SIEMENS

SIEMENS ADSL E-110/E-110-I

ETH & USB ComboRouter

User Manual

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Safety Notes

For Installation

- Use only the type of power source indicated on the marking labels.
- Use only the power adapter supplied with the product.
- Do not overload wall outlet or extension cables as this may increase the risk of electric shock or fire. If the power cable is frayed, replace it with a new one.
- Proper ventilation is necessary to prevent the product overheating. Do not block or cover the slots and openings on the device, which are intended for ventilation and proper operation. It is recommended to mount the product with a stack.
- Do not place the product near any source of heat or expose it to direct sunshine.
- Do not expose the product to moisture. Never spill any liquid on the product.
- Do not attempt to connect with any computer accessory or electronic product without instructions from qualified service personnel. This may result in risk of electronic shock or fire.
- Do not place this product on an unstable stand or table.

For Using

- Power off and unplug this product from the wall outlet when it is not in use or before cleaning. Pay attention to the temperature of the power adapter. The temperature might be high.
- After powering off the product, power on the product at least 15 seconds later.
- Do not block the ventilating openings of this product.
- When the product is expected to be not in use for a period of time, unplug the power cable of the product to prevent it from the damage of storm or sudden increases in rating.

For Service

Do not attempt to disassemble or open covers of this unit by yourself. Nor should you attempt to service the product yourself, which may void the user's authority to operate it. Contact qualified service personnel under the following conditions:

- If the power cable or plug is damaged or frayed.
- If liquid has been spilled into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally when the operating instructions are followed.
- If the product has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance.

Warning

- This equipment must be installed and operated in accordance with provided instructions.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution

- Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

Content

Before You Use

The SIEMENS ADSL E-110/E-110-I is an Asymmetric Digital Subscriber Line (ADSL) Router. With the asymmetric technology, this device runs over standard copper phone lines. In addition, ADSL allows you to have both voice and data services in use simultaneously all over one phone line.

The SIEMENS ADSL E-110/E-110-I is designed to offer cost-effective high-speed services for home or office users. It provides a downstream rate of up to 8 Mbps and upstream rate of up to 1 Mbps for ADSL connection, even offers auto-negotiation capability for different flavors (ANSI T1.413 Issue 2, G.lite, G.dmt for Annex A, G.dmt for Annex B or G.hs) according to central office DSLAM's settings (Digital Subscriber Line Access Multiplexer). Also the feature-rich routing functions are seamlessly integrated to ADSL service for existing corporate or home users. Now users can enjoy various bandwidth-consuming applications via the SANTIS ADSL Router.

Features

ADSL Compliance

- ANSI T1.413 Issue 2
- ITU G.992.2 Annex A (G.lite)
- ITU G.992.1 Annex A (G.dmt)
- ITU G.992.1 Annex B (G.dmt)
- ITU G.994.1 (G.hs)

ATM Features

- Compliant to ATM Forum UNI 3.1 / 4.0 Permanent Virtual Circuits (PVCs)
- Support up to 8 AAL5 Virtual Circuit Channels (VCCs) for UBR, CBR and GFR service classes
- Provides ATM layer functionality
- Provides adaptation layer (AAL5) functionality
- Performs the traffic shaping and scheduling per ATM port
- Supports PPP encapsulation over ATM (PPPoA) and PPP over Ethernet (PPPoE)
- ADSL-aware CAC
- Support for F5 AIS, RDI and loopback cells

Bridging Features

- Up to 1000 hosts
- Supports transparent bridging as specified in IEEE 802.1D Transparent Bridging
- Supports bridged PDU encapsulation (RFC 2684)
- MAC-level filter to accept/deny packets based on rules applicable at the MAC level

Routing Features

- Network Address Translation (NAT)
- IP filtering and raw filtering
- Dynamic IP address allocation is supported through DHSP and IPCP
- Point-to-point Protocol (PPP): PPPoA, PPPoE, PAP or CHAP for user authentication, Routing information Protocol (RIP) v1 and v2

Security Features

- PAP (RFC1334), CHAP (RFC1994) for PPP session
- Firewall support IP packets filtering based on IP address/Port number/Protocol type and TCP code field flags
- Intrusion Detection provides protection from a number of attacks (such as SYN/FIN/RST Flood, Smurf, WinNuke, Echo Scan, Xmas Tree Scan, etc)

Configuration and Management

- DSL Forum TR37-compliant auto configuration
- SNMPv1 over DSL or Ethernet for access to the MIB-II (router only)
- CLI (Command Line Interface) via serial interface or Telnet over Ethernet or DSL
- Web-based Graphical User Interface (GUI) enabling end-user device configuration via Web browser
- Update of boot image configuration data over TFTP/FTP

System Requirements

For using this, you have to make sure you have the following that installed on the clients:

- Operating System must be Windows 95/98/98 SE/ME/NT/2000/XP or Macintosh 8.6/9.x/10.x
- 10/100 Base-T NIC
- 10/100 Base-T (UTP) network cable

Unpacking

Check the contents of the package against the pack contents checklist below. If any of the items is missing, then contact the dealer from whom the equipment was purchased.

- ADSL Router
- Power Adapter
- RJ-11 ADSL Line Cable
- RJ-45 Ethernet Cable
- CDROM with Quick Start Guide / User Manual

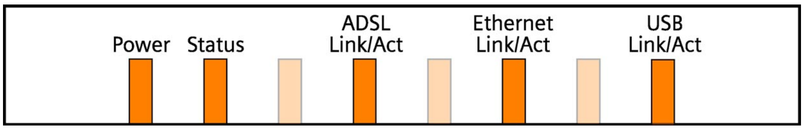
Chapter 1: Overview

Physical Outlook

Physical Outlook

Front Panel

The following illustration shows the front panel of the ADSL Router:



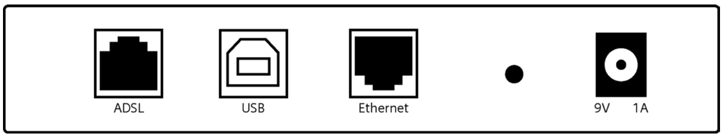
LED Indicators (Front Panel System Messages)

The ADSL Router is equipped with orange LEDs on the front panel as described in the table below (from left to right):

LED	Status	Description
Power	On	Unit is powered on.
	Off	Unit is powered off.
Status	Blinking	Flashes to indicate that the device software is operational.
ADSL Link/Act	Short Blinking	The Router Modem is in 'training'
	OFF	ADSL link is established
	Irregular Blinking	Indicates ADSL traffic
Ethernet Link/Act	On	Ethernet link is established
	Off	No Ethernet link
	Irregular Blinking	Indicates Ethernet traffic
USB Link/Act	On	USB link is established
	Off	No USB link
	Irregular Blinking	Indicates USB traffic

Rear PanelRear Panel

The following figure illustrates the rear panel of your ADSL Router.



ADSL	Connects the device to an ADSL telephone jack using the supplied cable.
USB	Connects the device to the USB port on your PC.
Ethernet	Connects the device to your PC's Ethernet port, or to the uplink port on your LAN's hub, using the cable provided.
Reset Button	Reset to factory defaults. To reset the device to factory defaults, you don’t need to power off the device. Just push a paper clip into the hole. Press down the button for 3 times and then release. Then wait for the device to finish boot-up.
9V 1A	Connects to the supplied power converter cable.

Chapter 2: Installation

Choosing a place for the ADSL Router

1. Place the ADSL Router close to ADSL wall outlet and power outlet for the cable to reach it easily.
2. Avoid placing the device in places where people may walk on the cables. Also keep it away from direct sunshine or heat sources.
3. Place the device on a flat and stable stand.

Connecting the ADSL Router

Follow the steps below to connect the related devices.

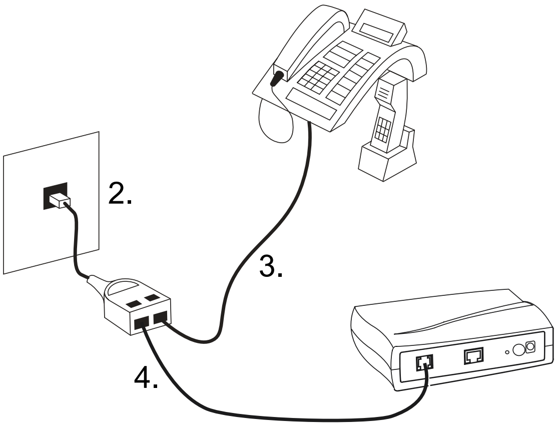
Note: For ADSL standard, a PSTN Microfilter or an ISDN Splitter is necessary on subscriber's premise to keep the telephone and ADSL signals separated, giving them the capability to provide simultaneous Internet access and telephone service on the same line.

Analog (PSTN) installation

If your telephone service is analog (SIEMENS ADSL E-110), proceed as follows to install your Hardware: Remove the end of the phone line from your phone connector and plug it into the "LINE" plug of the PSTN Microfilter. Use another phone line to connect your phone and Microfilter. Plug this phone line into the "PHONE" plug of the ADSL Microfilter, and plug the other end of the line onto your phone.

Y-Line Filters

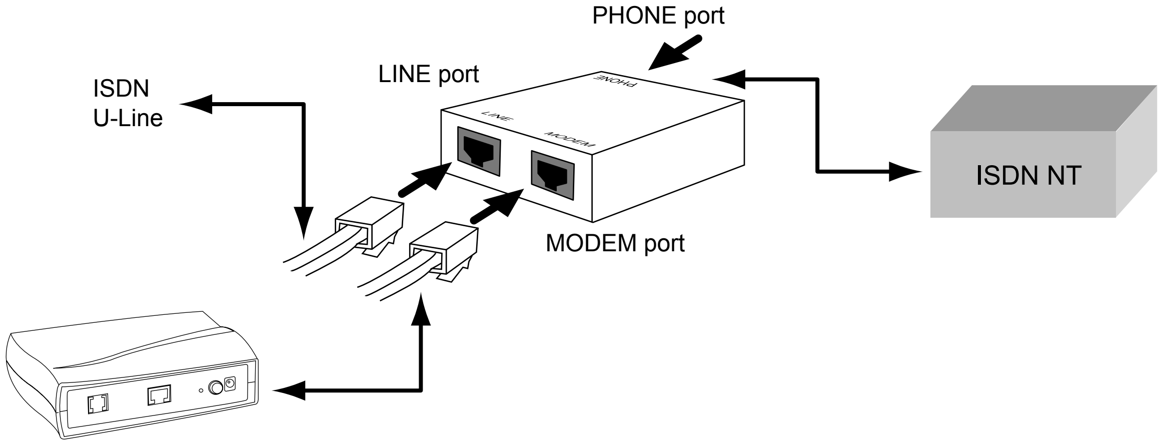
1. Unplug the device's cable from the phone jack.
2. Plug the Y-Line Filter into the phone jack.
3. Plug the phone cable (or other device cable) into the "PHONE" jack of your Y-Line Filter.
4. Plug the ADSL cable into the "ADSL" jack of your Y-Line Filter.



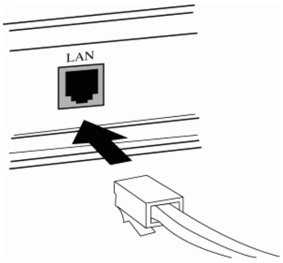
ISDN installation

If your telephone service is ISDN (SIEMENS ADSL E-110-I), proceed as follows to install your Hardware:

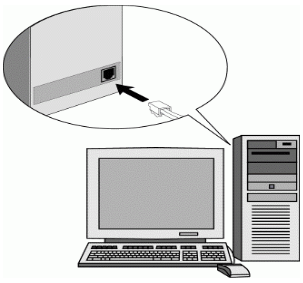
1. Remove the U-Line (incoming line) form your ISDN NT and plug it into the "LINE" plug of the ISDN Splitter. Use another phone line to connect your ISDN NT with your ISDN Splitter. Plug this phone line onto the "PHONE" plug of the ADSL splitter, and plug the other end of the line into the U-Line plug of your ISDN NT.



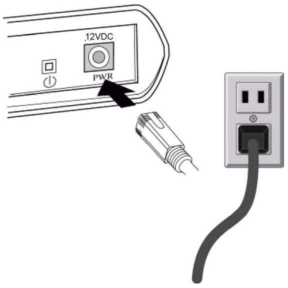
2. Use the line to connect the ADSL Microfilter or Splitter and your ADSL LAN port.
3. Please attach one end of the Ethernet cable with RJ-45 connector to the "LAN" port of your ADSL Router.



4. Connect the other end of the cable to the Ethernet port of the client PC.



5. Connect the supplied power adapter to the **PWR** port of your ADSL Router, and plug the other end to a power outlet.



6. Turn on the power switch.

USB driver installation

Install the USB driver

Note: The USB driver is only working on the following operating systems (OS):
Windows 98, Windows 98SE, Windows ME, Windows 2000 and Windows XP

If your Router is NOT equipped with an Ethernet interface you have to install first the USB driver in order to be able to configure your ADSL Router. For the driver installation proceed as follows:

Note: Windows 98 users need the Windows 98 CD-ROM to complete the installation.

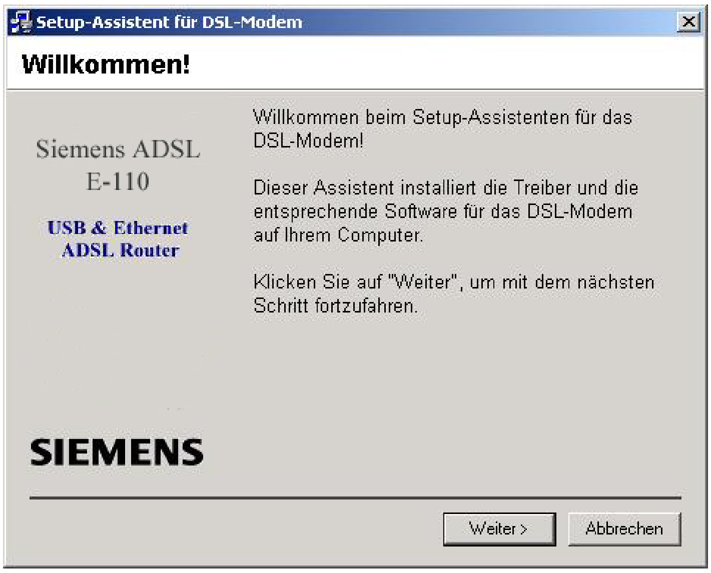
1a. With your computer off, connect the USB cable to the USB port on your computer (plug it in a separate USB port on the PC – preferably without using a hub).

1b. Do **NOT** connect your ADSL router to your computer now.

2. Turn on your computer.

3. Insert the Siemens installation CD-ROM in your CD-ROM drive.

4. The installation procedure will start automatically and the following window appears:



Setup-Assistent für DSL-Modem

Willkommen!

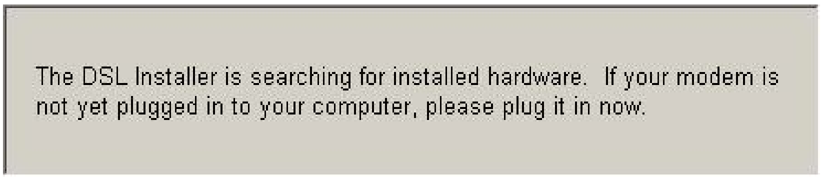
Willkommen beim Setup-Assistenten für das DSL-Modem!

Dieser Assistent installiert die Treiber und die entsprechende Software für das DSL-Modem auf Ihrem Computer.

Klicken Sie auf "Weiter", um mit dem nächsten Schritt fortzufahren.

Note: In case the setup wizard does not start automatically, open a “Run” window via “Start” → “Run” and enter the path D:\setup.exe, where “D” represents the drive letter of the CD-ROM drive.

5. Click on **Next**. The software will be installed after which the following window appears:

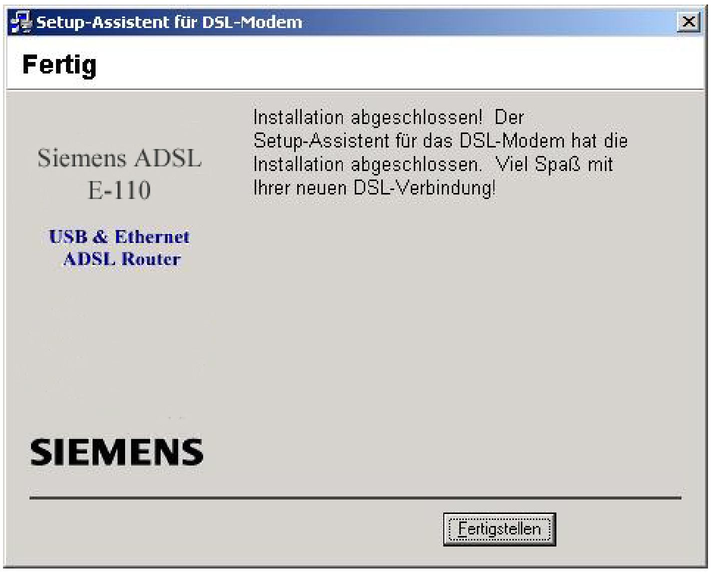


The DSL Installer is searching for installed hardware. If your modem is not yet plugged in to your computer, please plug it in now.

6. Connect the USB cable to your ADSL router. The driver will be installed automatically.

Note for Windows 98 users: If prompted, you need to insert the Windows 98 CD-ROM in your CD-ROM drive to complete the installation.

7. You will be asked whether the PC should be restarted. Click on **Close**.
   The PC will be restarted and the following window appears:



Setup-Assistent für DSL-Modem

Fertig

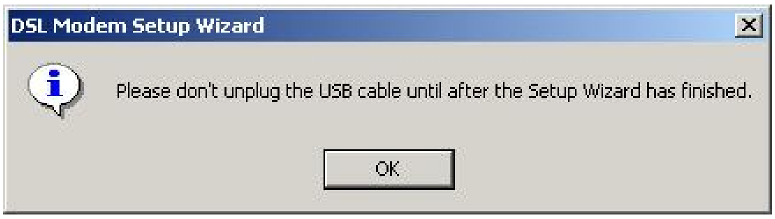
Installation abgeschlossen! Der Setup-Assistent für das DSL-Modem hat die Installation abgeschlossen. Viel Spaß mit Ihrer neuen DSL-Verbindung!

8. Click on **Finish**.

Uninstall the USB driver

Note: Do not unplug the ADSL router from the PC until the uninstaller asks!From your PC desktop click **Start → Programs → Siemens DSL Modem → Uninstall**.

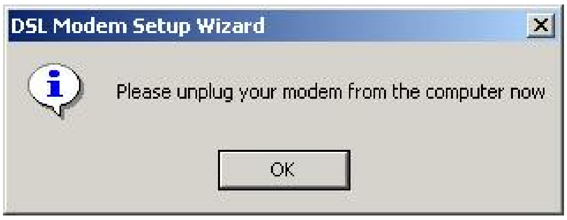
1. A message will be displayed asking you to confirm the removal of the SANTIS ADSL router software, click on **Yes**.
2. The “Information” window will be displayed reminding you **NOT to unplug** the USB cable until the uninstall process has been completed. Click **OK**.



DSL Modem Setup Wizard

Please don't unplug the USB cable until after the Setup Wizard has finished.

3. A message will be displayed, that you now can unplug your ADSL router from the computer. Unplug your ADSL router from your computer. Click **OK**.



DSL Modem Setup Wizard

Please unplug your modem from the computer now

4. The **Reboot** window indicates successful completion of the uninstall process.

Remove any disks from the drives. Select the **Yes, reboot the computer now** option by clicking in the radio button to its left, and click **Close**.

Chapter 3: Configuration

In order to access the Internet through the router, you must check the TCP/IP settings before configuring the router.

Step 1: Configure TCP/IP on Client PC

To access the ADSL Router via Ethernet, the host computer must meet the following requirements:

- With Ethernet network interface.
- Must have TCP/IP protocol installed.
- Set client PC with obtain an IP address automatically.
- With a Web browser installed: Internet Explorer 5.x or later.

The ADSL Router is configured with the **default IP address of 192.168.1.1** and subnet mask of **255.255.255.0**. As the DHCP server is **Enabled** by default, the DHCP clients should be able to access the ADSL Router. Or you could assign an IP address to the host PC first for initial configuration.

You also can manage the ADSL Router through a Web browser-based manager: **ADSL ROUTER CONTROL PANEL**. The ADSL Router manager uses the HTTP protocol via a Web browser to allow you to set up and manage the device.

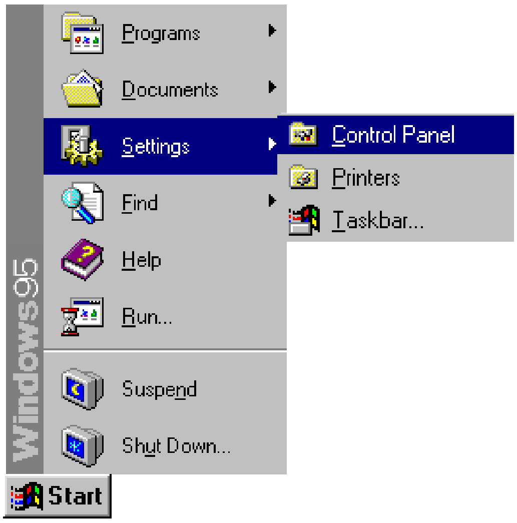
To configure the device via Web browser, at least one properly configured PC must be connected to the network (either connected directly or through an external hub/switch to the LAN port of the device).

If TCP/IP is not already installed, follow the steps below for installation.

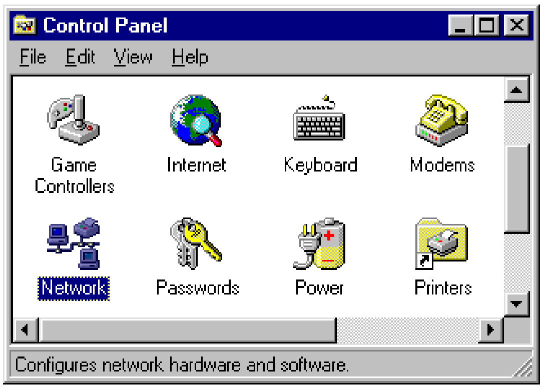
For Windows 95

Note: Windows 95 users need the **Windows 95 installation CD-ROM** to complete the installation!

1. Click on the **Start** menu, point to **Settings** and click on **Control Panel**.



2. Double-click the **Network** icon.

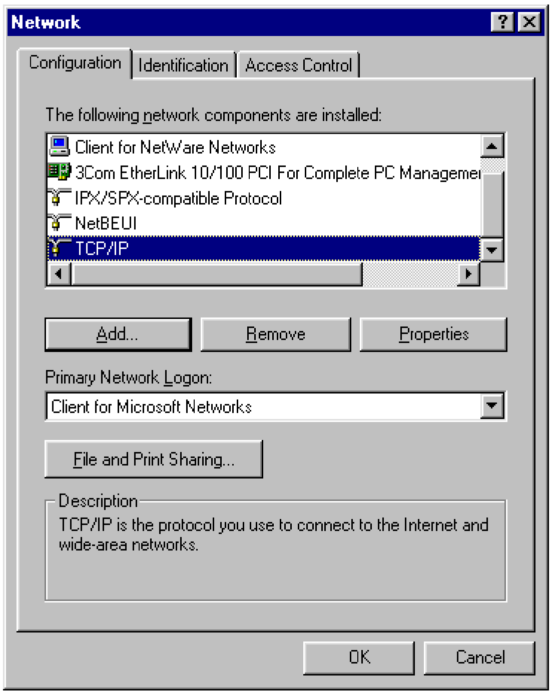


Configures network hardware and software.

3. The Network window appears. On the **Configuration** tab, check out the list of installed network components.

   Option 1: If you have **no** TCP/IP protocol, click **[Add]**.

   Option 2: If you have TCP/IP protocol, go to Step 6.



The following network components are installed:

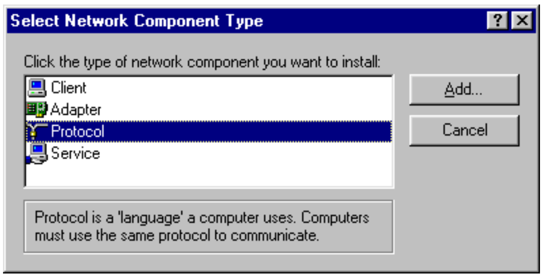
- Client for NetWare Networks
- 3Com EtherLink 10/100 PCI For Complete PC Managemer
- IPX/SPX-compatible Protocol
- NetBEUI
- TCP/IP

Primary Network Logon: Client for Microsoft Networks

Description

TCP/IP is the protocol you use to connect to the Internet and wide-area networks.

4. Highlight **Protocol** and click **[Add]**.

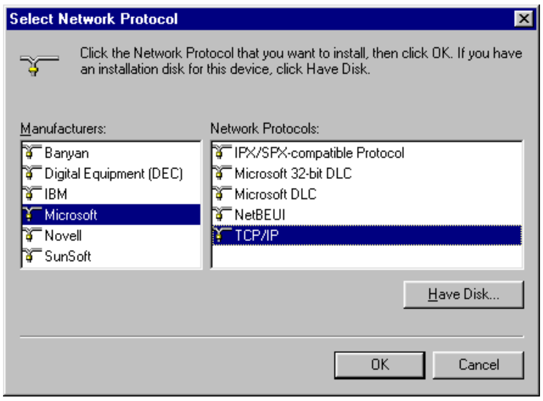


Click the type of network component you want to install:

- Client
- Adapter
- Protocol
- Service

Protocol is a 'language' a computer uses. Computers must use the same protocol to communicate.

5. On the left side of the windows, highlight **Microsoft** and then select **TCP/IP** on the right side. Then click **[OK]**.



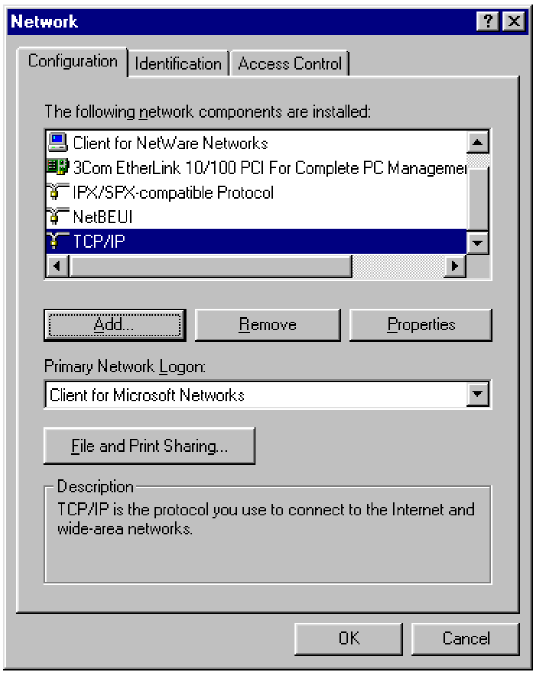
Select Network Protocol

Click the Network Protocol that you want to install, then click OK. If you have an installation disk for this device, click Have Disk.

Manufacturers: Banyan, Digital Equipment (DEC), IBM, Microsoft, Novell, SunSoft

Network Protocols: IPX/SPX-compatible Protocol, Microsoft 32-bit DLC, Microsoft DLC, NetBEUI, TCP/IP

6. When returning to Network window, highlight **TCP/IP** protocol for your NIC and click **[Properties]**.



Network

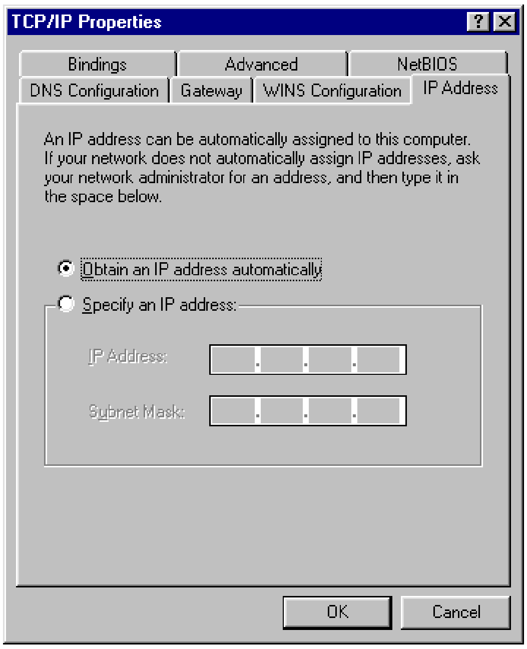
The following network components are installed:

Client for NetWare Networks
3Com EtherLink 10/100 PCI For Complete PC Managemer
IPX/SPX-compatible Protocol
NetBEUI
TCP/IP

Primary Network Logon: Client for Microsoft Networks

Description
TCP/IP is the protocol you use to connect to the Internet and wide-area networks.

7. On **IP Address** tab, select **Obtain an IP address automatically**. Then click **[OK]**.



TCP/IP Properties

An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.

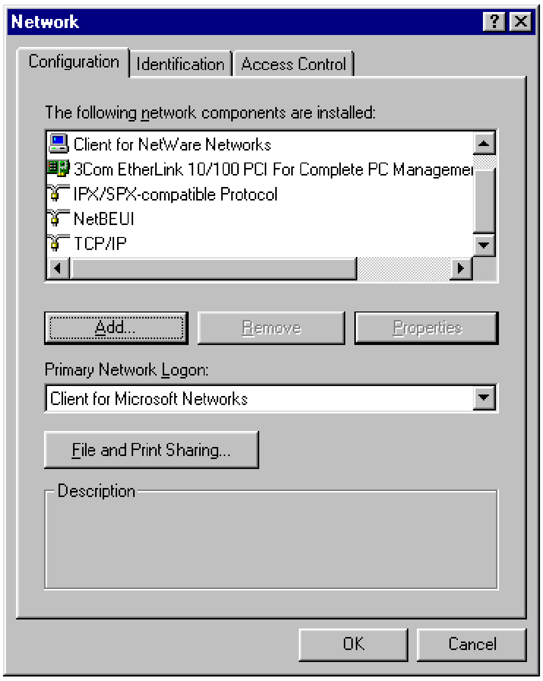
● Obtain an IP address automatically

○ Specify an IP address:

IP Address: . . .

Subnet Mask: . . .

8. When returning to Network window, click **[OK]**.



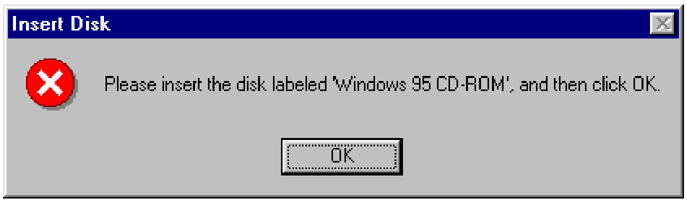
The following network components are installed:

- Client for NetWare Networks
- 3Com EtherLink 10/100 PCI For Complete PC Manageme
- IPX/SPX-compatible Protocol
- NetBEUI
- TCP/IP

Primary Network Logon:

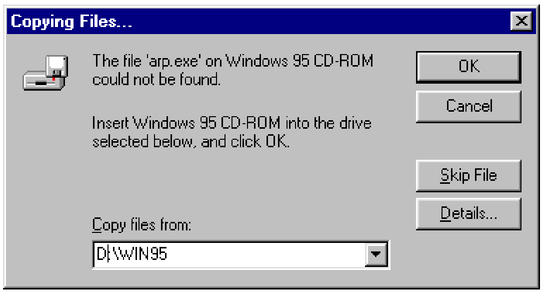
Client for Microsoft Networks

9. Windows may ask you for the original Windows installation disk or additional files. Insert the Windows 95 installation CD-ROM and click **[OK]**.



