

TELINDUS

USER'S GUIDE

1120 ADSL Router

USER'S GUIDE

Version: 5.3

172162

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Statements



<http://www.telindus.com/products/conformity/>



Hereby, TELINDUS declares that this Telindus 1120 ADSL Router is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.



Bij deze, verklaart TELINDUS dat deze Telindus 1120 ADSL Router in overeenstemming is met de essentiële vereisten en andere relevante bepalingen van Richtlijn 1999/5/EC.



Par la présente, TELINDUS déclare que ce Telindus 1120 ADSL Router est en conformité avec les exigences essentielles et autres articles applicables de la Directive 1999/5/EC.



Hiermit, TELINDUS erklärt daß dieser Telindus 1120 ADSL Router ist in Fügbarkeit mit den wesentlichen Anforderungen und anderen relevanten Bereitstellungen von Direktive 1999/5/EC.



Mediante la presente, TELINDUS declara que el Telindus 1120 ADSL Router cumple con los requisitos esenciales y las demás prescripciones relevantes de la Directiva 1999/5/CE.



A TELINDUS declara que o Telindus 1120 ADSL Router cumpre os principais requisitos e outras disposições da Directiva 1999/5/EC.



Col presente, TELINDUS dichiara che questo Telindus 1120 ADSL Router è in acquiescenza coi requisiti essenziali e stipulazioni attinenti ed altre di Direttivo 1999/5/EC.



Με το παρόν, η TELINDUS δηλώνει ότι αυτό το Crocus HDSL είναι συμμορφούμενο με τις βασικές απαιτήσεις και με τις υπόλοιπες σχετικές διατάξεις της οδηγίας 1999/5/EC.



Declaration of Conformity

issued according to ISO/IEC Guide 22 and EN45014 under the sole responsibility of the manufacturer

Hereby, TELINDUS nv/sa, manufacturer represented by the authority indicated below, declares that the product:

Product name

Telindus 1120 ADSL Router

provided that it is installed, maintained and used in the application for which it is intended for, with respect of the "professional practices", relevant installation standards and manufacturer's instructions is in conformity to all applicable essential requirements of all applicable directives and conform to the following product specifications:

- | EN60950 : 1992 (A1+A2+A3+A4+A11)
- | EN55022 : 1998 Class B
- | EN55024 : 1998

This declaration is based on the conformity assessment procedure as described in annex II of the **R&TTE Council Directive 1999/5/EC**.

The product may be connected to the following interface(s):

- | IEEE 802.3 Ethernet 10Base-T

This product is conforming to the following Technical Standards:

- | G.992.1 (G.DMT)
- | G.992.2 (G.Lite)
- | T1.413. Issue 2

The product has been tested in a typical configuration.

The technical file is kept at the TELINDUS premises:

Geldenaaksebaan 335 ² B-3001 Leuven ² Belgium.

Leuven, 15 January 2001

Kris Adriaensens

R&D Director

Authority name, function and signature



| | |
|-----------------------------|---|
| Statement: | The Telindus 1120 ADSL Router may be used provided that it is installed, maintained and used in the application which it is intended for, with respect to the professional practice, relevant installation standards and manufacturer's instructions (see also CE declaration of conformity). |
| Destination of use: | The Telindus 1120 ADSL Router allows data transfer via standard twisted pair cables according to ITU-T G.992.1, G.992.2, ANSI T1.413 Issue 2. |
| Interfaces: | The Telindus 1120 ADSL Router may be connected to the following interfaces: IEEE 802.3 Ethernet 10Base-T. |
| In case of problems: | Should you doubt or encounter problems with the Telindus 1120 ADSL Router, please contact your dealer for advice. |



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|---------------------------|--|
| Verklaring: | De Telindus 1120 ADSL Router mag gebruikt worden op voorwaarde dat het wordt geïnstalleerd, onderhouden en gebruikt voor de toepassing waarvoor het ontworpen is, met betrekking tot het professioneel gebruik, de relevante installatie richtlijnen en de richtlijnen van de fabrikant (zie ook de CE verklaring van conformiteit). |
| Toepassingsgebied: | De Telindus 1120 ADSL Router laat een data transfer toe over standaard twisted pair draden in overeenstemming met ITU-T G.992.1, G.992.2, ANSI T1.413 Issue 2. |
| Interfaces: | De Telindus 1120 ADSL Router mag aangesloten worden op de volgende interfaces: IEEE 802.3 Ethernet 10Base-T. |
| Bij problemen: | Indien u twijfelt of problemen hebt met de Telindus 1120 ADSL Router, contacteer uw verdeler voor advies. |



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| Déclaration: | Le Telindus 1120 ADSL Router peut être employé à condition qu'il soit installé, entretenu et utilisé dans la fonction pour laquelle il a été conçu, en suivant les règles de pratique professionnelles, les standards d'installation d'application et les instructions du fabricant (voyez aussi la déclaration CE de Conformité). |
| Domaine d'utilisation: | Le Telindus 1120 ADSL Router permet le transfert de données sur des câbles à paires torsadées conformes à ITU-T G.992.1, G.992.2, ANSI T1.413 Issue 2. |
| Les interfaces: | Le Telindus 1120 ADSL Router peut être connecté aux interfaces suivantes: IEEE 802.3 Ethernet 10Base-T. |
| En cas de problèmes: | En cas de doute ou si vous rencontrez des problèmes avec le Telindus 1120 ADSL Router, veuillez demander conseil à votre revendeur. |



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|---------------------------|--|
| Erklärung: | Der Telindus 1120 ADSL Router darf benutzt werden, vorausgesetzt, er wird installiert, unterhalten und in der Funktion benutzt für die er entwickelt wurde, in dem die Regeln der Berufsausführung, sowie die vorgeschriebenen Installationsstandards und die Anweisungen des Fabrikanten berücksichtigt werden (siehe hierzu die Konformitätserklärung der EG). |
| Anwendungsbereich: | Der Telindus 1120 ADSL Router erlaubt Datenübertragung über übliches verdrehtes Leitungspaar nach ITU-T G.992.1, G.992.2, ANSI T1.413 Issue 2. |
| Verbindung: | Der Telindus 1120 ADSL Router darf an die folgende Schnittstellen angeschlossen werden: IEEE 802.3 Ethernet 10Base-T. |
| Bei Problemen: | Wenn Sie zweifeln sollten oder Problemen mit dem Telindus 1120 ADSL Router begegnen sollten, bitte verständigen Sie Ihren Händler für Rat. |



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| Declaración: | El Telindus 1120 ADSL Router puede usarse con tal de que sea instalado, mantenido y usado en la aplicación para la cual ha sido destinado ,con el respeto del las prácticas profesionales, normas de la instalación pertinentes e instrucciones del fabricante (también vea declaración de CE de Conformidad). |
| Destino de uso: | El Telindus 1120 ADSL Router permite los datos transfieren vía el par trenzado cablegrafía normal según ITU-T G.992.1, G.992.2, ANSI T1.413 Issue 2. |
| Interfaces: | El Telindus 1120 ADSL Router puede ser conectado a los siguientes interfaces: IEEE 802.3 Ethernet 10Base-T. |
| En el Caso de Problema: | Si duda o encuentra problemas con el Telindus 1120 ADSL Router, por favor pida el consejo de su distribuidor. |



| | |
|----------------------------------|---|
| Declaração: | O Telindus 1120 ADSL Router poderá ser fornecido, instalado, mantido e utilizado para a o fim a que se destina, desde que respeite o cumprimento de todos os standards de instalação e directivas do fabricante (consultar declaração de Conformidade da UE). |
| Declaração de Utilização: | O Telindus 1120 ADSL Router permite dados transferem por cabos de par trançados normais de acordo com ITU-T G.992.1, G.992.2, ANSI T1.413 Issue 2. |
| Interfaces: | O Telindus 1120 ADSL Router poderá ter os seguintes interfaces: IEEE 802.3 Ethernet 10Base-T. |
| Problemas: | Em caso de dúvida ou se forem detectados problemas com o Telindus 1120 ADSL Router, contactar o seu fornecedor para aconselhamento. |



| | |
|-----------------------------|--|
| Dichiarazione: | Il Telindus 1120 ADSL Router può essere usato a condizione che sia installato, mantenuto ed usato nella applicazione per la quale è destinato, con rispetto delle pratiche professionali, degli standard di installazione attinenti e delle istruzioni del costruttore (vedere anche la dichiarazione CE di Conformità). |
| Destinazione di uso: | Il Telindus 1120 ADSL Router permette trasferimento dei dati via paio torto cavi standard secondo ITU-T G.992.1, G.992.2, ANSI T1.413 Issue 2. |
| Interfacce: | Il Telindus 1120 ADSL Router può essere collegato agli le seguenti interfacce: IEEE 802.3 Ethernet 10Base-T. |
| In Caso di Problema: | In caso di dubbi o problemi di incontro col Telindus 1120 ADSL Router, per favore contatti il Suo rivenditore per consiglio. |

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1. Before You Begin

This chapter includes:

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1.1 Hot Features

Multiple PVC

The Telindus 1120 ADSL Router supports up to 8 ATM PVC interfaces. In each interface, you have the option to set the Virtual Path Identifier (VPI), Virtual Channel Identifier (VCI), Unspecified Bit Rate (UBR), Constant Bit Rate (CBR), Peak Cell Rate (PCR), and the Operations And Maintenance (OAM) F5 virtual channel timer. You can also use the various encryption types including SNAP/IP, PPP, and SNAP/Bridge.

IP Packet Filtering Firewall

You can monitor and restrict the traffic flow through your Telindus 1120 ADSL Router. This is useful for protecting your network from undesired intrusion, and for preventing selected local network traffic from exiting through the Telindus 1120 ADSL Router. Telindus 1120 ADSL Router can be set to use up to 32 sequential criteria (filters) by which to check each packet as it enters or leaves your network. Each filter can be set to check source packets, destination packets, or both. You can also set each packet to be passed, restricted, discarded, or passed to the next filter, depending on whether or not a packet matches a filter.

Bridge Packet Filtering Table

Similar to the IP Packet Filtering Firewall, Telindus 1120 ADSL Router now has a new feature - the bridge packet filtering table. When the Telindus 1120 ADSL Router is set in bridge mode, you can use this filtering table to monitor and restrict traffic through the unit. Telindus 1120 ADSL Router can be set to use up to 32 sequential criteria (filters) by which to check each packet as it enters or leaves your network. Each filter can be set to check source Mac packets, destination Mac packets, or both. You can also set each packet to be passed, discarded, or passed to the next filter, depending on whether or not a packet matches a filter.

Multiple Router Management

The Telindus 9100 Maintenance Application recognizes multiple routers on a LAN. The *Multiple Router Selection* window will display all Telindus 1120 ADSL Router detected on the network. You can select which router you wish to configure or monitor.

IP Routing Table

The IP Routing Table provides you a graphical, tabular representation of the routes created for your Telindus 1120 ADSL Router. You can quickly and easily add, modify or delete routes from the IP Routing Table's intuitive interface. The IP Routing Table can hold up to 32 routes.

RIP

Telindus 1120 ADSL Router allows you to utilize both versions of the Routing Information Protocol, RIP-1 and RIP-2, to improve your route setup time.

DHCP Server User-Defined Lease Time

The Telindus 1120 ADSL Router provides a Dynamic Host Configuration Protocol (DHCP) server for the individual network devices on your LAN network. Instead of relying on a default value, you can specify the amount of time that a network device can be assigned (leased) an IP address before the router makes the address available for re-assignment. Using a lease time appropriate to your network's structure will optimize the availability of dynamic IP addresses.

Port Mapping

Port Mapping enables the hosting of web servers, ftp servers, mail servers, and allows for the playing of internet games by mapping internet traffic associated with particular ports to respective IP addresses.

Port Auto-Forwarding

Port AutoForwarding ensures that traffic routed through Network Address Translation (NAT) will retain the correct destination port information. This is crucial for applications running on a private LAN that need to send data to a specific port to properly establish and maintain a session.

1.2 New Features in Version 5.3

New Encryption Types

Telindus 1120 ADSL Router version 5.3 supports new encryption types in the DSL Protocol Configuration panel. These include PPP over Ethernet and SNAP/Bridge with NAT encapsulation. Please refer to *Chapter 5, "ATM PVC Protocol Configuration."*

DSL RIP

Now the Routing Information Protocols, RIP-1 and RIP-2, are supported on both the LAN and the WAN sides. Please refer to *Chapter 5, "ATM PVC RIP Configuration."*

MLPPP client VPN

You can now launch multiple Microsoft's Point-to-Point Tunneling Protocol (PPTP) Virtual Private Network (VPN) clients when Network Address Translation (NAT) is enabled.

1.3 Package Includes

- One Telindus 1120 ADSL Router
- Power cord and adapter
- Software CD-ROM (contains Telindus Installation software, Software User's Guide)
- One RJ-11 to RJ-11 phone cable (7ft)
- One RJ-45 to RJ-45 straight Ethernet cable (7ft)

1.4 Minimum System Requirements

- ADSL line
- 10BaseT Ethernet interface
- CD-ROM drive

Telindus 1120 ADSL Router gives you the option of configuring the router using the Telindus 9100 Maintenance Application. The system requirements for each are listed below:

Using the Telindus 9100 Maintenance Application:

- Ethernet card
- PC* with at least a 486 microprocessor (Pentium® recommended)
- CD-ROM drive
- At least 4 MB of space available on the hard disk drive
- Microsoft® Windows® 95/98/2000 or Windows® NT 4.0 Operating System

- * You may configure the Telindus 1120 ADSL Router from any PC attached to the Local Area Network (LAN) with the requirements listed above.

1.5 Internet Service

Many Internet Service Providers (ISPs) offer different types of Internet access accounts. Typically, you will have the option to choose between a Single User or a Multiple User account. Telindus 1120 ADSL Routers are compatible with both types of accounts. With a Single User account, which is the same as terminal adapter or digital modem account, the Network Address Translation (NAT) option should be selected during configuration of your Telindus 1120 ADSL Router. If you ordered a Multiple User account from your ISP, they will assign a specific IP Address for your router and a range of IP Addresses for your network. You will need this information when you configure the Telindus 1120 ADSL Router. In this case, the NAT options should not be selected.

1.6 Information You Will Need

To configure your router, you will need to receive information from the remote network to which you will connect, such as an Internet Service Provider (ISP) or a company server account. Consult the section below for a detailed list of information on utilizing the Ethernet interface and DSL interface. If you are unfamiliar with any of the terms listed, refer to [“Appendix A: About Configuration Parameters.”](#)

1. Utilizing the Ethernet Interface

The following information should be obtained from your ISP or company server.

- IP Address
- Subnet Mask
- Gateway IP Address

2. Utilizing the DSL Interface

The following information related to your xDSL connection which should be obtained from your ISP.

- VPI
- VCI
- PPP User name & Password (Only if encapsulation mode is in PPP)
- ADSL Line mode
- Encapsulation type
- DNS Address

2. Hardware Installation

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2.1 Diagram of the Telindus 1120 ADSL Router

Back Panel Interface

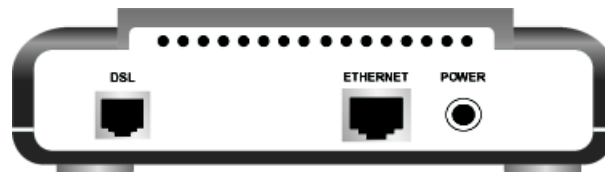


Figure 2.1 Back Panel Interface

On/Off

Select the On/Off switch to activate or de-activate the Telindus 1120 ADSL Router.

Power

The power interface connects to the power adapter.

Ethernet

The Ethernet interface connects the Telindus 1120 ADSL Router to a 10BaseT network.

