

Prestige 128L

User's Manual

Version 1.0

ZyXEL

ACCESSING INTERNET & INTRANET

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This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operations.

This equipment has been tested and found to comply with the limits for a CLASS B digital device pursuant to Part 15 of the FCC Rules. These

limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

If this equipment does cause harmful interference to radio/television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Shielded RS-232 cables are required to be used to ensure compliance with FCC Part 15, and it is the responsibility of the user to provide and use shielded RS-232 cables.

Information for Canadian Users

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation, and safety requirements. The Industry Canada does not guarantee that the equipment will operate to a user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications

company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly. The customer should be aware that the compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

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Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

This digital apparatus does not exceed the class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of Industry Canada. The declarations of CE marking:

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If you have questions about your ZyXEL product or desire assistance, contact ZyXEL Communications Corporation in one of the following ways:

- **Phone:** In North America call between 8:00 AM and 5:00 PM PST at (714) 693-0808

Outside North America, you can dial +886-3-5783942 EXT 252 between 8:00AM and 5:00PM Taiwan time (GMT +8:00).

- **Fax:** ZyXEL in North America: (714) 693-8811 or Taiwan: +886-3-5782439
- **E-mail:**
 - **Sales inquiries:** sales@zyxel.com in North America. sales@zyxel.com.tw outside North America.
 - **Technical support:** support@zyxel.com in North America. support@zyxel.com.tw outside North America.
- **Product information:** Visit our site on the World Wide Web: <http://www.zyxel.com>.
- **FTP:** Information , such as ZyXEL software and ROM updates for North America can be found at this FTP address: <ftp.zyxel.com>
For European and Asian versions and related files, use the address: <ftp.zyxel.co.at>
- **Postal Service:** You can send written communications at the following address:
ZyXEL Communications Corporation
6, Innovation Road II, Science-Based Industrial Park
Hsinchu, Taiwan 300, R.O.C.
or
ZyXEL Communications Inc.
4920 E. La Palma Avenue
Anaheim, CA92807, U.S.A.

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1 Introduction

Congratulations on your purchase of the ZyXEL Prestige 128L IDSL Router. The Prestige integrates a Router and Bridge, offering inexpensive yet complete telecommunications and internetworking solutions for your home or branch office. The Prestige is ideal for everything from Internet access, to receiving calls from Remote Dial-in Users, to making LAN-to-LAN connections to Remote Nodes.

Distinguishing features of the Prestige 128L include support for a full range of networking protocols such as TCP/IP (Transmission Control Protocol/Internet Protocol), Novell IPX (Internet Packet Exchange), and Transparent Bridging. The complete solution also includes extensive Network Management, and solid security features.

Features

The Prestige is packed with a number of features that give it the flexibility to provide a complete networking solution for Internet access and business users.

Ease of Installation

The Prestige is a self-contained unit that is quick and easy to install. Physically, it resembles an external modem except for the fact that it is a router and uses an Ethernet cable to connect to the host network.

ISDN Digital Subscriber Line (IDSL)

IDSL uses the 2B1Q line coding standard for ISDN BRI circuits. Used for data-only applications, IDSL can use unshielded twisted pair wire for transmitting data at 64/128Kbps for up to 18,000 feet.

The differences between IDSL and ISDN are:

1. ISDN passes through the phone company's central office voice network; IDSL bypasses it by plugging into a special router at the phone company end. Or a pair of Prestige 128L's can be connected by a single twisted pair cable.
2. ISDN requires call setup; IDSL is a dedicated service.

Multiple Networking Protocol Support

The Prestige 128L is a multi-protocol router. It supports TCP/IP, Novell IPX and Transparent Bridging.

Full Network Management

The Prestige 128L incorporates SNMP (Simple Network Management Protocol) support and menu-driven network management via an RS-232 or Telnet connection.

PPP Security

The Prestige 128L supports PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol).

Dynamic Host Configuration Protocol (DHCP)

DHCP allows you to dynamically and automatically assign IP address settings to hosts on your network.

Data Compression

The Prestige incorporates Stac data compression and Compression Control Protocol.

Applications For Your Prestige

Some applications for your Prestige include:

Internet Access

The Prestige supports TCP/IP protocol. It is also compatible with other IDSL access servers manufactured by vendors such as Ascend.

