

# ADSL Modem



## Installation Guide & Command Reference GS-R250S

eXperience  
the Internet  
@  
***GreatSpeed!***

V1.2



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## Safety Information for Home Electronic Devices

### FCC Statement

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

- Reorient or relocated the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into a different outlet circuit from than the receiver.
- Consult an experienced radio/TV technician for help.
- Shielded cables must be used to comply with FCC regulations.

### Compliance Certification

- CE approved
- FCC Part 15 Class B

### Environmental Requirements

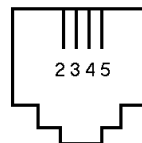
- Operating Temperature: 0° C to 55° C with airflow
- Non-operating Temperature: -10° C to 85° C
- Operating Humidity: 10% to 90% non-condensing
- Non-operating storage humidity: 5% to 95% non-condensing

### Power Requirements

- Input: 100-240V 0.3A 50-60Hz  
Output: +5V 1.4A

## Connector Pin-out

The ADSL router is equipped with a RJ-11 jack for connection to the ADSL data port. The center two pins, pins 3 and 4, are used for ADSL data. For the card to make a proper ADSL connection, the installed ADSL data port should also use pins 3 and 4 for data. If the ADSL data port installation uses pins 2 and 5 for data, then a wiring converter will be required. Do not alter or remove the wiring converter if present. Consult with your ADSL provider before attempting any wiring changes.



## About This Manual

This manual provides a comprehensive user's guide and installation manual for GreatSpeed's GS-R250S Multi-mode ADSL Router. It has been organized in such a way to make it easy to follow by users worldwide. In the manual, there are many examples given in the commands, largely IP addresses and other values. Please realize that these are for example only and you must use the values provided by your ADSL service provider to achieve a connection. In order to ensure optimal comprehension, the following list provides brief descriptions of the formatting styles used throughout this manual.

**Commands:** Commands are always referred to by using the words "type" or "click" before them. These commands are always shown as bold-faced words. For example, click **Next**, click **OK**, or type: **command**.

**Names of Windows (Dialog Boxes):** The names of the windows (also referred to as dialog boxes) that appear on the PC screen are always referred to in quotes. For example, the "Setup Complete" window.

**Names of Options in Windows:** The names of options to choose from inside the windows that appear on the PC screen are always referred to in italics. For example, choose the *Yes, I want to restart my computer now* option from the window.

**NOTES:** In some cases, preparatory or cautionary information is needed before proceeding onto the next step in an installation process. This kind of information is provided in the form of notes, which are always referred to in bold-faced and italicized letters. For example, **NOTE: *To access the Control Panel Application, the driver must be running.***

## Congratulations!

Your new GreatSpeed router is a multi-functional piece of equipment. It conveniently interfaces with your computer system for configuration. The modem connects directly to your telephone line via a standard connector. This guide is designed to walk you through installation of your GreatSpeed GS-R250S Router in the easiest and quickest way possible. Please follow the instructions carefully and in no time you'll be able to experience the Internet @ GreatSpeed.

## System Requirements

- IBM PC/AT or compatible PC
- Pentium 100MHz or faster
- 32Mbytes system memory or more
- 30Mbytes available hard disk space or more
- 4X CD-ROM drive or better
- Windows 95, 98, 98SE, 98ME, 2000, NT4.0, MacOS 8 and above, Unix, Linux
- Ethernet Network Interface Card (NIC) that supports TCP/IP

## Product Features

- Ethernet interface
- Many popular router functions
- Four LED indicators
- Supports: ANSI T1.413 issue 2, G.992.1 (Full-Rate DMT), G.992.2 (G.Lite), G.994.1 (Multimode), G.994.1 (G.sh)
- Supported Protocols: Bridged RFC 1483, Routed RFC 1483, RFC 1577, RFC 2364, RFC2516
- ATM supports AAL5. AATM Traffic shaping supports CBR and UBR
- Transparent Bridging features conformance to IEEE 802.1d and supports spanning tree protocol and bridge filters
- NAT functionality

## Package Contents

- One (1) GreatSpeed GS-R250S Multi-Mode ADSL Router
- One (1) 5VDC Adapter
- One (1) RJ-11 ADSL cable
- One (1) standard Ethernet cable (straight connect)
- One (1) Ethernet crossover adapter
- One (1) 9-pin to 9-pin RS-232 cable
- One (1) User Guide
- One (1) Stand
- One (1) Configuration Utility CD

All packages have been carefully checked for completeness and functionality before shipping. Please contact your place of purchase should any of the above items be missing or damaged.

## Front Panel

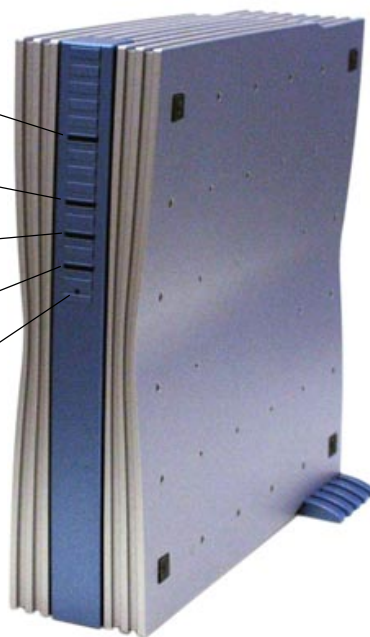
ADSL LED - Flashing= establishing link  
Solid=Link established.

Ethernet LED - On when Ethernet link is connected.

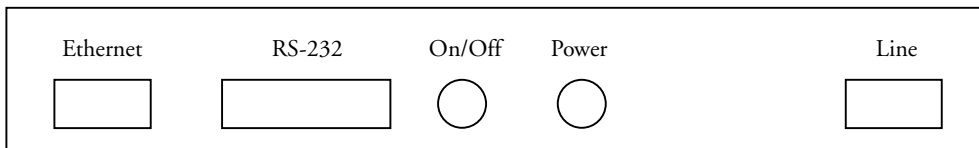
Data LED - When flashing, data is being transferred

Power LED - Light on indicates power to the unit.

Reset Button- warm reboot of the modem



## Rear Panel



## Installing and Configuring your ADSL Router

The major functions of the ADSL Router are performed by using the Ethernet network interface. Your computer must have an Ethernet Network Interface Card (NIC) installed and set up with the TCP/IP protocol before beginning to use the router. The router also provides a serial console port for monitoring and configuring the router via the built-in command line interface. This will be covered largely in the rest of this manual.

### Preparation

Before beginning the hardware installation, please gather the following materials for the setup you will be using.

You will need to know the Internet Protocol supported by your ADSL provider to successfully connect to the Internet. For future troubleshooting or reinstallation, it is important that you retain these details. **Please turn to page 61 of this manual to record your connection information in the space we have provided for you.**

#### Setup 1 - Connecting directly to your PC

- ADSL service, provided by your ISP/NSP. Also have your connection information ready.
- Personal Computer running a supported operating system, with a Ethernet NIC installed.
- TCP/IP protocol installed for your NIC. (See page 13).
- Ethernet straight connect cable (included in package)
- Ethernet crossover adapter (included in package)
- RJ-11 ADSL cable (included in package)
- RS-232 serial cable (included in package)
- Power adapter (included in package)

Proceed to Page 9

**Setup 2 - Connecting to multiple PCs** - You will need all the above listed items plus the following:

- Additional PC(s) running a supported operating system with a Ethernet NIC installed.
- Additional Ethernet straight connect cable (one for each additional PC).
- One Ethernet hub supporting the number of PCs you will be connecting
- Ethernet crossover adapter. Only required if your hub's uplink port does not have a cascade switch. (Included in package)

Proceed to Page 11

## Hardware Installation - Single PC Connection

Before configuring your ADSL router, you must complete the hardware installation using the following steps.

- 1 Be sure the power switch, marked ON/OFF, on the rear of the unit is depressed, in the OFF position.

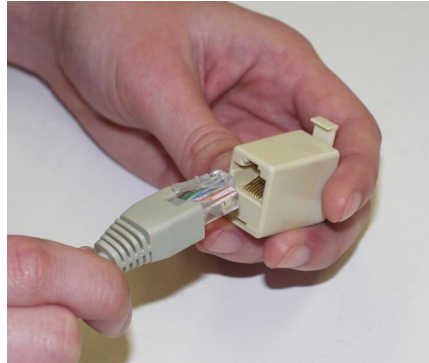
- 2 Connect the power adapter to the power receptacle on the rear of the unit marked PWR, then plug the AC end into the wall electrical outlet.



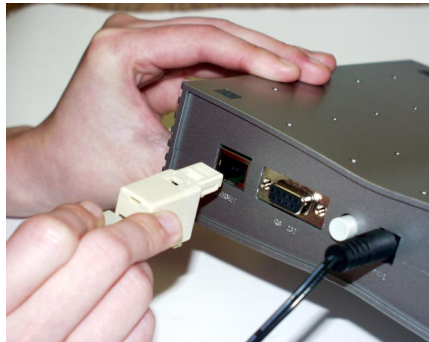
- 3 You will now connect the Ethernet cable. Connect one end of the Ethernet straight connect cable to the Ethernet jack on the NIC in the back of your PC.



- 4 Then connect the other end to the cross connect adapter supplied in the package.



- 5 Then connect the cable, with the cross connect adapter attached, to the connector marked Ethernet on the back of the router.



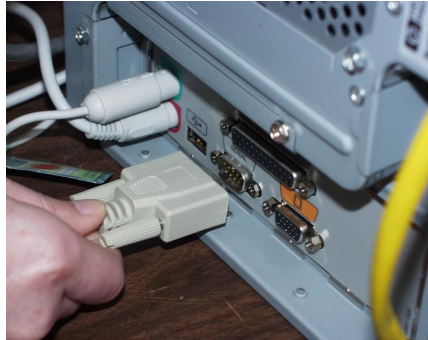
- 6 Connect one end of the RJ-11 ADSL cable to the ADSL line jack, marked Line, on the rear of the router. Then connect the other end to the ADSL line outlet that your ADSL service provider has installed.



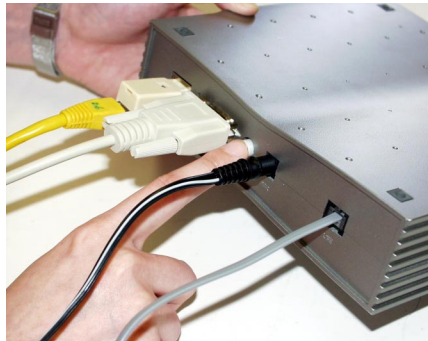
- 7 Connect the male (9-pin) end of the RS-232 serial cable to the connector marked RS-232 on the rear of the router.



- 8 Then plug the other end of the RS-232 cable into the serial port of your computer.



- 9 Turn the power on by pressing the power switch, marked ON/OFF on the rear of the unit. The router will perform a self-test and then will be ready for use.



Now proceed to page 13 to configure your TCP/IP settings.

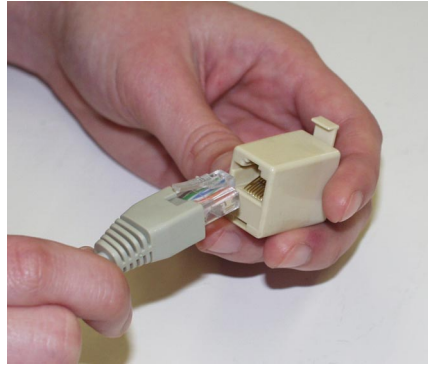
## Hardware Installation - Multiple PC Connection via Hub

Before configuring your ADSL router, you must complete the hardware installation using the following steps.

- 1 Be sure the power switch, marked ON/OFF, on the rear of the unit is depressed, in the OFF position.
- 2 Connect the power adapter to the power receptacle on the rear of the unit marked PWR, then plug the AC end into the wall electrical outlet.
- 3 Connect one end of the Ethernet straight connect cable to any available port on the Ethernet hub.
- 4 If you do not use the Uplink port on the hub, skip this step. If you connect the Ethernet straight connect cable to the Uplink port on your hub and the hub does not have cascade switch, you must connect the Ethernet straight connect cable to the supplied cross connect adapter and then into the Uplink port.



- 3 Connect one end of the Ethernet straight connect cable to any available port on the Ethernet hub.



- 5 Connect the other end of the Ethernet cable to the connector marked Ethernet on the back of the router.



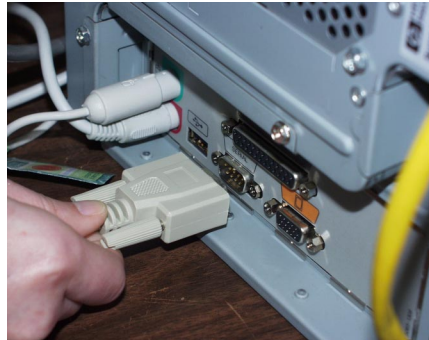
- 6 Connect one end of the RJ-11 ADSL cable to the ADSL line jack, marked Line, on the rear of the router. Then connect the other end to the ADSL line outlet that your ADSL service provider has installed.



- 7 Connect the male (9-pin) end of the RS-232 serial cable to the connector marked RS-232 on the rear of the router.



- 8 Then plug the other end of the RS-232 cable into the serial port of your computer.



- 9 Turn the power on by pressing the power switch, marked ON/OFF on the rear of the unit. The router will perform a self-test and then will be ready for use.



Now proceed to page 13 to configure your TCP/IP settings.

## TCP/IP Configuration

To connect to the Internet or configure the Router via Ethernet, the TCP/IP protocol must be installed and configured correctly. Follow the steps below to determine if you have TCP/IP installed and configured correctly for Windows 95/98.