DSL

The ADSL interface connects the Telindus 1120 ADSL Router to an ADSL line.

Front Panel Interfaces

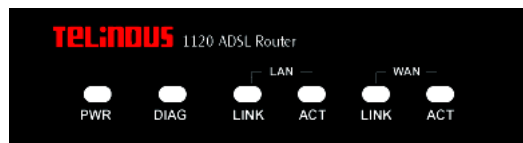


Figure 2.2 Front Panel Interface

PWR (Power)

A green LED is ON when power is supplied to the Telindus 1120 ADSL Router.

DIAG (Diagnostic)

The yellow DIAG LED is an indicator that shows the Telindus 1120 ADSL Router has been successfully booted up and the software is functional. When Telindus 1120 ADSL Router is powered on, the DIAG LED flashes while the router is booting up. After 10 to 15 seconds, the DIAG LED stops flashing and remains off.

LAN LINK

The LAN LINK LED displays the connection between the router and your Ethernet network. The green LED remains solid while there is a connection to the 10BaseT system.

LAN ACT (Activity)

A flashing yellow LED indicates data activity between the Ethernet network and the router. If the data traffic is heavy, then frequency of the flashing yellow LED becomes higher and will appear to be solid.

WAN LINK

Displays the connection between the router and the remote DSL network. The green LED flashes slowly if the DSL line is not connected or is being trained. The green LED remains solid if the DSL line is trained and ready between the router and the remote switch.

WAN ACT (Activity)

A flashing yellow LED indicates data activity between the DSL network and the router. If the data traffic is heavy, the frequency of the flashing yellow LED becomes higher and will appear to be solid.

2.2 Safety First

Personal Safety

- In case of emergency, locate the closest electricity power-off switch
- Refrain from touching any active wires or terminals.
- Remove jewelry before working on equipment connected to electricity.
- Keep cables away from walkways.
- Dispose of this product in accordance with national laws and regulations.

Product Handling

- Keep ventilation slots clear.
- Operate in a clean and dust-free location.
- Cables must be attached to the correct interfaces; to do otherwise may result in damaging the router or produce hazardous voltage.
- Do not operate or store the product in an environment that surpasses temperature or humidity specifications.

2.3 Setup Instructions

- Step 1. Choose a location for the Telindus 1120 ADSL Router close to a power outlet and the ADSL line outlet. Preferably select a convenient location that does not experience too much foot traffic and is away from sunlight.
- Step 2. Choose a level surface for the Telindus 1120 ADSL Router – such as a desk top, shelf, or table.
- Step 3. Place the Telindus 1120 ADSL Router on the predetermined surface so you can see the back panel.

2.4 Connect to the Ethernet

- Step 1. Locate your Ethernet cable (included).
- Step 2. Attach the Ethernet cable to the Ethernet interface of your Telindus 1120 ADSL Router.
- Step 3. Plug in the loose end of the Ethernet cable to your Ethernet network.
 - Option 1. Attach the included Ethernet cable to the Ethernet port on a PC.

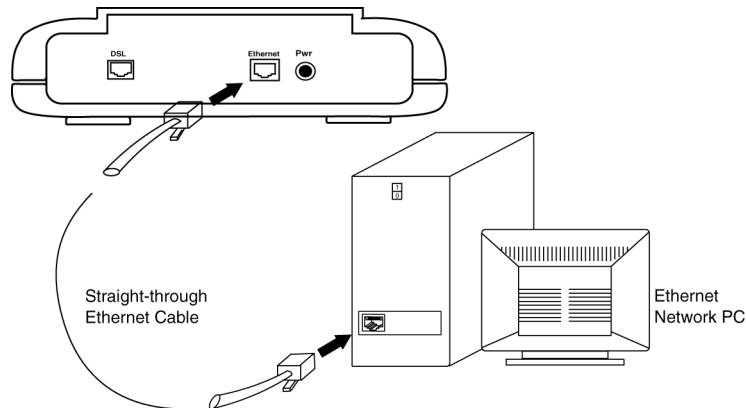


Figure 2.3 Connecting to a Ethernet Port on a PC

- Option 2. Attach the included Ethernet cable to the uplink port on a hub.

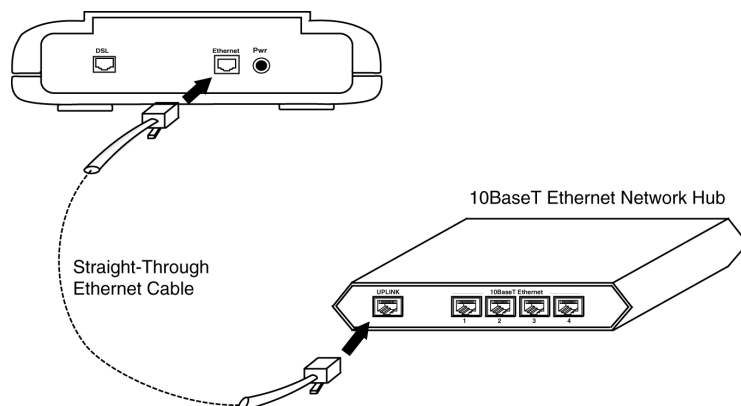


Figure 2.4 Connecting to the Uplink Port on a Network Hub

- Option 3. If the uplink port is unavailable, then you can use a crossover Ethernet cable (not included) and attach it to the non-uplink ports on a hub.

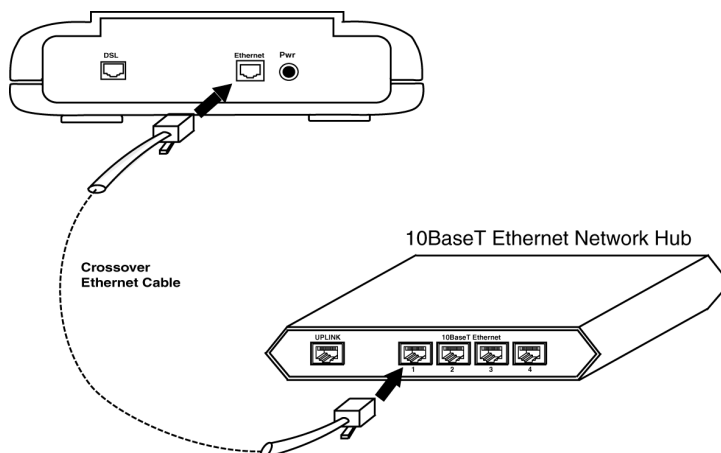


Figure 2.5 Connecting to the Non-Uplink Port on a Network Hub

- Step 4. The LAN LINK LED on the front panel should lit green to indicate a valid Ethernet connection. If the LAN LINK LED is not lit, then repeat steps 1 through 3.

Note: See "[Appendix B: Ethernet Cable Pinout](#)" for further information about the differences between a straight-through cable and a crossover cable.

2.5 Connect to the ADSL Interface

- Step 1. Plug the RJ-11 connector end of the ADSL phone cable (included) in the DSL port of the router. The ADSL phone cable is provided (RJ-11 to RJ-45).
- Step 2. Connect the RJ-45 connector end of the ADSL phone cable to the ADSL outlet on the wall.

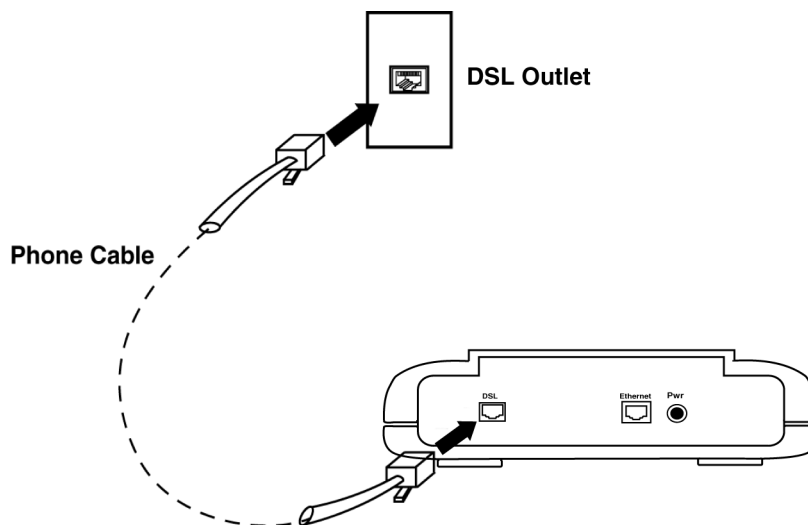


Figure 2.6 Connecting the DSL Interface

2.6 Connect to Power

- Step 1. Plug the power adapter in the Power interface of the Telindus 1120 ADSL Router.
- Step 2. Connect one end of the power cord to the power adapter, and connect the other end of the power cord to the power outlet on the wall.
- Step 3. To activate the Telindus 1120 ADSL Router, turn the ON/OFF switch to ON.

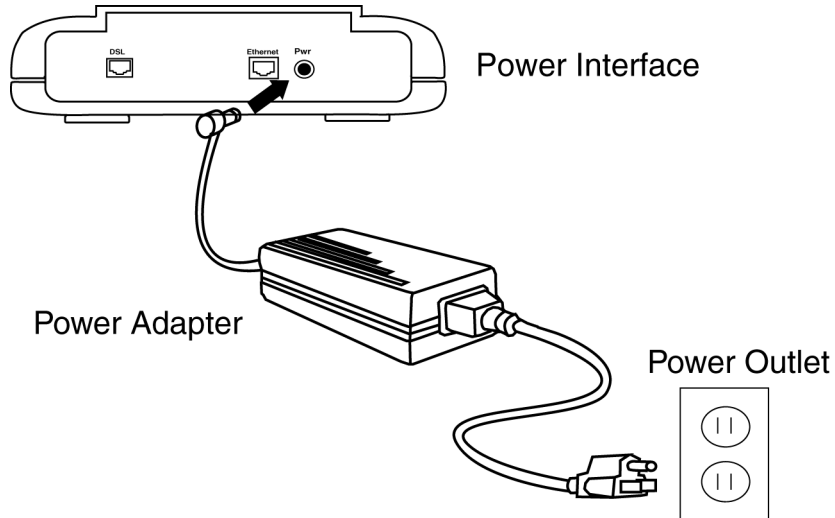


Figure 2.7 Connecting to a Power Supply

3. Software Installation

This Chapter Includes:

| Section | Title | Page |
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| 3.1 | About TCP/IP | 11 |
| 3.2 | Detecting TCP/IP in Windows® 95/98 | 12 |
| 3.3 | Installing TCP/IP in Windows® 95/98 | 12 |
| 3.4 | Configuring TCP/IP in Windows® 95/98 | 12 |
| 3.5 | Detecting TCP/IP in Windows® 2000 | 13 |
| 3.6 | Installing TCP/IP in Windows® 2000 | 13 |
| 3.7 | Configuring TCP/IP in Windows® 2000 | 13 |
| 3.8 | Detecting TCP/IP in Windows® NT 4.0 | 14 |
| 3.9 | Installing TCP/IP in Windows® NT 4.0 | 14 |
| 3.10 | Configuring TCP/IP in Windows® NT 4.0 | 14 |

3.1 About TCP/IP

To gain high-speed and shared access to the Wide Area Network (WAN), your Local Area Network (LAN) needs to be configured for the NetDSL device. Each network node on your LAN must install a network protocol so that they can communicate with the device. The device requires the TCP/IP network protocol. The TCP/IP Properties window in Windows® 95/98/2000 or NT 4.0 connects the node's Ethernet information to the network's protocol data. Make sure that each network node on your LAN has TCP/IP available. To ensure smooth setup, you must install the TCP/IP network protocol on the PCs **before** you install the router.

Note: To ensure that your Telindus 1120 ADSL Router will assign an IP address to your PCs if you set them to get IP addresses automatically, we have already configured your Telindus 1120 ADSL Router prior to shipping. The Telindus 1120 ADSL Router is configured with the **default IP address of 192.168.1.1** and **subnet mask of 255.255.255.0**. The Telindus 1120 ADSL Router's **DHCP server is enabled** with IP pool addresses starting from 192.168.1.2.

3.2 Detecting TCP/IP in Windows® 95/98

- Step 1. Turn on your computer and start Windows® 95/98.
- Step 2. Click the *Start* button and then select *Settings*.
- Step 3. Choose *Control Panel* and double click *Network* icon.
- Step 4. Click the *Configuration* tab.
 - A. If you see TCP/IP listed under Network Components, you already have TCP/IP on your Windows® 95/98. Proceed to configuration directions for Windows® 95/98 in Section 3.4.
 - B. If you do not see TCP/IP listed under Network Components, you do not have TCP/IP on your Windows® 95/98. Proceed to the next section, “*Installing TCP/IP in Windows® 95/98.*”

3.3 Installing TCP/IP in Windows® 95/98

- Step 1. From the *Configuration* tab in the Network window, click *Add*.
- Step 2. Select *Protocol* for the type of network component, and click *Add*.
- Step 3. Choose *Microsoft* for Manufacturers list box and *TCP/IP* for Network Protocols list box, then click OK.
- Step 4. Check to see *TCP/IP* is listed under Network Components.
 - A. If you do not see *TCP/IP* listed under Network Components, you have not installed TCP/IP. Repeat Steps 1 - 4.
 - B. If you see *TCP/IP* listed under Network Components, you already have TCP/IP on your Windows® 95/98. Proceed to configuration directions for Windows® 95/98 in Section 3.4.

3.4 Configuring TCP/IP in Windows® 95/98

- Step 1. From the *Configuration* tab, select *TCP/IP* (for Ethernet adapters) listed under Network Components and then click *Properties*.
- Step 2. Select the *IP Address* tab.

You now have the option of using either dynamic or static IP addressing.

To enable dynamic IP addressing:

- Step 1. Click *Obtain an IP Address automatically*.
- Step 2. **OPTIONAL*** Click the *DNS Configuration* tab and select *Disable DNS*. If you previously entered any parameters, clear all pre-existing settings.
- Step 3. Select the *Gateway* tab and then click *Remove* to clear all pre-existing settings.
- Step 4. Click *OK* to exit *TCP/IP Properties* window and click *OK* to exit *Network* window. When prompted, restart Windows® 95/98. If you are not prompted to restart Windows® 95/98, do so manually. Proceed to *Chapter 4*, “*Telindus 9100 Maintenance Application.*”

* If specifically required by your ISP, you may need to enter DNS information.

To enable static IP addressing:

- Step 1. Click *Specify an IP Address* and then type the *IP Address* and *Subnet Mask* (for your PC).
- Step 2. Click the *Gateway* tab.
- Step 3. Type in your *Gateway IP Address* from your ISP and then click *Add*.
- Step 4. Click the *DNS* tab. Enter the *Host* name, *Domain* name, and *DNS Service Search Order* (for your LAN) and then click *Add*.
- Step 5. Click *OK* to exit *TCP/IP Properties* window and click *OK* to exit *Network*.
- Step 6. When prompted, restart Windows® 95/98. If you are not prompted to restart Windows® 95/98, please do so manually. Proceed to *Chapter 4*, “*Telindus 9100 Maintenance Application.*”

3.5 Detecting TCP/IP in Windows® 2000

- Step 1. Turn on your computer and log-in to Windows® 2000.
- Step 2. Click the *Start* button and select *Settings*.
- Step 3. Choose *Control Panel*, and then double click *Network and Dial-up Connections* icon
- Step 4. Double click on the *Local Area Connection* icon. In the *Local Area Connection Status* window, click on the *Properties* button.
- Step 5. In the *Local Area Connection Properties* window:
 - A. If you see the *Internet Protocol (TCP/IP)* listed, you already have TCP/IP on your Windows® 2000. Proceed to configuration directions for Windows® 2000 in Section 3.7.
 - B. If you do not see *Internet Protocol (TCP/IP)*, you do not have TCP/IP on your Windows® 2000. Proceed to the next section, "Installing TCP/IP in Windows® 2000."