Internet Single User Account (SUA)

For a small office environment, the Prestige SUA support. This allows multiple users to access the LAN simultaneously using a single IP address.

SUA address mapping can also be used for LAN to LAN connections.

Multiprotocol LAN-to-LAN Connection

The Prestige 128L can connect to another Prestige 128L-like router to link two different LANs. The Prestige 128L supports TCP/IP and Novell IPX routing, and has the capability to bridge any Ethernet protocol.

Other Resources

For more information about your Prestige check the following sources:

- Quick Start Guide.
- Prestige Support disk.

- Release notes for firmware upgrades and other information can be accessed through a ZyXEL FTP server site.

For ZyXEL contact information see page v.

Packing List

Before you proceed further, check all items you received with your Prestige 128L against this list to make sure nothing is missing. The complete package should include:

- One Prestige 128L.
- One power adapter.
- One 25 pin female - 9 pin male adapter.
- One RS-232 cable.
- One LAN crossover cable (red tag).
- One LAN straight cable (white tag).
- One Prestige 128L Support Disk.
- One Prestige 128L Quick Start Guide.
- This Prestige 128L User's Manual.

Additional Installation Requirements

In addition to the contents of your package, there are other hardware and software requirements you need before you can install and use your Prestige. These requirements include:

- IDSL service provided by local phone company (optional).
- An Ethernet connection to your computer.
- A computer equipped with communications software configured to the following parameters:
 - VT100 terminal emulation.
 - 9600 Baud rate.
 - No parity, 8 Data bits, 1 Stop bit.

After the Prestige has been successfully connected to your network, you can make future changes to the configuration by using a Telnet application.

2 Before You Begin

To ensure successful installation of your Prestige, we strongly recommend that you carefully follow the steps outlined in Chapters 2 and 3. These chapters are designed as a guide for you to collect all necessary information about your LAN. Once this information has been collected, it will be used to configure your Prestige.

After you have successfully configured your Prestige, see the appropriate chapters to setup your application.

Road Map and Flow

The chart below is provided as a step by step guide to successful installation your Prestige.

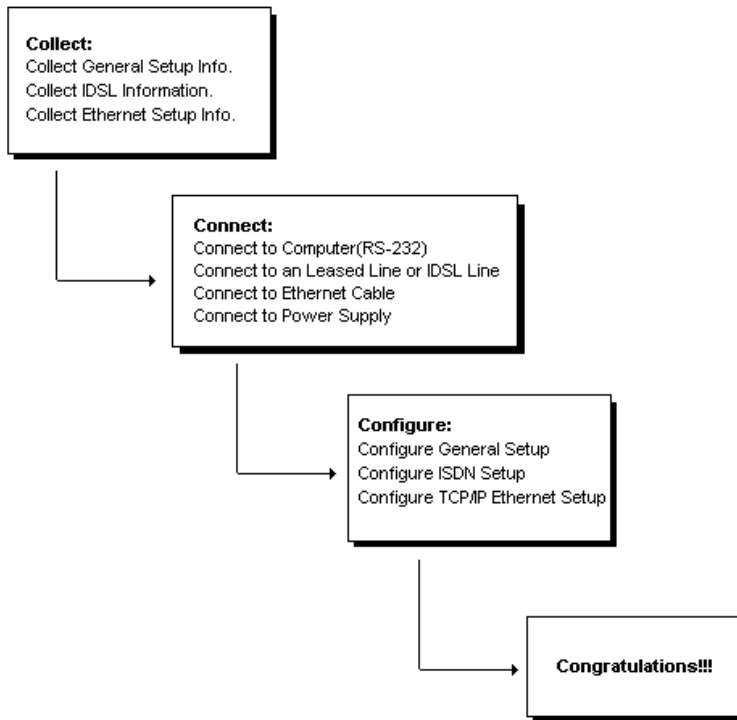


Figure 2-1 Installation Guide

Completing the Worksheet

Before you continue, locate the worksheet at the end of this chapter. This information worksheet has been provided to help you get through setup and installation of your Prestige as easily as possible.

Ordering Your IDSL Line

There is no need to order an IDSL line if you are using a pair of Prestige 128Ls directly connected by a twisted pair cable. If you choose to use IDSL, you will need to contact your local telephone company and order IDSL leased service to connect two IDSL routers.

