary SSID).

7. To delete an SSID, check the **SSID**, then click **Delete** in the pop-up window. To delete all SSIDs, check **Delete All**.
   Note: When the last secondary SSID is deleted, WLAN QoS is disabled and the VLAN ID of the primary SSID is changed to the default 0.

8. Click **Apply** to complete the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

9. After finish adding SSID, please refer to **3.5 Configuring the LAN** to setup the LAN configuration for each SSID.

10. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.

11. At the **System Commands** page, click **Save All**.

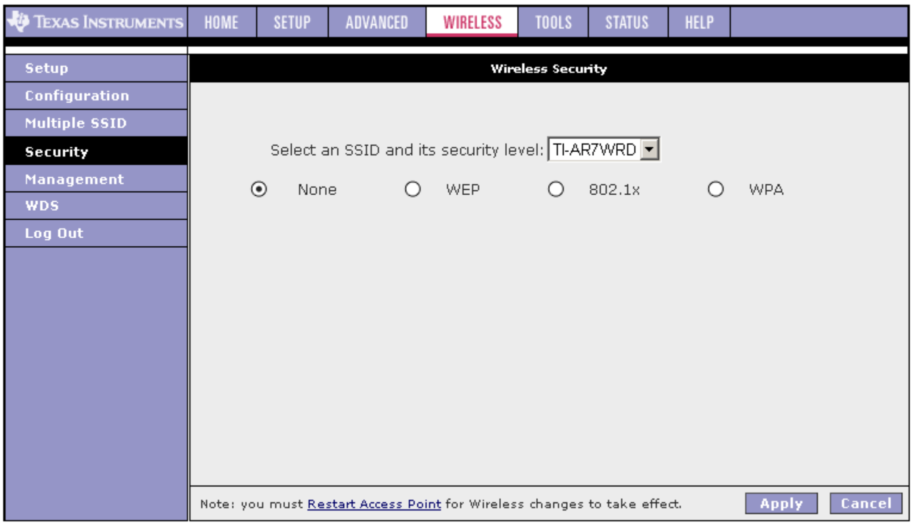
Field Description

Field	**Definition/Description**
Enable Multiple	SSID Enables/disables multiple SSID.
Secondary SSID	The secondary SSID of the SOHOSpeed, is up to 32 characters and is unique from the primary SSID.
VLAN ID	The VLAN ID of the secondary SSID, which has a unique value between 1 - 4095. For more information on the VLAN ID of the primary SSID, refer to "Wireless Setup Page".

3.6.4 Wireless Security

The default Wireless Security page provides the following wireless network security options:

- None: No security used.
- Wired equivalent privacy (WEP): Enable legacy stations to connect the AP.
- 802.1x: Enable stations with 802.1x capability to connect the AP.
- Wi-Fi protected access (WPA): Enable stations with WPA capability to connect the AP.
- WPA2: Enable stations with WPA2 capability to connect the AP. This option is available under the WPA option.



Wireless Security

Select an SSID and its security level: TI-AR7WRD

● None ○ WEP ○ 802.1x ○ WPA

Note: you must Restart Access Point for Wireless changes to take effect.

If you have multiple SSID enabled, you can assign security to each SSID. There are a few rules/limitations that you should follow:

- WEP cannot be assigned to more than one SSID.
- 802.1x cannot be assigned to more than one SSID.
- WEP and 802.1x cannot both be assigned concurrently to different SSIDs.
- When more than one SSID exists with security enabled, the Authentication type for WEP cannot be Shared.

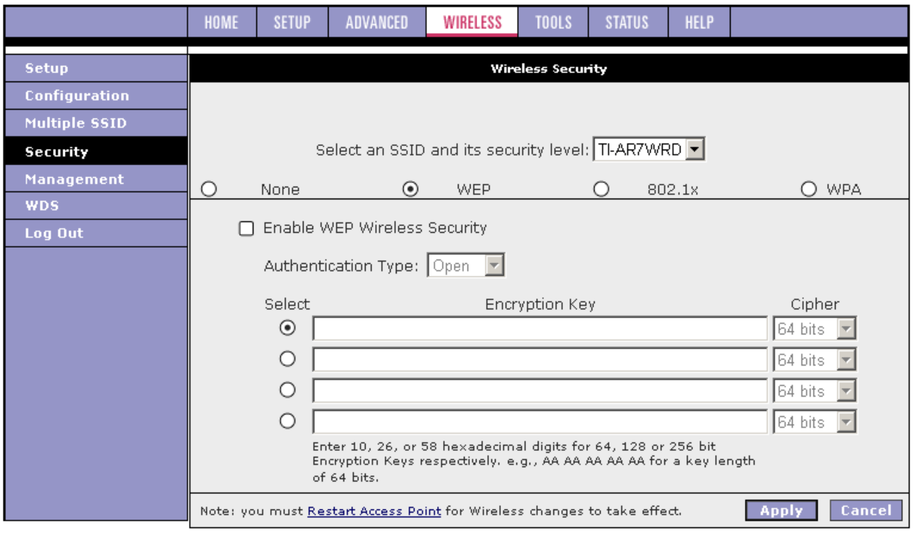
WEP

WEP is a security protocol for WLAN. WEP provides security by encrypting the data that is sent over the WLAN.

The SOHOSpeed supports three levels of WEP encryption:

- 64-bit encryption
- 128-bit encryption
- 256-bit encryption

With WEP, the receiving station must use the same key for decryption. Each radio network interface card (NIC) and AP, therefore, must be manually configured with the same key.



Wireless Security

Select an SSID and its security level: TI-AR7WRD

○ None ● WEP ○ 802.1x ○ WPA

□ Enable WEP Wireless Security

Authentication Type: Open

Select	Encryption Key	Cipher
●		64 bits
○		64 bits
○		64 bits
○		64 bits

Enter 10, 26, or 58 hexadecimal digits for 64, 128 or 256 bit Encryption Keys respectively. e.g., AA AA AA AA AA for a key length of 64 bits.

Note: you must Restart Access Point for Wireless changes to take effect.

Follow the procedure below to enable WEP on yourSOHOSpeed.

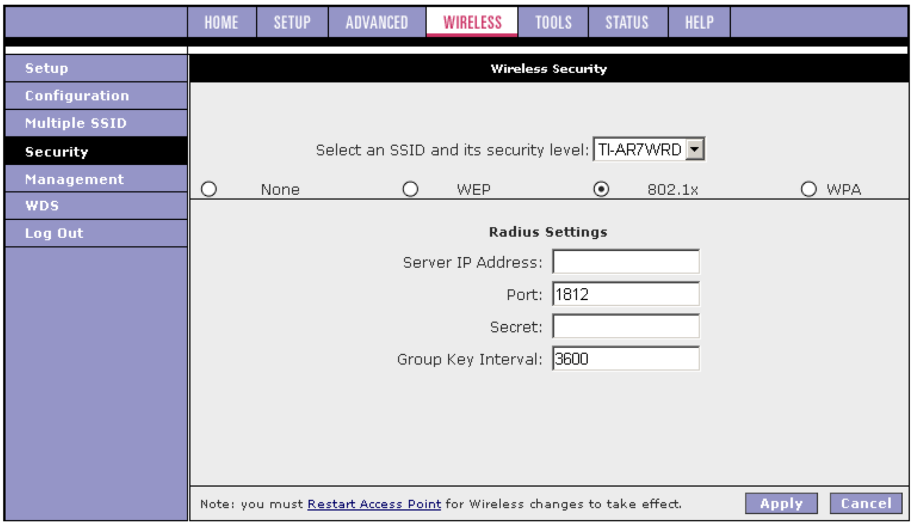
1. Select the SSID that you want to apply security to.
2. Check **Enable WEP Wireless Security**.
3. Select **Authentication** Type.
4. Enter Encryption key and select Cipher following the instructions on the page.
   You will need to enter the same key for the first time configuration of each station.
5. Click **Apply** to complete the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
6. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
7. At the **System Commands** page, click **Save All**.

Field Description

Field	**Definition/Description**
Select an SSID and its Security Level	If multiple SSID is enabled, use this drop-down menu to select the SSID that you want to apply wireless security to.
Enable WEP Wireless Security	Check this field to enable WEP wireless security on the selected SSID.
Authentication	Type Authentication algorithm to use when the security configuration is set to Legacy. When the security configuration is set to 802.1x or WPA, the authentication algorithm is always open. This field is enabled when the WEP security field is checked. There are three options: ● Open (default): In open-system authentication, the access point accepts any station without verifying its identify. ● Shared: Shared-key authentication requires a shared key (WEP encryption key) be distributed to the stations before attempting authentication. ● Both: If both is selected, the access point will perform shared-key authentication, then open-system authentication.
Encryption Key	This field is enabled when the WEP security is checked to identify the key value that is used when the security configuration is set to WEP. The key length must match the WEP cipher.
WEP Cipher	This field is enabled when the WEP security field is checked. You can select from 64 bits, 128 bits, and 256 bits. The WEP cipher that is used when the security configuration is set to WEP. This field is not used when the security configuration is set to 802.1x and WPA.

802.1x

802.1x is a security protocol for WLAN. It is a port-based network access control that keeps the network port disconnected until authentication is completed. 802.1x is based on extensible authentication protocol (EAP). EAP messages from the authenticator to the authentication server typically use the remote authentication dial-in user service (RADIUS) protocol. The figure below shows the default setting of the Wireless Security - 802.1x page.



Select an SSID and its security level: TI-AR7WRD

○ None ○ WEP ● 802.1x ○ WPA

Radius Settings

Server IP Address:

Port: 1812

Secret:

Group Key Interval: 3600

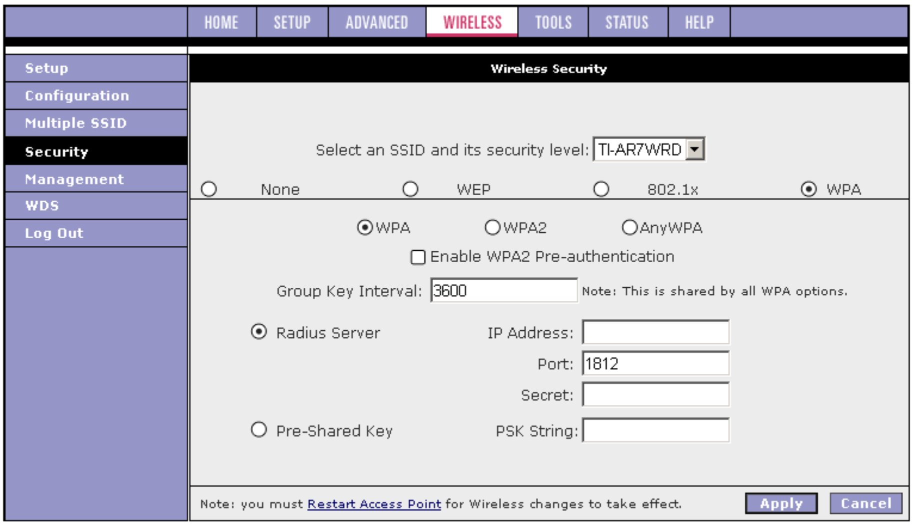
Note: you must Restart Access Point for Wireless changes to take effect.

Field Description

Field	Definition/Description
Select an SSID and its Security Level	If multiple SSID is enabled, use this drop-down menu to select the SSID that you want to apply wireless security to.
Server IP Address	The IP address of the RADIUS server. Used for authentication.
Port	The protocol port of the RADIUS server.
Secret	The secret that the AP shares with the RADIUS server. You can enter up to 63 alpha-numeric characters in this field.
Group Key Interval	The group key interval that is used to distribute the group key to 802.1x and WPA stations. The default value of this field is 3600 secs.

WPA

WPA is a security protocol for WLAN. WPA uses a sophisticated key hierarchy that generates new encryption keys each time a mobile device establishes itself with an AP. Protocols including 802.1X, EAP, and RADIUS are used for strong authentication. Like WEP, keys can still be entered manually (pre-shared keys); however, using a RADIUS authentication server provides automatic key generation and enterprise-wide authentication. WPA uses temporal key integrity protocol (TKIP) for data encryption. WPA2, also known as 802.11i, uses advanced encryption standard counter mode CBC-MAC protocol (AES-CCMP) for data encryption.



Wireless Security

Select an SSID and its security level: TI-AR7WRD

○ None ○ WEP ○ 802.1x ● WPA

● WPA ○ WPA2 ○ AnyWPA

□ Enable WPA2 Pre-authentication

Group Key Interval: 3600 Note: This is shared by all WPA options.

● Radius Server IP Address:

Port: 1812

Secret:

○ Pre-Shared Key PSK String:

Note: you must Restart Access Point for Wireless changes to take effect.

Field Description

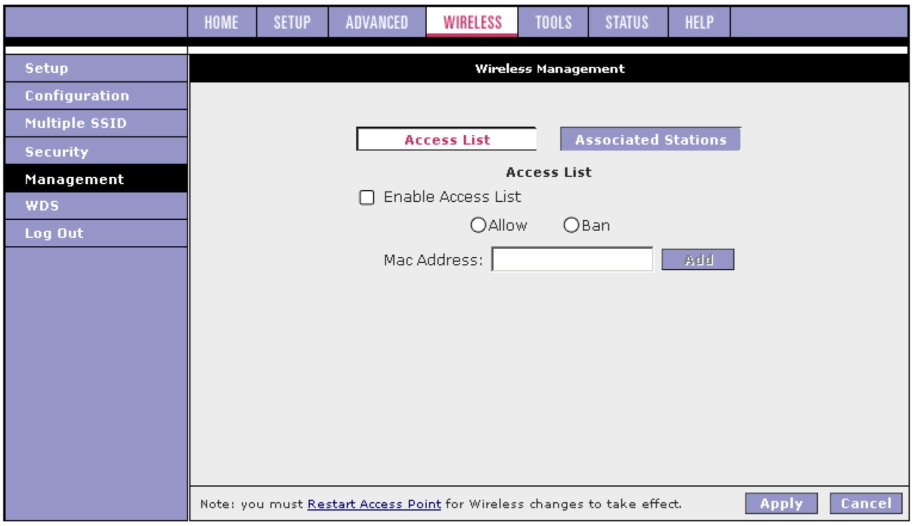
Field	Definition/Description
Select an SSID and its Security Level	If multiple SSID is enabled, use this drop-down menu to select the SSID that you want to apply wireless security to.
WPA	Enables stations that support WPA v.1 to connect to the AP.
WPA2	Enables stations that support WPA v.2 to connect to the AP.
AnyWPA	Enables stations that support WPA v.1 and WPA v.2 to connect to the AP.
Enable WPA2 Pre-authentication	Enables/disables WPA2 pre-authentication. This field is activated only when WPA2 or AnyWPA is enabled.
Group Key Interval	This value is measured in seconds.
Radius Server	When selected, the WPA stations authenticate with the RADIUS server using extensible authentication protocol - transport layer security (EAP-TLS) over 802.1x.
IP Address	IP address of the RADIUS server.
Port	The protocol port of the RADIUS server.
Secret	The secret that the AP shares with the RADIUS server. You can enter up to 63 alpha-numeric characters in this field.
Pre-shared Key	When selected, the WPA stations do not authenticate with the RADIUS server using EAP-TLS. Instead they share a pre-shared secret with the AP (ASCII format).
String	Pre-shared key string. The PSK string needs to be entered in the first-time configuration of each station. You can enter 8 - 63 alpha-numeric characters in this field.

3.6.5 Wireless Management

The wireless management function gives another level of security to your AP. It allows you to create an allowed access list or a banned access list (not both) and view a list of stations associated with your access point.

Access List

By clicking Management from the left-hand navigation list, you are taken to the default Access List page.



□ Enable Access List

○Allow ○Ban

Mac Address:

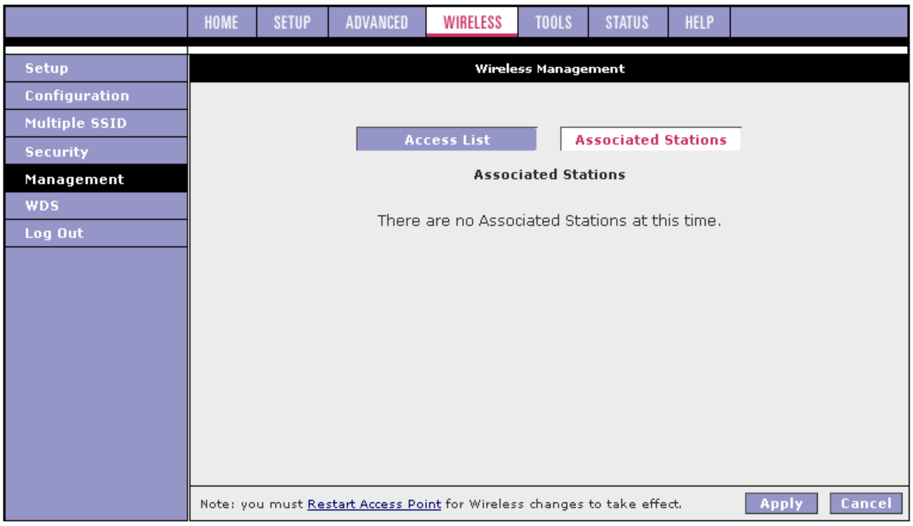
Note: you must Restart Access Point for Wireless changes to take effect.

You can create an Allowed or Banned access list from the Access List page using Procedure 4-4.

1. Check **Enable Access List**.
2. Select **Allow** to create an allowed access list or **Ban** to create a banned list.
   Note: You cannot create both.
3. Enter a MAC address of an allowed or banned station, then click **Add**.
   This station appears in your allowed or banned access list.
4. Repeat this step for each station you want to add to your access list.
5. Click **Apply** to complete the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
6. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
7. At the **System Commands** page, click **Save All**.

Associated Stations

This page allows you to see a list of all stations associated with the access point. You can ban any stations on the list by clicking Ban Station next to the MAC Address. If the Allowed Access list is enabled, this station will be deleted from the Allowed Access List. If the Banned Access list is enabled, this station will be added to the Banned Access List.



Wireless Management

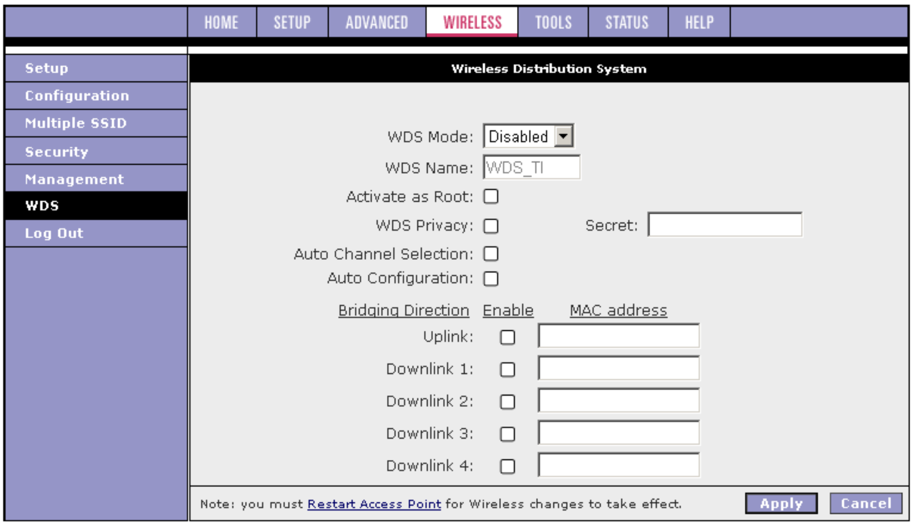
Associated Stations

There are no Associated Stations at this time.

Note: you must Restart Access Point for Wireless changes to take effect.

3.6.6 WDS

Wireless distribution system (WDS) is a system that interconnects BSS to build a premise wide network. WDS network allows users of mobile equipment to roam and stay connected to the available network resources. You can configure your SOHOSpeed as WDS mode using the WDS page.



Wireless Distribution System

WDS Mode: Disabled
WDS Name: WDS_TI
Activate as Root: □
WDS Privacy: □ Secret:
Auto Channel Selection: □
Auto Configuration: □

Bridging Direction	Enable	MAC address
Uplink:	□	
Downlink 1:	□	
Downlink 2:	□	
Downlink 3:	□	
Downlink 4:	□	

Note: you must Restart Access Point for Wireless changes to take effect.

Field Description

Field	**Definition/Description**
WDS Mode	The following WDS modes are available: ● Bridge: In Bridge mode, the AP basic service set (BSS) service is enabled. ● Repeater: In Repeater mode, the AP BSS is disabled when connection to the upper layer AP is established. ● Crude: In Crude mode, the AP BSS service is always enabled; however, the links between APs are configured statically and are not maintained. ● Disabled (Default): WDS inactive. ● In Both Bridge and Repeater modes, WDS uses management protocol to establish and maintain links between APs.
WDS Name	The WDS name is used to identify WDS network. The field takes up to eight characters. Two or more WDS networks may exist in the same area.
Activate as Root	This field must be checked for the root device in WDS hierarchy. Only one WDS root device may exist in WDS network. This field is not applicable for Crude mode.
WDS Privacy	Checking this field commands WDS manager to use a secured connection between APs in the WDS network. Security settings must be the same in all APs in the WDS network. Note: WDS privacy is not supported in Crude mode.
Secret	The 32-character alpha-numeric privacy key.
Auto Channel Selection	Auto channel selection is not supported in the current version.
Auto Configuration	Auto configuration is not supported in the current version.
Uplink Connection Check Box	The BSS ID of the upper device in the WDS hierarchy. This uplink cannot be configured if Root is enabled.
Downlink Connection Check Boxes	The BSS ID of the lower device in the WDS hierarchy connected to this AP. Up to four downlinks can be configured.

3.7 ADVANCED

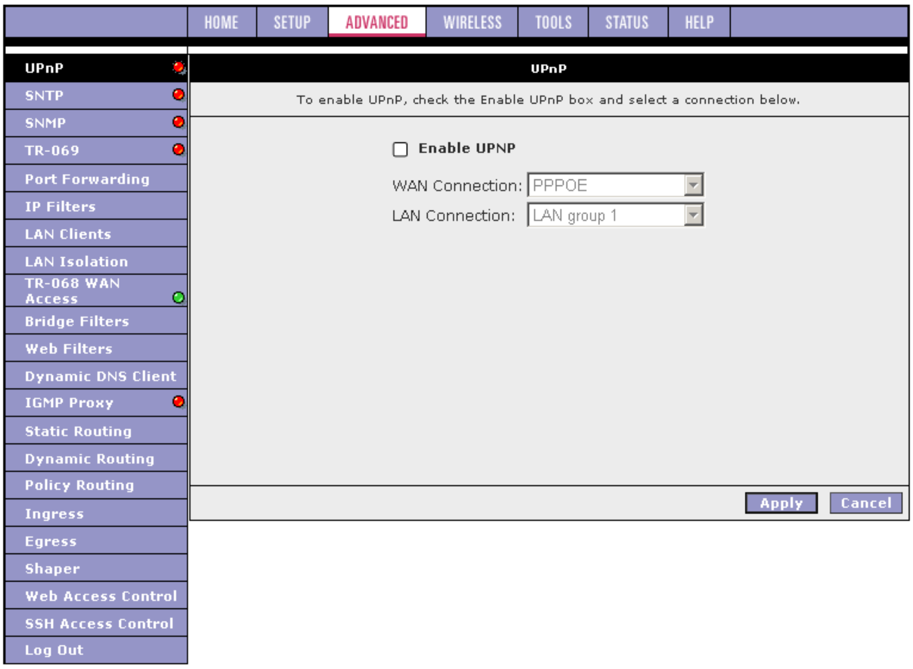
The Advanced tab allows you to perform advanced configuration functions for existing connections including:

- Enabling and disabling of key features including voice, voice provision, UPnP, SNTP, SNMP, TR-069, IP QoS, RIP, access control, TR-068 WAN access, and multicasting
- QoS (ingress, egress, shaper) and policy routing
- Management of LAN port interfaces, packet flow, and filtering

At least one WAN connection must be configured before implementing advanced WAN configuration features. At least one LAN group must be defined before implementing advanced LAN configuration features.

3.7.1 UPnP

Universal plug and play (UPnP), NAT, and firewall traversal allow traffic to pass through the SOHOSpeed for applications using the UPnP protocol. This feature requires one active WAN connection. In addition, the PC should support this feature. In the presence of multiple WAN connections, select a connection on which the incoming traffic is present, for example, the default WAN connection.



UPnP

To enable UPnP, check the Enable UPnP box and select a connection below.

□ Enable UPNP

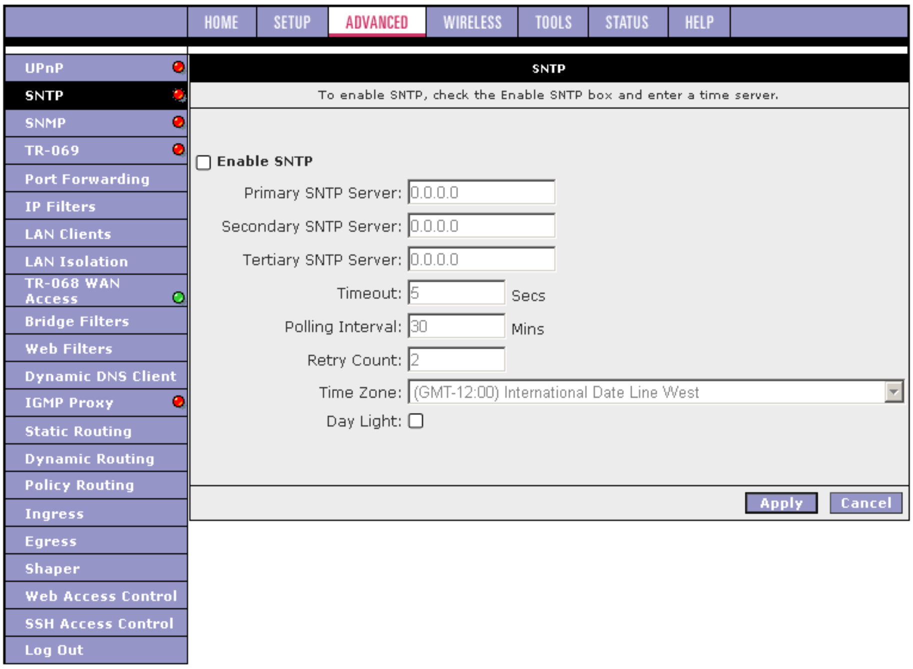
WAN Connection: PPPOE

LAN Connection: LAN group 1

1. Check **Enable UPnP**.
   This enables the WAN Connection and LAN Connection fields.
2. Select the WAN Connection and LAN Connection that will use UPnP from the drop-down lists.
3. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

3.7.2 SNTP

Simple network timing protocol (SNTP) is a protocol used to synchronize the system time to the public SNTP servers. It uses the UDP protocol on port 123 to communicate between clients and servers. The figure below shows the default SNTP page.



SNTP

To enable SNTP, check the Enable SNTP box and enter a time server.

□ Enable SNTP

Primary SNTP Server: 0.0.0.0

Secondary SNTP Server: 0.0.0.0

Tertiary SNTP Server: 0.0.0.0

Timeout: 5 Secs

Polling Interval: 30 Mins

Retry Count: 2

Time Zone: (GMT-12:00) International Date Line West

Day Light: □

When the SNTP feature is enabled, your SOHOSpeed starts querying for the time clock information from the primary SNTP server. If it fails to get a valid response within the Timeout period, it makes additional attempts based on the number specified in the Retry Count field before moving to the Secondary SNTP server.

If it fails to get a valid response from Secondary STNP server within the specified retry count, it starts querying the Tertiary SNTP server. If it fails to get a valid response from all the servers, then the program stops. Once a valid response is received from one of the servers, the program goes to sleep for number of minutes specified in the Polling Interval field before starting the whole process again.