3.6 Installing TCP/IP in Windows® 2000

- Step 1. From the *General* tab in the *Local Area Connection Properties* window, click *Install*.
- Step 2. In the *Select Network Component Type* window, select the *Protocol* icon for the type of network component and click *Add*.
- Step 3. Choose the *Internet Protocol (TCP/IP)* icon from the *Network Protocol* list box, then click *OK*.
- Step 4. Check to see if *Internet Protocol (TCP/IP)* is listed under *Network Components*.
 - A. If you do not see *TCP/IP* listed under *Network Components*, you have not installed TCP/IP. Repeat steps 1 - 4.
 - B. If you see TCP/IP listed under *Network Components*, you already have TCP/IP on your Windows® 2000. Proceed to "Configuring TCP/IP in Windows® 2000" in the next section.

3.7 Configuring TCP/IP in Windows® 2000

- Step 1. From the *General* tab in the *Local Area Connection Properties* window, select *Internet Protocol (TCP/IP)* listed under *Network Components* and click *Properties*.

To enable static IP addressing:

- Step 1. Click *Use the following IP Address* and then type the *IP Address*, *Subnet Mask*, and *Default gateway*.
- Step 2. Enter the *Preferred* and *Alternate DNS server* IP addresses.
- Step 3. Click *OK* to exit the *Internet Protocol (TCP/IP) Properties* window. Proceed to *Chapter 4 "Telindus 9100 Maintenance Application."*

To enable dynamic IP addressing:

- Step 1. Click the *Obtain an IP address dynamically* option.
- Step 2. Click the *Obtain DNS Server automatically* option.
- Step 3. Click *OK* to exit the *Internet Protocol (TCP/IP) Properties* window. Proceed to *Chapter 4 "Telindus 9100 Maintenance Application."*

3.8 Detecting TCP/IP in Windows[®] NT 4.0

- Step 1. Turn on your computer and log-in to Windows[®] NT 4.0.
- Step 2. Click the *Start* button and select *Settings*.
- Step 3. Choose *Control Panel*, and then double click *Network* icon.
- Step 4. Click the *Protocols* tab.
 - A. If you see TCP/IP listed under Network Protocols, you already have TCP/IP on your Windows[®] NT. Proceed to configuration directions for Windows[®] NT 4.0 in Section 3.7.
 - B. If you do not see TCP/IP listed under Network Protocols, you do not have TCP/IP on your Windows[®] NT. Proceed to the next section, "Installing TCP/IP in Windows[®] NT 4.0."

3.9 Installing TCP/IP in Windows[®] NT 4.0

Note: Consult your Network Administrator if you do not have authorization to change settings for your PC.

- Step 1. From the *Protocols* tab in the Network window, click *Add*.
- Step 2. Select *TCP/IP Protocol* listed under Network Protocols, Click *OK*.
- Step 3. Check to verify that TCP/IP is listed under Network Protocols, then Click *OK*.
 - A. If you do not see TCP/IP listed under Network Protocols, you have not installed TCP/IP. Repeat steps 1 - 3.
 - B. If you see TCP/IP listed under Network Protocols, then you have successfully installed TCP/IP. Proceed to configuration directions for Windows[®] NT 4.0 in Section 3.7.

3.10 Configuring TCP/IP in Windows[®] NT 4.0

- Step 1. From the *Protocols* tab, select *TCP/IP* (for Ethernet adapters) listed under Network Protocol and then click *Properties*.

- Step 2. Select the *IP Address* tab.

You now have the option of using either dynamic or static IP addressing.

To enable dynamic IP addressing:

- Step 1. Click *Obtain an IP Address from DHCP Server*.
- Step 2. **OPTIONAL*** Click the *DNS* tab and select *Disable DNS*. If you previously entered any parameters, clear all pre-existing settings.*
- Step 3. Click *OK* to exit Network Properties window. Proceed to *Chapter 4 "Telindus 9100 Maintenance Application."*

* If specifically required by your ISP, you may need to enter DNS information.

To enable static IP addressing:

- Step 1. To enable static addressing, click *Specify an IP Address* and then type the *IP Address*, *Subnet Mask*, and *Gateway IP Address* (for your PC).
- Step 2. Click the *DNS* tab. Enter the *Host name*, *Domain name*, and *DNS Service Search Order* (for your LAN).
- Step 3. Click *OK* to exit Network Properties window. Proceed to *Chapter 4 "Telindus 9100 Maintenance Application."*

4. Telindus 9100 Maintenance Application

This Chapter Includes:

| Section | Title | Page |
|---------|--|------|
| 4.1 | Installing the Telindus 9100 Maintenance Application | 15 |
| 4.2 | Launching the Telindus 9100 Maintenance Application | 15 |

The Telindus 9100 Maintenance Application gives you access to the configuration and administrative controls for the Telindus 1120 ADSL Router. Install the Telindus 9100 Maintenance Application on PCs that you want to give access to these controls. If you have difficulties configuring your Telindus 1120 ADSL Router, consult [Section 8, Troubleshooting](#), or the help menu in the Telindus 9100 Maintenance Application, or refer to the FAQs located on TELINDUS's website (<http://www.telindus.com>).

Note: You must install the TCP/IP network protocol on the PCs **before** you install the Telindus 9100 Maintenance Application. For more information on installing and configuring TCP/IP refer to the instructions in the previous chapter.

4.1 Installing the Telindus 9100 Maintenance Application

- Step 1. Start Windows® 95/98 or Windows® NT 4.0.
- Step 2. Insert the included *TELINDUS CD* into your CD-ROM drive.
- Step 3. Click *Start*, then choose *Run*.
- Step 4. Click the *Browse* button, and look in your CD-ROM drive.
- Step 5. Select the *TELINDUS* folder, and then the *Telindus 9100 Maintenance Application* folder.
- Step 6. Select the *setup.exe* file and click the *Open* button.
- Step 7. Click the *OK* button.

4.2 Launching the Telindus 9100 Maintenance Application

When you launch the Telindus 9100 Maintenance Application, you will be presented with a sequence of panels that help you decide which router you want to manage, and how to manage it. The sequence of panels is as follows:

1. **Multiple Routers Selection**— provides the number of and basic information about all Telindus routers that the software has detected on your LAN.
2. **Telindus 9100 Maintenance Application**— is the main software that allows you to configure, maintain and monitor your selected router.

For further information on the available features, refer to the *Telindus 9100 Maintenance Application Overview* later in this section.

Note: After the initial router configuration, you can reset the router configuration parameters at any time from the Tools feature. Just select the *Reset Router/Mode* tab, click on the “Delete Configurations and Reset to Manufacturer Mode” box, and then click *Reset Router*.

Multiple Routers Selection Window

When you run the Telindus 9100 Maintenance Application program the *Multiple Routers Selection* window will appear. The program is searching for the Telindus 1120 ADSL Routers attached to the same network as your PC. This procedure may take a few seconds.

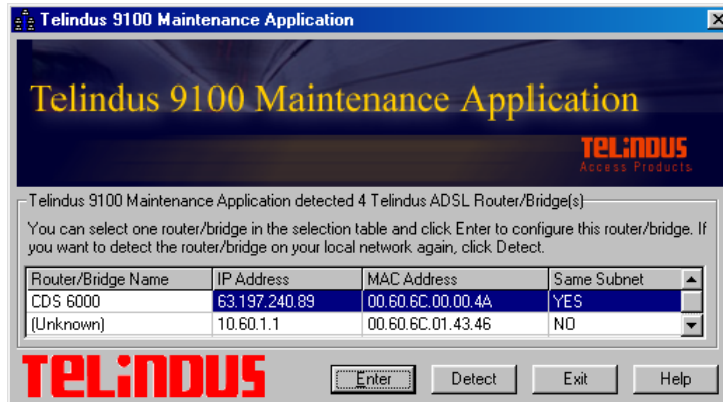


Figure 4.1 Multiple Router Selection

After a few seconds, the Telindus 9100 Maintenance Application will display a message indicating that it has found one or more routers on your local network. The window lists all detected routers, both configured and unconfigured. From this list you can select the specific router that you wish to configure or re-configure.

If the router is not in the same subnet as the managing PC, a *Subnet* window appears and allows you to choose three selections. You can *Change the router's IP address and keep the other configuration*, *Reset the router to Manufacture mode and delete the configuration*, or *Change your computer's TCP/IP settings*. After you have made your choice, click *Next* to proceed.

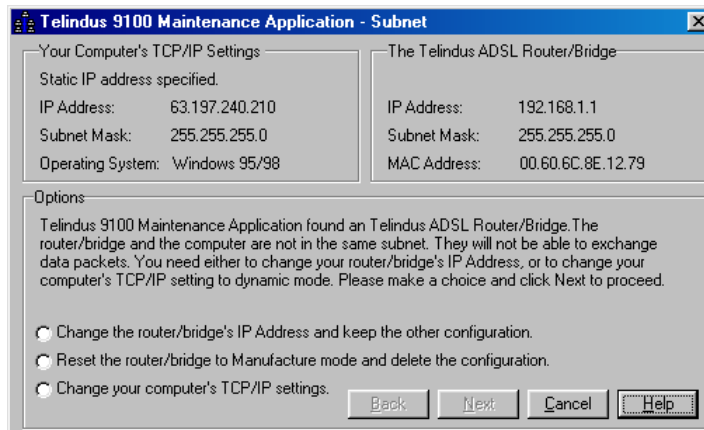


Figure 4.2 Subnet Window

If the Telindus 9100 Maintenance Application is unable to detect the router or it gives you an error message, consult the on-line help menu for more detailed instructions.

To continue, select a router and click *Enter*. You will automatically enter the Telindus 9100 Maintenance Application. From the Telindus 9100 Maintenance Application you can use any one of the following features:

- **Configuration** to get your router up and running.
- **Status** to monitor many of your router's operations.
- **Tools** offers some basic utilities for maintenance of your router.

Telindus 9100 Maintenance Application Overview

The Telindus 9100 Maintenance Application gives you access to all of the features of the Telindus 1120 ADSL Router. To activate a feature, you may use the keyboard by following the table below. Note that both lower and uppercase letters may be used. The letters to be used with the Alt key to activate the Configuration, Status, and Tools figure are underlined in the Telindus 9100 Maintenance Application. Alternatively, you may select the feature using your mouse pointer. When the feature button is selected, the mouse pointer changes into a hand. Once you select a feature, click on the feature button.

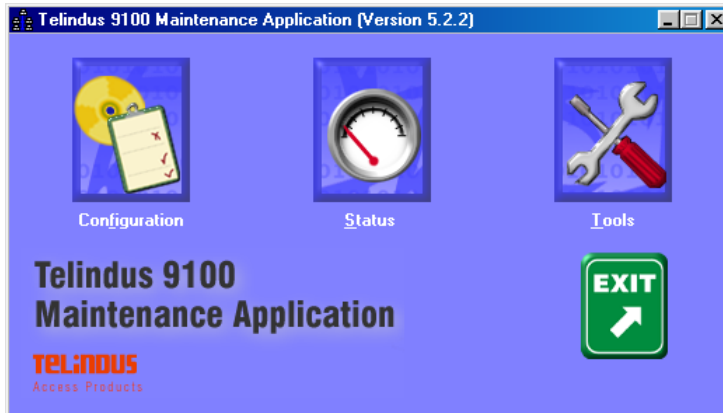


Figure 4.3 Telindus 9100 Maintenance Application

| Telindus 9100 Maintenance Application Feature | Keyboard Keys |
|---|---------------|
| Configuration | Alt <u>f</u> |
| Status | Alt <u>s</u> |
| Tools | Alt <u>t</u> |
| Help | F1 |
| Exit | Alt F4 |

Table 4.1 Keyboard Keys to Activate Telindus Features

The Telindus 9100 Maintenance Application gives you access to the following features:

- **Configuration** — a step-by-step guide to configuring all parameters of your router: General, LAN, DSL Configuration, and Configuration File settings.
- **Status** — allows you to remotely monitor many of the router's functions, such as Front Panel LED operation, Traffic Counter, DSL Status Table, IP Routing Table, and the DHCP Table status.
- **Tools** — provides you with some tools for performing some basic router maintenance tasks, firmware upgrades, and resetting the router.

5. Configuration

This Chapter Includes:

| Section | Title | Page |
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| 5.1 | Configuration | 19 |
| 5.2 | Outline of Configuration | 19 |
| 5.3 | General Configuration | 21 |
| 5.4 | LAN Configuration | 31 |
| 5.5 | DSL Configuration | 34 |
| 5.6 | Configuration File | 40 |

5.1 Configuration

The Telindus 9100 Configuration feature walks you through the configuration of the Telindus 1120 ADSL Router with a series of windows. You will be asked to enter information that you received from your ISP or network administrator – refer to [Section 1.6, Information You Will Need](#) for the configuration parameters for a Single IP Address Account or a Multiple IP Address Account, and other additional parameters necessary for use of the unit.

For your convenience, the Telindus 9100 Configuration feature provides instructions in each window to guide you through the installation process. To exit the Telindus 9100 Configuration feature, click on the *Exit* button. If you need more information, click on the *Help* button.

5.2 Outline of Configuration

With the Configuration feature you have the flexibility to configure one parameter at any time and to change more technical default settings. The Configuration window is organized in a hierarchical tree format. From the Telindus 9100 Main Screen, click *General Configuration* to access the General Configuration window. Click on the item that you wish to configure, and then set the parameters.

General Configuration

- **Administrative Security:** Sets your router's name and enables password protection (optional).
- **IP Routing Table:** Directs the Telindus 1120 ADSL Router to which path or route to forward data packets.
- **Packet Filtering:** Monitors and selectively filters packets that enter or leave the Telindus 1120 ADSL Router. This includes an IP Packet Filtering Table and a Bridge Packet Filtering Table.
- **Port Mapping Configuration:** Allows you to map private IP addresses to certain applications (such as pcAnywhere or Blizzard StarCraft) or services (such as an FTP server, web server, telnet, or mail server) by utilizing Application View. The Port Mapping Table displays the details of all port maps created and allows you to create a port map for an application or service that is not defined in the Application List of the Application View window.
- **Auto Forwarding Table:** Ensures that traffic routed through Network Address Translation (NAT) will retain the correct destination port information.
- **DNS Server:** Allows you to specify primary and secondary domain name server IP addresses.

LAN Configuration

- **LAN Configuration:** Allows you to set the primary and secondary IP addresses and Subnet Mask information for the LAN.
- **DHCP:** Enables or disables Dynamic Host Configuration Protocol (DHCP) on the LAN based on its primary or secondary IP address, if it has been defined. You can specify the lifetime duration of the dynamically assigned IP addresses, and also reserve IP addresses from the list of available DHCP addresses.
- **Protocol Configuration:** Enables and disables Routing Information Protocol (RIP) and IGMP for the LAN Interface.