Collecting General Setup Information

Your Prestige requires the following system information. You can obtain all the pertinent information from your network administrator. Record this information into the worksheet as it becomes available. This worksheet will later be referred to as you configure your Prestige.

- **System Name** - This is the name given to your Prestige for identification purposes. This name should be no more than 8 alphanumeric characters. Spaces are not allowed, but “-” and “_” are accepted. This name can be obtained remotely via the SNMP management protocol and will be displayed as the prompt when the user enters the Command Mode.
- **Route IP Field** - For Internet access, you will need to enable the Route IP Field. See Chapter 4 for more details on configuring your Prestige for Internet access. To support Novell IPX, or Bridging, enable the appropriate protocol and reference the related chapters for detailed information.

You have now collected all of the general setup information you need. Make sure that you have entered all the values onto the worksheet before proceeding to the next section.

Collecting IDSL Information

- **Service Type** - There are two options: Client or Server. One IDSL router should be set as the client, and the other as server.
- **Transfer Type** - There are two options: Leased 128 or Leased 64. The data will be transmitted in 128Kbps if Leased128 is selected; otherwise, it will be transmitted in 64Kbps. The transfer type must be set the same for both the client and server router.

Collecting Ethernet Setup Information

This section assumes that you are setting up your Prestige for a TCP/IP connection. If you want to configure the Prestige for other protocols (e.g., IPX), refer to the appropriate chapters.

- **Ethernet Interface** - The first step is to determine the type of Ethernet interface you will be using. There are two options: AUI or UTP. Record the interface type onto the worksheet. If you have a 10Base2 (BNC), you should choose AUI.
- **IP Address** - An IP Address is required for TCP/IP protocol. The IP Address is the unique 32-bit number assigned to your Prestige. This address is written in dotted decimal notation (four 8-bit numbers, between 0 and 255, separated by periods), e.g., 192.68.203.5.

Record the IP Address into the worksheet as assigned by your network administrator. Note that every machine on an internet must have a unique IP address - do not assign an arbitrary address to any machine.

- **IP Sub-net Mask** - This field is required for TCP/IP protocol. An IP address consists of two parts, the network ID and the host ID. The IP Subnet Mask is used to specify the network ID portion of the address, expressed in dotted decimal notation. The Prestige will automatically calculate this mask based on the IP address that you assign. Unless you have special need for subnetting, use the default mask.

The table below lists some examples of IP subnet masks and the number of hosts that are allowed. Consult your network administrator if you are unsure of this value.

IP Subnet Mask	Number of Host	Number of Bits
----------------	----------------	----------------

IP Subnet Mask	Number of Host	Number of Bits
255.255.255.0	254	24
255.255.255.128	126	25
255.255.255.192	62	26
255.255.255.224	30	27
255.255.255.255	1	32

Prestige Setup and Installation Worksheet

General Setup Information

- **System Name (for identification purposes):**

- **Protocol Routing:**

TCP/IP

IPX

Bridging

IDSL Setup Information

- **Service Type (check one):**

Client

Server

- **Transfer Type (check one):**

Leased 128

Leased 64

Ethernet Setup Information

- **Ethernet Interface (check one):**

AUI

___UTP

- **IP Address:**

_____ . _____ . _____ . _____

- **IP Subnet Mask:**

_____ . _____ . _____ . _____

Notes:

3 Installation

This chapter outlines how to connect your Prestige to the LAN and ISDSL line. Refer to the diagram below to identify all of the ports on your device when you attempt to make the various connections.

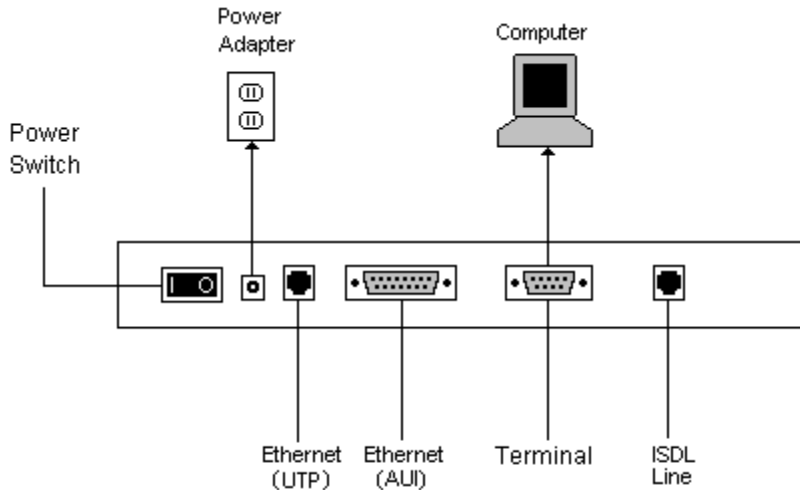


Figure 3-1 Rear Panel Diagram

A Warning On Connection Cables

The ISDSL line and Ethernet cable, are very similar to each other. It is important that you use the correct cable for each connection; otherwise, your Prestige could be damaged.