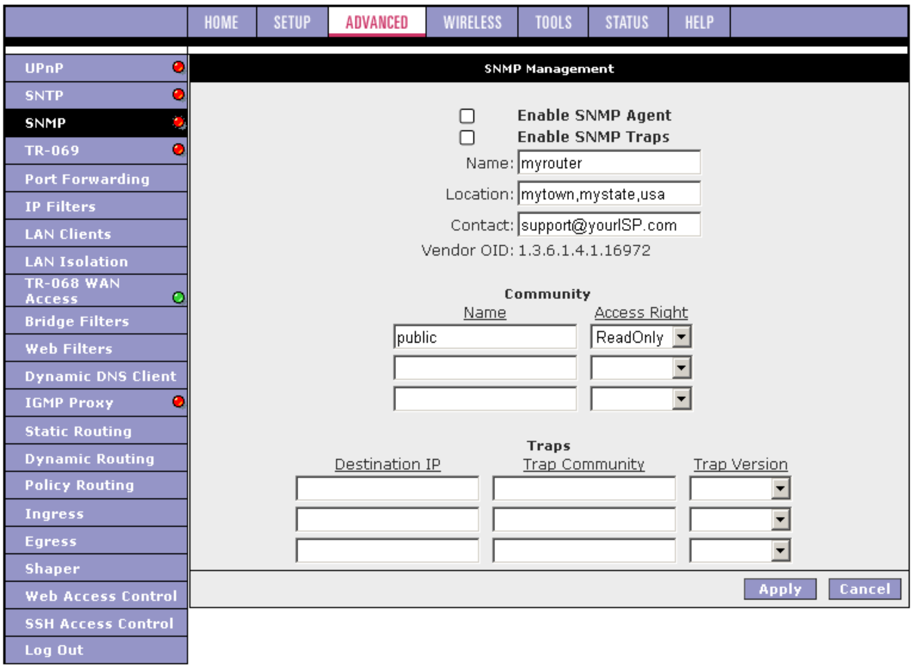
1. Check **Enable SNTP**.
2. Use the table below as a reference and configure the following fields:
   - Primary SNTP Server
   - Secondary SNTP Server
   - Tertiary SNTP Server
   - Timeout
   - Polling Interval
   - Retry Count
   - Time Zone
   - Day Light
3. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

Field Description

Field	**Definition/Description**
Primary SNTP Server	The IP address or the host name of the primary SNTP server. This can be provided by ISP or user-defined.
Secondary SNTP Server	The IP address or the host name of the secondary SNTP server. This can be provided by ISP or user-defined.
Tertiary SNTP Server	The IP address or the host name of the tertiary SNTP server. This can be provided by ISP or user-defined.
Timeout	If the SOHOSpeed failed to connect to a SNTP server within the Timeout period, it retries the connection.
Polling Interval	The amount of time between a successful connection with a SNTP server and a new attempt to connect to an SNTP server.
Retry Count	The number of times the SOHOSpeed tries to connect to an SNTP server before it tries to connect to the next server in line.
Time Zone	The time zone in which the SOHOSpeed resides.
Day Light	Check/uncheck this option to enable/disable daylight saving time (DST). **Note:** DST is not automatically enabled or disabled. You need to manually enable and disable it.

3.7.3 SNMP

Simple network management protocol (SNMP) is a troubleshooting and management protocol that uses the UDP protocol on port 161 to communicate between clients and servers. The figure below shows the default SNMP page.



SNMP Management

□ Enable SNMP Agent
□ Enable SNMP Traps

Name: myrouter
Location: mytown,mystate,usa
Contact: support@yourISP.com
Vendor OID: 1.3.6.1.4.1.16972

Community

Name	Access Right
public	ReadOnly

Traps

Destination IP	Trap Community	Trap Version

SNMP uses a Manager- Management information base (MIB)-Agent solution to fulfill network management needs. The manager is a separate station that can request data from an SNMP agent, which resides in each modem on the network. The agent uses the MIBs as dictionaries of manageable objects. The SNMP agent supports GET, SET, GETNEXT, and TRAP for four groups with MIB-II: System, Interface, IP, and ICMP.

Field Description

Field	**Definition/Description**
Enable SNMP Agent	The SNMP agent is enabled by default.
Enable SNMP Traps	SNMP traps are enabled to send by default.
Name	An administratively-assigned name for the SOHOSpeed.
Location	The physical location of the SOHOSpeed.
Contact	Contact person and/or contact information for the SOHOSpeed.
Vendor OID	Vendor object identifier. The vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1). For example, Texas Instruments was assigned the subtree 1.3.6.1.4.1.294.
Community	SNMP defines a community to be a relationship between an SNMP agent and one or more SNMP managers. Once the clear-text community name corresponds to a community known to the receiving SNMP entity, the sending SNMP entity is considered to be authenticated as a member of that community and is granted different levels of access: read-only or read-write. The combination of community access mode and a MIB-managed project defines the community profile for each object. The community profile defines the operations that can be applied to the object. In the SOHOSpeed, a default community name of public with access mode of read-only is created in the configuration file. It allows a GET or a GETNEXT operation to all objects with access rights of READ-ONLY and READ-WRITE in the MIB. In the SOHOSpeed, up to three community names can be configured through the web page. The view_subtrees of SNMPv2c and user-based security model and view-based access control model of SNMPv3 will be supported in future SNMP agent development.
Community Name	Name of community. SNMP supports up to 3 communities including the default community name of public.
Community Access Right	Two options are offered: ● ReadOnly: Allows a GET or a GETNEXT operation to all objects in the MIB. ● ReadWrite: Allows ReadOnly access right to all objects and SET operation to objects defined as read-writable in the MIB.
Trap	Trap is an event notification. There are four standard traps supported in the SOHOSpeed: ● WarmStartTrap ● LinkUpTrap ● LinkDownTrap ● AuthenticationFailureTrap
Trap Destination IP	Destination IP address of the trap. Traps can be sent to three different destinations.
Trap Community	Community name of the trap.
Trap Version	Two trap versions/formats are supported: ● SNMP v1 ● SNMP v2c

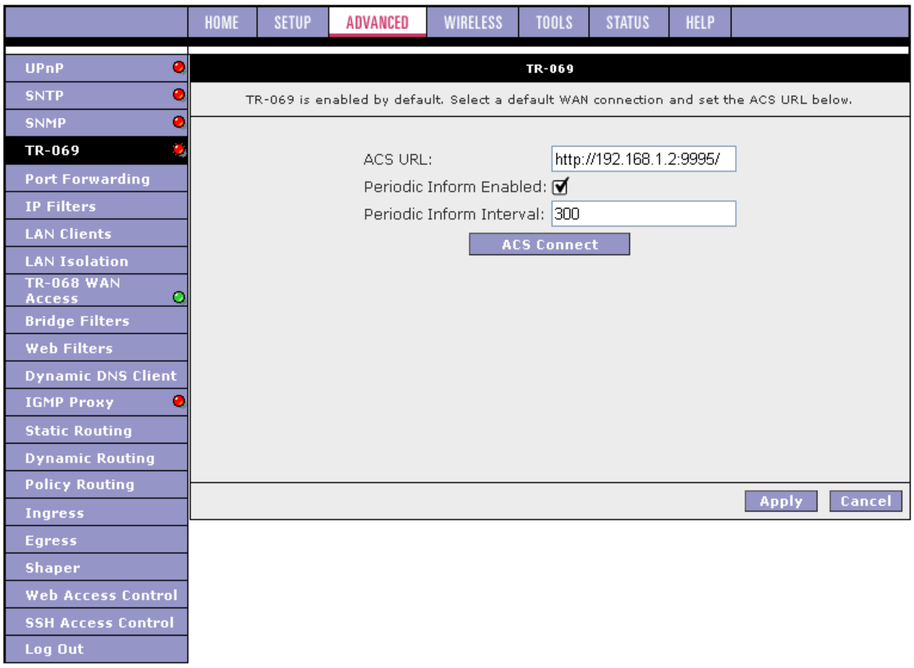
3.7.4 TR-069

TR-069 is CPE Management Protocol from WAN side, intended for communication between a CPE and Auto-Configuration Server (ACS). The CPE WAN Management Protocol defines a mechanism that encompasses secure auto-configuration of a CPE, and also incorporates other CPE management functions into a common framework.

The CPE WAN Management Protocol is intended to support a variety of functionalities to manage a collection of CPE, including the following primary capabilities:

- Auto-configuration and dynamic service provisioning
- Software/firmware image management
- Status and performance monitoring
- Diagnostics

The TR-069 page allows you to set up connection parameters and may not be seen by the end user. The figure below shows the default TR-069 page.



TR-069

TR-069 is enabled by default. Select a default WAN connection and set the ACS URL below.

ACS URL: http://192.168.1.2:9995/

Periodic Inform Enabled: ☑

Periodic Inform Interval: 300

Field Description

Field	**Definition/Description**
ACS URL	URL of the auto configuration server (ACS) provided by the ISP.
Periodic Inform Enabled	Enable/disables the SOHOSpeed to connect to the ACS periodically. If you enable this feature, you should enter a value in the Periodic Inform Interval field.
Periodic Inform Interval	This field is enabled only when the Periodic Inform Enabled field is checked. It defines the amount of time (in seconds) between a successful connection with an ACS server and a new attempt to connect to an ACS server. A recommended value is 86400 seconds (1 day).
ACS Connect	By clicking the ACS Connect button, you manually connect the SOHOSpeed to the ACS.

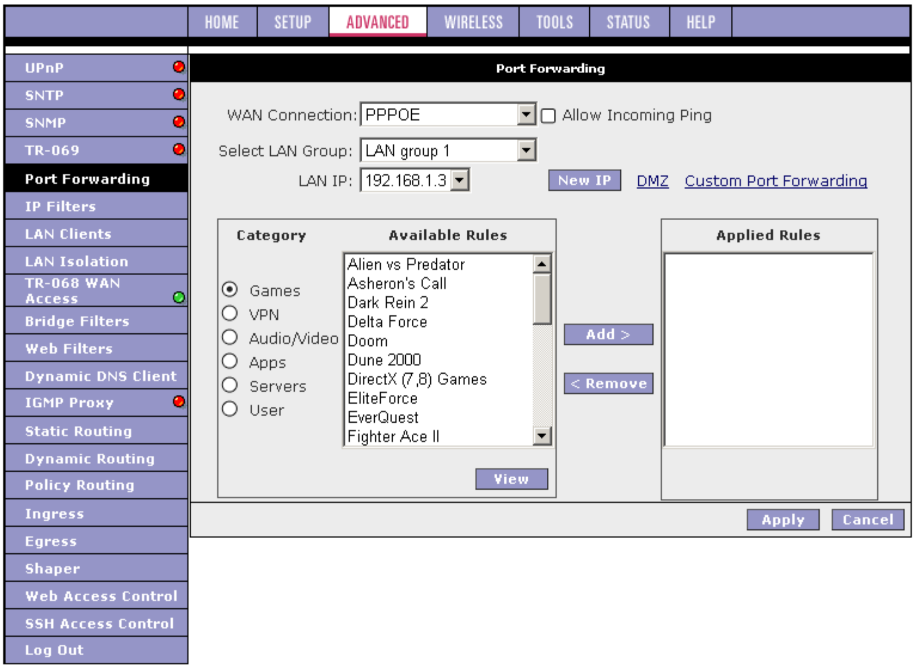
Please refer to TR-69 “Field Description” and follow procedure below to configure parameters related to TR-69.

1. Leave the default URL in the **ACS URL** field .
2. Check **Periodic Inform Enabled** and enter a value in the **Periodic Inform Interval** field.
   or
   Click **ACS Connect** to manually connect to the ACS. Once a connection is established, the ACS can update all three fields: **ACS URL**, **Periodic Inform Enabled**, and **Periodic Inform Interval**.
3. Click **Apply** when you finish to temporarily activate the settings.
   Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

3.7.5 Port Forwarding

The port forwarding (or virtual server) feature allows you to direct incoming traffic to specific LAN hosts based on a protocol port number and protocol.

Using the Port Forwarding page, you can provide local services (for example, web hosting) for people on the Internet or play Internet games. Port forwarding is configurable per LAN group. A database of predefined port forwarding rules allows you to apply one or more rules to one or more members of a defined LAN group. You can view the rules associated with a predefined category and add the available rules for a given category. You can also create, edit, or delete your own port forwarding rules.



Port Forwarding

WAN Connection: PPPOE ☐ Allow Incoming Ping

Select LAN Group: LAN group 1

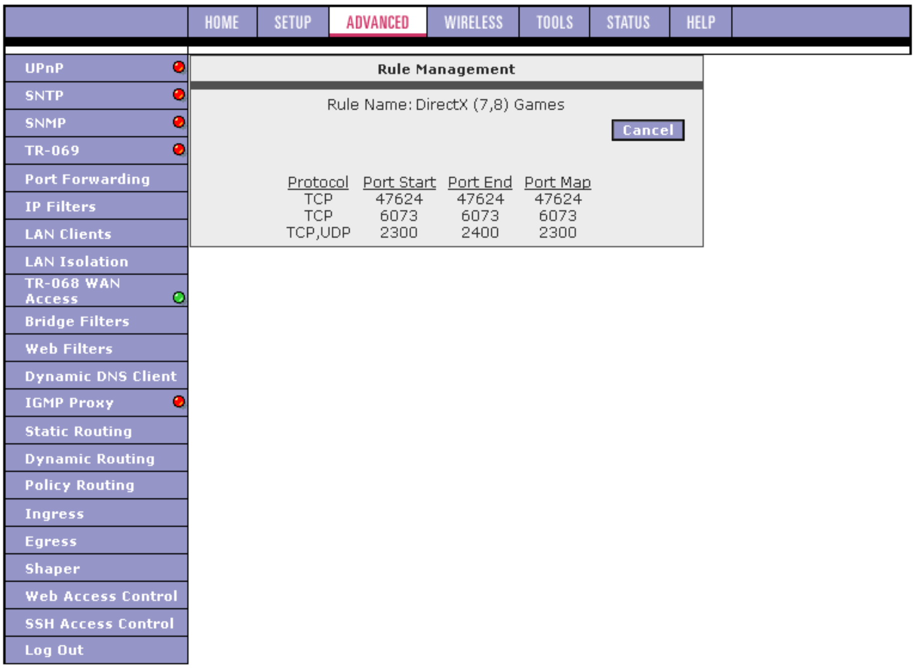
LAN IP: 192.168.1.3

Category	Available Rules	Applied Rules
● Games ○ VPN ○ Audio/Video ○ Apps ○ Servers ○ User	Alien vs Predator Asheron's Call Dark Rein 2 Delta Force Doom Dune 2000 DirectX (7,8) Games EliteForce EverQuest Fighter Ace II	

Field Description

Field	Definition/Description
WAN Connection	Select the WAN connection to which port forwarding is applied.
Select LAN Group	Select the LAN Group to which port forwarding is applied.
LAN IP	Select the IP address to host the service.
Allow Incoming Ping	Enabling incoming ping (ICMP) requests on the Port Forwarding page allows the SOHOSpeed to respond to a ping from the Internet.
DMZ	Demilitarized zone. More information on DMZ is available in "DMZ Settings Page".
Custom Port Forwarding	This link takes you to the Custom Port Forwarding page. More information is available in "Custom Port Forwarding Page".
Category	Custom and user-defined categories.
Available Rules	Predefined and user-defined IP filtering rules for each category.
Applied Rules	Lists the IP filtering rules you elect to apply for each given category.

6. On the **Port Forwarding Configuration** page, select WAN Connection, LAN Group, and LAN IP.
   If the desired LAN IP is not available in the LAN IP drop-down menu, you can add it using the LAN Client page, which is accessed by clicking New IP.
7. Select the available rules for a given category and click **Add** to apply the rule for this category.
   Note: You can click **View** to view the rule associated with a predefined filter on the Rule Management page.

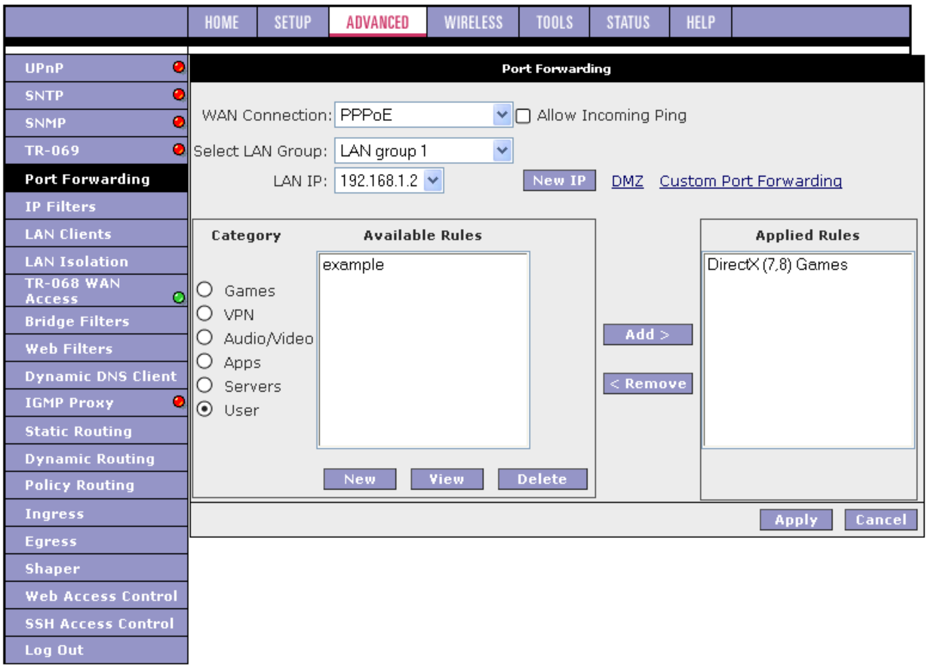


Rule Management

Rule Name: DirectX (7,8) Games

Protocol	Port Start	Port End	Port Map
TCP	47624	47624	47624
TCP	6073	6073	6073
TCP,UDP	2300	2400	2300

8. If a rule is not in the list, you can create your own rule in the User category. Select **User**, then click **New**



Port Forwarding

WAN Connection: PPPoE ☐ Allow Incoming Ping

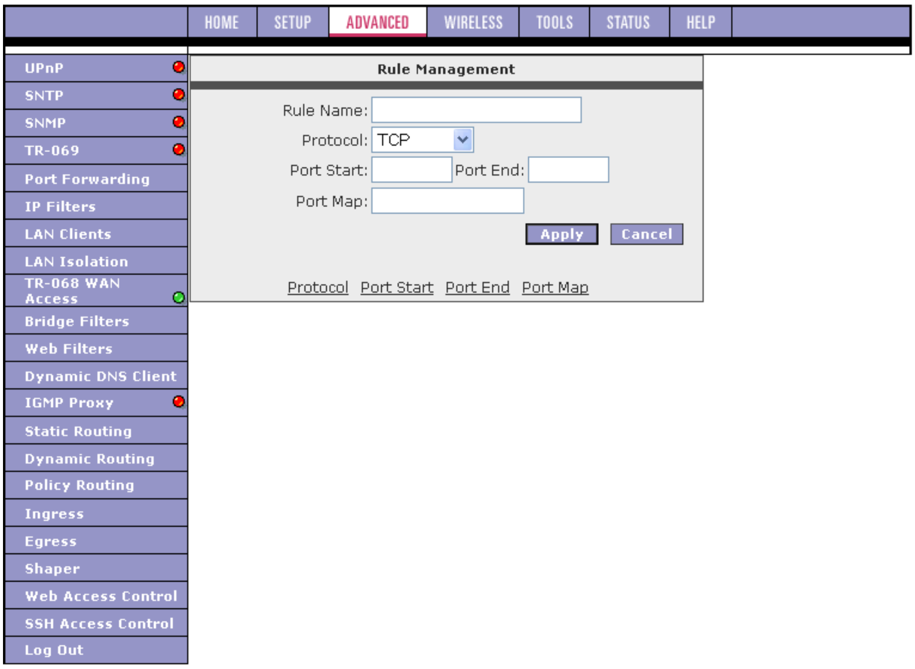
Select LAN Group: LAN group 1

LAN IP: 192.168.1.2

Category	Available Rules	Applied Rules
○ Games ○ VPN ○ Audio/Video ○ Apps ○ Servers ● User	example	DirectX (7,8) Games

Note: The New, View, and Delete buttons become available only when the User category is selected. All the custom rules you create fall under the User Category.

9. The Rule Management page populates for you to create new rules. Enter Rule Name, Protocol, Port Start, Port End, and Port Map fields, then click **Apply**.



Rule Management

Rule Name:

Protocol: TCP

Port Start: Port End:

Port Map:

Protocol Port Start Port End Port Map

The rules you create become available in the User category. You are able to view or delete the rules you create.

10. Continue to add rules as they apply from each category.

11. Click **Apply** when you finish to temporarily activate the settings.
Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

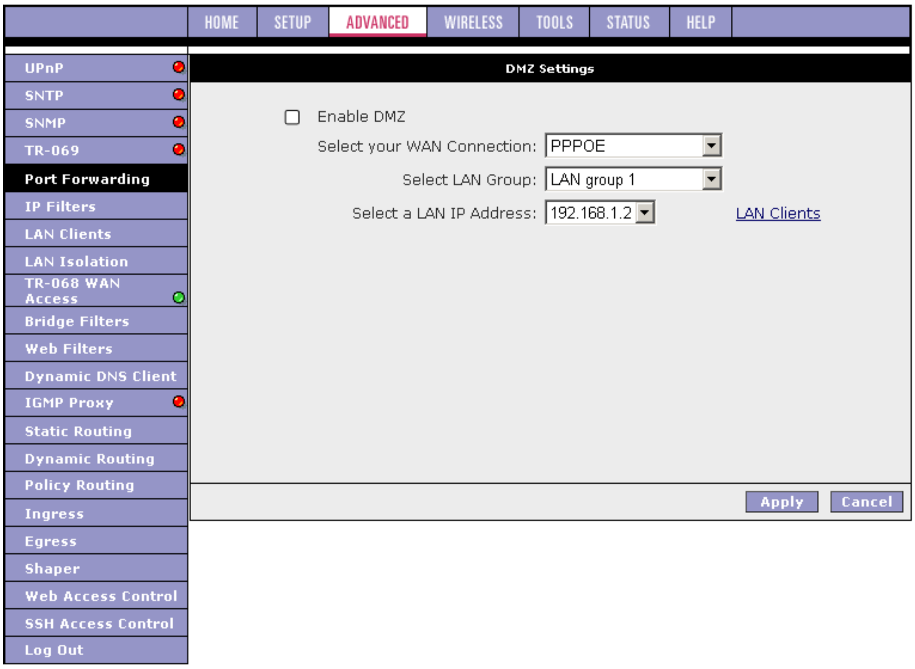
12. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
13. At the **System Commands** page, click **Save All**.

Note: You can also use the Custom Port Forwarding link to add programs to the existing list.

DMZ Settings Page

Setting a host on your local network as demilitarized zone (DMZ) forwards any network traffic that is not redirected to another host via the port forwarding feature to the IP address of the host. This opens the access to the DMZ host from the Internet. This function is disabled by default. By enabling DMZ, you add an extra layer of security protection for hosts behind the firewall.

1. On the **Port Forwarding** page, click the **DMZ** link.
   You are taken to the DMZ Settings page.



□ Enable DMZ

Select your WAN Connection: PPPOE

Select LAN Group: LAN group 1

Select a LAN IP Address: 192.168.1.2

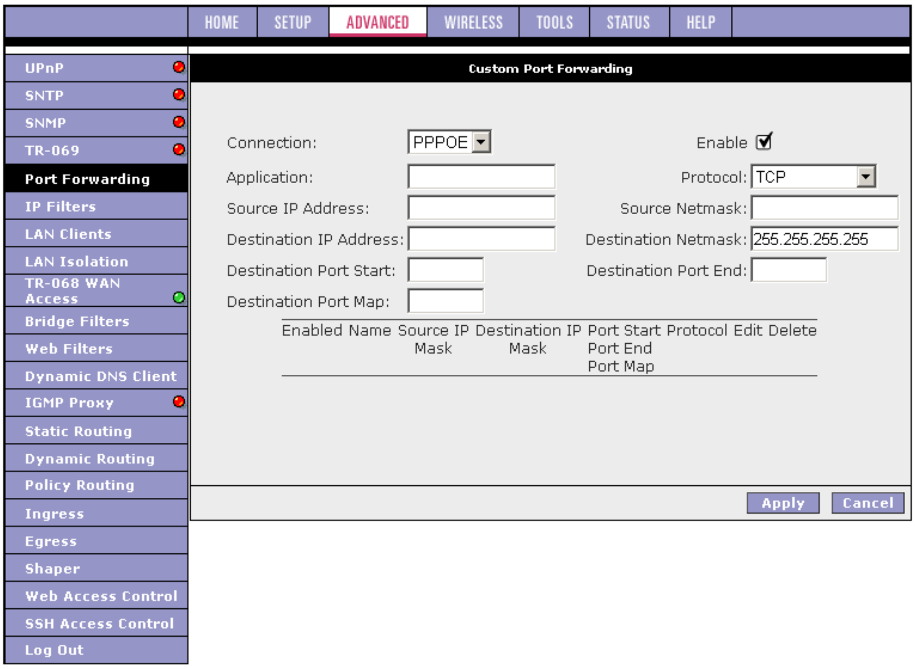
2. Check the **Enable DMZ** box.
3. Select the WAN Connection, LAN Group, and LAN IP Address.
   DMZ is configurable per LAN segment.
4. Click **Apply** when you finish to temporarily activate the settings.
   Note: You can access the LAN Clients page by clicking the LAN Clients link.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
5. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
6. At the **System Commands** page, click **Save All**.

Field Description

Field	**Definition/Description**
Enable DMZ	Enables/disables the Demilitarized Zone feature. This field is unchecked (disabled) by default.
Select your WAN Connection	Select the WAN connection on which the DMZ feature is applied.
Select LAN Group	Select the LAN Group on which the DMZ feature is applied.
Select a LAN IP Address	Select the LAN IP address you are going to use as the DMZ host. This host is exposed to the Internet. Be aware that this feature may expose your local network to security risks.
LAN Clients	This link takes you to the LAN Clients page. More information on LAN Clients can be found in "LAN Clients Page".

Custom Port Forwarding Page

The Custom Port Forwarding page allows you to create up to 15 custom port forwarding entries to support specific services or applications, such as concurrent NAT/NAPT operation.



Custom Port Forwarding

Connection: PPPOE

Enable ☑

Application:

Protocol: TCP

Source IP Address:

Source Netmask:

Destination IP Address:

Destination Netmask: 255.255.255.255

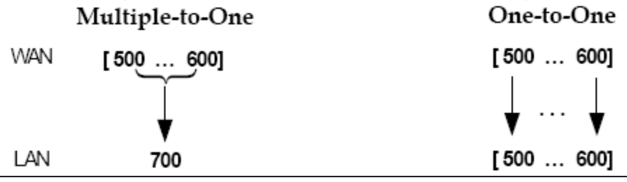
Destination Port Start:

Destination Port End:

Destination Port Map:

Enabled	Name	Source IP Mask	Destination IP Mask	Port Start Port End Port Map	Protocol	Edit	Delete

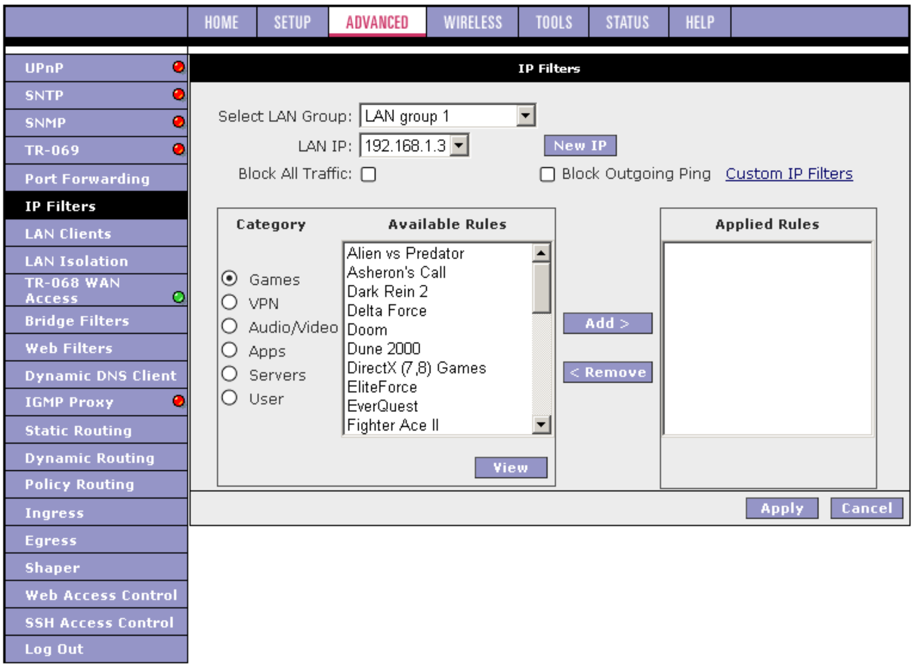
Field Description

Field	Definition/Description
Connection	Select the WAN connection on which the Custom Port Forwarding rule is to be applied.
Enable	The Enable button is checked by default, meaning this rule is automatically applied when you click the Apply button.
Application	Name of the application for which your ports will be opened.
Protocol	There are three options available: TCP, UDP, and TCP and UDP.
Source IP Address	You can define the source IP address from which the incoming traffic is allowed. Enter 0.0.0.0 for all.
Source Netmask	Netmask of the source IP address. Enter 255.255.255.255 for all.
Destination IP Address	The LAN-side destination IP address for incoming traffic.
Destination Netmask	The LAN-side destination netmask for incoming traffic. The default value of this field is 255.255.255.255.
Destination Port Start	The starting port number that is made open for this application.
Destination Port End	The ending port number that is made open for this application.
Destination Port Map	Destination port mapped on the LAN (destination) side to which packets are forwarded. There are two types of port mapping: ● One-to-one (one port mapped to one) ● Multiple-to-one (multiple ports mapped to one port)  Multiple-to-One One-to-One WAN [500 … 600] [500 … 600] LAN 700 [500 … 600]
Note: Wildcard (*) entries are allowed for IP Address/Netmask and Port range fields.	