Please insert the disk labeled 'Windows 95 CD-ROM', and then click OK.

10. Supply the requested files by pointing to the correct location, e.g. D:\Win95, where “D” represents the letter of your CD-ROM drive.



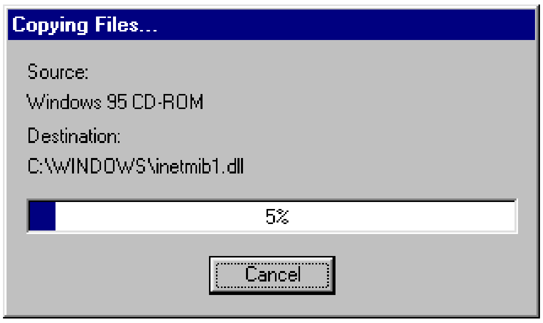
The file 'arp.exe' on Windows 95 CD-ROM could not be found.

Insert Windows 95 CD-ROM into the drive selected below, and click OK.

Copy files from:

D:\WIN95

11. Wait for Windows copying files.



Source:
Windows 95 CD-ROM
Destination:
C:\WINDOWS\inetmib1.dll

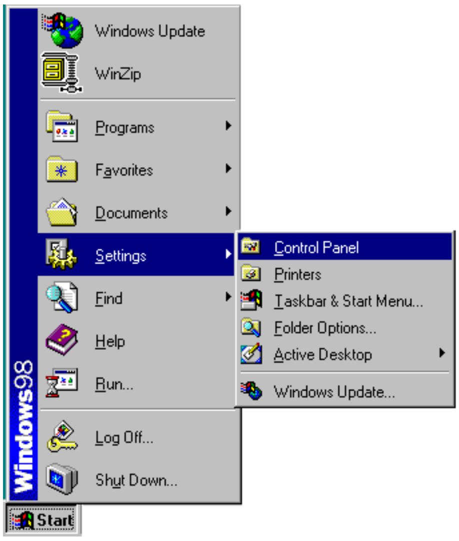
5%

12. When prompted with **System Settings Change** dialog box, click **[Yes]** to restart your computer.

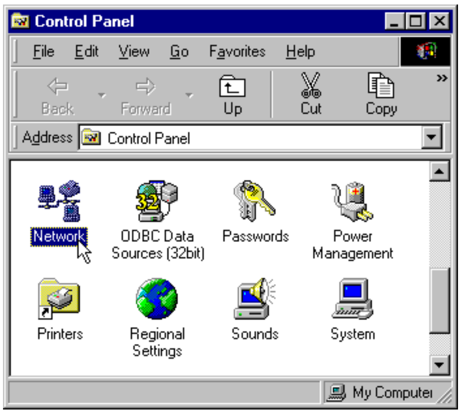
For Windows 98 and Windows 98 SE

Note: Windows 98 and 98 SE users need the **Windows 98 / Windows 98 SE installation CD-ROM** to complete the installation!

1. Click on the **Start** menu, point to **Settings** and click on **Control Panel**.



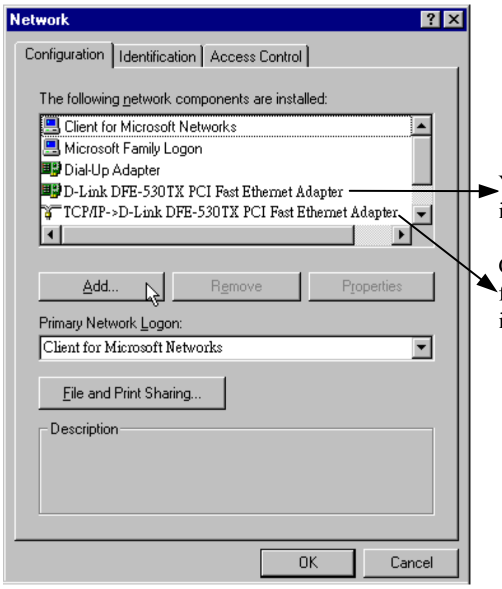
2. Double-click the **Network** icon.



3. The Network window appears. On the **Configuration** tab, check out the list of installed network components.

   Option 1: If you have **no** TCP/IP protocol, click **[Add]**.

   Option 2: If you have TCP/IP protocol, go to Step 6.



Network

Configuration | Identification | Access Control

The following network components are installed:

- Client for Microsoft Networks
- Microsoft Family Logon
- Dial-Up Adapter
- D-Link DFE-530TX PCI Fast Ethernet Adapter
- TCP/IP->D-Link DFE-530TX PCI Fast Ethernet Adapter

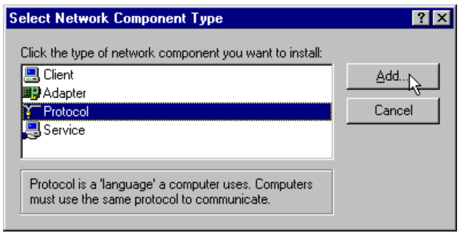
Primary Network Logon: Client for Microsoft Networks

Description

Your network interface card.

Check out if TCP/IP for your NIC is installed or not.

4. Highlight **Protocol** and click **[Add]**.



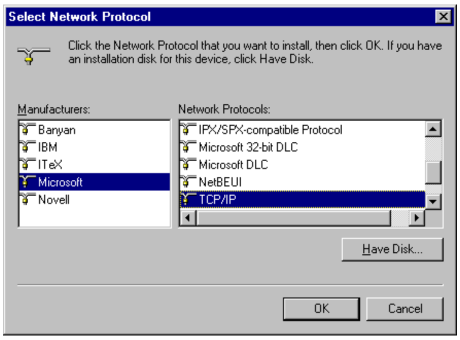
Select Network Component Type

Click the type of network component you want to install:

- Client
- Adapter
- Protocol
- Service

Protocol is a 'language' a computer uses. Computers must use the same protocol to communicate.

5. On the left side of the windows, highlight **Microsoft** and then select **TCP/IP** on the right side. Then click **[OK]**.



Select Network Protocol

Click the Network Protocol that you want to install, then click OK. If you have an installation disk for this device, click Have Disk.

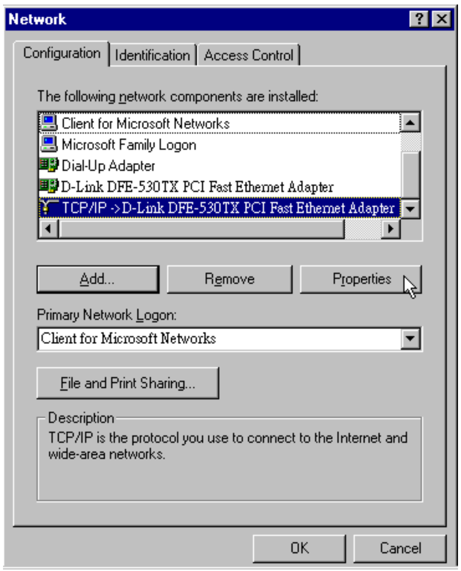
Manufacturers:

- Banyan
- IBM
- ITeX
- Microsoft
- Novell

Network Protocols:

- IPX/SPX-compatible Protocol
- Microsoft 32-bit DLC
- Microsoft DLC
- NetBEUI
- TCP/IP

6. When returning to Network window, highlight **TCP/IP** protocol for your NIC and click **[Properties]**.



Network

Configuration | Identification | Access Control

The following network components are installed:

- Client for Microsoft Networks
- Microsoft Family Logon
- Dial-Up Adapter
- D-Link DFE-530TX PCI Fast Ethernet Adapter
- TCP/IP -> D-Link DFE-530TX PCI Fast Ethernet Adapter

Add... | Remove | Properties

Primary Network Logon:

Client for Microsoft Networks

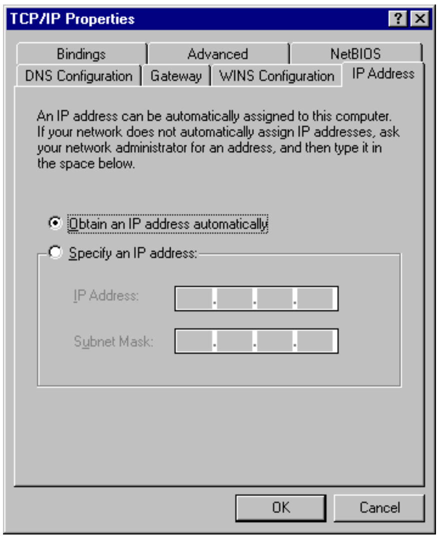
File and Print Sharing...

Description

TCP/IP is the protocol you use to connect to the Internet and wide-area networks.

OK | Cancel

7. On **IP Address** tab, select **Obtain an IP address automatically**. Then click **[OK]**.



TCP/IP Properties

Bindings | Advanced | NetBIOS

DNS Configuration | Gateway | WINS Configuration | IP Address

An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.

● Obtain an IP address automatically

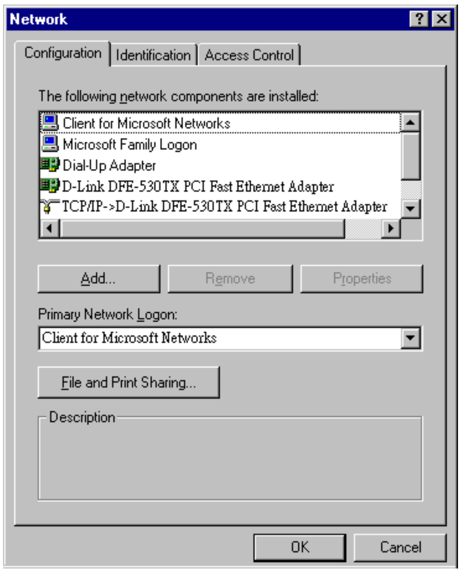
○ Specify an IP address:

IP Address: . . .

Subnet Mask: . . .

OK | Cancel

8. When returning to Network window, click **[OK]**.



Network

Configuration | Identification | Access Control

The following network components are installed:

- Client for Microsoft Networks
- Microsoft Family Logon
- Dial-Up Adapter
- D-Link DFE-530TX PCI Fast Ethernet Adapter
- TCP/IP->D-Link DFE-530TX PCI Fast Ethernet Adapter

Add... | Remove | Properties

Primary Network Logon:

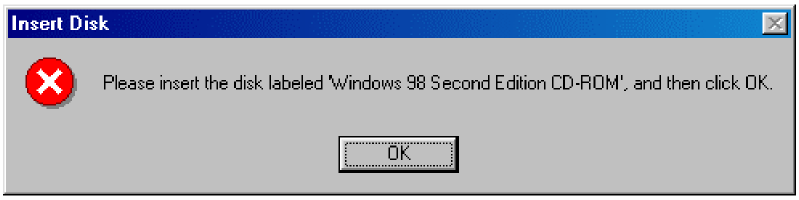
Client for Microsoft Networks

File and Print Sharing...

Description

OK | Cancel

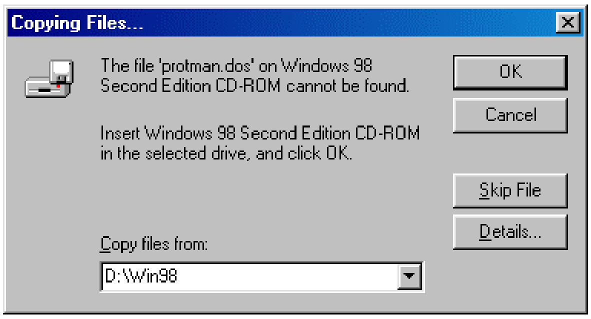
9. Windows may ask you for the original Windows installation disk or additional files. Insert the Windows 95 installation CD-ROM and click **[OK]**.



Insert Disk

Please insert the disk labeled 'Windows 98 Second Edition CD-ROM', and then click OK.

10. Supply the requested files by pointing to the correct location, e.g. D:\Win95, where “D” represents the letter of your CD-ROM drive.



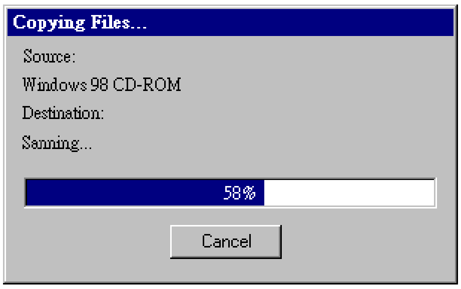
Copying Files...

The file 'protman.dos' on Windows 98 Second Edition CD-ROM cannot be found.

Insert Windows 98 Second Edition CD-ROM in the selected drive, and click OK.

Copy files from: D:\Win98

11. Wait for Windows copying files.

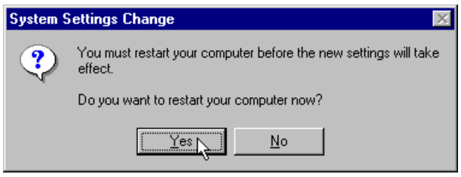


Copying Files...

Source:
Windows 98 CD-ROM
Destination:
Sanning...

58%

12. When prompted with **System Settings Change** dialog box, click **[Yes]** to restart your computer.



System Settings Change

You must restart your computer before the new settings will take effect.

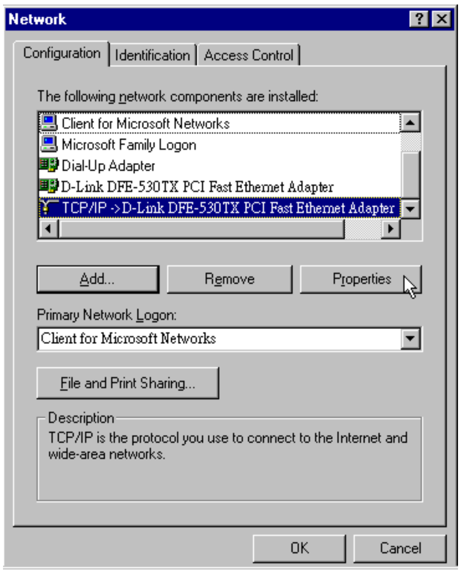
Do you want to restart your computer now?

For Windows ME

1. Click on the **Start** menu, point to **Settings** and click on **Control Panel**.
2. Double-click the **Network** icon.
3. The Network window appears. On the **Configuration** tab, check out the list of installed network components.

   Option 1: If you have **no** TCP/IP protocol, click **[Add]**.

   Option 2: If you have TCP/IP protocol, go to Step 6.
4. Highlight **Protocol** and click **[Add]**.
5. On the left side of the windows, highlight **Microsoft** and then select **TCP/IP** on the right side. Then click **[OK]**.
6. While returning to Network window, highlight **TCP/IP** protocol for your NIC and click **[Properties]**.



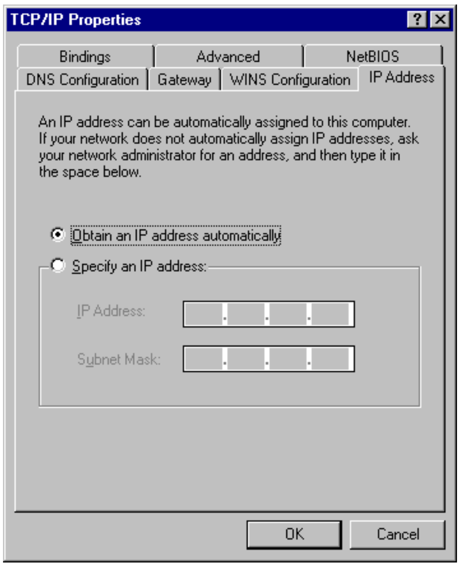
The following network components are installed:

- Client for Microsoft Networks
- Microsoft Family Logon
- Dial-Up Adapter
- D-Link DFE-530TX PCI Fast Ethernet Adapter
- TCP/IP -> D-Link DFE-530TX PCI Fast Ethernet Adapter

Primary Network Logon:
Client for Microsoft Networks

Description
TCP/IP is the protocol you use to connect to the Internet and wide-area networks.

7. On the **IP Address** tab, select **Obtain an IP address automatically**. Then click **[OK]**.



An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.

● Obtain an IP address automatically

○ Specify an IP address:

IP Address: . . .

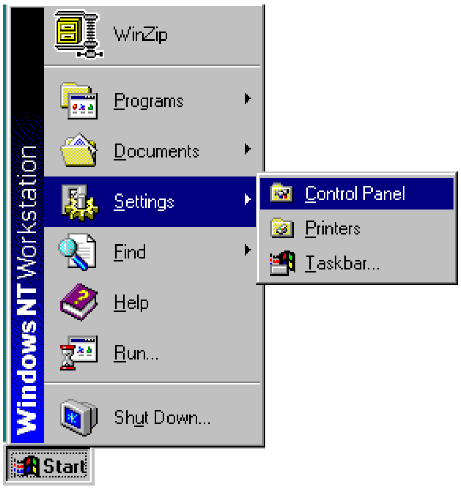
Subnet Mask: . . .

8. While returning to the Network window, click **[OK]**.
9. Wait for Windows copying files.
10. When prompted with the **System Settings Change** dialog box, click **[Yes]** to restart your computer.

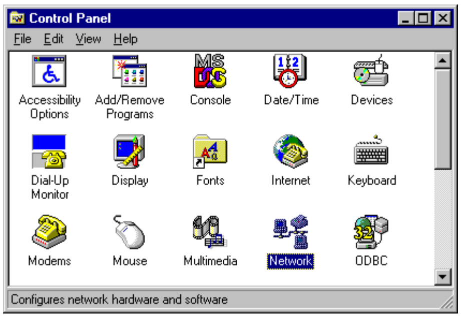
For Windows NT

Note: Windows NT users need the **Windows NT installation CD-ROM** to complete the installation!

1. Click **Start**, point to **Settings** and then click **Control Panel**.



2. Double-click the **Network** icon.

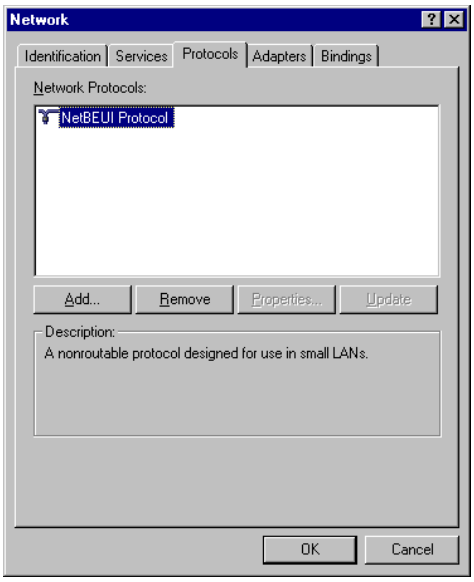


Configures network hardware and software

3. The Network window appears. On the **Protocols** tab, check out the list of installed network components.

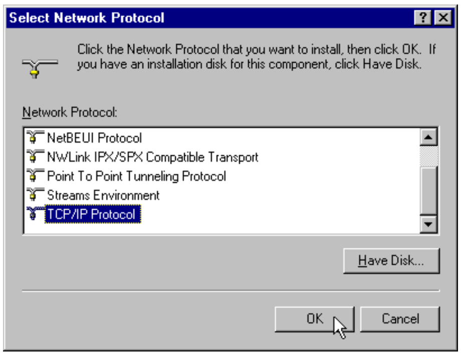
Option 1: If you have **no** TCP/IP Protocol, click **[Add]**.

Option 2: If you have TCP/IP Protocol installed, go to Step 10.



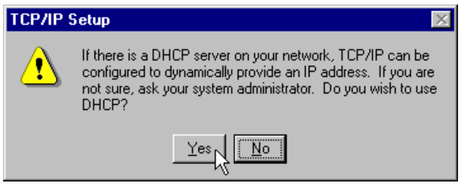
A nonroutable protocol designed for use in small LANs.

4. Highlight **TCP/IP Protocol** and click **[OK]**.



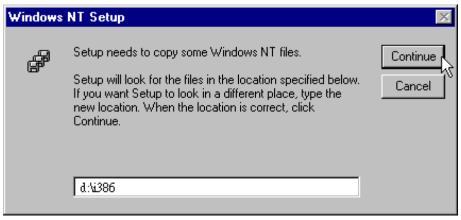
Click the Network Protocol that you want to install, then click OK. If you have an installation disk for this component, click Have Disk.

5. Click **[Yes]** to use DHCP.



If there is a DHCP server on your network, TCP/IP can be configured to dynamically provide an IP address. If you are not sure, ask your system administrator. Do you wish to use DHCP?

6. Insert the Windows NT CD into your CD-ROM drive and type the location of the CD. Then click **[Continue]**.

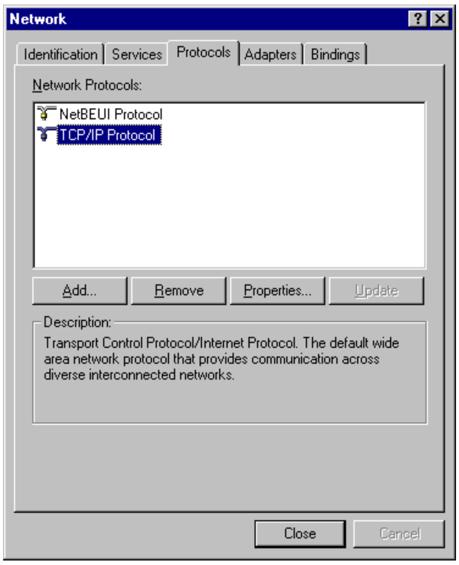


Setup needs to copy some Windows NT files.

Setup will look for the files in the location specified below. If you want Setup to look in a different place, type the new location. When the location is correct, click Continue.

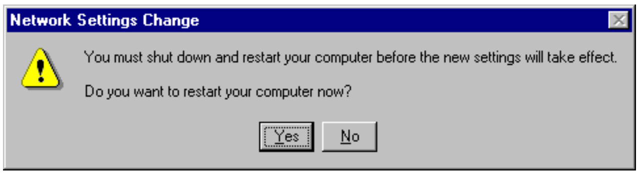
d:\i386

7. Returning to the Network window, you will find the TCP/IP Protocol among the list. Click on **[Close]**.



Description:
Transport Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

8. When prompted with **Network Settings Change** dialog box, click **[Yes]** to restart your computer.

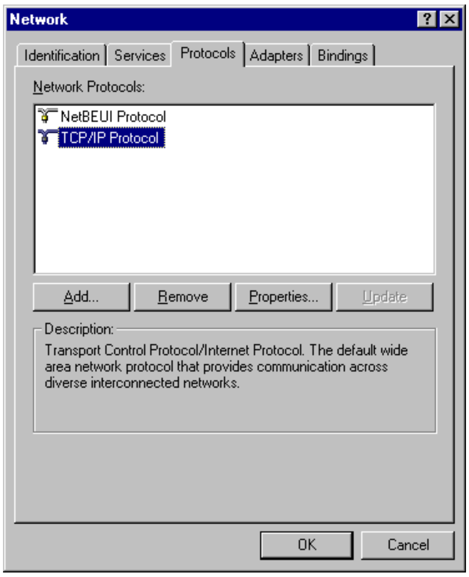


You must shut down and restart your computer before the new settings will take effect.

Do you want to restart your computer now?

9. Right click on the **Network Neighborhood** icon on the desktop and select **Properties**.

10. In the **Protocol** tab select **TCP/IP Protocol** and click on **[Properties]**.

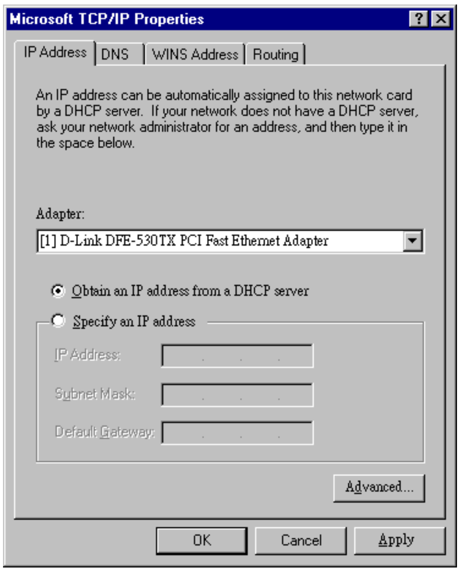


Network Protocols:

- NetBEUI Protocol
- TCP/IP Protocol

Description:
Transport Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

11. Select **Obtain an IP address from a DHCP server**. Then click **[OK]**.



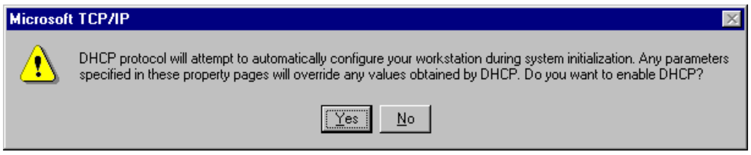
An IP address can be automatically assigned to this network card by a DHCP server. If your network does not have a DHCP server, ask your network administrator for an address, and then type it in the space below.

Adapter:
[1] D-Link DFE-530TX PCI Fast Ethernet Adapter

● Obtain an IP address from a DHCP server

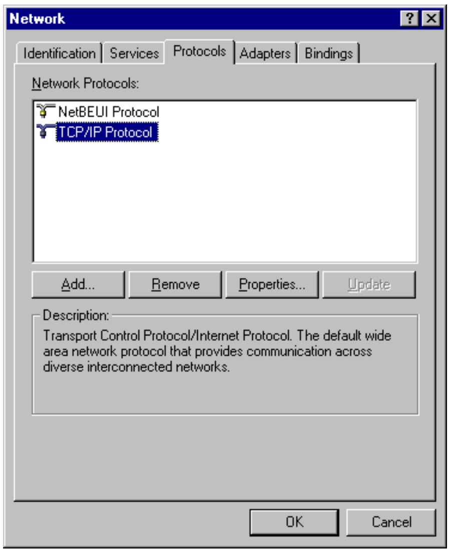
○ Specify an IP address

12. When prompted with **Microsoft TCP/IP** dialog window, click **[Yes]**.



DHCP protocol will attempt to automatically configure your workstation during system initialization. Any parameters specified in these property pages will override any values obtained by DHCP. Do you want to enable DHCP?

13. When returning to **Network** window, click **[OK]**.



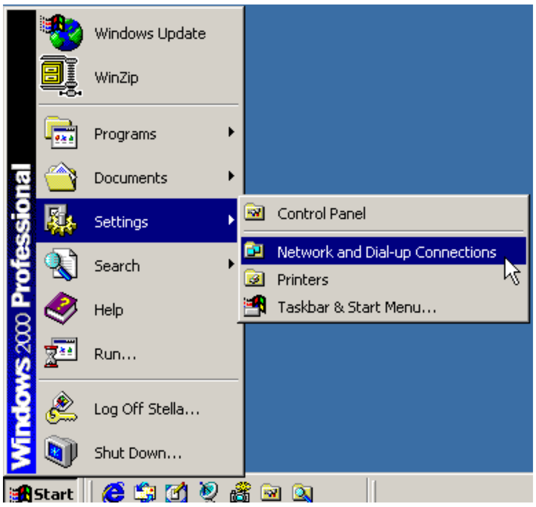
Network Protocols:

NetBEUI Protocol
TCP/IP Protocol

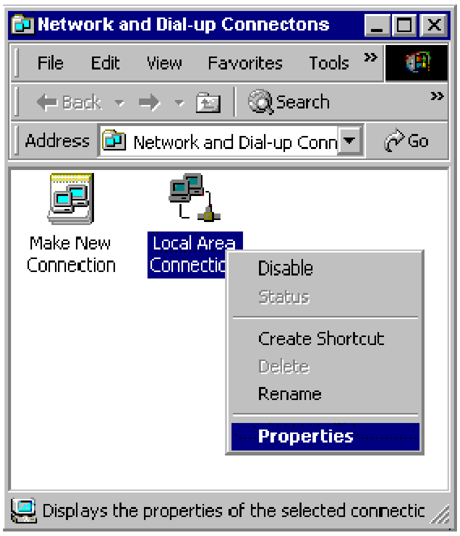
Description:
Transport Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

For Windows 2000

1. From the Start menu, point to **Settings** and then click **Network and Dial-up Connections**.

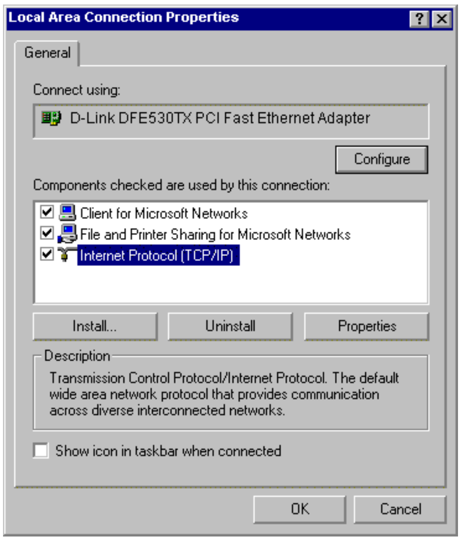


2. Right-click the **Local Area Connection** icon and then click **Properties**.



Displays the properties of the selected connectic

3. On the **General** tab, check out the list of installed network components.
Option 1: If you have **no** TCP/IP Protocol, click **[Install]**.
Option 2: If you have TCP/IP Protocol, go to Step 6.



Connect using:

D-Link DFE530TX PCI Fast Ethernet Adapter

Components checked are used by this connection:

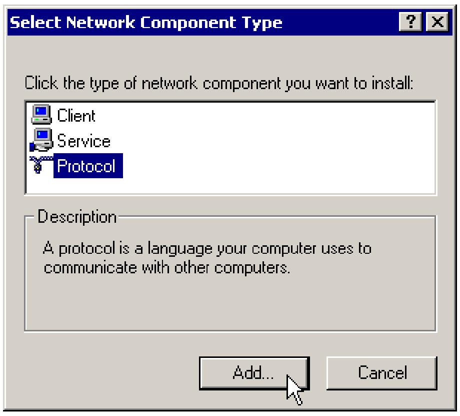
☑ Client for Microsoft Networks
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

□ Show icon in taskbar when connected

4. Highlight **Protocol** and then click **[Add]**.



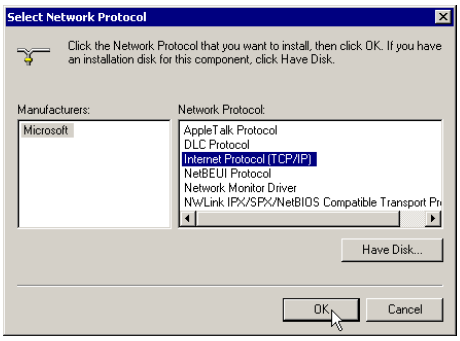
Click the type of network component you want to install:

- Client
- Service
- Protocol

Description

A protocol is a language your computer uses to communicate with other computers.

