



DSL Router Commander

Software Manual

Version 1.2

Windows® 95, Windows® 98, Windows® 98 Second Edition, Windows® Me,
Windows® XP, Windows NT®4.0 and Windows® 2000 supported

Product warranty does not apply to damage caused by lightning, power surges or wrong voltage usage.

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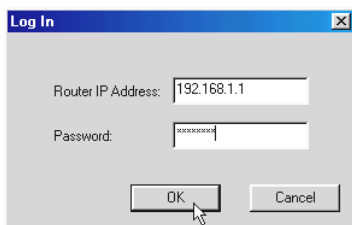
Chapter... 1

Introducing DSL Router Commander

DSL Router Commander is a user-friendly interface that allows you to initialize, view and modify your Router configurations to match the characteristics of your network environment.

1.1 Logging In

1. Place the **Installation CD** into your CD-ROM Drive. You will be prompted with a **Modem Installation Wizard**. Click **Cancel**.
Run **DSL Router Commander** by running **DslCom.exe** file from **\Advanced\Tools\DSL Router Commander** folder on the Installation CD.
2. You will be prompted for your log in password. Enter the password as **stm** (factory's default) and click **OK**.



(The factory default for **Router IP Address** and **Password** is **192.168.1.1** and **stm** respectively. Replace them with your new Router IP Address and Password if your System Administrator has changed them.)



You may also change your login password by selecting the **SNMP** tab from the DSL Router Commander.

1.2 Getting Ready Information Required

To configure your Router, you need to have the following information ready from your ADSL Service Provider and System Administrator.

The following table shows the information required.

a) Check with your ADSL Service Provider:

i) The line protocol to use _____

ii) For RFC 2684 (RFC 1483) / RFC 2225 (RFC 1577):

The addresses for

WAN IP _____
 WAN Subnet Mask _____
 VPI and VCI values _____
 Default WAN Gateway _____
 DNS Relay (Enable/Disable) _____
 DNS Server (Primary) _____
 DNS Server (Secondary) _____

For RFC 2516 / RFC 2364:

The PPP Authorization's

VPI and VCI values _____
 User Name _____
 Password _____
 Channel _____
 Authentication _____
 DNS Relay (Enable/Disable) _____
 DNS Server (Primary) _____
 DNS Server (Secondary) _____

iii) The Framing Mode [not applicable for RFC 2225 (RFC 1577)]

b) Check with your System Administrator:

i) The addresses for

LAN IP address _____

LAN Subnet Mask _____

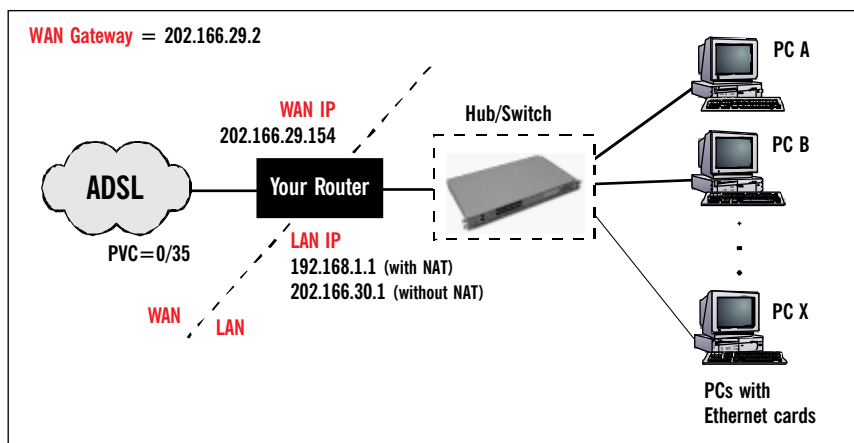
Remote Gateway _____

ii) To enable or disable NAT

Chapter...2

Network Setup Overview

This section gives an overview of a typical network. *The addresses indicated are used as examples throughout the whole manual. You are to replace them with values given by your System Administrator / ADSL Service Provider.*



(The Hub/Switch shown on the diagram is optional if your Router already has more than 1 Ethernet Ports)



1. For configuration without NAT:

The range of the IP address used in this example is from **202.166.30.1** to **202.166.30.6** as restricted by subnet mask defined.

Network ID : 202.166.30.0 Broadcast ID :202.166.30.7

The ADSL Service Provider will have to create a static route:

Network ID : 202.166.30.0 Subnet Mask :ff:ff:ff:f8
Next Hop Gateway : 202.166.29.154

2. For PPPoA and PPPoE:

The WAN IP and WAN Gateway will be dynamically assigned by the PPP server. There is no need to specify the WAN IP nor to configure a default route to the WAN Gateway.

2.1 Configuring the PCs

For PC A:

	(with NAT)	(without NAT)
IP	= 192.168.1.11	= 202.166.30.2
Subnet mask	= 255.255.255.0	= 255.255.255.248
Gateway	= 192.168.1.1	= 202.166.30.1

For PC B:

	(with NAT)	(without NAT)
IP	= 192.168.1.12	= 202.166.30.3
Subnet mask	= 255.255.255.0	= 255.255.255.248
Gateway	= 192.168.1.1	= 202.166.30.1

For PC X:

	(with NAT)	(without NAT)
IP	= 192.168.1.23	= 202.166.30.6
Subnet mask	= 255.255.255.0	= 255.255.255.248
Gateway	= 192.168.1.1	= 202.166.30.1

Chapter...3

Configuring your Router with DSL Router Commander



1. For any settings that you are unsure, please check with your ADSL Service Provider or System Administrator.
2. Based on your selected line configuration, fields that are not applicable will be grayed out.
3. The values in the screen shots are based on the examples in [Chapter 2 - Network Setup Overview](#). You are required to replace these values with those given by your ADSL Service Provider or System Administrator!

Once you are logged in, you will see the following Main Menu.



Always click **Close** on the menu to save any changes you have made to your configurations. If you exit DSL Router Commander without clicking on **Close**, changes you have made will be lost!

The following describes the menu items:

Line Configuration (see section 3.1 for details)

To select the desired protocol and configure the IP addresses/Subnet Mask that is required for your network. You may set, modify or view the settings for your configuration.

Route Table (see section 3.2 for details)

To set, view or delete static route(s).

DHCP (see section 3.3 for details)

To add, modify or view the DHCP server for your local network.

(DHCP allows centralized configuration of all workstations' TCP/IP protocol and IP address allocation from the server.)

SNMP (see section 3.4 for details)

To manage the list of SNMP community names.

DSL Monitoring (see section 3.5 for details)

To monitor the activities of your Router from the computer connected to it. Click **Close** to exit DSL Router Commander.