3.7.6 IP Filters

The IP filtering feature allows you to block specific applications/services based on the IP address of a LAN device. You can use the IP Filters page to block specific traffic (for example, block web access) or any traffic from a host on your local network.

A database of predefined IP filters allows you to apply one or more filtering rules to one or more members of a defined LAN group. You can view the rules associated with a predefined filter and add the available rules for a given category. You can also create, edit, or delete your own IP filter rules.



IP Filters

Select LAN Group: LAN group 1

LAN IP: 192.168.1.3

Block All Traffic: ☐

☐ Block Outgoing Ping

Custom IP Filters

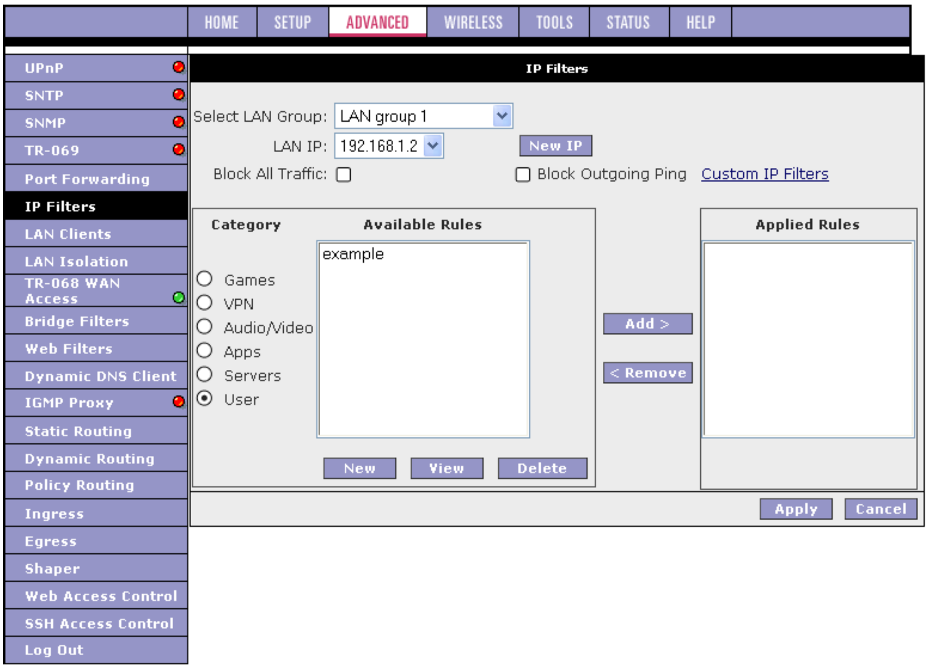
Category	Available Rules	Applied Rules
● Games ○ VPN ○ Audio/Video ○ Apps ○ Servers ○ User	Alien vs Predator Asheron's Call Dark Rein 2 Delta Force Doom Dune 2000 DirectX (7,8) Games EliteForce EverQuest Fighter Ace II	

Field Description

Field	Definition/Description
Select LAN Group	Select the LAN group to which the IP fllters feature will be applied.
LAN IP	Select the IP address in the given LAN group to which the IP Filters feature will be applied.
Block All Traffic	When checked, complete network access is blocked for the specific IP address.
Block Outgoing Ping	Blocking outgoing ping (ICMP) generated from a particular LAN IP can be used if your host has a virus that attempts a Ping-of-Death Denial of Service attack.
Custom IP Filters	This link takes you to the Custom IP Filters page. More information is available in "Custom IP Filters Page".
Available Rules	Predefined and user-defined IP filtering rules for each category.
Applied Rules	Lists the IP filtering rules you elect to apply for each given category.

1. On the **IP Filters** page, select LAN Group and LAN IP.
   If the desired LAN IP is not available in the LAN IP drop-down menu, you can add it using the LAN Client page, which is accessed by clicking New IP.
2. Select the available rules for a given category. Click **View** to view the rule associated with a predefined filter. Click **Add** to apply the rule for this category.

3. If a rule is not in the list, you can create your own rule in the User category. Select User, then click **New**.



Select LAN Group: LAN group 1

LAN IP: 192.168.1.2

Block All Traffic: □

□ Block Outgoing Ping

○ Games
○ VPN
○ Audio/Video
○ Apps
○ Servers
● User

Available Rules: example

Note: The New, View, and Delete buttons become available only when the User category is selected. All the custom rules you create fall under the User Category.

4. The Rule Management page populates for you to create new rules. Enter Rule Name, Protocol, Port Start, Port End, and Port Map fields, then click **Apply**.
The rules you create appear in the Available Rules box in the User category.
You can view or delete the rules you create.

5. Continue to add rules as they apply from each category using the Add button.

6. Click **Apply** when you finish to temporarily activate the settings.
Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

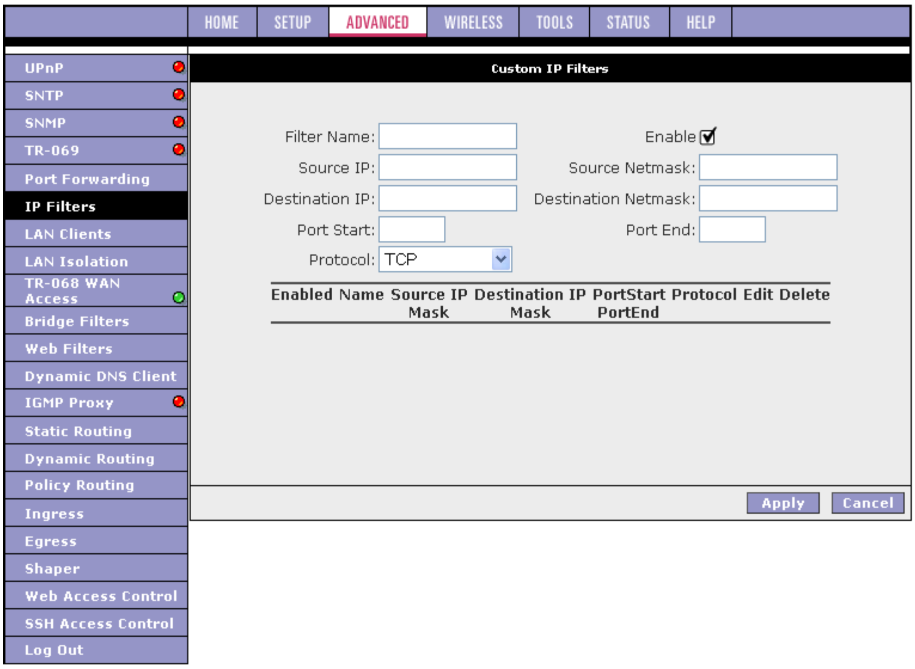
7. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.

8. At the **System Commands** page, click **Save All**.

Custom IP Filters Page

The Custom IP Filters page allows you to define up to 20 custom IP filtering entries to block specific services or applications based on:

- Source/destination IP address and netmask
- TCP port (ranges supported)
- Protocol
- TCP
- UDP
- TCP and UDP
- ICMP
- Any



Custom IP Filters

Filter Name: Enable ☑
Source IP: Source Netmask:
Destination IP: Destination Netmask:
Port Start: Port End:
Protocol: TCP

Enabled	Name	Source IP Mask	Destination IP Mask	PortStart PortEnd	Protocol	Edit	Delete

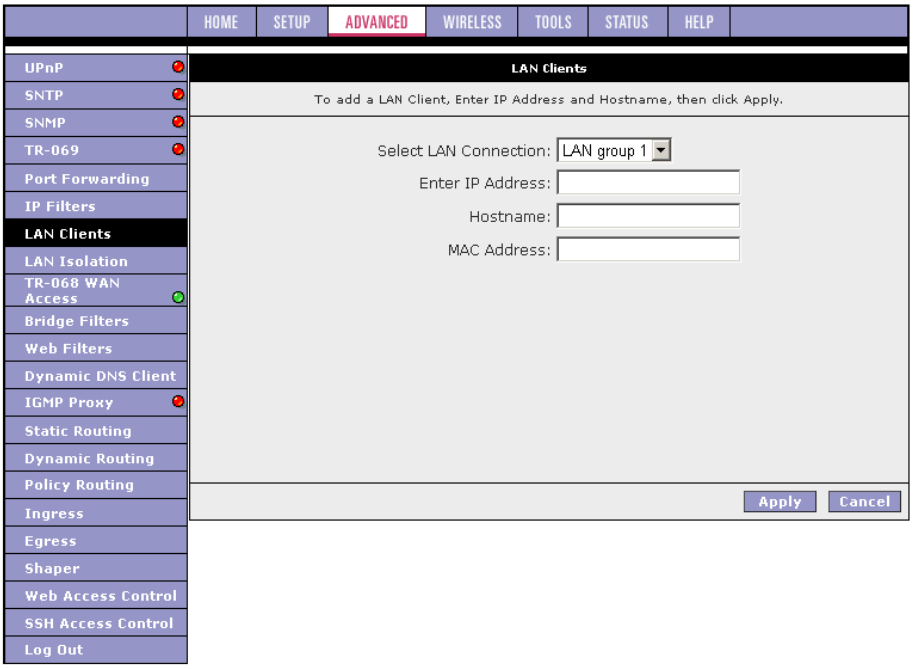
Field Description

Field	Definition/Description
Filter Name	Name of the IP filter rule you are creating.
Enable	The Enable button is checked by default, meaning this rule is automatically applied when you click Apply.
Source IP	The LAN-side source IP address assigned to outgoing traffic on which filtering is applied.
Source Netmask	Netmask of the source IP on your LAN side.
Destination IP	You can define the destination IP address to which your source IP will be banned access. Enter 0.0.0.0 for all.
Destination Netmask	Netmask of the destination IP. Enter 255.255.255.255 for all.
Port Stat	The starting port number that will be blocked for this application.
Port End	The ending port number that will be blocked for this application.
Protocol	There are five options available: TCP, UDP, TCP and UDP, ICMP, and Any.

3.7.7 LAN Clients

The LAN clients feature allows you to see all the hosts on the LAN segment.
Each host is qualified to be either dynamic (host obtained a lease from this SOHOSpeed) or static (host has a manually-configured IP address).
You can add a static IP address (belonging to the SOHOSpeed's LAN subnet) using the LAN Clients page. Any existing static entry falling within the DHCP server's range can be deleted and the IP address is made available for future allocation.

Note: Dynamic clients show up in the list only when the DHCP server is running.

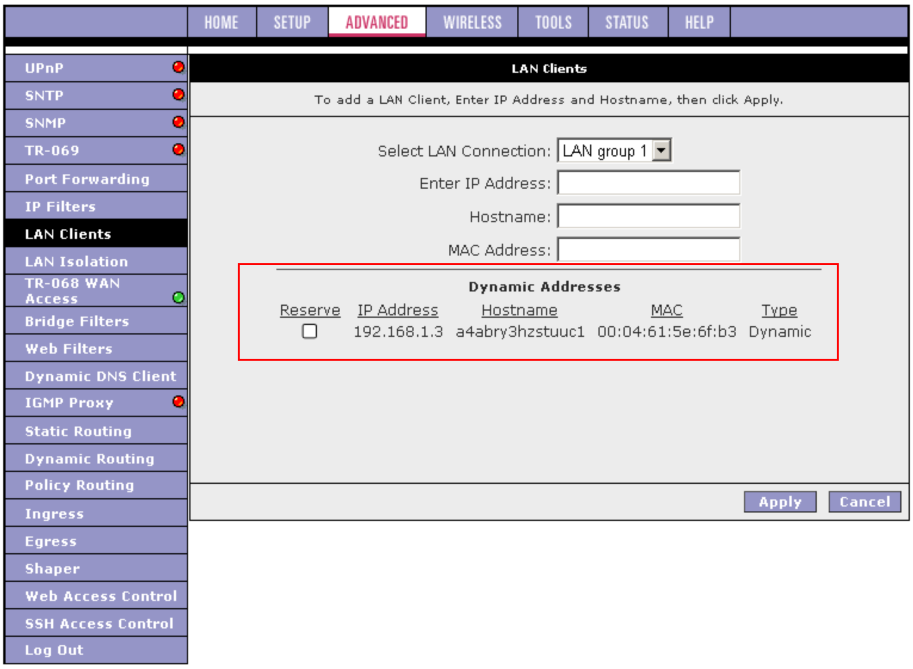


LAN Clients

To add a LAN Client, Enter IP Address and Hostname, then click Apply.

Select LAN Connection: LAN group 1
Enter IP Address:
Hostname:
MAC Address:

1. On the **LAN Clients** page, select LAN Connection, and enter IP Address, Hostname, and MAC Address.
2. Click **Apply**.
   The IP address is allocated and it shows up in the list of LAN clients as a Dynamic entry.



LAN Clients

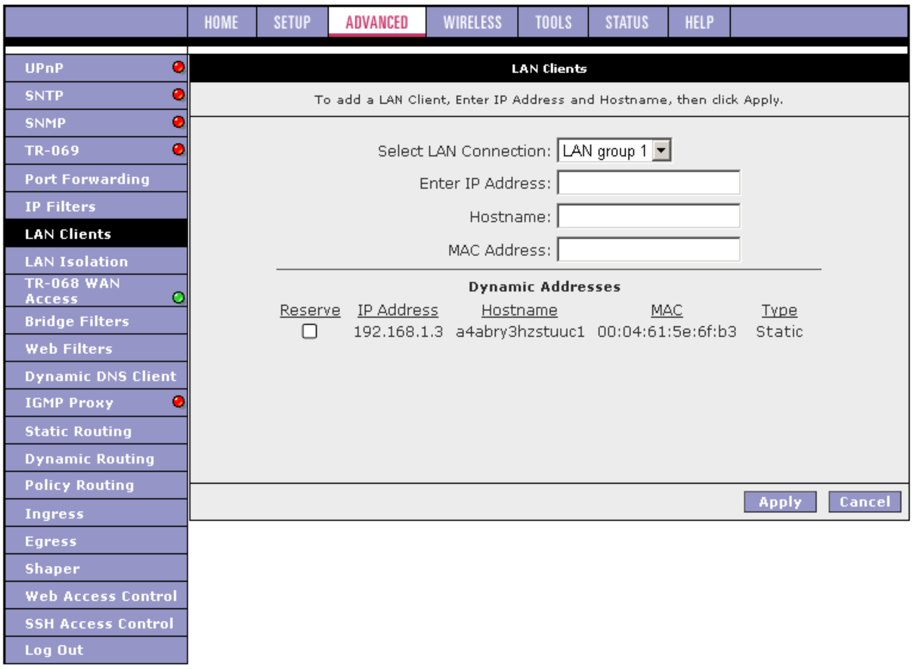
To add a LAN Client, Enter IP Address and Hostname, then click Apply.

Select LAN Connection: LAN group 1
Enter IP Address:
Hostname:
MAC Address:

Dynamic Addresses

Reserve	IP Address	Hostname	MAC	Type
☐	192.168.1.3	a4abry3hzstuuc1	00:04:61:5e:6f:b3	Dynamic

3. You can convert the dynamic entry into a static entry by clicking **Reserve**, then **Apply**. As shown in figure below, the IP is now changed to a Static address. You can delete this entry by selecting **Delete**.



LAN Clients

To add a LAN Client, Enter IP Address and Hostname, then click Apply.

Select LAN Connection: LAN group 1

Enter IP Address:

Hostname:

MAC Address:

Dynamic Addresses

Reserve	IP Address	Hostname	MAC	Type
□	192.168.1.3	a4abry3hzstuuc1	00:04:61:5e:6f:b3	Static

4. When you finish, click **Apply** to temporarily activate the settings.
Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

5. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.

6. At the **System Commands** page, click **Save All**.

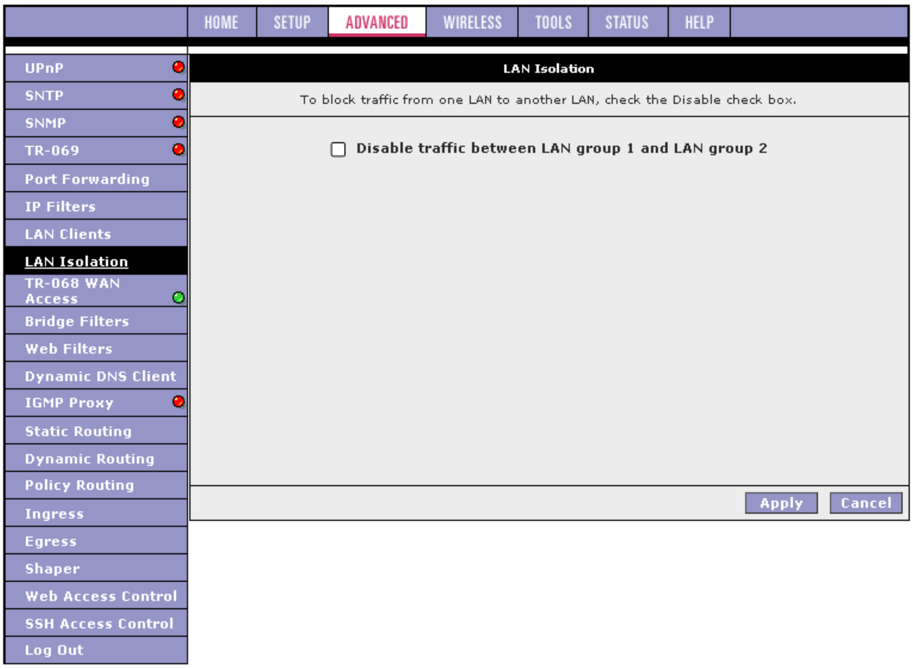
Note: The firewall rules that are applied to a Dynamic IP address will be removed after the release time expires.

Field Description

Field	**Definition/Description**
Select LAN Connection	Select the LAN connection to which the client is to be added.
Enter IP Address	Assign the dynamic IP address to the host here. This is a mandatory field.
Hostname	Hostname of the client. This is an optional field.
MAC Address	MAC address of the host. This is an optional field.

3.7.8 LAN Isolation

The LAN Isolation page allows you to disable the flow of packets between up to five user-defined LAN groups (interfaces include WLAN, USB, Ethernet, SSID1, SID2, and SSID3). This allows you to secure information in private portions of the LAN (such as a hot spot deployment) from other publicly accessible LAN segments.



LAN Isolation

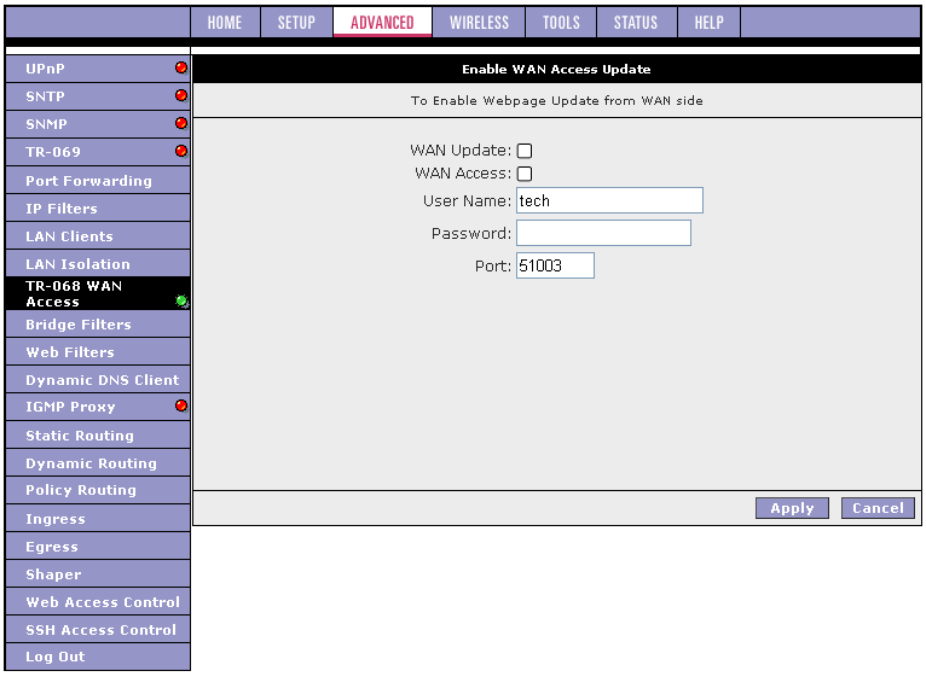
To block traffic from one LAN to another LAN, check the Disable check box.

□ Disable traffic between LAN group 1 and LAN group 2

1. Check the LAN group combinations that define which traffic will be blocked.
2. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
3. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
4. At the **System Commands** page, click **Save All**.

3.7.9 TR-068 WAN Access

The TR-068 WAN Access page enables you to give temporary permission to someone (such as technical support staff) to be able to access your SOHOSpeed from the WAN side. From the moment the account is enabled, the user is expected to log in within 20 active minutes, otherwise the account expires. Once the user has logged in, if the session remains inactive for more than 20 minutes, the user will be logged out and the account expires.



Enable WAN Access Update

To Enable Webpage Update from WAN side

WAN Update: □
WAN Access: □
User Name: tech
Password:
Port: 51003

Field Description

Field	Definition/Description
WAN Update	Check this field to give the account read and write access.
WAN Access	Check this field to give the account read-only access.
User Name	User name of the WAN access account.
Password	Password of the WAN access account.

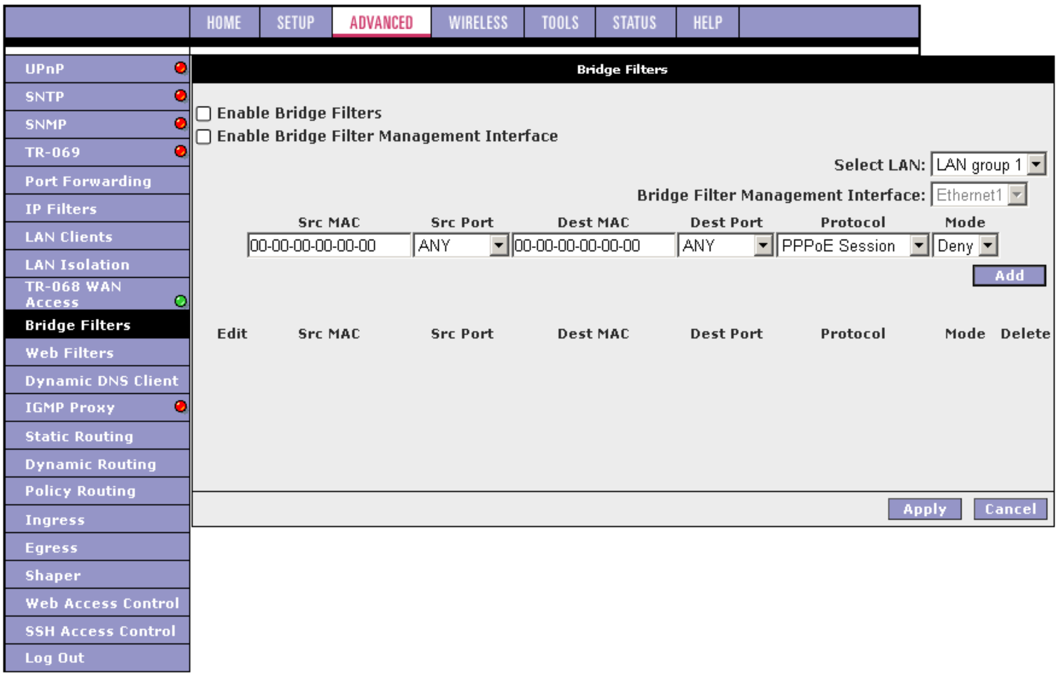
To create a temporary user account for a remote access to your RG, use TR-68 "Field Description" as a reference and follow procedure below.

1. Check **WAN Update** to enable write privilege of the SOHOSpeed.
2. Check **WAN Access** to enable read privilege of the SOHOSpeed.
3. Enter a user name and password in the **User Name** and **Password** fields.
4. Enter a port number In the **Port** field (for example, 51003).
5. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
6. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
7. At the **System Commands** page, click **Save All**.
8. To access your SOHOSpeed remotely, enter the following in the URL:
   http(s)://10.10.10.5:51003
   *Syntax: http(s)://**WAN IP of SOHOSpeed:Port Number***

3.7.10 Bridge Filters

The bridge filtering mechanism provides a way for you to define rules to allow or deny frames through the bridge based on source MAC address, destination MAC address, frame type, and physical ports. When bridge filtering is enabled, each frame is examined against every defined filter rule in sequence. When a match is found, the appropriate filtering action (allow or deny) is performed.

Note that the bridge filter only examines frames from interfaces that are part of the bridge itself. Up to 20 filter rules are supported with bridge filtering.



Bridge Filters

☐ Enable Bridge Filters

☐ Enable Bridge Filter Management Interface

Select LAN: LAN group 1

Bridge Filter Management Interface: Ethernet1

Src MAC	Src Port	Dest MAC	Dest Port	Protocol	Mode
00-00-00-00-00-00	ANY	00-00-00-00-00-00	ANY	PPPoE Session	Deny

Edit	Src MAC	Src Port	Dest MAC	Dest Port	Protocol	Mode	Delete

1. Check **Enable Bridge Filters**.
2. To add a rule, enter the source MAC address, destination MAC address, and frame type with desired filtering type, then click **Add**.
   Note: You can also edit a rule that you created using the Edit checkbox. You can delete a rule using Delete.
3. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

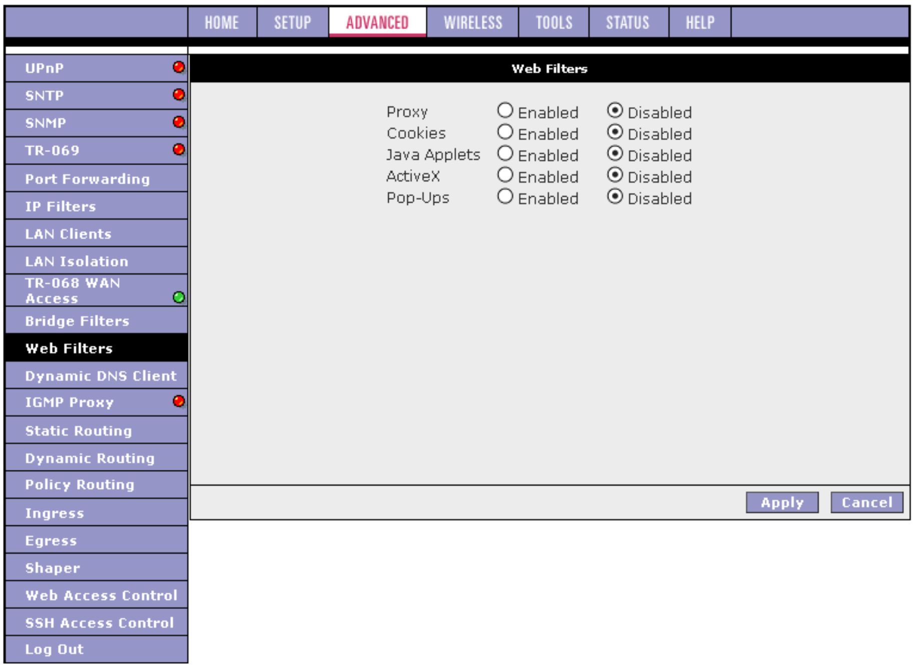
Note: There are four hidden filter rules within the bridge filter table. These rules are entered to ensure you do not "lock" yourself out of the SOHOSpeed on a particular port. The rules pertain to the combination of source/destination MAC addresses, source/destination ports, and protocols.