5. Click Internet **Protocol(TCP/IP)** and then click **[OK]**.



Click the Network Protocol that you want to install, then click OK. If you have an installation disk for this component, click Have Disk.

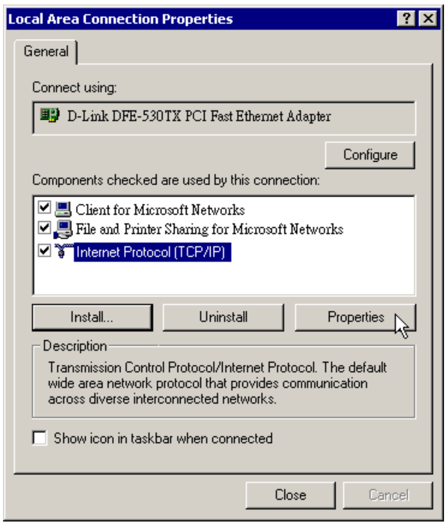
Manufacturers:

- Microsoft

Network Protocol:

- AppleTalk Protocol
- DLC Protocol
- Internet Protocol (TCP/IP)
- NetBEUI Protocol
- Network Monitor Driver
- NWLink IPX/SPX/NetBIOS Compatible Transport Pr

6. When returning to Local Area Connection Properties window, highlight **Internet Protocol (TCP/IP)** and then click **[Properties]**.



Connect using:

D-Link DFE-530TX PCI Fast Ethernet Adapter

Components checked are used by this connection:

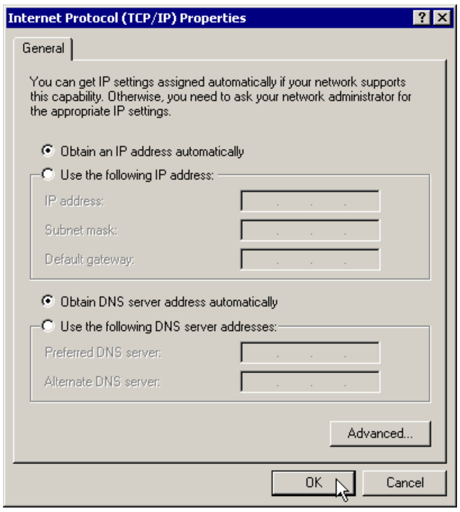
- ☑ Client for Microsoft Networks
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

☐ Show icon in taskbar when connected

7. Under the General tab, select **Obtain an IP address automatically**. Then click **[OK]**.



Internet Protocol (TCP/IP) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically

○ Use the following IP address:

IP address:

Subnet mask:

Default gateway:

● Obtain DNS server address automatically

○ Use the following DNS server addresses:

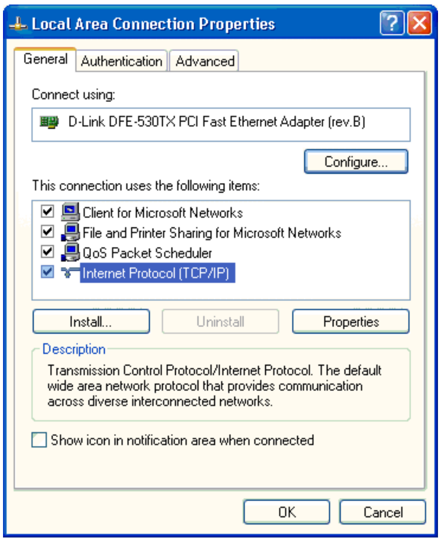
Preferred DNS server:

Alternate DNS server:

8. When prompted to restart your computer, reboot it to enable the settings.

For Windows XP

1. From the **Start** menu, point to **Control Panel** and then click **Network and Internet Connections**.
2. Click **Network Connection** and then click **Properties**.
3. On the General tab, check out the list of installed network components.
   Option 1: If you have **no** TCP/IP Protocol, click **[Install]**.
   Option 2: If you have TCP/IP Protocol, go to Step 6.
4. Highlight **Protocol** and then click **[Add]**.
5. Click **Internet Protocol(TCP/IP)** and then click **[OK]**.
6. On the Local Area Connection Properties window, highlight **Internet Protocol (TCP/IP)** and then click **[Properties]**.



Local Area Connection Properties

Connect using:

D-Link DFE-530TX PCI Fast Ethernet Adapter (rev.B)

This connection uses the following items:

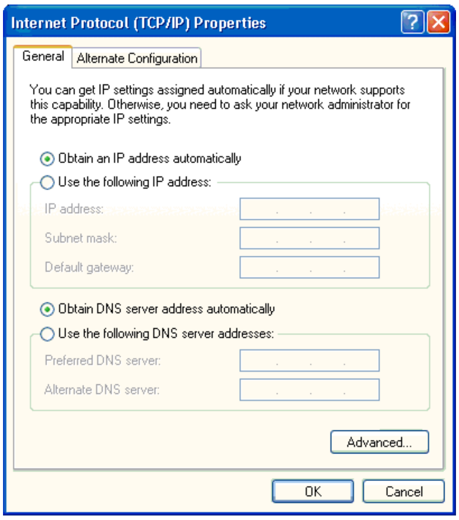
☑ Client for Microsoft Networks
☑ File and Printer Sharing for Microsoft Networks
☑ QoS Packet Scheduler
☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

☐ Show icon in notification area when connected

7. Under the General tab, enable **Obtain an IP address automatically**. Then click **[OK]**.



Internet Protocol (TCP/IP) Properties

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:

IP address: . . .
Subnet mask: . . .
Default gateway: . . .

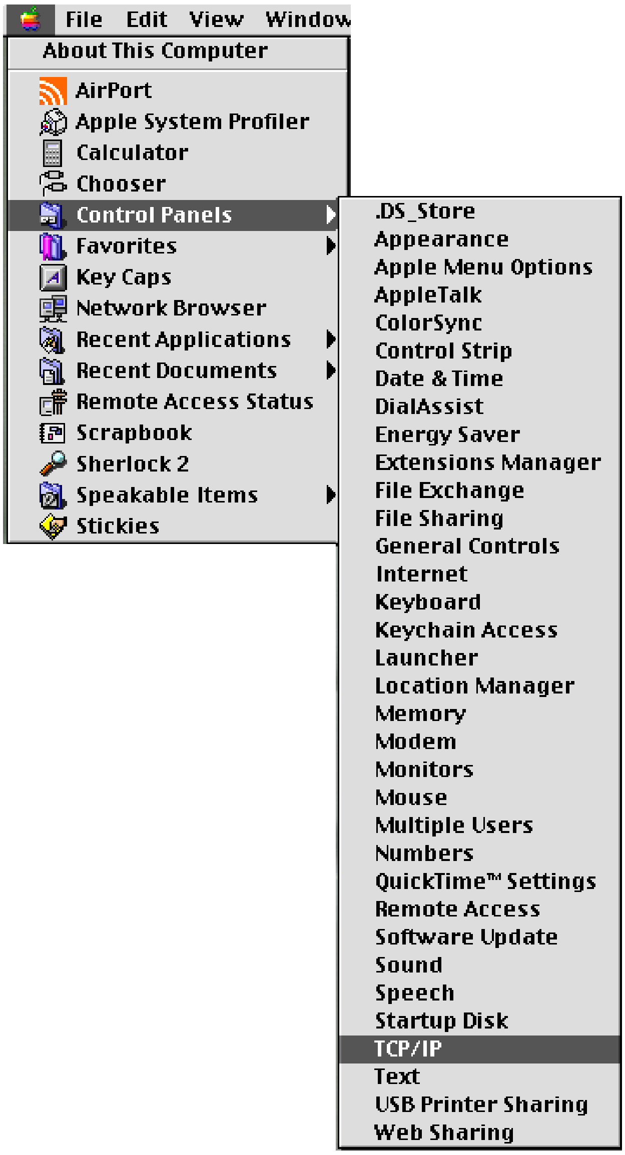
● Obtain DNS server address automatically
○ Use the following DNS server addresses:

Preferred DNS server: . . .
Alternate DNS server: . . .

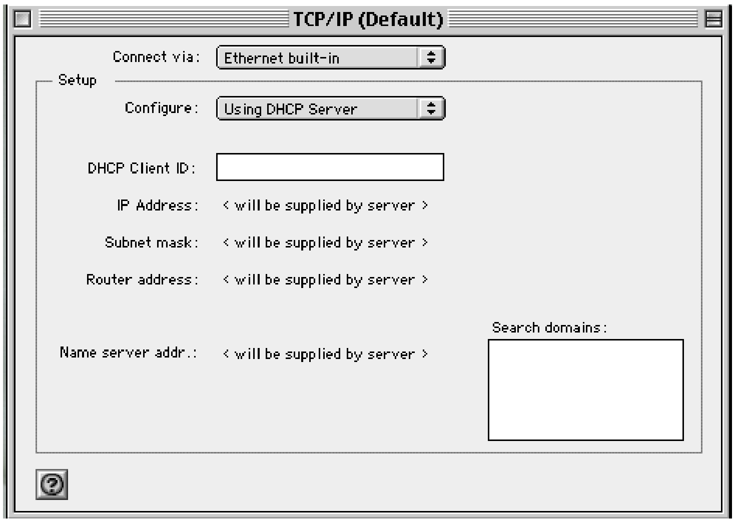
8. When prompted to restart your computer, reboot it to enable the settings.

For Macintosh OS 8.6 and 9.x

1. From the **Apple Menu**, point to **Control Panels** and then click **TCP/IP**.



2. From the **Connect via** pull-down menu select **Ethernet built-in**. From the **Configure** pull-down menu select **Using DHCP Server**. Close the **TCP/IP window** and click on **[Save]**.


TCP/IP (Default)

Connect via: Ethernet built-in

Setup

Configure: Using DHCP Server

DHCP Client ID:

IP Address: < will be supplied by server >

Subnet mask: < will be supplied by server >

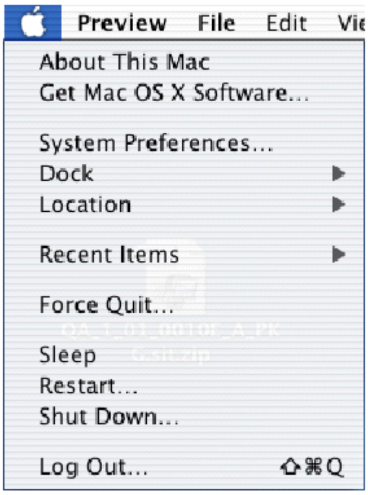
Router address: < will be supplied by server >

Search domains:

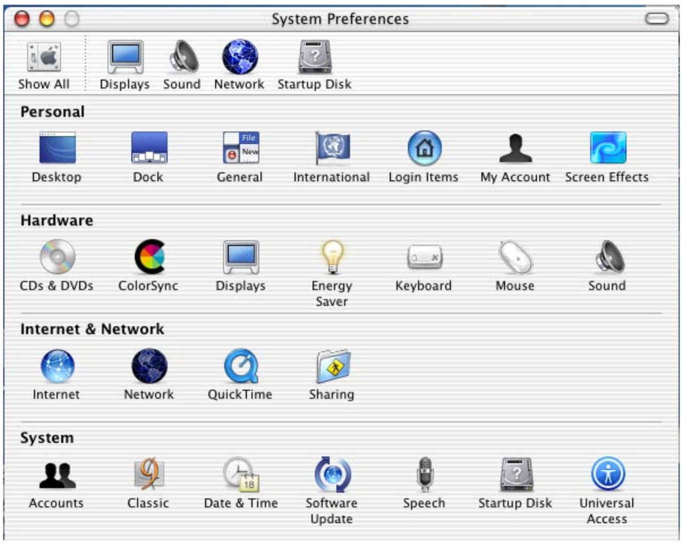
Name server addr.: < will be supplied by server >

For Macintosh OS 10.x

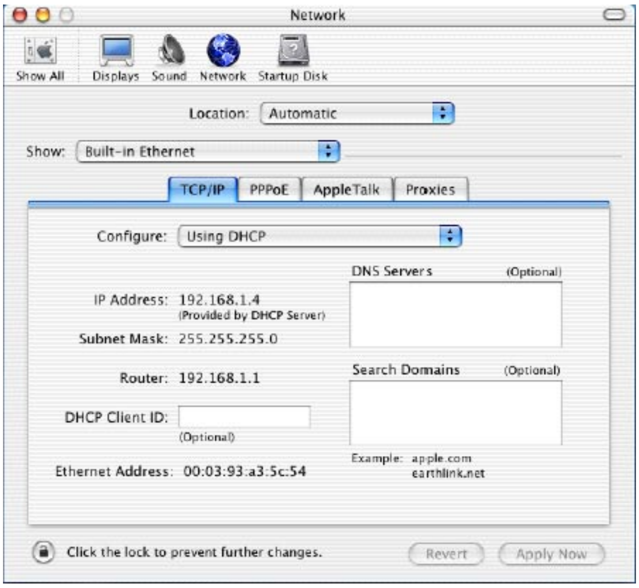
1. From the **Apple Menu**, select **System Preferences...**



2. Click on **Network**.



3. From the **Show** pull-down menu select **Built-in-Ethernet**. On the TCP/IP tab, select **Using DHCP** from the **Configure** pull-down menu.



Location: Automatic

Show: Built-in Ethernet

Configure: Using DHCP

IP Address: 192.168.1.4
(Provided by DHCP Server)

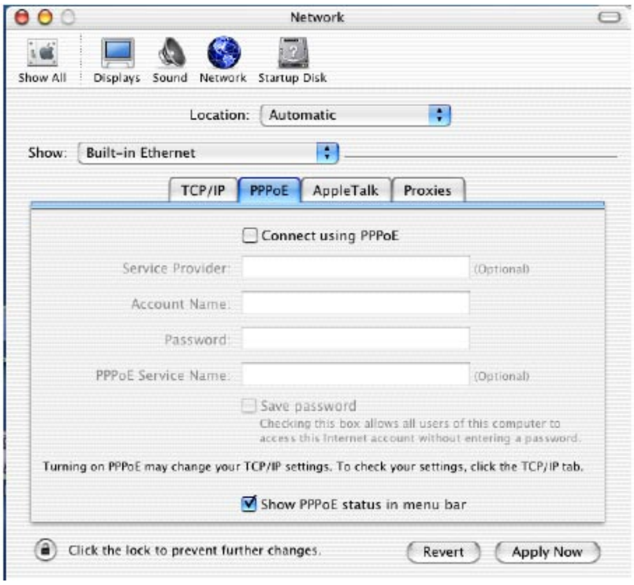
Subnet Mask: 255.255.255.0

Router: 192.168.1.1

DHCP Client ID:
(Optional)

Ethernet Address: 00:03:93:a3:5c:54

4. On the PPPoE tab, and make sure that the **Connect using PPPoE** check box is **NOT** activated.
   Click **Apply Now**.



Location: Automatic

Show: Built-in Ethernet

□ Connect using PPPoE

Service Provider: (Optional)

Account Name:

Password:

PPPoE Service Name: (Optional)

□ Save password
Checking this box allows all users of this computer to access this Internet account without entering a password.

Turning on PPPoE may change your TCP/IP settings. To check your settings, click the TCP/IP tab.

☑ Show PPPoE status in menu bar

Click the lock to prevent further changes.

5. Close the **Network window**.

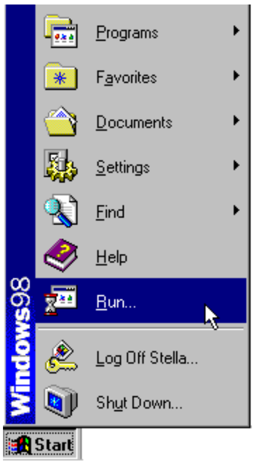
Renew IP Address on Client PC

There is a chance that your PC does not renew its IP address after the ADSL Router is on line and the PC cannot access the Internet. Please follow the procedures below to renew PC's IP address.

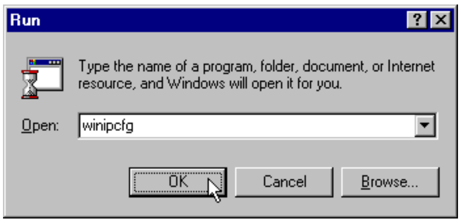
Note: This feature is only available for the following operating systems: Windows 98/98 SE/ME/2000/XP!

For Windows 98 and Windows 98 SE

1. Select **Run** from the **Start** menu.



2. Type **`winipcfg`** in the dialog box and the click **[OK]**.

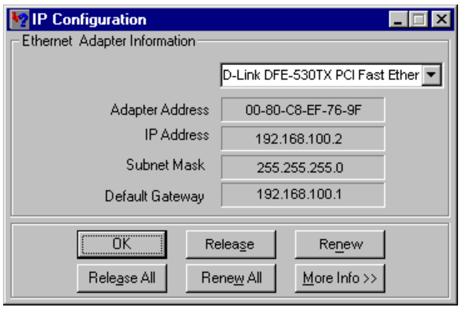


Run

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: winipcfg

3. When the figure below appears, click **[Release]** and then **[Renew]** to get an IP address.



IP Configuration

Ethernet Adapter Information

D-Link DFE-530TX PCI Fast Ether

Adapter Address 00-80-C8-EF-76-9F

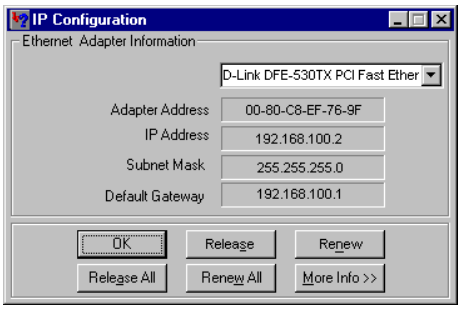
IP Address 192.168.100.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.100.1

For Windows ME

1. Select **Run** from the **Start** menu.
2. Type **`winipcfg`** in the dialog box and the click **[OK]**.
3. When the figure below appears, click **[Release]** and then **[Renew]** to get an IP address.



IP Configuration

Ethernet Adapter Information

D-Link DFE-530TX PCI Fast Ether

Adapter Address: 00-80-C8-EF-76-9F

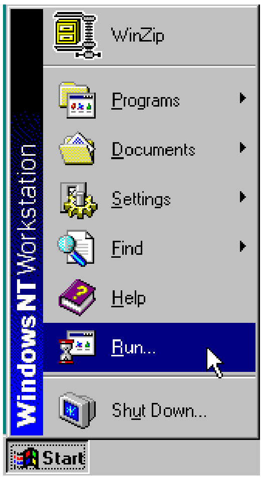
IP Address: 192.168.100.2

Subnet Mask: 255.255.255.0

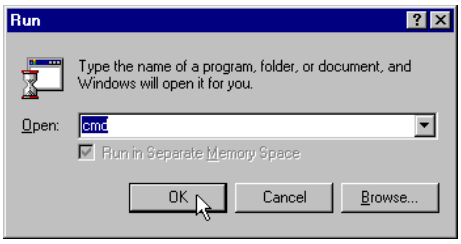
Default Gateway: 192.168.100.1

For Windows NT

1. Select **Run** from the **Start** menu.



2. Type **`cmd`** in the dialog box and the click **[OK]**.



Run

Type the name of a program, folder, or document, and Windows will open it for you.

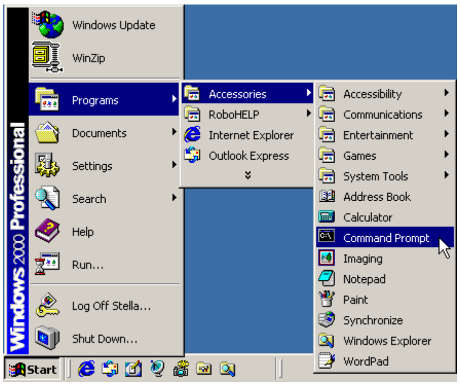
Open: cmd

☑ Run in Separate Memory Space

3. Type **`ipconfig`** at prompt. Then you will see the IP information from DHCP server.
4. If you want to get a new IP address, type **`ipconfig /release`** to release the previous IP address and then type **`ipconfig  /renew`** to get a new one.

For Windows 2000

1. From the **Start** menu, point to **Programs** > **Accessories** and then click **Command Prompt**.



2. Type **`ipconfig`** at prompt. Then you will see the IP information from DHCP server.

3. If you want to get a new IP address, type **`ipconfig /release`** to release the previous IP address and then type **`ipconfig  /renew`** to get a new one.

For Windows XP

1. From the **Start** menu, point to **Programs** > **Accessories** and then click **Command Prompt**.

2. Type **`ipconfig`** at prompt. Then you will see the IP information from DHCP server.

3. If you want to get a new IP address, type **`ipconfig/ release`** to release the previous IP address and then type **`ipconfig/  renew`** to get a new one.

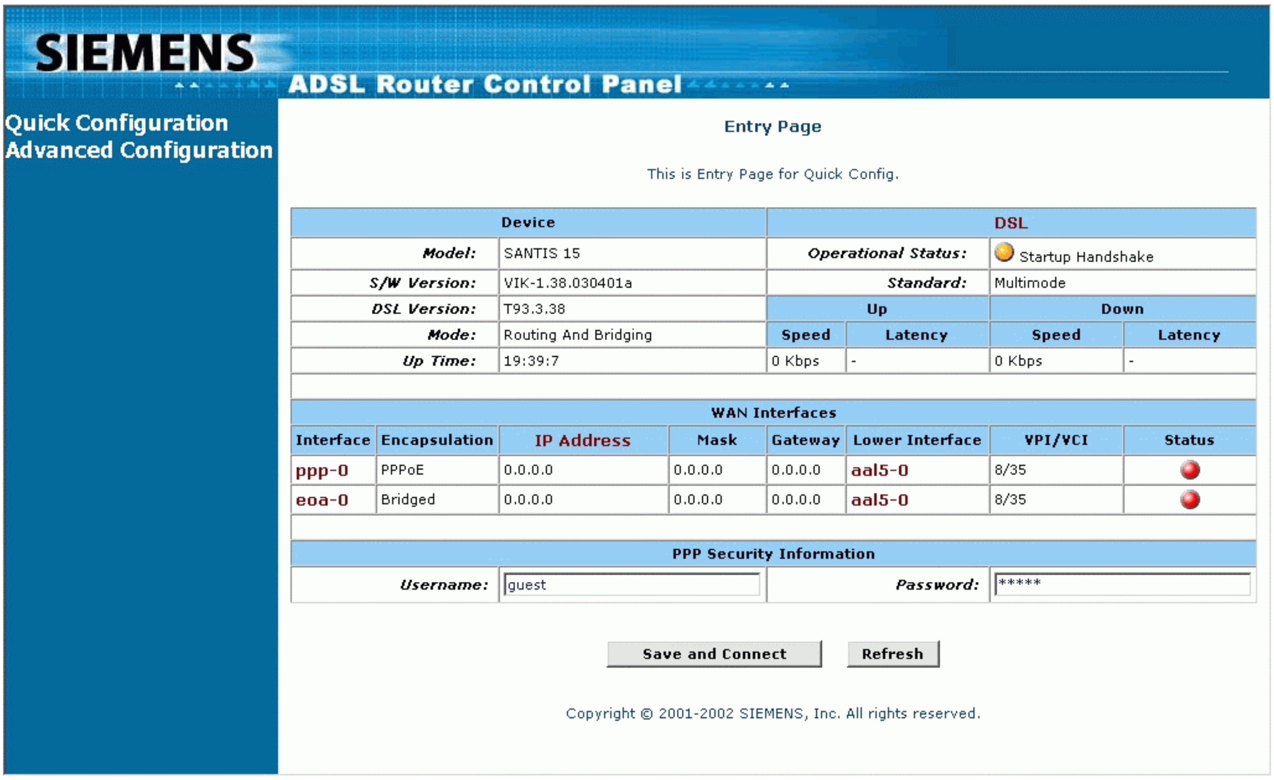
Step 2: Quick Configuration via Web browser

Your ADSL Router includes a Web-based Configuration Manager, which enables you to configure the device settings to meet the needs of your network.

Once your host PC is properly configured, please proceed as follows:

Start your Web browser and type **192.168.1.**1 in the address field of your browser. Press **<Enter>**.

After connecting to the device, the **Entry Page** will be displayed.



Entry Page

This is Entry Page for Quick Config.

Device		DSL			
Model:	SANTIS 15	*Operational Status:*	● Startup Handshake		
S/W Version:	VIK-1.38.030401a	*Standard:*	Multimode		
DSL Version:	T93.3.38	Up		Down	
Mode:	Routing And Bridging	Speed	Latency	Speed	Latency
Up Time:	19:39:7	0 Kbps	-	0 Kbps	-

WAN Interfaces

Interface	Encapsulation	IP Address	Mask	Gateway	Lower Interface	VPI/VCI	Status
ppp-0	PPPoE	0.0.0.0	0.0.0.0	0.0.0.0	aal5-0	8/35	●
eoa-0	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-0	8/35	●

PPP Security Information

Username:	guest	*Password:*	*****

Save and Connect   Refresh

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Internet Access

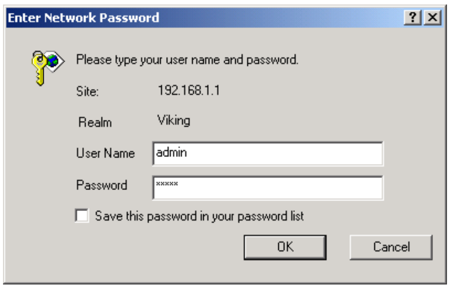
1. For **Username** enter the username (replace Guest) and for **Password** the password (replace *****) of your Internet Service Provider.
2. Click **[Connect and Save]**.
3. Username and password will automatically be saved and the status of the Internet connection will be prompted.

Advanced Configuration via Web browser

Note: Please follow carefully the instructions in the whole chapter in order to be sure that your PC and your ADSL Router are working properly.

For advanced configuration click to **Advanced Configuration**.

You will be prompted to enter username and password. By default, the username is **admin** and the password is **admin**.



Please type your user name and password.

Site: 192.168.1.1

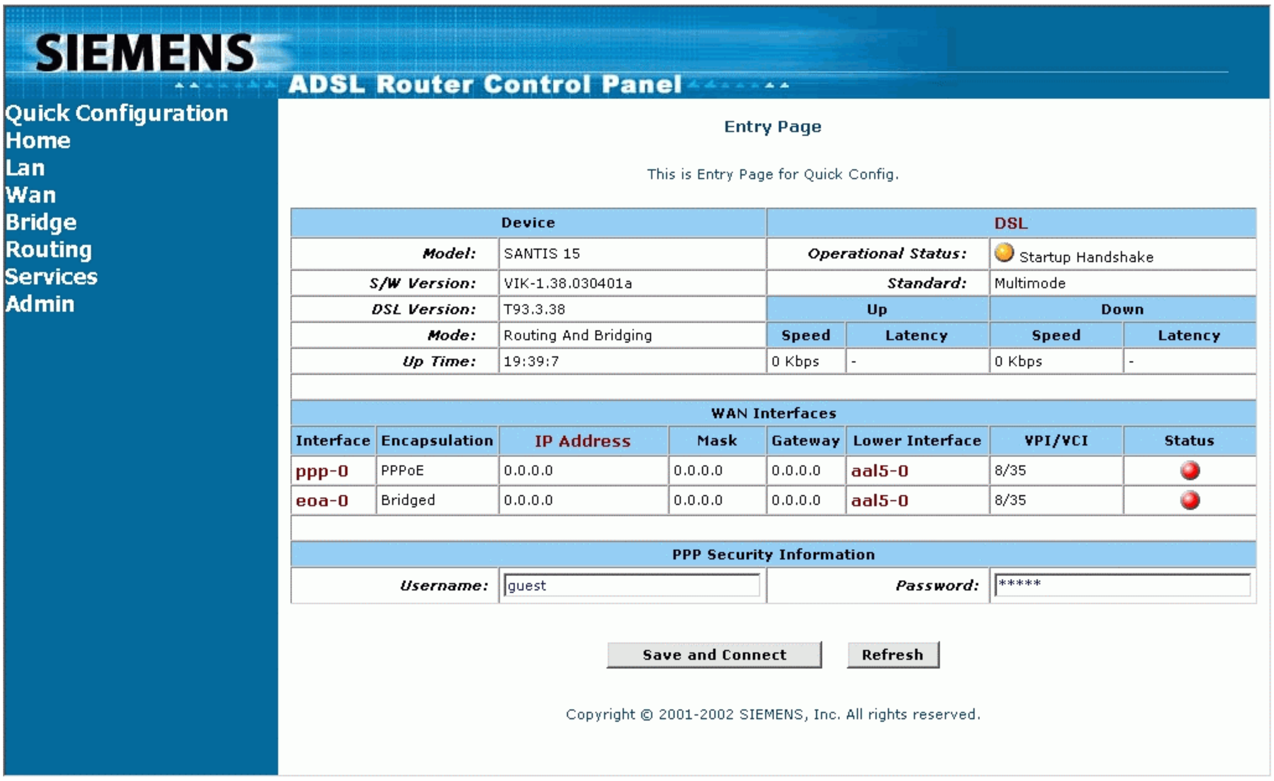
Realm Viking

User Name admin

Password *****

☐ Save this password in your password list

If you login successfully, the main page of the **ADSL ROUTER CONTROL PANEL** appears. From now on the ADSL Router acts as a Web server sending HTML pages/forms on your request. You can fill in these pages/forms and apply them to the ADSL Router.



Entry Page

This is Entry Page for Quick Config.

Device		DSL			
Model:	SANTIS 15	*Operational Status:*	● Startup Handshake		
S/W Version:	VIK-1.38.030401a	*Standard:*	Multimode		
DSL Version:	T93.3.38	Up		Down	
Mode:	Routing And Bridging	Speed	Latency	Speed	Latency
Up Time:	19:39:7	0 Kbps	-	0 Kbps	-

WAN Interfaces

Interface	Encapsulation	IP Address	Mask	Gateway	Lower Interface	VPI/VCI	Status
ppp-0	PPPoE	0.0.0.0	0.0.0.0	0.0.0.0	aal5-0	8/35	●
eoa-0	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-0	8/35	●

PPP Security Information

Username:	guest	*Password:*	*****

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Main Menu

Configuration Manager tasks are grouped info categories which can be accessed by clicking the main menu on the left. Each menu displays the available tasks in sub-menus. The specific configuration options are displayed by clicking on these menus. The same sub-menu may appear in more than one menu, when appropriate.