3.1 Line Configuration

The different types of configurations available are:

- **RFC 2684 (RFC 1483) Bridged or Ethernet Framing**
Encapsulation of bridged network data, such as Ethernet frames, in ATM Adaptation Layer 5 (AAL5) Protocol Data Units (PDU).
- **RFC 2684 (RFC 1483) Routed or IP Framing**
Encapsulation and Transmission of routed network data, such as IP datagrams, over ATM Adaptation Layer 5 (AAL5) Protocol Data Units (PDU).
- **RFC 2225 (RFC 1577) IPoA**
Transmission of IP datagrams and ATM Address Resolution Protocol (ATMARP) requests and replies over ATM Adaptation Layer 5 (AAL5).
- **RFC 2516 PPPoE**
Creation and maintenance of a Point-to-Point-Protocol (PPP) session over an Ethernet link.
- **RFC 2364 PPPoA**
Creation and maintenance of a Point-to-Point-Protocol (PPP) session over an ATM link.
- **Transparent Bridge**
Joining two or more bridged network segments (such as Ethernet) running on different physical media.

3.1.1 Configuring for RFC 2684 (RFC 1483) Bridged

The screenshot shows the 'DSL Router Commander' window with the 'Line Configuration' tab selected. The configuration is as follows:

- Protocol:**
 - RFC 1483 Bridged
 - RFC 1483 Routed
 - RFC 1577 (IPoA)
 - RFC 2364 (PPPoA)
 - RFC2516 (PPPoE)
 - Transparent Bridge
- PVC:**
 - VPI: 8
 - VCI: 35
- IP Address:**
 - LAN IP Configuration: 192 . 168 . 1 . 1
 - LAN Subnet Mask: 255 . 255 . 255 . 0
 - WAN IP Configuration: 202 . 166 . 29 . 154
 - WAN Subnet Mask: 255 . 255 . 255 . 0
 - Remote Gateway: 202 . 166 . 29 . 2
- NAT:**
 - Enable NAT
 - Obtain Wan Setting Automatically
 - Inbound button
- Framing Mode:**
 - LLC SNAP
 - VC MUX
- PPP Authorization:**
 - Auto
 - PAP
 - CHAP
 - User Name: []
 - Password: []
 - Channel: []
 - DNS Server Discovery

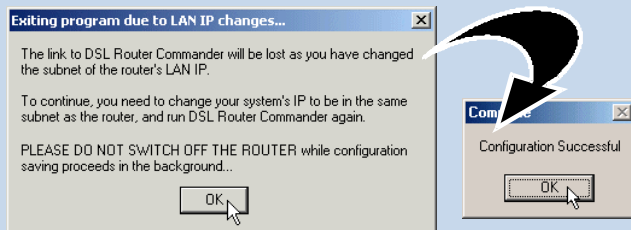
Buttons: Multiple PVC, Apply, Close, Cancel.

- i) Select **Line Configuration** tab. In the **Protocol** section, click **RFC 1483 Bridged**.
- ii) In the **PVC** section, enter the **VPI** and **VCI** values as assigned by your ADSL Service Provider.
- iii) In the **IP Address** section, enter all the required IP addresses as assigned by your ADSL Service Provider or System Administrator.
(Depending on your ADSL Service Provider, you may select the option **Obtain Wan Setting Automatically**. The **WAN IP Configuration**, **WAN Subnet Mask** and **Remote Gateway** fields will be grayed out. The addresses will be allocated by your ADSL Service Provider's Server automatically.)
- iv) Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
- v) Select the **Framing Mode** option as determined by your ADSL Service Provider.



Changing LAN IP address / Subnet Masks (applicable to all protocols):

If you overwrite the **default LAN IP address / Subnet Mask** with new addresses and click **Apply**, the following dialog box will be prompted.

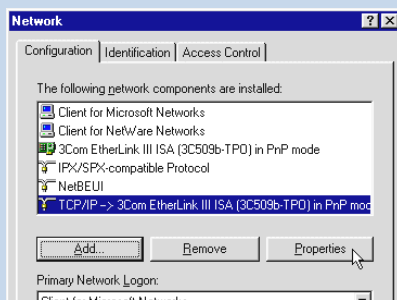


Understand the instructions. Click **OK** to both prompts. Proceed to change your Ethernet Card's IP / Subnet Mask by carrying out the following steps:

For Windows® 95 / Windows® 98 / Windows® 98 Second Edition / Windows® Me

- From your Windows desktop, right-click on the **Network Neighborhood** icon and select **Properties**.
- From the **Configuration** tab, select the '**TCP/IP->xxx**' where xxx refers to **the model of your Ethernet card that is connected to your Router**. (3Com EtherLink III Ethernet Card is used as an example here.)

Click **Properties**.



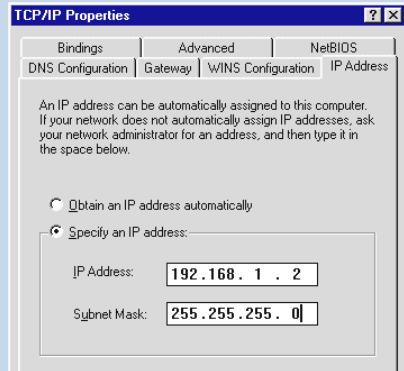
(If you do not see TCP/IP with the model of your Ethernet Card, refer to the documentation that comes with your card and re-install the driver.)

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- c) From the **IP Address** tab, overwrite the existing **IP Address / Subnet Mask** to the same subnet as the LAN IP / Subnet Mask you have entered at the DSL Router Commander.

Click **OK** and restart you system if prompted.

You can now run the DSL Router Commander with the new IP address.



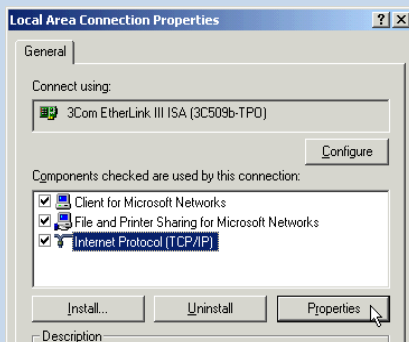
If you have set the subnet mask of the LAN IP to 255:255:255:255, you will not be able to run DSL Router Commander. This is because only one IP is allowed on the LAN network and it is already allocated to the Router.

For Windows® XP

- i) From your Windows desktop, click **Start > All Programs > Accessories > Communications > Network Connections**.

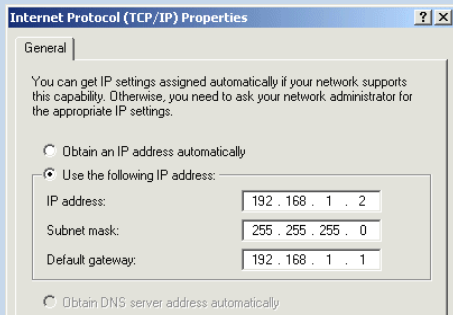
Right-click on the **Local Area Connection** icon that reflects **the model of your Ethernet Card that is connected to your Router** and click **Properties**. *(This is important especially if you have more than one Local Area Connection icons displayed. If you do not see the model of your Ethernet Card, refer to the documentation that comes with your Ethernet card and re-install the driver.)*

- ii) Select **Internet Protocol (TCP/IP)** and click **Properties**.