Field Description

Field	**Definition/Description**
Enable Bridge Filters	Enables/disables bridge filtering. It can be set/unset during any add, edit, or delete operation. It can also be set/unset independently by clicking Apply.
Enable Bridge Filter Management Interface	When checked, it enables the Bridge Filter Management Interface field. This ensures that you do not get locked out of the SOHOSpeed on the interface of the LAN group specified in the next two fields.
Select LAN	Select your LAN group to enable the Bridge Filter Management Interface feature.
Bridge Filter Management Interface	Select the interface of the LAN group to have the Bridge Filter Management Interface feature enabled. Depending on the LAN group that is selected, the interface selections are Ethernet, USB, and/or WLAN.
SRC MAC	The source MAC address. It must be in a xx-xx-xx-xx-xx-xx format, with 00-00-00-00-00-00 as don't care. Blanks can be used in the MAC address space and are also considered as don't care.
SRC Port	Source port. You can choose from Any, Ethernet, USB, WLAN, or WAN Bridge Connection Port for the particular bridge. If any of the selections are not available, please check your DSL connection.
Dest MAC	The destination MAC address.
Dest Port	Destination port. You can choose from Any, Ethernet, USB, and WLAN. Protocol You can choose from the following options: PPPoE Session, PPPoE Discovery, IPX - Ethernet II, RARP, IPv6, IPv4, and Any.
Mode	There are two filtering modes: Deny and Allow.

3.7.11 Web Filters

The Web Filters page allows you to manage the type of web content that passes through your SOHOSpeed.



Web Filters

Proxy	○ Enabled	● Disabled
Cookies	○ Enabled	● Disabled
Java Applets	○ Enabled	● Disabled
ActiveX	○ Enabled	● Disabled
Pop-Ups	○ Enabled	● Disabled

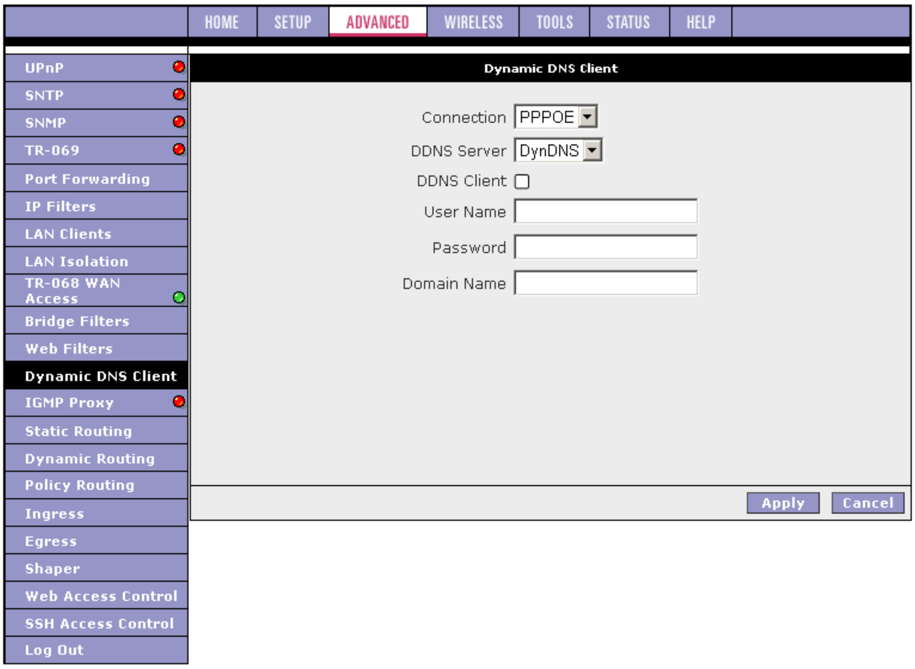
The following web filters are disabled by default:

- Proxy server
- Cookies
- Java applets
- ActiveX controls
- Pop-ups

To enable a web filter, check Enabled next to the filter name, then click **Apply**.

3.7.12 Dynamic DNS Client

Each time your SOHOSpeed connects to the Internet, your ISP assigns a different IP address to your SOHOSpeed. In order for you or other users to access your SOHOSpeed from the WAN-side, you need to manually track the IP that is currently used. The Dynamic DNS feature allows you to register your SOHOSpeed with a DNS server and access your SOHOSpeed each time using the same host name. The Dynamic DNS Client page allows you to enable/disable the Dynamic DNS feature.



Dynamic DNS Client

Connection: PPPOE
DDNS Server: DynDNS
DDNS Client: ☐
User Name:
Password:
Domain Name:

1. On the **Dynamic DNS Client** page, configure the following fields:
   - Connection
   - DDNS Server
   - DDNS Client
   - User Name
   - Password
   - Domain Name
2. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
3. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
4. At the **System Commands** page, click **Save All**.

Field Description

Field	**Definition/Description**
Connection	This field defaults to your SOHOSpeed's WAN connection over which your SOHOSpeed will be accessed.
DDNS Server	This is where you select the server from different DDNS service providers. A charge may occur depends on the service you select.
DDNS Client	Enables/disables the DDNS client feature for the WAN connection. This field is disabled by default.
User Name	User name assigned by the DDNS service provider.
Password	Password assigned by the DDNS service provider.
Domain Name	Domain name to be registered with the DDNS server.

3.7.13 IGMP Proxy

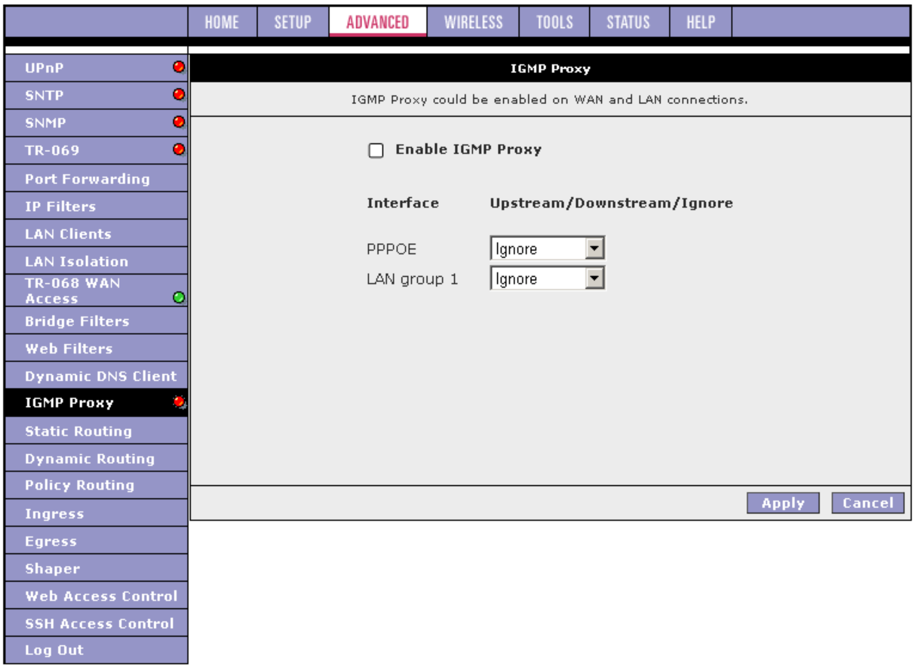
Multicasting is a form of limited broadcast. UDP is used to send datagrams to all hosts that belong to what is called a Host Group. A host group is a set of one or more hosts identified by a single IP destination address. The following statements apply to host groups:

- Anyone can join or leave a host group at will.
- There are no restrictions on a host's location.
- There are no restrictions on the number of members that may belong to a host group.
- A host may belong to multiple host groups.
- Non-group members may send UDP datagrams to the host group.

Multicasting is useful when the same data needs to be sent to more than one device. For instance, if one device is responsible for acquiring data that many other devices need, then multicasting is a natural fit. Note that using multicasting as opposed to sending the same data to individual devices uses less network bandwidth. The multicast feature also enables you to receive multicast video streams from multicast servers.

IP hosts use Internet group management protocol (IGMP) to report their multicast group memberships to neighboring routers. Similarly, multicast routers use IGMP to discover which of their hosts belong to multicast groups.

Your SOHOSpeed supports IGMP proxy that handles IGMP messages. When enabled, your SOHOSpeed acts as a proxy for a LAN host making requests to join and leave multicast groups, or a multicast router sending multicast packets to multicast groups on the WAN side.



IGMP Proxy

IGMP Proxy could be enabled on WAN and LAN connections.

☐ Enable IGMP Proxy

Interface	Upstream/Downstream/Ignore
PPPOE	Ignore
LAN group 1	Ignore

The IGMP Proxy page allows you to enable multicast on available WAN and LAN connections. You can configure the WAN or LAN interface as one of the following:

1. Upstream: The interface that IGMP requests from hosts are sent to the multicast router.
2. Downstream: The interface data from the multicast router are sent to hosts in the multicast group database.
3. Ignore: No IGMP request nor data multicast are forwarded.

You can perform one of the two options:

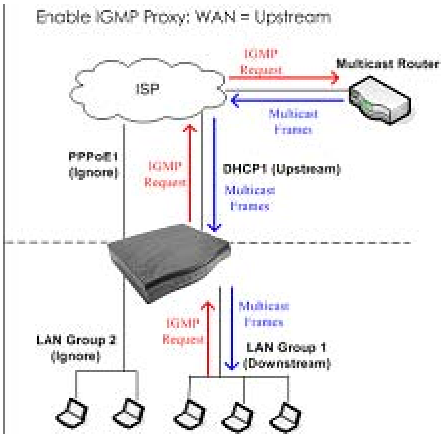
1. Configure one or more WAN interface as the upstream interface.
2. Configure one or more LAN interface as the upstream interface.

Each option is discussed in more details as follows.

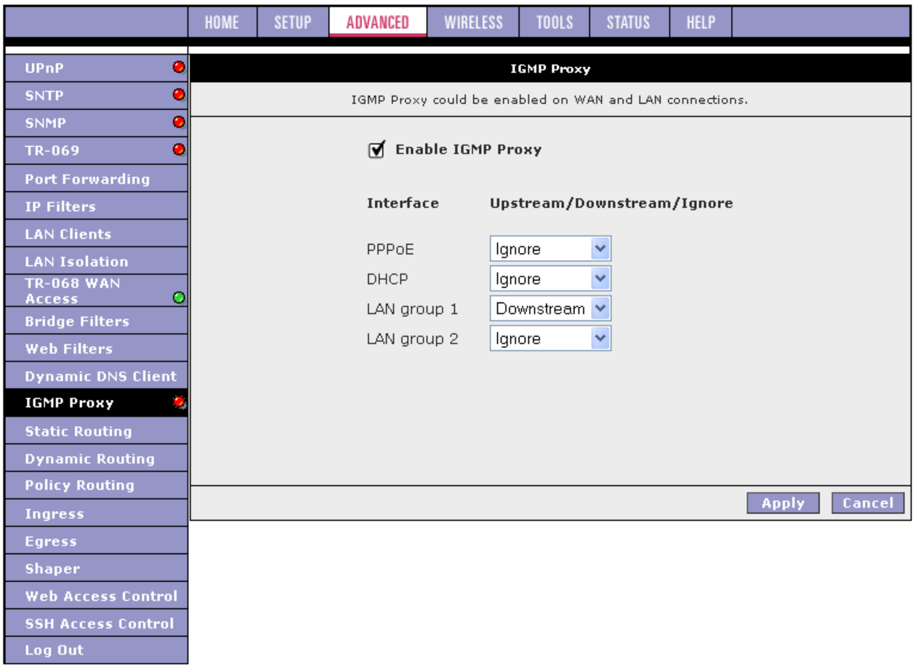
Configure a WAN Interface as the Upstream IGMP Proxy

This applies when the multicast server in on the network. Hosts on your LAN side can send IGMP requests through the WAN interface. And the WAN will pass multicast packets from the multicast server to the hosts on the LAN side.

In figure as shown below, the WAN interface DHCP1 is enabled as the upstream IGMP interface, which forwards IGMP requests from LAN group 1 to the multicast router on the network and forwards multicast frames from the multicast router to hosts on the downstream interface (LAN group 1). No IGMP request nor data multicast are forwarded to PPPoE1 or LAN Group 2.



1. Check **Enable IGMP Proxy**.
2. Configure the following WAN/LAN interfaces:
   - PPPoE: Ignore
   - DHCP: Upstream
   - LAN group 1: Downstream
   - LAN group 2: Ignore



IGMP Proxy

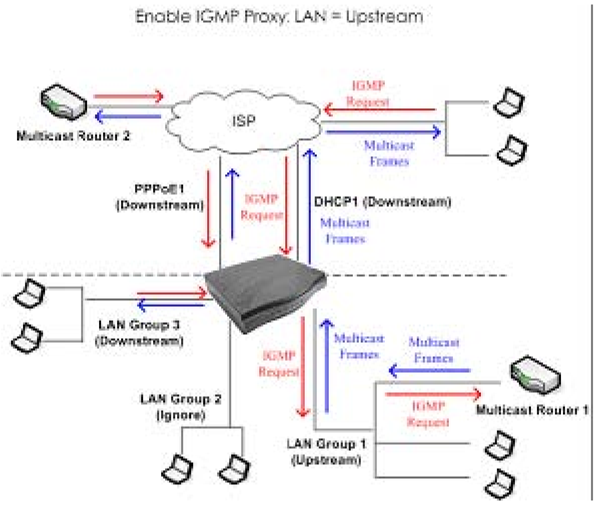
IGMP Proxy could be enabled on WAN and LAN connections.

☑ Enable IGMP Proxy

Interface	Upstream/Downstream/Ignore
PPPoE	Ignore
DHCP	Ignore
LAN group 1	Downstream
LAN group 2	Ignore

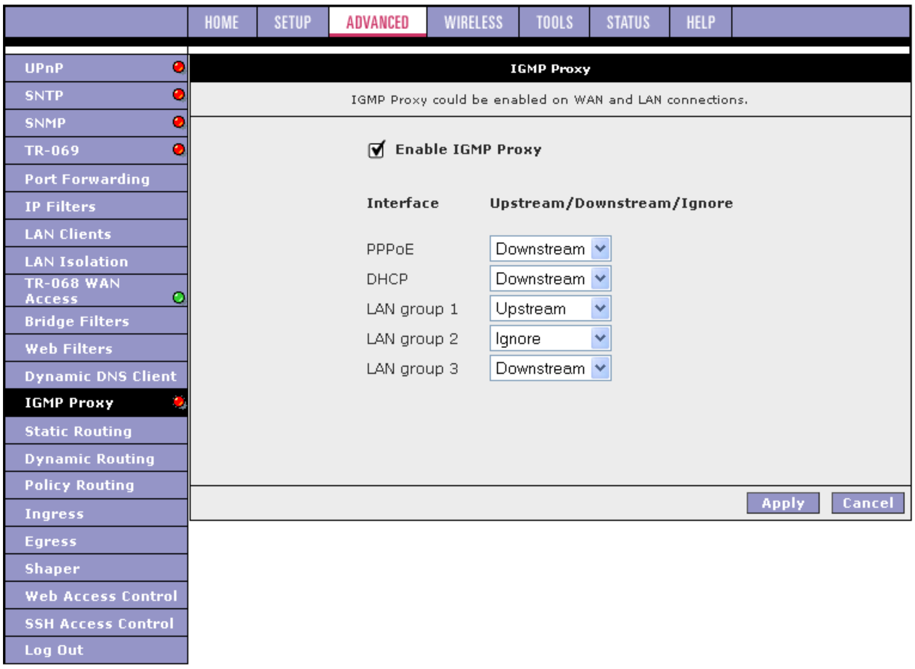
3. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

Configure a LAN interface as the Upstream Interface
This applies when the multicast server in on the LAN side. Hosts on the network can sent IGMP request from the WAN side through the LAN interface. And the LAN interface, acting as the upstream interface, forwards data multicast from the LAN-side multicast server to hosts on the network.
In figure as shown below, there is a multicast router on the LAN side and LAN Group 1 interface is enabled as the upstream IGMP proxy. IGMP requests from the network are forwarded to LAN group 1 and multicast frames from multicast router 1 are forwarded to hosts on the LAN side (LAN group 3) and on the WAN side (DHCP1 and PPPoE1). Neither IGMP request nor data multicast are forwarded to LAN Group 2.



1. Check **Enable IGMP Multicast**.

2. Configure the following WAN/LAN interfaces:
   - PPPoE: Downstream
   - DHCP: Downstream
   - LAN group 1: Upstream
   - LAN group 2: Ignore
   - LAN group 3: Downstream



IGMP Proxy

IGMP Proxy could be enabled on WAN and LAN connections.

☑ Enable IGMP Proxy

Interface	Upstream/Downstream/Ignore
PPPoE	Downstream
DHCP	Downstream
LAN group 1	Upstream
LAN group 2	Ignore
LAN group 3	Downstream

3. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

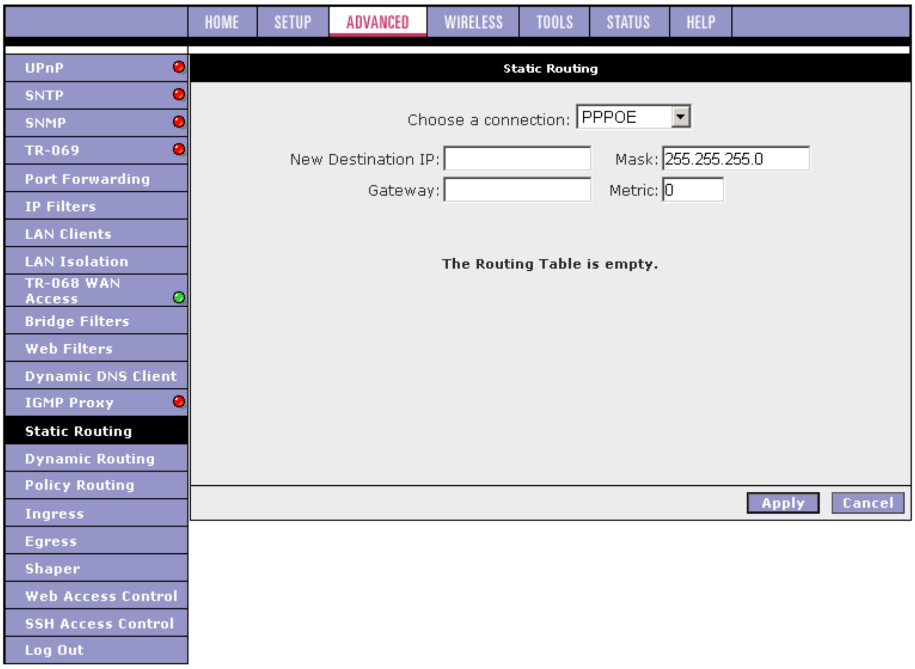
Note: At least one WAN interface should be configured in order to enable the IGMP proxy.

Field Description

Field	**Definition/Description**
Enable IGMP Proxy	Enables/disables IGMP multicast feature of the SOHOSpeed.
Connections	There are three types of configuration for each WAN /LAN connection: ● Upstream ● Downstream ● Ignore

3.7.14 Static Routing

The Static Routing page enables you to define routes for specific subnets on the WAN/LAN side. The SOHOSpeed allows you to manually program the SOHOSpeed's routing table. Up to 16 static routes can be added.



Static Routing

Choose a connection: PPPOE

New Destination IP: Mask: 255.255.255.0

Gateway: Metric: 0

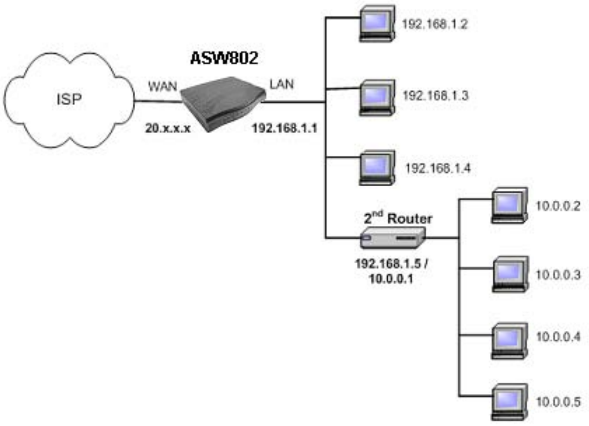
The Routing Table is empty.

Field Description

Field	**Definition/Description**
Select a Connection	Select the LAN group or WAN connection to which a static routing subnet is to be applied.
New Destination IP	The network IP address of the subnet. (You can also enter the IP address of each individual station in the subnet).
Mask	The network mask of the destination subnet.
Gateway	The IP address of the next hop through which traffic will flow towards the destination subnet.
Metric	Defines the number of hops the between network nodes that data packets travel. The default value is 0, which means that the subnet is directly one hop away on the local LAN network.

Suppose you have a network like the one shown in figure below. In your LAN, you have an Gateway (192.168.1.1) and three stations connected to it (192.168.1.x). A subnet is added to your LAN group by adding a second router (192.168.1.5/ 10.0.0.1) with four stations (10.0.0.x) connected to it. The four stations in the subnet cannot receive packets unless they are added to the routing table of your SOHOSpeed. You can add each individual station to the routing table using the Static Routing page, or more easily, you can add the whole subnet in one entry.

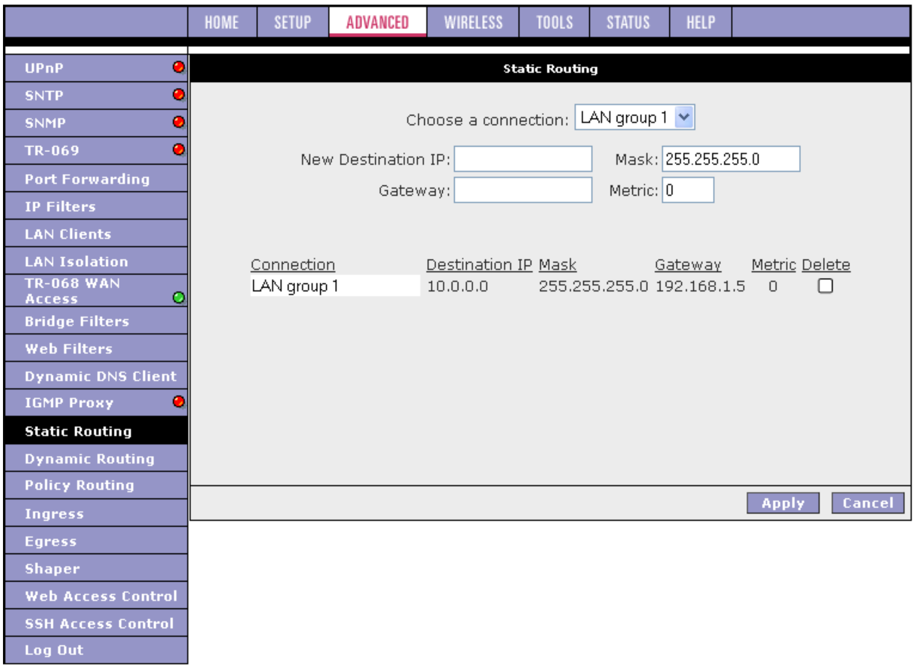
The procedure below explains how to add the subnet to the SOHOSpeed routing table.



1. From the Choose a connection drop-down menu, select your LAN connection LAN Group 1.
2. Enter or leave the default entry for the following parameters:
   - New Destination IP: 10.0.0.0 (the network IP address of the subnet)
   - Mask: 255.255.255.0 (the subnet mask)
   - Gateway: 192.168.1.5 (the LAN-side IP address of the second router, through which the stations in the subnet access the network)
   - Metric: 0

   You are telling the SOHOSpeed that a new subnet with an IP of 10.0.0.0 and a netmask of 255.255.255.0 has been added and can access the SOHOSpeed via station 192.168.1.5.

   The metric is 0 since the subnet is one level down on the LAN.
3. Click **Apply** to temporarily activate the settings.
   You have added the subnet to the routing table. The four stations in the subnet can receive packets from the WAN.



Static Routing

Choose a connection: LAN group 1

New Destination IP: 　 Mask: 255.255.255.0

Gateway: 　 Metric: 0

Connection	Destination IP	Mask	Gateway	Metric	Delete
LAN group 1	10.0.0.0	255.255.255.0	192.168.1.5	0	□

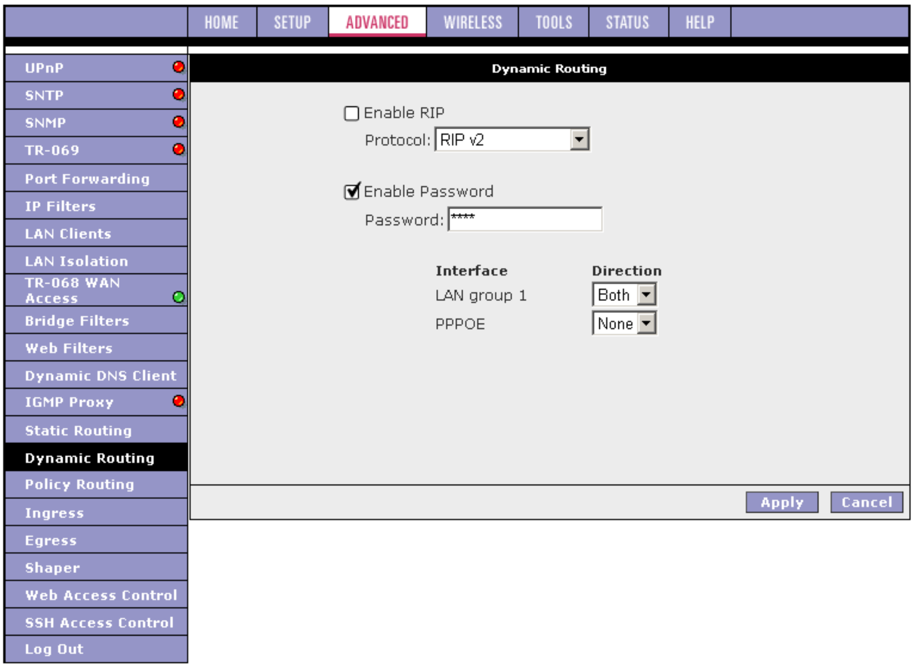
Note: You can add up to 16 entries. You can also delete any entry using the Delete checkbox.

4. Click **Apply** again when you finish making all the changes.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

5. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
6. At the **System Commands** page, click **Save All**.

3.7.15 Dynamic Routing

The dynamic routing feature enables the SOHOSpeed to dynamically define routes for WAN and LAN subnets. Dynamic routing uses routing information protocol (RIP) for exchanging routing information with other routers in the network. It is supported across both WAN and LAN interfaces. Any RIP-enabled router sends out automatic update packets containing its own routing table on a periodic basis (every 30 secs). Similarly, it accepts such periodic updates from other routers and adds, deletes, or modifies routes in its own routing table accordingly. The router is also expected to receive requests for its routing table and respond accordingly. Use the Dynamic Routing page to define dynamic routing routes for the available interfaces.