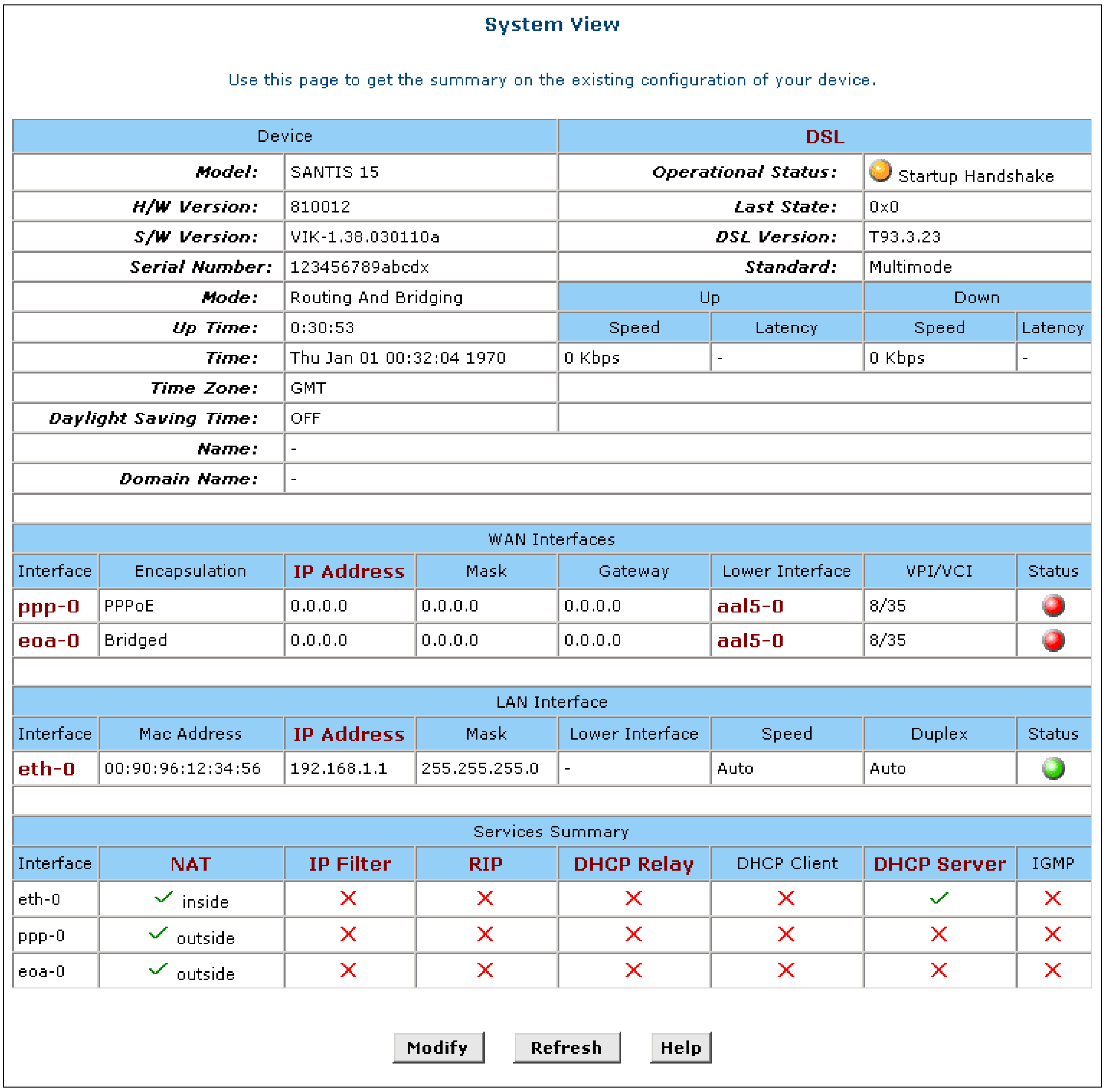
Menu	Description
Home	Allows you to display the basic system information and to access the Quick Configuration
Lan	Displays software names and various settings for the device interfaces that communicate directly with your network. Includes the sub-menus of LAN Config, DHCP Mode, DHCP Server and DHCP Relay
Wan	Displays software names and various settings for the device interfaces that communicate with your ISP via DSL. Although there is only one physical DSL port, multiple software-defined interfaces may be configured to use it. Includes the sub-menus of DSL, ATM VC, PPP, EOA and IPOA
Bridge	Displays software names and various settings for the device to operate as a bridge. Bridges are devices that enable two or more networks to communicate as if they are two segments of the same physical LAN. Includes the sub-menus of Bridging, LAN Config, DSL, ATM VC and RFC 1483 Interface(EoA)
Routing	Displays software names and various settings for the device to operate as a router. Routers use a higher-level protocol to determine how to pass data. Includes the sub-menus of IP Route, IP Addr, LAN Config, DSL, ATM VC, PPP, EOA and IPOA
Services	Displays services that ADSL Router performs to help you manage your network. Includes the sub-menus of NAT, RIP, FireWall, IP Filter, DNS and Blocked Protocols
Admin	Displays administration tasks that ADSL Router performs to help you manage your device. Includes the sub-menus of User Config, Commit & Reboot, Local Image Upgrade, Alarm, Diagnostics and Port Settings

Commonly Used Buttons and Icons

Button	Function
Apply	Stores in temporary system memory any changes you have made on the current page.
Refresh	Redisplays the current page with updated statistics.
Clear	When accumulated statistics are displaying, this button resets the statistics to their initial values.
Help	Launches the online help for the current topic in a separate browser window. Help is available from any main topic page.
🗑	Delete an entry.
✏	Modify an entry.
🔍	View details for an entry.

Viewing Basic System Information

The **System View** page displays when you first access the program.



System View

Use this page to get the summary on the existing configuration of your device.

Device		DSL			
Model:	SANTIS 15	***Operational Status:***	● Startup Handshake		
H/W Version:	810012	***Last State:***	0x0		
S/W Version:	VIK-1.38.030110a	***DSL Version:***	T93.3.23		
Serial Number:	123456789abcdx	***Standard:***	Multimode		
Mode:	Routing And Bridging	Up		Down	
Up Time:	0:30:53	Speed	Latency	Speed	Latency
Time:	Thu Jan 01 00:32:04 1970	0 Kbps	-	0 Kbps	-
Time Zone:	GMT				
Daylight Saving Time:	OFF				
Name:	-				
Domain Name:	-				

WAN Interfaces

Interface	Encapsulation	IP Address	Mask	Gateway	Lower Interface	VPI/VCI	Status
ppp-0	PPPoE	0.0.0.0	0.0.0.0	0.0.0.0	aal5-0	8/35	●
eoa-0	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-0	8/35	●

LAN Interface

Interface	Mac Address	IP Address	Mask	Lower Interface	Speed	Duplex	Status
eth-0	00:90:96:12:34:56	192.168.1.1	255.255.255.0	-	Auto	Auto	●

Services Summary

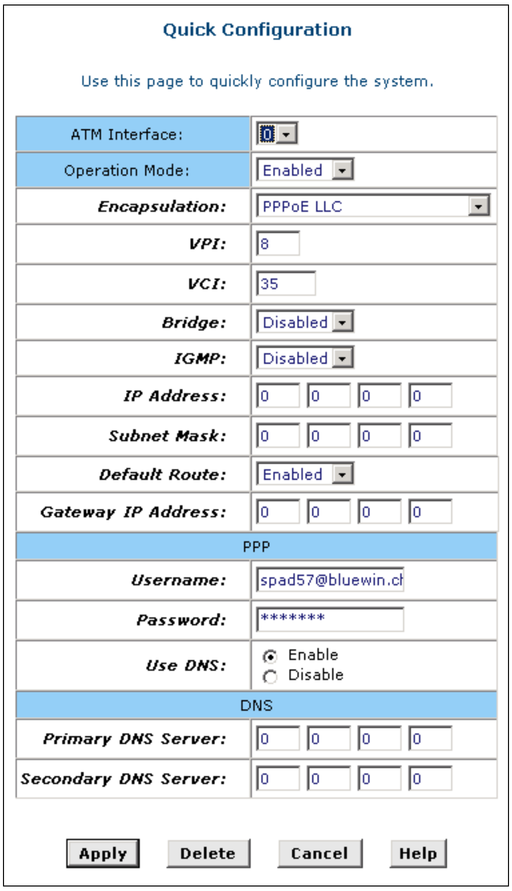
Interface	NAT	IP Filter	RIP	DHCP Relay	DHCP Client	DHCP Server	IGMP
eth-0	✓ inside	✗	✗	✗	✗	✓	✗
ppp-0	✓ outside	✗	✗	✗	✗	✗	✗
eoa-0	✓ outside	✗	✗	✗	✗	✗	✗

The **System View** table provides a snapshot of your system configuration. You can click on the table headings that are highlighted in orange lettering to display a more details on those settings or the configuration page for that feature. Refer to the appropriate chapters in this document for more information.

Quick Configuration

The Quick Configuration displays the settings you are most likely to need to change when you first set up your ADSL Router. Work with your ISP to determine the values or settings you need to change.

Select **Home** > **Quick Configuration**. The Quick Configuration page displays.



Quick Configuration

Use this page to quickly configure the system.

ATM Interface:	0
Operation Mode:	Enabled
Encapsulation:	PPPoE LLC
VPI:	8
VCI:	35
Bridge:	Disabled
IGMP:	Disabled
IP Address:	0 0 0 0
Subnet Mask:	0 0 0 0
Default Route:	Enabled
Gateway IP Address:	0 0 0 0
PPP	
Username:	spad57@bluewin.ch
Password:	*******
Use DNS:	● Enable ○ Disable
DNS	
Primary DNS Server:	0 0 0 0
Secondary DNS Server:	0 0 0 0

The Quick Configuration page contains the following fields:

Field	Description
ATM Interface	Select the ATM interface you want to use (usually atm-0)
Operation Mode	Enables or disables the device's Internet and routing function. When set to **Disabled**, the device cannot be used to provide Internet connectivity for your network.
Encapsulation	Determines the type of data link used to communicate with your ISP.
VPI / VCI	Enter the VPI/VCI values given by your ISP, e.g. **0** / **35**
Bridge	Enables or disables bridging between the device and your ISP.
IGMP	Enables or disables the Internet Group Management Protocol, which some ISPs use to perform remote configuration of your device.
IP Address	Enter the IP address given by your ISP, e.g. **10.100.17.89**.
Subnet Mask	Enter the associated subnet mask given by your ISP, e.g. **255.255.255.248**.
Default Route	When enabled, it specifies that the IP address entered above will be used as the default route for your LAN.
Gateway IP Address	Specifies the IP address that identifies the ISP server through which your Internet connection will be routed. Enter the IP Address given by your ISP, e.g. **10.100.17.94**.
Username / Password	Enter the username and password you use to log in to your ISP. Note: This is not the same as the username and password you used to log in to Configuration Manager.

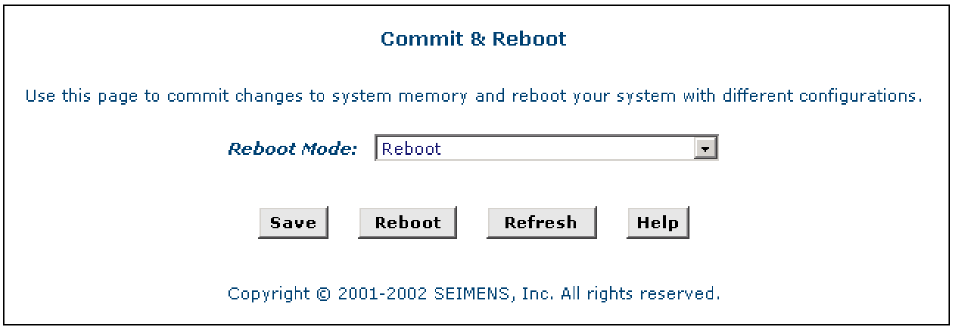
Field	Description
Use DNS	**Enable**
Primary DNS Server / Secondary DNS Server	Enter the Primary and Secondary DNS server addresses provided by your ISP

Committing Changes to Permanent Storage

Whenever you change system settings, the changes are initially placed in temporary storage (called random access memory or RAM). Your changes are made effective when you submit them, but will be lost if the device is reset or turned off.

Follow these steps to commit changes to permanent storage.

1. Select **Admin** > **Commit & Reboot**. The **Commit & Reboot** page displays.



Commit & Reboot

Use this page to commit changes to system memory and reboot your system with different configurations.

Reboot Mode: Reboot

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2. Click **[Save]**. (Disregard the selection in the Reboot Mode drop-down list; it does not affect the commit process.)
   The changes are saved to permanent storage.

When committing your changes, note that:

- If you change the LAN IP address information, you **must** commit the changes and then reboot the system to activate them.
- All other changes are activated when you commit them (no reboot is needed).

Rebooting the device using Configuration Manager

If, after rebooting the device, you find that it does not operate properly with the new configuration, you can reboot using options that reactivate a previous configuration or the manufacturer's default configuration.

You can select from the following options when rebooting:

Setting	Description
Reboot From Default Configuration	Reboots the device to default settings provided by your ISP or the manufacturer. Choosing this option erases any custom settings.
Reboot From Backup Configuration	Reboots the device using settings stored in backup memory. These are the settings that were in effect before you committed new settings in the current session.
Reboot From Last Configuration	Reboots the device using the current settings in permanent memory, including any changes you just committed.

Sub-Menus

For advanced mode, the following sub-menus are available:

Lan

LAN Config	Sets LAN configuration, which determines you the device is defined in the network.
DHCP Mode	Sets and configures the Dynamic Host Configuration Protocol mode for the device. With DHCP, IP addresses for your LAN are administrated and distributed as needed by this device or an ISP device.
DHCP Server	Lists the IP address pools available to computer on your LAN. The device distributes numbers in the pool to devices on your network as they request Internet access (refer to "Configuring DHCP Server").
DHCP Relay	Lists each interface on the device that relays data from your ISP. As a DHCP relay agent, when a computer request Internet access, the device requests an IP address from your ISP, and then relays the addresses back to the computer (refer to "Configuring DHCP Relay").

Wan

DSL	Displays configuration parameters and performance statistics for the ADSL Router's DSL line (refer to "View DSL Parameters").
ATM VC	Configures and displays an ATM virtual circuit (VC). The VC properties define the path that the ADSL Router uses to communicate with your ISP over the ATM network.
PPP	Configures and displays Point to Point Protocol (PPP) interfaces. The PPP protocol is commonly used between ISPs and their customers to identify and control various communication properties (refer to "PPP Connection Mode").
EOA	Configures and displays RFC1483/Ethernet over ATM (EoA) interfaces. The EoA protocol is commonly used to carry data between LANs that use the Ethernet protocol and WANs that use the ATM protocol.
IPOA	Configures and displays IP over ATM (IPoA) interfaces. An IPoA interface can be used to exchange IP packets over ATM network, without using an underlying EoA connection (refer to "Router Connection Mode").

Bridge

Bridging	Configures and displays Bridging information (refer also to "Bridge Mode").
LAN Config	Sets LAN configuration, which determines you the device is defined in the network.
DSL	Displays configuration parameters and performance statistics for the ADSL Router's DSL line (refer to "View DSL Parameters").
ATM VC	Configures and displays an ATM virtual circuit (VC). The VC properties define the path that the ADSL Router uses to communicate with your ISP over the ATM network.
RFC 1483 Interface (EoA)	Configures and displays RFC1483/Ethernet over ATM (EoA) interfaces. The EoA protocol is commonly used to carry data between LANs that use the Ethernet protocol and WANs that use the ATM protocol.

Routing

IP Route	Lists IP addresses of Internet destinations commonly accessed by your network. When a computer requests to send data to a listed destination, the device uses the Next Hop to identify the first Internet router it should contact to route the data most efficiently (refer to "Configuring IP Routes").
IP Addr	Displays all IP addresses associated with ports on your device, including the LAN (Ethernet) port and the WAN (DSL).
LAN Config	Sets LAN configuration, which determines you the device is defined in the network.
DSL	Displays configuration parameters and performance statistics for the ADSL Router's DSL line (refer to "View DSL Parameters").
ATM VC	Configures and displays an ATM virtual circuit (VC). The VC properties define the path that the ADSL Router uses to communicate with your ISP over the ATM network.

PPP
Configures and displays Point to Point Protocol (PPP) interfaces. The PPP protocol is commonly used between ISPs and their customers to identify and control various communication properties.

EOA
Configures and displays RFC1483/Ethernet over ATM (EoA) interfaces. The EoA protocol is commonly used to carry data between LANs that use the Ethernet protocol and WANs that use the ATM protocol.

IPOA
Configures and displays IP over ATM (IPoA) interfaces. An IPoA interface can be used to exchange IP packets over ATM network, without using an underlying EoA connection.

Services

NAT
Configures Network Address Translation (NAT), a security protocol in which the device translates the IP addresses of your LAN computers to new addresses before sending data out on the Internet (refer to “NAT Configuration”).

RIP
Lists any interfaces on your device that use Routing Information Protocol (RIP) and the version of the protocol used. Routers on your LAN communicate with one another using the RIP (refer to “RIP Configuration”).

FireWall
Configures the firewall function, enabling you to protect the system against denial of services (DoS) attacks and other types of malicious accesses to your LAN (refer to “Firewall Configuration”).

IP Filter
Configures IP filters enabling you to create rules that control the forwarding of incoming and outgoing data between your LAN and the Internet and within your LAN (refer to “IP Filter Configuration”).

DNS
Configures Domain Name Service (DNS) server IP Addresses. DNS servers map the user-friendly domain names that users type into their Web browsers to the equivalent numerical IP addresses that are used for Internet routing.

Blocked Protocols
Blocks/unblocks the protocols running access the system. This enables you to prevent the ADSL Router from passing any data that uses a particular protocol (refer to “To Block Specific Protocols”).

Admin

User Config
Displays user information and changes your password (refer to “User Configuration”).

Commit & Reboot
Commits changes to system memory and reboots your system with different configurations (refer to “Committing Changes to Permanent Storage”).

Local Image Upgrade
Uploads a new image to the system. Your ISP may provide you with an upgrade to the software running on your ADSL Router. All system software is contained in a single file, called an image (refer to “Image Upgrade”).

Alarm
Displays information about alarms that occur in the system. Alarms, also called traps, are caused by a variety of system events, including connection attempts, resets and configuration changes (refer to “View System Alarms”).

Diagnostics
Executes a series of test of your system software and hardware connections (refer to “Diagnostics”).

Port Settings
Modifies various port settings access the system (refer to “Port Settings”).

Chapter 4: Advanced Configuration

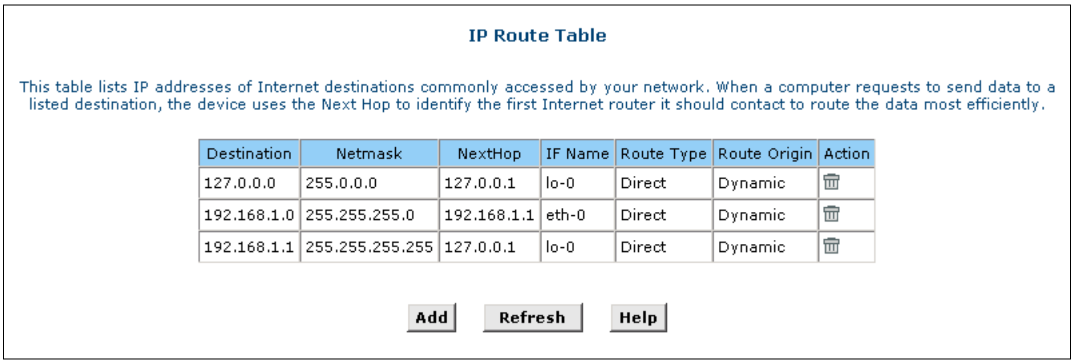
Configuring IP Routes

Most users do not need to define IP routes. You may need to define routes if:

- Your network setup includes two or more networks or subnets.
- You connect to two or more ISP services.
- You connect to a remote corporate LAN.

To display the routing table and add an IP route (if necessary), proceed as follows:

1. To view the routing table, select **Routing** > **IP Route**. The IP Route Table page displays.



IP Route Table

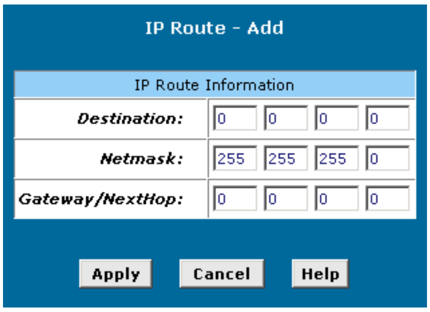
This table lists IP addresses of Internet destinations commonly accessed by your network. When a computer requests to send data to a listed destination, the device uses the Next Hop to identify the first Internet router it should contact to route the data most efficiently.

Destination	Netmask	NextHop	IF Name	Route Type	Route Origin	Action
127.0.0.0	255.0.0.0	127.0.0.1	lo-0	Direct	Dynamic	🗑
192.168.1.0	255.255.255.0	192.168.1.1	eth-0	Direct	Dynamic	🗑
192.168.1.1	255.255.255.255	127.0.0.1	lo-0	Direct	Dynamic	🗑

The IP Route Table includes routes that were predefined on the device, routes you may have added, and routes that the device has identified automatically through communication with other devices.

The routing table should reflect a default gateway, which directs outbound Internet traffic to your ISP. This default gateway is shown in the row containing destination address 0.0.0.0.

2. If you need to add an IP route, click **[Add]**. The IP Route - Add page displays.



IP Route - Add

IP Route Information				
Destination:	0	0	0	0
Netmask:	255	255	255	0
Gateway/NextHop:	0	0	0	0

3. Specify the destination, network mask and gateway or next hop for this route.
To create a route that defines the default gateway for your LAN, enter **0.0.0.0** in both the **Destination** and **Netmask** fields. Enter your ISP's IP address in the **Gateway/NextHop** field.

   You cannot specify the interface name, route type or route origin. These parameters are used only for routes that are identified automatically as the device communicates with other routing devices. For routes you create, the routing table displays system default values in these fields.

4. Click **[Apply]**. A confirmation page displays to indicate that the route has been added successfully.
5. Click **[Close]** to return to the IP Route Table page. It will now display the new route.
6. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

DHCP Configuration

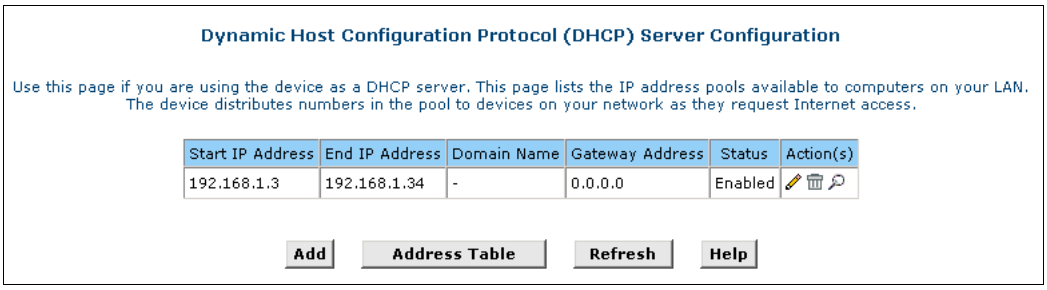
You can configure your network and ADSL Router to use the Dynamic Host Configuration Protocol (DHCP). The device can be configured as a DHCP server, DHCP relay agent, or, in some cases, a DHCP client.

- **DHCP server** - It will maintain the pool of addresses and distribute them to your LAN computers. If the pool of addresses includes private IP addresses, you must also configure the Network Address Translation service, so that the private addresses can be translated to your public IP address on the Internet. Both DHCP server and NAT are enabled in the default configuration.
- **DHCP relay agent** - If your ISP performs the DCHP server function for your network, then you can configure the device as a DHCP relay agent. When the ADSL Router receives a request for Internet access from a computer on your network, it contacts your ISP for the necessary IP information, and then relays the assigned information back to the computer.
- **DCHP client** - If you have another PC or device on your network that is already performing the DHCP server function, then you can configure the LAN port on the ADSL Router to be a DHCP client of that server.

Configuring DHCP Server

Part 1. Creating IP address pools

1. Select **Lan** > **DHCP Server**. The DHCP Server Configuration page displays.



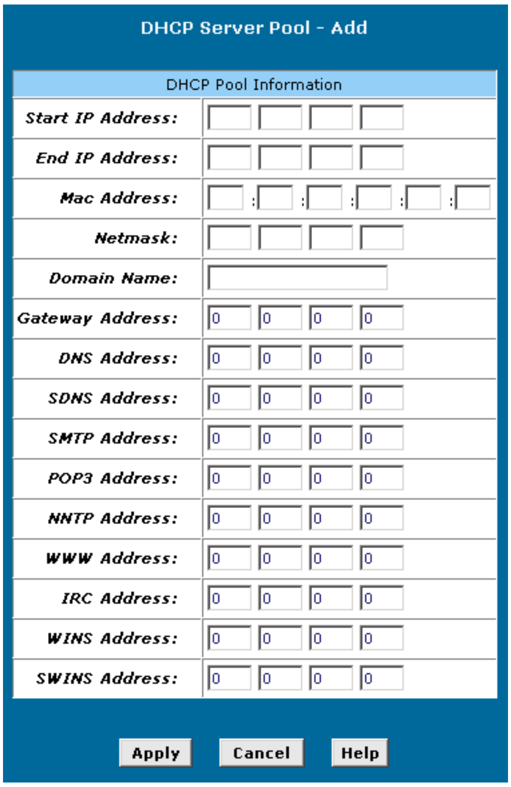
Dynamic Host Configuration Protocol (DHCP) Server Configuration

Use this page if you are using the device as a DHCP server. This page lists the IP address pools available to computers on your LAN. The device distributes numbers in the pool to devices on your network as they request Internet access.

Start IP Address	End IP Address	Domain Name	Gateway Address	Status	Action(s)
192.168.1.3	192.168.1.34	-	0.0.0.0	Enabled	

Each pool you create displays in a row on the table on this page. You can create up to eight pools. In this example, one pool has been created for the LAN interface. Additional pools may be needed when the device is configured with multiple LAN interfaces.

2. To add an IP address pool, click **[Add]**. The **DHCP Server Pool - Add** page displays.



DHCP Server Pool - Add

DHCP Pool Information

Start IP Address:	
End IP Address:	
Mac Address:	
Netmask:	
Domain Name:	
Gateway Address:	0 0 0 0
DNS Address:	0 0 0 0
SDNS Address:	0 0 0 0
SMTP Address:	0 0 0 0
POP3 Address:	0 0 0 0
NNTP Address:	0 0 0 0
WWW Address:	0 0 0 0
IRC Address:	0 0 0 0
WINS Address:	0 0 0 0
SWINS Address:	0 0 0 0

Field	Description
Start / End IP Addresses	Specify the lowest and highest addresses in the pool.
Mac Address (optional)	Allows you to assign a specific IP address to a specific computer, identified by this MAC address. If this is the case, you must have specified the same IP address in both the Start/End IP Address fields.
Netmask	Specifies the associated subnet mask of the IP address in this range.
Domain Name (optional)	The domain name to be used by DHCP clients.
Gateway Address	The address of the default gateway. Typically, it is the device's LAN port IP address.
DNS Address (optional)	The IP address of the DNS Server . Its typically located with your ISP.
SDSN...SWINS Address (optional)	The IP addresses of devices that perform various services for DHCP clients.

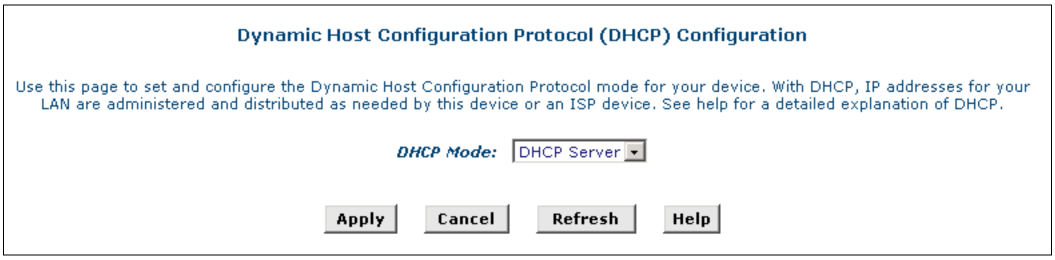
3. Click **[Apply]**. A confirmation page displays to indicate that the pool has been added successfully.

4. Click **[Close]** to return to the **DHCP Server Configuration** page.

Part 2. Enabling DHCP Server Mode

1. Select **Lan** > **DHCP Mode**.

2. From the **DHCP Mode** drop-down list, select **DHCP Server** and then click **[Apply]**.



Dynamic Host Configuration Protocol (DHCP) Configuration

Use this page to set and configure the Dynamic Host Configuration Protocol mode for your device. With DHCP, IP addresses for your LAN are administered and distributed as needed by this device or an ISP device. See help for a detailed explanation of DHCP.

DHCP Mode: DHCP Server

A page gives a receipt for the changes.

3. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

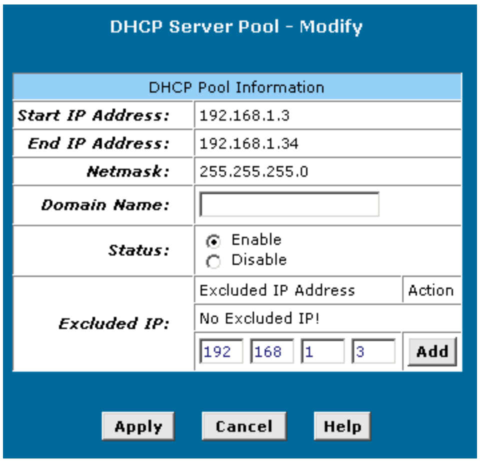
Part 3. Configuring your PCs as DHCP clients

For each computer that you want to configure to receive IP information automatically, configure the TCP/IP properties to **Obtain an IP address automatically** (the actual text may vary depending on your operating system).

Modifying Address Pools

1. Select **Lan** > **DHCP Server**.

2. On the DHCP Server Configuration page select ✎ for the entry to modify.
   The DHCP Server Pool - Modify page displays:



DHCP Server Pool - Modify

DHCP Pool Information	
Start IP Address:	192.168.1.3
End IP Address:	192.168.1.34
Netmask:	255.255.255.0
Domain Name:	
Status:	● Enable ○ Disable
Excluded IP:	Excluded IP Address / Action No Excluded IP! 192 . 168 . 1 . 3 [Add]

   When modifying an address pool, you are **only** allowed to:

   - Change the domain name associated with the pool.
   - Exclude IP addresses within its range from distribution. To excluded an IP address, enter it in the fields provided and click **[Add]**.

   If you want to change other attributes, you must delete the pool and create a new one.

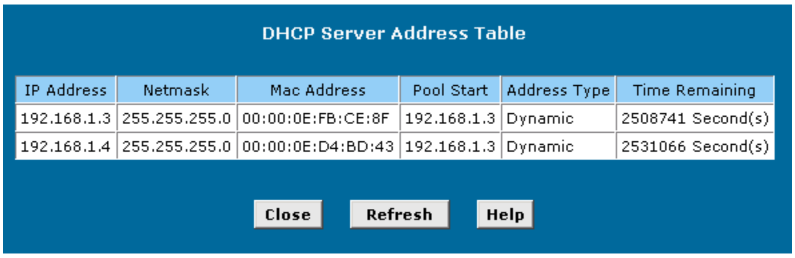
3. After entering your changes, click **[Apply]**. A confirmation page displays to indicate that the pool has been modified successfully.