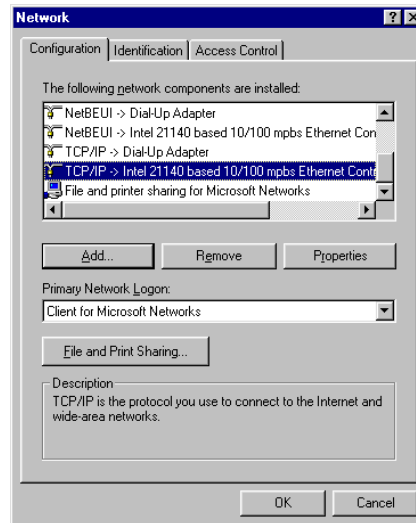
### Step 1 - Check if TCP/IP is installed

To check if TCP/IP is properly installed, use the following steps

- 1 Double-click on My Computer, then Control Panel, and then double-click the Network icon.



- 2 In the "Network" window, check that TCP/IP is installed and setup for the Ethernet NIC that is installed in your computer (for example, TCP/IP->Intel 21140 based 10/100mbps Ethernet Controller).

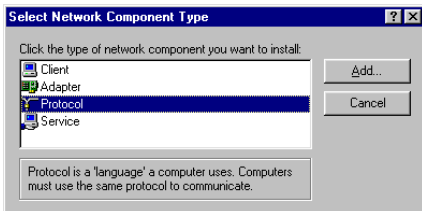


- 3 If TCP/IP has been properly installed, proceed to the TCP/IP configuration on page 15. If TCP/IP has not been properly installed for your NIC, proceed to the next page.

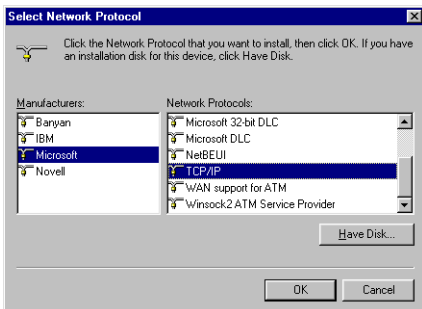
## Step 2 - Install TCP/IP if necessary

Install TCP/IP now if it is not previously installed. You may need the Windows Installation CD-ROM.

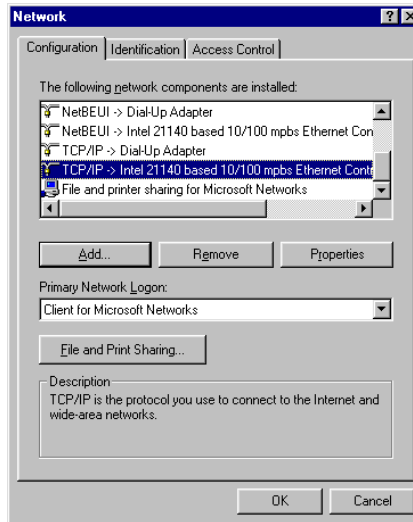
- 1 Still in the “Network” window, click the **Add** button. The “Select Network Component Type” window will appear. Select *Protocol* by clicking on it once. Then click **Add**.



- 2 The “Select Network Protocol” window will appear. Choose *Microsoft* in the “Manufacturers” panel and then *TCP/IP* in the “Network Protocols” panel. Click **OK**.



- 3 Confirm that the TCP/IP protocol has been correctly set up with your Ethernet card.

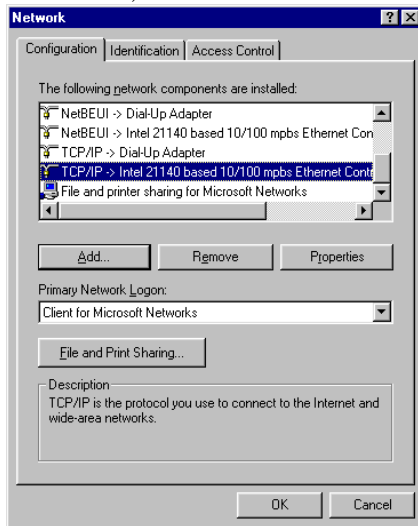


### Step 3 - Set up TCP/IP

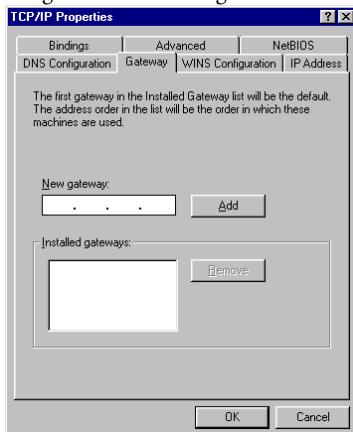
You will now configure the TCP/IP settings of your Ethernet NIC for use with your new GreatSpeed ADSL Router.

*Note: When connecting your ADSL Router with an existing LAN, consult your network administrator for the correct configurations.*

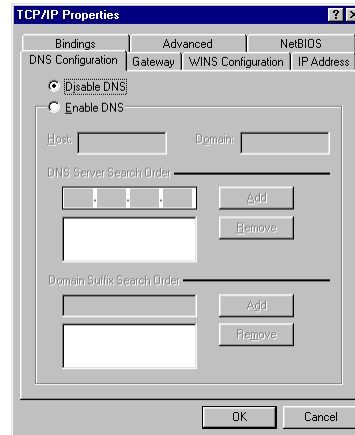
- 1 In the “Network” window, double-click the TCP/IP component for your Ethernet NIC (for example, TCP/IP->Realtek RTL8029(AS) PCI Ethernet NIC).



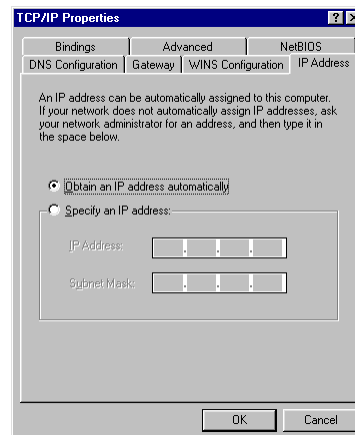
- 2 In the “TCP/IP Properties” window, click the Gateway tab. Remove any installed Gateways by selecting them and clicking Remove.



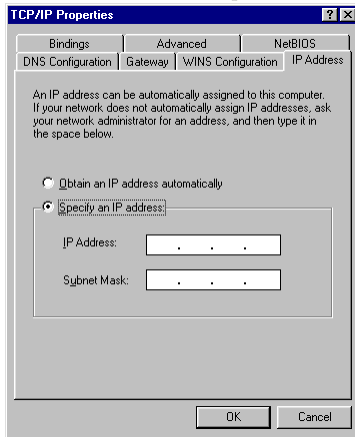
- 3 Click the DNS Configuration tab, and then click the Disable DNS button.



- 4 A) If your device is to be set in Router mode, click the IP address tab and then click the Obtain an IP address automatically button.



- 4 From previous page:  
B) If your device is to be set in Bridge mode, click the **IP address** tab, and then click the **Obtain an IP address automatically** option.



- 5 Click OK to save the new settings.
- 6 You will be prompted and asked “Do you want to restart your computer?”. Click Yes. Your computer will restart to place all new settings in effect.

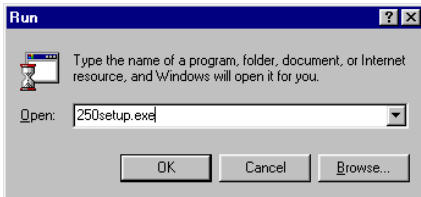
Your computer is now ready to access your ADSL Router via Ethernet.

Now proceed to page 17 to install the Windows configuration application if you would like to configure the router via our easy application (recommended).

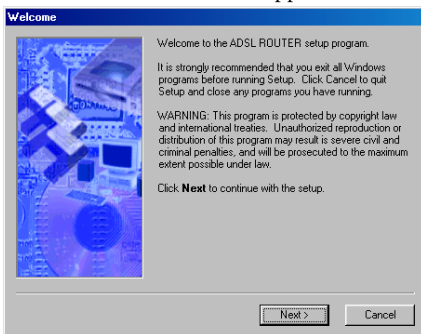
## Software Installation

The ADSL Router Configuration Utility Software is provided to ease the setup process and only needs to be installed on the PC that will be used to configure the router. If your ISP/NSP has already pre-configured the router, do not make any changes to the configuration.

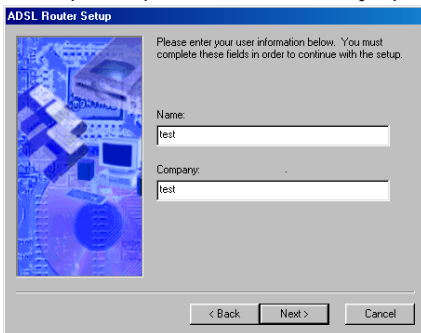
- 1 From the desktop, click **Start**, then click **Run**. The “Run” window will appear. Type “d:\250setup.exe” (‘d’ represents the letter for your CD-ROM drive. Your drive may use a different letter. Please use the appropriate letter for your CD-ROM drive in the command) and click **OK**.



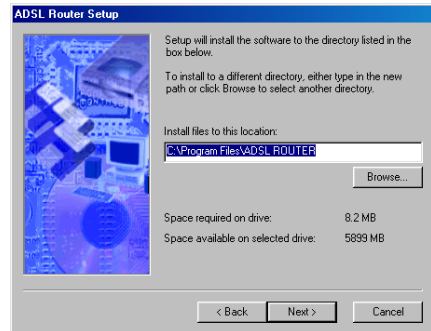
- 2 The “Welcome” window will appear. Click **Next**.



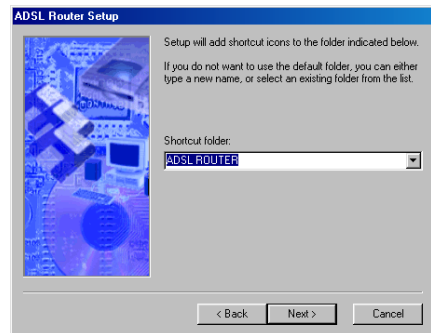
- 3 The “ADSL Router Setup” window will appear and ask you for your ‘Name’ and ‘Company’.



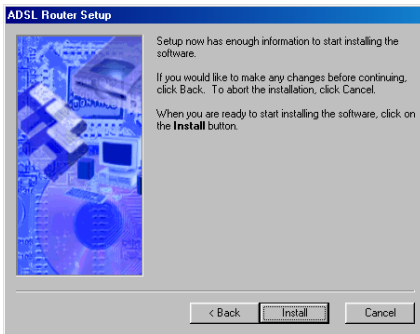
- 4 Still in the “ADSL Router Setup” window, you will be asked where you would like to install the files. You may change the location, or use the default location. Click **Next**.



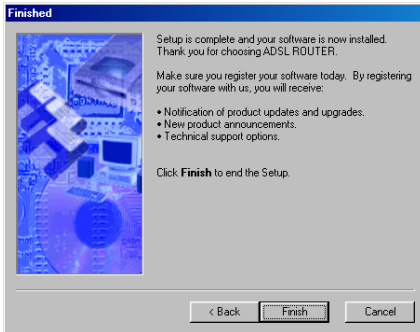
- 5 Still in the “ADSL Router Setup” window, select the *Shortcut Folder* and then a name for your shortcut folder, or use the default name. Click **Next**.



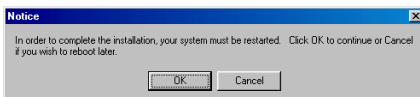
- 6 Then the “ADSL Router Setup” window will indicate that it is ready to begin installing software. Click **Install**.



- 7 The “Finished” window will appear, click **Finish**.



- 8 The “Notice” window will appear, click **OK** to restart the system.

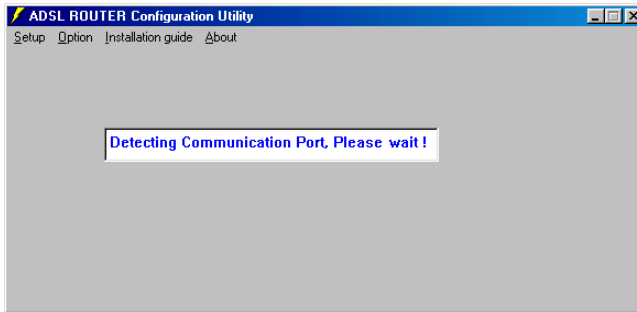


You may now proceed to page 19 to configure your router with the easy to use application you have just installed.

## Configuring your ADSL Router

From the desktop, Click **Start**, then **Programs**, then **ADSL Router** and then **ADSL.exe** to open the ADSL router configuration utility.

In the first 5 seconds, the program will auto-detect the COM port you are connected to. In this stage, all selections are inactive. Please wait for few seconds.



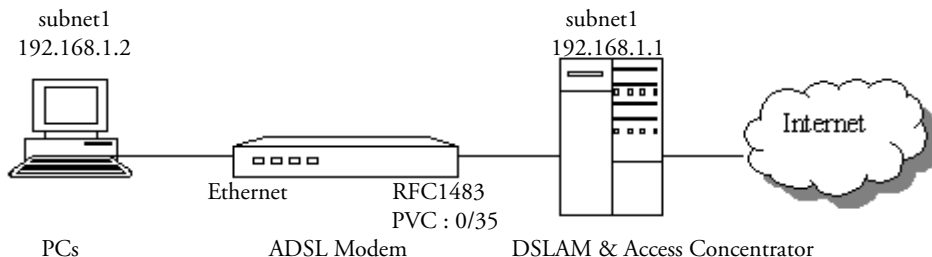
### A. Setup

In the “ADSL Router Configuration Utility” window, click on **Setup**. Select the correct Connection mode or feature for your connection (if you do not know what connection mode should be used, please ask your ADSL service provider for the correct information). Click on your selection and then proceed to the corresponding page for that installation procedure.