(3Com EtherLink III Ethernet Card is used as an example here.)

- iii) Select the option **Use the following IP address**. Overwrite the existing **IP Address**, **Subnet Mask** and **Default gateway** to the same subnet as the LAN IP / Subnet Mask you have entered at the DSL Router Commander.



Click **OK** again to close.

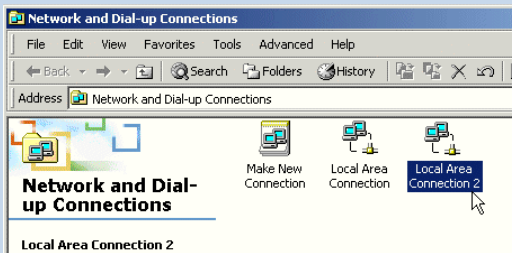
You can now run the DSL Router Commander with the new IP address.

If you have set the subnet mask of the LAN IP to 255:255:255:255, you will not be able to run DSL Router Commander. This is because only one IP is allowed on the LAN network and it is already allocated to the Router.

For Windows® 2000

- i) From your Windows desktop, right-click on the icon **My Network Places**. Select **Properties**.

At the **Network and Dial-up Connections** window, right-click on the **Local Area Connection** icon and select **Properties**.

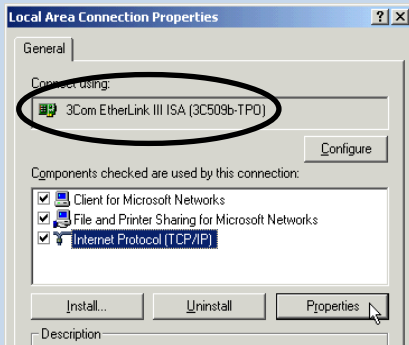


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- ii) Ensure that the field **Connect Using** indicates **the model of your Ethernet card that is connected to your Router**.

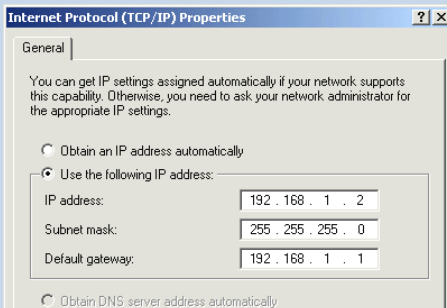
*(This is important especially if you have more than one **Local Area Connection** icons displayed at the **Network and Dial-up Connections** window. Ensure that you have selected the correct **Local Area Connection** icon.)*

Select **Internet Protocol (TCP/IP)** and click **Properties**.



(3Com EtherLink III Ethernet Card is used as an example here. If you cannot find the model of your Ethernet Card that is connected to your Router, refer to the documentation that comes with your Ethernet card and re-install the driver.)

- iii) Select the option **Use the following IP address**. Overwrite the existing **IP Address**, **Subnet Mask** and **Default gateway** to the same subnet as the LAN IP / Subnet Mask you have entered at the DSL Router Commander.



Click **OK** again to close.

You can now run the DSL Router Commander with the new IP address.

If you have set the subnet mask of the LAN IP to 255:255:255:255, you will not be able to run DSL Router Commander. This is because only one IP is allowed on the LAN network and it is already allocated to the Router.

For Multiple PVCs:

vi) For multiple PVCs, click **Multiple PVC**.

Protocol	PVC	NAT	Framing Mode	IP	Subnet
RFC 1483 Bridged	8/35	Enable	LLC SNAP	165.21.25.173	255.255.255.0
RFC 2364 (PPPoA)	0/35	Enable	VC MUX		

- In the **Protocol** section, select **RFC 1483 Bridged**.
 - In the **IP Address** section, enter the **WAN IP Configuration** and **WAN Subnet Mask** addresses as assigned by your ADSL Service Provider / System Administrator.
(The **WAN IP Configuration** must be a unique IP address for different set of PVC values.)
Depending on your ADSL Service Provider, you may select the option **Obtain Wan Setting Automatically**. The addresses will be allocated by your ADSL Service Provider's Server automatically.
 - In the **PVC** field, enter the new VPI and VCI values.
 - Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
 - Select the **Framing Mode** option as determined by your ADSL Service Provider.
 - Click **Add**. A protocol with the new PVC values entered will be listed.
(To **remove** a PVC value, click on the respective protocol and click **Remove**.)
 - Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK** followed by **Close**.
- vii) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- viii) Click **Close** to save the configurations and exit.

3.1.1a NAT Inbound (optional)

Inbound allows you to list or set up a series of rules to determine what will happen to the incoming traffic. By default, all incoming packets other than packets arriving in response to outgoing traffic, will be rejected.

The Interface (e.g. **wan** as shown in the dialog box below) listed in the table corresponds to your configured WAN interface.



NAT should always be enabled only on the interface connecting to the public network or WAN, not the interface connecting to the private network.

The screenshot shows the 'Inbound' dialog box with the following configuration:

- Port: 80
- Host IP: 192.168.1.2
- Protocol: TCP UDP

Interface	Port/Proto	New IP Addr
wan	21/TCP	192.168.1.2
wan	80/TCP	192.168.1.2

Buttons at the bottom: Add, Remove, Remove All, Exit.

(Illustration is based on RFC 1483 Routed)

i) To add a rule:

Enter the **Port**, **Host IP Address** and **Protocol** required and click **Add**.

- Port** Refers to a 16-bit number (range from 1 to 65535) used by transport layer protocols (UDP or TCP). Ports are used to address application or services which run on a Server.
- Host IP Address** Refers to the IP address of a local application server (e.g. HTTP, FTP Server) that will service inbound traffic request from Internet. The Router will forward those requests according to the list.
- Protocol** Refers to the IP protocol, either **TCP** or **UDP**.
- Port/Proto** Refers to the **Port** and **Protocol** used for the interface.
- New IP Addr** Refers to the new IP address on the private network which the packet's destination IP address should be translated to.

- ii) **To remove a single interface**
To remove one of the interface, click on it and click **Remove**.
- iii) **To remove all interfaces**
To remove all interfaces, click **Remove All**.
- iv) Click **Exit**.

3.1.2 Configuring for RFC 2684 (RFC 1483) Routed

The screenshot shows the 'DSL Router Commander' window with the 'Line Configuration' tab selected. The configuration is as follows:

- Protocol:**
 - RFC 1483 Bridged
 - RFC 1483 Routed
 - RFC 1577 (IPoA)
 - RFC 2364 (PPPoA)
 - RFC2516 (PPPoE)
 - Transparent Bridge
- PVC:**
 - VPI: 0
 - VCI: 35
- IP Address:**
 - LAN IP Configuration: 192 . 168 . 1 . 1
 - LAN Subnet Mask: 255 . 255 . 255 . 0
- NAT:**
 - Enable NAT
 - Inbound
 - Obtain Wan Setting Automatically
 - WAN IP Configuration: 202 . 166 . 29 . 154
 - WAN Subnet Mask: 255 . 255 . 255 . 0
 - Remote Gateway: 202 . 166 . 29 . 2
- Framing Mode:**
 - LLC SNAP
 - VC MUX
- PPP Authorization:**
 - Auto
 - PAP
 - CHAP
 - User Name: []
 - Password: []
 - Channel: []
 - DNS Server Discovery

Buttons: Multiple PVC, Apply, Close, Cancel.