DSL Configuration

- **DSL Configuration:** By selecting the appropriate DSL line mode (ANSI T1.413, G.Lite, G.DMT, or Multi Mode), this window allows you to create a new or use a previously configured ATM PVC interface.
- **ATM PVC Properties:** Allows you to specify the name of the ATM Permanent Virtual Circuit (PVC), and the values of Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI).
- **ATM Service Type:** Allows you to choose the ATM service category supporting your ATM connection and the rate parameters associated with the service: Unspecified Bit Rate (UBR) and Constant Bit Rate (CBR). From this panel you can specify the Peak Cell Rate (PCR) in kbps, and you can set the Operations and Maintenance (OAM) F5 timer period. If the period is set to zero, the OAM F5 loopback cell will not be sent. If the period is non-zero, the loopback cell is sent according to the specified period to the remote peer.
- **ATM PVC Protocol Configuration:** Allows you to choose the encapsulation protocol used at the ATM interface: *SNAP/IP, VC MUX over ATM, LLC PPP over ATM, PPP over Ethernet, and SNAP/Bridge.*
- **ATM PVC NAT Properties:** Allows you to enter a specified *NAT IP Address* and/or *NAT Pool IP Addresses.*
- **ATM PVC IP Properties:** Allows you to specify the WAN IP Address and Subnet Mask for the PVC, or to use a WAN-assigned IP Address and Subnet Mask.
- **ATM PVC PPP Configuration:** Allows you to input user name and password for authentication purposes. If you click the "Telindus 1120 ADSL Router will do the authentication" checkbox, then the remote server's user name and password will be needed for access of authentication.

Configuration File

- **Save Configuration File:** Saves your customized configuration settings to your local hard disk drive as a configuration file (*.cfg). This is especially helpful for network management.
- **Load Configuration File:** Allows you to load any previously saved configuration file.

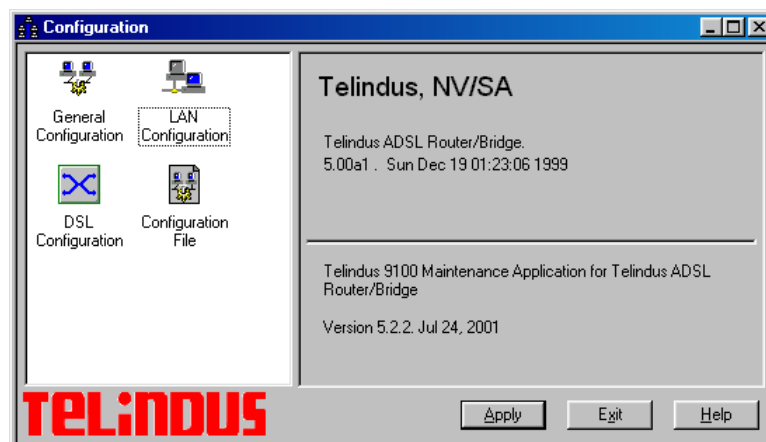


Figure 5.1 Configuration Panel

5.3 General Configuration

Administrative Security

The first configuration panel in the Telindus 1120 ADSL Router General Configuration is the Administrative Security. From this panel, you can create a *Router Name* and select *Password Protected* for administrative security.

Naming your router is mandatory. The default name for the router is “Telindus 1120 ADSL Router.”

If you are concerned with administration security, you should select *Password Protected*. This optional feature limits Telindus Telindus 9100 Maintenance Application access to users with the correct password. To select this feature, check *Password Protected*, and then click *Change Password*. When you type your password and confirmation in the edit boxes, they will appear as asterisk (****).



Figure 5.2 Administrative Security

After setting your Administrative Security, Click *Apply* to continue configuring your router. To exit the Telindus 1120 ADSL Router, click on the *Exit* button. If you need help, click on the *Help* button.

IP Routing Table

The next configuration panel in the Telindus 1120 ADSL Router is the IP Routing Table. The IP Routing Table indicates the Telindus 1120 ADSL Router which path or route to use when forwarding data packets. From this panel, you can [Add New IP Route](#), [Modify IP Route](#), or [Remove IP Route](#).

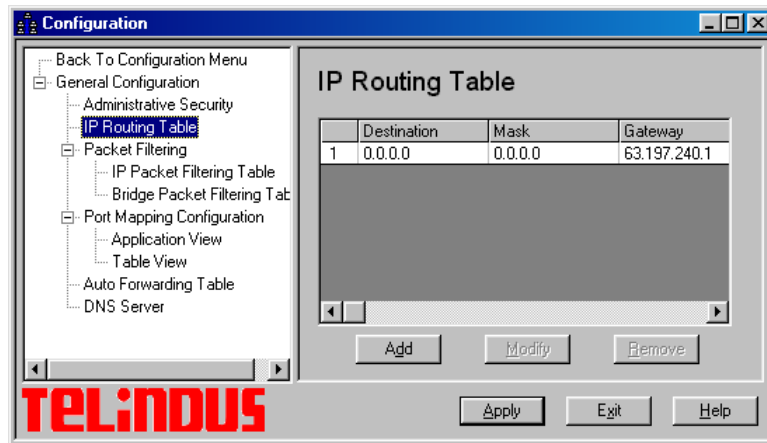


Figure 5.3 IP Routing Table

Add New IP Route

To add a new IP route, click the *Add* button. This will open the Add New Route window.

Figure 5.4 Add New Route

Enter the following information:

Destination

IP Address: The IP address of where data packets are to be sent.

Subnet Mask: The subnet of the Destination IP Address.

Gateway

IP Address: The IP address of the gateway on the LAN where data packets are to be sent. The Gateway IP Address can only be set if the route uses the LAN interface, otherwise it is grayed-out.

Interface: Determines whether data packets are to be sent to LAN or DSL through the specified interface.

ATM PVC: Allows you to select a specific ATM PVC profile.

When you are finished, click *OK*. If you do not want to create a new route, click *Cancel* to close the Add New Route window.

Modify IP Route

If you want to change the parameters of a route, select the route number, and then click *Modify*. This will open the *Modify Route* window. You can change the *Destination IP Address*, *Subnet Mask*, *Interface*, *Gateway IP Address*, and the particular instances of the ATM PVC.

When you are finished, click *OK*. If you do not want to modify this route, click *Cancel* to close the *Modify Route* window.

Remove IP Route

To delete a route, select the route number, and then click *Remove*. Click *Yes* to remove the selected route or click *No* to keep it.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

Packet Filtering - IP Packet Filtering Table

From Configuration, double-click on the General Configuration icon, and click on the *IP Packet Filtering Table* in the left panel. The IP packet filters allow you to monitor and selectively filter packets that enter or leave the Telindus 1120 ADSL Router. You can use filtering to protect your network from unauthorized access, and restrict certain traffic from leaving your LAN.

The IP Packet Filtering Table allows for up to 32 sequential filters, and each filter can be set to examine source packets, destination packets, or both. From this panel, you can [Add New IP Packet Filter](#), [Modify IP Packet Filter](#), or [Remove IP Packet Filter](#).

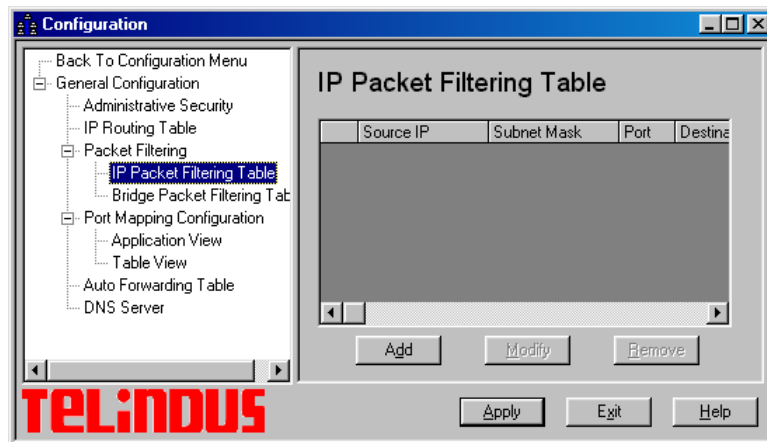


Figure 5.5 IP Packet Filtering Table

Add New IP Packet Filter

To add a new IP Packet Filter, click the *New* button. This will open the *Add New IP Packet Filter* window.

Figure 5.6 Add New IP Packet Filter

Enter the IP packet filter parameters according to the following criteria:

- IP address:** Identifies each device on a TCP/IP network and the Internet.
- Subnet mask:** A “mask” used to determine what subnet an IP address belongs to. IP networks are divided using subnet masks. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix.
- TCP/IP port:** Used to distinguish between requests for different services, such as telnet, ftp, or the web.
- Protocol type:** A set of rules governing the information flow within a communications infrastructure. Currently, the Telindus 1120 ADSL Router supports TCP and UDP

The characteristics of each packet that enters the Telindus 1120 ADSL Router are compared to the IP packet filters’ parameters to see if they match (true), or whether they do not match (false).

For either true/false condition, the packets can be set to:

- Pass:** Automatically pass through the router.
- Restrict:** Pass only if there is an available connection.
- Discard:** Packet is blocked and discarded.
- Pass to next filter:** Packet goes to the next filter in sequence.

When you are finished, click *OK*. If you do not want to create an IP packet filter, click *Cancel* to close the Add New IP Packet Filter window.

Modify IP Packet Filter

If you want to change the parameters of an IP packet filter, select the filter number, and then click *Modify*. This will open the *Modify IP Packet Filter* window. You can change any of the parameters or settings. When you are finished, click *OK*. If you do not want to modify this filter, click *Cancel* to close the Modify IP Packet Filter window.

Remove IP Packet Filter

To delete a filter, select the filter number, and then click *Remove*. Click *Yes* to remove the selected filter or click *No* to keep it.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

Packet Filtering - Bridge Packet Filtering Table

From Configuration, double-click on the General Configuration icon, and click on the *Bridge Packet Filtering Table* in the left panel. The bridge packet filters also allow you to monitor and selectively filter packets that enter or leave the Telindus 1120 ADSL Router when in the bridge mode. You can use filtering to protect your network from unauthorized access, and restrict certain traffic from leaving your LAN.

The Bridge Packet Filtering Table also allows up to 32 sequential filters, and each filter can be set to examine source MAC, destination MAC, or both. From this panel, you can [Add New Bridge Packet Filter](#), [Modify Bridge Packet Filter](#), or [Remove Bridge Packet Filter](#).

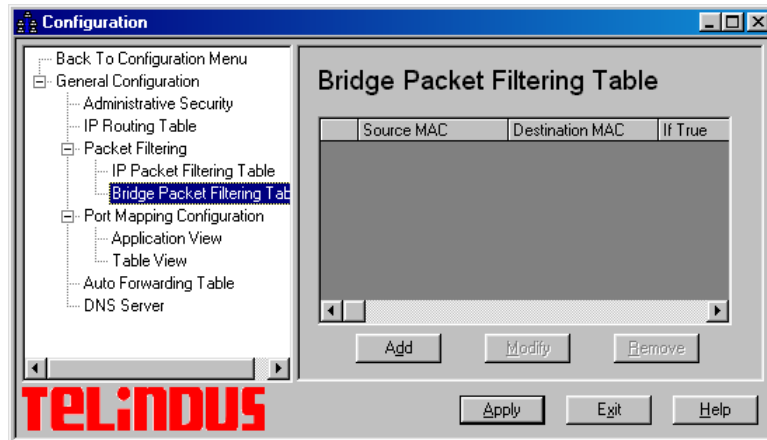


Figure 5.7 Bridge Packet Filter

Add New Bridge Packet Filter

To add a new Bridge Packet Filter, click the *Add* button. This will open the *Add New Bridge Packet Filter* window.

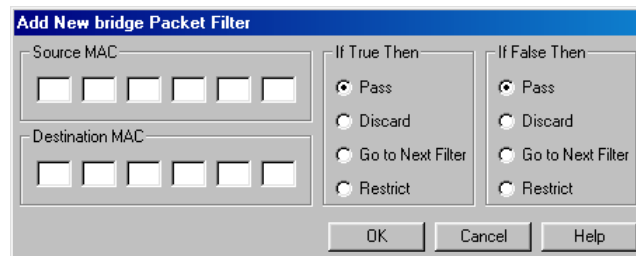


Figure 5.8 Add New Bridge Packet Filter

Enter the Bridge packet filter parameters according to the following criteria:

MAC: Identifies each device on the network and the Internet.

The characteristics of each packet that enters the Telindus 1120 ADSL Router are compared to the bridge packet filters' parameters to see if they match (true), or whether they do not match (false).

For either true/false condition, the packets can be set to:

Pass: Automatically pass through the router.

Restrict: Pass only if there is an available connection.

Discard: Packet is blocked and discarded.

Pass to next filter: Packet goes to the next filter in sequence.

When you are finished, click *OK*. If you do not want to create an bridge packet filter, click *Cancel* to close the Add New Bridge Packet Filter window.

Modify Bridge Packet Filter

If you want to change the parameters of an bridge packet filter, select the filter number, and then click *Modify*. This will open the *Modify Bridge Packet Filter* window. You can change any of the parameters or settings. When you are finished, click *OK*. If you do not want to modify this filter, click *Cancel* to close the *Modify Bridge Packet Filter* window.

Remove Bridge Packet Filter

To delete a filter, select the filter number, and then click *Remove*. Click *Yes* to remove the selected filter or click *No* to keep it.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

Port Mapping Configuration

Application View

From Configuration, double-click on the *General Configuration* icon. Use the list in the left panel to open the *Port Mapping Configuration* menu, and then click *Application View*.

Port Mapping allows you to map to certain applications (such as pcAnywhere or Blizzard StarCraft) or services (such as an FTP server, web server, telnet, or mail server) using Private IP addresses within an IP Master LAN. Incoming data packets being sent to a specific IP port can be routed to the application or service using Port Mapping Configuration.

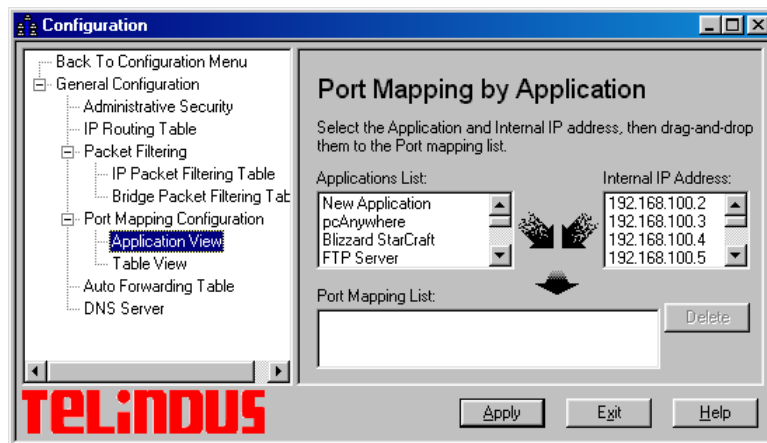


Figure 5.9 Port Mapping by Application

To port map an application or service simply select it from the Application list, and while holding down the left mouse button, drag and drop it into the Port Mapping List. Then you will need to specify the internal IP address where the application or service resides. Do this by clicking on the appropriate IP address from the list of Internal IP Addresses, and while holding down the left mouse button, drag and drop it into the Port Mapping List.

If there is more than one entry in the Port Mapping list, be sure to drag and drop the internal IP address to the correct application or service.

If the application that you need to port map is not available in the Application List, you will need to create a port map for it. Drag and drop the *New Application* option from the Application List to the Port Mapping List, drag and drop the appropriate internal IP address to the *New Application*, and an *Add Port Mapping Item* window will appear. Refer to the following section *Port Mapping Table* for further information.

Note: If you drag and drop the *New Application* option from the Application List to the Port Mapping List, then you can modify this item by selecting *Table View* and clicking *Modify*. All other applications in the Application List CANNOT be modified anymore.

Port Mapping Table

Selecting the *Table View* button from the Port Mapping panel will show the Port Mapping Table, which displays the details of all the port maps created. For applications that are not included in the *Applications List*, you can use the *Port Mapping Table* to create new applications and IP addresses.

From the Port Mapping Table, you can [Add New Port Mapping Item](#), [Modify Port Mapping Item](#), or [Remove Port Mapping Item](#).