4. Click **[Close]** to return to the DHCP Server Configuration page.

5. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

Viewing Current DHCP Address Assignments

To view a table of all current IP address assignments, select **Lan** > **DHCP Server** and click **[Address Table]**. The DHCP Server Address Table is as below.



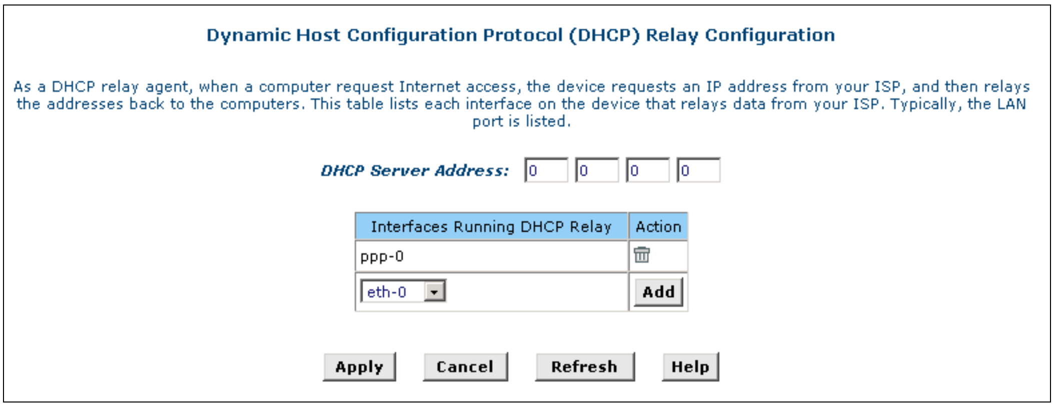
DHCP Server Address Table

IP Address	Netmask	Mac Address	Pool Start	Address Type	Time Remaining
192.168.1.3	255.255.255.0	00:00:0E:FB:CE:8F	192.168.1.3	Dynamic	2508741 Second(s)
192.168.1.4	255.255.255.0	00:00:0E:D4:BD:43	192.168.1.3	Dynamic	2531066 Second(s)

Configuring DHCP Relay

Part 1. Defining the DHCP relay interface(s)

1. Select **Lan** > **DHCP Relay**. The DHCP Relay Configuration page displays.



Dynamic Host Configuration Protocol (DHCP) Relay Configuration

As a DHCP relay agent, when a computer request Internet access, the device requests an IP address from your ISP, and then relays the addresses back to the computers. This table lists each interface on the device that relays data from your ISP. Typically, the LAN port is listed.

DHCP Server Address: 0 . 0 . 0 . 0

Interfaces Running DHCP Relay	Action
ppp-0	🗑
eth-0 ▾	Add

This page provides a text box for entering the IP address of your ISP's DHCP server and a table that lists the interfaces on your ADSL Router that can relay DHCP information.

2. Type the IP address of your ISP's DHCP server in the fields provided.

   If you do not have this number, it is not essential to enter it here. Requests for IP information from your LAN will be passed to the default gateway, which should route the request appropriately.

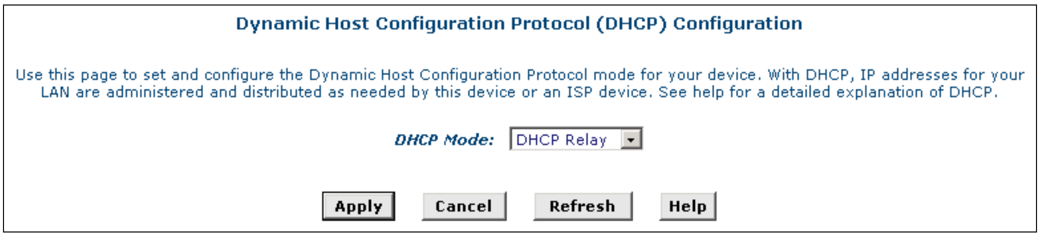
3. If the interface named eth-0 is not already displaying, select it from the drop-down list and click **[Add]**.

4. Click **[Apply]**. A page gives a receipt for your changes..

Part 2. Enabling DHCP relay mode

1. Select **Lan** > **DHCP Mode**.

2. From the **DHCP Mode** drop-down list, select **DHCP Relay** and then click **[Apply]**.



Dynamic Host Configuration Protocol (DHCP) Configuration

Use this page to set and configure the Dynamic Host Configuration Protocol mode for your device. With DHCP, IP addresses for your LAN are administered and distributed as needed by this device or an ISP device. See help for a detailed explanation of DHCP.

DHCP Mode: DHCP Relay ▾

A page gives a receipt for the changes.

3. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

Part 3. Configuring your PCs as DHCP clients

For each computer that you want to configure to receive IP information automatically, configure the TCP/IP properties to **Obtain an IP address automatically** (the actual text may vary depending on your operating system).

NAT Configuration

This section provides an overview of Network Address Translation (NAT) and instructions for modifying the default configuration on your device.

By default, NAT is enabled, with an network address port translation (napt) rule configured to perform the following translation:

These private IP addresses:	...are translated to:
192.168.1.2 192.168.1.3 . . 192.168.1.13	Your ISP-assigned public IP address

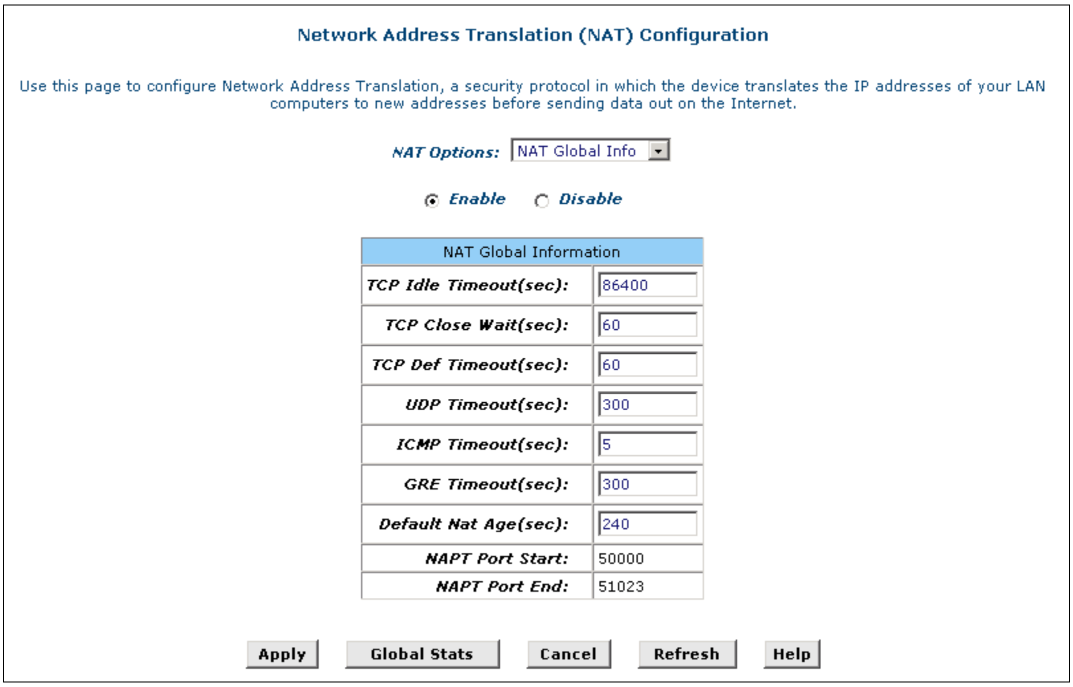
This default NAT setup assumes that, on each LAN computer, you configured TCP/IP properties as follows:

- You enables them to receive their IP addresses automatically (that is, to use a DHCP server) or
- You assigned static IP addresses to your PCs in the range 192.168.1.2 through 192.168.1.13.

If your computers are not configured in one of these ways, you can either change the IP addresses on your computers to match the NAT setup or delete this NAT rule and add a new one that matches the addresses you assigned to your computers.

Viewing Your NAT Configuration

1. To view your NAT settings, select **Services** > **NAT**. The NAT Configuration page displays.



Network Address Translation (NAT) Configuration

Use this page to configure Network Address Translation, a security protocol in which the device translates the IP addresses of your LAN computers to new addresses before sending data out on the Internet.

NAT Options: NAT Global Info

● Enable ○ Disable

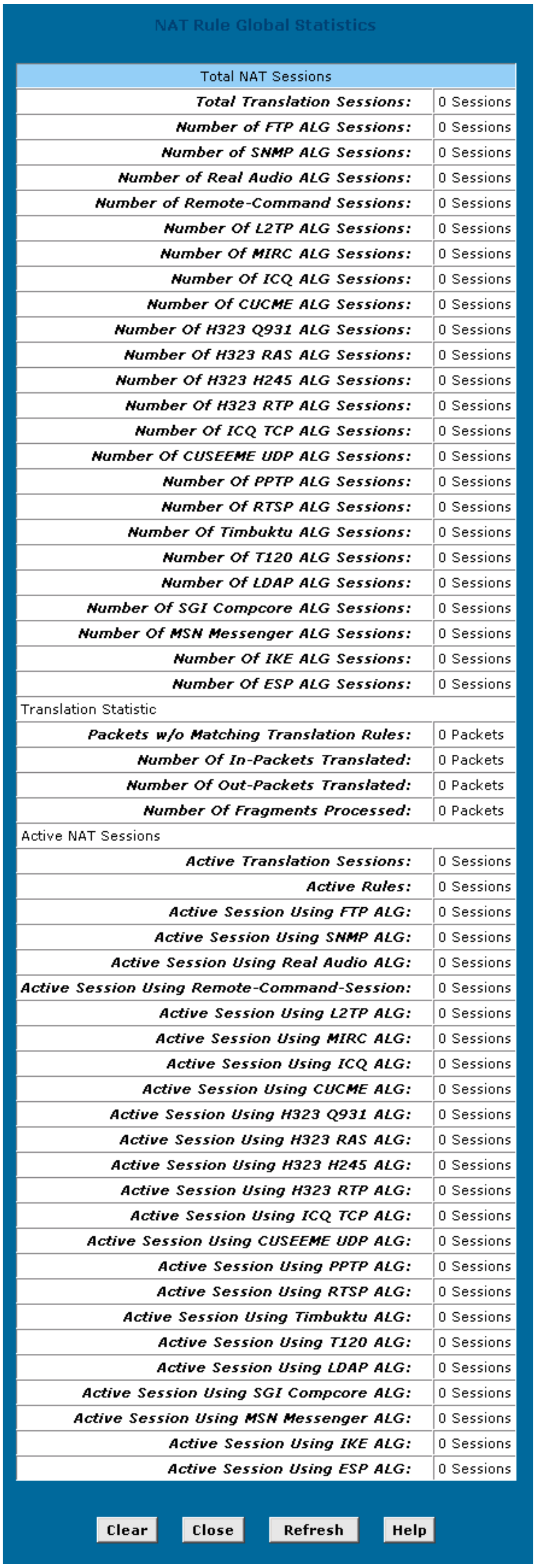
NAT Global Information	
TCP Idle Timeout(sec):	86400
TCP Close Wait(sec):	60
TCP Def Timeout(sec):	60
UDP Timeout(sec):	300
ICMP Timeout(sec):	5
GRE Timeout(sec):	300
Default Nat Age(sec):	240
NAPT Port Start:	50000
NAPT Port End:	51023

The **NAT Global Information** table contains the following fields:

Field	Description
TCP Idle Timeout(sec)	For a NAT translation session on data that uses the TCP protocol, the translation will no longer be performed if no matching data packets are received after the specified time has elapsed.
TCP Close Wait(sec)	For a NAT translation on data using the TCP protocol, after a communication session has been closed, the translation will no longer be performed if no matching data packets are received after the specified time has elapsed.
TCP Def Timeout(sec)	For a NAT translation session on data that uses the TCP protocol, the translation will no longer be performed if no matching data packets are received after the specified time has elapsed.
UDP Timeout(sec)	Same as TCP Idle Timeout, but for UDP packets.
ICMP Timeout(sec)	Same as TCP Idle Timeout, but for ICMP packets.
GRE Timeout(sec)	Same as TCP Idle Timeout, but for GRE packets.
Default Nat Age(sec)	For all other NAT translation sessions, the number of seconds after which a translation session will no longer be valid.
NAPT Port Start/End	When an napt rule is defined, the source ports will be translated to sequential numbers in this range.

2. If you change any values, click **[Apply]**. A page gives a receipt for the changes.
3. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

On the **NAT Configuration** page you can click **[Global Stats]** to view accumulated data on how many NAT rules have been invoked and how much data has been translated. A page similar to the one below displays.

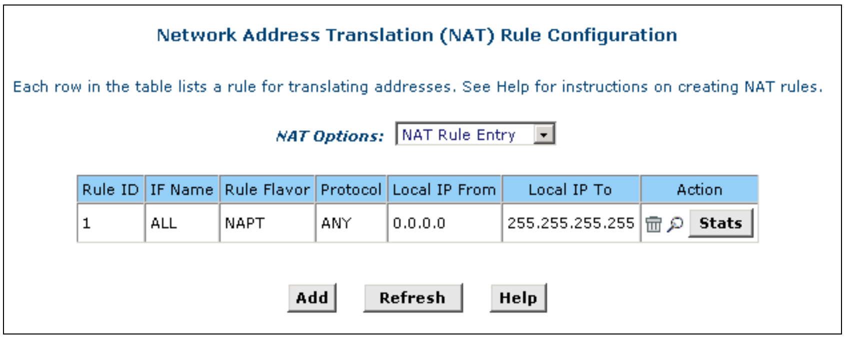


NAT Rule Global Statistics

Total NAT Sessions	
Total Translation Sessions:	0 Sessions
Number of FTP ALG Sessions:	0 Sessions
Number of SNMP ALG Sessions:	0 Sessions
Number of Real Audio ALG Sessions:	0 Sessions
Number of Remote-Command Sessions:	0 Sessions
Number Of L2TP ALG Sessions:	0 Sessions
Number Of MIRC ALG Sessions:	0 Sessions
Number Of ICQ ALG Sessions:	0 Sessions
Number Of CUCME ALG Sessions:	0 Sessions
Number Of H323 Q931 ALG Sessions:	0 Sessions
Number Of H323 RAS ALG Sessions:	0 Sessions
Number Of H323 H245 ALG Sessions:	0 Sessions
Number Of H323 RTP ALG Sessions:	0 Sessions
Number Of ICQ TCP ALG Sessions:	0 Sessions
Number Of CUSEEME UDP ALG Sessions:	0 Sessions
Number Of PPTP ALG Sessions:	0 Sessions
Number Of RTSP ALG Sessions:	0 Sessions
Number Of Timbuktu ALG Sessions:	0 Sessions
Number Of T120 ALG Sessions:	0 Sessions
Number Of LDAP ALG Sessions:	0 Sessions
Number Of SGI Compcore ALG Sessions:	0 Sessions
Number Of MSN Messenger ALG Sessions:	0 Sessions
Number Of IKE ALG Sessions:	0 Sessions
Number Of ESP ALG Sessions:	0 Sessions
Translation Statistic	
Packets w/o Matching Translation Rules:	0 Packets
Number Of In-Packets Translated:	0 Packets
Number Of Out-Packets Translated:	0 Packets
Number Of Fragments Processed:	0 Packets
Active NAT Sessions	
Active Translation Sessions:	0 Sessions
Active Rules:	0 Sessions
Active Session Using FTP ALG:	0 Sessions
Active Session Using SNMP ALG:	0 Sessions
Active Session Using Real Audio ALG:	0 Sessions
Active Session Using Remote-Command-Session:	0 Sessions
Active Session Using L2TP ALG:	0 Sessions
Active Session Using MIRC ALG:	0 Sessions
Active Session Using ICQ ALG:	0 Sessions
Active Session Using CUCME ALG:	0 Sessions
Active Session Using H323 Q931 ALG:	0 Sessions
Active Session Using H323 RAS ALG:	0 Sessions
Active Session Using H323 H245 ALG:	0 Sessions
Active Session Using H323 RTP ALG:	0 Sessions
Active Session Using ICQ TCP ALG:	0 Sessions
Active Session Using CUSEEME UDP ALG:	0 Sessions
Active Session Using PPTP ALG:	0 Sessions
Active Session Using RTSP ALG:	0 Sessions
Active Session Using Timbuktu ALG:	0 Sessions
Active Session Using T120 ALG:	0 Sessions
Active Session Using LDAP ALG:	0 Sessions
Active Session Using SGI Compcore ALG:	0 Sessions
Active Session Using MSN Messenger ALG:	0 Sessions
Active Session Using IKE ALG:	0 Sessions
Active Session Using ESP ALG:	0 Sessions

Viewing NAT Rules and Rule Statistics

To view the NAT Rules currently defined on your system, select **Services** > **NAT**. From the **NAT Options** drop-down list select **NAT Rule Entry**. The NAT Rule Configuration page displays.



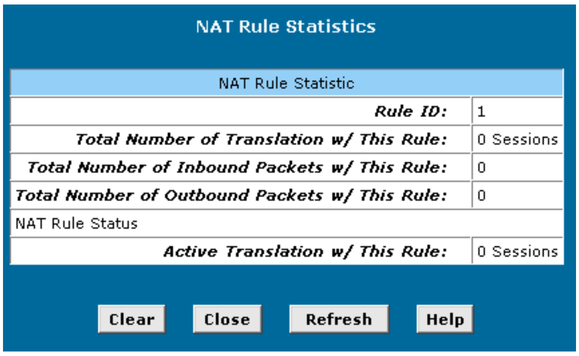
Network Address Translation (NAT) Rule Configuration

Each row in the table lists a rule for translating addresses. See Help for instructions on creating NAT rules.

NAT Options: NAT Rule Entry

Rule ID	IF Name	Rule Flavor	Protocol	Local IP From	Local IP To	Action
1	ALL	NAPT	ANY	0.0.0.0	255.255.255.255	Stats

To view data on how often a specific NAT rule has been used, click **[Stats]**. A page similar to the one below displays:



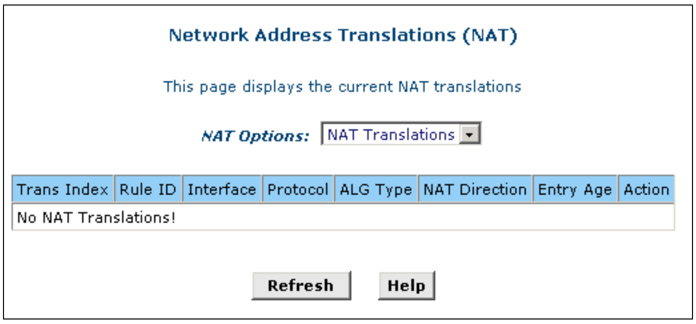
NAT Rule Statistics

NAT Rule Statistic	
Rule ID:	1
Total Number of Translation w/ This Rule:	0 Sessions
Total Number of Inbound Packets w/ This Rule:	0
Total Number of Outbound Packets w/ This Rule:	0
NAT Rule Status	
Active Translation w/ This Rule:	0 Sessions

The statistics show how many times this rule has been invoked and how many currently active sessions are using this rule.

Viewing Current NAT Translations

To view a list of NAT translations that have recently been performed and which remain in effect (for any of the defined rules), select **Services** > **NAT**. From the **NAT Options** drop-down list select **NAT Translations**. The NAT Translations page displays.



Network Address Translations (NAT)

This page displays the current NAT translations

NAT Options: NAT Translations

Trans Index	Rule ID	Interface	Protocol	ALG Type	NAT Direction	Entry Age	Action
No NAT Translations!							

For each current NAT translation session, the table contains the following fields:

Field	Description
Trans Index	The sequential number assigned to the IP session used by this NAT translation session.
Rule ID	The ID of the NAT rule invoked.
Interface	The device interface on which the NAT rule was invoked (from the rule definition).
Protocol	The IP protocol used by the data packets that are undergoing translations (from the rule definition) Example: TCP, UDP, ICMP.

Field	Description
ALG Type	The Application Level Gateway (ALG), if any, that was used to enable this NAT translation (ALGs are special settings that certain applications require in order to work while NAT is enabled).
NAT Direction	The direction (incoming or outgoing) of the translation (from the port definition).
Entry Age	The elapsed time, in seconds, of the NAT translation session.

Adding NAT Rules

This section explains how to create rules for the various NAT flavors.

In general, follow this instructions to add a rule:

1. Select **Services** > **NAT**. From the **NAT Options** drop-down list select **NAT Rule Entry** and click **[Add]**.
2. From the **Rule Flavor** drop-down list, select the rule flavor needed. The corresponding page displays (see sections below)
3. In the **Rule ID** field assign a number to the rule.

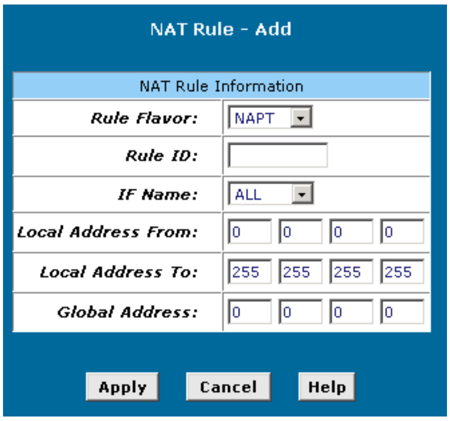
   The Rule ID determines the order in which rules are invoked (the lowest numbered rule is invoked first, and so on). In some cases, two or more rules may be defined to act on the same set of IP addresses. Once a data packet matches a rule, the data is acted upon according to that rule and is not subjected to higher-numbered rules.
4. From the **IF Name** drop-down list, select the interface on the ADSL Router to which this rule applies.

   Typically, NAT rules apply to communication between your LAN and the Internet. Because the device uses the WAN interface (named ppp-0 or eoa-0) to connect your LAN to your ISP, it is the usual IF Name selection.
5. Proceed as described below for the corresponding rule.
6. When you have completed entering all information, click **[Apply]**. A page displays to confirm the change.
7. Click **[Close]** to return to the **NAT Configuration** page. The new rule should display in the NAT Rule table.
8. On the **NAT Configuration** page, ensure that the **Enable** radio button is turned on.
9. On the NAT Configuration page, click **[Apply]**.
   A page displays to confirm your changes.
10. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

The napt rule: Translating between private and public IP addresses

The NAT flavor napt was used in your default configuration. The napt flavor translates all LAN-side private source IP addresses to a single public IP address. It also translates the source port numbers to port numbers that are defined on the NAT Global Configuration page.

1. On the **NAT Rule - Add** page, select **NAPT** from the **Rule Flavor** drop-down list (if necessary).



NAT Rule - Add

NAT Rule Information

Rule Flavor:	NAPT
Rule ID:	
IF Name:	ALL
Local Address From:	0 0 0 0
Local Address To:	255 255 255 255
Global Address:	0 0 0 0

2. Define the rule ID and select the interface.
3. In the **Local Address From/To** fields, type the starting and ending IP addresses, respectively, of the range of private address you want to be translated. Or, type the same address in both fields to specify a single value.

   If all LAN addresses should be translated, specify **0.0.0.0** and **255.255.255.255** respectively.

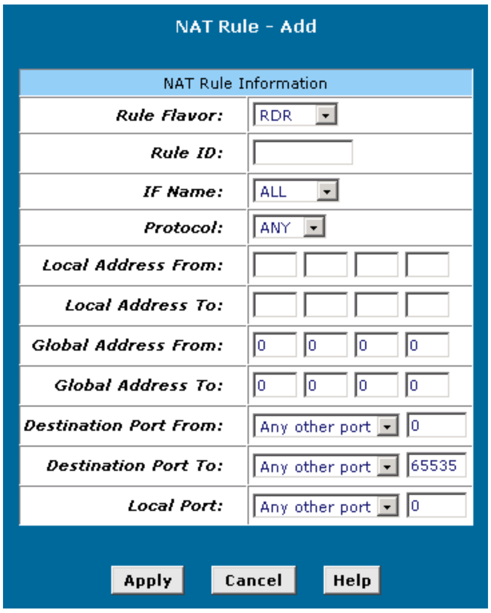
   If you use non-sequential private addresses, you can create an additional napt rule for each separate range of addresses.
4. Complete as described for general procedure (steps 6 to 10).

The rdr rule: Allowing external access to a LAN computer

You can create an rdr rule to make a computer on your LAN, such as a Web or FTP server, available to Internet users without requiring you to obtain a public IP address for that computer. The computer's private IP address is translated to your public IP address in all incoming and outgoing data packets.

Note: Without an rdr rule (or bimap rule), the ADSL Router blocks attempts by external computers to access your LAN computers.

1. On the **NAT Rule - Add** page, select **RDR** from the **Rule Flavor** drop-down list.



NAT Rule - Add

NAT Rule Information

Rule Flavor:	RDR	
Rule ID:		
IF Name:	ALL	
Protocol:	ANY	
Local Address From:		
Local Address To:		
Global Address From:	0 . 0 . 0 . 0	
Global Address To:	0 . 0 . 0 . 0	
Destination Port From:	Any other port	0
Destination Port To:	Any other port	65535
Local Port:	Any other port	0

2. Define the rule ID and select the interface.
3. From the **Protocol** drop-down list, select a protocol to which this rule applies, or choose **ANY** if the rule applies to all data.
4. In the **Local Address From/To** fields, type the same private IP address, or the lowest and highest addresses in a range:

   If you type the same IP address in both fields, incoming traffic that matches the criteria of this rule will be redirected to that IP address.

   If you type a range of addresses, incoming traffic will be redirected to any available computer in that range. This option would typically be used for load balancing, whereby traffic is distributed among several redundant servers.
5. In the **Global Address From/To** fields, type the public IP address assigned to you by your ISP.

   If you have multiple WAN interfaces, in both fields type the IP address of the interface to which this rule applies. This rule will not be enforced for data that arrives on WAN interfaces not specified here.

   If you have multiple WAN interfaces and want the rule to be enforced on a range of them, type the starting and ending IP addresses of the range.
6. In the **Destination Port From/To** fields, enter the port ID (or a range) if incoming traffic destined for these port types should be redirected to the local port number specified in step 7.

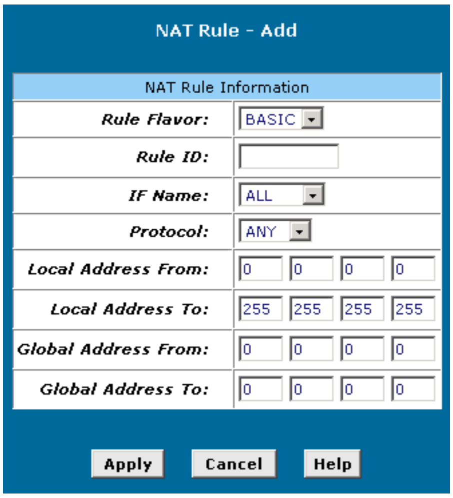
7. If the publicly accessible LAN computer uses a non-standard port number for the type of traffic it receives, type the non-standard port number in the **Local Port** field.

8. Complete as described for general procedure (steps 6 to 10).

The basic rule: Performing 1:1 translations

The basic flavor translates the private (LAN-side) IP address to a public (WAN-side) address, like napt rules. However, unlike napt rules, basic rules do not also translate the port numbers in the packet header; they are passed through untranslated. Therefore, the basic rule does not provide the same level of security as the napt rule.

1. On the NAT Rule - Add page, select **BASIC** from the **Rule Flavor** drop-down list.



NAT Rule - Add

NAT Rule Information				
Rule Flavor:	BASIC			
Rule ID:				
IF Name:	ALL			
Protocol:	ANY			
Local Address From:	0	0	0	0
Local Address To:	255	255	255	255
Global Address From:	0	0	0	0
Global Address To:	0	0	0	0

2. Define the rule ID and select the interface.

3. From the **Protocol** drop-down list, select a protocol to which this rule applies, or choose **ANY** if the rule applies to all data.

4. In the **Local Address From/To** fields, type the starting and ending IP addresses that identify the range of private address you want to be translated. Or, type the same address in both fields.

   If you specify a range, each address will be translated in sequence to a corresponding address in a range of global addresses (which you specify in step 5).

5. In the **Global Address From/To** fields, type the starting and ending address that identify the pool of public IP addresses to which to translate your private addresses. Or, type the same address in both fields (if you also specified a single address in step 4).

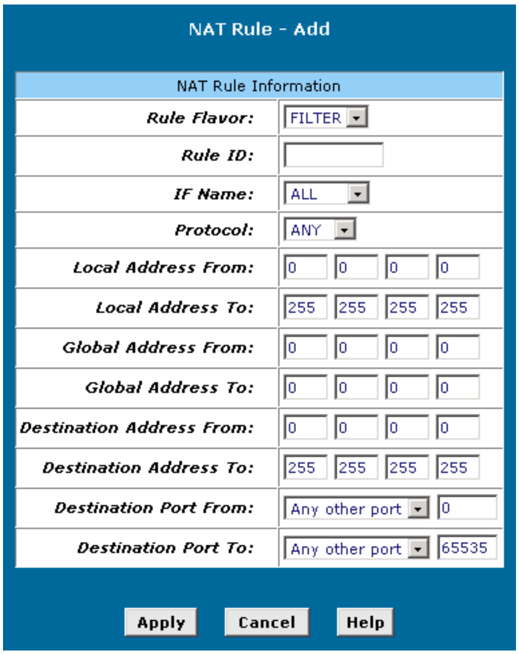
6. Complete as described for general procedure (steps 6 to 10).

The filter rule: Configuring a basic rule with additional criteria

Like the basic flavor, the filter flavor translates public and private IP addresses on a one-to-one basis. The filter flavor extends the capability of the basic rule.

You can use the filter rule if you want an address translation to occur only when your LAN computers initiate access to specific destinations. The destinations can be identified by their IP addresses, server type (such as FTP or Web server), or both.

1. On the NAT Rule - Add page, select **FILTER** from the **Rule Flavor** drop-down list.



NAT Rule - Add

NAT Rule Information

Rule Flavor:	FILTER			
Rule ID:				
IF Name:	ALL			
Protocol:	ANY			
Local Address From:	0	0	0	0
Local Address To:	255	255	255	255
Global Address From:	0	0	0	0
Global Address To:	0	0	0	0
Destination Address From:	0	0	0	0
Destination Address To:	255	255	255	255
Destination Port From:	Any other port	0		
Destination Port To:	Any other port	65535		

2. Define the rule ID and select the interface.

3. From the **Protocol** drop-down list, select a protocol to which this rule applies, or choose **ANY** if the rule applies to all data.

4. In the **Local Address From/To** fields, type the starting and ending IP addresses that identify the range of private address you want to be translated. Or, type the same address in both fields.