- i) Select **Line Configuration** tab. In the **Protocol** section, click **RFC 1483 Routed**.
- ii) In the **PVC** section, enter the **VPI** and **VCI** values as assigned by your ADSL Service Provider.
- iii) In the **IP Address** section, enter all the required IP addresses as assigned to you by your ADSL Service Provider / System Administrator.
- iv) Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
- v) Select the **Framing Mode** option as determined by your ADSL Service Provider.



To change the LAN IP address / LAN Subnet Mask at the **LAN IP Configuration / LAN Subnet Mask** field, read the **Note** on page **14**.

For Multiple PVCs:

vi) For multiple PVCs, click **Multiple PVC**.

Protocol	PVC	NAT	Framing Mode	IP	Subnet
RFC 1483 Routed	8/35	Enable	LLC SNAP	202.166.29.155	255.255.255.0
RFC 1483 Routed	0/35	Enable	LLC SNAP	202.166.29.154	255.255.255.0

- In the **Protocol** field, select **RFC 1483 Routed**.
 - In the **IP Address** section, enter the **WAN IP Configuration** and **WAN Subnet Mask** addresses as assigned by your ADSL Service Provider / System Administrator. (The **WAN IP Configuration** must be a unique IP address for different set of PVC values.)
 - In the **PVC** field, enter the new VPI and VCI values.
 - Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
 - Select the **Framing Mode** option as determined by your ADSL Service Provider.
 - Click **Add**. A protocol with the new PVC values will be listed. (To **remove** a PVC value, click on the respective protocol and click **Remove**.)
 - Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK** followed by **Close**.
- vii) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- viii) Click **Close** to save the configurations and exit.

3.1.3 Configuring for RFC 2225 (RFC 1577)

The screenshot shows the 'DSL Router Commander' window with the 'Line Configuration' tab selected. The configuration is as follows:

- Protocol:**
 - RFC 1483 Bridged
 - RFC 1577 (IPoA)
 - RFC 2516 (PPPoE)
 - RFC 1483 Routed
 - RFC 2364 (PPPoA)
 - Transparent Bridge
- PVC:**
 - VPI: 0
 - VCI: 85
- IP Address:**
 - LAN IP Configuration: 192 . 168 . 1 . 1
 - LAN Subnet Mask: 255 . 255 . 255 . 0
- NAT:**
 - Enable NAT
 - Inbound
 - Obtain Wan Setting Automatically
 - WAN IP Configuration: 202 . 166 . 29 . 154
 - WAN Subnet Mask: 255 . 255 . 255 . 0
 - Remote Gateway: 202 . 166 . 29 . 2
- Framing Mode:**
 - LLC BNAP
 - VC MUX
- PPP Authorization:**
 - Auto
 - PAP
 - CHAP
 - User Name: []
 - Password: []
 - Channel: []
 - DNS Server Discovery

Buttons: Multiple PVC, Apply, Close, Cancel.

- i) Select **Line Configuration** tab. In the **Protocol** field, click **RFC 1577**.
- ii) In the **PVC** section, enter the **VPI** and **VCI** values as assigned by your ADSL Service Provider.
- iii) In the **IP Address** section, enter all the required IP addresses as assigned by your ADSL Service Provider / System Administrator. (Depending on your ADSL Service Provider, you may select the option **Obtain Wan Setting Automatically**. The **WAN IP Configuration**, **WAN Subnet Mask** and **Remote Gateway** fields will be grayed out. The addresses will be allocated by your ADSL Service Provider's Server automatically.)
- iv) Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
- v) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- vi) Click **Close** to save the configurations and exit.



To change the LAN IP address / LAN Subnet Mask at the **LAN IP Configuration / LAN Subnet Mask** field, read the **Note** on page **14**.

3.1.4 Configuring for RFC 2516

The screenshot shows the 'DSL Router Commander' window with the 'Line Configuration' tab selected. The 'Protocol' section has radio buttons for RFC 1483 Bridged, RFC 1483 Routed, RFC 1577 (IPoA), RFC 2364 (PPPoA), RFC 2516 (PPPoE) (which is selected), and Transparent Bridge. The 'PVC' section has VPI: 0 and VCI: 35. The 'IP Address' section has LAN IP Configuration: 192.168.1.1 and LAN Subnet Mask: 255.255.255.0. The 'NAT' section has 'Enable NAT' checked and 'Inbound' selected. The 'Framing Mode' section has 'LLC SNAP' selected. The 'PPP Authorization' section has 'Auto' selected, 'User Name: username@isp', 'Password: *****', and 'Channel: 1'. There is also a 'DNS Server Discovery' checkbox which is unchecked. Buttons for 'Multiple PVC', 'Apply', 'Close', and 'Cancel' are visible at the bottom.

- i) Select **Line Configuration** tab. In the **Protocol** field, click **RFC 2516**.
- ii) In the **PVC** section, enter the **VPI** and **VCI** values assigned by your ADSL Service Provider.
- iii) In the **IP Address** section, enter all the required IP addresses assigned to you by your ADSL Service Provider / System Administrator.
- iv) Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
- v) Select the **PPP Authorization** as determined by your ADSL Service Provider. Default is **Auto**.
- vi) Enter your **User Name** and **Password** as given by your ADSL Service Provider. Select **DNS Server Discovery** as determined by your ADSL Service Provider. It will enable your Router to detect the IP address of the DNS server of your ADSL Service Provider.
- vii) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- viii) Click **Close** to save the configurations and exit.



To change the LAN IP address / LAN Subnet Mask at the **LAN IP Configuration / LAN Subnet Mask** field, read the **Note** on page 14.

3.1.5 Configuring for RFC 2364

The screenshot shows the 'DSL Router Commander' window with the 'Line Configuration' tab selected. The 'Protocol' section has 'RFC 2364 (PPPoA)' selected. In the 'PVC' section, 'VPI' is 0 and 'VCI' is 35. The 'LAN IP Configuration' is 192.168.1.1 and the 'LAN Subnet Mask' is 255.255.255.0. The 'NAT' section has 'Enable NAT' checked and 'Inbound' selected. The 'Framing Mode' section has 'VC MUX' selected. The 'PPP Authorization' section has 'Auto' selected, 'User Name' is 'username@isp', 'Password' is '*****', and 'Channel' is 1. There are buttons for 'Multiple PVC', 'Apply', 'Close', and 'Cancel'.