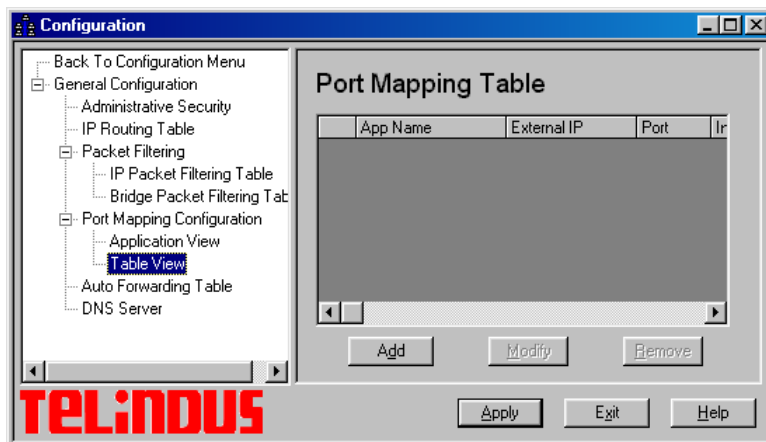


Figure 5.10 Port Mapping Table

Add New Port Mapping Item

To add a new port mapping item, click the *New* button. This will open the Add New Port Mapping Item window:

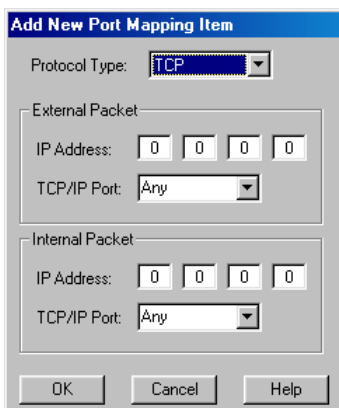


Figure 5.11 Add New Port Mapping Item

Enter the following information:

Protocol: A set of rules governing the information flow within a communications infrastructure. Currently, the Telindus 1120 ADSL Router supports TCP and UDP.

External

IP Address: The destination IP address for incoming data packets. Usually, this would be an ISP assigned IP address, but any address can be set as the *External IP* address, and any incoming packets sent to that address will be mapped to the associated *Internal IP* address.

You can use the IP address wild card, 0.0.0.0, to specify that *any* IP address, with a specific IP port, will be mapped to a specific Internal IP address and IP port.

External

TCP/IP Port: The IP port number associated with the Dial-Out IP address. An IP port is used to distinguish between requests for different services, such as telnet, ftp, or the web. If *Any* is selected then any port can be accessed.

Internal

IP Address: The Private IP Address for the device running the special service(s) within the router's private subnet.

If the router has DHCP enabled for IP Master mode, then it is recommended that the *Internal IP* address be reserved and the network device running the special service be configured to always use the *Internal IP* address. Otherwise, the network device will be assigned a new IP address by the router every time it connects to the network, and the *Internal IP* parameter will need to be updated.

Internal

TCP/IP Port: The IP port number of the device running the special service(s) within the router's private subnet. An IP port is used to distinguish between requests for different services, such as telnet, ftp, or the web. If *Any* is selected then any port can be accessed.

More than one service can run on a single network device, or different services can run on different network devices, but the same service with same port number cannot be run on more than one network device.

When you are finished, click *OK*. If you do not want to create a new port mapping item, click *Cancel* to close the Add New Port Mapping window.

Modify Port Mapping Item

If you want to change the parameters of a port mapping item, select the item number, and then click *Modify*. This will open the Modify Port Mapping Item window. You can change the *External IP Address* and *External IP Port*, the *Internal IP Address* and *Internal IP Port*, and the *Protocol*. When you are finished, click *OK*. If you do not want to modify this item, click *Cancel* to close the Modify Port Mapping Item window.

Remove Port Mapping Item

To delete a port mapping item, select the desired port map, and then click *Remove*. Click *Yes* to remove the selected item or click *No* to keep it.

Once you have finished setting the Port Mapping parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

Auto Forwarding Table

From Configuration, double-click on the *General Configuration* icon. Use the list in the left panel to open the *Auto Forwarding Table*.

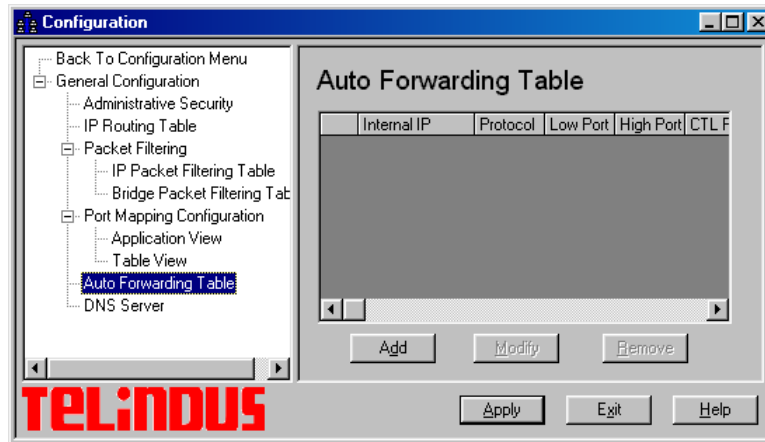


Figure 5.12 Auto Forwarding Table

Auto Forwarding ensures that traffic routed through Network Address Translation (NAT) will retain the correct destination port information. This is crucial for applications running on a private LAN that need to send data to a specific port to properly establish and maintain a session. From this panel, you can [Add New Auto Forwarding Item](#), [Modify Auto Forwarding Item](#), or [Remove Auto Forwarding Item](#).

Add New Auto Forwarding Item

To add a new auto forwarding item, click the *Add* button. This will open the *Add New Auto Forwarding Item* window.

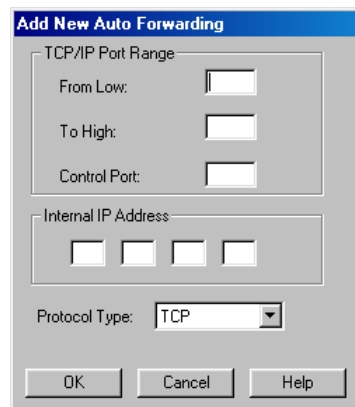


Figure 5.13 Add New Auto Forwarding Item

Enter the following information:

- From Low:* Some applications that require Auto Forwarding need to utilize a range of port numbers. *From Low* is the lowest port number in the range of port numbers to be used. Refer to the application that requires Auto Forwarding to determine the port number range.
- To High:* The highest port number in the range of port numbers to be used. Refer to the application that requires Auto Forwarding to determine the port number range.
- Control Port:* The port number that will be used for sending control commands during a session. Refer to the application that requires Auto Forwarding to determine the control port number.

Internal

IP Address: The LAN IP address of the PC on your private LAN that will be using the Auto Forwarding function.

Protocol Type: A set of rules governing the information flow within a communications infrastructure. Currently, the Telindus 1120 ADSL Router supports TCP and UDP.

When you are finished, click *OK*. If you do not want to create a new auto forwarding item, click *Cancel* to close the Add New Auto Forwarding Item.

Modify Auto Forwarding Item

If you want to change the parameters of an Auto Forwarding item, select the item number, and then click *Modify*. This will open the *Modify Auto Forwarding Item* window. You can change the *From Low* port number, *To High* port number, *Control Port*, *Internal IP Address*, and *Protocol Type*. When you are finished, click *OK*. If you do not want to modify this item, click *Cancel* to close the *Modify Port Mapping Item* window.

Remove Auto Forwarding Item

To delete an Auto Forwarding item, select the desired item, and then click *Remove*. Click *Yes* to remove the selected item or click *No* to keep it.

Once you have finished setting the Auto Forwarding parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

DNS Server

From Configuration, double-click on the *General Configuration* icon. Use the list in the left panel to open the *DNS Server*.

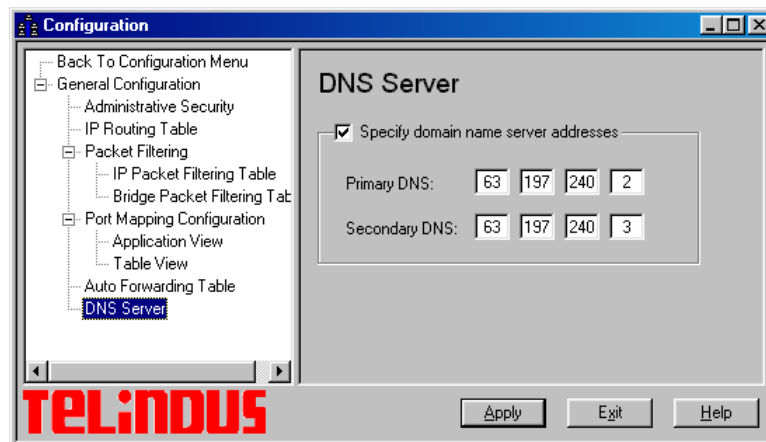


Figure 5.14 DNS Server

The DNS Server Configuration Panel allows you to assign a *Primary DNS* and *Secondary DNS* IP Addresses for the selected profile.

Your DNS IP Address should be assigned by an ISP during connection. If so, do not select *Specify domain name server addresses*. However, if your ISP cannot dynamically assign the DNS IP Address, then you must enter this information in the DNS Server configuration panel in the *Configuration* feature of the Telindus Telindus 9100 Maintenance Application. Select *Specify domain name server addresses* and then enter the DNS IP Address.

Note: The PC's DNS IP address has a higher priority over the IP address specified in the router. The IP address specified in the router has a higher priority over the IP address assigned by the ISP.

5.4 LAN Configuration

LAN Configuration

From *Configuration*, use the list in the left panel to open the *LAN Configuration* menu.

LAN Configuration assigns the IP address of the router on your LAN and defines the associated IP subnet. The LAN Interface can be configured for either a single or multiple IP address account.

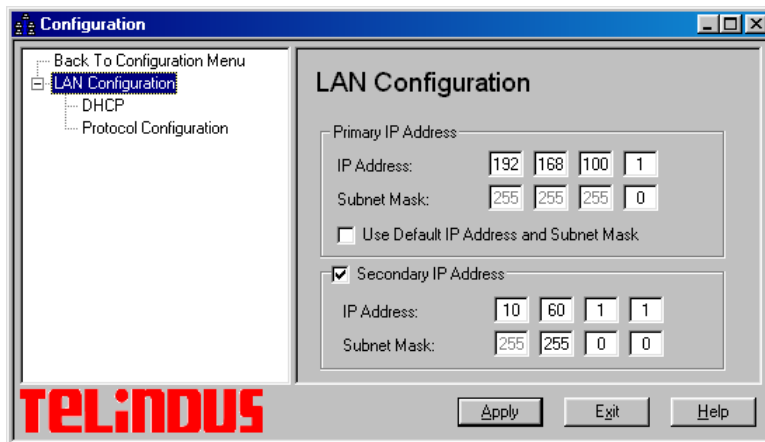


Figure 5.15 LAN Configuration

Multiple IP Address Account

If you have purchased a multiple IP address account, you have a range of IP addresses for the router and network devices on your LAN. To configure the router you will need to enter its *IP Address* and the *Subnet Mask* under *Primary IP Address*. Remember, when you assign these parameters you must make sure your PC and router are in the same subnet. If you have an additional subnet in your network you would like the router to be able to access, you may provide its *IP Address* and *Subnet Mask* under *Secondary IP Address*.

Single IP Address Account

A single IP address account allows users on your entire local area network to share the one IP address.

Selecting *Use Default IP Address and Subnet Mask* enables your router to automatically assign itself a default Private IP Address of **192.168.1.1** with a Subnet Mask of **255.255.255.0**. This will give you an available range of IP addresses from 192.168.1.2 to 192.168.1.254 that can be assigned to your network devices. The *IP Address* and *Subnet Mask* will be grayed out since you do not need to enter this information.

You can also opt to de-select *Use Default IP Address and Subnet Mask* and enter your own *IP Address* and *Subnet Mask*.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus Telindus 9100 Maintenance Application.

DHCP

From *Configuration*, double-click on the *LAN Configuration* icon in the left panel to open the *LAN Configuration* menu, and then click on *DHCP*.

DHCP allows you to enable or disable the use of DHCP for a Multiple IP Address Account. DHCP, Dynamic Host Configuration Protocol, dynamically assigns (leases) Private IP Addresses to devices on a network. With dynamic addressing, a device can be assigned an IP address each time it connects to the network.

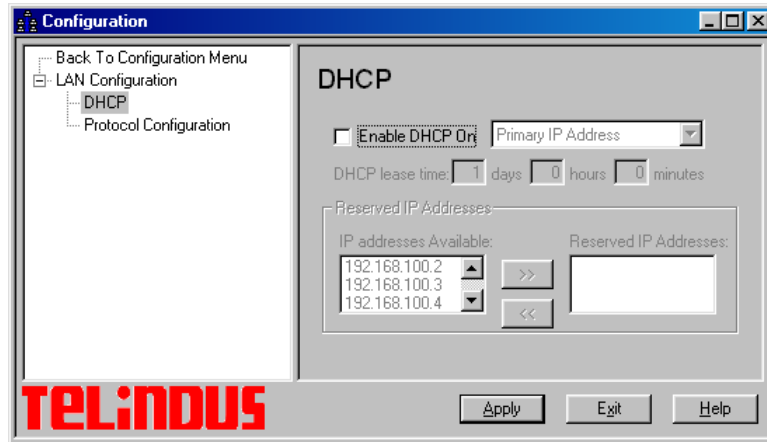


Figure 5.16 DHCP

DHCP simplifies network administration because the router keeps track of IP addresses rather than requiring an administrator to manage the task. This means that a new computer can be added to a network without the hassle of manually assigning it an IP Address.

If you de-select *Enable DHCP On* (which disables DHCP) then either every PC (or network device) on your LAN has a fixed IP address already assigned to it, or else another DHCP server is already running on your network.

However, if you select *Enable DHCP On*, you have the option of enabling DHCP on either the Primary or Secondary IP Address. You can also configure the following DHCP parameters:

DHCP Lease Time: The amount of time that a network device can have (lease) a Private IP Address before the router makes the address available for re-assignment.

The *DHCP Lease Time* range is:

Max: 999 days, 23 hours, 59 minutes

Min: 0 days, 0 hours, 1 minute

Default: 0 days, 12 hours, 0 minutes

Reserved IP Addresses: Reserves selected Private IP Addresses so that they can be manually assigned to the Dial-In IP Address Pool, dial-in profiles, or network devices that do not use DHCP.

To reserve an IP address, select it in the *IP Addresses Available* window, and click on the right arrow button. This will move the IP address to the *Reserved IP Addresses* window.

De-select a reserved IP address, click on the left arrow button. This will move the IP address to the *Available IP Addresses* window.

After you have configured your DHCP settings, click *Apply* to review the parameters you have entered, and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

Protocol Configuration for LAN Interface

From *Configuration*, double-click on the *LAN Configuration* icon in the left panel to open the *LAN Configuration* menu, and then click on *Protocol Configuration*.

Protocol Configuration for the LAN interface allows you to enable or disable the Routing Information Protocol (RIP) and Internet Group Management Protocol (IGMP) for the LAN Interface.