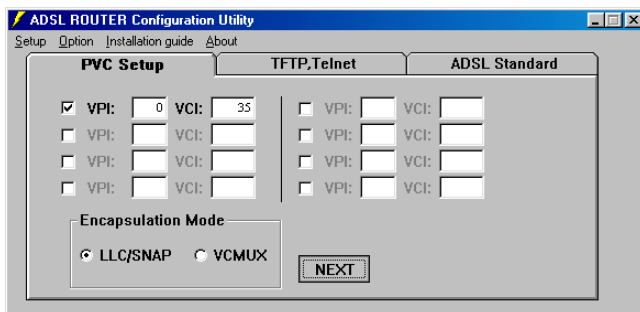
- Bridged Ethernet Over ATM (RFC1483)      Page 20
- Bridged PPP over Ethernet                      Page 22
- Routed Ethernet Over ATM (RFC1483)      Page 24
- Routed Classical IP Over ATM (RFC1577)    Page 27
- Routed PPP Over ATM (RFC2364)            Page 30
- Routed PPP over Ethernet (RFC 2516)      Page 33
- DHCP Server                                      Page 36
- Options    Page 39

## Bridged Ethernet over ATM (RFC1483) Setup

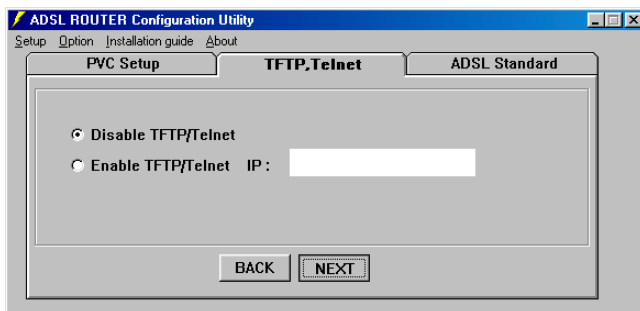
In a bridged configuration, the ADSL modem is transparent to the network. It bridges the ADSL line to the Ethernet line to make both sides appear as a single subnet. In this configuration, only an IP address needs to be provided to the PC.



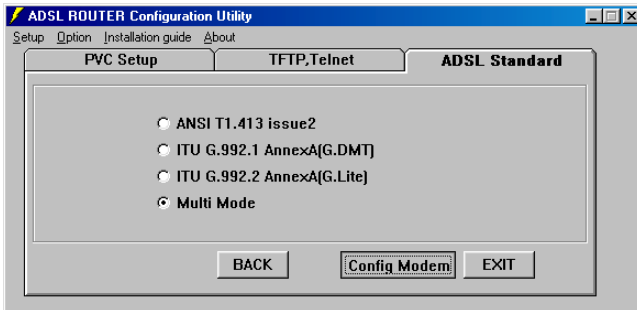
- 1 The “ADSL ROUTER Configuration Utility” window will now ask you to enter your PVC settings. Enter the PVC values and select Encapsulation mode. Up to 8 PVCs can be entered. Then click **Next**.



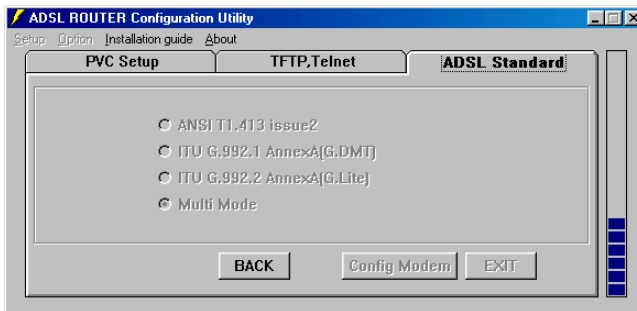
- 2 Select Enable or Disable TFTP/Telnet access. If enabled, enter an IP address for the Ethernet Port. Then click **Next**.



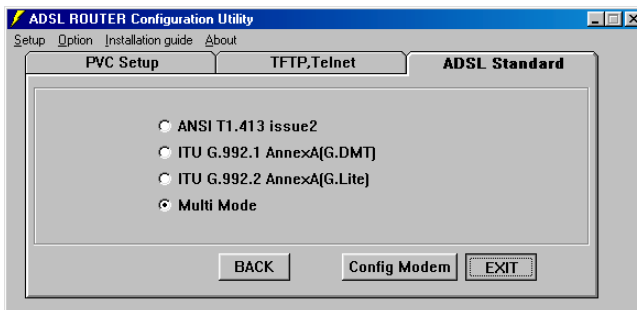
- 3 Select the ADSL line mode, the default is Multi-Mode. Click **Config Modem**.



- 4 After clicking the CONFIG button, you will see the progress bar moving on the right side of the window. DO NOT turn off or interrupt the modem during configuration, or it may cause the configuration to be incomplete.

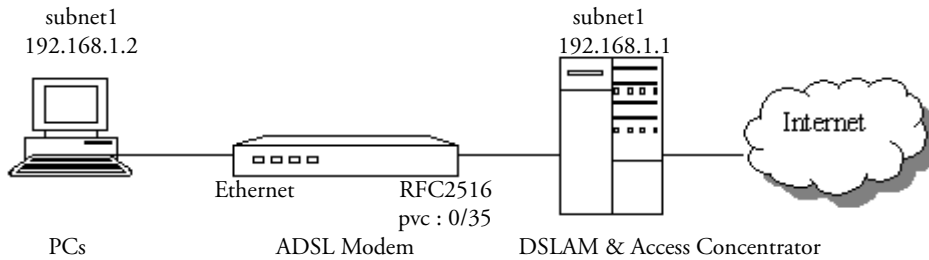


- 5 The ADSL Standard tab will appear again when the configuration process is complete. Click EXIT.

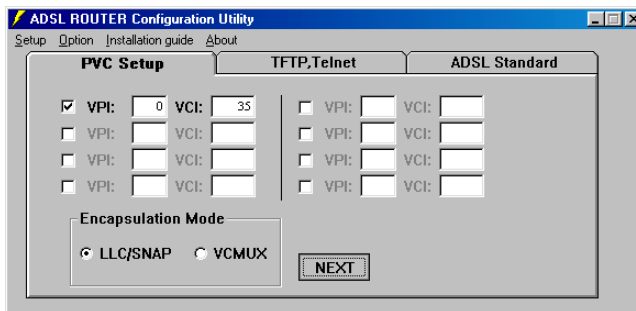


## Bridged PPP over Ethernet (RFC 2516) Setup

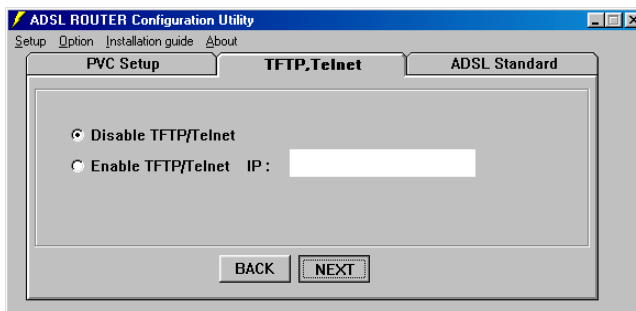
In a bridged configuration, the ADSL modem is transparent to the network. It bridges the ADSL line to the Ethernet line to make both sides appear as a single subnet. In this configuration, only an IP address needs to be provided to the PC. PPPoE Client software is provided by your ISP or other third party. It must be installed on your PC to make a connection.



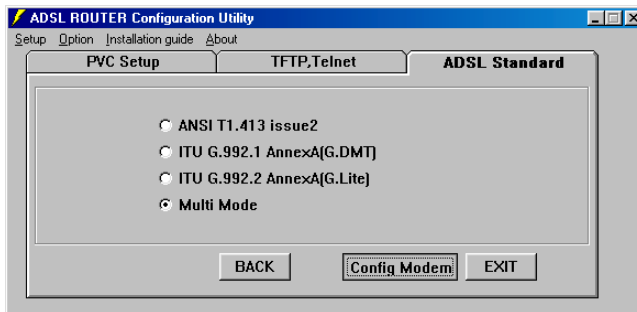
- 1 The “ADSL ROUTER Configuration Utility” window will now ask you to enter your PVC settings. Enter the PVC values and select an Encapsulation mode. Up to 8 PVCs may be entered. Then click Next.



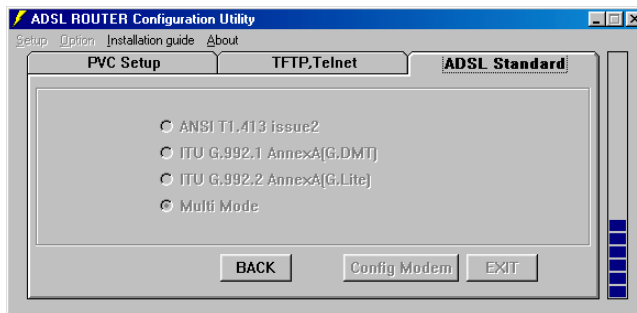
- 2 Select Enable or Disable TFTP/Telnet access. If enabled, enter an IP address for the Ethernet Port. Then click Next.



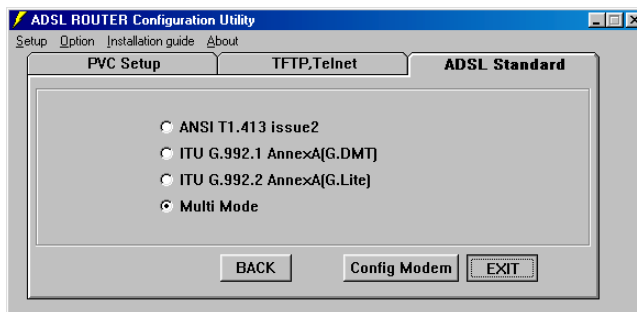
- 3 Select ADSL line mode. By default, you should select Multi Mode. Then click **Config**.



- 4 After clicking the Config button, you will see the progress bar moving on the right side of the window. DO NOT turn off or interrupt the modem during configuration, or it may cause the configuration to be incomplete.

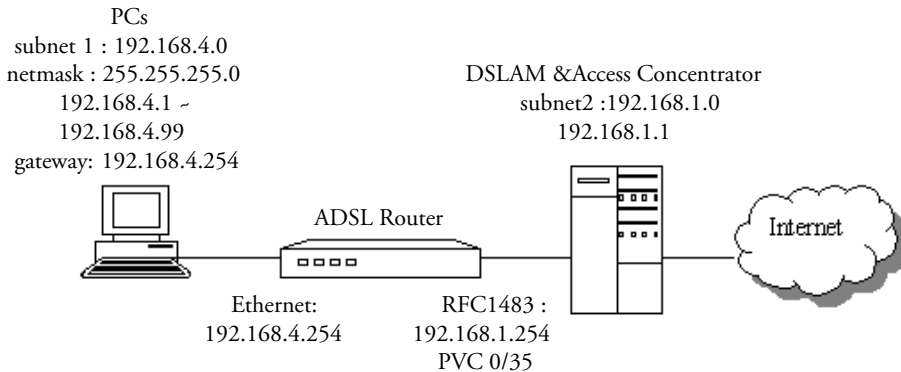


- 5 The ADSL Standard tab will appear again when the configuration process is complete. Click **EXIT**.

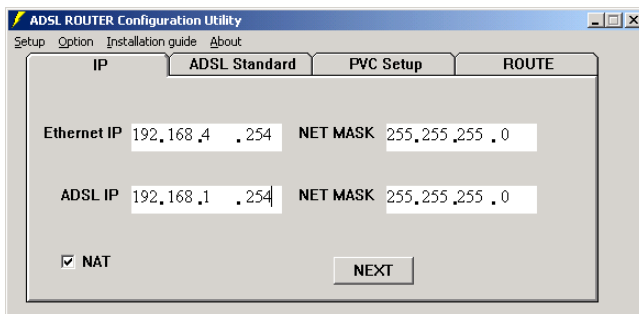


## Routed Ethernet over ATM (RFC1483) Setup

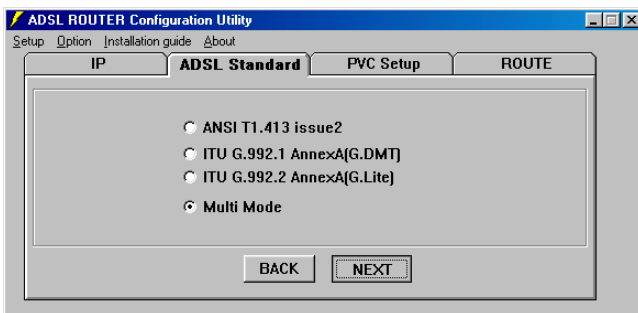
You will be assigning the router an IP address here. The IP address and PVC settings will be provided by your ADSL service provider. Since the modem is routing, an IP address needs to be assigned on both of the modem's interfaces. Also, the default gateway of each PC on your network must be set to the IP address of the modem's ethernet port.