- i) Select **Line Configuration** tab. In the **Protocol** field, click **RFC 2364**.
- ii) In the **PVC** section, enter the **VPI** and **VCI** values as assigned by your ADSL Service Provider.
- iii) Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
- iv) Select the **Framing Mode** option as determined by your ADSL Service Provider.
- v) Select the **PPP Authorization** as determined by your ADSL Service Provider. Default is **Auto**.
- vi) Enter your **User Name** and **Password** as given by your ADSL Service Provider. Select **DNS Server Discovery** as determined by your ADSL Service Provider. It will enable your Router to detect the IP address of the DNS server of your ADSL Service Provider.
- vii) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.



To change the LAN IP address / LAN Subnet Mask at the **LAN IP Configuration / LAN Subnet Mask** field, read the **Note** on page **14**.

For Multiple PVCs:

viii) For multiple PVCs, click **Multiple PVC**.

Protocol	PVC	NAT	Framing Mode	IP	Subnet
RFC 1483 Bridged	8/35	Enable	LLC SNAP	165.21.25.173	255.255.255.0
RFC 2364 (PPPoA)	0/35	Enable	VC MUX		

- In the **Protocol** field, select your desired protocol. (The following instructions will be based on RFC 1483 Bridged Protocol)
- In the **IP Address** section, enter the **WAN IP Configuration** and **WAN Subnet Mask** addresses as assigned by your ADSL Service Provider / System Administrator. (The **WAN IP Configuration** must be a unique IP address for different set of PVC values.)
Depending on your ADSL Service Provider, you may select the option **Obtain Wan Setting Automatically**. The **WAN IP Configuration**, **WAN Subnet Mask** and **Remote Gateway** fields will be grayed out. The addresses will be allocated by your ADSL Service Provider's Server automatically.
- In the **PVC** field, enter the new VPI and VCI values.
- Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
- Select the **Framing Mode** option as determined by your ADSL Service Provider.
- Click **Add**. A protocol with the new PVC values will be listed. (To **remove** a PVC value, click on the respective protocol and click **Remove**.)
- Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK** followed by **Close**.

- ix) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- x) Click **Close** to save the configurations and exit.

3.1.6 Configuring for Transparent Bridge

The screenshot shows the 'DSL Router Commander' window with the 'Line Configuration' tab selected. The 'Protocol' section has radio buttons for 'RFC 1483 Bridged', 'RFC 1483 Routed', 'RFC 1577 (IPoA)', 'RFC 2364 (PPPoA)', 'RFC 2516 (PPPoE)', and 'Transparent Bridge', with 'Transparent Bridge' selected. The 'PVC' section has 'VPI' set to 0 and 'VCI' set to 35. The 'IP Address' section has 'LAN IP Configuration' set to 192.168.1.1 and 'LAN Subnet Mask' set to 255.255.255.0. The 'NAT' section has 'Enable NAT' checked and an 'Inbound' button. The 'Framing Mode' section has radio buttons for 'LLC SNAP' (selected), 'VC MUX', and 'Auto'. The 'PPP Authorization' section has radio buttons for 'Auto', 'PAP', and 'CHAP' (selected), along with 'User Name', 'Password', and 'Channel' input fields. There are 'Apply', 'Close', and 'Cancel' buttons at the bottom.

- i) Select **Line Configuration** tab. In the **Protocol** field, click **Transparent Bridge**.
- ii) In the **PVC** section, enter the **VPI** and **VCI** values as assigned by your ADSL Service Provider.
- iii) Select the **Framing Mode** option as determined by your ADSL Service Provider.
- iv) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- v) Click **Close** to save the configurations and exit.



To change the LAN IP address / LAN Subnet Mask at the **LAN IP Configuration / LAN Subnet Mask** field, read the **Note** on page 14.

For Multiple PVCs:

vi) For multiple PVCs, click **Multiple PVC**.

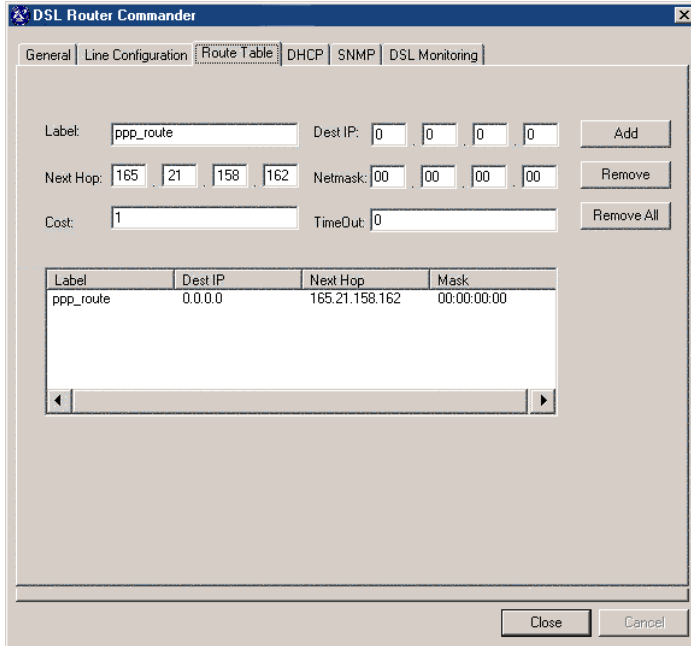
Protocol	PVC	NAT	Framing Mode	IP	Subnet
RFC 1483 Bridged	8/35	Enable	LLC SNAP	165.21.25.173	255.255.255.0
RFC 2364 (PPPoA)	0/35	Enable	VC MUX		

- In the **Protocol** field, select your desired protocol. (The following instructions will be based on RFC 1483 Bridged Protocol)
- In the **IP Address** section, enter the **WAN IP Configuration** and **WAN Subnet Mask** addresses as assigned by your ADSL Service Provider / System Administrator.
(The **WAN IP Configuration** must be a unique IP address for different set of PVC values.)
Depending on your ADSL Service Provider, you may select the option **Obtain Wan Setting Automatically**. The **WAN IP Configuration** and **WAN Subnet Mask** fields will be grayed out. The addresses will be allocated by your ADSL Service Provider's Server automatically.
- In the **PVC** field, enter the new VPI and VCI values.
- Select the **NAT** option as determined by your System Administrator. If required, click **Inbound** and fill in the data. (See [section 3.1.1a - NAT Inbound](#))
- Select the **Framing Mode** option as determined by your ADSL Service Provider.
- Click **Add**. A protocol with the new PVC values will be listed.
(To **remove** a PVC value, click on the respective protocol and click **Remove**.)
- Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK** followed by **Close**.

- viii) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- ix) Click **Close** to save the configurations and exit.

3.2 Route Table

Route Table allows you to set, view or delete a static route or deletes all routes. Check with your System Administrator for details.



i) Click the **Route Table** tab.

To **add** a static IP route, enter all the required information and click **Add**.