Connecting Your Computer and Your Prestige

For the initial setup of your Prestige, use the provided RS-232 cable and communications software to configure your Prestige.

After your Prestige has been successfully installed, you can modify the configuration through a remote Telnet connection. See Chapter 12 for detailed instructions on using Telnet to configure your Prestige.

Connecting the RS-232 Cable to your Prestige

One 9-25 pin adapter is included with your Prestige. To connect a RS-232 cable, connect the 9-pin end of the cable to the DTE port on the back panel of the Prestige. Connect the other end to the RS-232 cable connected to the serial port (COM1, COM2, or any other COM port) of your computer.

Connecting an IDSL Line to your Prestige

Plug one end of the IDSL line included in your package into the socket on the rear panel of your Prestige labeled Line, and the other end into the IDSL wall jack or another Prestige.

 **NOTE:** THE IDSL JACK IS FOR IDSL LINE CONNECTION ONLY. CONNECTION OF A PHONE LINE MAY RESULT IN DAMAGE TO YOUR PRESTIGE.

ATTENTION: LA FICHE IDSL EST DESTINÉE UNIQUEMENT POUR LA CONNEXION SUR UNE LIGNE RNIS. LA CONNEXION SUR UNE LIGNE TÉLÉPHONIQUE PEUT ENDOMMAGER VOTRE ADAPTATEUR DE TERMINAL.

Connecting an Ethernet Cable to your Prestige

Your Prestige supports two types of Ethernet connections. The connection procedure differs for each one; follow the one that is appropriate for your installation.

UTP

The UTP port is used to connect to a 10Base-T network. 10Base-T networks use Unshielded Twisted Pair (UTP) cable and RJ-45 connectors that look like a bigger telephone plug with 8 pins. Two types of gray Ethernet cables come with the package:

- Straight through cable (white tag): Connect your Prestige 128L to a 10Base-T hub.
- Crossover cable (red tag): Connect your Prestige to your computer directly without a hub.

 **NOTE:** IF THIS CABLE IS USED TO CONNECT IDSL, IT MAY DAMAGE YOUR PRESTIGE.

AUI

The AUI port (the connector with 15 pins) is used to connect your Prestige to a 10Base5 (thicknet) network.

If you have a 10Base2 network using BNC connectors and thin coaxial cables, you will need a transceiver between the AUI port and the 10Base2 cabling.

Connecting the Power Adapter to your Prestige

Plug the 16VAC 1000mA power adapter into the outlet on the rear panel of the Prestige labeled POWER.

At this point, you should have connected the RS-232 cable, the ISDN phone line, the Ethernet cable, and the power supply. You can now power on your Prestige.

Prestige Front Panel

Names and descriptions of the Prestige front panel LEDs are listed below:

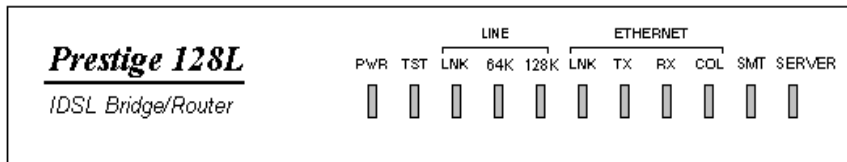


Figure 3-2 Front Panel

PWR - Comes on as soon as you connect your Prestige to the power supply and switch it to the I (on) position.

TST - Should be blinking if your Prestige is functioning properly.

Line: LNK - Indicates that your Prestige has an ISDN line connected to the WAN interface and it has been successfully initialized.

64K and 128K - The 64K LED will light to indicate a line speed of 64K. The 64K and 128K LED will light to indicate a line speed of 128K.

Ethernet: LNK - Indicates that the Prestige has been successfully connected to the LAN via the Ethernet interface.