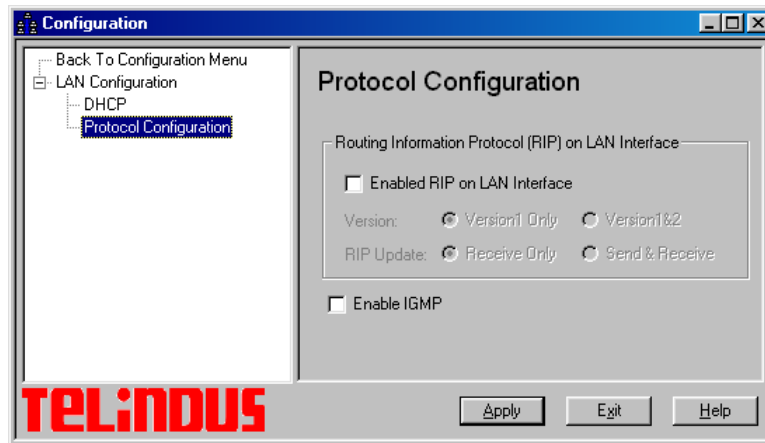


Figure 5.17 Protocol Configuration for LAN Interface

Selecting *Enable RIP on LAN Interface* will turn RIP on for the local Ethernet network. RIP is a method that routers use to communicate network status and determine optimal routes. After enabling RIP you can select to use *Version 1* or *Version 1 & 2*. In addition, you can set the RIP Update to *Receive Only* or *Send & Receive*.

In addition, selecting the *IGMP* checkbox allows your PC to send content to multiple other PCs. IGMP is used by IP hosts to report their IP Multicast group memberships to any immediately neighboring multicast routers. The NetDSL unit works as an IGMP proxy between the IP Multicast Content Server and the client PC.

After you have set the LAN Protocol configuration, click *Apply* to review the parameters you have entered, and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

5.5 DSL Configuration

DSL Configuration

From Configuration, double-click on the DSL Configuration icon.

To create a new **ATM PVC** interface, select the appropriate DSL line mode and double-click on the **Make New ATM PVC** icon.

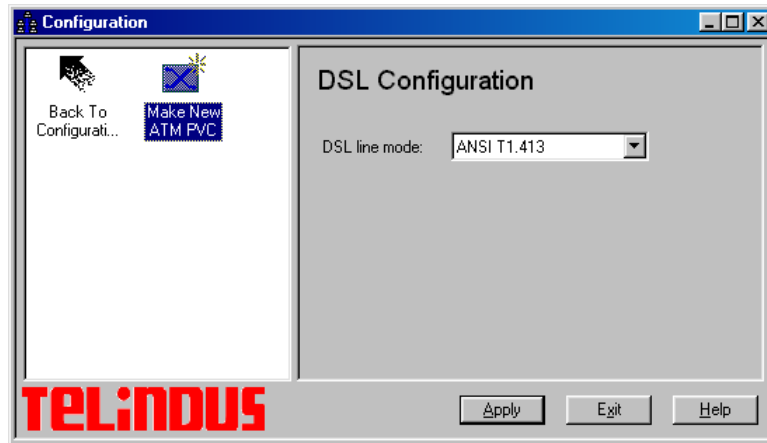


Figure 5.18 DSL Configuration

You have the option to use **ANSI T1.413**, **G.Lite**, **G.DMT**, or **Multi Mode** as your *DSL line mode*. To find out which DSL line mode suits your unit, please consult your ISP or telephone company.

When you are done, click *Apply* to go to the next window.

Note: The DSL line mode refers to the entire Telindus 1120 ADSL Router unit and not each individual ATM PVC profile. Once you have made your choice, all subsequent ATM PVC profiles created will be using the same line mode.

ATM PVC Properties

After typing in the name and clicking *OK*, the *ATM PVC Properties* panel will appear. Note that a maximum of 8 PVCs may be defined. If you double-click on the icon of a previously created PVC, the *ATM PVC Properties* panel will also appear.

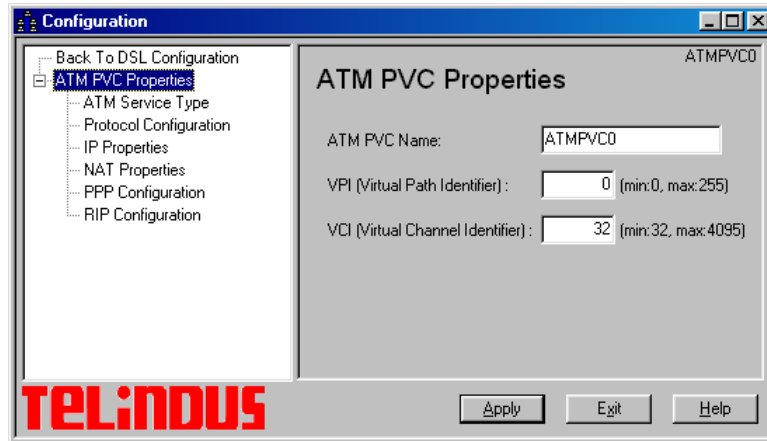


Figure 5.19 ATM PVC Properties

The *ATM PVC Properties* panel allows you to change the name of the selected ATM interface and to set the values of Virtual Path Identifier (VPI) and the Virtual Channel Identifier (VCI). The minimum and maximum values of the VCI are 32 and 4,095, respectively. VCI values from zero to 31 are reserved for well-known protocols. Note that two ATM PVC connections can have the same VCI value only if the VPIs are distinct.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

ATM Service Type

Click on *ATM Service Type* in the left panel.

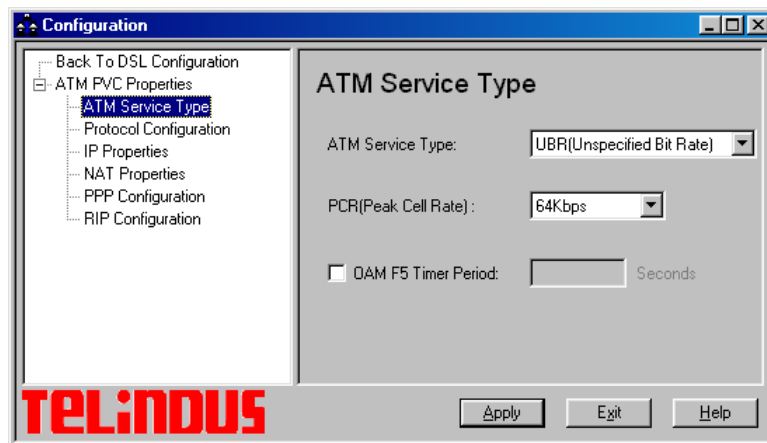


Figure 5.20 ATM Service Type

This panel allows you to select the ATM Service Type for the ATM interface. Presently, *Unspecified Bit Rate (UBR)* and *Constant Bit Rate (CBR)* are available. You can specify the Peak Cell Rate (PCR) in kbps. This panel also allows you to specify the period for the *Operations And Maintenance (OAM) F5* (virtual channel) timer. If the period is set to zero, the OAM F5 loopback cell is not sent. If the period is set to a non-zero value, the loopback cell is transmitted to the remote peer according to the specified period. Note that the local peer will always respond to a loopback cell that is transmitted by the remote peer.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router.

Click *Exit* to return to the Telindus 9100 Maintenance Application.

ATM PVC Protocol Configuration

Click on *Protocol Configuration* in the left panel.

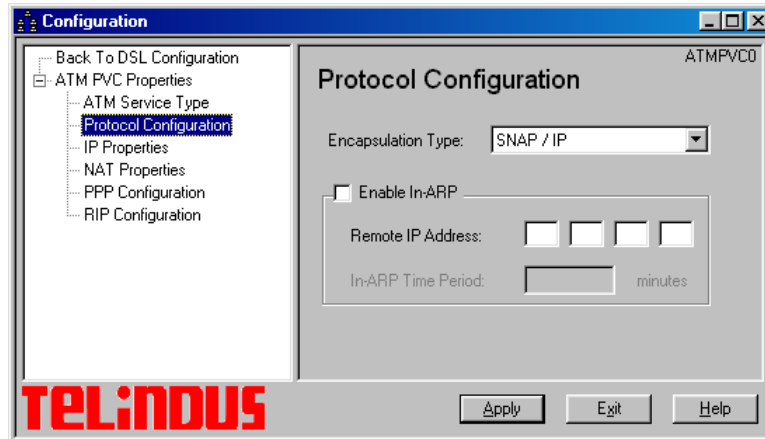


Figure 5.21 Protocol Configuration

You can enter the following information:

Encapsulation

Type: Allows you to choose the encapsulation type used at the ATM interface. The options are *SNAP/ IP*, *VC MUX over ATM*, *LLC PPP over ATM*, *PPP over Ethernet*, and *SNAP/Bridge* protocols.

Enable In-ARP: This is used by an ATM Permanent Virtual Circuit to determine the IP address of a remote peer.

When selecting a specific encapsulation type, you have the following three options to choose from:

- Option 1. If you select ***VC MUX over ATM***, ***LLC PPP over ATM*** or ***PPP over Ethernet*** as your encapsulation type, then you can check the ***Enable Network Address Translation (NAT)*** checkbox if you have a single user account for the *NAT Properties* feature. You can then select the ***Specified NAT IP Address*** checkbox and enter the desired IP address, or you can select the ***Specified NAT Pool IP Addresses*** and enter the requested values. Also, you **MUST** select the *PPP Configuration* feature from the list located in the left panel, and enter the *User Name* and *Password*.
- Option 2. If you select ***SNAP/IP*** as your encapsulation type, then you can check the ***Enable Network Address Translation (NAT)*** checkbox if you have a single user account for the *NAT Properties* feature. You can then select the ***Specified NAT IP Address*** checkbox and enter the desired IP address, or you can select the ***Specified NAT Pool IP Addresses*** and enter the requested values.
- Option 3. If you select *SNAP/Bridge* as your encapsulation type, then you can check the ***Enable Network Address Translation (NAT)*** checkbox if you have a single user account for the *NAT Properties* feature. You can then select the ***Specified NAT IP Address*** checkbox and enter the desired IP address, or you can select the ***Specified NAT Pool IP Addresses*** and enter the requested values.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

ATM PVC NAT Properties

Click on *NAT Properties* in the left panel.

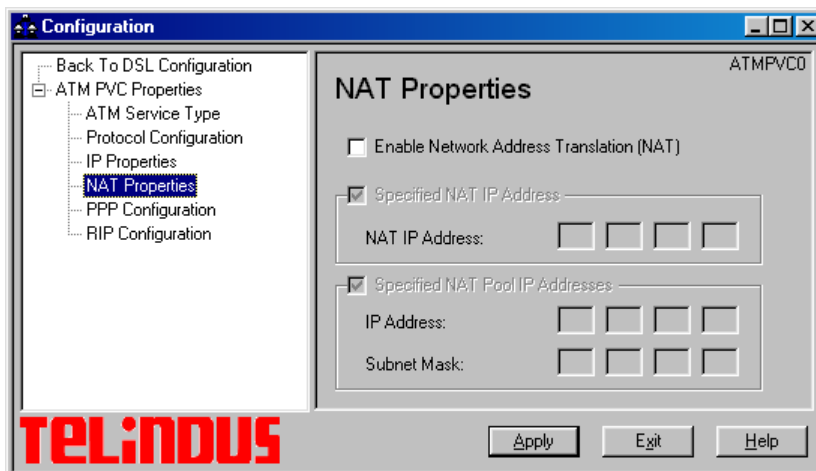


Figure 5.22 NAT Properties

This window allows you to specify the NAT IP Addresses and NAT Pool IP Addresses:

Enable Network

Address Translation

(NAT): Enables the use of NAT for the specified ATM PVC interface.

Specified NAT IP

Address: Selecting this option allows you to enter one specified NAT IP address.

Specified NAT Pool

IP Addresses: Selecting this option allows you to enter a range of specified NAT IP addresses and subnet mask.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

ATM PVC IP Properties

Click on *IP Properties* in the left panel. The *IP Properties* panel allows you to specify whether to use numbered or unnumbered WAN IP addresses, and also allows you to specify the router's WAN IP Address and Subnet Mask for the selected connection profile.

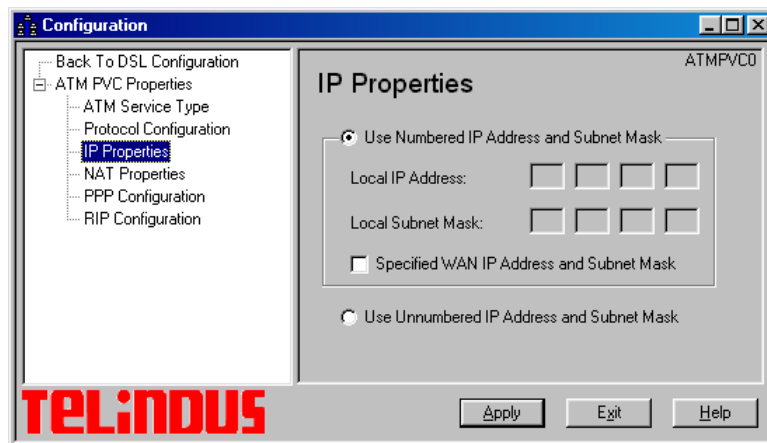


Figure 5.23 IP Properties

From this panel, you can select and configure the following WAN IP Address parameter:

Use Numbered IP

Address and Subnet

Mask: Enables the use of a WAN IP address. If you select this option, you can either let the remote server or ISP assign the Telindus 1120 ADSL Router unit a WAN IP address, or you can specify your own WAN IP address.

Specified WAN IP

Address and Subnet

Mask: Selecting this checkbox allows you to specify the WAN IP address for the router. Otherwise, if unchecked, the router may obtain the WAN IP address whenever you connect to your ISP or remote server using PPP encapsulation.

Use Unnumbered IP

Address and Subnet

Mask: Disables the assignment of a WAN address for the router. This option may be useful when connecting to devices that do not use WAN IP addresses to negotiate a connection. When negotiating unnumbered IP connections, the IPCP protocol uses the LAN IP addresses instead of the WAN IP addresses.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

ATM PVC PPP Configuration

Click on *ATM PVC Properties* to open the menu, then click on *PPP Configuration*.

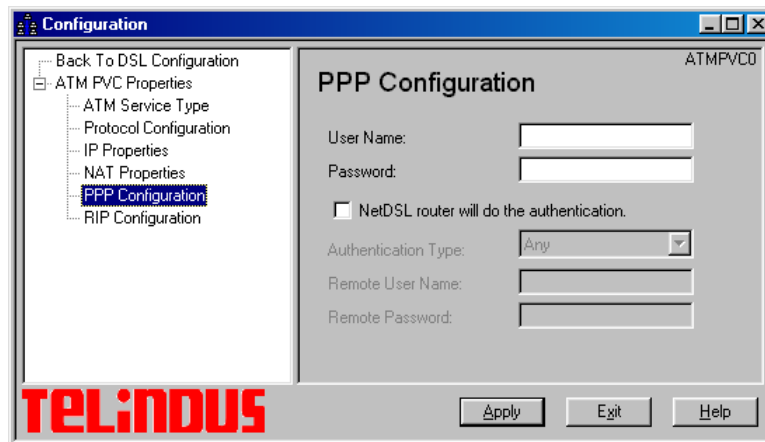


Figure 5.24 PPP Configuration

The *PPP Configuration* panel allows you to change the name of the selected connection profile and to set the following parameters:

User Name: The name you use to access the remote server or ISP.

Password: The password you use to access the remote server or ISP.

By checking the “Telindus 1120 ADSL Router will do the authentication” checkbox, you can enable Telindus 1120 ADSL Router to authenticate access to the remote server. Set the following parameters:

Authentication Type: The Telindus 1120 ADSL Router supports PAP, CHAP, and MS-CHAP security. You can select one of the above or Any for automatic selection of these authentication protocols.

Remote User Name: The user name of the remote server that is needed to access your Telindus 1120 ADSL Router

Remote Password: The password of the remote server that is necessary to access your Telindus 1120 ADSL Router.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

ATM PVC RIP Configuration

Click on *ATM PVC Properties* to open the menu, then click on *RIP Configuration*.