- **Label** Enter any name for your static route.
- **Dest IP** Enter the IP Address of the network destination.
- **Next Hop** Enter the IP address of the Router or gateway to which packets destined for network destination [Dest IP] should be sent.
- **Netmask** Enter the address to indicate network mask of network destination. (Default is ff.ff.ff.00. For example, 0.0.0.0 is the default route that will be used if none of the specific routes defined matches the destination IP)

- **Cost** Enter the value for cost. This refers to the number of hops counted as the cost of the route, which may affect the choice of route when the route is competing with routes acquired from RIP. (But note that using a mixture of RIP and static routing is not advised.) Default is 1.
- **TimeOut** Enter the value for timeout (in seconds). This specifies the length of time before the route entry timeouts. Default of 0 means the route entry will never timeout.

To **remove** a static IP address, click on the label listed on the table and click **Remove**. To **remove all** the static IP addresses, click **Remove All**.

- ii) Click **Close** to save the configurations and exit.

3.3 DHCP

DHCP allows you to add, modify, remove or view the DHCP server to your Router network. **All values are provided by your System Administrator.**



DHCP is not applicable for **Transparent Bridge** configuration.

DSL Router Commander

General | Line Configuration | Route Table | **DHCP** | SNMP | DSL Monitoring

DHCP

Enable DHCP

Network ID: 192 . 168 . 1 . 0 Subnet Mask: 255 . 255 . 255 . 0

IP Range Start: 192 . 168 . 1 . 2 IP Range End: 192 . 168 . 1 . 100

DHCP Options

Gateway IP: 192 . 168 . 1 . 1 Lease Live: 1 days

DNS Server

Enable DNS Relay

Primary: 165 . 21 . 83 . 88 Secondary: 165 . 21 . 100 . 88

Remove DHCP Apply

Close Cancel

- i) Click the **DHCP** tab. Click **Enable DHCP**. Enter the following fields.
- **Network ID** To identify the network address to which an IP address belongs.
 - **Subnet Mask** To identify the subnet to which an IP address belongs.
 - **IP Range Start** Refers to the first IP address that Router will assign to a PC requesting for it.

- **IP Range End** Refers to the last IP address that Router will assign to a PC requesting for it.

DHCP Options

- **Gateway IP** The IP address of a machine (other Router or server) that will resolve any unknown destination IP address requested by Clients.
- **Lease Live** To specify the number of days how long a DHCP client (your PCs) can use an assigned IP address before it must renew its configuration with the DHCP server (Router).

DNS Server

The main purpose for DNS Server is to map host names into Internet addresses (so call IP address), or vice versa.

If the first DNS server cannot process the translation request, it queries an upper DNS server, and another one, and so on, until the correct IP address is returned or no corresponding address for the request can be found.

- **Enable DNS Relay** Enable this option so that DNS relay will be informed which DNS Server to contact.
You will only be allowed to enter the IP address of the Primary DNS Server.
 - **DNS Server (Primary)** The first DNS Server to consult.
 - **DNS Server (Secondary)** The backup DNS Server if the primary one fails.
- ii) Click **Remove DHCP** to remove the DHCP server from your Router network. Upon successful removal, you will see a dialog box, '**DHCP Removed Successfully**' prompted. Click **OK**.
- iii) Click **Apply** for changes to take effect. Upon configuration successful, you will see a dialog box, '**Configuration Successful**' prompted. Click **OK**.
- iv) Click **Close** to save the configurations and exit.

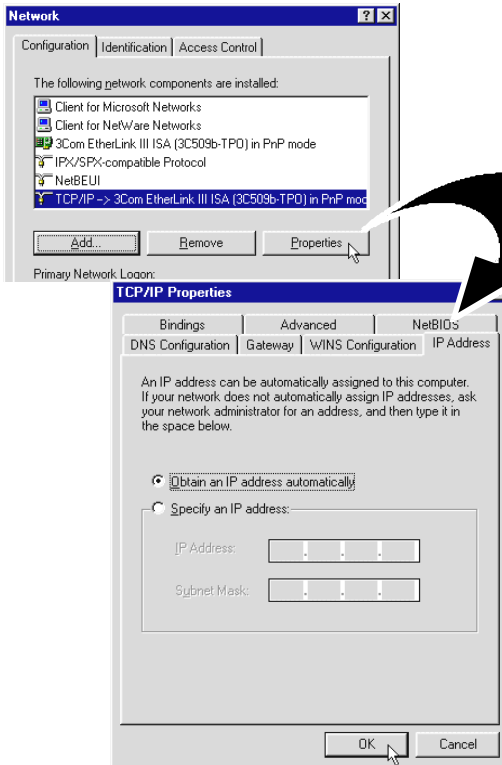
You need to proceed with [section 3.3.1](#) to configure your Ethernet card for DHCP.

3.3.1 Configuring Your Ethernet card for DHCP

For Windows® 95 / Windows® 98 / Windows® 98 Second Edition / Windows® Me

- i) From your Windows desktop, right-click on **Network Neighborhood**. Select **Properties**.
- ii) From the **Configuration** tab, select **TCP/IP-> xxx** where **xxx** refers to the Ethernet card that is connected to your Router.
Click **Properties**.

(3Com EtherLink III ISA Ethernet Card is used as an example here. Please select the TCP/IP protocol that is connected to your Router).



- iii) Click the option '**Obtain an IP address automatically**' and click **OK** to save the settings.

When prompted to restart, click **Yes**.

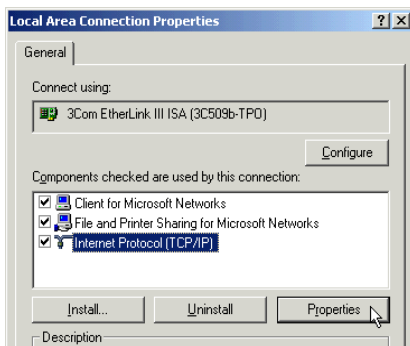
For Windows® XP

- i) From your Windows desktop, click **Start > All Programs > Accessories > Communications > Network Connections**.

Right-click on the **Local Area Connection** icon that reflects **the model of your Ethernet Card that is connected to your Router** and click **Properties**.

*(This is important especially if you have more than one **Local Area Connection** icons displayed.)*

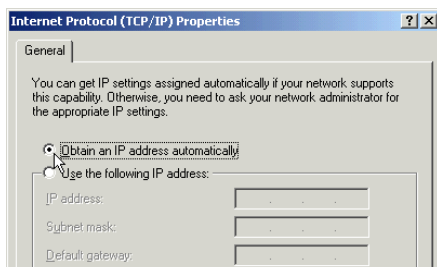
- ii) Select **Internet Protocol (TCP/IP)** and click **Properties**.



(3Com EtherLink III Ethernet Card is used as an example here.)