Dynamic Routing

☐ Enable RIP

Protocol: RIP v2

☑ Enable Password

Password: ****

Interface	Direction
LAN group 1	Both
PPPOE	None

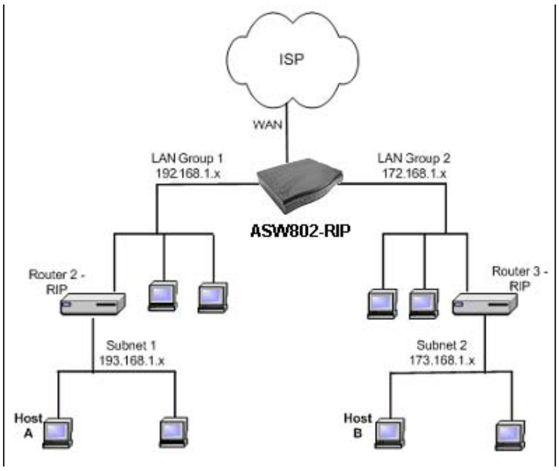
Field Description

Field	Definition/Description
Enable RIP	Enables/disables RIP.
Protocol	The following three RIP versions are available: ● RIP v1 (UDP protocol) ● RIP v2 (multicast protocol) ● RIP v1 compatible (UDP protocol with multicast format) **Note:** Routers using RIP v1 or RIP v1-compatible protocol can talk to each other, but not to routers using RIP v2 protocol.
Enable Password	This is an optional field. RIP version v2 compatibility allows you to provide simple plain-text password-based authentication to RIP packets. This field is disabled if RIP v1 protocol is selected.
Password	The password can be up to 16 characters long.

Direction	Normally when RIP is enabled on a router, it dynamically learns/provides routes on all its configured interfaces. This parameter allows you to select the interfaces on which RIP is expected to learn and distribute routing information. This feature allows you to control how and which routes get distributed through the network. For example, by selecting In only mode, routes to private LAN networks are prevented from being sent over to the WAN-side router. The following four direction options are available: ● Both: Receive updates on the interface and also send its routing table to other routers connected to that interface. ● In: Receive routing updates from other routers connected to that interface but do NOT send routing updates on that interface. ● Out: Send routing updates but do NOT receive updates on this interface from the other routers connected to that interface. ● None: Ignore this interface and do not send or receive routing updates through this interface.

To demonstrate the use of the dynamic routing feature, consider an expanded version of the network used in the static routing example in ''Static Routing Page''. As shown in figure below, you have a network with two LAN connections (192.168.1.x and 172.168.1.x), and each has a router and a subnet.
How can host A in subnet 1 (193.168.1.x) talk to host B in subnet 2 (173.168.1.x)? You have two options:

- As previously demonstrated in Procedure 14, using the static routing feature, you can add both subnets to the routing table using the Static Routing page (two separate entries).
- You can enable dynamic routing on all routers without having to manually enter the individual routes. Keep in mind that you need to enable all routers on this network and they should use the same protocol to be able to communicate with each other. Procedure 15 shows you how to enable and configure the dynamic routing feature on your SOHOSpeed.



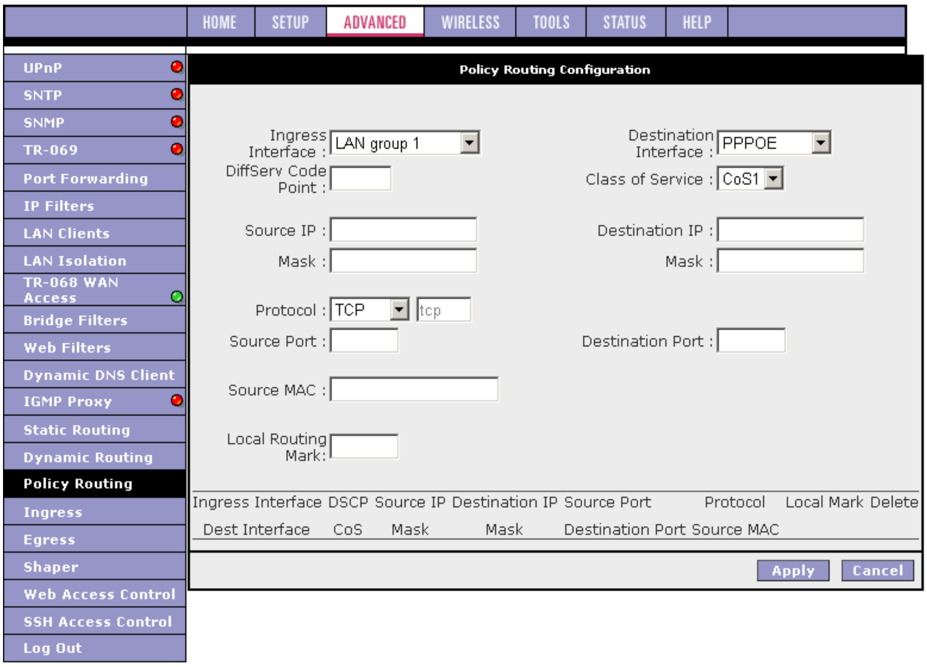
1. Check **Enable RIP**.
2. Select the RIP Protocol RIP v2 for training purpose.
   The Enable Password field is enabled.
   Note: The same RIP protocol should be used to enable dynamic routing on all routers on the network.
3. Check Enable Password and enter a password.
   This is an optional field for additional security.
4. For LAN group 1 and LAN group 2, leave Both checked in the Direction field.
5. Click **Apply** to temporarily activate the settings.
   Notice you did not need to enter the subnet IP, mask, or gateway when using the

dynamic routing feature. The SOHOSpeeds can receive and transmit routing information and add it to their own routing tables.
You also need to enable dynamic routing on routers 2 and 3.

6. Click **Apply** again when you finish making all the changes.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
7. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
8. At the **System Commands** page, click **Save All**.

3.7.16 Policy Routing

The Policy Routing Configuration page is accessed by selecting Policy Routing on the Advanced home page. This page enables you to configure policy routing and QoS. The policy routing configuration is discussed as follows. The QoS configuration is discussed in ''Ingress Payload Database Configuration''.



Policy Routing Configuration

Ingress Interface : LAN group 1
Destination Interface : PPPOE
DiffServ Code Point :
Class of Service : CoS1
Source IP :
Destination IP :
Mask :
Mask :
Protocol : TCP tcp
Source Port :
Destination Port :
Source MAC :
Local Routing Mark:

Ingress Interface	DSCP	Source IP	Destination IP	Source Port	Protocol	Local Mark	Delete
Dest Interface	CoS	Mask	Mask	Destination Port	Source MAC		

The table below describes the Policy Routing Configuration page settings.

Field Description

Field	**Definition/Description**
Ingress Interface	The incoming traffic interface for a Policy Routing rule. Selections include LAN interfaces, WAN interfaces, Locally generated (traffic), and not applicable. Examples of Locally generated traffic are: voice packets, packets generated by applications such as DNS, DHCP, etc.
Destination Interface	The outgoing traffic interfaces for a Policy Routing rule. Selections include LAN Interfaces and WAN interfaces.
DiffServ Code Point	The DiffServ code point (DSCP) field value ranges from 1 to 255. This field cannot be configured alone, addtional fields like IP, Source MAC, and/or Ingress Interface should be configured.
Class of Service	The selections are (in the order of priority): CoS1, CoS2, CoS3, CoS4, CoS5, CoS6, and N/A.
Source IP	The IP address of the traffic source.
Mask	The source IP netmask. This field is required if the source IP has been entered.
Destination IP	The IP address of the traffic destination.
Mask	The netmask of the destination. This field is required if the destination IP has been entered.
Protocol	The selections are TCP, UDP, ICMP, Specify, and none. If you choose Specify, you need to enter the protocol number in the box next to the Protocol field. This field cannot be configured alone, addtional fields like IP, Source MAC, and/or Ingress Interface should be configured. This field is also required if the source port or destination port has been entered.
Source Port	The source protocol port. You cannot configure this field without entering the protocol first.
Destination Port	The destination protocol port or port range. You cannot configure this field without entering the protocol first.
Source MAC	The MAC address of the traffic source.
Local Routing Mark	This field is enabled only when Locally Generated is selected in the Ingress Interface field. The mark for DNS traffic generated by different applications are described below: ● Dynamic DNS: 0xE1 ● Dynamic Proxy: 0xE2 ● Web Server: 0xE3 ● MSNTP: 0xE4 ● DHCP Server: 0xE5 ● IPtables Utility: 0xE6 ● PPP Deamon: 0xE7 ● IP Route: 0xE8 ● ATM Library: 0xE9 ● NET Tools: 0xEA ● RIP: 0xEB ● RIP v2: 0xEC ● UPNP: 0xEE ● Busybox Utility: 0xEF ● Configuration Manager: 0xF0 ● DropBear Utility: 0xF1 ● Voice: 0
Note: Wildcard (*) entries are allowed for IP Address/Netmask and Port range fields.	

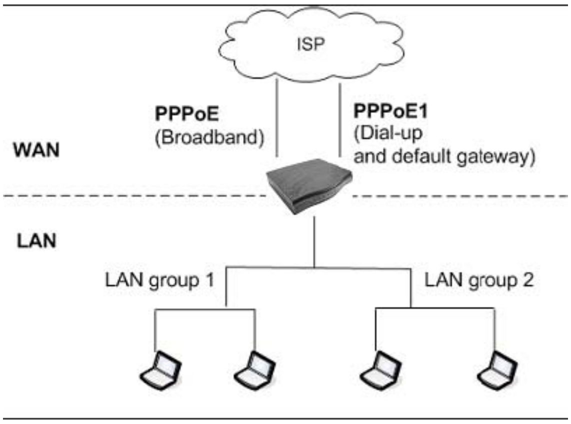
Currently routing algorithms make decision based on destination address, i.e., only Destination IP address and subnet mask is supported. The Policy Routing page enables you to route packets on the basis of various fields in the packet. The following fields can be configured for Policy Routing:

- Destination IP address/mask
- Source IP address/mask
- Source MAC address
- Protocol (TCP, UDP, ICMP, etc)
- Source port
- Destination port
- Incoming interface
- DSCP

Example: Traffic Segregation
In the first example, we will use the Policy Routing Configuration page to configure traffic segregation. As shown in figure below, your SOHOSpeed has the following configuration:

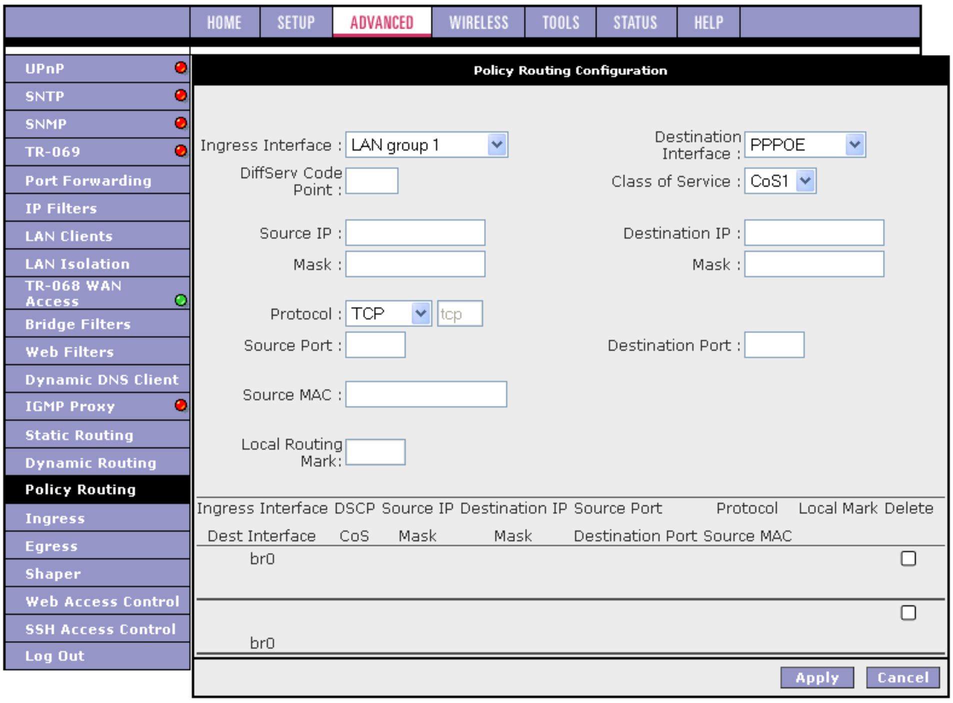
- Two WAN connection: PPPoE (broadband connection) and PPPoE1 (dial-up and default gateway).
- Two LAN groups: LAN group 1 and LAN group 2
- Two computers in LAN group 1
- Two computers in LAN group 2

Goal: You want to reserve PPPoE for use by LAN group 1 computers only.



To create PR rule:

1. In the Ingress field, select LAN Group 1.
2. In the Destination Interface field, select PPPoE.
3. In the Class of Service field, select N/A.
4. In the Protocol field, leave the default selection None.
   This is to select all protocols.
5. Click Apply to temporarily activate the settings on the page.
   The first rule is created. Voice traffic from LAN group 1 will go out on PPPoE.
6. In the Ingress field, select PPPoE.
7. In the Destination Interface field, select LAN Group 1.
8. In the Class of Service field, select N/A.
9. In the Protocol field, leave the default selection None.
   This is to select all protocols.
10. Click Apply to temporarily activate the settings on the page.
    Packets arriving into LAN group 1 will come from PPPoE. The rule is generated at the bottom of the page.



Policy Routing Configuration

Ingress Interface : LAN group 1
Destination Interface : PPPOE
DiffServ Code Point :
Class of Service : CoS1
Source IP :
Destination IP :
Mask :
Mask :
Protocol : TCP tcp
Source Port :
Destination Port :
Source MAC :
Local Routing Mark:

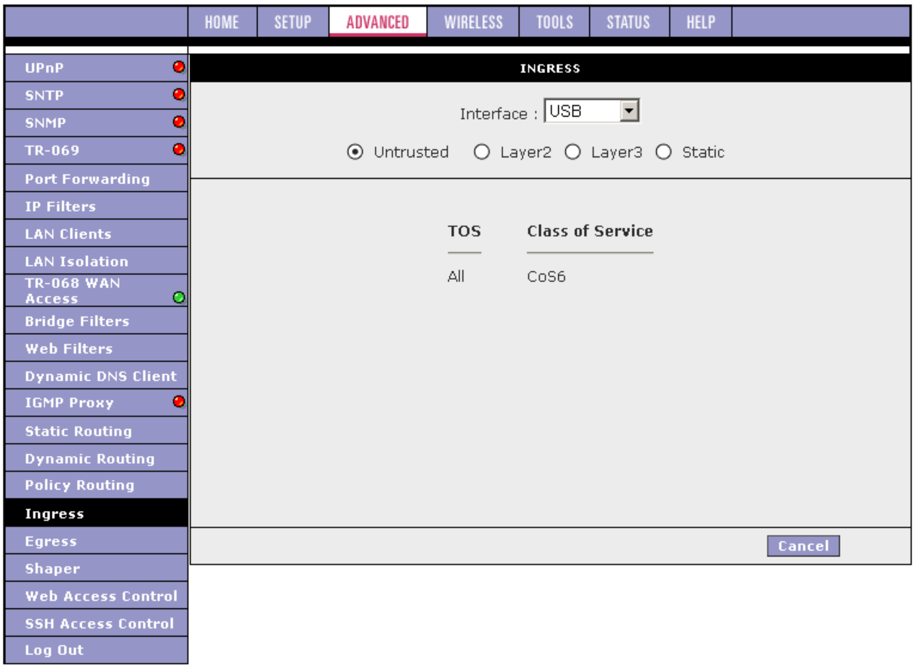
Ingress Interface Dest Interface	DSCP CoS	Source IP Mask	Destination IP Mask	Source Port Destination Port	Protocol Source MAC	Local Mark	Delete
br0							□
 br0							□

Note: The changes take effect when you click **Apply**; however, if SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

11. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
12. At the **System Commands** page, click **Save All**.

3.7.17 Ingress

The Ingress page enables you to configure QoS for packets as soon as they come into the SOHOSpeed. The domain mappings are converted to CoS (the common language) so that the priority marking is carried over.



INGRESS

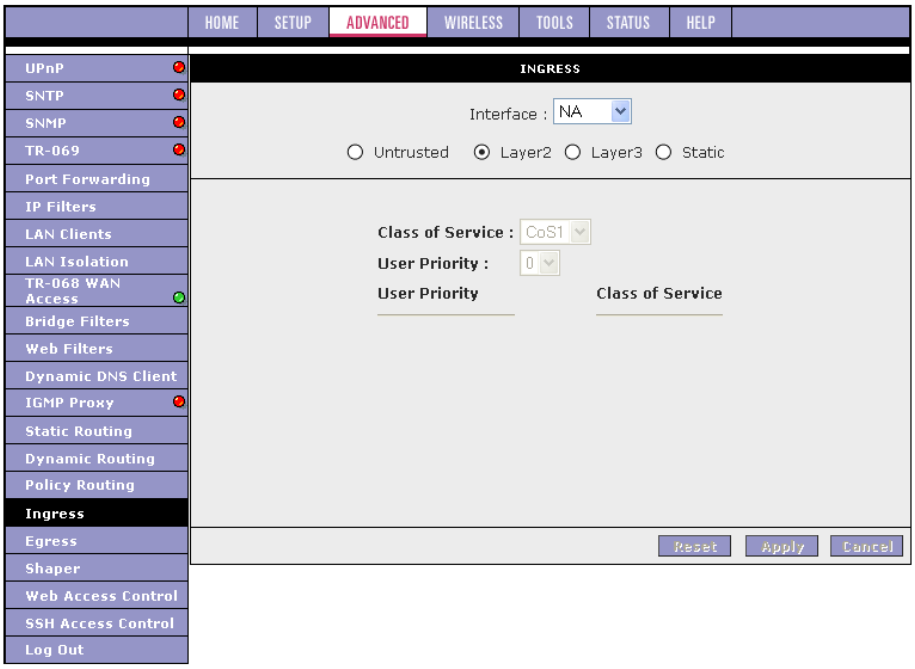
Interface : USB

● Untrusted ○ Layer2 ○ Layer3 ○ Static

TOS	Class of Service
All	CoS6

There are four modes that are discussed below:

- Ingress Untrusted Mode
  Untrusted is the default Ingress page setting for all interfaces. In this mode, no domain mapping is honoured in the SOHOSpeed. All packets are treated as CoS6 (best effort) as shown in previous figure.
- Layer2 enables you to map an incoming packet with VLAN priority to CoS. This feature is only configurable on the WAN interfaces as VLAN is only supported on the WAN side in the current software release.



INGRESS

Interface : NA

○ Untrusted ● Layer2 ○ Layer3 ○ Static

Class of Service : CoS1

User Priority : 0

User Priority	Class of Service

Field Description

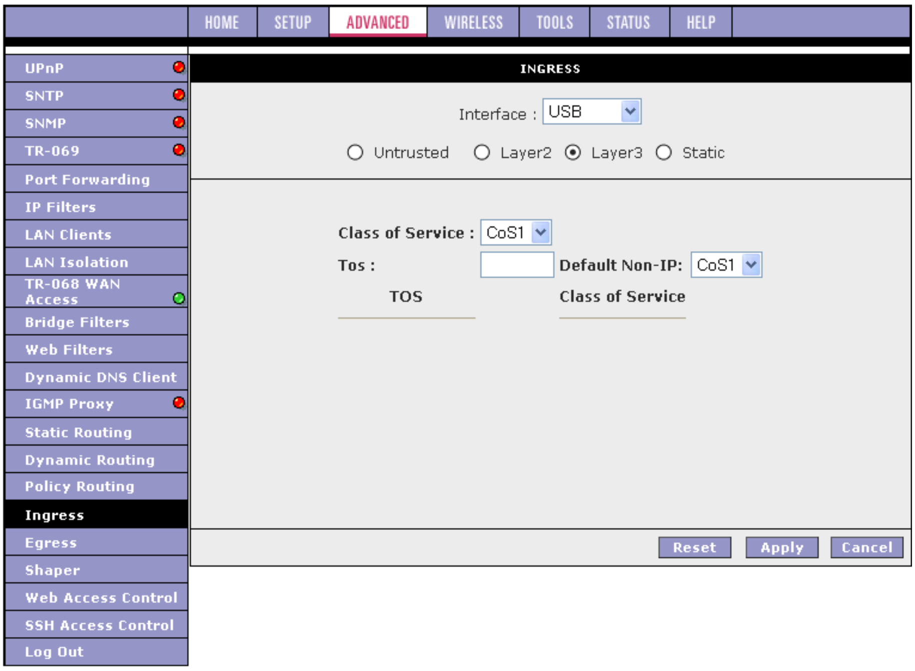
Field	Definition/Description
Interface	Select the WAN interface here to configure the CoS for incoming traffic. Only WAN interface can be selected as VLAN is currently supported only on the WAN side.
Class of Service	The selections are (in the order of descending priority): CoS1, CoS2, CoS3, CoS4, CoS5, and CoS6.
User Priority	The selections are 0, 1, 2, 3, 4, 5, 6, 7.

Follow the procedure below to configure Ingress Layer 2 QoS settings:

1. From Interface drop-down box, select PPPoE1.
   You are configuring QoS on this WAN interface.
2. Select CoS1 in Class of Service and 5 in Priority Bits.
   Any packets with priority marking 5 is mapped to CoS1, the highest priority that is normally given to the voice packets.
3. Click Apply to temporarily activate the settings.
4. Select CoS2 in the Class of Service field and 1 in the Priority Bits field.
   Any packets that have a priority bits of 1 is mapped to CoS2, which is the second highest priority. This is given to the high priority packets such as video.
5. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
6. Repeat step 2-5 to add more rules to PPPoE1.
   Up to eight rules can be configured for each interface.
   Note: Any priority bits that have not been mapped to a CoS default to CoS6, the lowest priority.

7. Repeat step 1-6 to create rules to another WAN interface.
   Note: Any WAN interface that is not configured has the default Untrusted mode.
8. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
9. At the **System Commands** page, click **Save All**.

- Ingress Layer 3 Configuration



INGRESS

Interface : USB

○ Untrusted ○ Layer2 ● Layer3 ○ Static

Class of Service : CoS1

Tos :

Default Non-IP: CoS1

TOS	Class of Service

The Layer 3 page allows you to map ToS bits of incoming packets from the IP network to CoS for each WAN/LAN interface.

Field Description

Field	**Definition/Description**
Interface	For both WAN and LAN interfaces, you can configure QoS for layer 3 (IP) data traffic.
Class of Service	This CoS field allows you to map incoming layer 3 WAN/LAN packets to one of the following CoS (in the order of descending priority): CoS1, CoS2, CoS3, CoS4, CoS5, and CoS6.
ToS	The type of service field takes values from 0 to 255.
Default Non IP	A static CoS can be assigned to all layer 3 incoming packets (per interface) that do not have an IP header, such as PPP control packets and ARP packets. The default is CoS1 (recommended).

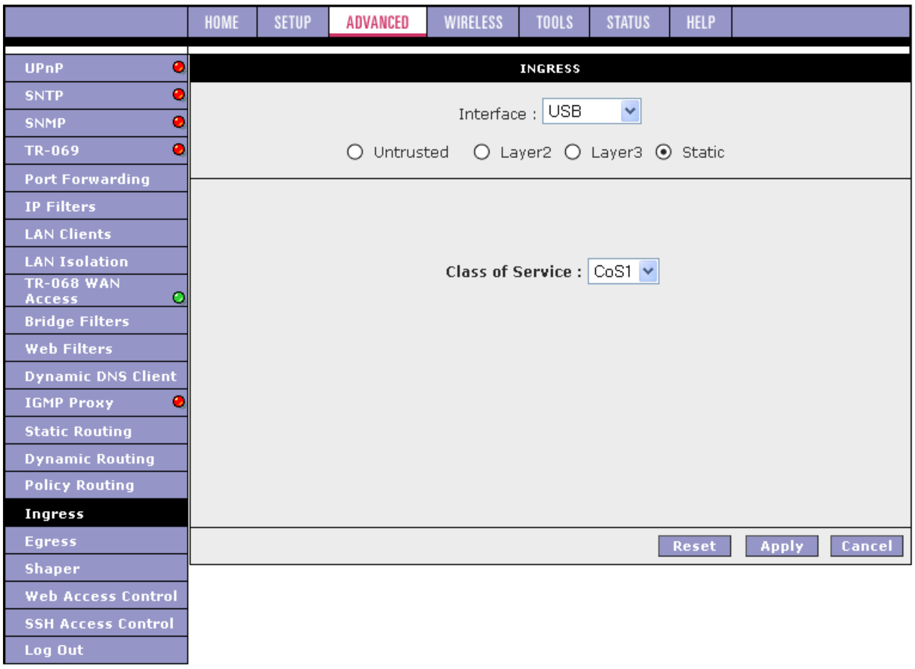
1. From Interface drop-down box, select LAN Group 1.
   You are configuring QoS on this interface.
2. Select CoS1 in Class of Service and enter 22 in Type of Service (ToS).
   Any incoming packet from LAN Group 1 (layer 3) with a ToS of 22 is mapped to CoS1, the highest priority, which is normally given to the voice packets.
3. Leave the default value CoS1 in Default Non-IP.
   Any incoming packet from LAN Group 1 without an IP is mapped to CoS1, the highest priority.
4. Click **Apply** to temporarily activate the settings.
   Note: The changes take effect when you click **Apply**; however, if SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
5. Repeat step 2-4 to add more rules to LAN Group 1.

Up to 255 rules can be configured for each interface.
Note: Any ToS that have not been mapped to a CoS is treated as CoS6, the lowest priority.

6. Repeat step 1-5 to create rules to another WAN/LAN interface.
Note: Any WAN/LAN interface that is not configured has the default Untrusted mode.
7. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
8. At the **System Commands** page, click **Save All**.

- Ingress Static Configuration

The Ingress - Static page enables you to configure a static CoS for all packets received on a WAN or LAN interface.



INGRESS

Interface : USB

○ Untrusted ○ Layer2 ○ Layer3 ● Static

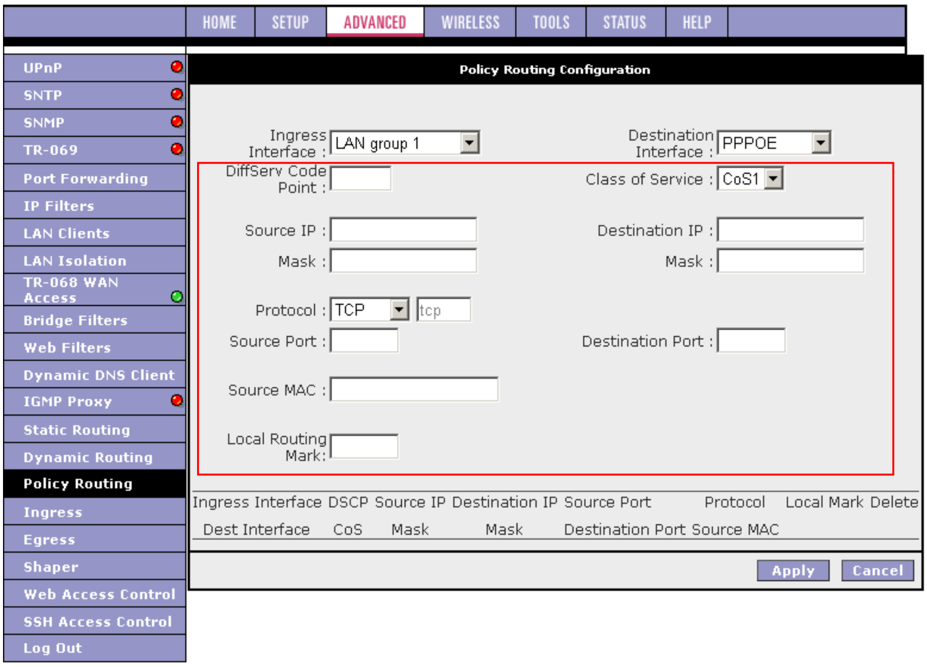
Class of Service : CoS1

Follow the procedure below to configure Ingress static QoS settings:

1. At the Interface drop-down box, select USB.
You are configuring QoS on this interface only. Any WAN/LAN interface that is not configured has the default Untrusted mode.
2. Select CoS1 in Class of Service.
All incoming traffic from the USB interface receives CoS1, the highest priority.
3. Click **Apply** to temporarily activate the settings.
Note: The changes take effect when you click **Apply**; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
4. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
5. At the **System Commands** page, click **Save All**.