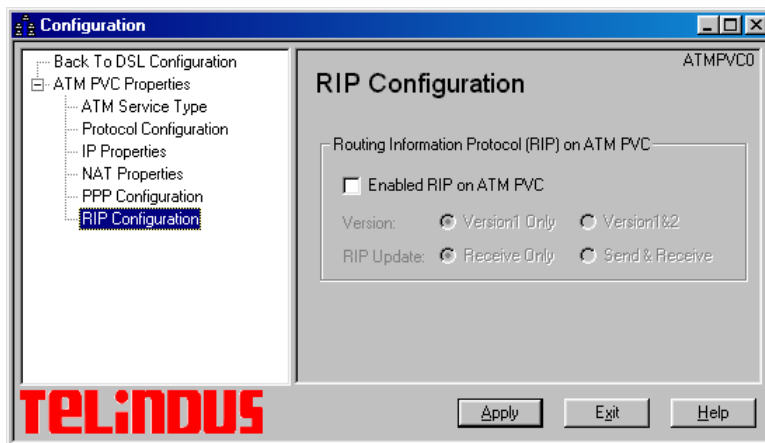


Figure 5.25 RIP Configuration

In the *RIP Configuration* panel, you can select the *Enable RIP on ATM PVC* checkbox to use the Routing Information Protocol (RIP) on ATM PVC.

Selecting *Enable RIP on ATM PVC* will turn RIP on. RIP is a method that routers use to communicate network status and determine optimal routes. After enabling RIP you can select to use *Version 1* or *Version 1 & 2*. In addition, you can set the RIP Update to *Receive Only* or *Send & Receive*.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus 9100 Maintenance Application.

5.6 Configuration File

From Configuration, double-click on the *Configuration File* icon, then double-click on the *Configuration File* to open the menu. The *Save Configuration File* feature allows you to save your custom configuration settings to your local hard disk drive as a configuration file (*.cfg). This is especially helpful for network management.

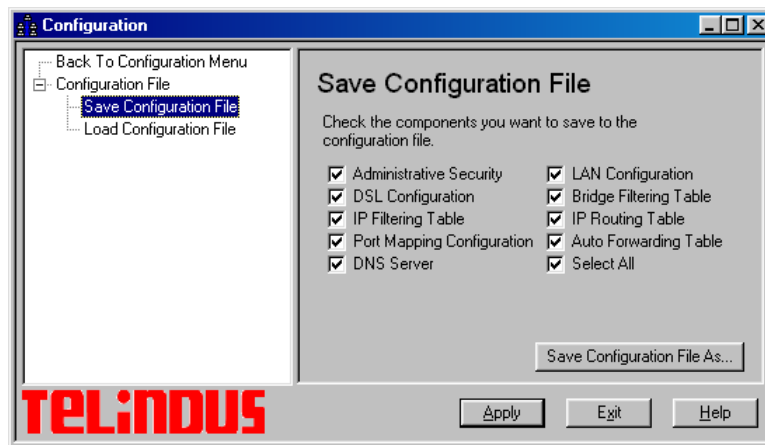


Figure 5.26 Save Configuration File

To keep the current configuration setting that you just entered in the Telindus 1120 ADSL Router:

- Step 1. Click *Save Configuration File As...*
- Step 2. Enter the File Name for your new configuration file.
- Step 3. Select the appropriate drive, directory, and file folder to indicate where you want to save the file on your hard drive. The default path is “c:/Program Files/Telindus 1120 ADSL Router/” and the default file name is “My Configuration.cfg.”
- Step 4. Click *Save*.

Once you have a saved Configuration Profile you can load it at any time. Just click *Load Configuration Profile* and click the *Load Configuration* button. Select the appropriate drive, directory, and file folder to locate the configuration profile file. Choose the configuration profile file (*.cfg) and then click *Open*. Click *Yes* to confirm that you want to load the configuration profile. Click *OK* at the confirmation that the configuration profile has been successfully loaded to the Telindus 1120 ADSL Router. You will return to the Telindus 9100 Maintenance Application.

Once you have finished setting these parameters, click *Apply* to review the parameters you have entered and then click *Finish* to send settings to the Telindus 1120 ADSL Router. Click *Exit* to return to the Telindus Telindus 9100 Maintenance Application.

6. Status Feature

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Status feature collects information from many different functions and operations and displays the information within a single, convenient panel. This makes it easy to monitor the current status, and troubleshoot the operation of your Telindus 1120 ADSL Router.

To access the Status Feature, launch the Telindus 9100 Maintenance Application and click on the *Status* icon.

6.1 Main Status Panel

The Main Status panel is the default panel when *Status* feature is opened. If the Main Status panel has been expanded to show the Status tabs, then clicking on the *Hide Details* button can open the Main Status panel. Depending on where your Telindus 1120 ADSL Router is located, you may have difficulty viewing the front window LEDs. The Main Status panel provides a real-time display of the front window LEDs.

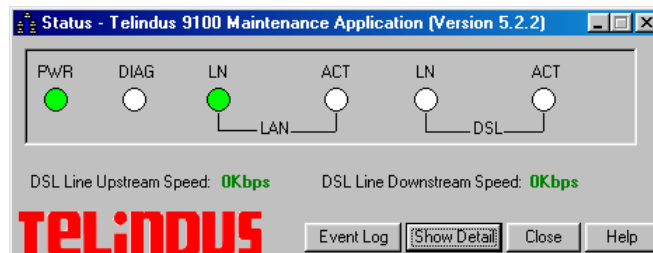


Figure 6.1 Main Status Panel

To supplement the front window LED monitoring, the Main Status panel also includes an Event Log.

Event Log

From the Telindus 9100 Maintenance Application click on the *Status* icon and click on the *Event Log* button. The Event log will appear as an independent window from the Status window.

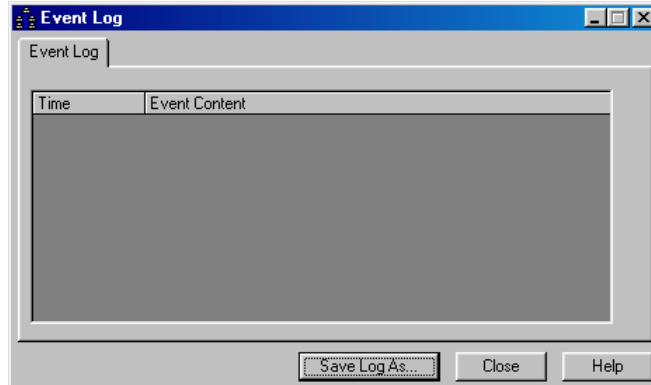


Figure 6.2 Event Log in Status

The Event Log helps you pinpoint the date and time a connectivity problem occurred. Every time you close Status the *Event Log* will reset. If you want to save the contents of the log you may do so by clicking on the *Save Event Log* button and saving the file to your computer's hard drive or to a 3.5" floppy disk.

To close the Event Log, click the *Close* button. To exit *Status* and return to the Telindus 9100 Maintenance Application, click the *Close* button.

6.2 LED Panel

From the Telindus 9100 Maintenance Application click on the *Status* icon, click on the *Show Details* button, and then select the *LED Panel* tab.

Depending on where your router is located, you may have difficulty viewing the front window LEDs of the Telindus 1120 ADSL Router. The *LED Panel* tab provides a real-time display of the front window LEDs, and it provides the DSL Line Upstream and Downstream speeds in Kbps.

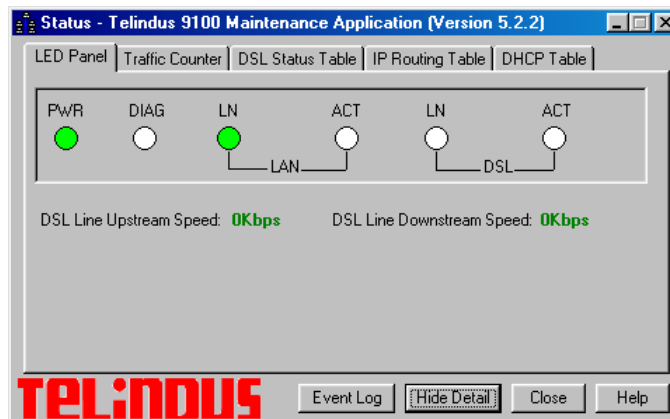


Figure 6.3 LED Panel Tab in Status

To return to the Main Status panel, click the *Hide Details* button. To exit Status and return to the Telindus 9100 Maintenance Application, click the *Close* button.

6.3 Traffic Counter

From the Telindus 9100 Maintenance Application click on the *Status* icon, click on the *Show Details* button, and then select the *Traffic Counter* tab.

The *Traffic Counter* tab displays real-time data traffic counters for the LAN interface and the DSL interface. For each interface, cumulative totals are displayed for *Sent Packets*, *Received Packets*, *Sent Bytes*, and *Received Bytes*.

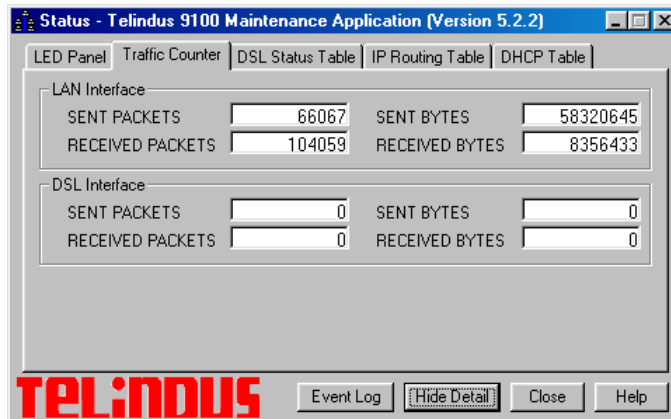


Figure 6.4 Traffic Counter Tab in Status

To return to the Main Status panel, click the *Hide Details* button. To exit Status and return to the Telindus 9100 Maintenance Application, click the *Close* button.

6.4 DSL Status Table

From the Telindus 9100 Maintenance Application click on the *Status* icon, click on the *Show Details* button, and then select the *DSL Status Table* tab.

The *DSL Status Table* tab displays all the user-defined ATM interfaces and protocol configuration. For each ATM interface listed, the DSL Status Table will show the *ATM PVC Name*, *Encapsulation Type*, *Sent Packets*, *Received Packets*, and *NAT IP address*.

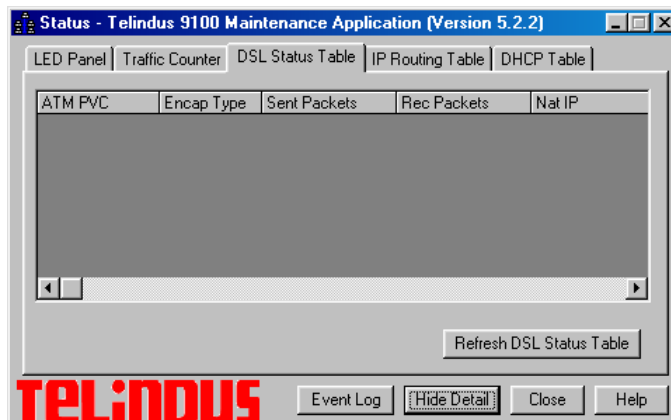


Figure 6.5 DSL Status Table Tab in Status

To update and display the changes in the DSL Status Table tab, click the *Refresh Status Table* button.

To return to the Main Status panel, click the *Hide Details* button. To exit Status and return to the Telindus 9100 Maintenance Application, click the *Close* button.

6.5 IP Routing Table

From the Telindus 9100 Maintenance Application click on the *Status* icon, click on the *Show Details* button, and then select the *IP Routing Table* tab.

The *IP Routing Table* tab displays all the static, user-defined IP routes and the dynamic loopback IP routes. For each route listed the IP Routing Table tab will display the *Destination IP Address*, *Subnet Mask*, *Gateway*, and *Interface* name.

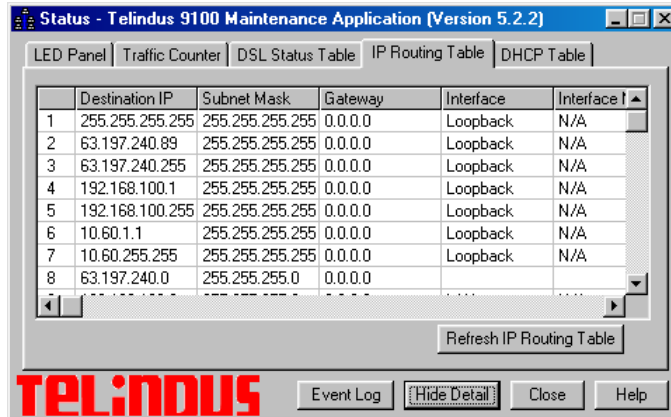


Figure 6.6 IP Routing Table Tab in Status

If you disconnect and reconnect the DSL connection, the list of loopback IP routes can change. To update and display the changes in the IP Routing Table tab, Click the *Refresh IP Routing Table* button.

To return to the Main Status panel, click the *Hide Details* button. To exit Status and return to the Telindus 9100 Maintenance Application, click the *Close* button.

6.6 DHCP Table

From the Telindus 9100 Maintenance Application click on the *Status* icon, click on the *Show Details* button, and then select the *DHCP Table* tab.

The *DHCP Table* tab lists all the DHCP assignments made by the Telindus 1120 ADSL Router. For each DHCP assignment listed, the *DHCP Table* tab displays the *Host Name*, *MAC Address*, *IP Address*, and current *Status*.

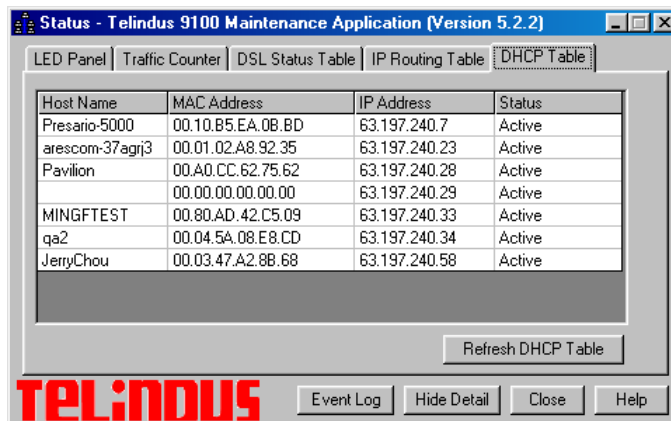


Figure 6.7 DHCP Table Tab in Status

If the DHCP Lease Time has not expired then the DHCP assignment status is labeled as *Active*, otherwise it is labeled as *Expired*.

As users log-on and log-off the network, the list of DHCP assignments can change. To update and display the changes in the *DHCP Table* tab, Click the *Refresh DHCP Table* button.

To return to the Main Status panel, click the *Hide Details* button. To exit Status and return to the Telindus 9100 Maintenance Application, click the *Close* button.

7. Tools Feature

This Chapter Includes:

| Section | Title | Page |
|---------|----------------------------------|------|
| 7.1 | Upgrade Firmware | 47 |
| 7.2 | Reset Router | 48 |

The Telindus 9100 Maintenance Application provides you with some tools for performing basic router maintenance tasks, such as firmware upgrades and resetting the router.

To access the Tools Feature, launch the Telindus 9100 Maintenance Application click on the *Tools* icon.

7.1 Upgrade Firmware

Click *Tools* in the Telindus 9100 Maintenance Application, and then select the *Upgrade Firmware* tab.

You can download firmware upgrades to the Telindus 1120 ADSL Router using the *Upgrade Firmware* feature. You can obtain upgrade firmware files from TELINDUS's web site. You can save the binary firmware file either on a floppy diskette or your hard drive. Once you have downloaded the firmware, please following the instructions below:

- Step 1. From the *Upgrade Firmware* panel, select the appropriate drive, directory, and file folder to locate the firmware file.
- Step 2. Choose the firmware file (*.bin) and then click *Upgrade*.