   If you specify a range, each address will be translated in sequence to a corresponding address in a range of global addresses (which you specify in step 5).

5. In the **Global Address From/To** fields, type the starting and ending address that identify the range of public IP addresses to translate your private addresses to. Or, type the same address in both fields (if you also specified a single address in step 4).

6. In the **Destination Address From/To** fields specify a destination address (or range), in the **Destination Port From/To** fields a destination port (or range), or both. You can specify a single value by entering that value in both fields.

   a. Specify a destination address (or range) if you want this rule to apply only to outbound traffic to the address (or range).
      If you enter only the network ID portion of the destination address, then the rule will apply to outbound traffic to all computers on network.

   b. Specify a destination ports (or range) if you want this rule to apply to any outbound traffic to the types of servers identified by that port number.

   c. Specify both a destination address (or range) and a destination port (or range) if you want this translation rule to apply to accesses to the specified server type at the specified location.

7. Complete as described for general procedure (steps 6 to 10).

The bimap rule: Performing two-way translations

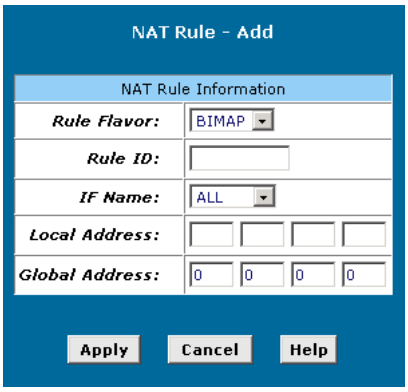
Unlike the other NAT flavors, the bimap flavor performs address translations in both the outgoing and incoming directions.

In the incoming direction, when the specified interface receives a packet destined to your public IP address, this address is translated to the private IP address of a computer on your LAN.

In the outgoing direction, the private source IP address in a data packet is translated to the LAN's public IP address.

Bimap rules can be used to provide external access to a LAN device. They do not provide the same level of security as rdr rules, because rdr rules also reroute incoming packets based on the port ID. Bimap rules do not account for the port number, and therefore allow external access regardless of the destination port type specified in the incoming packet.

1. On the NAT Rule - Add page, select **BIMAP** from the **Rule Flavor** drop-down list.



NAT Rule - Add

NAT Rule Information

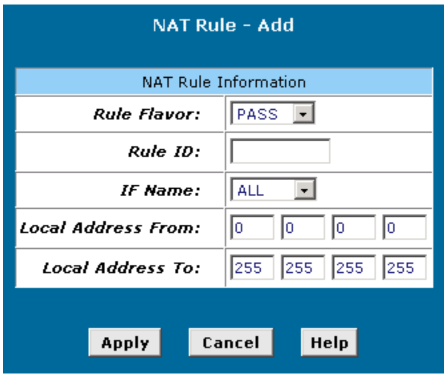
Rule Flavor:	BIMAP
Rule ID:	
IF Name:	ALL
Local Address:	
Global Address:	0 . 0 . 0 . 0

2. Define the rule ID and select the interface.
3. In the **Local Address** field, type the private IP address of the computer to which you are granting external access.
4. In the **Global Address** field, type the address that you want to serve as the publicly known address for the LAN computer.
5. Complete as described for general procedure (steps 6 to 10).

The pass rule: Allowing specific addresses to pass through untranslated

You can create a pass rule to allow a range of IP addresses to remain untranslated when another rule would otherwise do so.

1. On the NAT Rule - Add page, select **PASS** from the **Rule Flavor** drop-down list.



NAT Rule - Add

NAT Rule Information

Rule Flavor:	PASS
Rule ID:	
IF Name:	ALL
Local Address From:	0 . 0 . 0 . 0
Local Address To:	255 . 255 . 255 . 255

2. Define the rule ID and select the interface.

   The pass rule must be assigned a rule ID that is a lower number than the ID assigned to the rule it is intended to pass. In you want a specific IP address or range of addresses to not be subject to an existing rule, say rule ID #5, then you can create a pass rule with ID #1 through 4.
3. In the **Local Address From/To** fields, type the lowest and highest IP addresses that define the range of private address you want to be passed without translation.

   If you want the pass rule to act on only one address, type that address in both fields.
4. Complete as described for general procedure (steps 6 to 10).

RIP Configuration

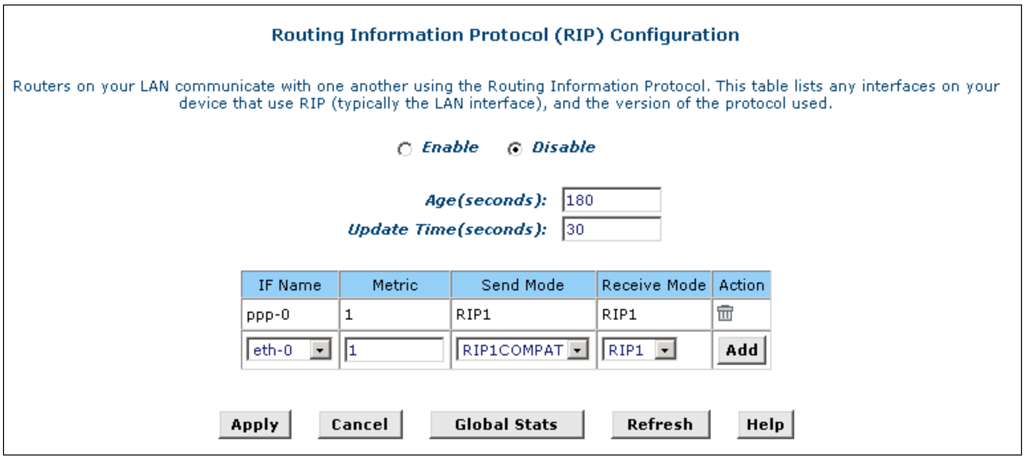
Your ADSL Router can be configured to communicate with other routing devices to determine the best path for sending data to its intended destination. This chapter describes how to configure your ADSL Router to use one of these, called the Routing Information Protocol (RIP).

Most small home or office networks do not need to use RIP. You may want to configure RIP if any of the following circumstances apply to your network:

- Your network includes an additional router or RIP-enabled PC. The ADSL Router and the router will need to communicate via RIP to share their routing tables.
- Your network connects via the ADSL line to a remote network, such as a corporate network. In order for your LAN to learn the routes used within your corporate network, they should *both* be configured with RIP.
- Your ISP requests that you run RIP for communication with devices on their network.

Configuring the RIP

1. Select to **Services** > **RIP**. The **RIP Configuration** page displays.



Routing Information Protocol (RIP) Configuration

Routers on your LAN communicate with one another using the Routing Information Protocol. This table lists any interfaces on your device that use RIP (typically the LAN interface), and the version of the protocol used.

○ Enable ● Disable

Age(seconds): 180

Update Time(seconds): 30

IF Name	Metric	Send Mode	Receive Mode	Action
ppp-0	1	RIP1	RIP1	🗑
eth-0	1	RIP1COMPAT	RIP1	Add

2. If necessary, change the **Age** and **Update Time**.

   These are global settings for all interfaces that use RIP.

   Age is the amount of time in seconds that the device's RIP table will retain each route that it learns from adjacent computers.

   Update Time specifies how frequently the ADSL Router will send out its routing table its neighbors.

3. In the **IF Name** column, select the interface on which you want to enable RIP.

   For communication with RIP-enabled devices on your LAN, select eth-0 or the name of the appropriate virtual Ethernet interface.

   For communication with your ISP or a remote LAN, select the corresponding PPP, EoA or other WAN interface.

4. Enter a metric value (hop count) for the interface. You can enter any integer from 1 to 15.

5. Select a **Send Mode** and a **Receive Mode**.

   The Send Mode setting indicates the RIP version this interface will use when it sends its route information to other devices.

   The Receive Mode setting indicates the RIP version(s) in which information must be passed to the ADSL Router in order for it to be accepted into its routing table.

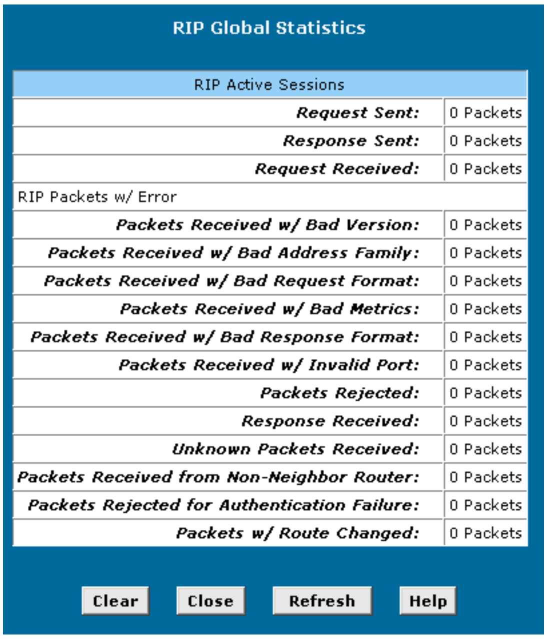
   RIP version 1 is the original RIP protocol. Select RIP1 if you have devices that communicate with this interface that understand RIP version 1 only.

   RIP version 2 is the preferred selection because it supports "classless" IP addresses (which are used to create subnets) and other features. Select RIP2 if all other routing devices on the autonomous network support this version of the protocol.

6. Click **[Add]**. The new RIP entry will display in the table.
7. Click the **Enable** radio button to enable the RIP feature.
8. When you are finished defining RIP interfaces, click **[Apply]**. A page gives a receipt for the changes.
9. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

Viewing RIP Statistics

1. Select to **Services** > **RIP**. The **RIP Configuration** page displays.
2. To view the RIP statistics, click **[Global Stats]**.



RIP Global Statistics

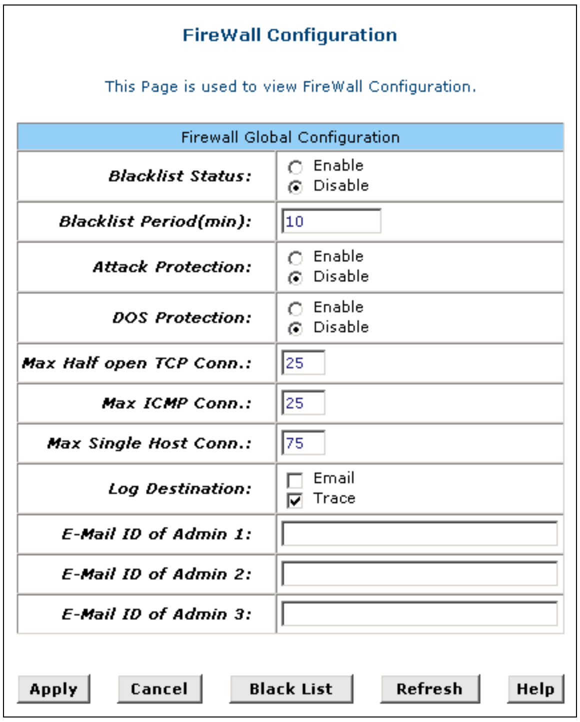
RIP Active Sessions	
Request Sent:	0 Packets
Response Sent:	0 Packets
Request Received:	0 Packets
RIP Packets w/ Error	
Packets Received w/ Bad Version:	0 Packets
Packets Received w/ Bad Address Family:	0 Packets
Packets Received w/ Bad Request Format:	0 Packets
Packets Received w/ Bad Metrics:	0 Packets
Packets Received w/ Bad Response Format:	0 Packets
Packets Received w/ Invalid Port:	0 Packets
Packets Rejected:	0 Packets
Response Received:	0 Packets
Unknown Packets Received:	0 Packets
Packets Received from Non-Neighbor Router:	0 Packets
Packets Rejected for Authentication Failure:	0 Packets
Packets w/ Route Changed:	0 Packets

Firewall, IP Filters and Blocked Protocols

Firewall Configuration

Configuration Manager provides built-in firewall functions, enabling you to protect the system against denial of service (DoS) attacks and other types of malicious accesses to your LAN. You can also specify how to monitor attempted attacks, and who should be automatically notified.

1. Select **Services** > **FireWall**. The **FireWall Configuration** page displays.



FireWall Configuration

This Page is used to view FireWall Configuration.

Firewall Global Configuration	
Blacklist Status:	○ Enable ● Disable
Blacklist Period(min):	10
Attack Protection:	○ Enable ● Disable
DOS Protection:	○ Enable ● Disable
Max Half open TCP Conn.:	25
Max ICMP Conn.:	25
Max Single Host Conn.:	75
Log Destination:	□ Email ☑ Trace
E-Mail ID of Admin 1:	
E-Mail ID of Admin 2:	
E-Mail ID of Admin 3:	

2. Configure any of the following settings:

Field	Description
Blacklist Status	If you want the device to maintain and use a blacklist, click **Enable**. Click **Disable** if you do not want to maintain a list.
Blacklist Period(min)	Specifies the number of minutes that a computer's IP address will remain on the blacklist.
Attack Protection	Click **Enable** to use the built-in firewall protections that prevent the following common types of attacks: ▪ IP Spoofing: Sending packets over the WAN interface using an internal LAN IP address as the source address. ▪ Tear Drop: Sending packets that contain overlapping fragments. ▪ Smurf and Fraggle: Sending packets that use the WAN or LAN IP broadcast address as the source address. ▪ Land Attack: Sending packets that use the same address as the source and destination address. ▪ Ping of Death: Illegal IP packet length.
DOS Protection	Click **Enable** to use the following denial of service protections: ▪ SYN DoS ▪ ICMP DoS ▪ Per-host DoS protection

Field	Description
Max Half open TCP Conn.	Sets the percentage of concurrent IP sessions that can be in the half-open state. In ordinary TCP communication, packets are in the half-open state only briefly as a connection is being initiated; the state changes to active when packets are being exchanged, or closed when the exchange is complete. TCP connections in the half-open state can use up the available IP sessions. If the percentage is exceeded, then the half-open sessions will be closed and replaced with new sessions as they are initiated.
Max ICMP Conn.	Sets the percentage of concurrent IP sessions that can be used for ICMP messages. If the percentage is exceeded, then older ICMP IP sessions will be replaced by new sessions as the are initiated.
Max Single Host Conn.	Sets the percentage of concurrent IP session that can originate from a single computer. This percentage should take into account the number of hosts on the LAN.
Log Destination	Specifies how attempted violations of the firewall settings will be tracked. Records of such events can be sent via Ethernet to be handled by a system utility Ethernet to (Trace) or can E-mailed to specified administrators.
E-Mail ID of Admin 1/2/3	Specifies the E-mail addresses of the administrators who should receive notices of any attempted firewall violations. Type the addresses in standard Internet E-mail address format, e.g., jxsmith@home.com. The E-mail message will contain the time of the violation, the source address of the computer responsible for the violation, the destination IP address, the protocol being used, the source and destination ports, and the number violations occurring the previous 30 minutes. If the ICMP protocol were being used, then instead of the source and destination ports, the E-mail will report the ICMP code and type.

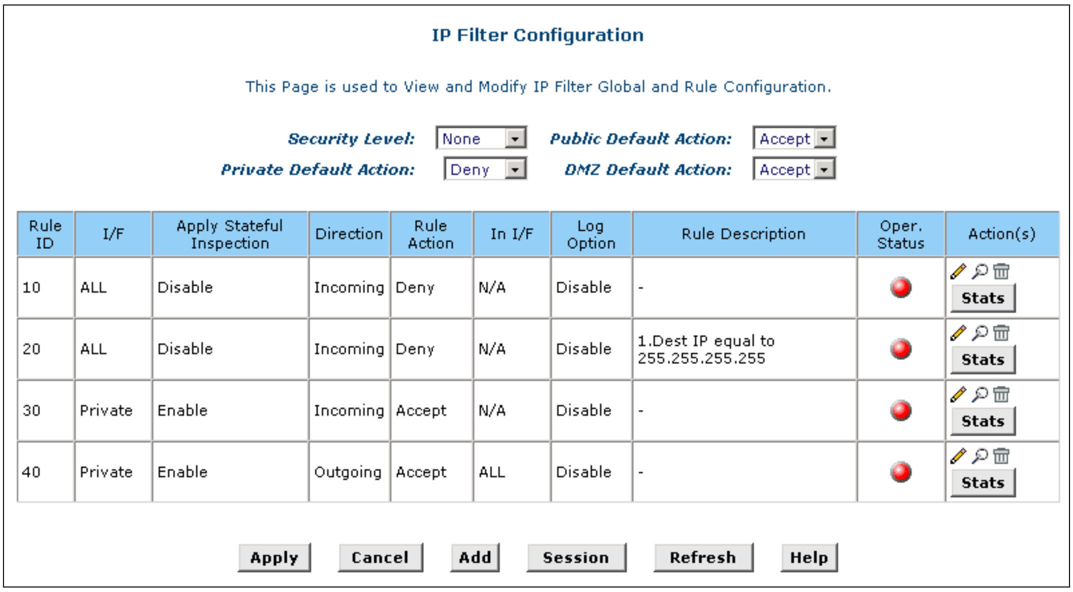
3. Click **[Apply]**. A page gives a receipt for the changes.
4. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

IP Filter Configuration

The IP filter feature enables you to create rules that control the forwarding of incoming and outgoing data between your LAN and the Internet. This chapter explains how to create IP filter rules.

Viewing Your IP Filter Configuration

Select **Services** > **IP Filter**. The IP Filter Configuration page displays.



IP Filter Configuration

This Page is used to View and Modify IP Filter Global and Rule Configuration.

Security Level: None *Public Default Action:* Accept
Private Default Action: Deny *DMZ Default Action:* Accept

Rule ID	I/F	Apply Stateful Inspection	Direction	Rule Action	In I/F	Log Option	Rule Description	Oper. Status	Action(s)
10	ALL	Disable	Incoming	Deny	N/A	Disable	-	●	Stats
20	ALL	Disable	Incoming	Deny	N/A	Disable	1.Dest IP equal to 255.255.255.255	●	Stats
30	Private	Enable	Incoming	Accept	N/A	Disable	-	●	Stats
40	Private	Enable	Outgoing	Accept	ALL	Disable	-	●	Stats

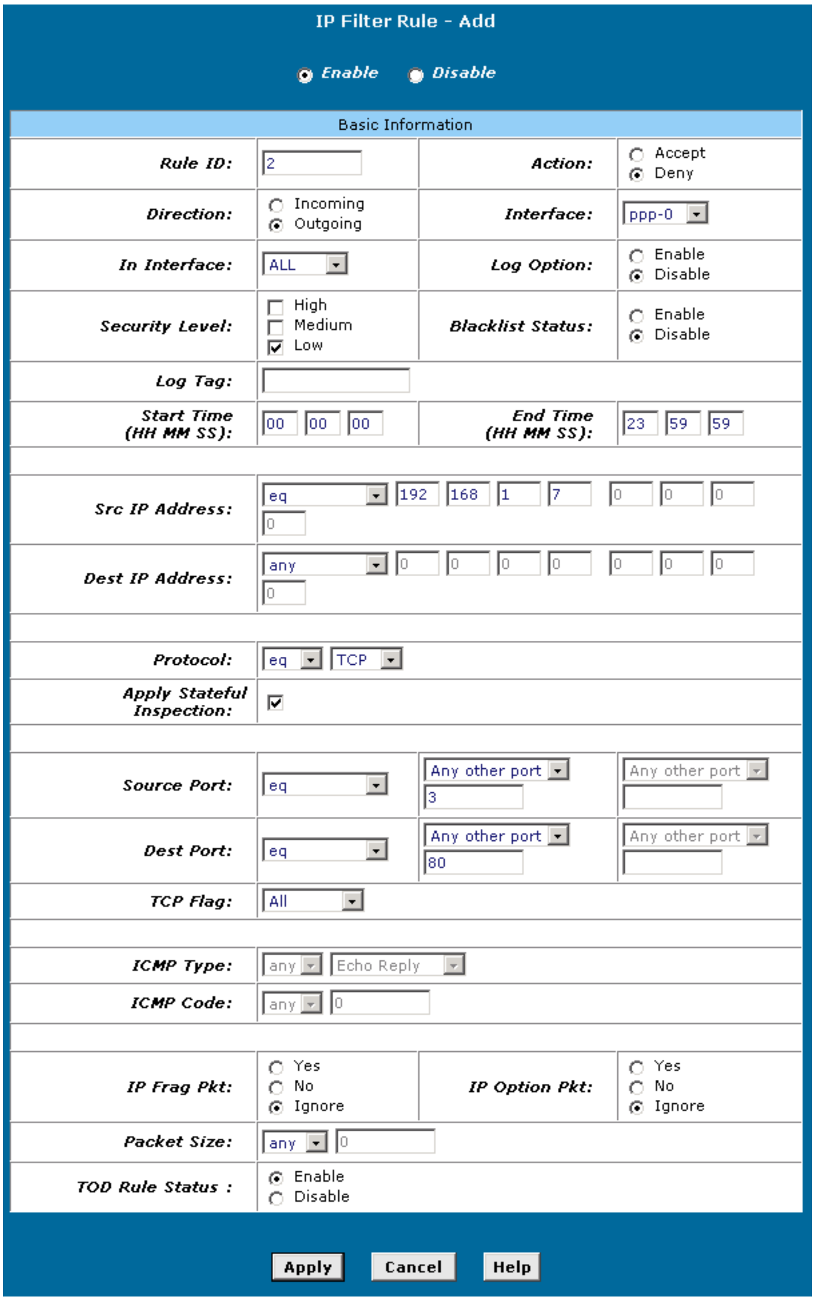
Configuring IP Filter Global Settings

The IP Filter Configuration page enables you to configure several global IP Filter settings, and displays a table showing all existing IP Filter rules. The global settings that you can configure are:

- **Security Level**: When **High** is selected, only those rules that are assigned a security value of High will be in effect. The same is true for the **Medium** and **Low** settings. When **None** is selected, IP Filtering is disabled.
- **Private/Public/DMZ Default Action**: This setting specifies a default action to be taken (**Accept** or **Deny**) on private, public, or DMZ-type device interfaces when they receive packets that do not match any of the filtering rules.
  - Private – Typically, the global setting for private interfaces is **Accept**, so that LAN computers have access to the ADSL Router's Internet connection.
  - Public – The interface connects to the Internet. e.g., PPP, EoA, and IPoA interfaces. Typically, the global setting for public interfaces is **Deny**, so that all accesses to your LAN initiated from external computers are denied (discarded at the public interface), except for those allowed by a specific IP Filter rule.
  - DMZ – Refers to computers that are available for both public and in-network accesses (such as a company's public Web server). Packets received on a DMZ interface - a whether from a LAN or external source - are subject to a set of protections that is in between public and private interfaces. The global setting for DMZ-type interfaces may be set to **Deny** so that all attempts to access these servers are denied by default; the administrator may then configure IP Filter rules to allow accesses of certain types.

Creating IP Filter Rules

1. On the IP Filter Configuration page click **[Add]**. The IP Filter Rule - Add page displays.



IP Filter Rule - Add

● *Enable* ○ *Disable*

Basic Information

Rule ID:	2	*Action:*	○ Accept ● Deny
Direction:	○ Incoming ● Outgoing	*Interface:*	ppp-0
In Interface:	ALL	*Log Option:*	○ Enable ● Disable
Security Level:	□ High □ Medium ☑ Low	*Blacklist Status:*	○ Enable ● Disable
Log Tag:			
Start Time (HH MM SS):	00 00 00	*End Time (HH MM SS):*	23 59 59
Src IP Address:	eq 192 168 1 7 0 0 0 0		
Dest IP Address:	any 0 0 0 0 0 0 0 0		
Protocol:	eq TCP		
Apply Stateful Inspection:	☑		
Source Port:	eq	Any other port 3	Any other port
Dest Port:	eq	Any other port 80	Any other port
TCP Flag:	All		
ICMP Type:	any Echo Reply		
ICMP Code:	any 0		
IP Frag Pkt:	○ Yes ○ No ● Ignore	*IP Option Pkt:*	○ Yes ○ No ● Ignore
Packet Size:	any 0		
TOD Rule Status :	● Enable ○ Disable		

2. Enter or select data for each field that applies to your rule:

Field	Description
Rule ID	Rules are processed from lowest to highest on each data packet, until a match is found. It is recommended that you assign rule IDs in multiples of 5 or 10 (e.g., 10, 20, 30) so that you leave enough room between them for inserting a new rule if necessary.
Action	The action can be **Accept** (forward to destination) or **Deny** (discard the packet).
Direction	**Incoming** refers to packets coming from the LAN, and **Outgoing** refers to packets going to the Internet.
Interface	The interface on which the rule will take effect.
In Interface	The interface from which packets must have been forwarded to the interface specified in the previous selection. This option is valid only for the outgoing direction.

Field	Description
Log Option	When **Enabled** is selected, a log entry will be created on the system each time this rule is invoked.
Security Level	The security level that must be enabled globally for this rule to take affect. A rule will be active only if its security level is the same as the globally configured setting (shown on the main IP Filter page). For example, if the rule is set to **Medium** and the global firewall level is set to medium, then the rule will be active; but if the global firewall level is set to high or low, then the rule will be inactive.
Blacklist Status	Specifies whether or not a violation of this rule will result in the offending computer's IP address being added to the Blacklist, which blocks the router from forwarding packets from that source for a specified period of time.
Log Tag	A description of up to 16 characters to be recorded in the log in the event that a packet violates this rule. Be sure to set the Log Option to Enable if you configure a Log Tag.
Start/End Time	The time range during which this rule is to be in effect, specified in military units.
Src IP Address	IP address criteria for the source computer(s) from which the packet originates. Use the following expression to specify IP: **any**: any source IP address. **lt**: less than **lteq**: less than or equal to. **gt**: greater than **eq**: equal to **neq**: not equal to **range**: within the specified range, inclusive. **out of range**: outside the specified range. **self**: the IP address of the router interface on which this rule takes effect.
Dest IP Address	IP address rule criteria for the destination computer(s) (i.e., the IP address of the computer to which the packet is being sent). In addition to the options described for the **Src IP Address** field, the following option is available: **bcast**: Specifies that the rule will be invoked for any packets sent to the broadcast address for the receiving interface. (The broadcast address is used to send packets to all hosts on the LAN or subnet connected to the specified interface.) When you select this option, you do not need to specify the address, so the address fields are dimmed.
Protocol	The basic IP protocol criteria that must be met for rule to be invoked. Using the options in the drop-down list, you can specify that packets must contain the selected protocol (**eq**), that they must not contain the specified protocol (**neq**), or that the rule can be invoked regardless of the protocol (**any**). TCP, UDP, and ICMP are commonly IP protocols; others can be identified by number from 0 to 255, as defined by IANA.
Apply Stateful Inspectation	If this option is enabled, then stateful filtering is performed and the rule is also applied in the other direction on the given interface during an IP session.
Source Port	Port number criteria for the computer(s) from which the packet originates. This field will be dimmed (unavailable for entry) if you have not specified a protocol criteria. See the description of **Src IP Address** for the selection options.

Field	Description
Dest Port	Port number criteria for the destination computer(s) (i.e., the port number of the type of computer to which the packet is being sent). This field will be dimmed (unavailable for entry) unless you have selected TCP or UDP as the protocol. See the description of **Src IP Address** for the selection options.
TCP Flag	Specifies whether the rule should apply only to TCP packets that contain the synchronous (**SYN**) flag, only to those that contain the non-synchronous (**NOT-SYN**) flag, or to all TCP packets (**All**). This field will be dimmed (unavailable for entry) unless you selected **TCP** as the **Protocol**.
ICMP Type	Specifies whether the value in the type field in ICMP packet headers will be used as a criteria. The code value can be any decimal value from 0 to 255. You can specify that the value must equal (**eq**) or not equal (**neq**) the specified value, or you can select any to enable the rule to be invoked on all ICMP packets. This field will be dimmed (unavailable for entry) unless you specify **ICMP** as the **Protocol**.
ICMP Code	Specifies whether the value in the code field in ICMP packet headers will be used as a criteria. The code value can be any decimal value from 0 to 255. You can specify that the value must equal (**eq**) or not equal (**neq**) the specified value, or you can select any to enable the rule to be invoked on all ICMP packets. This field will be dimmed (unavailable for entry) unless you specify **ICMP** as the **Protocol**.
IP Frag Pkt	Determines how the rule applies to IP packets that contain fragments. You can choose from the following options: **Yes**: The rule will be applied only to packets that contain fragments. **No**: The rule will be applied only to packets that do not contain fragments. **Ignore**: (Default) The rule will be applied to packets whether or not they contain fragments, assuming that they match the other criteria.
IP Option Pkt	Determines whether the rule should apply to IP packets that have options specified in their packet headers. **Yes**: The rule will be applied only to packets that contain header options. **No**: The rule will be applied only to packets that do not contain header options. **Ignore**: (Default) The rule will be applied to packets whether or not they contain header options, assuming that they match the other criteria.
Packet Size	Specifies that the IP Filter rule will take affect only on packets whose size in bytes matches this criteria. (**lt** = less than, **gt** = greater than, **lteq** = less than or equal to, etc.)
TOD Rule Status	The Time of Day Rule Status determines how the **Start Time**/**End Time** settings are used. **Enable**: (Default) The rule is in effect for the specified time period. **Disable**: The rule is not in effect for the specified time period, but is effective at all other times.

3. When you are done selecting criteria, ensure that **Enable** is selected and then click **[Apply]**.

   If the security level of the rule matches the globally configured setting, a green ball in the **Oper. Status** column for that rule, indicating that the rule is now in effect. A red ball will display when the rule is disabled or if its security level is different than the globally configured level.

4. Ensure that the **Security Level** and **Private/Public/DMZ Default Action** settings on the IP Filter Configuration page are configured as needed, then click **[Apply]**.

   A page gives a receipt for the changes.

5. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

IP filter rule examples

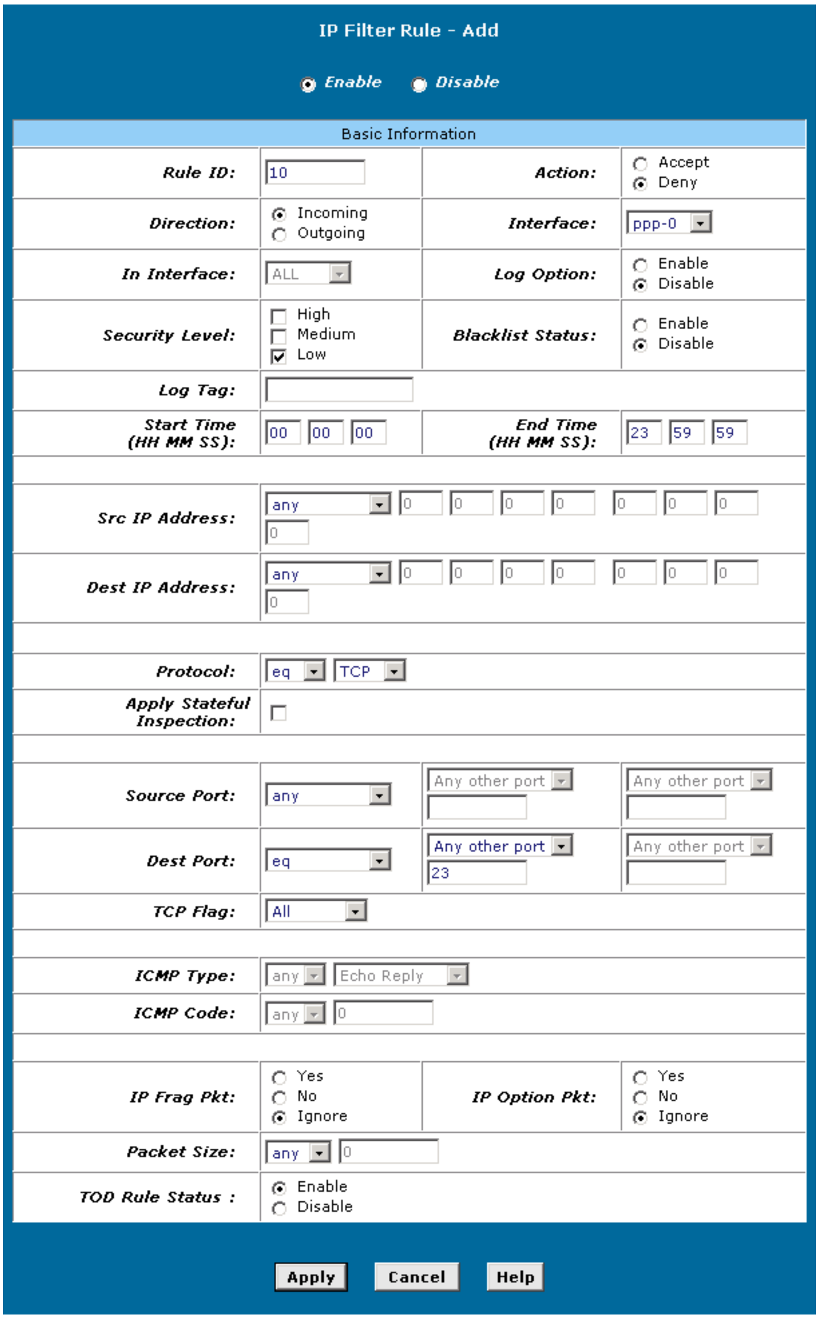
Example 1. Blocking a specific computer on your LAN from using accessing Web servers on the Internet:

1. Add a new rule for outgoing packets on the ppp-0 interface from any incoming interface (this would include the eth-0, for example).
2. Specify a source IP address of the computer you want to block.
3. Specify **Protocol eq TCP** and enable the **Apply Stateful Inspectation** setting.
4. Specify **Dest Port eq 80**, which is the well-known port number for Web servers.
5. Enable the rule by clicking the radio button at the top of the page.
6. Click **[Apply]** to create the rule.
7. On the **IP Filter Configuration** page, set the **Security Level** to the same level you chose for the rule, and set both the **Private Default Action** and the **Public Default Action** to **Accept**.
8. Click **[Apply]**.

Example 2. Blocking Telnet accesses to the device:

1. Add a new rule for packets incoming on the ppp-0 interface.
2. Specify **Protocol eq TCP**
3. Specify **Dest Port eq 23**, the well-known port number used for the Telnet protocol.
4. Enable the rule by clicking the radio button at the top of the page.
5. Click **[Apply]**. to create the rule.

The figure below shows how this rule could be configured:



IP Filter Rule - Add

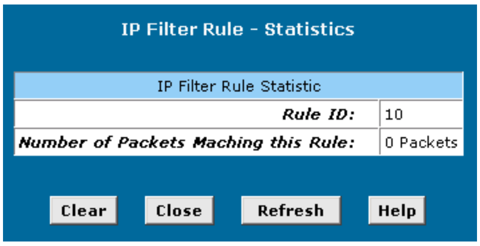
● Enable ○ Disable

Basic Information

Rule ID:	10	Action:	○ Accept ● Deny
Direction:	● Incoming ○ Outgoing	Interface:	ppp-0
In Interface:	ALL	Log Option:	○ Enable ● Disable
Security Level:	☐ High ☐ Medium ☑ Low	Blacklist Status:	○ Enable ● Disable
Log Tag:			
Start Time (HH MM SS):	00 00 00	End Time (HH MM SS):	23 59 59
Src IP Address:	any 0 0 0 0 0 0 0 0		
Dest IP Address:	any 0 0 0 0 0 0 0 0		
Protocol:	eq TCP		
Apply Stateful Inspection:	☐		
Source Port:	any	Any other port	Any other port
Dest Port:	eq	Any other port 23	Any other port
TCP Flag:	All		
ICMP Type:	any Echo Reply		
ICMP Code:	any 0		
IP Frag Pkt:	○ Yes ○ No ● Ignore	IP Option Pkt:	○ Yes ○ No ● Ignore
Packet Size:	any 0		
TOD Rule Status :	● Enable ○ Disable		

Viewing IP Filter Statistics

1. Select **Services** > **IP Filter**. The IP Filter Configuration page displays.
2. To view statistics on how many packets were accepted or denied for a rule, click **[Stats]** in the row corresponding to the rule:



IP Filter Rule - Statistics

IP Filter Rule Statistic

Rule ID:	10
Number of Packets Maching this Rule:	0 Packets

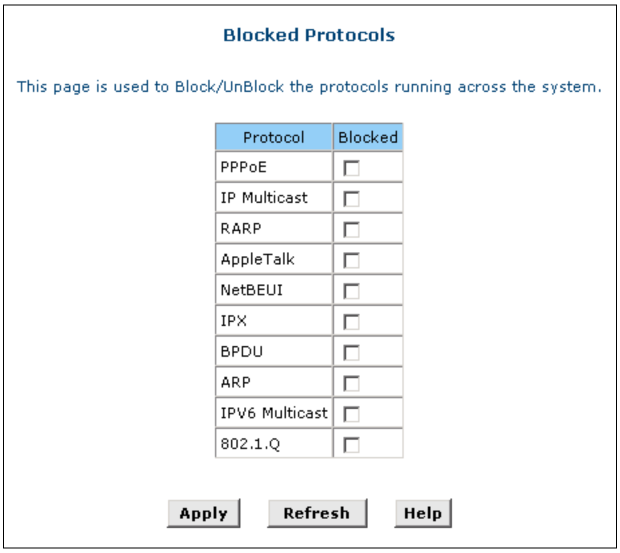
Managing Current IP Filter Sessions

1. Select **Services** > **IP Filter**. The **IP Filter Configuration** page displays.
2. To view all current IP sessions, click **[Session]**. The **IP Filters Session** page displays.
   It displays the following fields:

Field	Description
Session Index	The ID assigned by the system to the IP session (all sessions, whether or not they are affected by an IP filter rule, are assigned a session index).
Time to expire	The number of seconds in which the connection will automatically expire
Protocol	The underlying IP protocol used on the connection, such as TCP, UDP, IGMP, etc.)
I/F	The interface on which the IP Filter rule is effective
IP Address	The IP addresses involved in the communication. The first one shown is the initiator of the communication.
Port	The hardware addresses of the ports involved in the communication
In/Out Rule Index	The number of the IP Filter rule that is applies to this session (assigned when the rule was created)
In/Out Action	The action (accept, deny, or unknown), being taken on data coming into or going out on the interface. This action is specified in the rule definition.

To Block Specific Protocols

1. To block specific protocols running across the system, select **Services** > **Blocked Protocols**.



Blocked Protocols

This page is used to Block/UnBlock the protocols running across the system.

Protocol	Blocked
PPPoE	□
IP Multicast	□
RARP	□
AppleTalk	□
NetBEUI	□
IPX	□
BPDU	□
ARP	□
IPV6 Multicast	□
802.1.Q	□

2. Check the protocol type you want to block
3. Click **[Apply]**.
4. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

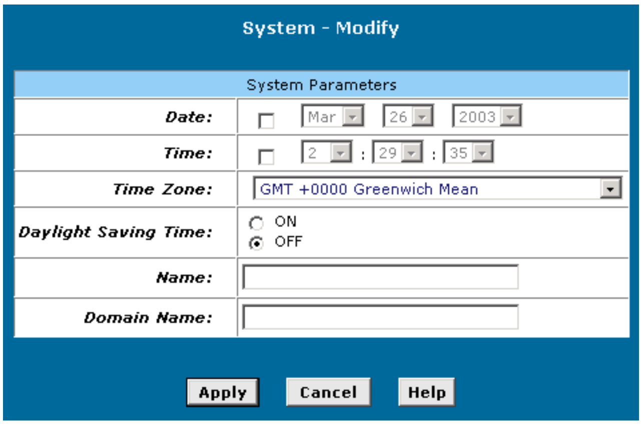
To unblock the specific protocol, uncheck the protocol and repeat the submit and commit task.

Administration Tasks

Changing the System Date and Time

The device keeps a record of the current date and time, which it uses to calculate and report various performance data.

1. Select **Home**. The **System View** page displays.
2. Click **[Modify]** to change the date and time as required.



System - Modify

System Parameters

Date:	□ Mar 26 2003
Time:	□ 2 : 29 : 35
Time Zone:	GMT +0000 Greenwich Mean
Daylight Saving Time:	○ ON ● OFF
Name:	
Domain Name:	

3. Click **[Apply]**. A page displays to confirm the change.
4. Click **[Close]** to return to the **System View** page.
5. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

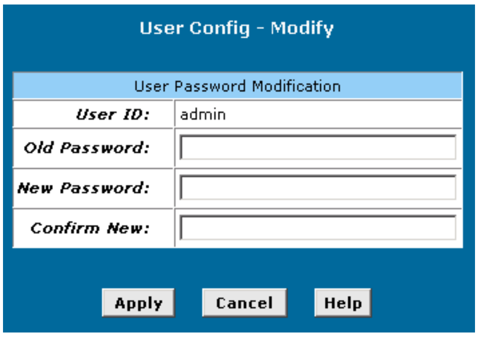
User Configuration

Changing Your Login Password

The first time you log into the Configuration Manager, you use the default user ID and password (*admin* and *admin*).

To change the password:

1. Select **Admin** > **User Config**. The **User Configuration** page displays.
2. Select ✎ for the entry to modify. The **User Config - Modify** page displays.



User Config - Modify

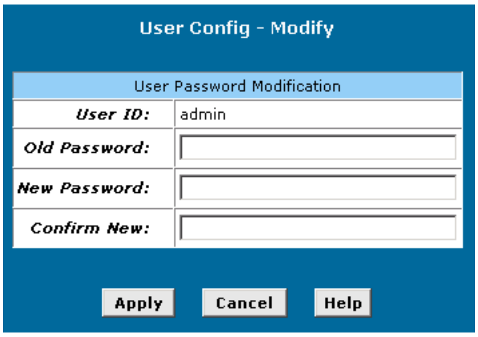
User Password Modification

User ID:	admin
Old Password:	
New Password:	
Confirm New:	

3. Type your current password in the **Old Password** text box.
4. Type the new password in the **New Password** text box and again in the **Confirm New** text box. The password can be up to eight ASCII characters long and is case sensitive.
5. Click **[Apply]**. A page displays to confirm the change.
6. Click **[Close]** to return to the **User Configuration** page.
7. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

Adding a New User

1. Select **Admin** > **User Config**. The User Configuration page displays.
2. Click [Add]. The User Config - Add page displays.



User Config - Modify

User Password Modification

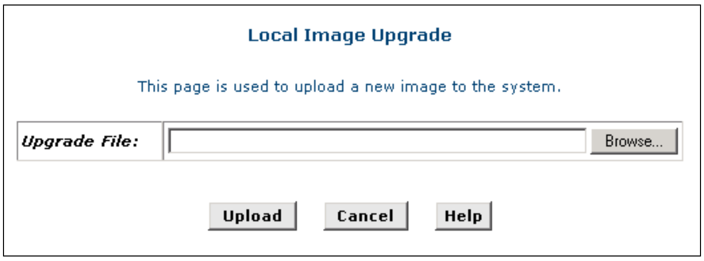
User ID:	admin
Old Password:	
New Password:	
Confirm New:	

3. Enter a new username in the **User ID** text box. It can be up to 128 characters and is case-sensitive.
4. Select the desired **Privilege**.
5. Type the password in the **Password** text box and again in the **Confirm New** text box.
   The password can be up to eight ASCII characters long and is case sensitive.
6. Click **[Apply]**. A page displays to confirm the change.
7. Click **[Close]** to return to the User Configuration page.
8. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

Image Upgrade

This feature allows you to upgrade the device to new firmware. After upgrading, your customized configuration will still exist and not reset to the factory defaults. To perform upgrade task, download required firmware file to your host PC and follow the steps below:

1. Select **Admin** > **Local Image Upgrade**.



Local Image Upgrade

This page is used to upload a new image to the system.

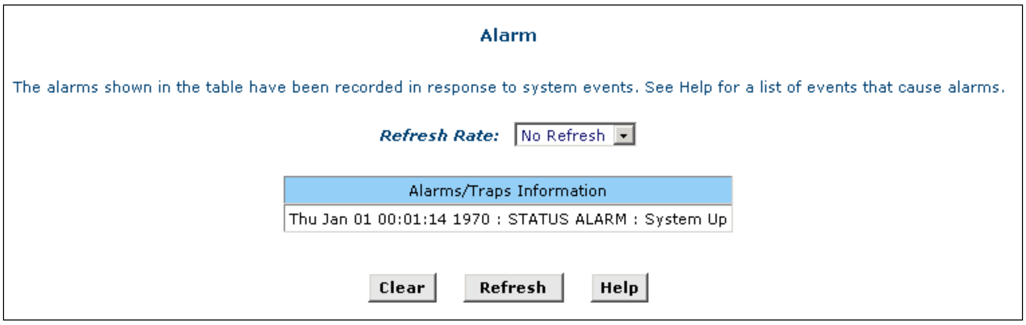
Upgrade File:

2. Click **[Browse]** to locate the firmware file.
3. Click the **[Upload]** button to start upgrade and then wait for the system to complete upgrade.

Note: Do not interrupt the upgrade process otherwise it might cause damage to your router.

View System Alarms

1. To display the Alarm page, select **Admin** > **Alarm**.



Alarm

The alarms shown in the table have been recorded in response to system events. See Help for a list of events that cause alarms.

Refresh Rate: No Refresh

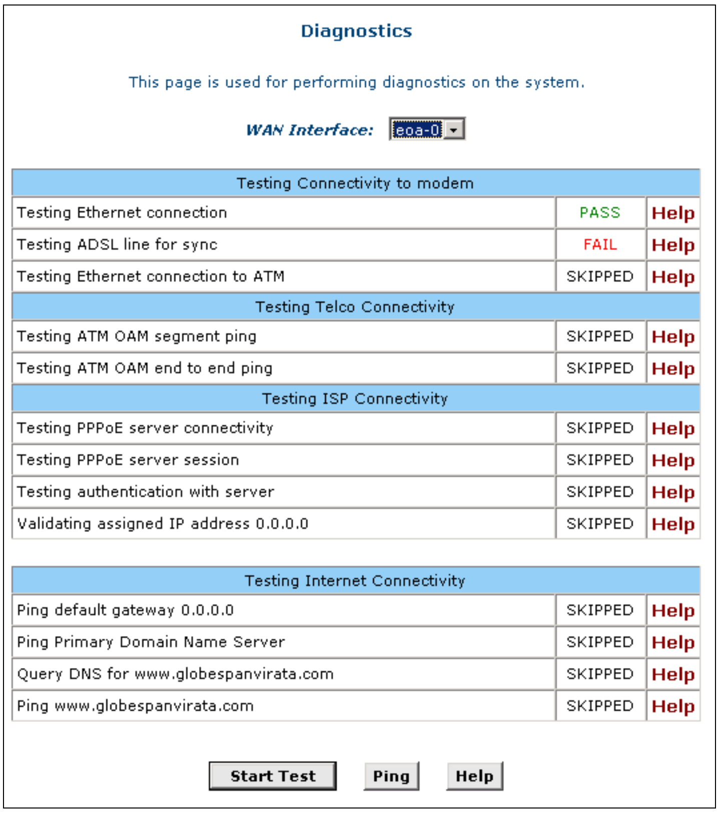
Alarms/Traps Information
Thu Jan 01 00:01:14 1970 : STATUS ALARM : System Up

Each row in the table displays the time and date that an alarm occurred, the type of alarm, and a brief statement indicating its cause.

2. You can click on the **Refresh Rate** drop-down list to select a recurring time interval after which the page will redisplay with new data.

Diagnostics

1. To perform diagnostics on specific ATM VC, select **Admin** > **Diagnostics**.



Diagnostics

This page is used for performing diagnostics on the system.

WAN Interface: eoa-0

Testing Connectivity to modem		
Testing Ethernet connection	PASS	Help
Testing ADSL line for sync	FAIL	Help
Testing Ethernet connection to ATM	SKIPPED	Help
Testing Telco Connectivity		
Testing ATM OAM segment ping	SKIPPED	Help
Testing ATM OAM end to end ping	SKIPPED	Help
Testing ISP Connectivity		
Testing PPPoE server connectivity	SKIPPED	Help
Testing PPPoE server session	SKIPPED	Help
Testing authentication with server	SKIPPED	Help
Validating assigned IP address 0.0.0.0	SKIPPED	Help

Testing Internet Connectivity		
Ping default gateway 0.0.0.0	SKIPPED	Help
Ping Primary Domain Name Server	SKIPPED	Help
Query DNS for www.globespanvirata.com	SKIPPED	Help
Ping www.globespanvirata.com	SKIPPED	Help

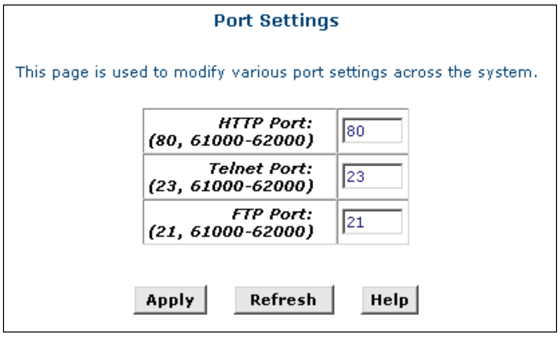
2. From the **WAN Interface** drop-down list, select the interface on which you want to execute diagnostics. Note that only the interfaces defined in the system will appear on the drop-down list.

3. Click **[Start Test]**. The diagnostic result will displayed on this page.

Port Settings

The router's HTTP service (Web Configuration Utility), Telnet service and FTP service are accessible using the standard port number 80, 23 and 21 respectively. It is possible that you want to designate a publicly accessible HTTP, Telnet or FTP server on your LAN side and you want to shift the router's HTTP/Telnet/FTP service to use non-standard port number.

1. Select **Admin** > **Port Settings**.



Port Settings

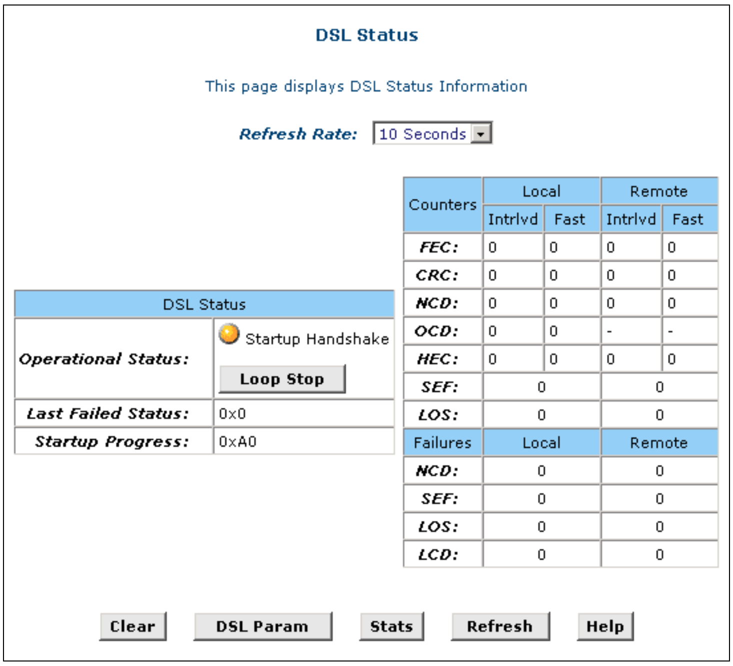
This page is used to modify various port settings across the system.

HTTP Port: *(80, 61000-62000)*	80
Telnet Port: *(23, 61000-62000)*	23
FTP Port: *(21, 61000-62000)*	21

2. Modify the **HTTP/Telnet/FTP Port** settings
3. Click **[Apply]**.
4. Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

View DSL Parameters

1. To view configuration parameters and performance statistics for the ADSL Router’s DSL line, select **WAN** > **DSL Status**. The DSL Status page displays.



DSL Status

This page displays DSL Status Information

Refresh Rate: 10 Seconds

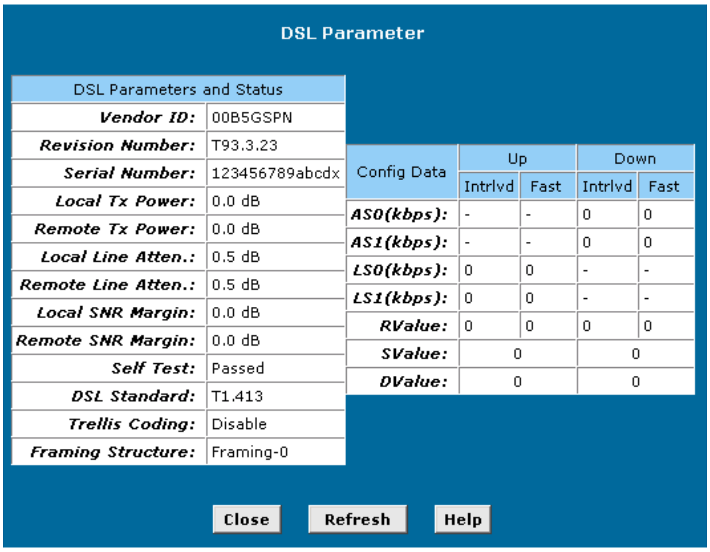
DSL Status	
Operational Status:	Startup Handshake Loop Stop
Last Failed Status:	0x0
Startup Progress:	0xA0

Counters	Local		Remote	
	Intrlvd	Fast	Intrlvd	Fast
FEC:	0	0	0	0
CRC:	0	0	0	0
NCD:	0	0	0	0
OCD:	0	0	-	-
HEC:	0	0	0	0
SEF:	0		0	
LOS:	0		0	

Failures	Local	Remote
NCD:	0	0
SEF:	0	0
LOS:	0	0
LCD:	0	0

The DSL Status page displays current information on the DSL line performance. The page refreshes about every 10 seconds (**Refresh Rate**).

2. You can click **[DSL Param]** to display data about the configuration of the DSL line, as shown below.



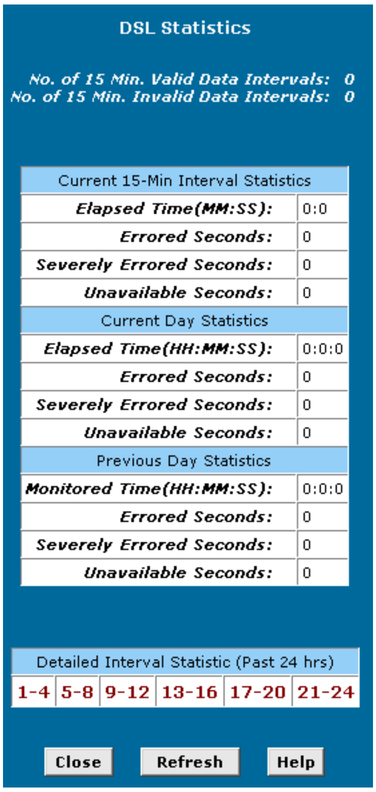
DSL Parameter

DSL Parameters and Status	
Vendor ID:	00B5GSPN
Revision Number:	T93.3.23
Serial Number:	123456789abcdx
Local Tx Power:	0.0 dB
Remote Tx Power:	0.0 dB
Local Line Atten.:	0.5 dB
Remote Line Atten.:	0.5 dB
Local SNR Margin:	0.0 dB
Remote SNR Margin:	0.0 dB
Self Test:	Passed
DSL Standard:	T1.413
Trellis Coding:	Disable
Framing Structure:	Framing-0

Config Data	Up		Down	
	Intrlvd	Fast	Intrlvd	Fast
AS0(kbps):	-	-	0	0
AS1(kbps):	-	-	0	0
LS0(kbps):	0	0	-	-
LS1(kbps):	0	0	-	-
RValue:	0	0	0	0
SValue:	0		0	
DValue:	0		0	

Click **[Close]** to return to the DSL Status page.

3. From the **DSL Status** page, you can click **[Stats]** to display DSL line performance statistics:



DSL Statistics

No. of 15 Min. Valid Data Intervals: 0
No. of 15 Min. Invalid Data Intervals: 0

Current 15-Min Interval Statistics	
Elapsed Time(MM:SS):	0:0
Errored Seconds:	0
Severely Errored Seconds:	0
Unavailable Seconds:	0
Current Day Statistics	
Elapsed Time(HH:MM:SS):	0:0:0
Errored Seconds:	0
Severely Errored Seconds:	0
Unavailable Seconds:	0
Previous Day Statistics	
Monitored Time(HH:MM:SS):	0:0:0
Errored Seconds:	0
Severely Errored Seconds:	0
Unavailable Seconds:	0

Detailed Interval Statistic (Past 24 hrs)					
1-4	5-8	9-12	13-16	17-20	21-24

The **DSL Statistics** page reports error data relating to the last 15 minute interval, the current day, and the previous day.

At the bottom of the page, the **Detailed Interval Statistic** table displays links you can click on to display detailed data for each 15 minute interval in the past 24 hours. For example, when you click on 1-4, data displays for the 15-minute such intervals that make up the previous 4 hours (there are 16 of these) shows one such page.

Chapter 5: Connection Modes

The ADSL Router is delivered pre-configured from the factory in Router Mode. This chapter presents some deployment examples for your reference. Each mode includes its general configure procedures. For more detailed information about Web configuration, refer to chapters 3 and 4.

- Bridge Mode
- PPP Connection Mode
- Router Mode

For making sure that you can connect the ADSL to your computer well and get into Internet successfully, please make sure the following first.

1. Make sure you have installed a network interface card onto your computer.
2. Make sure the connection between the ADSL and your computer is OK.
3. Check to see the TCP/IP protocol and set the IP address as **Obtain an IP address automatically** (See chapter 3)

When you are sure all above is Ok, you can open the Browser and type in **192.168.1.1** and start to do the Web configuration with different connection modes.

This chapter is going to introduce the function of each connection mode and tell you the basic configuring steps that you have to do. If you did not follow the configuring steps for using these connection modes, you might get some connection problems and cannot connect to Internet well.

Bridge Mode

In this example, the ADSL Router acts as a bridge which bridging PC IP address from LAN to WAN. PC IP address can be a static public address that is pre-assigned by ISP or a dynamic public address that is assigned by ISP DHCP server, or can be got from PPPoE software.

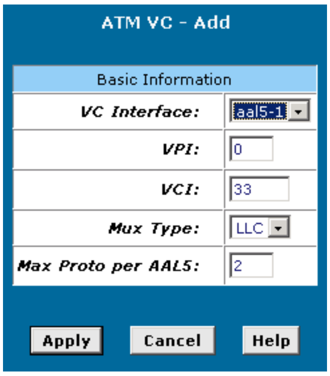
Therefore, it does not require a public IP address. It only has a default private IP address (192.168.1.1) for management purpose.

Note: Before changing your bridge configuration, check with your ISP to determine the type of connection they use to exchange data with their customer's DSL modems.

Part 1: Configuring the ADSL Router

1. Creating an ATM VCC interface

1. Select **Bridge** > **ATM VC**.
2. On the ATM VC Configuration page click **[Add]** to add a new ATM VCC interface.



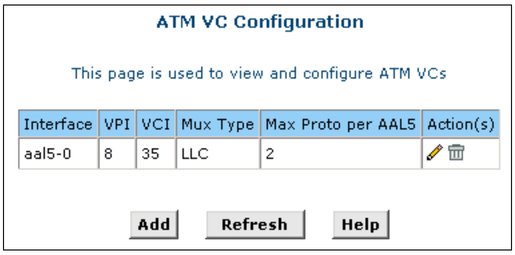
ATM VC - Add

Basic Information	
VC Interface:	aal5-1
VPI:	0
VCI:	33
Mux Type:	LLC
Max Proto per AAL5:	2

3. Enter the provided fields as below.

Field	Description
VC Interface	Select a VCC interface from the available interfaces, e.g. **aal5-1**.
VPI / VCI	Enter the VPI/VCI values given by your ISP, e.g. **0 / 33**.
Mux Type	Select **LLC** or **VC** as required by your ISP.
Max Proto per AAL5	Keep the default **2**.

4. After entering the fields above, click **[Apply]**.
5. When confirmation page appears, click **[Close]**.
6. You will return to the **ATM VC Configuration** page and see the newly added ATM VC entry.



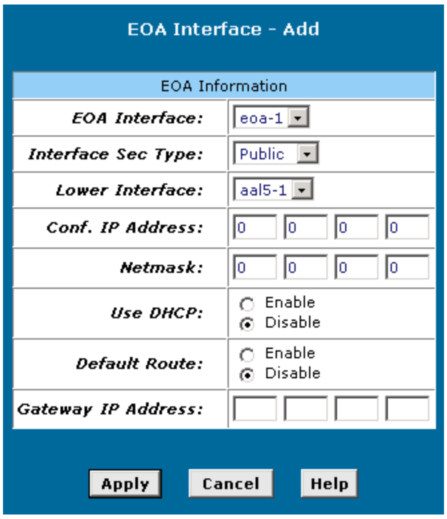
ATM VC Configuration

This page is used to view and configure ATM VCs

Interface	VPI	VCI	Mux Type	Max Proto per AAL5	Action(s)
aal5-0	8	35	LLC	2	✎ 🗑

2. Creating an EoA interface.

1. Select **Bridge** > **RFC1483 Interface (EoA)**.
2. On the **ATM(EoA) Config** page click **[Add]** to add a new EoA interface.