Ingress Payload Database Configuration

The Policy Routing Configuration page is accessed by selecting Policy Routing on the Advanced home page. This page enables you to configure QoS payload database and policy routing. The QoS payload database configuration will be discussed here. The policy routing configuration will be discussed in ‘‘Policy Routing’’.



Policy Routing Configuration

Ingress Interface : LAN group 1
Destination Interface : PPPOE
DiffServ Code Point :
Class of Service : CoS1
Source IP :
Destination IP :
Mask :
Mask :
Protocol : TCP tcp
Source Port :
Destination Port :
Source MAC :
Local Routing Mark:

Ingress Interface	DSCP	Source IP	Destination IP	Source Port	Protocol	Local Mark	Delete
Dest Interface	CoS	Mask	Mask	Destination Port	Source MAC		

QoS can be configured in the Ingress and Egress pages on a per interface basis. The Policy Routing page enables you to classify packets on the basis of various fields in the packet. The following fields can be configured for QoS:

- CoS
- Source IP address/mask
- Destination IP address/mask
- Protocol
- Source port
- Destination port
- Source Mac address

You can configure any or all field as needed. The table below describes the QoS-related fields on the Policy Routing Configuration page.

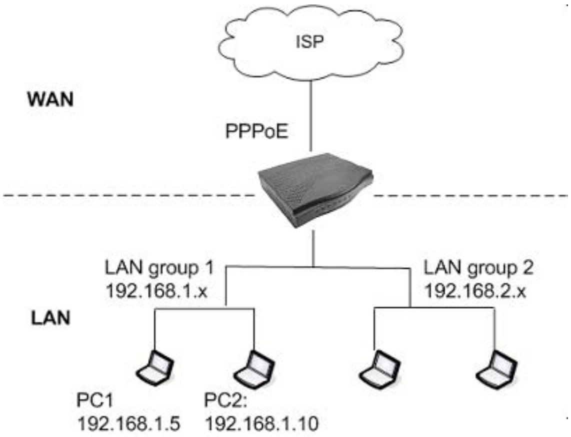
Field Description

Field	Definition/Description
Ingress Interface	This field is applicable for policy routing configuration only and will be discussed in "Policy Routing".
Destination Interface	This field is applicable for policy routing configuration only and will be discussed in "Policy Routing".
DiffServ Code Point	This field is applicable for policy routing configuration only and will be discussed in "Policy Routing".
Class of Service	The selections are (in the order of priority): CoS1, CoS2, CoS3, CoS4, CoS5, CoS6, and N/A.
Source IP	The IP address of the traffic source.
Mask	The source IP netmask. This field is required if the source IP has been entered.
Destination IP	The IP address of the traffic destination.
Mask	The netmask of the destination. This field is required if the destination IP has been entered.
Protocol	The selections are TCP, UDP, ICMP, Specify, and none. If you choose Specify, you need to enter the protocol number in the box next to the Protocol field. This field cannot be configured alone, additional fields like IP and/or Source MAC should be configured. This field is also required if the source port or destination port has been entered.
Source Port	The source protocol port. You cannot configure this field without entering the protocol first.
Destination Port	The destination protocol port. You cannot configure this field without entering the protocol first.
Source MAC	The MAC address of the traffic source.
Local Routing Mark	This field is applicable for policy routing configuration only and will be discussed in "Policy Routing".
Note: Wildcard (*) entries are allowed for IP Address/Netmask and Port range fields.	

Let's configure QoS using the Policy Routing Configuration page. In the figure below, your SOHOSpeed has the following configuration:

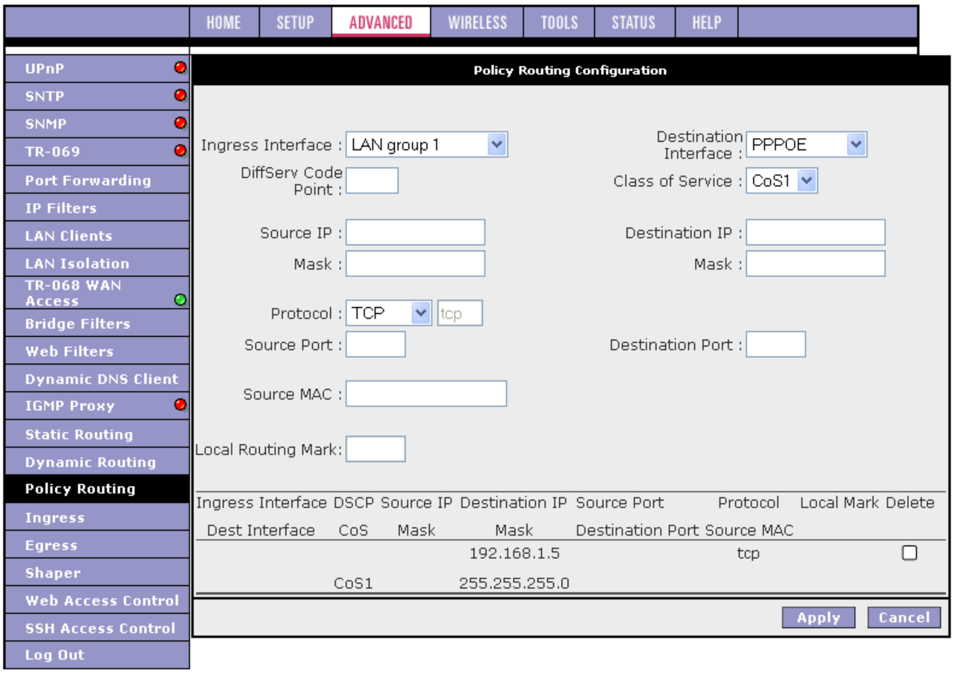
- WAN connection: PPPoE (default gateway).
- Two LAN groups: LAN group 1 and LAN group 2
- Two PCs in LAN group 1. You use PC 1 (192.168.1.5) to download movie and PC 2 (192.168.1.10) to surf the Internet.

Goal: You want to give priority to PC 1 traffic over PC 2 traffic.



To configure the QoS rule:

1. In the Ingress field, select not applicable.
   The field is applicable for policy routing only.
2. In the Destination Interface field, select not applicable.
   The field is applicable for policy routing only.
3. In the Class of Service field, leave the default CoS1.
4. In the Destination IP field, enter 192.168.1.5.
5. In the Destination IP Mask field, enter 255.255.255.255.
6. In the Protocol field, leave the default selection TCP.
7. Click Apply to temporarily activate the settings on the page.
   The rule is generated at the bottom of the page.



Policy Routing Configuration

Ingress Interface : LAN group 1

Destination Interface : PPPOE

DiffServ Code Point :

Class of Service : CoS1

Source IP :

Destination IP :

Mask :

Mask :

Protocol : TCP tcp

Source Port :

Destination Port :

Source MAC :

Local Routing Mark:

Ingress Interface	DSCP	Source IP	Destination IP	Source Port	Protocol	Local Mark	Delete
Dest Interface	CoS	Mask	Mask	Destination Port	Source MAC		
			192.168.1.5		tcp		☐
	CoS1		255.255.255.0				

Note: The changes take effect when you click Apply; however, if SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.

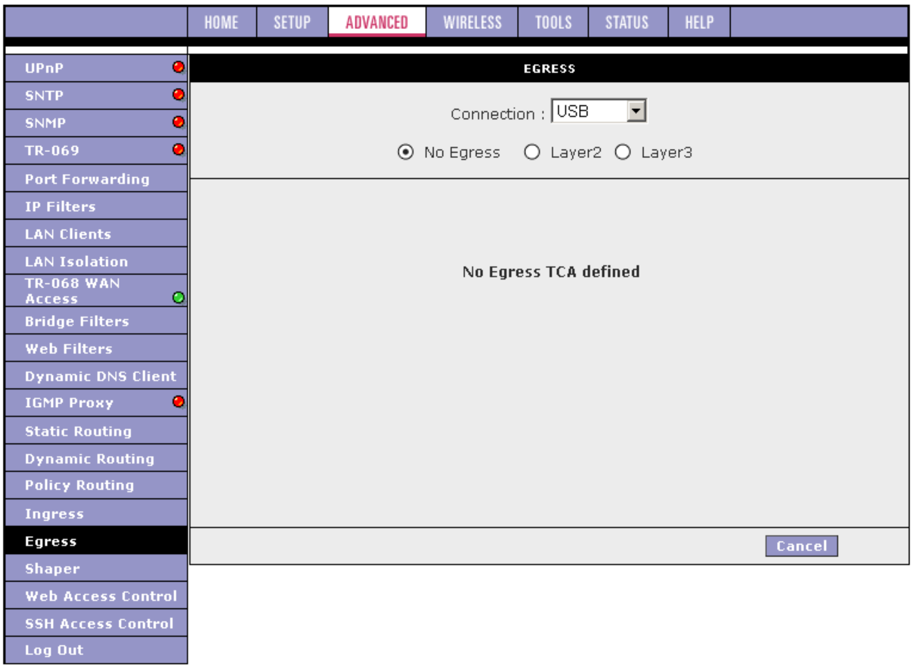
8. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
9. At the **System Commands** page, click **Save All**.

3.7.18 Egress

For packets going out of the SOHOSpeed, the marking (CoS) need to be translated to the mappings understood by the network domains. The reverse CoS and domain mapping is configured using the Egress page.

No Egress Mode

The default Egress page setting for all interfaces is No Egress. In this mode, the domain mappings of the packets are untouched.



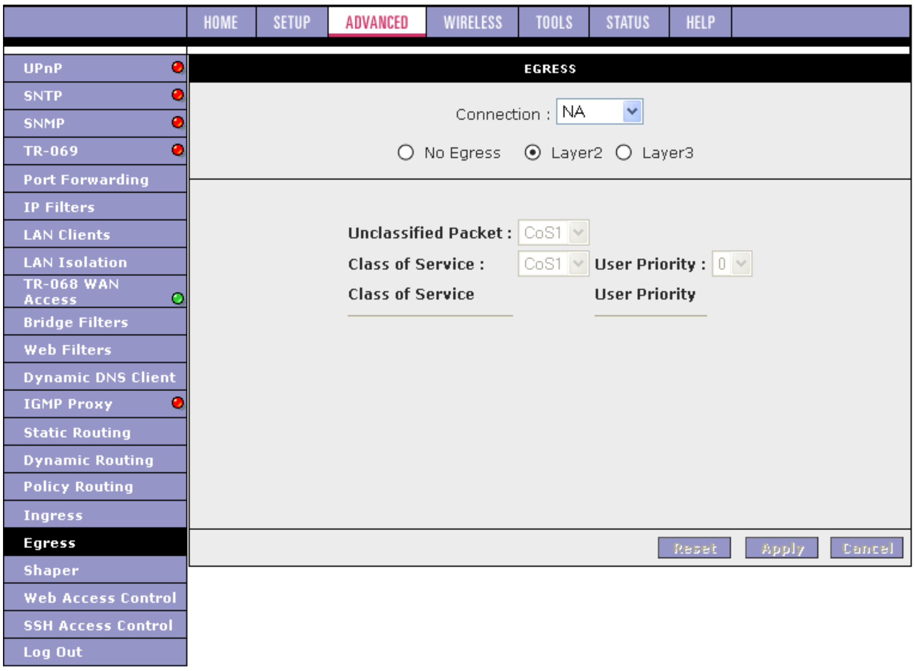
Connection : USB

● No Egress ○ Layer2 ○ Layer3

No Egress TCA defined

Egress Layer 2 Configuration

The Egress Layer 2 page enables you to map the CoS of an outgoing packet to user priority bits, which is honoured by the VLAN network. Again, this feature is only configurable on the WAN interfaces as VLAN is only supported on the WAN side in the current release.



Connection : NA

○ No Egress ● Layer2 ○ Layer3

Unclassified Packet : CoS1

Class of Service : CoS1 User Priority : 0

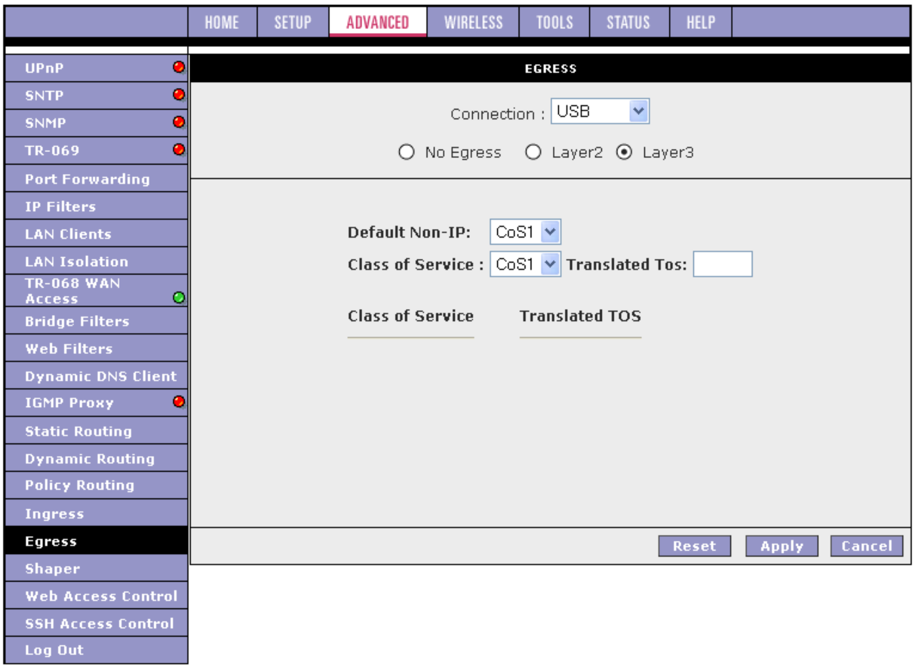
Class of Service	User Priority

Field Description

Field	**Definition/Description**
Interface	Select the WAN interface to configure the QoS for outgoing packets. LAN interface can not be selected as VLAN is currently supported on the WAN side only.
Unclassified Packet	Some locally generated packets might not have been classified and thus do not have a CoS value, such as PPP control packet and ARP packet. You can define the CoS for all unclassified outgoing packets on layer 2 using this field, which will then pick up the user priority bits based on the mapping rules you create. The selections are (in the order of descending priority): CoS1, CoS2, CoS3, CoS4, CoS5, and CoS6. The default value is CoS1 (recommended)
User Priority	The selections are 0, 1, 2, 3, 4, 5, 6, 7.
Class of Service	The selections are (in the order of descending priority): CoS1, CoS2, CoS3, CoS4, CoS5, and CoS6.

Egress Layer 3 Configuration

The Egress Layer 3 page enables you to map CoS to ToS so that the priority marking of outgoing packets can be carried over to the IP network.



EGRESS

Connection : USB

○ No Egress ○ Layer2 ● Layer3

Default Non-IP: CoS1

Class of Service : CoS1 Translated Tos:

Class of Service	Translated TOS

Reset Apply Cancel

Egress - Layer 3 Page Descriptions

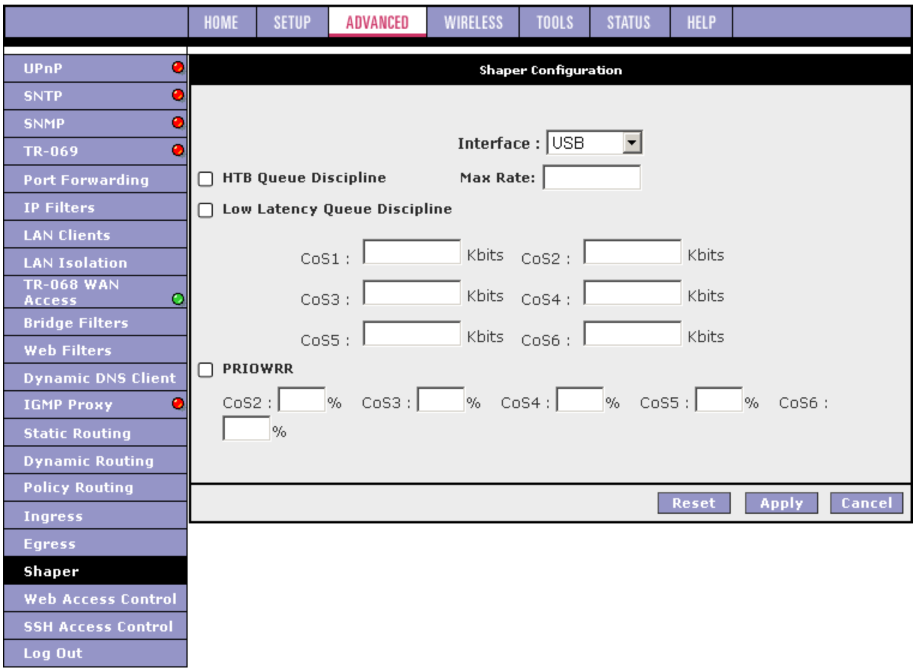
Field	**Definition/Description**
Interface	Select the WAN/LAN interface here to configure the QoS for outgoing traffic to the IP network.
Default Non-IP	Locally generated packets (such as ARP packets) do not have a CoS marking. You can define the CoS for all unclassified outgoing packets on layer 3 using this field. The selections are (in the order of descending priority): CoS1, CoS2, CoS3, CoS4, CoS5, and CoS6. The default value is CoS1 (recommended).
Translated ToS	The Type of Service field takes values from 1 to 255. The selections are 0, 1, 2, 3, 4, 5, 6, 7.
Class of Service	The selections are (in the order of descending priority): CoS1, CoS2, CoS3, CoS4, CoS5, and CoS6.

3.7.19 Shaper

The Shaper Configuration page is accessed by selecting Shaper on the Advanced main page. Three shaper algorithms are supported:

- HTB
- Low Latency Queue Discipline
- PRIOWRR

Note: Egress TCA is required if shaper is configured for that interface.



Shaper Configuration

Interface : USB

□ HTB Queue Discipline Max Rate:

□ Low Latency Queue Discipline

CoS1 : Kbits CoS2 : Kbits

CoS3 : Kbits CoS4 : Kbits

CoS5 : Kbits CoS6 : Kbits

□ PRIOWRR

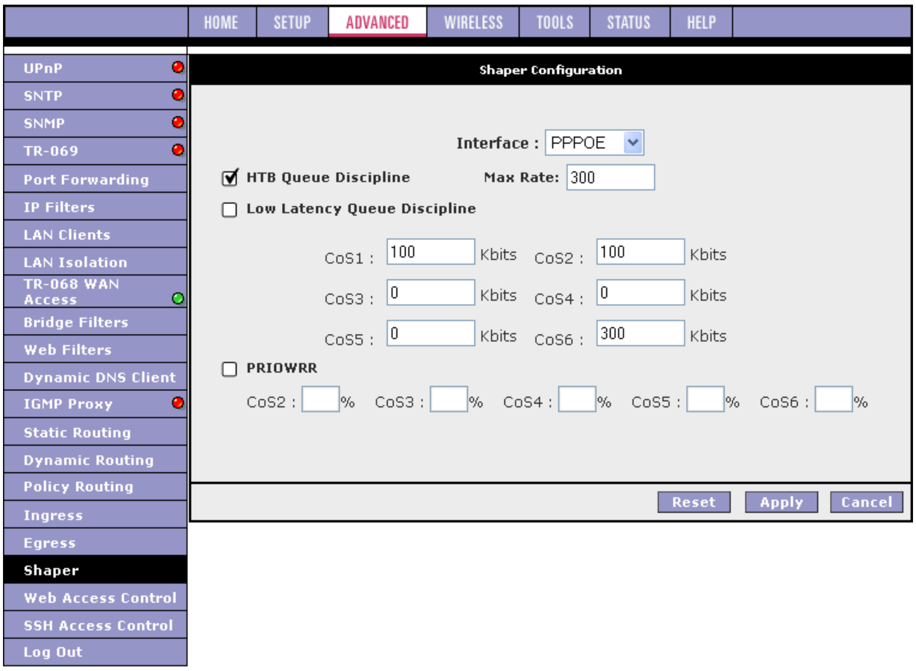
CoS2 : % CoS3 : % CoS4 : % CoS5 : % CoS6 : %

Field Description

Field	**Definition/Description**
Interface	The selections are WAN/LAN interfaces except WLAN, which does not support Shaper feature. This field needs to be selected before shaper configuration.
Max Rate	This field is applicable for the HTB Queue Discipline and Low Latency Queue Discipline, both are rate-based shaping algorithms.
HTB Queue Discipline	The hierachical token bucket queue discipline is a rate-based shaping algorithm. This algorithm rate shapes the traffic of a class over a specific interface. All CoSx traffic is assigned a specific rate to which data will be shaped to. For example: If CoS1 is configured to 100Kbps then even if 300Kbps of CoS1 data is being transmitted to the interface only 100Kbps will be sent out.
Low Latency Queue Discipline	This is similar to the above algorithm except that CoS1 is not rate limited. So in the example above CoS1 data is not rate limited to 100Kbps but instead all 300Kbps is transmitted. The side effect is that a misconfigured stream can potentially take all bandwidth.
PRIOWRR	This is a priority based weighted round robin algorithm operating on CoS2-CoS6. CoS1 queues have the highest priority and are not controlled by the WRR algorithm.

Of the three shaping algorithms available on the Shaper Configuration page, only one can be enabled at a time. An example of each configuration is given as follows.

Example 1: HTB Queue Discipline Enabled
In the example below, HTB Queue Discipline is enabled. The PPPoE connection has a total of 300 kbits of bandwidth, of which 100 kbits is given to CoS1 and another 100 kbits is given to CoS2. When there is no CoS1 or CoS2 packets, CoS6 packets have the whole 300 kbits of bandwidth.



Shaper Configuration

Interface : PPPOE

☑ HTB Queue Discipline Max Rate: 300

□ Low Latency Queue Discipline

CoS1 : 100 Kbits CoS2 : 100 Kbits

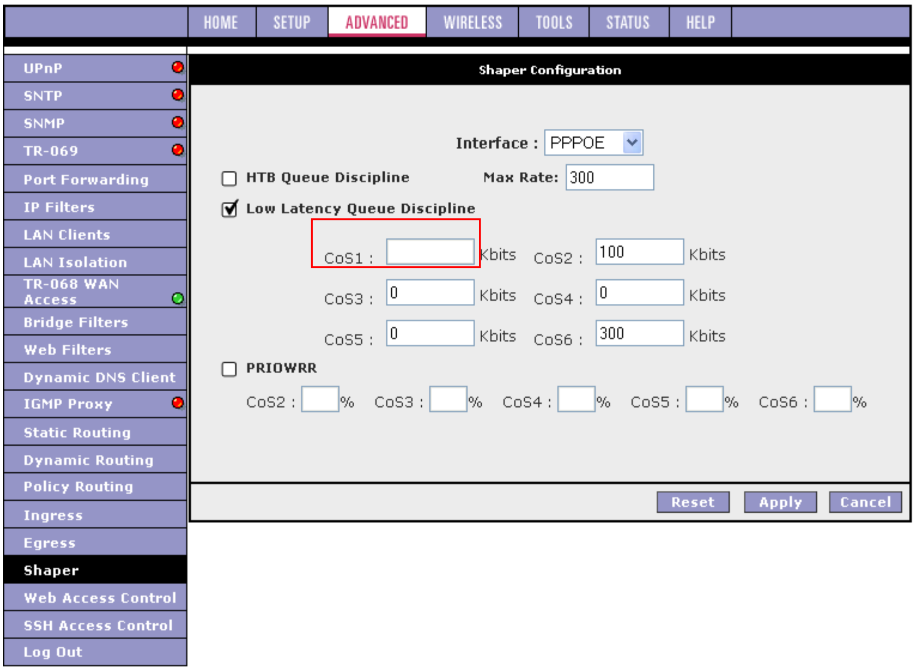
CoS3 : 0 Kbits CoS4 : 0 Kbits

CoS5 : 0 Kbits CoS6 : 300 Kbits

□ PRIOWRR

CoS2 : % CoS3 : % CoS4 : % CoS5 : % CoS6 : %

Example 2: Low Latency Queue Discipline Enabled
In this second example, Low Latency Queue Discipline is enabled.
CoS1 is not rate controlled (hence the field is disabled). CoS2 takes 100 kbits when there is no CoS1 packet. CoS6 has 300 kbits when there is no CoS1 or CoS2 packets. This is similar to the HTB queue discipline as they are both rate-based algorithm, except that CoS1 is handled differently.



Shaper Configuration

Interface : PPPOE

□ HTB Queue Discipline Max Rate: 300

☑ Low Latency Queue Discipline

CoS1 : Kbits CoS2 : 100 Kbits

CoS3 : 0 Kbits CoS4 : 0 Kbits

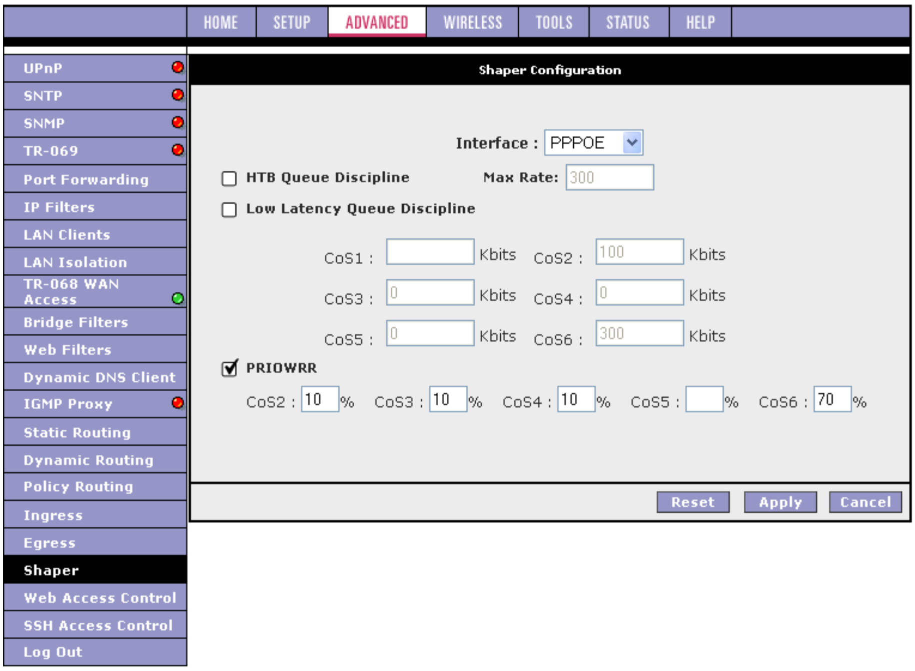
CoS5 : 0 Kbits CoS6 : 300 Kbits

□ PRIOWRR

CoS2 : % CoS3 : % CoS4 : % CoS5 : % CoS6 : %

Example 3: PRIOWRR Enabled

In this third example, PRIOWRR is enabled. Since PRIOWRR operates only on the number of packets being transmitted, the max rate field has been disabled. Only percentage can be assigned to the CoS2 - CoS6. CoS1 is not rate controlled (hence the field is not displayed). When there is no CoS1 packet, CoS2, CoS3, CoS4 each has 10 percent, and CoS6 has 70 percent. This is similarly to the Low Latency Queue discipline, except that one is packet-based, and the other is rate-based.