Note: Make sure you are downloading the **CORRECT** Telindus 1120 ADSL Router firmware file. Upgrading the Telindus 1120 ADSL Router with the incorrect file may cause damage to the Telindus 1120 ADSL Router.

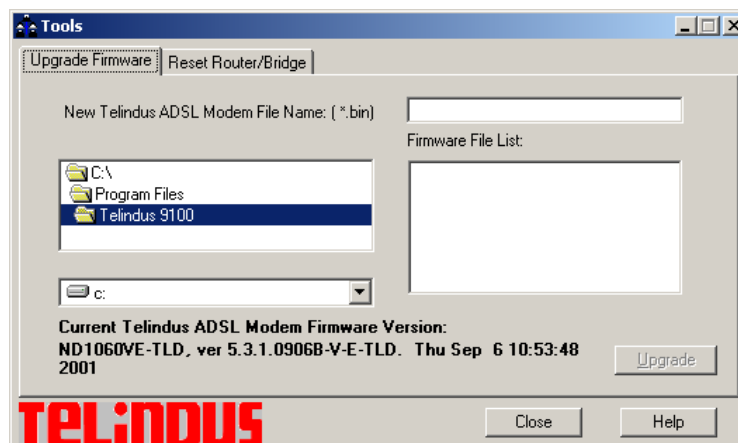


Figure 7.1 Upgrade Firmware Tab in Tools

7.2 Reset Router

Click *Tools* in the Telindus 9100 Maintenance Application Manager, and then select the *Reset Router* tab.

You can reset your router from the *Reset Router* tab. Select the *Delete Configurations and Reset to Manufacture Mode* checkbox if you want to remove all your custom settings while resetting your router. Otherwise, if you do not select the checkbox, the router will simply reboot.

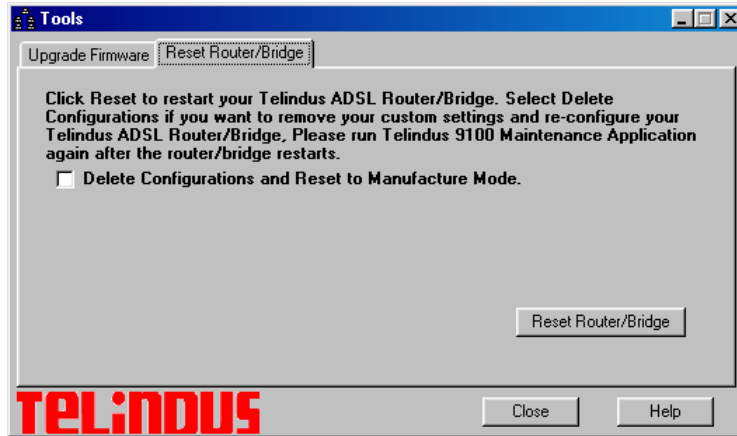


Figure 7.2 Reset Router

If you have deleted your custom configuration, you will need to re-configure your router after it reboots. Remember, internetworking connectivity is not possible with an unconfigured router. To reconfigure your parameters, return to *Configuration* in the Telindus 9100 Maintenance Application.

8. Troubleshooting

This Chapter Includes:

| Section | Title | Page |
|---------|--|------|
| 8.1 | Cannot Detect the Router | 49 |
| 8.2 | Router and PC are Not in the Same Subnet | 50 |
| 8.3 | Cannot Upgrade the Firmware | 50 |

If you can not find the answers to your problems here, consult the help menu in the Telindus 9100 Maintenance Application or refer to the FAQs located on -TELINDUS's website

(<http://www.TELINDUS.com>)

8.1 Cannot Detect the Router

- Verify that your Router is connected to your Ethernet LAN.
 - If you are connecting your Telindus 1120 ADSL Router to an Ethernet network hub, use a straight-through Ethernet cable, and make sure you connect to the uplink port of the hub.
 - If you are connecting your Telindus 1120 ADSL Router to an Ethernet network PC, then use a straight-through Ethernet cable.

Note: See *Appendix B "Ethernet Cable Pinout"* for further information about the differences between a straight-through 10BaseT cable and a crossover 10BaseT cable.

- Another way you can confirm that there is a physical connection to your LAN is by checking the LED located on the front panel of the Telindus 1120 ADSL Router. The LAN Link LED will be lit green to indicate a valid Ethernet connection. If the LAN Link LED is not green, then check the connection between the router and your LAN. Re-start Telindus 9100 Maintenance Application to see if it can detect the router.
- Your PC is configured as "Obtain an IP Address Automatically" in TCP/IP Properties in Windows[®] 95/98 or Windows[®] NT 4.0 and the Telindus 1120 ADSL Router DHCP is disabled. Then your PC cannot obtain an IP from the router and you cannot detect the Telindus 1120 ADSL Router. You must configure the PC to Static IP first. If your ISP has given you IP Addresses for your LAN for a Multiple User LAN Access account, then configure your PC with the information provided. If you have a Single User account from your ISP, you can still configure your PC to Static IP. In TCP/IP Properties for Windows[®] 95/98 or Windows[®] NT 4.0 set your PC's IP Address as 192.168.1.2, the Subnet Mask as 255.255.255.0, and the Gateway as 192.168.1.1. When prompted, restart your computer otherwise do so manually. Re-start Telindus 9100 Maintenance Application to see if it can detect the router.
 - If you cannot detect your router, then you can check and see whether or not your router's Mac address is correct. Use the DOS Command Prompt, type `arp -a` and press the *Enter* key to check your router's Mac address. If the Mac address is not the same as your router, type `arp -d` and enter the IP address displayed, such as 192.168.10.1, and press the *Enter* key. Return to your desktop and re-start *Telindus 9100 Maintenance Application* to see if it can detect the router.

8.2 Router and PC are Not in the Same Subnet

1. Your router and PC must be configured to be in the same subnet. Otherwise, you will be unable to access the Telindus 9100 Maintenance Application to configure your router. Verify that you have entered the correct information provided by your Internet Service Provider (ISP) or network manager for your router's and PC's IP Address and Subnet Mask. For more specific information about your account, consult your ISP. If you are not sure whether or not you assigned the appropriate IP Addresses to your PC and router refer to "Assigning IP Addresses (for Static IP Only)" section in Appendix A.

8.3 Cannot Upgrade the Firmware

1. You may have inadvertently tried to download the wrong file to your router. Telindus 1120 ADSL Router can only use upgrades created by TELINDUS, NV. The upgrades are available by downloading the file from TELINDUS's web site. The **correct file format is *.bin**. Serial number of the Telindus 1120 ADSL Router unit is needed when obtaining the firmware from TELINDUS's website. The serial number is located on the bottom label of your Telindus 1120 ADSL Router device.
2. There may have been an illegal operation on your router. Re-boot your router by disconnecting the power adapter and reconnecting it after a 30 seconds. You may have to do this more than once.

Appendix A: About Configuration Parameters

Definitions of common configuration terms are available below. Please note that terminology used by various remote networks may vary. If you are using Static IP mode and you have questions regarding assigning IP Addresses refer to the “Assigning IP Addresses” section in the following pages.

Explaining IP Addresses

LAN Interface vs. DSL Interface

Before you can understand how many of the different IP addresses operate, you first need to understand the basic concept of the LAN interface and the DSL interface. The Telindus 1120 ADSL Router is designed to connect an Ethernet network to a remote location through an ADSL connection. (See *Figure 1*). The Ethernet side of the router is called the LAN interface. The LAN interface can connect the router (through Ethernet) to many network devices, such as PCs, printers, and servers. The DSL side, known as the DSL interface, can only make a single, direct connection with another remote DSL device. However, since the Telindus 1120 ADSL Router has two DSL B-channels, it can establish two separate DSL connections, but each connection is only to a single remote DSL device.

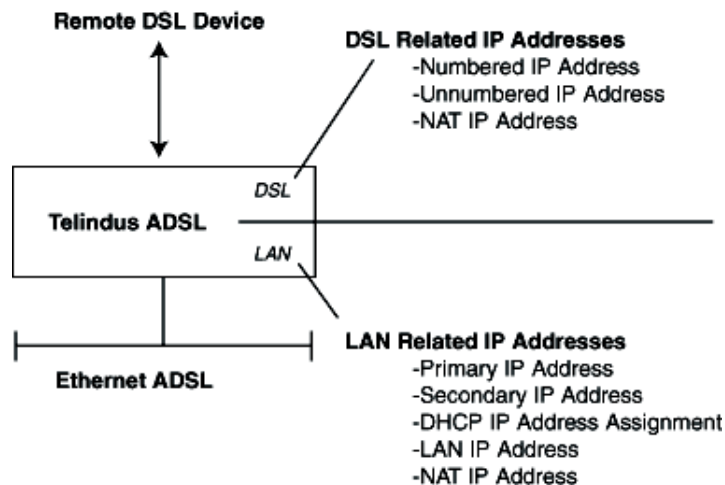


Figure A-1. LAN and DSL side of the Telindus 1120 ADSL Router

Some of the IP addresses that you see in the Advanced configuration are associated with the LAN interface, others are associated with the DSL interface, and the NAT IP address can be associated with either interface. For instance, all of the IP addresses located within the Connection Profiles are part of the DSL interface, and the IP addresses that deal with configuring your local network are part of the LAN interface.

LAN IP Address

In the most basic terms, the LAN IP address is the logical location of the Telindus 1120 ADSL Router on the local Ethernet network. A LAN IP address can be a fixed (static) Public IP address, or a user-defined Private IP address.

In Static IP mode, the router has a fixed (static) Public IP address assigned from an ISP or remote server that can be used as the router’s Lan IP address. However, running in Static IP mode requires you to have more than one available fixed Public IP address so that you can assign one fixed Public IP address to the router and the remaining fixed Public IP addresses to other network devices, such as computer workstations, ftp servers, and web servers.

When using IP Master mode, your LAN IP address must be a user-defined Private IP address. In this case, the Public IP address assigned by the ISP or remote server will be used by the router as the Network Address Translation (NAT) IP address.

Primary (Public) IP Address

Primary IP addresses are LAN IP addresses that can be considered “legal” for the Internet. In most cases they are allocated to you by an ISP. They are called “primary” because they can be recognized and accessed by any device on the other side of the DSL connection, such as the Internet.

However, if you are allocated a block of fixed IP addresses, then one can be assigned to the router and the others can be used by other network devices, such as computer workstations, ftp servers, and web servers. Network devices that use fixed IP addresses always use the same IP address, and are never dynamically assigned a different one. You can only run Static IP mode if you have an available block of fixed Public IP addresses to use.

Additionally, if your block of fixed IP addresses is large enough, you can assign one to the router, others to network devices, and even use one to define a another range of Secondary IP addresses. This is known as “mixed mode” since you would be simultaneously running Primary and Secondary IP addresses.

Secondary (Private) IP Address

Secondary IP addresses are also LAN IP addresses, but are considered “virtual” addresses that the router allocates to itself and other network devices. They may be copies of actual, legal Primary IP addresses being used somewhere else on the Internet, and would then be considered illegal. However, since all IP addresses have to be unique, there can only be one copy of each address that can be recognized and accessed on a network or the Internet.

A router uses Private IP addresses by allocating them within a local network that cannot be directly accessed by the Internet or remote server. To access outside the “private” network, the Private IP Addresses must pass their data back and forth with an associated Public IP address. The Public IP address is then used to access the Internet or remote server.

NAT IP Address

Network Address Translation (NAT) IP Address is a Public IP Address. It can be a single, fixed Public IP address, or an dynamically assigned Public IP address. NAT is used to translate Private IP addresses to a Public IP address. Many Private IP addresses can be translated through the single Public NAT IP address. The router keeps track of all the translation traffic so that information arriving at the single NAT IP Address can seamlessly be forwarded to the appropriate Private IP address.

DHCP IP Address Assignment

Dynamic Host Control Protocol (DHCP) IP Address Assignment is a method the router uses to dynamically assign Private IP addresses within its local network. The router has a subnet (range) of available Private IP addresses with which to assign to other network devices on its local network. It “leases” these Private IP addresses for a user-defined amount of time. After the lease time expires, the Private IP address is made available for assigning to other network devices.

The subnet of Private IP addresses that the router assigns are based on a single DHCP IP Address. All traffic going to and from the subnet of Private IP addresses goes through the DHCP IP Address. The DHCP IP Address can be a single, fixed Public IP address, an ISP assigned Public IP address, or a Private IP address.

For situations where a Private IP address is assigned as the DHCP IP Address, a Public IP address will have to be assigned to the NAT IP Address, and NAT has to be enabled so that the DHCP IP Address can be translated into a Public IP address.

Numbered IP Address

When negotiating a connection, you can either let the remote server or ISP assign the Telindus 1120 ADSL Router a WAN IP address, or you can specify your own WAN IP address.

Unnumbered IP Address

Some network devices do not use WAN IP addresses when negotiating a connection. This is known as unnumbered IP. When running unnumbered IP, no WAN IP addresses are used, but the LAN IP addresses are used instead.

Terminology for Configuration Parameters

Domain Name of Your Network

A domain name gives your network a specific name to represent its Internet address. For example, the Internet address www.telindus.com identifies the type of service operating on the server (World Wide Web), the name of the organization (TELINDUS NV), and the type of organization (commercial).

Virtual Path Identifier

A virtual path is a semi-permanent connection between endpoints in an ATM network and may support one or more virtual channels. In Private Virtual Circuit (PVC) mode, the Virtual Path (VP), which is a header subfield, is assigned manually when Telindus 1120 ADSL Router is used. Different VP values allow the endpoints to discriminate between different virtual connections and ATM nodes.

Virtual Channel Identifier

Each connection in an ATM network is characterized by a Virtual Channel (VC). This is a header subfield that is assigned manually when Telindus 1120 ADSL Router is used. A VC has only local significance on the link between ATM nodes. When the connection is released, the VC value on the involved links will be released and can be re-used by other connections.

Bridge Packet Filtering

Establishing Bridge packet filters allows you to monitor and selectively filter packets that enter or leave the Telindus 1120 ADSL Router. You can use filtering to protect your network from unauthorized access, and restrict certain web traffic from leaving your LAN. This is done by examining each packet that enters the Telindus 1120 ADSL Router to see if the following characteristics match the criteria for the filter (true), or whether they do not match (false):

MAC: Identifies each device on the network and the Internet

For either true/false condition, the following packet dispositions can be set:

Pass: automatically pass through the modem

Restrict: pass only if there is an available connection

Discard: packet is blocked and discarded

Pass to next filter: packet goes to the next filter in sequence

The IP Packet Filtering allows for up to 32 sequential filters, and each filter can be set to examine source packets, destination packets, or both.

Assigning IP Addresses

When you order a LAN Access or Multiple User Account from your Internet Service Provider or network manager, they will assign you a range of IP Addresses. These addresses are used to configure your 1) network address, 2) broadcast address, 3) router, and 4) PCs on your LAN. We recommend that you use the following assignment rules. Typically, the first IP Address in the range is the network address. The last IP Address in the range is the reserved broadcast address. The second IP Address in the range is the router's IP Address. The remaining IP Addresses in the range are assigned to PCs on your LAN.

For example, if you are given the IP Address range from **192.168.1.0** to **192.168.1.7** with a subnet of 255.255.255.248 then the following typically would apply.

- **192.168.1.0** is the network address
- **192.168.1.7** is the broadcast address
- **192.168.1.1** is your router's IP Address
- **192.168.1.2** to **192.168.1.6** are assigned to LAN PCs

Appendix B: Ethernet Cable Pinout