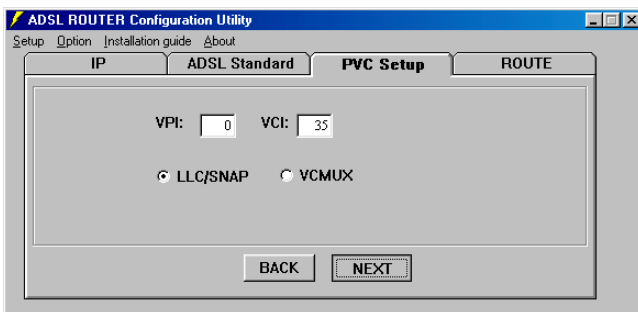
- The “ADSL ROUTER Configuration Utility” window will now ask you to enter your IP settings. Enter your Ethernet IP address, ADSL IP address and NET MASK address. You also have option to enable or disable NAT functionality. Then click Next.



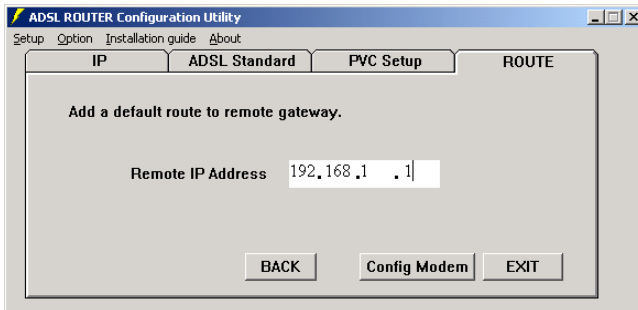
- 2 Select your ADSL line mode. By default, you should select Multi Mode. Then click **Next**.



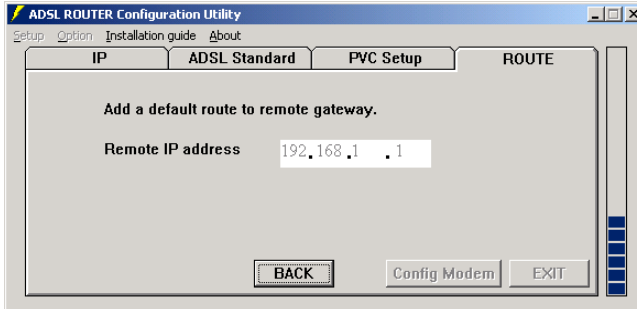
- 3 Enter PVC values and select Encapsulation mode. Then click **Next**.



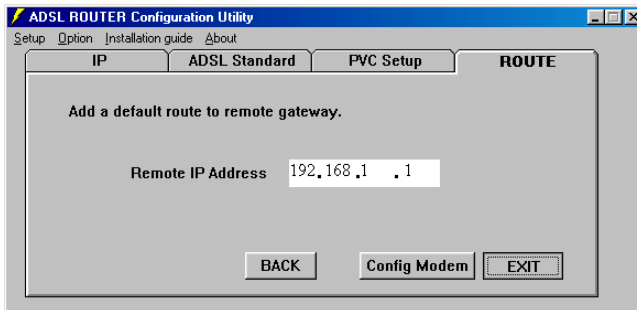
- 4 Enter the Remote IP address as the Gateway. Then click **Config Modem**.



- 5 After you click the Config button, you will see the progress bar moving on the right side of the window. DO NOT turn off or interrupt the modem during configuration, it may cause the configuration to be incomplete.

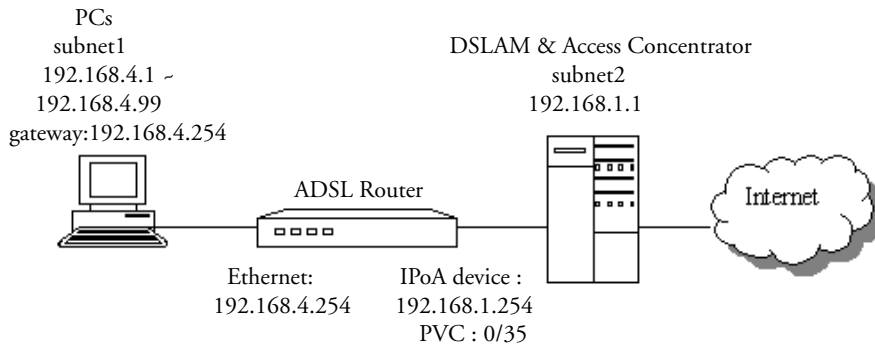


- 6 The Routed Ethernet over ATM (RFC1483) window will appear again when the configuration process is complete. Click EXIT.

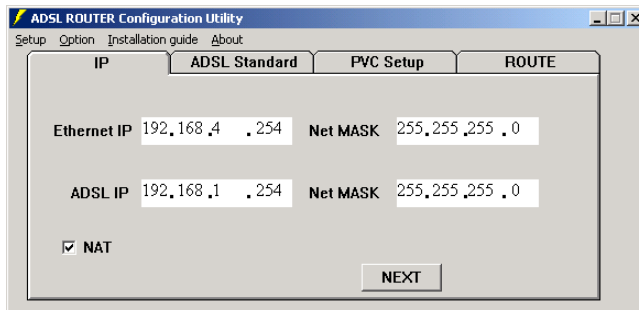


## Routed Classical IP Over ATM (RFC1577) Setup

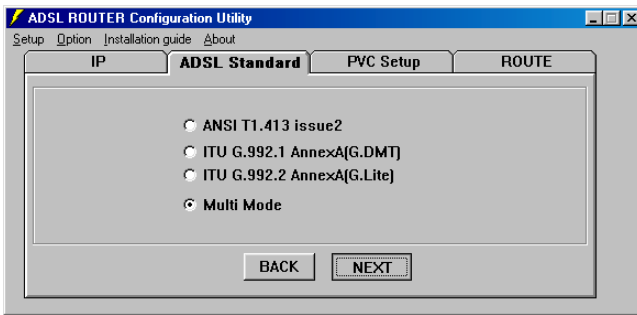
When configured for IPoA, data is routed between Ethernet and Classical IP over ATM. The IPoA data runs over a PVC between the Client Access Device and the service provider. The IP address, PVC settings and the package cell rate all must be defined by the service provider. Since the modem is routing, an IP address needs to be assigned on both of the modem's ports. Your PC's default gateway should be set to the modem's Ethernet port IP address.



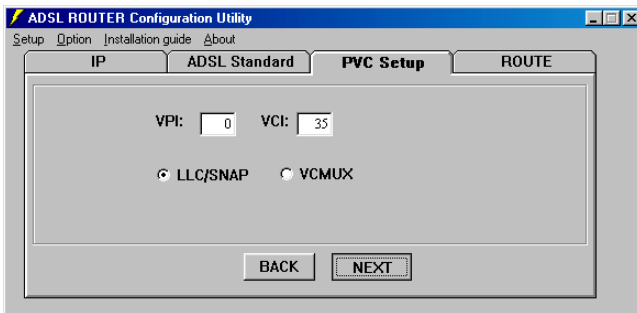
- The “ADSL ROUTER Configuration Utility” window will now require you to enter your settings. Enter Ethernet IP address, ADSL IP address and NET MASK address. You also have option to enable or disable NAT functionality. Then click **Next**.



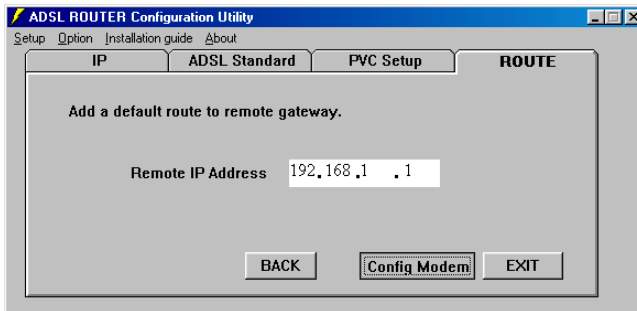
- 2 Select ADSL line mode. By default, you should select Multi Mode. Then click **Next**.



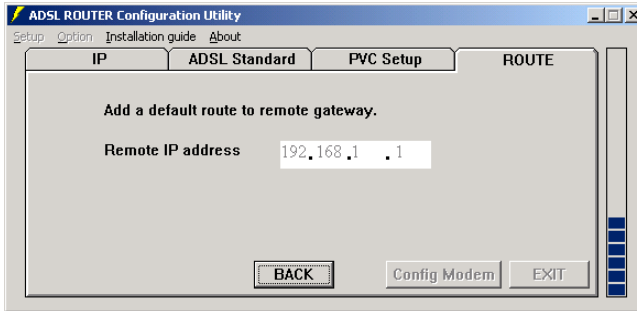
- 3 Enter PVC values and select Encapsulation mode. Then click **Next**.



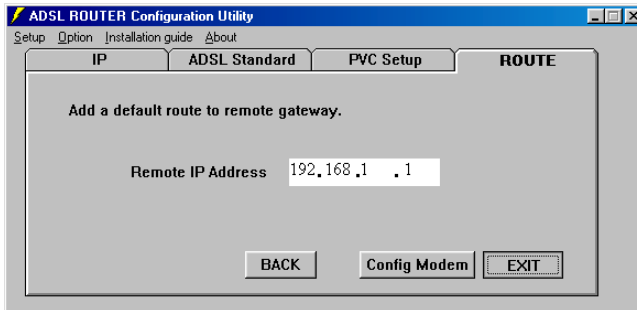
- 4 Enter the Remote IP address as the Gateway. Then click **Config Modem**.



- 5 After you click the Config button, you will see the progress bar moving on the right side of the window. DO NOT turn off or interrupt the modem during configuration, it may cause the configuration to be incomplete.

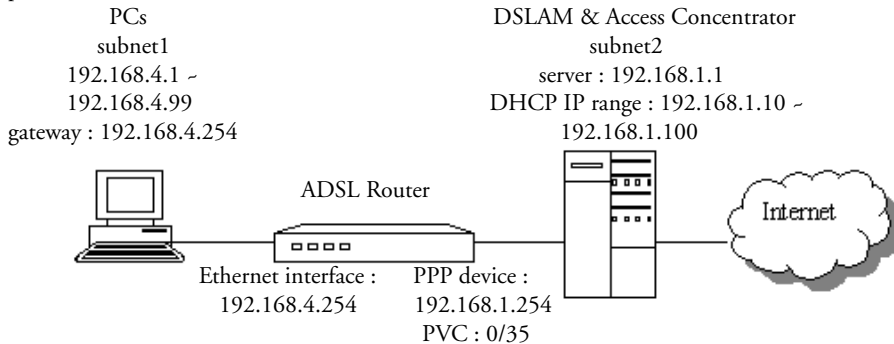


- 6 The Routed Classical IP over ATM (RFC1577) window will appear again when the configuration process is complete. Click EXIT.

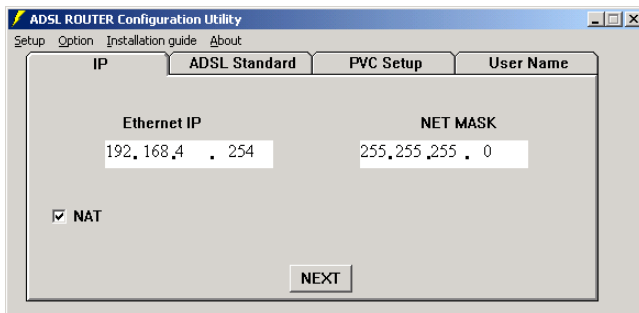


## Routed PPP Over ATM (RFC2364) Setup

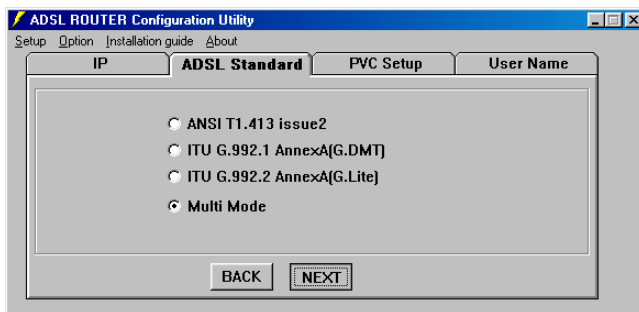
When configured for PPP, data is routed between Ethernet and PPP over ATM. The PPP data runs over a PVC between the Client Access Device and the service provider. The IP address and PVC need to be determined by the service provider. Since the modem is routing, an IP address needs to be assigned on both of the modems ports.



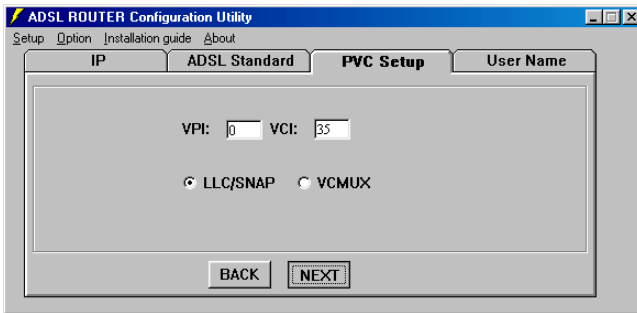
- 1 The “ADSL ROUTER Configuration Utility” window will require you to enter your settings. Enter the Ethernet IP address and NET MASK. You also have option to enable or disable NAT functionality. Then click **Next**.



- 2 Select your ADSL line mode. By default, you should select Multi Mode. Then click **Next**.

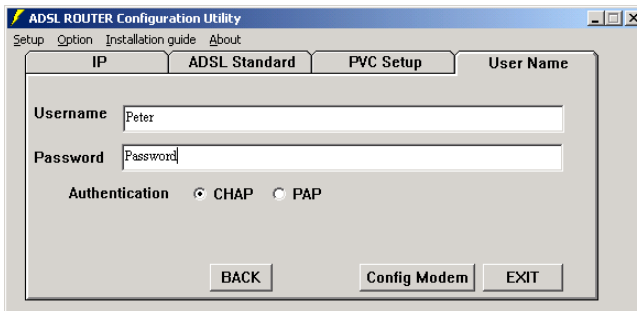


- 3 Enter your PVC values and select Encapsulation mode. Then click Next.