EOA Interface - Add

EOA Information

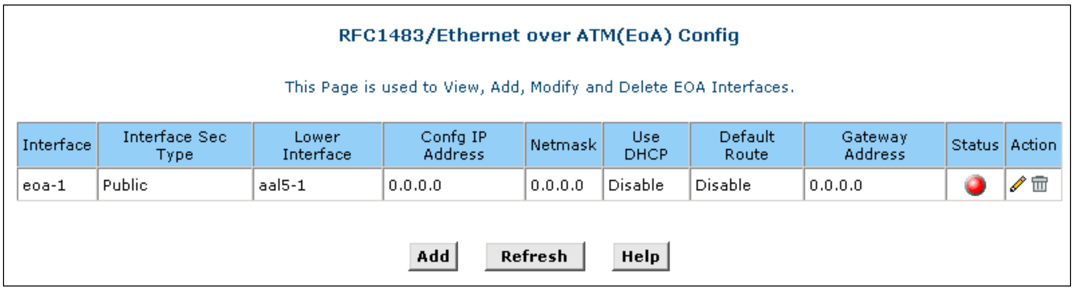
EOA Interface:	eoa-1
Interface Sec Type:	Public
Lower Interface:	aal5-1
Conf. IP Address:	0 0 0 0
Netmask:	0 0 0 0
Use DHCP:	○ Enable ● Disable
Default Route:	○ Enable ● Disable
Gateway IP Address:	

3. Enter the provided fields as below:

Field	Description
EOA Interface	Select an EoA interface from the available interfaces, e.g. **eoa-1**.
Interface Sec Type	Select **Public**.
Lower Interface	Select the ATM VCC interface you created, e.g. **aal5-1**.
Conf. IP Address / Netmask	**0.0.0.0 / 0.0.0.0**. To use the device as a bridge, you don't need to set the IP address and subnet mask. Just keep the default.
Use DHCP	Select **Disable**
Default Route	Select **Disable**
Gateway IP Address	Leave it empty. You don't need to set the gateway.

4. After entering the fields above, click **[Apply]**.

5. When confirmation page appears, click **[Close]**.
6. You will return to the ATM(EoA) Config page and see the newly added EoA entry.



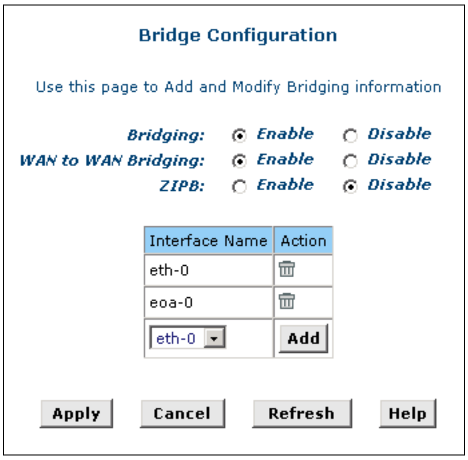
RFC1483/Ethernet over ATM(EoA) Config

This Page is used to View, Add, Modify and Delete EOA Interfaces.

Interface	Interface Sec Type	Lower Interface	Config IP Address	Netmask	Use DHCP	Default Route	Gateway Address	Status	Action
eoa-1	Public	aal5-1	0.0.0.0	0.0.0.0	Disable	Disable	0.0.0.0	●	✎ 🗑

3. Enable Bridging function.

1. Select **Bridge** > **Bridging** to display the Bridge Configuration page.
2. Select **eth-0** from the list and click **[Add]**.
3. Select the EoA interface to be used (e.g. **eoa-0**) from the drop-down list, and then click **[Add]**.



Bridge Configuration

Use this page to Add and Modify Bridging information

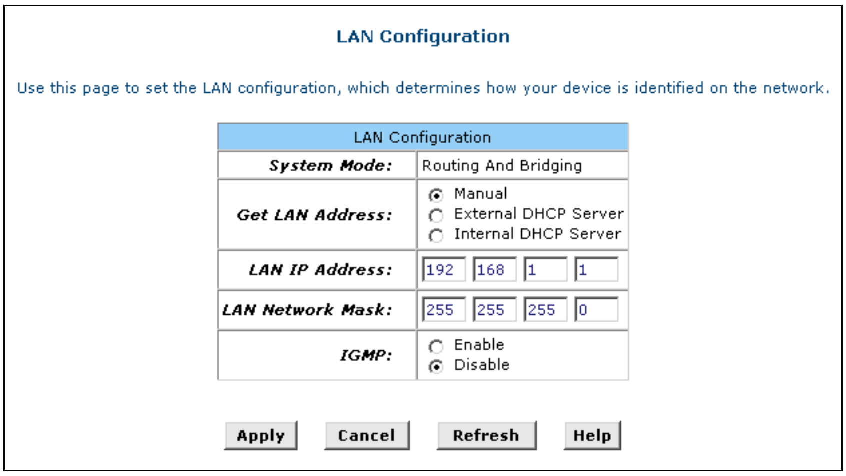
Bridging: ● *Enable* ○ *Disable*
WAN to WAN Bridging: ● *Enable* ○ *Disable*
ZIPB: ○ *Enable* ● *Disable*

Interface Name	Action
eth-0	🗑
eoa-0	🗑
eth-0 ▾	Add

4. Make sure **Enable** is selected for **Bridging**.
5. Click **[Apply]**. A page gives a receipt for the changes.

4. LAN configuration.

1. Select **Bridge** > **LAN Config**.



LAN Configuration

Use this page to set the LAN configuration, which determines how your device is identified on the network.

LAN Configuration	
System Mode:	Routing And Bridging
Get LAN Address:	● Manual ○ External DHCP Server ○ Internal DHCP Server
LAN IP Address:	192 . 168 . 1 . 1
LAN Network Mask:	255 . 255 . 255 . 0
IGMP:	○ Enable ● Disable

2. Don’t modify the settings; just keep the default shown as the figure below:

5. Commit your changes.

Select **Admin** > **Commit & Reboot** and click **[Save]** to save your changes to permanent storage.

Part 2: Check your connection status.

Select **Home**. On the **System View** page, the **WAN Interfaces** item should display the interface you created to communicate with your ISP. A green ball in the **Status** field indicates a successful connection.

Part 3: Configuring the PC.

Option 1: Your PC use the IP given by your ISP.

If this is the case, configure your PC to use the static IP given by your ISP, for example:

IP address: 10.100.16.2

Subnet mask: 255.255.255.0

Default gateway: 10.100.16.254

Note: With the configuration above, your PC should be able to access the Internet now but will lose the local connection to the device's LAN port. If you want to configure the ADSL Router via the Web browser again, you should re-configure the PC to **192.168.1.x** to be in the same subnet of the device's LAN port.

Option 2: Your client use PPPoE software to connect to your ISP.

Just keep your PC's setting as a DHCP client and execute the PPPoE software to make the connection.

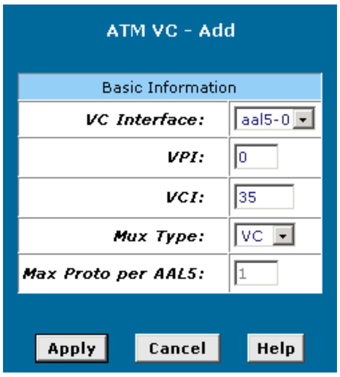
PPP Connection Mode

In this deployment environment, the PPPoE/PPPoA session is between the ADSL WAN interface and BRAS. The ADSL Router gets a public IP address from BRAS when connecting to DSLAM. The multiple client PCs will get private IP address from the DHCP server enabled on private LAN. The enabled NAT mechanism will translate the IP information for clients to access the Internet.

Part 1: Configuring the ADSL Router

1. Creating an ATM VCC interface.

1. Select **Wan** > **ATM VC**.
2. On the **ATM VC Configuration** page click **[Add]** to add a new ATM VCC interface.



ATM VC - Add

Basic Information

VC Interface:	aal5-0
VPI:	0
VCI:	35
Mux Type:	VC
Max Proto per AAL5:	1

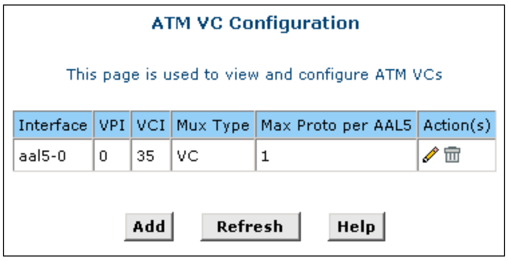
3. Enter the provided fields as below:

Field	Description
VC Interface	Select a VCC interface from the available interfaces, e.g. **aal5-0**.
VPI / VCI	Enter the VPI/VCI values given by your ISP, e.g. **0 / 35**.
Mux Type	For PPPoE select **LLC**, for PPPoA select **VC**.
Max Proto per AAL5	Keep the default **2**.

4. After entering the fields above, click **[Apply]**.

5. When confirmation page appears, click **[Close]**.

6. You will return to the ATM VC Configuration page and see the newly added ATM VC entry.



ATM VC Configuration

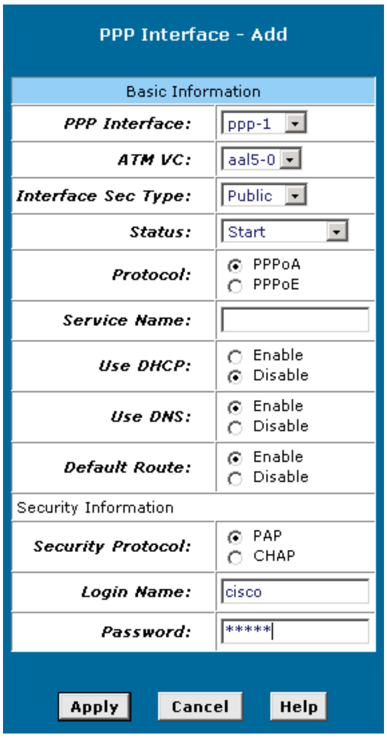
This page is used to view and configure ATM VCs

Interface	VPI	VCI	Mux Type	Max Proto per AAL5	Action(s)
aal5-0	0	35	VC	1	✎ 🗑

2. Creating a PPP interface.

1. Select **Wab** > **PPP**.

2. On the PPP Configuration page click **[Add]** to add a new PPP interface.



PPP Interface - Add

Basic Information

PPP Interface:	ppp-1
ATM VC:	aal5-0
Interface Sec Type:	Public
Status:	Start
Protocol:	● PPPoA ○ PPPoE
Service Name:	
Use DHCP:	○ Enable ● Disable
Use DNS:	● Enable ○ Disable
Default Route:	● Enable ○ Disable

Security Information

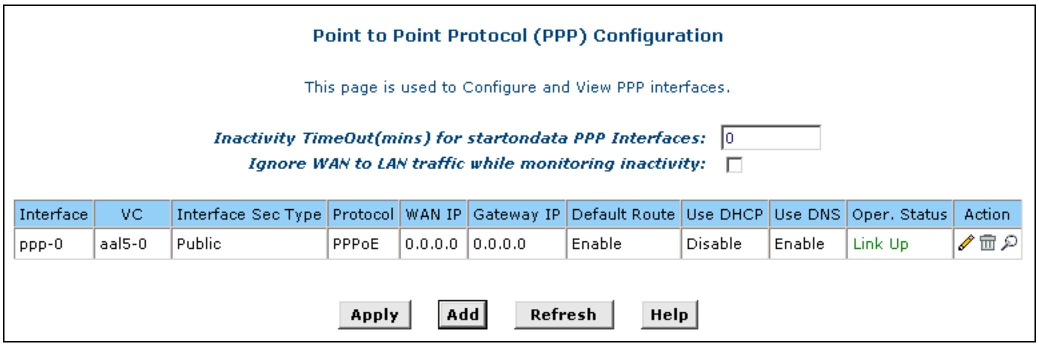
Security Protocol:	● PAP ○ CHAP
Login Name:	cisco
Password:	*****

3. Enter the provided fields as below:

Field	Description
PPP Interface	Select a PPP interface from the available interfaces, e.g. **ppp-1**.
ATM VC	Select the ATM VC you created, e.g. **aal5-0**.
Interface Sec Type	Select **Public**

Field	Description
Status	Select **Start** or **StartOnData**. Start - To establish connection whenever you turn on the ADSL Router. StartOnData - To establish connection whenever the device gets request to connect to the Internet, such as when you open browser requesting for Web pages.
Protocol	Select **PPPoA** or **PPPoE** as required by your ISP.
Service Name	For PPPoA, no need to set up. For PPPoE, enter the Service Name if this is required by your ISP. Otherwise leave it blank.
Use DHCP	Select **Disable** unless your ISP instructs you to enable this service.
Use DNS	Select **Enable**
Default Route	Select **Enable**
Security Protocol	Select **PAP** or **CHAP** as required by your ISP.
Login Name	Enter the login name given by your ISP.
Password	Enter the password given by your ISP.

4. After entering the fields above, click **[Apply]**.
5. When confirmation page appears, click **[Close]**.
6. You will return to the PPP Configuration page and see the newly added PPP entry.



Point to Point Protocol (PPP) Configuration

This page is used to Configure and View PPP interfaces.

Inactivity TimeOut(mins) for startondata PPP Interfaces: 0

Ignore WAN to LAN traffic while monitoring inactivity: □

Interface	VC	Interface Sec Type	Protocol	WAN IP	Gateway IP	Default Route	Use DHCP	Use DNS	Oper. Status	Action
ppp-0	aal5-0	Public	PPPoE	0.0.0.0	0.0.0.0	Enable	Disable	Enable	Link Up	✎ 🗑 🔍

The Oper. Status **Link Up** indicates the link is currently up.

Part 2: Check your connection status.

Select **Home**. On the System View page, the **WAN Interfaces** item should display the interface you created to communicate with your ISP. A green ball in the **Status** field indicates a successful connection.

Part 3: Configuring the PC.

Keep your PC's setting as a DHCP client. No further configuration is required.

Router Connection Mode

In this deployment environment, we make up a private IP network of 192.168.1.1. NAT function is enabled (on ADSL Router or use another NAT box connected to hub) to support multiple clients to access the Router and some public servers (WWW, FTP).

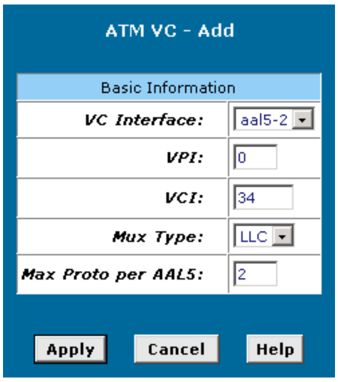
If you apply for multiple IP addresses from your ISP, you can assign these public IP addresses to the ADSL Router and public server, e.g., Web or FTP server. Typically the first IP is network address, the second is used as router IP address and the last one is subnet broadcasting. Other remaining IP addresses can be assigned to PCs on the LAN.

This section describes both RFC1577 and 1483 Bridge connection methods.

Part 1: Configuring the ADSL Router

1. Creating an ATM VCC interface.

1. Select **Wan** > **ATM VC**.
2. On the ATM VC Configuration page click **[Add]** to add a new ATM VCC interface.



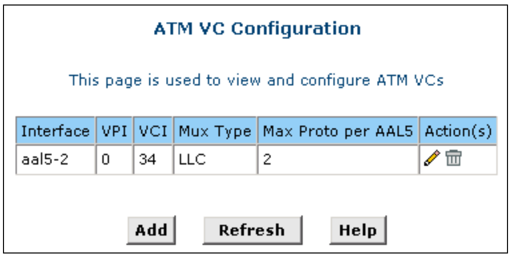
ATM VC - Add

Basic Information	
VC Interface:	aal5-2
VPI:	0
VCI:	34
Mux Type:	LLC
Max Proto per AAL5:	2

3. Enter the provided fields as below:

Field	Description
VC Interface	Select a VCC interface from the available interfaces, e.g. **aal5-2**.
VPI / VCI	Enter the VPI/VCI values given by your ISP, e.g. **0 / 34**.
Mux Type	Select **LLC** or **VC** as required by your ISP.
Max Proto per AAL5	Keep the default **2**.

4. After entering the fields above, click **[Apply]**.
5. When confirmation page appears, click **[Close]**.
6. You will return to the ATM VC Configuration page and see the newly added ATM VC entry.



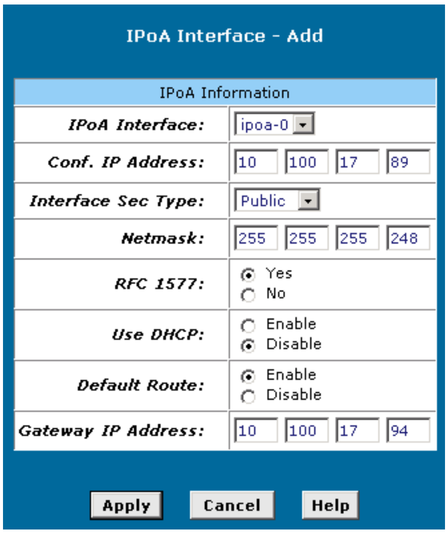
ATM VC Configuration

This page is used to view and configure ATM VCs

Interface	VPI	VCI	Mux Type	Max Proto per AAL5	Action(s)
aal5-2	0	34	LLC	2	✎ 🗑

2. Creating a IPoA interface.

1. Select **Wan** > **IPOA**.
2. On the **IOoA Configuration** page click **[Add]** to add a new IPoA interface.



IPoA Interface - Add

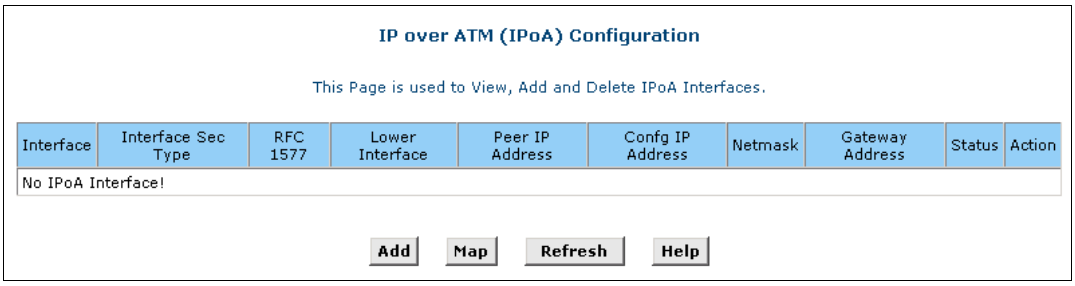
IPoA Information

IPoA Interface:	ipoa-0
Conf. IP Address:	10 100 17 89
Interface Sec Type:	Public
Netmask:	255 255 255 248
RFC 1577:	● Yes ○ No
Use DHCP:	○ Enable ● Disable
Default Route:	● Enable ○ Disable
Gateway IP Address:	10 100 17 94

3. Enter the provided fields as below:

Field	**Description**
IPoA Interface	Select an IPoA interface from the available interfaces, e.g. **ipoa-0**.
Conf. IP Address	Enter the IP address given by your ISP, e.g. **10.100.17.89**.
Interface Sec Type	Select **Public**
Netmask	Enter the IP address given by your ISP, e.g. **255.255.255.248**.
RFC 1577	For IPoA select **Yes**, for 1483 bridge select **No**
Use DHCP	Select **Disable**
Default Route	Select **Enable**
Gateway IP Address	Enter the IP address given by your ISP, e.g. **10.100.17.94**.

4. After entering the fields above, click **[Apply]**.
5. When confirmation page appears, click **[Close]**.
6. You will return to the **IpoA Configuration** page and see the newly added IPoA entry.



IP over ATM (IPoA) Configuration

This Page is used to View, Add and Delete IPoA Interfaces.

Interface	Interface Sec Type	RFC 1577	Lower Interface	Peer IP Address	Confg IP Address	Netmask	Gateway Address	Status	Action
No IPoA Interface!									

Part 2: Check your connection status.

Select **Home**. On the **System View** page, the **WAN Interfaces** item should display the interface you created to communicate with your ISP. A green ball in the **Status** field indicates a successful connection.

Part 3: Configuring the PC.

Keep your PC's setting as a DHCP client. No further configuration is required.

Chapter 6: Troubleshooting

This appendix suggests solutions for problems you may encounter in installing or using your ADSL Router, and provides instructions for using several IP utilities to diagnose problems.

Contact Customer Support if these suggestions do not resolve the problem.

Problem	Troubleshooting Suggestion
LEDs	
Power LED does not illuminate after product is turned on.	Verify that you are using the power cable provided with the device and that it is securely connected to the ADSL Router and a wall socket/power strip.
LINK WAN LED does not illuminate after phone cable is attached.	Verify that a standard telephone cable is securely connected to the ADSL port and your wall phone jack. Wait 30 seconds to allow the device to negotiate a connection with your ISP.
LINK LAN LED does not illuminate after Ethernet cable is attached.	Verify that the Ethernet cable is securely connected to your LAN hub or PC and to the ADSL Router. Make sure the PC and/or hub is turned on. Verify that you are using correct cable.
DIAG LED stays illuminated after turning the device on.	The DIAG LED should turn off after about 10-15 seconds. If it does not, turn off the ADSL Router, wait 10 seconds, and then turn it back on.
Internet Access	
PC cannot access Internet	Use the **ping** utility to check whether your PC can communicate with the ADSL Router's LAN IP address (by default 192.168.1.1). If it cannot, check the Ethernet cabling. If you statically assigned a private IP address to the computer, (not a registered public address), verify the following: • Check that the gateway IP address on the computer is your public IP address. If it is not, correct the address or configure the PC to receive IP information automatically. • Verify with your ISP that the DNS server specified for the PC is valid. Correct the address or configure the PC to receive this information automatically. • Verify that a NAT rule has been defined on the ADSL Router to translate the private address to your public IP address.
PCs cannot display Web pages on the Internet.	Verify that the DNS server specified on the PCs is correct for your ISP. You can use the **ping** utility to test connectivity with your ISP's DNS server.
Configuration Manager Program	
You forgot/lost your Configuration Manager username or password.	You can reset the device to the default configuration by pressing the **Reset** button for 3 times on the back panel of the device (using a pointed object such as a paper clip). Then, type the default username and password admin/admin. **WARNING**: Resetting the device removes any custom settings and returns all settings to their default values.

Problem	Troubleshooting Suggestion
Cannot access the Configuration Manager program from your browser.	Use the **ping** utility to check whether your PC can communicate with the ADSL Router's LAN IP address (by default 192.168.1.1). If it cannot, check the Ethernet cabling. Verify that you are using Internet Explorer v5.0 or later, or Netscape Navigator v4.7 or later. Support for Javascript® must be enabled in your browser. Support for Java® may also be required. Verify that the PC's IP address is defined as being on the same subnet as the IP address assigned to the LAN port on the ADSL Router.
Changes to Configuration Manager are not being retained.	Be sure to use the Commit function (**Admin** > **Commit & Reboot**) after any changes.

Upgrading		
Error Message	**Possible cause**	**Action**
invalid checksum	The firmware file to be used is damaged or the file format is wrong.	Make sure that your firmware file format is valid or get a new firmware file.
invalid hardcode	The firmware file is not compatible with the model of your ADSL Router.	Download a compatible firmware from the Web.
unknown flags type	The firmware version is not compatible.	Download a compatible firmware from the Web.
internal isfs error / internal flashfs error	System error occurs. It may cause by the lack of memory.	Reboot your ADSL Router and perform the upgrade task again.
invalid file format	The firmware file format is invalid.	Check the file format is correct, otherwise download a firmware file with correct format.
get an error message	The TFTP server responses with error message.	Make sure the file name you enter is correct. Otherwise the TFTP server may response with the error message "File not found".
transfer time out	The transfer session is interrupted.	a. Make sure the TFTP server is on the same subnet with the ADSL Router. b. Make sure you the IP address of the TFTP server you specify is correct and that your TFTP server is started. c. If error still occurs, reboot your ADSL Router and perform the upgrade task again.
firmware update in process	The upgrade is already in process	Do not turn off your ADSL Router otherwise you will cause damage to the device
no remote server IP	The IP address of the TFTP server is not specified	Specify the IP address of the TFTP server is not specified.
can't allocate update buffer	It may cause by the lack of memory.	Reboot your ADSL Router and perform the upgrade task again.

Chapter 7: Glossary

- **ARP (Address Resolution Protocol)**

  ARP is a TCP/IP protocol for mapping an IP address to a physical machine address that is recognized in the local network, such as an Ethernet address.

  A host wishing to obtain a physical address broadcasts an ARP request onto the TCP/IP network. The host on the network that has the IP address in the request then replies with its physical hardware address.

  Inverse ARP (In-ARP), on the other hand, is used by a host to discover its IP address. In this case, the host broadcasts its physical address and a RARP server replies with the host's IP address.

- **DHCP (Dynamic Host Configuration Protocol)**

  When operates as a DHCP server, the ADSL Router assign IP addresses to the client PCs on the LAN. The client PCs "leases" these Private IP addresses for a user-defined amount of time. After the lease time expires, the private IP address is made available for assigning to other network devices.

  The DHCP IP address can be a single, fixed public IP address, an ISP assigned public IP address, or a private IP address.

  If you enable DHCP server on a private IP address, a public IP address will have to be assigned to the NAT IP address, and NAT has to be enabled so that the DHCP IP address can be translated into a public IP address. By this, the client PCs are able to access the Internet.

- **LAN (Local Area Network) & WAN (Wide Area Network)**

  A LAN is a computer network limited to the immediate area, usually the same building or floor of a building. A WAN, on the other hand, is an outside connection to another network or the Internet.

  The Ethernet side of the ADSL Router is called the LAN port. It is a twisted-pair Ethernet 10Base-T interface. A hub can be connected to the LAN port. More than one computers, such as server or printer, can be connected through this hub to the ADSL Router and composes a LAN.

  The DSL port of the ADSL Router composes the WAN interface, which supports PPP or RFC 1483 connecting to another remote DSL device.

- **NAT (Network Address Translation) IP Address**

  NAT is an Internet standard that translates a private IP within one network to a public IP address, either a static or dynamic one. NAT provides a type of firewall by hiding internal IP addresses. It also enables a company to use more internal IP addresses.

  If the IP addresses given by your ISP are not enough for each PC on the LAN and the ADSL Router, you need to use NAT. With NAT, you make up a private IP network for the LAN and assign an IP address from that network to each PC. One of some public addresses is configured and mapped to a private workstation address when accesses are made through the gateway to a public network.

  For example, the ADSL Router is assigned with the public IP address of 168.111.2.1. With NAT enabled, it creates a Virtual LAN. Each PC on the Virtual LAN is assigned with a private IP address with default value of 192.168.1.2 to 192.168.2.254. These PCs are not accessible by the outside word but they can communicate with the outside world through the public IP 168.111.2.1.

- **Private IP Address**

  Private IP addresses are also LAN IP addresses, but are considered "illegal" IP addresses to the Internet. They are private to an enterprise while still permitting full network layer connectivity between all hosts inside an enterprise as well as all public hosts of different enterprises.

  The ADSL Router uses private IP addresses by assigning them to the LAN that cannot be directly accessed by the Internet or remote server. To access the Internet, private network should have an agent to translate the private IP address to public IP address.

- **Public IP Address**

  Public IP addresses are LAN IP addresses that can be considered "legal" for the Internet, because they can be recognized and accessed by any device on the other side of the DSL connection. In most cases they are allocated by your ISP.

  If you are given a range of fixed IP addresses, then one can be assigned to the router and the others to network devices on the LAN, such as computer workstations, ftp servers, and Web servers.

- **PVC (Permanent Virtual Circuit)**
  A PVC is a logical point-to-point circuit between customer sites. PVCs are low-delay circuits because routing decisions do not need to be made along the way. Permanent means that the circuit is preprogrammed by the carrier as a path through the network. It does not need to be set up or torn down for each session.
- **RIP (Routing Information Protocol)**
  RIP is a routing protocol that uses the distance-vector routing algorithms to calculate least-hops routes to a destination. It is used on the Internet and is common in the NetWare environment. It exchanges routing information with other routers. It includes V1, V2 and V1&V2, which controls the sending and receiving of RIP packets over Ethernet.
- **UDP (User Datagram Protocol)**
  UDP is a connectionless transport service that dispenses with the reliability services provided by TCP. UDP gives applications a direct interface with IP and the ability to address a particular application process running on a host via a port number without setting up a connection session.
- **Virtual Server**
  You can designate virtual servers, e.g., a FTP, Web, telnet or mail server, on your local network and make them accessible to the outside world. A virtual server means that it is not a dedicated server -- that is, the entire computer is not dedicated to running on the public network but in the private network.
- **VPI (Virtual Path Identifier) & VCI (Virtual Channel Identifier)**
  A VPI is a 8-bit field while VCI is a 16-bit field in the ATM cell header. A VPI identifies a link formed by a virtual path and a VCI identifies a channel within a virtual path. In this way, the cells belonging to the same connection can be distinguished. A unique and separate VPI/VCI identifier is assigned in advance to indicate which type of cell is following, unassigned cells, physical layer OAM cells, metasignalling channel or a generic broadcast signaling channel. Your ISP should supply you with the values.

Appendix: Specification

Software

ADSL Compliance

- ANSI T1.413 Issue 2
- ITU G.992.2 Annex A (G.lite)
- ITU G.992.1 Annex A (G.dmt)
- ITU G.992.1 Annex B (G.dmt)
- ITU G.994.1 (G.hs)

ATM Features

- Compliant to ATM Forum UNI 3.1 / 4.0 Permanent Virtual Circuits (PVCs)
- Support up to 8 AAL5 Virtual Circuit Channels (VCCs) for UBR, CBR and GFR service classes
- Provides ATM layer functionality
- Provides adaptation layer (AAL5) functionality
- Performs the traffic shaping and scheduling per ATM port
- Supports PPP encapsulation over ATM (PPPoA) and PPP over Ethernet (PPPoE)
- ADSL-aware CAC
- Support for F5 AIS, RDI and loopback cells

Bridging Features

- Up to 1000 hosts
- Supports transparent bridging as specified in IEEE 802.1D Transparent Bridging
- Supports bridged PDU encapsulation (RFC 2684)
- MAC-level filter to accept/deny packets based on rules applicable at the MAC level

Routing Features

- Network Address Translation (NAT)
- IP filtering and raw filtering
- Dynamic IP address allocation is supported through DHSP and IPCP
- Point-to-point Protocol (PPP): PPPoA, PPPoE, PAP or CHAP for user authentication, Routing information Protocol (RIP) v1 and v2

Security Features

- PAP (RFC1334), CHAP (RFC1994) for PPP session
- Firewall support IP packets filtering based on IP address/Port number/Protocol type and TCP code field flags
- Intrusion Detection provides protection from a number of attacks (such as SYN/FIN/RST Flood, Smurf, WinNuke, Echo Scan, Xmas Tree Scan, etc)

Configuration and Management

- DSL Forum TR37-compliant auto configuration
- SNMPv1 over DSL or Ethernet for access to the MIB-II (router only)
- CLI (Command Line Interface) via serial interface or Telnet over Ethernet or DSL
- Web-based Graphical User Interface (GUI) enabling end-user device configuration via Web browser
- Update of boot image configuration data over TFTP/FTP

Hardware

Interface

- One RJ-11 port for ADSL connection
- One RJ-45 port for 10/100 Base-T auto-sensing Ethernet connection
- One hidden reset button for restoring to factory default settings

Regulatory Approvals and Compliance

- EMI/Immunity: FCC part 15 and part 68 Class B approval
- Safety: UL, CE

Power Requirement and Operation Environment Requirement

- Power Adaptor: Input 230 VAC, 50 Hz, 70 mA; Output 9V, 1000 mA
- Ambient Temperature: 0 to 45°C (32 to 113°F)
- Relative Humidity: 20% to 90% (non-condensing)

Physical

- Dimensions: 140mm(L) x 111mm(W) x 28mm(H)
- Weight: 380g