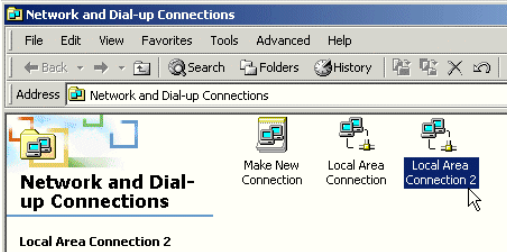
- iii) Select the option **Obtain an IP address automatically** and click **OK**.

Click **OK** again to close.



For Windows® 2000

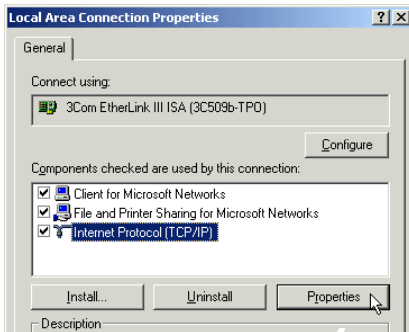
- i) From your Windows desktop, right-click on the icon **My Network Places**. Select **Properties**.



At the **Network and Dial-up Connections** window, right-click on the **Local Area Connection** icon and select **Properties**.

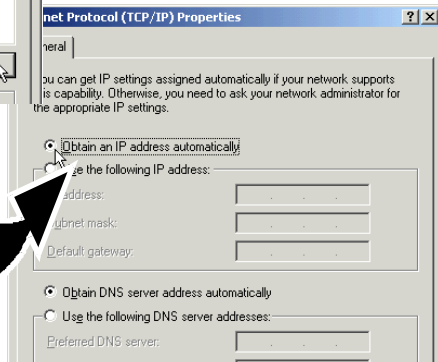
- ii) Ensure that the field **Connect Using** indicates your Ethernet card model.
(*This is important especially if you have more than one **Local Area Connection** icons displayed at the **Network and Dial-up Connections** window. Ensure that you have selected the correct **Local Area Connection** icon.*)

Select **Internet Protocol (TCP/IP)** and click **Properties**.



(3Com EtherLink III ISA Ethernet Card is used as an example here.)

- iii) Select the option **Obtain an IP address automatically** and click **OK**.
Click **OK** again to close.



3.4 SNMP

SNMP - Simple Network Management Protocol, is used to communicate management information (MIB or Management Information Base) between the network management stations (e.g a management software running in your PC) and the agents in the network elements (e.g your Router).

SNMP “communities” (used in this case like passwords) can be set with the following table. Any number of community strings can be set up, each of which can be set to allow either read-write or read-only access. It also can be usable either from any IP address or only from a configured management IP address (authorized IP).

The screenshot shows the 'DSL Router Commander' window with the 'SNMP' tab selected. The 'DHCP' section is active, showing the following configuration:

- Enable DHCP
- Network ID: 192 . 168 . 1 . 0
- Subnet Mask: 255 . 255 . 255 . 0
- IP Range Start: 192 . 168 . 1 . 2
- IP Range End: 192 . 168 . 1 . 100
- DHCP Options:
 - Gateway IP: 192 . 168 . 1 . 1
 - Lease Live: 1 days
- DNS Server:
 - Enable DNS Relay
 - Primary: 165 . 21 . 83 . 88
 - Secondary: 165 . 21 . 100 . 88

Buttons at the bottom include 'Remove DHCP', 'Apply', 'Close', and 'Cancel'.

i) Click the **SNMP** tab.

To **add** an access right or read, enter the required information and click **Add**.

- **SNMP Access Right (Write)** To have read and write access to SNMP MIB of your Router.
- **SNMP Access Right (Read)** To have read access only, to SNMP MIB of your Router.

- **Community** A community name that corresponds to the password that you need to provide when accessing the Router from any SNMP client.
- **Authorized IP** The IP address of a device (e.g. a PC) that has the authority to access your Router.

To **remove** an access right, select on it and click **Remove**.

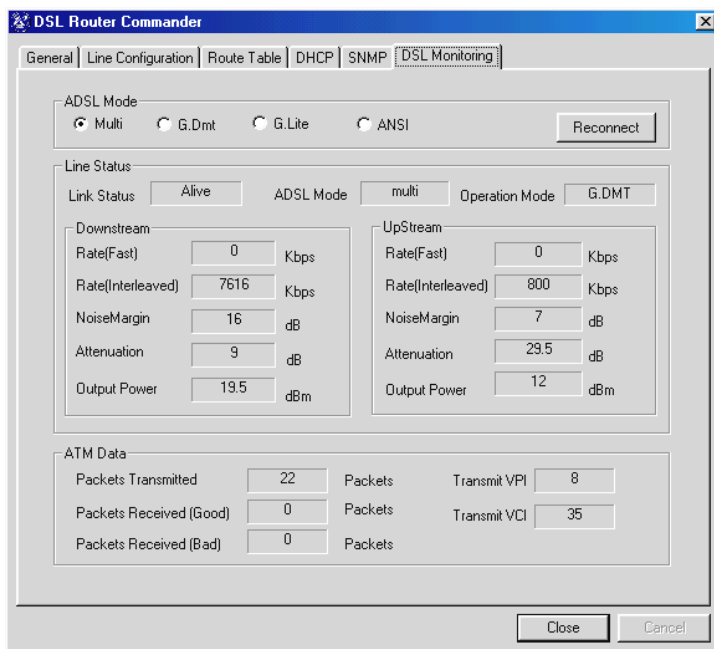
- ii) Click **Close** to save the configurations and exit.



You will not be able to remove ALL **Write access** password. You need to have **at least one** Write access password entered.

3.5 DSL Monitoring

DSL Monitoring monitors the real-time activities of your Router. It lists down the ADSL mode, Line Status and ATM Data information. (The following illustrates an example of DSL Monitoring. What you see on your system will not be exactly the same.)



i) Click the **DSL Monitoring** tab. The window shows your Router's activities.

ADSL Mode (the options available are models-dependent)

Click to force your Router into detecting the selected mode. Click **Reconnect**.

Line Status

- **Link status** Displays the status of your Router. Status are **Alive** or **Idle**.
- **ADSL Mode** Displays the mode that was selected for your Router.
- **Operation Mode** Displays the current operating mode of your Router.
- **Downstream** Refers to the maximum estimated download rate to your Router.

- **Upstream** Refers to the maximum estimated upload rate from your Router.

ATM Data

Displays the line transfer (packets data) and ATM PVC parameters.

- ii) Click **Close** to save the configurations and exit.

Glossary

ADSL

ADSL, Asymmetric Digital Subscriber Line, is a broadband communication technology designed for use on regular phone lines. It has the ability to move data over the phone lines at speeds up to 140 times faster than the analog modem available today.

CHAP

CHAP, Challenge Handshake Authentication Protocol, is one of the two PPP authentication protocols, with PAP the other one. Authentication protocol requests information to verify a valid user. CHAP is a stronger authentication method because it uses encryption and may repeatedly request verification of the identity of the user any time after the link is established.

Client

Devices and software that request information.

Community

Community names are passwords which are also used by other applications, such as Telnet.