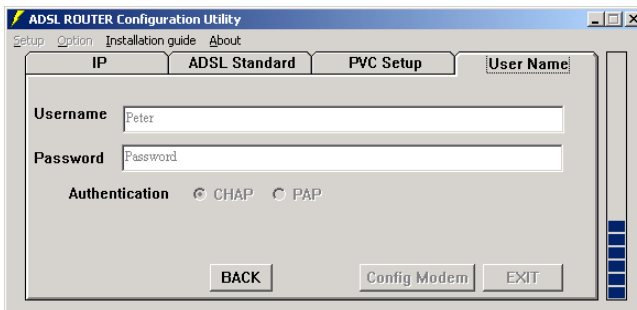
The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'PVC Setup' tab selected. The 'VPI' field is set to 0 and the 'VCI' field is set to 35. The 'LLC/SNAP' radio button is selected, and the 'VCMUX' radio button is unselected. There are 'BACK' and 'NEXT' buttons at the bottom.

- 4 Enter Username, Password and select Authentication method. Then click Config Modem.



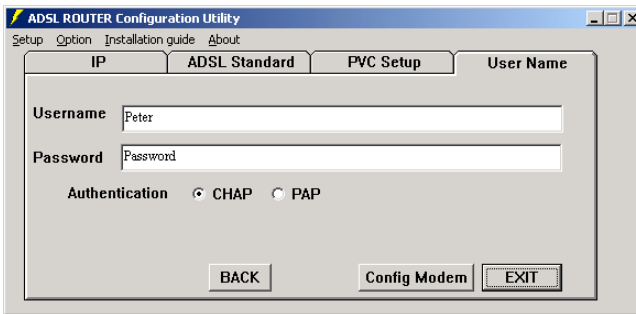
The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'User Name' tab selected. The 'Username' field contains 'Peter' and the 'Password' field contains 'Password'. The 'CHAP' radio button is selected for authentication, and the 'PAP' radio button is unselected. There are 'BACK', 'Config Modem', and 'EXIT' buttons at the bottom.

- 5 After you click the Config button, you will see the progress bar moving on the right side of the window. DO NOT turn off or interrupt the modem during configuration, it may cause the configuration to be incomplete.

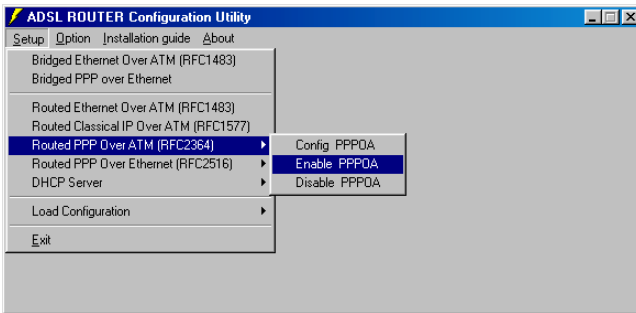


The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'User Name' tab selected. The 'Username' field contains 'Peter' and the 'Password' field contains 'Password'. The 'CHAP' radio button is selected for authentication, and the 'PAP' radio button is unselected. There are 'BACK', 'Config Modem', and 'EXIT' buttons at the bottom. A vertical progress bar on the right side of the window is partially filled with blue, indicating that the configuration process is in progress.

- 6 When the configuration processing is complete, click EXIT.

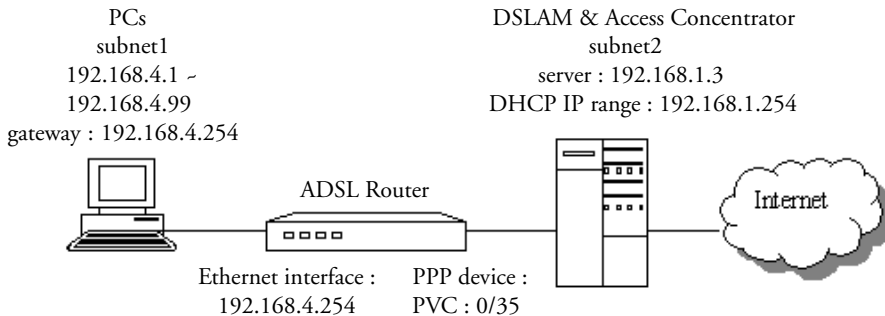


- 7 After PPP Over ATM is configured, please select Enable PPPoA from the Setup menu. Now your ADSL modem is ready to use.

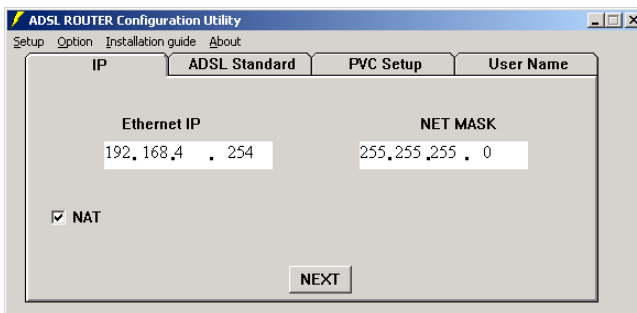


## Routed PPP Over Ethernet (RFC2516) Setup

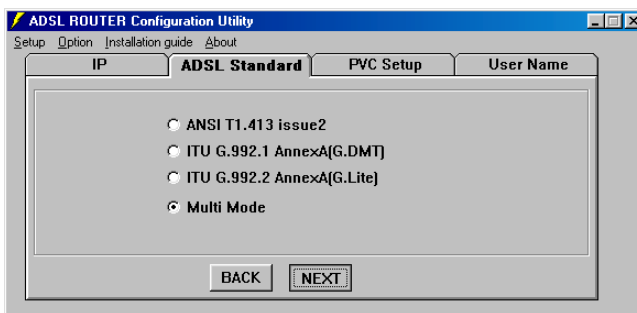
When configured for PPP, data is routed between Ethernet and PPP over Ethernet. The PPP data runs over a PVC between the Client Access Device and the service provider. The PVC, username and password need to be determined by the service provider and the IP address and remote gateway for the WAN port will be assigned by the ISP dynamically when the connection is established. Since the modem is routing, an IP address needs to be assigned on the Ethernet interface of the router. The PCs default gateway must be set to the Ethernet IP address of the router.



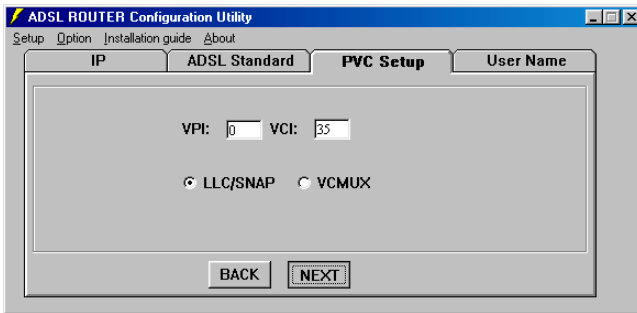
- 1 The “ADSL ROUTER Configuration Utility” window will require you to enter your settings. Enter the Ethernet IP address and NET MASK. You also have option to enable or disable NAT functionality. Then click **Next**.



- 2 Select your ADSL line mode. By default, you should select Multi Mode. Then click **Next**.



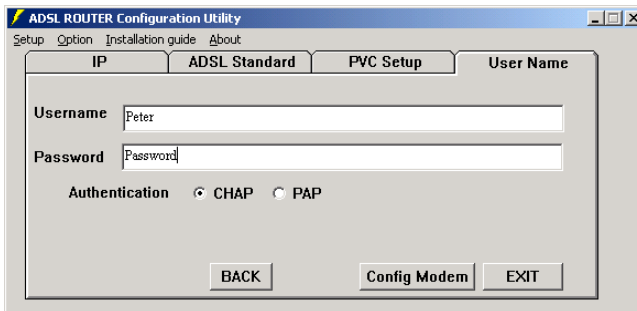
- 3 Enter your PVC values and select Encapsulation mode. Then click Next.



The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'PVC Setup' tab selected. The window has a menu bar with 'Setup', 'Option', 'Installation guide', and 'About'. Below the menu bar are four tabs: 'IP', 'ADSL Standard', 'PVC Setup', and 'User Name'. The 'PVC Setup' tab contains the following fields and options:

- VPI: 0
- VCI: 35
- Authentication:  LLC/SNAP  VCMUX
- Buttons: BACK, NEXT

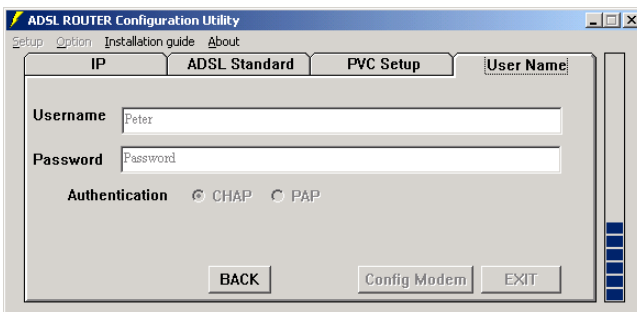
- 4 Enter Username, Password and select Authentication method. Then click Config Modem.



The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'User Name' tab selected. The window has a menu bar with 'Setup', 'Option', 'Installation guide', and 'About'. Below the menu bar are four tabs: 'IP', 'ADSL Standard', 'PVC Setup', and 'User Name'. The 'User Name' tab contains the following fields and options:

- Username: Peter
- Password: Password
- Authentication:  CHAP  PAP
- Buttons: BACK, Config Modem, EXIT

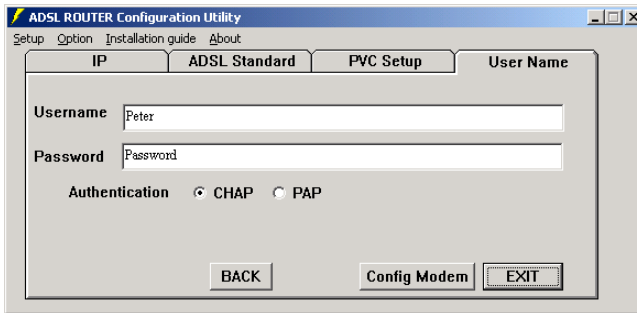
- 5 After you click the Config button, you will see the progress bar moving on the right side of the window. DO NOT turn off or interrupt the modem during configuration, it may cause the configuration to be incomplete.



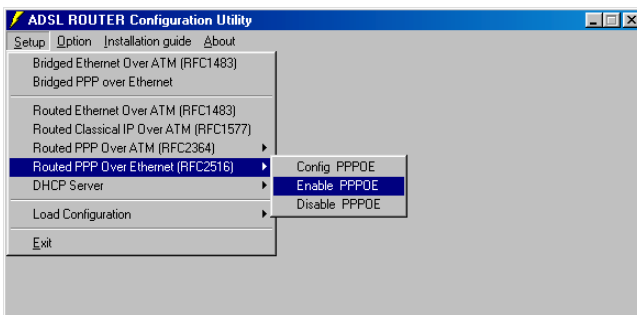
The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'User Name' tab selected. The window has a menu bar with 'Setup', 'Option', 'Installation guide', and 'About'. Below the menu bar are four tabs: 'IP', 'ADSL Standard', 'PVC Setup', and 'User Name'. The 'User Name' tab contains the following fields and options:

- Username: Peter
- Password: Password
- Authentication:  CHAP  PAP
- Buttons: BACK, Config Modem, EXIT
- A vertical progress bar is visible on the right side of the window, indicating that the configuration process is in progress.

- 6 When the configuration processing is complete, click EXIT.

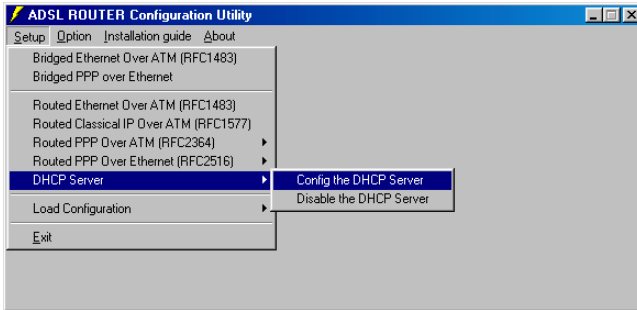


- 7 After PPP Over Ethernet is configured, please select Enable PPPoE from the Setup menu. Now your ADSL modem is ready to use.

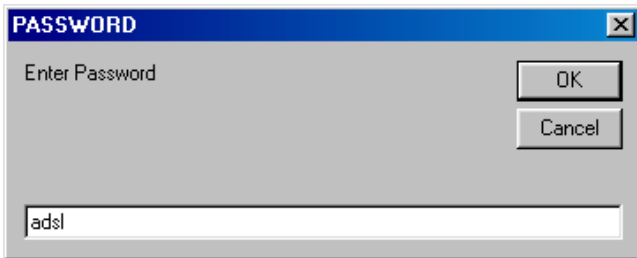


## DHCP Server Setup

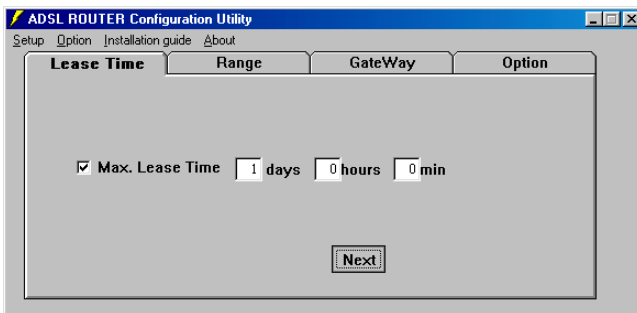
- 1 From the Setup tab, click **Config the DHCP Server**.