Shaper Configuration

Interface : PPPOE

☐ HTB Queue Discipline Max Rate: 300

☐ Low Latency Queue Discipline

CoS1 : Kbits CoS2 : 100 Kbits

CoS3 : 0 Kbits CoS4 : 0 Kbits

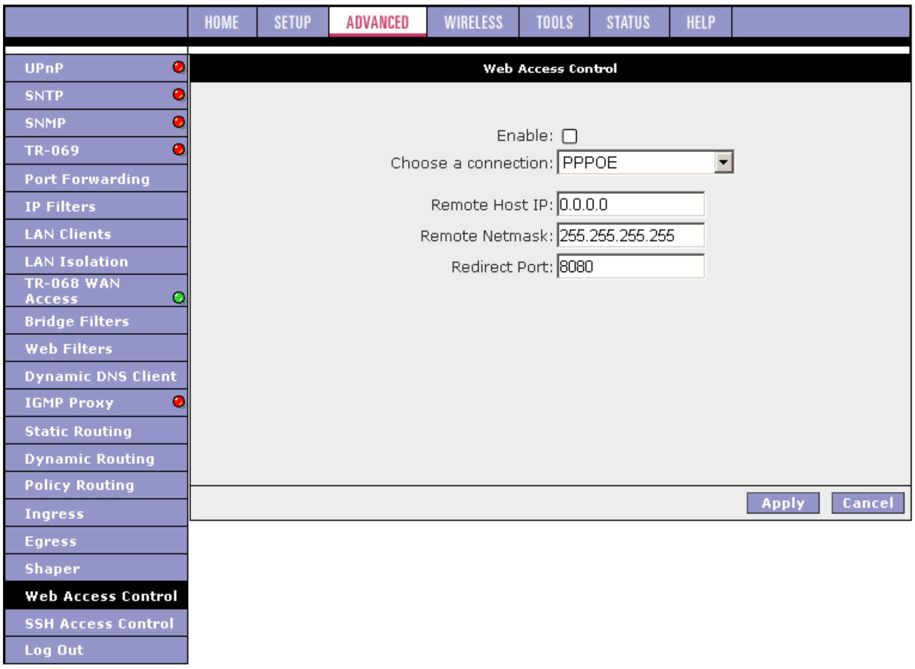
CoS5 : 0 Kbits CoS6 : 300 Kbits

☑ PRIOWRR

CoS2 : 10 % CoS3 : 10 % CoS4 : 10 % CoS5 : % CoS6 : 70 %

3.7.20 Web Access Control

The Web Access Control page allows you to access the SOHOSpeed remotely via the web from the WAN side.



Web Access Control

Enable: ☐

Choose a connection: PPPOE

Remote Host IP: 0.0.0.0

Remote Netmask: 255.255.255.255

Redirect Port: 8080

If you want to access your SOHOSpeed at home from a remote location such as your office, use the table below as a reference and follow the procedure below to configure your WAN IP address.

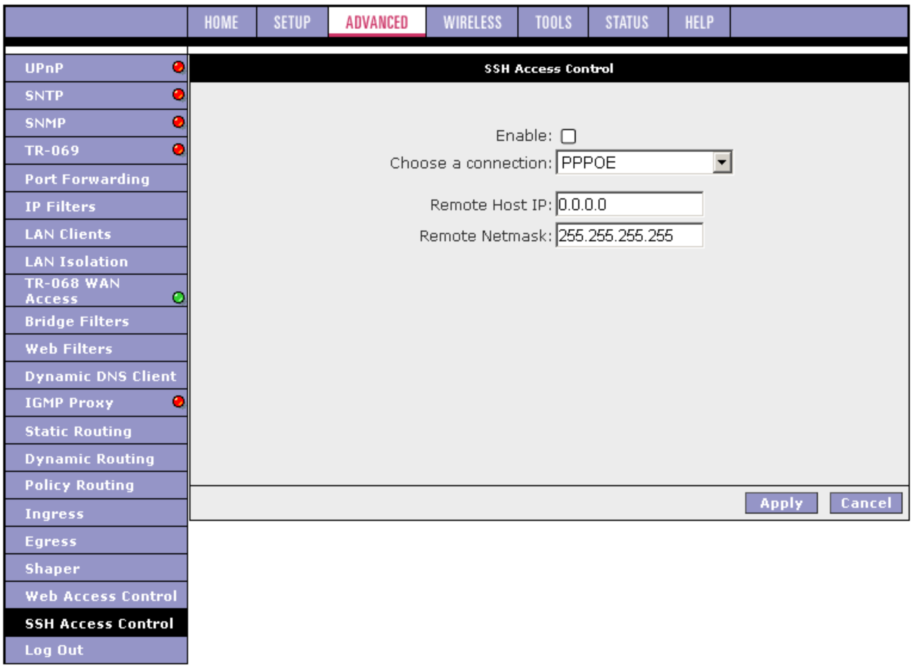
1. Check Enable to enable the Web access control feature.
2. In the Choose a Connection field, leave the default WAN connection selected.
3. In the Remote Host IP field, enter the WAN-side IP address you will use to access your SOHOSpeed (for example, 10.10.10.1).
4. In the Remote Netmask field, enter the netmask of your WAN-side IP address.
5. Enter a port number In the Redirect Port field (for example, 80).
6. Click Apply to temporarily activate the settings on the page.
   This WAN address is added to the IP Access List. This allows you to access you SOHOSpeed at home from a WAN IP (10.10.10.1) via Web.
   Note: The changes take effect when you click Apply; however, if the SOHOSpeed configuration is not saved, these changes will be lost upon SOHOSpeed reboot.
7. To make the change permanent, click **Tools** at the top of the page and select **System Commands**.
8. At the **System Commands** page, click **Save All**.
9. To access your SOHOSpeed from the remote IP (10.10.10.1), enter the following in the URL:
   http(s)://10.10.10.5:80
   *Syntax: http(s)://**WAN IP of SOHOSpeed:Port Number***

Field Description

Field	**Definition/Description**
Enable	Enables/disables the remote web access feature.
Choose a connection	Select the WAN connect over which the remote web access feature is enabled.
Remote	Host IP Enter the IP address of the remote host.
Remote Netmask	Enter the netmask of the remote host.
Redirect Port	You can enter a port number in this field that is different from the well-known IP port number 80. The port number that you enter will be viewed externally and mapped to port 80 internally in the SOHOSpeed.

3.7.21 SSH Access Control

The SSH Access Control page allows you to access the SOHOSpeed remotely via SSH from the WAN side.



SSH Access Control

Enable: □

Choose a connection: PPPOE

Remote Host IP: 0.0.0.0

Remote Netmask: 255.255.255.255

The configuration of a WAN IP address for SSH access control is very similar to the configuration of a WAN IP address for Web access control. Refer to ‘‘Web Access Control Page’’ for field descriptions and configuration procedures.

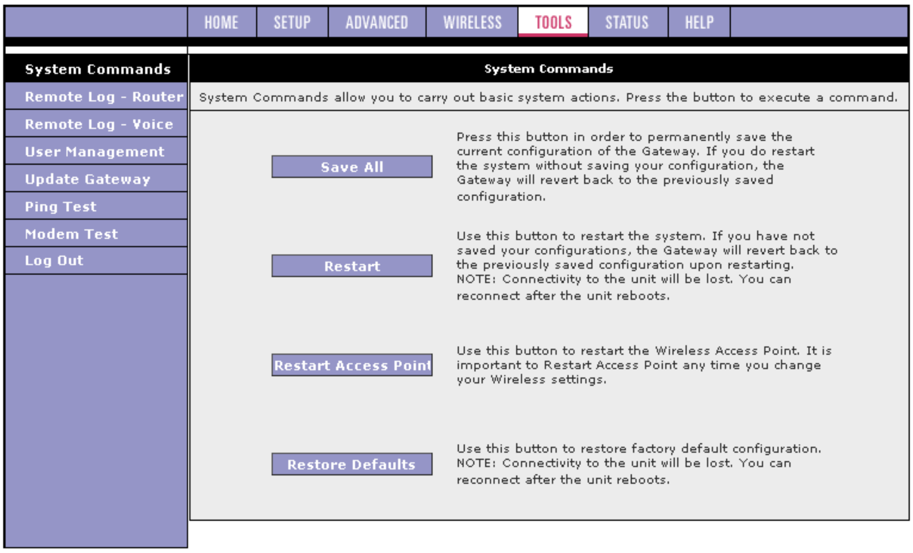
3.8 Tools

The SOHOSpeed supports a host of tools which will allow you to customize and debug your SOHOSpeed.

3.8.1 System Commands

To make the changes permanent you need to click on **Tools** at the top of the page and select **System Commands**. The following commands are used to configure the SOHOSpeed:

- **Save all:** Press this button in order to permanently save the current configuration of the SOHOSpeed. If you do re-start the system without saving your configuration, the SOHOSpeed will revert back to the previously saved configuration.
- **Restart:** Use this button to re-start the system. If you have not saved your configurations, the SOHOSpeed will revert back to the previously saved configuration upon re-starting.
  Note: Connectivity to the unit will be lost. You can reconnect after the unit reboots.
- **Restart Access Point:** Use this button to restart the Wireless Access Point. It is important to restart Access Point whenever you change your wireless settings.
- **Restore Defaults:** Use this button to restore factory default configuration.
  Note: Connectivity to the unit will be lost. You can reconnect after the unit reboots.



System Commands

System Commands allow you to carry out basic system actions. Press the button to execute a command.

Press this button in order to permanently save the current configuration of the Gateway. If you do restart the system without saving your configuration, the Gateway will revert back to the previously saved configuration.

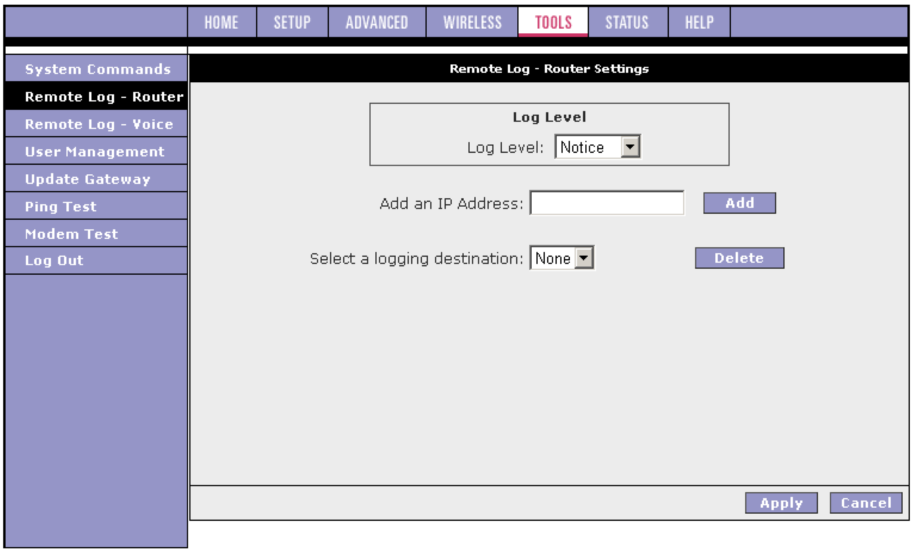
Use this button to restart the system. If you have not saved your configurations, the Gateway will revert back to the previously saved configuration upon restarting. NOTE: Connectivity to the unit will be lost. You can reconnect after the unit reboots.

Use this button to restart the Wireless Access Point. It is important to Restart Access Point any time you change your Wireless settings.

Use this button to restore factory default configuration. NOTE: Connectivity to the unit will be lost. You can reconnect after the unit reboots.

3.8.2 Remote Log - Router

The remote log feature is used in conjunction with the PC tool (software provided with your SOHOSpeed). For PPPoE and PPPoA connections, you can select Debug in the Log Level field if you want to log the connection information. This is helpful when trying to debug connection problems. The remote log feature allows you to forward all logged information to one (or more) remote syslog server. The type of information forwarded to the remote server depends upon the Log level. Each log message is assigned a severity level, which indicates how seriously the triggering event affects SOHOSpeed functions. When you configure logging, you must specify a severity level. Log messages that are rated at that level or higher are sent to the syslog server and can be viewed using the syslog server application, which can be downloaded from the web or comes with a linux machine. To view the log information on the web, refer to ''System Log Page''.



Remote Log - Router Settings

Log Level

Log Level: Notice

Add an IP Address:

Select a logging destination: None

The remote log configuration procedure is as below:

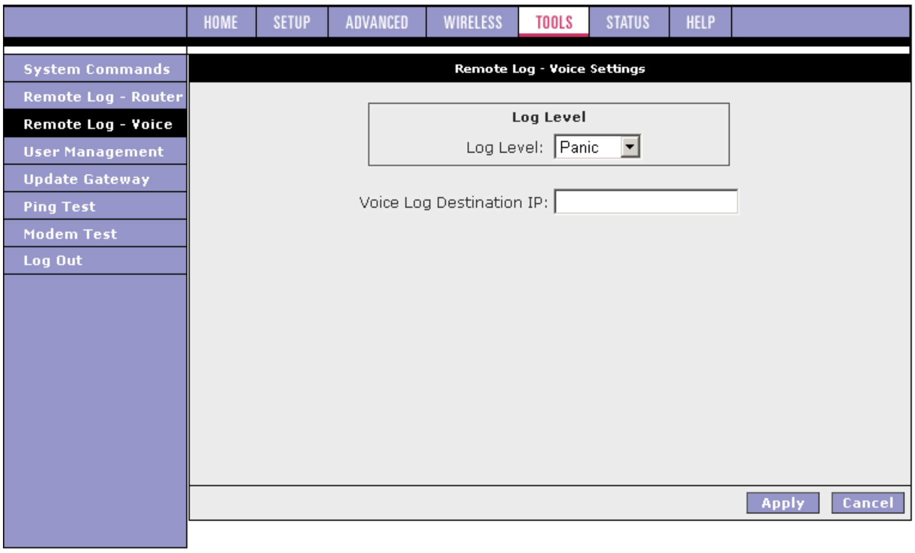
1. Select you desired Log Level from the drop-down list.
   Note: When you select a log level, all log information within this severity level and levels above (meaning, more severe levels) are sent to the remote station.
2. Enter the IP Address of the remote station (for example, the syslog server) that the log information is to be sent to, and click Add.
   This station is added to the drop-down list of the Select a Logging Destination field.
3. Select the Logging Destination.
   You can edit the logging destination list using the Add and Delete buttons.
4. Click **Apply**.

Field Description

Field	Definition/Description
Log Level	There are eight log levels listed below in order of severity: ● Panic: System panic or other condition that causes the SOHOSpeed to stop functioning. ● Alert: Conditions that require immediate correction, such as a corrupted system database. ● Critical: Critical conditions, such as hard drive errors. ● Error: Error conditions that generally have less serious consequences than errors in the emergency, alert, and critical levels. ● Warning: Conditions that warrant monitoring. ● Notice: Conditions that are not errors but might warrant special handling. ● Info: Events or non-error conditions of interest. ● Debug: Software debugging message. Specify the level only when so directed by a technical support representative. The default log level is Notice. **Note:** When you select a log level, all log information within this severity level and levels above (meaning, more severe levels) will be sent to the remote host.
Add an IP Address	You should enter the IP address of the remote host to which you want the log information be forwarded. You can add more than more IP address, and any IP address you add here appears in the drop-down list of the next field: Select a logging destination.
Select a Logging Destination	You can select a destination IP address from the drop-down list. This defines where the log information will be sent. You can customize the destination list using the Add and Delete buttons.

3.8.3 Remote Log - Voice

Remote Log - Voice Settings page can be accessed by clicking the Remote Log - Voice link at the left of the Tools page.



Remote Log - Voice Settings

Log Level

Log Level: Panic

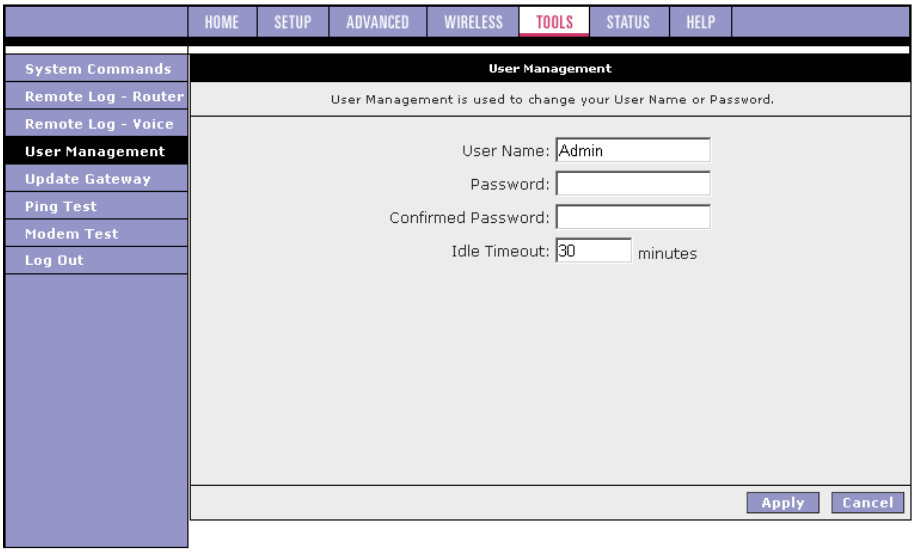
Voice Log Destination IP:

Field Description

Field	**Definition/Description**
Log Level	There are eight log levels listed below in order of severity: ● Panic ● Alert: ● Critical ● Error ● Warning ● Notice ● Info ● Debug The default log level is Panic. Refer to previous table for more information on each log level.
Add an IP Address	You should enter the IP address of the remote host to which you want the log information be forwarded. You can add more than more IP address, and any IP address you add here appears in the drop-down list of the next field: Select a logging destination.
Select a Logging Destination	You can select a destination IP address from the drop-down list. This defines where the log information will be sent. You can customize the destination list using the Add and Delete buttons.

3.8.4 User Management

This page allows you to change your login name and password.



User Management

User Management is used to change your User Name or Password.

User Name: Admin

Password:

Confirmed Password:

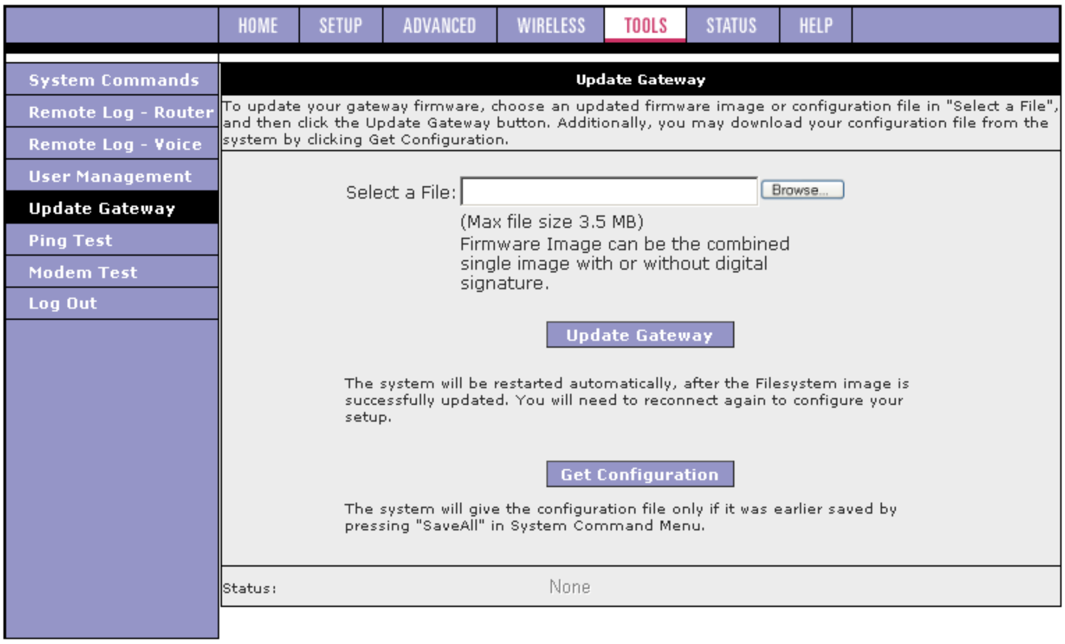
Idle Timeout: 30 minutes

Field Description

Field	**Definition/Description**
User Name	Admin is your default user name. You can enter your new user name here.
Password	Admin is your default password. You can enter your new password here. **Note:** If you forget your password, you can press and hold the reset to factory default button for 10 seconds (or more). The SOHOSpeed will reset to its factory default configuration and all custom configuration will be lost.
Confirmed Password	Enter your new password here again to confirm.
Idle Timeout	The default is 30 minutes. You will need to log back onto the SOHOSpeed after your session has been inactive for 30 minutes. You can change the timeout here.

3.8.5 Update SOHOSpeed

This page allows you to update the SOHOSpeed's firmware, voice provision file, and/or configurations files.



Update Gateway

To update your gateway firmware, choose an updated firmware image or configuration file in "Select a File", and then click the Update Gateway button. Additionally, you may download your configuration file from the system by clicking Get Configuration.

Select a File: [ ] Browse...

(Max file size 3.5 MB)
Firmware Image can be the combined single image with or without digital signature.

Update Gateway

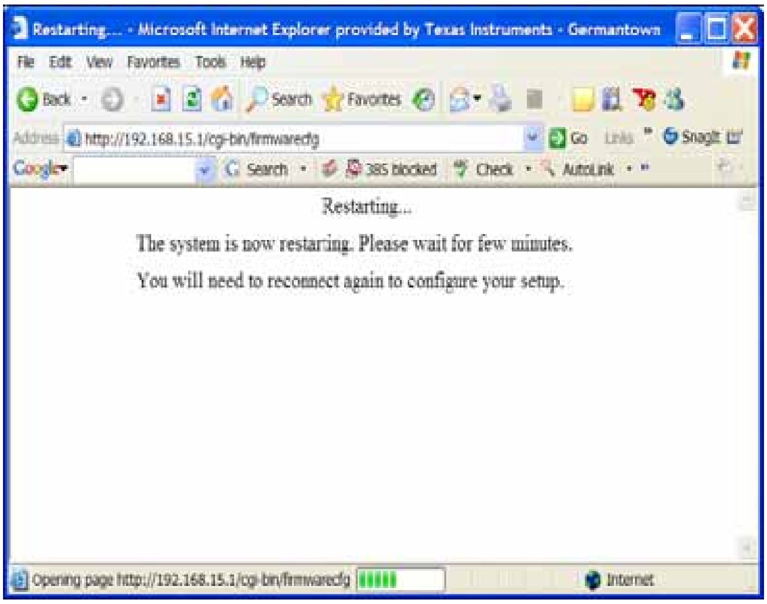
The system will be restarted automatically, after the Filesystem image is successfully updated. You will need to reconnect again to configure your setup.

Get Configuration

The system will give the configuration file only if it was earlier saved by pressing "SaveAll" in System Command Menu.

Status: None

1. Upload firmware: Click **Browse** and select the firmware image to upload. The file name should look something like this: nsp.ar7vw.firmware.upgrade.img. The file for web upload should have "upgrade" in the name. The file without "upgrade" in the name is for upload using the serial connection.
2. Click **Update Gateway**.
   The status of the uploading appears at the bottom of the page. When the upload is finished, the SOHOSpeed reboots and you are prompted to log in again.


Restarting... - Microsoft Internet Explorer provided by Texas Instruments - Germantown
File Edit View Favorites Tools Help
Back Search Favorites
Address http://192.168.15.1/cgi-bin/firmwarecfg
Go Links Snagit
Google Search 385 blocked Check AutoLink
Opening page http://192.168.15.1/cgi-bin/firmwarecfg
Internet

Restarting...

The system is now restaring. Please wait for few minutes.

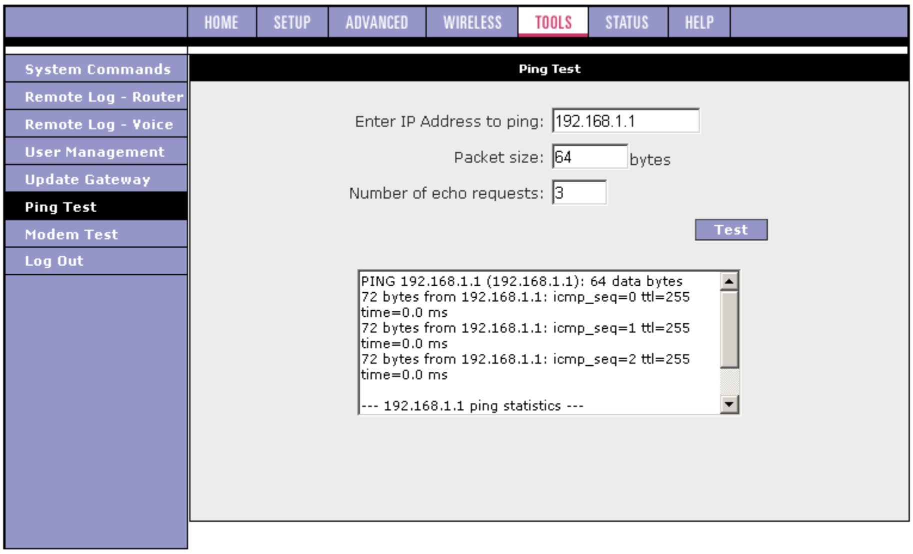
You will need to reconnect again to configure your setup.

Note: If you are loading multiple files, it is recommended that you upload the firmware image at last as the system reboots after loading firmware image.

3. At the login prompt, enter your **Username** and **Password** to log back in.
4. If you want to make sure the firmware is properly upgraded, go to Status/Product Information and check on the SOHOSpeed version information on the Product Information page.
5. Upload configuration file: You can use the same procedure to update the configuration file (config.bin).
6. You can download to your hard drive a copy of the configuration file (config.bin) that has been saved to the SOHOSpeed flash. To do so, click **Get Configuration** and follow the prompt.
7. You can also upload a saved configuration file (config.bin) back to the SOHOSpeed. To do so, click **Browse** and select the file, then click **Update Gateway**.

3.8.6 Ping Test

Once you have your SOHOSpeed configured, it is a good idea to make sure you can ping the network. If you can ping an IP on the WAN side successfully, you should be able to surf the Internet.



Enter IP Address to ping: 192.168.1.1

Packet size: 64 bytes

Number of echo requests: 3

```
PING 192.168.1.1 (192.168.1.1): 64 data bytes
72 bytes from 192.168.1.1: icmp_seq=0 ttl=255
time=0.0 ms
72 bytes from 192.168.1.1: icmp_seq=1 ttl=255
time=0.0 ms
72 bytes from 192.168.1.1: icmp_seq=2 ttl=255
time=0.0 ms

--- 192.168.1.1 ping statistics ---
```

1. Click **Ping Test** from the Tools menu to access the Ping Test page.
2. Change or leave the default settings of the following fields:
   - Enter the IP Address to Ping
   - Packet Size
   - Number of Echo Requests
3. Click **Test**.
   The ping results are displayed in the box on the page. If the ping test was successful, it means that the TCP/IP protocol is up and running. If the Ping test failed, you should restart the SOHOSpeed.

Field Description

Field	**Definition/Description**
Enter IP Address to Ping	Enter the WAN-side IP address that you want to ping. The default is set to the default IP address of your SOHOSpeed (192.168.1.1).
Packet Size	You can define the packet size of the ping test. The default is 64 bytes.
Number of Echo Requests	You can define how many times the IP address will be pinged. The default is 3 times.

3.8.7 Modem Test

The Modem Test page is used to check the connectivity to the WAN. This test ay take a few seconds to complete. Before running this test, make sure you ave at least one WAN connection configured and have a valid DSL link. If the SL link is not connected, the test will fail. Also make sure the DSLAM supports this feature. Not all DSLAMs have F4 and F5 support. F4/F5 cells are used for operation, administration, and maintenance (OAM) on ATM level. They are used for two main purposes:

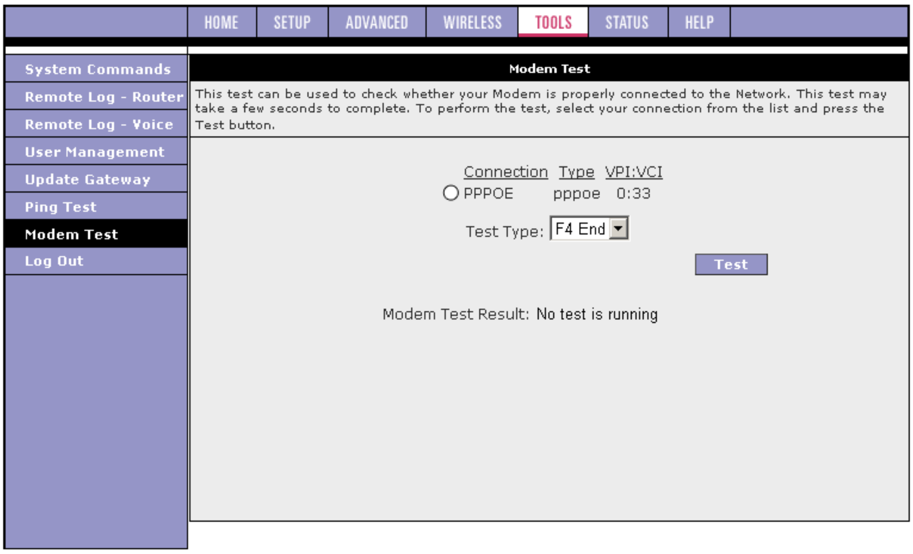
- Fault management (detection and notification)
- Loopback testing and link integrity

The ATM OAM is divided into several levels:

- F4: VP level. OAM information flows between network elements (NEs) used within virtual paths to report an unavailable path or a virtual path (VP) that cannot be guaranteed. Segment flows are processed, as well as end-to-end flows that terminate in the management processor.
- F5: VC level. OAM information flows between network elements (NEs) used within virtual connections to report degraded virtual channel (VC) performance such as late arriving cells, lost cells, and cell insertion problems. Segment flows are processed, as well as end-to-end flows that terminate in the management processor.