DHCP

DHCP stands for Dynamic Host Configuration Protocol. Every computer on a TCP/IP network must be given a unique computer name and IP address. DHCP is an industry standard protocol that specifies methods for dynamic configuration of computers on TCP/IP networks. It allows centralized configuration of all workstations' TCP/IP protocol and IP address allocation from the server.

After you activate the DHCP server, whenever a network client select dynamic DHCP configuration option in configuring TCP/IP protocol and IP address, the task of allocation of IP address will be done dynamically and automatically by the DHCP Server.

DNS

DNS stands for Domain Name Server. The main purpose for DNS is to map host names into Internet addresses (so call IP address), or vice versa.

If the first DNS server cannot process the translation request, it queries an upstream DSN server, and another one, and so on, until the correct IP address is returned or no corresponding address for the request can be found.

DNS Relay

A DNS Relay is a software entity that appears to behave as a DNS server from the point of view of a DNS resolver, and vice-versa. It forwards DNS queries from a DNS resolver to a DNS server, and returns responses from the DNS server back to the original DNS resolver.

Gateway IP

The IP address of a machine (other Router or server) that will resolve any unknown destination IP address requested by Clients.

Host

On the Internet, the term “host” means any computer that has full two-way access to other computers on the Internet. A host has a specific “local or host number” that, together with the network number, forms its unique IP address.

In other contexts, the term generally means a device or program that provides services to some smaller or less capable device or program.

IP

IP, Internet Protocol, is the method or protocol by which data is sent from one computer to another on the Internet.

IP Address

A 32-bit binary number that is usually represented as a 4 decimal numbers separated by dots ".". Each IP address uniquely identifies each host on the Internet.

LAN

Local Area Network. A computer network limited to the immediate area, usually the same building or floor of a building.

LLC SNAP

LLC SNAP is one of two encapsulation methods used in telecommunication, with VC MUX the other one. Encapsulation is the inclusion of one data structure within another structure so that the first data structure is hidden for the time being.

NAT

NAT, Network Address Translation, is designed for IP address simplification and conservation, as it enables private IP internetworks that use non-registered IP addresses to connect to the Internet. NAT operates on a Router, usually connecting two networks together, and translates the private (not globally unique) addresses in the internal network into legal addresses before packets are forwarded onto another network. NAT has the dual functionality of security and address conservation, and is typically implemented in remote access environments.

NAT Inbound

This command enables the user to list or to set up a series of rules for incoming traffic when NAT is enabled. By default all incoming packets, other than packets arriving in response to outgoing traffic, will be rejected.

Network

Any time you connect 2 or more computers together so that they can share resources, you have a computer network.

Packet

Generic term for a bundle of data, organized in a specific way for transmission over a network. “Packet” and “datagram” are similar in meaning. A protocol similar to TCP, the User Datagram Protocol (UDP) uses the term datagram.

PAP

PAP, Password Authentication Protocol, is one of the two PPP authentication protocols, with CHAP the other one. An authentication protocol requests information to verify a valid user. PAP requests the user's name and password for verification.

Password

A string of characters assigned to you to gain access to a locked system.

PPP

PPP stands for Point to Point Protocol. It normally means: regular phone line, ISDN, xDSL connections that require their respective point to point modems.

The protocol used to carry TCP/IP traffic to the ISP across modem and ISDN links. PPP incorporates authentication (username/password checking).

PPPoATM (PPP over ATM)

PPP over ATM - RFC 2364

PPP over ATM (PPPoATM) is the most elegant and simple implementation that provides PPP encapsulation over a routed ADSL connection.

Microsoft provides a PPP over ATM stack in Windows® 98 Second Edition, Windows® Me and Windows® 2000 and this provides an almost ideal implementation for 'passive' ADSL modems such as internal cards and USB devices.

PPPoE (PPP over Ethernet)

PPP over Ethernet (PPPoE) is used in some existing ADSL services. It requires a custom 'driver' in the user's PC, similar manner to Dial-Up Networking. In other words, you will be dependent on the PPP over Ethernet (PPPoE) client being available for your operating system platform.

Protocol

In information technology, a protocol is a special set of rules, procedures and conventions that two end points in a telecommunication connection use when they communicate.

PVC

PVC, Permanent Virtual Circuit, is an ATM virtual circuit established on top of your ADSL connection from your Router to your ADSL Service Provider. The call set-up and tear-down are not visible, which creates the feeling of having a dedicated connection to the Internet.

RFC 2684 (RFC 1483) Bridged or Ethernet Framing

Encapsulation of bridged network data, such as Ethernet frames, in ATM Adaptation Layer 5 (AAL5) Protocol Data Units (PDU).

RFC 2684 (RFC 1483) Routed or IP Framing

Encapsulation and Transmission of routed network data, such as IP datagrams, over ATM Adaptation Layer 5 (AAL5) Protocol Data Units (PDU).

RFC 2225 (RFC 1577)

Transmission of IP datagrams and ATM Address Resolution Protocol (ATMARP) requests and replies over ATM Adaptation Layer 5 (AAL5).

RFC 2516

Creation and maintenance of a Point-to-Point-Protocol (PPP) session over an Ethernet link.

RFC 2364

Creation and maintenance of a Point-to-Point-Protocol (PPP) session over an ATM link.

Router

A device that handles the connection between 2 or more *networks*. Routers spend all their time looking at the destination addresses of the *packets* passing through them and deciding which route to send them on.

SNMP

SNMP stands for Simple Network Management Protocol. SNMP manages the list of SNMP community names (also used as passwords by other applications, such as *telnet*) and the list of SNMP trap destinations.

Static Route

Route that is explicitly configured and entered into the routing table. Static routes take precedence over routes chosen by dynamic routing protocols.

Subnet Mask

32-bit address mask used in IP to indicate the bits of an IP address that are being used for the subnet address. Sometimes referred to simply as mask.

TCP

TCP, Transmission Control Protocol, is a transport protocol used along with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the packets and provide error recovery mechanism.

TCP/IP

See TCP.

Telnet

Telnet is the way you can access a remote computer, provided you have given access to it. More technically, Telnet is a user command and an underlying TCP/IP protocol for accessing remote computers. With Telnet, you log on as a regular user with whatever privileges you may have been granted to the specific application and data on that computer.

Transparent Bridge

Joining two or more bridged network segments (such as Ethernet) running on different physical media.

UDP

User Datagram Protocol. UDP is a “stateless” protocol in that it makes no provision for acknowledgement of packets received.

VPI/VCI

The ATM Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) uniquely identify a virtual circuit on an ATM link, such as PVC. An ATM switch (or other device incorporating ATM switching capability like a DSLAM) can be configured to take data from one VPI/VCI on an incoming link and map it to another VPI/VCI on an outgoing link. This configuration defines the route through the ATM switch. Note that this means that a particular data connection may be given many different VPI/VCI ‘addresses’ as it passes through the network.

WAN

Wide Area Network. Any *Internet* or *network* that covers an area larger than a single building or campus.

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