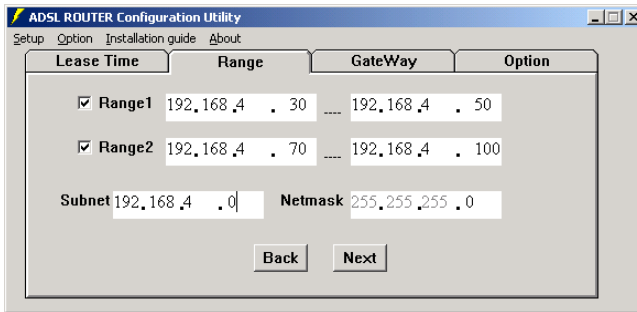
- 2 You will be asked for a password. Enter "adsl" and click **OK**.



- 3 Enter the "Maximum Lease Time" for clients and click **Next**.



- 4 Enter the IP pool range, Subnet and NetMask addresses. Click Next.



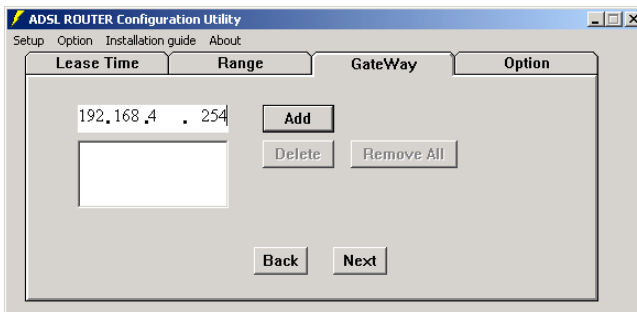
The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'Range' tab selected. It features two rows for IP ranges, each with a checked checkbox, a 'Range' field, and a 'GateWay' field. Below these are 'Subnet' and 'Netmask' fields. 'Back' and 'Next' buttons are at the bottom.

Lease Time	Range	GateWay	Option
<input checked="" type="checkbox"/>	Range1 192,168,4 . 30	192,168,4 . 50	
<input checked="" type="checkbox"/>	Range2 192,168,4 . 70	192,168,4 . 100	

Subnet: 192,168,4 . 0      Netmask: 255,255,255 . 0

Buttons: Back, Next

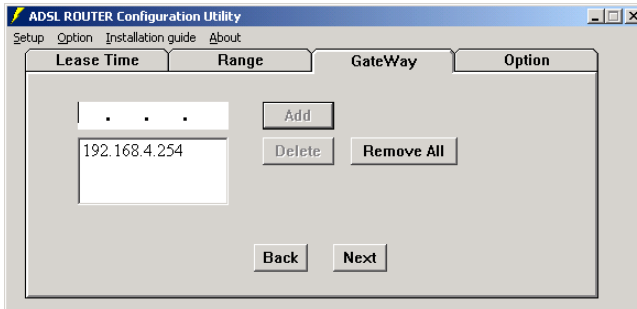
- 5 Enter the Gateway IP address and click Add. Then click Next.



The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'GateWay' tab selected. A text input field contains '192,168,4 . 254'. To its right are 'Add', 'Delete', and 'Remove All' buttons. 'Back' and 'Next' buttons are at the bottom.

Input: 192,168,4 . 254

Buttons: Add, Delete, Remove All, Back, Next



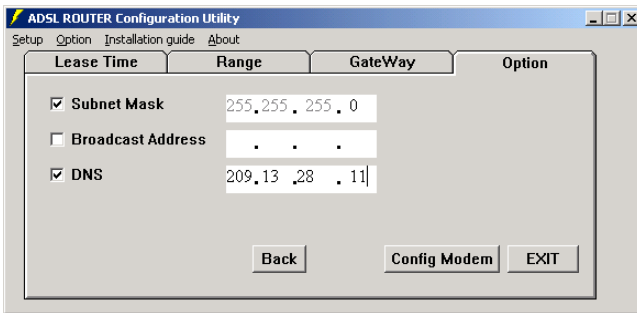
The screenshot shows the 'ADSL ROUTER Configuration Utility' window with the 'GateWay' tab selected. The text input field now contains '192.168.4.254'. The 'Add' button is highlighted. 'Delete' and 'Remove All' buttons are also visible. 'Back' and 'Next' buttons are at the bottom.

Input: . . .

Input: 192.168.4.254

Buttons: Add, Delete, Remove All, Back, Next

- 6 Enter Optional Subnet Mask, Broadcast Address or DNS if necessary. Click **Config Modem**.

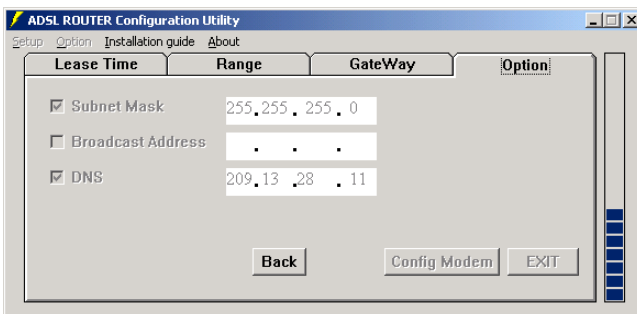


The screenshot shows the 'ADSL ROUTER Configuration Utility' window. It has a menu bar with 'Setup', 'Option', 'Installation guide', and 'About'. Below the menu bar are four tabs: 'Lease Time', 'Range', 'GateWay', and 'Option'. The 'Option' tab is selected. It contains three rows of configuration options:

Option	Value
<input checked="" type="checkbox"/> Subnet Mask	255,255,255,0
<input type="checkbox"/> Broadcast Address	. . .
<input checked="" type="checkbox"/> DNS	209,13,28,11

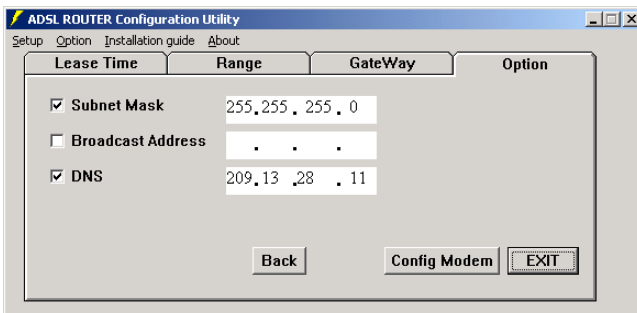
At the bottom of the window are three buttons: 'Back', 'Config Modem', and 'EXIT'.

- 7 After you click the Config button, you will see the progress bar moving on the right side of the window. DO NOT turn off or interrupt the modem during configuration, it may cause the configuration to be incomplete.



This screenshot is identical to the previous one, but it shows a vertical progress bar on the right side of the window. The progress bar is partially filled with blue, indicating that the configuration process is in progress.

- 8 When the configuration processing is complete, click **EXIT**.

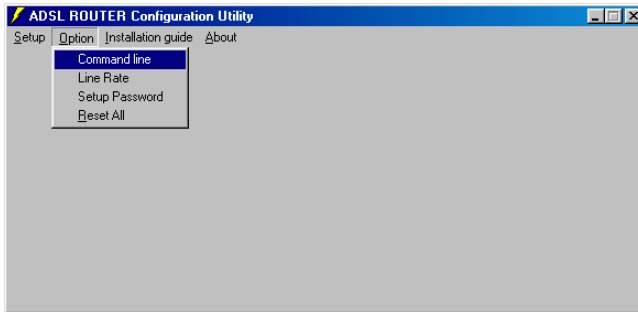


This screenshot is identical to the previous ones, but the 'EXIT' button at the bottom right is highlighted with a dotted border, indicating it is the recommended action to take.

*NOTE: You must assign an IP address to the Router's Ethernet port for the DHCP server to be active.*

## Option Menu

Here are simple explanations of the commands in the Option Menu.



- **Command Line:** This will launch the Monitoring Window which will show you the current status. The password is “adsl”.
- **Line Rate:** This window will show you the current ADSL line rate.
- **Setup Password:** Allows you to change your password.
  1. Enter your old password and the new password. Click **OK**.
  2. You will be prompted to “Accept new password?” Click **Yes** to change the password.
- **Reset All:** This will erase all configuration settings.

## Installation Guide Menu

This will display the “Installation Guide” in HTML format.

## About Menu

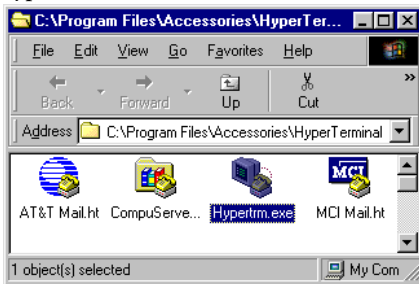
This will display the utility version and system information.

## HyperTerminal Setup

There is some setup required to get your ADSL Router working properly. A terminal can be connected directly to the serial console port on the rear of the router. This requires the use of a terminal emulation software application such as Microsoft HyperTerminal. By default, the router is configured to communicate at 9600 baud. Any standard terminal that supports a baud rate of 9600 can be connected to the serial port of the router. These directions are for using HyperTerminal on a Windows system.

*Note: HyperTerminal comes standard with all Windows OS's, but may not be installed on your system. To check, from the desktop, click Start, then Programs, then Accessories, then Communications. It should be located in the Communications folder. If it does not appear there, you should install it now from the Windows OS Installation CD.*

- 1 From the desktop, click **Start**, then **Programs**, then **Accessories**, then **Communications** and then click HyperTerminal. Then double-click the Hyperterm.exe icon.



- 2 HyperTerminal will prompt you asking for a connection name. Enter a name and click **OK**.

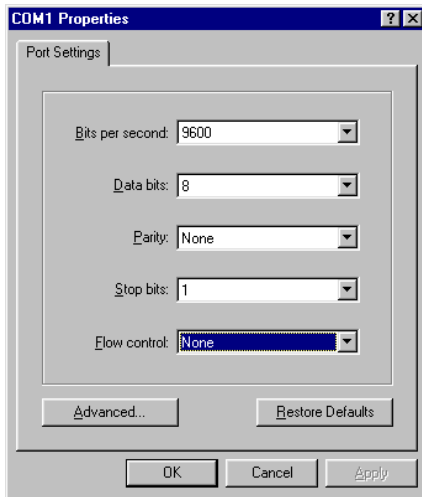


- 3 In the "Connect To" window, select the proper COM port you will be using and click **OK**.



- 4 The “Com1 Properties” window will appear and allow you to make settings for the connection. Enter the following parameters, then click **OK**.

Bits per second: 9600  
Data bits: 8  
Parity: None  
Stop bits: 1  
Flow control: None



- 5 The HyperTerminal window will appear. Press the enter key several times to get the command prompt for the router. You are now ready to configure the router using command line. Proceed to Pre-Configuration on the following page.

## Managing your ADSL Line

### ADSL Standards Change

The router is set to multi mode by default. You may change it to any of the supported modes using the following commands.

ANSI T1.413 Issue 2 Mode

```
>bsp ansi ↵  
>config save ↵  
>restart ↵
```

ITU G.DMT Mode

```
>bsp gdmt ↵  
>config save ↵  
>restart ↵
```

ITU G.LITE Mode

```
>bsp glite ↵  
>config save ↵  
>restart ↵
```

Multi Mode

```
>bsp multi ↵  
>config save ↵  
>restart ↵
```

### Upstream & Downstream Data Rate

To get the data rate, type:

```
>bsp channel ↵
```

To disconnect the adsl line, type:

```
>bsp down ↵
```

To connect the adsl line, type:

```
>bsp up ↵
```

## Console Command Reference

The main prompt in your router is the routers MAC address. So, the prompt may read something such as “00:20:2B:00:04:9F >”. Once you have specified an IP address, the prompt will then always use the IP address instead of the MAC address, such as “192.168.4.254 >”. Since both of these numbers will vary and may be dynamic, we will refer to the prompt as “Mymachine >” henceforth.

You may combine directory instructions in with commands. For instance, see the example below. “IP” is a directory and you would like to run the command “config”. In example A, from the main prompt “Mymachine”, you may either type **ip** and hit enter, and then type **config** and hit enter. Or, you may combine the two into the same line as in example B, from the main prompt “Mymachine”, you can type **ip config** and hit enter. Either will do the same thing.

A. Mymachine > ip  
Mymachine ip > config

B. Mymachine > ip config

### Directory of Commands:

System Commands	Page 44
IP Commands	Page 45
Bridge Commands	Page 49
PPP Commands	Page 50
BSP Commands	Page 54
DHCP Server Commands	Page 56

## System Commands

In this section, we will review most of the large number of commands available for the router. The command will be in bold, followed by a brief description and perhaps some examples of the command in use and proper syntax.

- **help**

>**help** or **help all** or **? or ? all** ↵

Displays all commands at the prompt “Mymachine >”

Example: Mymachine > **help** - displays commands ↵

Mymachine > **help all** - displays commands in details ↵

Mymachine > **ip help** - displays all commands of ip ↵

Mymachine > **ip help all** - displays all commands of ip in details ↵

- **home**

>**home** ↵

Returns to the main prompt “ Mymachine >”

- **config save**

>**config save** ↵

Saves configuration

Example: Mymachine > **config save** ↵

- **restart**

>**restart** ↵

Reboots the system

Example: Mymachine > **restart** ↵

- **.**

> **.** ↵

Repeat the last command using dot “.”