Both F4 and F5 flows can be configured as one of the test types:

- Segment: This test verifies that ATM continuity exists between the virtual channel link segment from the SOHOSpeed to the DSL provider network (typically this is a DSLAM at the DSL provider site).
- End-to-End: This test verifies ATM connectivity of the virtual channel link with the ATM endpoint, such as a remote broadband access router located at the DSL provider or ISP site.



Modem Test

This test can be used to check whether your Modem is properly connected to the Network. This test may take a few seconds to complete. To perform the test, select your connection from the list and press the Test button.

	Connection	Type	VPI:VCI
○	PPPOE	pppoe	0:33

Test Type: F4 End

Modem Test Result: No test is running

The figure below shows the Modem Test page with two WAN connections (PPPoE1 and Bridge1) pre-configured.

Perform a Connectivity Test

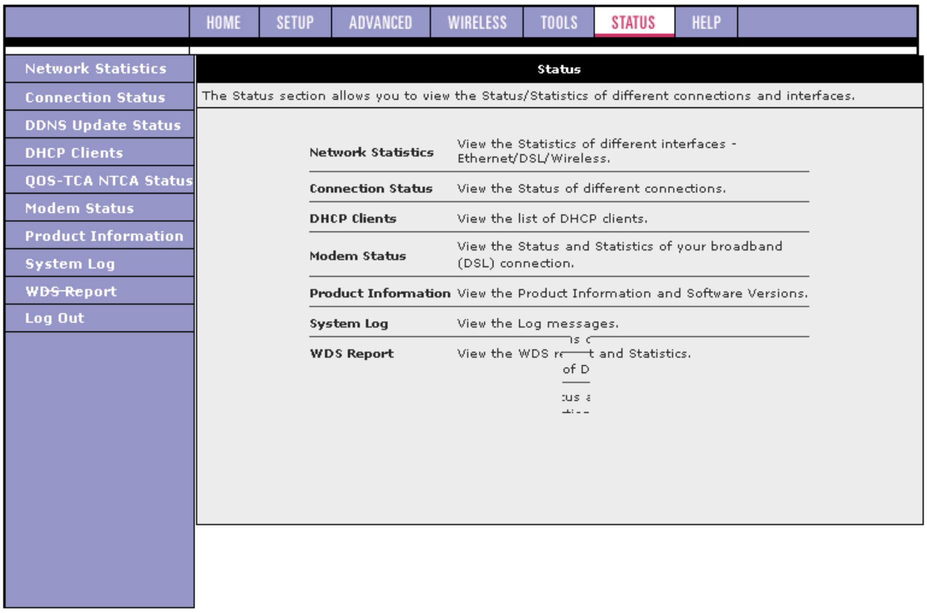
1. Click **Modem Test** at the Tools main page to access the Modem Test page.
2. Select the Connection you want to test and the Test Type.
3. Click **Test**.
   The modem test results are displayed on the page.

Field Description

Field	**Definition/Description**
Connection	Select the WAN connection on which you want to run the modem test. **Note:** You will not be able to perform a modem test without any WAN connections configured.
Type	The type of the WAN connection.
VPI/VCI	Virtual path identifier/virtual channel identifier.
Test Type	There are four test types: ● F4 End: F4 end to end. ● F4 Seg: F4 segment. ● F5 End: F5 end to end. ● F5 Seg: F5 segment.

3.9 STATUS

The Status section allows you to view the Status/Statistics of different connections and interfaces.



Status

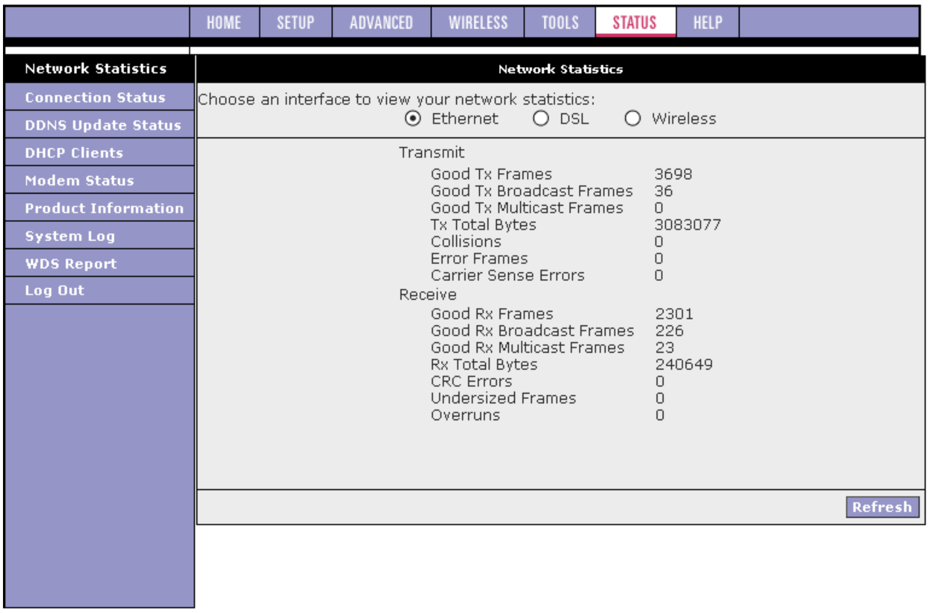
The Status section allows you to view the Status/Statistics of different connections and interfaces.

Network Statistics	View the Statistics of different interfaces - Ethernet/DSL/Wireless.
Connection Status	View the Status of different connections.
DHCP Clients	View the list of DHCP clients.
Modem Status	View the Status and Statistics of your broadband (DSL) connection.
Product Information	View the Product Information and Software Versions.
System Log	View the Log messages.
WDS Report	View the WDS r t and Statistics.

3.9.1 Network Statistics

You can access the Network Statistics page by clicking the Network Statistics link from the Status main page. Click to view the statistics of the following four interfaces:

- Ethernet
- USB
- DSL
- Wireless



Network Statistics

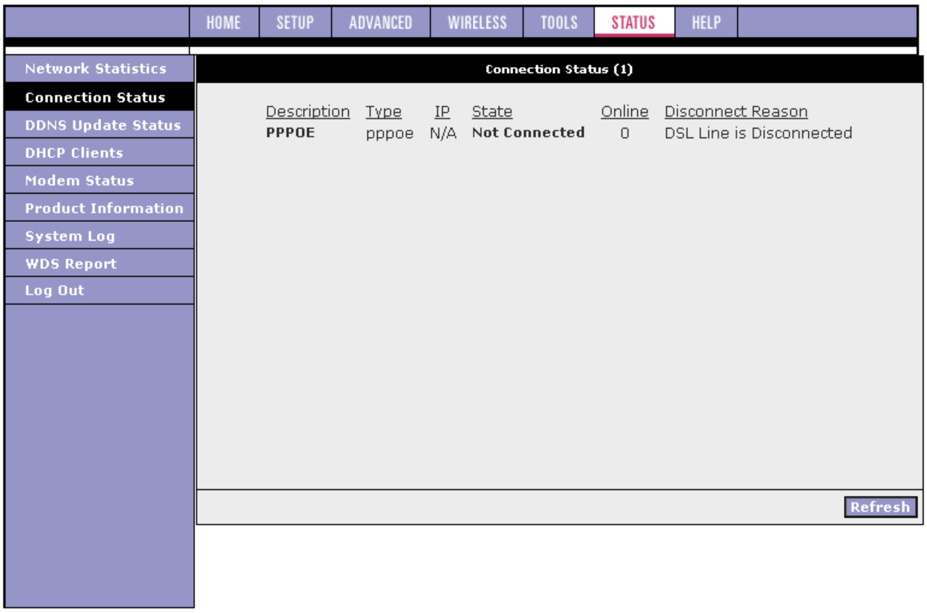
Choose an interface to view your network statistics:

● Ethernet ○ DSL ○ Wireless

```
Transmit
    Good Tx Frames             3698
    Good Tx Broadcast Frames   36
    Good Tx Multicast Frames   0
    Tx Total Bytes             3083077
    Collisions                 0
    Error Frames               0
    Carrier Sense Errors       0
Receive
    Good Rx Frames             2301
    Good Rx Broadcast Frames   226
    Good Rx Multicast Frames   23
    Rx Total Bytes             240649
    CRC Errors                 0
    Undersized Frames          0
    Overruns                   0
```

3.9.2 Connection Status

You can view the status of different connections from the Connection Status page.

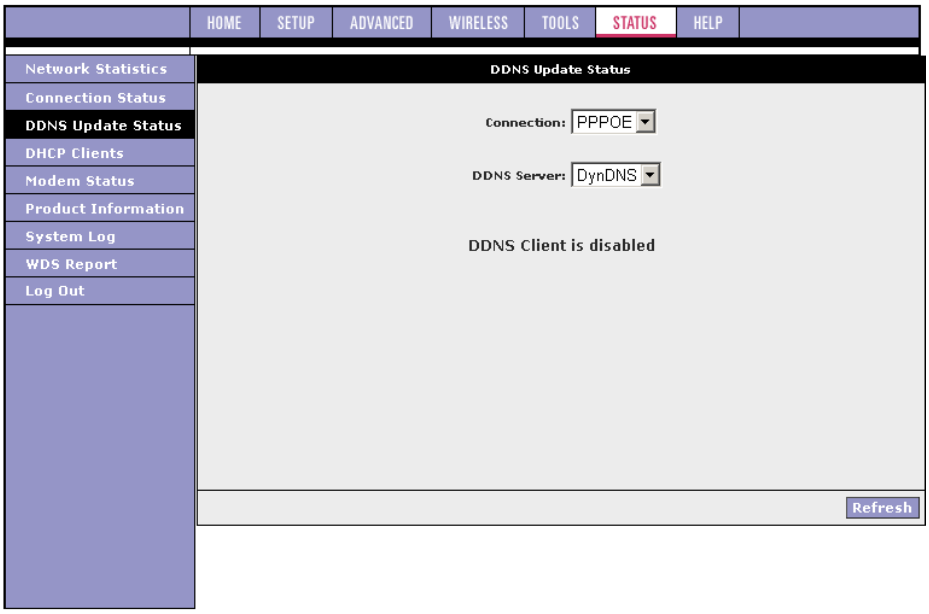


Connection Status (1)

Description	Type	IP	State	Online	Disconnect Reason
PPPOE	pppoe	N/A	**Not Connected**	0	DSL Line is Disconnected

3.9.3 DDNS Update Status

You can view the DDNS update status of your WAN connection from the DDNS Status page.



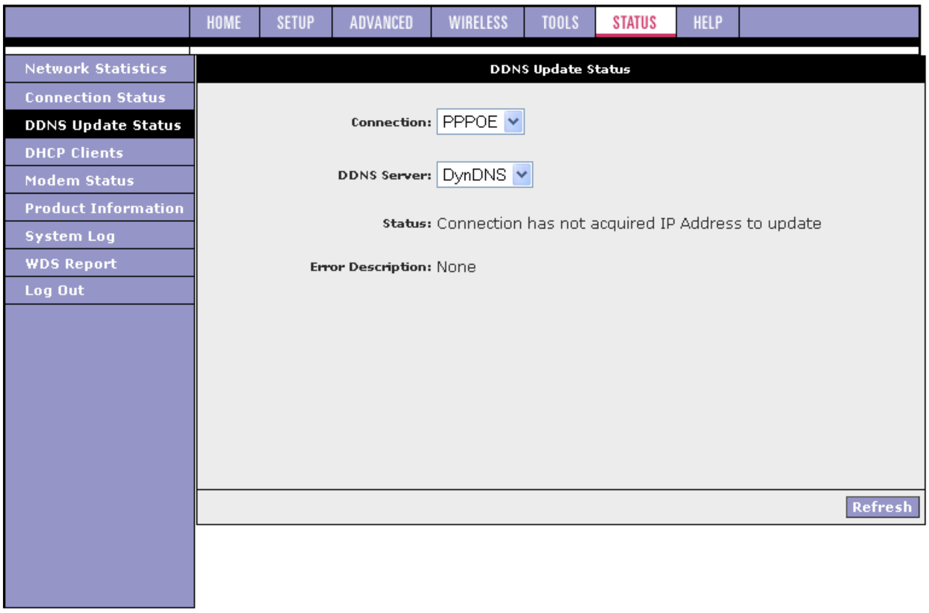
DDNS Update Status

Connection: PPPOE

DDNS Server: DynDNS

DDNS Client is disabled

As you can see from this page, the DDNS client is disabled by default for your SOHOSpeed. When DDNS client is enabled, the DDNS client updates every time the SOHOSpeed gets a new IP address. The DDNS Status page provides you the DDNS update status of your SOHOSpeed.



DDNS Update Status

Connection: PPPOE

DDNS Server: DynDNS

Status: Connection has not acquired IP Address to update

Error Description: None

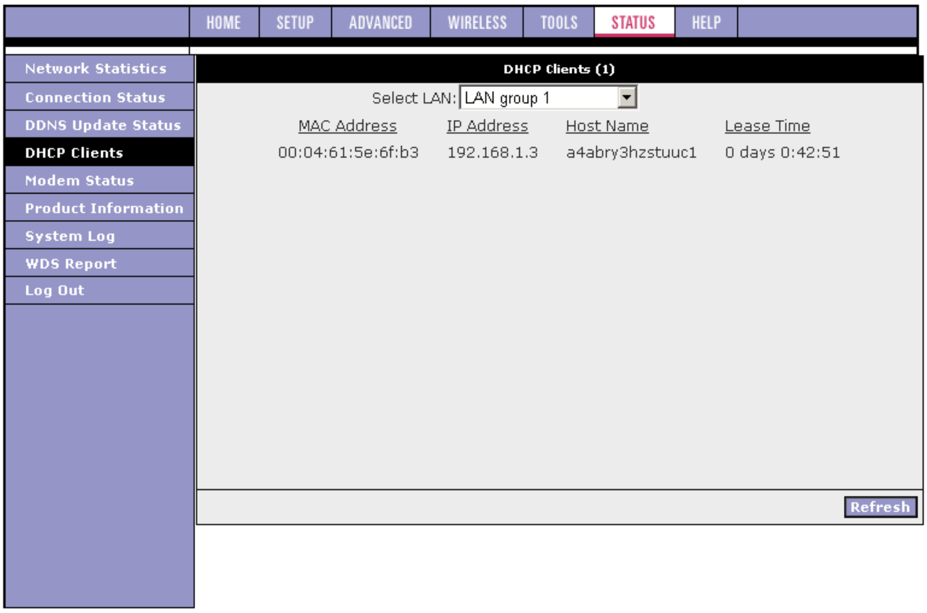
Field Description

Field	**Definition/Description**
Connection	This field defaults to your SOHOSpeed's WAN connection over which your SOHOSpeed will be accessed.
DDNS Server	This is where you select the server from different DDNS service providers. Only DynDNS and TZO are supported by your SOHOSpeed at this time.
Status	The status could be one of the following: ● Updated: The IP address of the client has been changed and an update has been sent to the DDNS server. ● No change: The IP address of the client has not been changed. ● Error: There is an error with the DDNS update.
Error Description	If the DDNS update status is Error, this field gives a description of the error.

3.9.4 DHCP Clients

If you have enabled the DHCP server, you can view a list of the DHCP clients from the DHCP Clients page. From the Status main page, click the DHCP Clients link, select the LAN Group, and the following information of the DHCP LAN clients is displayed:

- MAC Address
- IP Address
- Host Name
- Lease Time



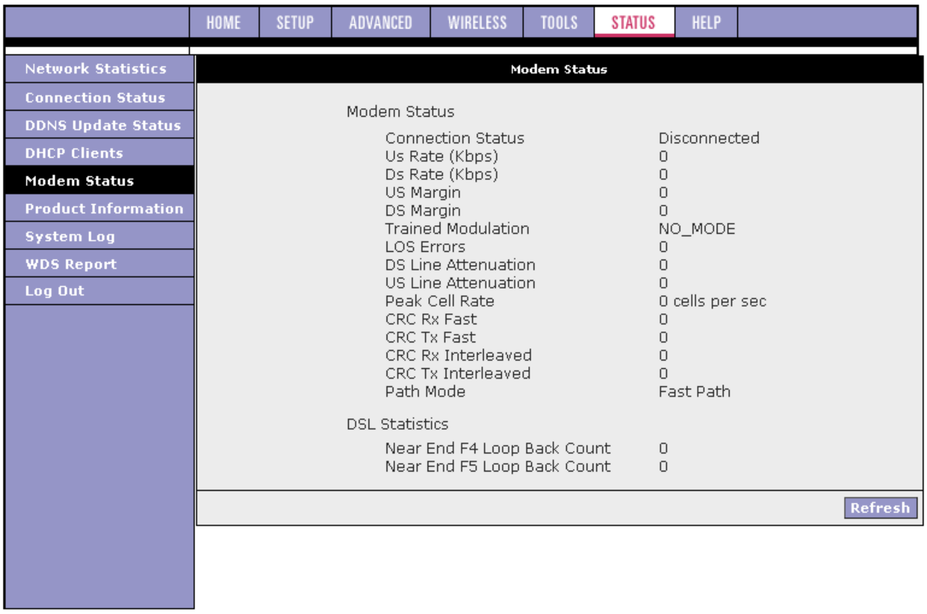
DHCP Clients (1)

Select LAN: LAN group 1

MAC Address	IP Address	Host Name	Lease Time
00:04:61:5e:6f:b3	192.168.1.3	a4abry3hzstuuc1	0 days 0:42:51

3.9.5 Modem Status

Select to view the Status and Statistics of your broadband (DSL) connection.



Modem Status

Modem Status

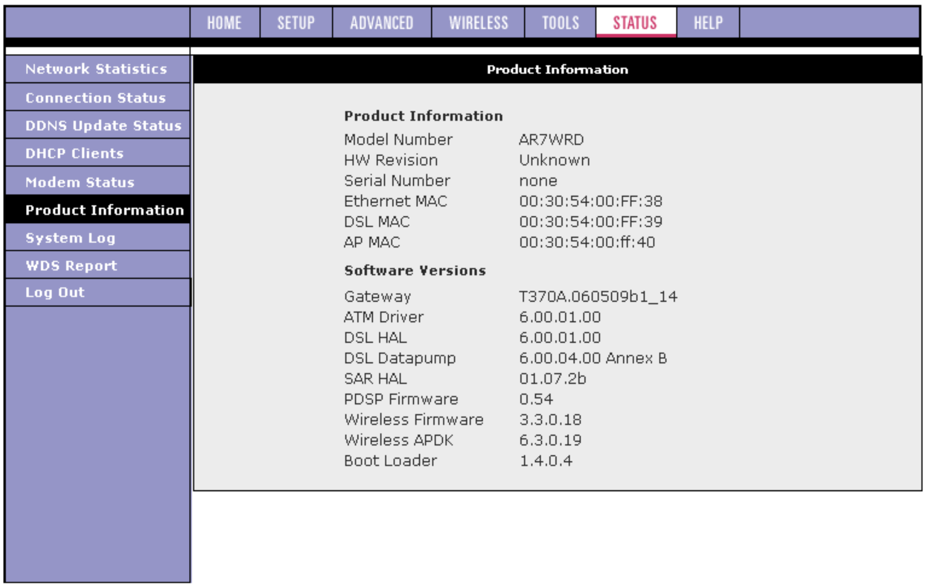
Connection Status	Disconnected
Us Rate (Kbps)	0
Ds Rate (Kbps)	0
US Margin	0
DS Margin	0
Trained Modulation	NO_MODE
LOS Errors	0
DS Line Attenuation	0
US Line Attenuation	0
Peak Cell Rate	0 cells per sec
CRC Rx Fast	0
CRC Tx Fast	0
CRC Rx Interleaved	0
CRC Tx Interleaved	0
Path Mode	Fast Path

DSL Statistics

Near End F4 Loop Back Count	0
Near End F5 Loop Back Count	0

3.9.6 Product Information

This page shows the hardware and software information for your SOHOSpeed.



Product Information

Product Information

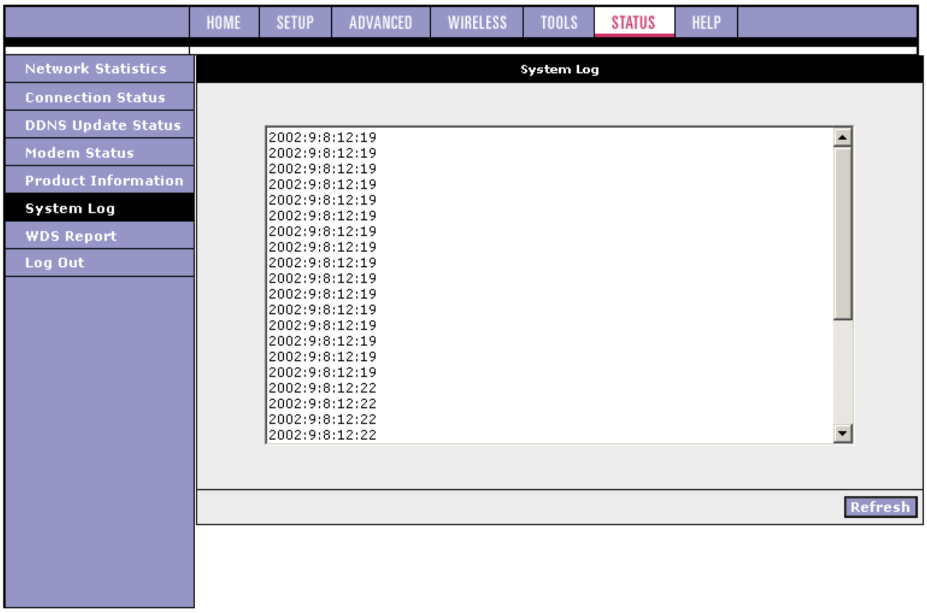
Model Number	AR7WRD
HW Revision	Unknown
Serial Number	none
Ethernet MAC	00:30:54:00:FF:38
DSL MAC	00:30:54:00:FF:39
AP MAC	00:30:54:00:ff:40

Software Versions

Gateway	T370A.060509b1_14
ATM Driver	6.00.01.00
DSL HAL	6.00.01.00
DSL Datapump	6.00.04.00 Annex B
SAR HAL	01.07.2b
PDSP Firmware	0.54
Wireless Firmware	3.3.0.18
Wireless APDK	6.3.0.19
Boot Loader	1.4.0.4

3.9.7 System Log

The System Log page allows you to view all logged information. Depending upon the severity level, the logged information generates log reports to a remote host (if remote logging is enabled). Up to 32 logs can be displayed on this page.



```
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
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2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:19
2002:9:8:12:22
2002:9:8:12:22
2002:9:8:12:22
2002:9:8:12:22
```
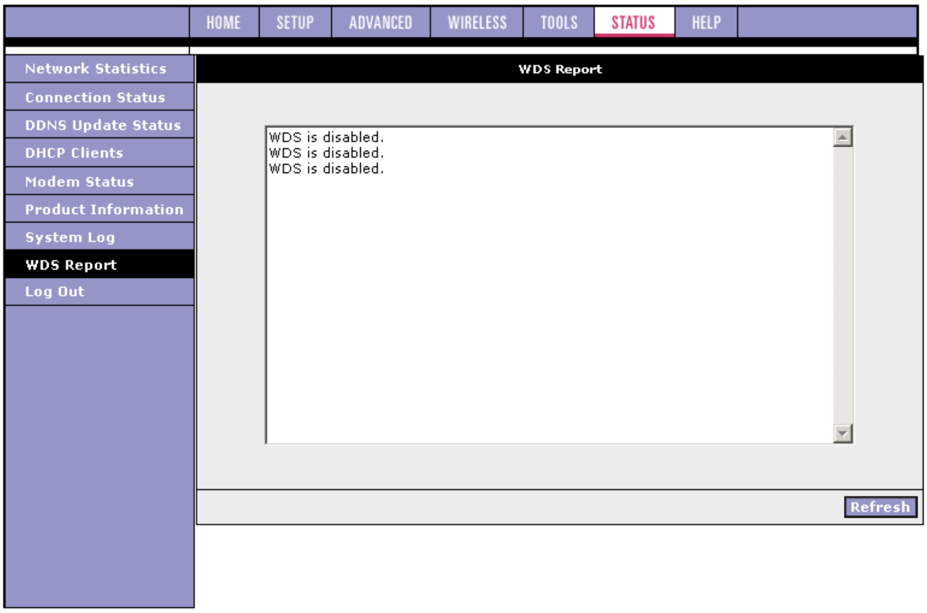

3.9.8 WDS Report

The WDS Report page allows you to view the following WDS-related wireless activities:

- WDS configuration and states
- WDS management statistics
- WDS database



```
WDS is disabled.
WDS is disabled.
WDS is disabled.
```

Appendix: Troubleshooting

Below is a list of commonly asked questions. Before calling technical support, please look through these issues to see if they help solve your problem.

The SOHOSpeed is not functional.

1. Check to see that the POWER LED is green and than the network cables are installed correctly. Refer to the quick configuration guide for more details.
2. Check to see that the LAN and WAN LEDs are green.
3. Check the settings on your PC. Again, refer to the quick configuration guide for more details.
4. Check the SOHOSpeed's settings.
5. From your PC, can you PING the SOHOSpeed? Assuming that the SOHOSpeed has DHCP enabled and your PC is on the same subnet as the SOHOSpeed, you should be able to PING the SOHOSpeed.
6. Can you PING the WAN? Your ISP should have provided the IP address of their server. If you can ping the SOHOSpeed and your protocols are configured correctly, you should be able to ping the ISPs network. If you cannot PING the ISPs network, make sure your using the correct protocols with the correct VPI/VCI values.
7. Make sure NAT is enabled for your connection. If NAT is disabled you the SOHOSpeed will not route frames correctly.

I can't connect to the SOHOSpeed.

1. Check to see that the POWER LED is green and that the network cables are installed correctly; see the quick start guide for more details.
2. Make sure you are not connecting the USB and the Ethernet port at the same time. You must only use 1 interface at a time.
3. Make sure that your PC and the gateway is on the same network segment. The SOHOSpeed's default IP address is 192.168.1.1. If you are running a Windows based PC, you can open a DOS window and type IPCONFIG; make sure that the network adapter that is connected to the SOHOSpeed is within the same 192.168.1.x subnet.
4. Also, your PC's Subnet Mask should match the SOHOSpeed's subnet mask. The SOHOSpeed has a default subnet mask of 255.255.255.0.
5. If this still does not work, press the reset button. This will place the SOHOSpeed into its factory default state. Go through the above procedures again.
6. Make sure NAT is enabled for your connection. If NAT is disabled you the SOHOSpeed will not route frames correctly.

The WAN Link LED continues to blink but does not go solid.

1. This means that the DSL line is trying to train but for some reason it cannot establish a valid connection. The main cause of this is that you are too far away from the central office. Contact your DSL service provider for further assistance.

The WAN Link LED is always off.

1. Make sure you have DSL service. You should get some kind of information from your ISP which states that DSL service is installed. You can usually tell if the service is installed by listening to the phone line; you will hear some high-pitched noise. If you do not hear high-pitched noise, contact your ISP.
2. Verify that the phone line is connected directly to the wall and to the line input on the SOHOSpeed. If the phone line is connected to the phone side of the SOHOSpeed or you have a splitter installed on the phone line, the WAN light will not come on.