## IP Commands

- **config**

>config [save] ↵

Displays the IP configuration (not including the “snmp” configuration), or save it in flash memory using the save command after it.

Example:        Mymachine > ip config ↵  
                 Mymachine > ip config save ↵

- **device**

>device ↵

>device add < i/f > <type> [< file >] [< IP address >] ↵

>device delete < i / f > ↵

>device flush ↵

Displays the interfaces that IP is configured to use, or adds an interface to the configuration, or delete an interface, or all interfaces, from the configuration.

Parameters:

i/f ( interface ) - ethernet, ppp\_device, ipoa, rfc1483

type - ether, atm, atmpvc

file - //edd, //atm, //r1483, //ppp

IP address - supplied by your ISP

Configuration saving ( >config save ↵ ) saves this information.

Example:        Mymachine > ip device ↵  
                 Mymachine > ip device add ethernet ether //edd 192.168.4.254 ↵

- **disable**

>disable [ < i/ f > ] ↵

Disables all interfaces, or just a specified interface.

Example:        Mymachine > ip disable ipoa ↵

- **enable**

>enable [ < I / f > ] [mtu <size>] [ < IP address > ] ↵

Enables all interfaces, or just s specified interface. Can also be used to set the MTU and IP address on an interface when enabling it (or change them on an interface that is already enabled).

Configuration saving saves this information.

Example:        Mymachine > ip enable ipoa 192.168.4.254 ↵

- **help** ↵

>help <cmd> ↵

>help all ↵

Displays a summary of available commands, more detailed information on a particular command, or more detailed information on all commands.

Example:        Mymachine > ip help ↵  
                 Mymachine > ip help all ↵  
                 Mymachine > ip ipatm help all ↵

- **ping**

>ping < IP address > ↵

Sends an ICMP Echo message to the specified address.

Example: Mymachine > ip ping 192.168.4.254 ↵

- **relay**

>relay ↵

>relay all | < i/ f > [ < i/ f > ] [forward] ↵

Displays or sets what forwarding TCP/IP will do between interfaces. The combinations of setting forwarding can be a bit confusing; they behave as follows:

< i/f > - means interface.

forward - indicates one-way relaying.

relay all - from every interface to every non-loopback interface.

relay if1 - from if1 to every non-loopback.

interface - and from every interface to if1.

relay if1 forward - from if1 to every non-loopback interface.

relay if1 if2 - from if1 to if2 and from if2 to if1.

relay if1 if2 forward - from if1 to if2

To disable forwarding, use the “norelay” command.

Configuration saving saves this information.

Example: Mymachine > ip relay ↵

Mymachine > ip relay all ↵

- **route**

>route ↵

>route add <name> <dest> <relay> [<mask>] [<cost>] [<timeout>] ↵

>route delete <name> ↵

>route flush ↵

Lists routes ; add or delete a static route ; or delete all routes.

<name> is an arbitrary name specified to “route add” that can be used to delete the route using “route delete”.

<dest> is the IP address of the network being routed to (only those bits of “<dest>” corresponding to bits set in <mask> are relevant).

<relay> is the IP address of the next-hop gateway for the route.

<mask> (default ff:ff:ff:0) is the subnet mask of the network being route to, specified as four hexadecimal number separated by colons. For example, 0:0:0:0 is a default route (matches everything without a more specific route), ff:ff:ff:0 would match a Class C network, and ff:ff:ff:ff is a route to a single host. (Note: the default is not always sensible. In particular, if <dest> is 0.0.0.0 then it would be better for the mask to default to 0:0:0:0.)

<cost> (default 1) is the number of hops counted as the cost of the route, which may affect the choice of route when the route is comparing with routes acquired from RIP. (But note that using a mixture of RIP and static routing is not advised).

<timeout> (default 0, meaning that the route does not time out) is the number od seconds that the route will remain in the routing table).

**route** command continued on the next page.

Note that the routing table does not contain routes to the directly connected network, without going through a gateway. TCP/IP routes packets to such destination by using the information in the device and subnet tables instead.

The “route” command (with no parameter) displays the routing table. It adds a comment to each route with the following information:

How the route was obtained; one of  
 MAN - configured by the “route” command.  
 RIP - obtained from RIP.  
 ICMP - obtained from an ICMP redirected message.  
 SNMP - configured by SNMP network management.

The time-out, if the route is not permanent.

The original time-out, if the route is not permanent.

The name of the interface (if known) that will be used for the route.

An asterisk (\*) if the route was added recently and RIP has not yet processed the change. (the asterisk should disappear within 30 seconds, when RIP next considers broadcasting routing information).

Configuration saving saves this information. (Only the routes configured by the “route” command are saved or displayed by “config”).

```
Example: Mymachine > ip route add default 0.0.0.0 192.168.2.3 0:0:0:0 ↵
Mymachine > ip route add testnet1 192.168.101.0 192.168.2.4 ↵
Mymachine > ip route add testnet2 192.168.102.0 192.168.2.34 ff:ff:ff:0 1 60 ↵
Mymachine > ip route ↵
```

#### • subnet

```
>subnet ↵
>subnet add <name> <i/f> <IP address> <mask> ↵
>subnet delete <name> ↵
>subnet flush ↵
```

Lists defined subnets; defines a subnet; deletes a subnet; or deletes all subnet definitions.

<name> is a label, that can be specified by “subnet add” and later used by “subnet delete” to delete the subnet.

<i/f> is not used, but is present for historical reasons and must be specified as either “. “ or a valid interface name.

<IP address> is the IP address of the subnet being defined (only those bits of <dest> corresponding to bits set in <mask> are relevant).

**subnet** command continued on the next page.

<mask> is the subnet mask of the subnet being defined , specified as four hexadecimal numbers separated by colons.

A subnet is defined automatically for each interface , with a name formed by appending “ . home” to the device name. The only significant use for the “subnet” command is to change the masks for these automatic subnets , if the default masks (see “device” command) are not correct.

(Subnet definition for other subnets can also be useful in conjunction with RIP version 1 , which does not communicate subnet masks , but this is not very common).

Configuration saving saves this information.

Example:       Mymachine > ip subnet add ethernet.home 192.168.55.1 ff:ff:ff:0 ←  
                  Mymachine > ip subnet delete ethernet.home ←  
                  Mymachine > ip subnet flush ←

## Bridge Commands

- **device add**

```
>device add <device> ↵
```

This command adds a device to the bridge configuration.

< device >: The list below shows devices which may be attached to the bridge , although not all systems may support all devices.

lec1 - Forum LAN emulation

edd - Ethernet driver

rfc1483 - RFC1483 protocol (PVC)

ppp - Point-to Point protocol

Configuration saving saves this information.

Example: Mymachine > bridge device add edd ↵

```
Mymachine> bridge device add //bun/port=adsl/rfc1483=true/mode=llcbridged/txvpi=0/
```

```
txvci=35/rxvpi=0/rxvci=35 ↵
```

```
Mymachine > bridge add ppp/DEVICE=1 ↵
```

- **device delete**

```
>device delete <device> ↵
```

This command deletes a device from the bridge configuration. The changes will only take place after the configuration is saved and the system is rebooted.

Example: Mymachine > bridge device delete //bun/port=adsl/rfc1483=true/mode=llcbridged/txvpi=0/

```
txvci=35/rxvci=0/rxvci=35 ↵
```

```
Mymachine bridge > device delete edd ↵
```

- **device list**

```
>device list ↵
```

This command lists all the devices that are currently attached to the bridge.

Example: Mymachine > bridge device list ↵

```
Mymachine bridge > device list ↵
```

- **status**

```
>status ↵
```

This command shows the status of the bridge and its ports.

Example: Mymachine> bridge status ↵

## PPP commands

- **clear**

> <channel> clear ↵

Clear all aspects of this channel back to their default setting. If there is an active connection it is torn down.

Example: Mymachine > ppp 1 clear ↵

- **disable**

> <channel> disable ↵

Clear the enable flag for a PPP channel. This is the default setting. Disabling does not remove other configured information about this channel.

In the PPP state machine, this sets the PPP link to “closed”. If it is already closed, there is no effect.

Configuration saving saves this information. By default all channels are disabled.

Example: Mymachine > ppp 1 disable ↵

- **enable**

> <channel> enable ↵

Set the enable flag for a PPP channel. By default this is disabled. In the PPP state machine, this flag sets the PPP link to “open”. If it is already open, there is no effect.

Configuration saving saves this information.

Example: Mymachine > ppp 1 enable ↵

- **info**

> <channel> info [all] ↵

Provide information about the current setting of this channel. This includes all configuration state, and also current protocol information.

Example: Mymachine> ppp 1 info all ↵

- **interface**

> <channel> interface <n> ↵

Logically associated the specified channel with the specified interface.

Interface 1 is always the router port. It should be used for any PPP channel over which IPCP communication with the local system’s IP router is desired. Other interfaces can be created for bridging. A single PPP channel can only be associated with a single interface, or a single tunnel.

Use info to find the current setting.

Calling with n=0 removes any association. This is the default state.

Configuration saving saves this information.

Example: Mymachine > ppp 1 tunnel <n> ↵

- **llc**

> <channel> llc [1 | 0] ↵

If 1, use an LLC header on the front of transmitted packets and require one on received ones. This consists of four bytes, FE-FE-03-CF, and is required for PPP over AAL5 (RFC2364 p4) when using LLC encapsulated PPP. If 0, disable this. The default value is 0 ( disabled ).

Configuration saving saves this information.

Example: Mymachine > ppp 1 llc 1 ↵

#### • pvc

> <channel> pvc none ↵

> < channel> pvc [ [< port>] <vpi>] <vci> [ ip | mac ] [listen] ↵

Attached an ATM PVC to the given PPP channel. The port can be specified (only for a multi-port device), and VPI(default VPI is 0), and the VCI.

The allowable range of port, VPI, VCI depends on the atm driver. Normal limits are 0 for port, 0 only for VPI, 1...1023 for VCI.

If a single argument none is supplied, any current connection is torn down.

Note that enable must also be used to allow the link to become operational.

The ip and mac indicates which form of data is transported over the connection: one of IP data (controlled by the IPCP protocol), or MAC data (for BCP). If neither is provided, ip is assumed.

If the channel is not linked to an interface, and the channel is for IP data, the channel is linked to interface 1

If the channel is not linked to an interface, and the channel is for MAC data, the channel is linked to interface 2.

If listen is specified then this is the server end of a PVC. It will not send out PPP configure Request until it first receives a packet over the PVC. When a connection is torn down it goes returns to this state.

Use the info command to read this information.

Configuration saving saves this information.

Example: Mymachine > ppp 3 pvc 3 32 (set channel 3 to be (VPI=0,VCI=32) ↵

Mymachine > ppp 4 info (read PVC setting for channel 4) ↵

Mymachine > ppp 5 pvc 0 (remove any PVC setting from channel 5) ↵

#### • remoteip

> <channel> remoteip [ <IP address> ] ↵

If a PPP link is established using IPCP, this call causes the channel to provide the given IP address to the remote end of the connection. PPP will refuse to complete the connection if the other end will not accept this.

This is normally used for channel on which the remote party dials in, to allocate the IP address to that remote party.

Call with no argument to find the current setting.

Call with 0.0.0.0 to remove any setting. This is the default state.

Configuration saving saves this information.

remoteip command continues on the next page

Example: Dial -in:

```

Mymachine > ip device add ether ether //edd 192.168.4.254 ←
Mymachine > ip device add ppp_device ether //ppp/DEVICE=2 192.168.1.254 ←
Mymachine > ppp user add peter pwd telecom chap ←
    (user name :peter , password : telecom”) ←
Mymachine > ppp 2 pvc 0 35 ip listen ←
Mymachine > ppp 2 interface 2 ←
Mymachine > ppp 2 remoteip 192.168.1.1 ←
Mymachine > ppp 2 theylogin chap ←
Mymachine > ppp 2 enable ←
Mymachine > ip relay all ←
Mymachine > config save ←
Mymachine > restart ←

```

#### • they login

```
> <channel> they login pap|chap|none ←
```

This command describes how we requires the far end to login on this channel.

This command specifies that when using this channel , the user must log on using the specified protocol, and that they must provide any name/password combination which has been defined for that protocols, using the user command.

To remove this information on a channel , call theylogin with a single argument of none.

By default no login is required.

Configuration saving saves this information.

Example: see **remoteip**

#### • tunnel

```
> <channel> tunnel <n> <tunnel protocol> <dial direction> ←
```

Logically associated the specified channel with the specified tunnel. A single PPP channel can only be associated with a single interface, or a single tunnel. Use info to find the current setting.

Calling with n=0 removes any association . This is the default state. The possible tunnel protocols are : pptp and l2tp.

The dial direction may be : in or out for dial-in or dial-out respectively.

Configuration saving saves this information.

Example: Mymachine : ppp 3 tunnel 1 pptp out ←

#### • welogin

```
> <channel> welogin <name> <password> [pap|chap] ←
```

This command describes how we should login to the far end when a connection is established.

A name and password are supplied , and whether these should be used with the PAP or CHAP authentication protocol . CHAP is the default. To remove this information on a channel, call welogin with a single argument none.

If chap is specified, we will also log in using pap if the other end prefers this. If pap is specified we will only log in using pap.

By default no login is performed.

Configuration saving saves this information.

Example: Mymachine > ppp 1 welogin peter telecom chap ←

- **bcp**

> **bcp stp|nostp** ←

This command describes parameter for BCP, the Bridge Control Protocol, which is used to transport MAC (ethernet) packets over the PPP link.

If stp is specified, the Spanning Tree Protocol is in use by the Bridges, to control bridge loops.

In this case STP frames should be carried over any links using BCP.

If nostp is specified, STP frames should not be carried.

Configuration saving saves this information.

By default STP is not supported.

Example: Mymachine > ppp bcp stp ←

- **interface**

> **interface <n> localip <ipaddress>** ←

This command describes parameter for IPCP, the IP control protocol, when providing the servers end of an IPCP connection.

The server knows its own IP address (and may allocate an IP address to the remote end). This command tells the PPP process, for a particular interface, the local IP address to be associated with the local end.

For interface 1, this should be the same IP address as possessed by the device ppp\_device in the IP stack. If PPP channels are now associated with this interface, remote users can dial in to those channels and will be connected to the IP stack. They can be allocated IP address, see the command <channel> remoteip.

Call with 0.0.0.0 to remove any IP address setting. This is the default state.

Configuration saving saves this information.

Example: Mymachine > ppp interface 1 localip 192.168.1.1 ←

- **interface stats**

> **interface <n> stats** ←

The interface is regarded by the operating system as an Ethernet-like device which can be attached to the bridge or router.

It also provides an ifEntry to SNMP providing basic information about traffic through the interface.

This command shows the basic information about byte and package traffic through the interface, in SNMP terms.

Example: Mymachine > ppp interface 1 stats ←

- **user**

> **user add <name> [pwd <passwd> [pap | chap]]** ←

>**user [ <name >]** ←

>**user delete <name>| all** ←

This command stores information about a particular login name /password combination.

Use user delete to delete an individual user by name, or to delete all users. Use user add to create a new user or update an existing one.

Example: Mymachine > ppp user add peter pwd telecom chap ←

Mymachine > ppp user delete peter ←

Mymachine > ppp user delete all ←

## BSP Commands

- **ansi**

>ansi ↵

Set to ANSI mode T1 413 issue 2

Example: Mymachine > bsp ansi ↵

- **channel**

>channel ↵

Get Upstream/Downstream data rate

Example: Mymachine > bsp channel ↵

- **defects**

>defects ↵

Get defects

Example: Mymachine > bsp defects ↵

- **down**

>down ↵

Line disable

Example: Mymachine > bsp down ↵

- **gdmr**

>gdmr ↵

Set to G.DMT mode

Example: Mymachine > bsp gdmr ↵

- **glite**

>glite ↵

Set G.lite mode

Example: Mymachine > bsp glite ↵

- **line**

>line ↵

Get line data

Example: Mymachine > bsp line ↵

- **mode**

>mode ↵

Display current line state/mode

Example: Mymachine > bsp mode ↵

- **multi**

>multi ↵

Set to multi mode (G.lite/G.DMT/t1 413 issue2)

Example: Mymachine> bsp multi ↵

- **perf**

>perf ↵

Get performance counters

Example: Mymachine > bsp perf ↵

- **up**

>up ↵

Line enable

Example: Mymachine > bsp up ↵

## DHCP Server Commands

- **config**

>config [add <text> | confirm | delete | flush] ←

This command displays or edits the current configuration of the DHCP server.

To display current configuration, provide no argument to the command.

Use of the “add” argument adds the line <text> to the configuration file.

Use of the “confirm” argument re-parses the configuration file, confirming the changes made if the parse is successful.

Use of the “delete” argument deletes the last line from the configuration file.

Use of the “flush” argument deletes whole configuration.

Following any change to the configuration file, it is necessary to “confirm” the changes, issue a “flashfs update” to commit the change to FLASH, and then restart the system before the changes can take effect.

Example: Mymachine > dhcpserver config ←  
 Mymachine > dhcpserver config add subnet 192.168.1.0 netmask 255.255.255.0 ←  
 Mymachine > dhcpserver delete ←  
 Mymachine > dhcpserver flush ←

- **status**

>status ←

This command provides a summary of all leases known to the server on each interface in turn. It also shows remaining available IP address (i.e. those with no specified lease time, or client identifier).

Example: Mymachine > dhcpserver status ←

### Text line examples for configuration example:

Use the command **config add** to edit each line and use **config delete** to delete the last line.

```
subnet 192.168.4.0 netmask 255.255.255.0
{
range 192.168.4.1 192.168.4.99 ;
default-lease-time 43200;
max-lease-time 864000;
option subnet-mask 255.255.255.0;

option broadcast-address 192.168.4.255;
option routers 192.168.4.254;
}
```

## Product Specifications

### Hardware Specifications

<b>Console Interface:</b>	Windows GUI / HyperTerminal Command Line
<b>Console Access:</b>	Via RS-232 interface
<b>Interface Port:</b>	LAN: 10Base-T Ethernet (RJ-45) WAN: ADSL line (RJ-11) Console Management: RS-232
<b>Dimensions:(HxWxD)</b>	7.4" x 2" x 7.2" (H x W x D)
<b>Weight:</b>	1.1lb.
<b>Power Consumption:</b>	10W Max.
<b>DC Input Voltage:</b>	DC +5v
<b>Operating Temperature:</b>	32° ~ 104° F (0° ~ 40° C)

### ADSL Specifications

<b>Line Coding:</b>	Supports: ANSI T1.413 issue 2, G.992.1 (Full-Rate DMT), G.992.2 (G.Lite), G.994.1 (Multimode), G.994.1 (G.sh)
<b>Standard Compliance:</b>	Full rate ADSL
<b>Data Rate:</b>	Maximum transmission rate: Downstream: up to 8Mbps Upstream: up to 800Kbps
<b>Rate Adaption:</b>	Data rate auto-negotiation in 32Kbps increments

### ATM Specifications

<b>ATM Adaption Layer:</b>	Supports AAL5
<b>ATM Signaling:</b>	ATM Forum UNI3.0, 3.1, and UNI4.0
<b>VCs:</b>	Supports multiple Permanent Virtual Circuits (PVCs)
<b>Service Class:</b>	CBR, UBR
<b>OAM:</b>	ITU-T I.610 OAM Principles and Functions (including F4/F5) loop

### Basic Protocol and RFC

<b>RFC 1483:</b>	Multiple protocol encapsulation over AAL5 <ul style="list-style-type: none"><li>• Supports Logical Link Control (LLC) Encapsulation</li><li>• Supports VC-based multiplexing</li></ul>
<b>RFC 2364:</b>	PPP over AAL5 <ul style="list-style-type: none"><li>• Supports LLC Encapsulation</li><li>• Supports VC-based multiplexing</li><li>• Supports VPN</li></ul>

<b>RFC 2516:</b>	PPP over AAL5 <ul style="list-style-type: none"><li>• Supports LLC Encapsulation</li><li>• Supports VC-based multiplexing</li><li>• Supports VPN</li></ul>
<b>RFC 1577:</b>	Classical IP and ARP over ATM
<b>RFC 1661:</b>	PPP Link Control Protocol (LCP)
<b>RFC 1332:</b>	Internet Protocol Control Protocol (IPCP)
<b>RFC 1334:</b>	PPP Authentication Protocol (PAP)
<b>RFC 1994:</b>	PPP Challenge Handshake Authentication Protocol (CHAP)
<b>RFC 792:</b>	Internet Control Message Protocol (ICMP)
<b>802.1 d</b>	Spanning-tree bridge

### **Routing Functions**

<b>RFC 1058, 1723</b>	Routing Information Protocol (RIP, RIPv2)
<b>RFC 1631</b>	Network Address Translation (NAT)
<b>RFC 2131</b>	Dynamic Host Configuration Protocol (DHCP) <ul style="list-style-type: none"><li>• Supports DHCP server and client</li></ul>
<b>VPN</b>	Virtual Private Networks <ul style="list-style-type: none"><li>• Supports Point-to-Point Tunneling Protocol (PPTP)</li></ul>

## Troubleshooting

This section is intended to help you troubleshoot problems you may encounter while setting up and using your GS-R250S ADSL Router. It also describes some common hardware and software problems and gives some suggestions to troubleshoot them.

### Diagnostics with the LED indicators

Most hardware problems can be diagnosed and solved by checking the LEDs on the front panel of the router.

- If the POWER LED is dark:
  - Make sure the power cord is firmly plugged into the back panel of the router and the other end into an active AC wall or power strip outlet.
  - Make sure the power switch is depressed to the “on” position.
- If the PC LED is dark:
  - Make sure your Ethernet cable (RJ-45) is firmly plugged into the back panel of your router and the other end into your computer or hub.
  - Make sure you are using the correct Ethernet cable for your application (Cross-connect or straight-through).
  - Make sure your Ethernet card is installed properly in your system by pinging the IP address of your PC.

### Problems when configuring the Modem via the Console Port

- If you cannot see any message for the configuration screen:
  - Make sure the cable connection from the modem’s console port to the computer being used as a console is securely connected.
  - Make sure the terminal emulation software is accessing the correct port on the computer that is being used as a console.
  - Make sure flow control on serial connections is turned “off”.
- Junk characters appear on the configuration screen
  - Make sure the terminal emulation software is configured correctly. Check the baud rate is set to 9600bps and the data format is set to No parity, 8 data bits, and 1 stop bit.

### Problems when connecting to the Modem via Ethernet

- Cannot connect your PC to the modem for configuration via Ethernet
  - Make sure the Ethernet LED is lit.
  - Make sure the modem’s IP address matches the IP address previously stored into the modem’s configuration. You must have previously set the modem’s Ethernet IP address and subnet mask, saved the Ethernet configuration changes, and rebooted the modem for the new IP address to take effect.

- Make sure the PC and the modem are on the same IP subnetwork or the target router is reachable through a router on your LAN.
- Make sure the TCP/IP properties are set correctly in your PC.
- Make sure the DATA LED on the modem's front panel blinks when pinged.

## Problems when accessing the Internet or remote network

- Cannot access the Internet or remote network
  - There are four possible causes to this problem.
    1. The connection between the computer and the modem
    2. The connection between the modem and your NSP
    3. The connection between your NSP and your ISP
    4. The connection between your ISP and the Internet

To isolate the problem, you can verify IP connectivity with the following steps by running a **ping <IP address>** command. For example, **ping 192.168.254.254**.

1. Ping the IP address of your PC. If you get a response back, proceed to the next step directly. If you do not get a response back, be sure that:
    - Your network interface card (NIC) is properly installed
    - TCP/IP protocol is installed
    - TCP/IP protocol is bound to the NIC
  2. Ping the IP address of your modem. If you get a response back, the problem lies between your PC and your modem.
    - Check the cables
    - Check the hub
    - Make sure that your PC and your modem belong to the same IP sub network
    - Watch the DATA LED to see if data traffic flow changes with configuration
  3. Ping the DNS server
- If the modem is configured to bridging mode
    - Be sure to reboot the modem if you have made any changes to the configuration
    - All IP address must be in the same IP sub network
  - If the modem is configured to routing mode
    - Check that IP Routing is enabled at the local and the remote end
    - Make sure the IP addresses of the local and remote networks belong to different IP sub networks
    - Make sure that there is an existing route to the remote network
    - Make sure that there is an existing route back from the remote network
    - Be sure to reboot the modem if you have made any changes to the configuration

## Record Your Internet Protocol Details

**WARNING:** In order to successfully connect with ADSL you must utilize the connection information provided by your Internet Service Provider.

For future trouble-shooting or re-installation it is important that you retain these details. **Please record the details for your protocol in the space we have provided for you.**

### Bridged RFC 1483

VPI: \_\_\_\_\_ VCI: \_\_\_\_\_

Encapsulation Mode:    VC/MUX                    LLC/SNAP

---

### Routed RFC 1483

VPI: \_\_\_\_\_ VCI: \_\_\_\_\_

Encapsulation Mode:    VC/MUX                    LLC/SNAP

Ethernet Port IP: \_\_\_\_\_ Net Mask: \_\_\_\_\_

ADSL Port IP: \_\_\_\_\_ Net Mask: \_\_\_\_\_

Remote Gateway IP: \_\_\_\_\_

---

### RFC 1577 Classical IP

VPI: \_\_\_\_\_ VCI: \_\_\_\_\_

Ethernet Port IP: \_\_\_\_\_ Net Mask: \_\_\_\_\_

ADSL Port IP: \_\_\_\_\_ Net Mask: \_\_\_\_\_

---

**RFC 2364 PPPoA**

VPI: \_\_\_\_\_

VCI: \_\_\_\_\_

Encapsulation Mode:

 VC/MUX LLC/SNAP

Ethernet Port IP: \_\_\_\_\_

Net Mask: \_\_\_\_\_

User Name: \_\_\_\_\_

Password: \_\_\_\_\_

Authentication Mode:

 CHAP PAP**RFC 2516 PPPoE**

VPI: \_\_\_\_\_

VCI: \_\_\_\_\_

Ethernet Port IP: \_\_\_\_\_

Net Mask: \_\_\_\_\_

User Name: \_\_\_\_\_

Password: \_\_\_\_\_

Authentication Mode:

 CHAP PAP**Decimal to Hexadecimal Conversion Chart**

<b>0</b>	<b>00</b>
<b>128</b>	<b>80</b>
<b>192</b>	<b>C0</b>
<b>224</b>	<b>EO</b>
<b>240</b>	<b>F0</b>
<b>248</b>	<b>F8</b>
<b>252</b>	<b>FC</b>
<b>254</b>	<b>FE</b>
<b>255</b>	<b>FF</b>