TX and RX - Transmit and Receive LEDs will blink to indicate when there is traffic on the LAN.

COL - Indicates that there is transmission collision over the LAN.

SMT - Indicates your Prestige is connected to a terminal emulator via the RS-232 port.

SERVER - Indicates your Prestige is configured as a server.

Powering On Your Prestige

When you power on your Prestige, it will perform several internal tests and will also do an IDSL line initialization. After this initialization, your Prestige will ask you to press **ENTER** to continue as shown below:

```
Copyright (c) 1994 - 1997 ZyXEL Communications Corp.  
RAS Version: U1.42(B.00) ! 11/7/97  
ethernet address: 00:a0:c5:20:26:35  
Resetting ISDN firmware....  
Link NOT up yet  
Switch Type is DSS1 - ISDN Firmware Version: U 069  
.....  
ISDN link not up.  
Press ENTER to continue...
```

Figure 3-3 Power on Messages

If you press **ENTER**, your Prestige will display a login screen and ask you to enter the password as shown below:

```
Enter Password :
```

Figure 3-4 Login Screen

Enter the default password, **1234** to get into the Main Menu of System Management Terminal (SMT). Note that once you are in the SMT and if there is no activity for longer than 5 minutes, your Prestige will automatically log you out and will display a blank screen. If you see a blank screen, press **ENTER** to bring up the password screen.

Navigating Through the System Management Terminal Interface

Use the SMT to configure your Prestige. Several operations that you should be familiar with before you attempt to modify the configuration are listed below:

- **Moving Forward to Another Menu.** To move forward to a sub-menu below the current one, type in the number of the sub-menu and press **ENTER**.
- **Moving Backward to a Previous Menu.** Press the **Escape** key to move back to the previous menu. The only exception is the Main Menu, where typing **99** is the only method to exit the SMT.
- **Moving the Cursor.** Within a menu, press **ENTER** (carriage return) to move to the next field. You can also use the **Up** and **Down** keys to move to the previous and the next field, respectively.
- **Entering Information.** There are two types of fields that you will need to fill in. The first requires you to type in the appropriate information. The second gives you choices to choose from. In the second case, press the **space bar** to cycle through the available choices.
- **Required Fields.** Some of the fields in the SMT are essential in order to configure your Prestige. These fields will initially show a ? indicating that the information must be filled in before that menu can be saved.
- **N/A Fields.** Some of the fields in the SMT will show a N/A. This symbol refers to an option that is not available.

- **Saving Your Configuration.** You can save your configuration by pressing **ENTER** at the message: Press **ENTER** to confirm or **ESC** to cancel: Saving the data on the screen will take you in most cases to the previous menu.

The SMT main menu is shown below:

```

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Prestige 128L Main Menu

Getting Started                               Advanced Management
 1. General Setup                             21. Filter Set Configuration
 2. WAN Port Setup                            22. SNMP Configuration
 3. Ethernet Setup                            23. System Security
 4. Internet Access Setup                     24. System Maintenance

Advanced Applications
11. Remote Node Setup
12. Static Routing Setup

99. Exit

Enter Menu Selection Number:

```

Figure 3-5 SMT Main Menu

System Management Terminal Interface Summary

This section summarizes all major SMT Menus:

#	Menu Title	Description
1	General Setup	Setup general information and enable routing or bridging of specific protocols.
2	WAN Port Setup	Setup IDSL configuration.
3	Ethernet Setup	Setup Ethernet configuration.
4	Internet Access Setup	A quick and easy way to setup Internet connection.
11	Remote Node Setup	Setup Remote Node for LAN-to-LAN connection including Internet connection. Your Prestige has four

#	Menu Title	Description
		Remote Nodes.
12	Static Routing Setup	Setup static route for different protocols. There are four static routes for each protocol.
21	Filter Set Configuration	Setup filters to be used in Menu 3 and Menu 11 to provide security, call control, etc.
22	SNMP Configuration	Setup SNMP related parameters.
23	System Security	Setup security related parameters.
24	System Maintenance	Provide system status, diagnostics, firmware upload, etc.
99	Exit	To exit from SMT and return to the blank screen.

General Setup

This menu contains administrative and system-related information. Enter **1** in the main menu to go to Menu 1 - General Setup.

```

Menu 1 - General Setup

System Name= 306Y
Location= San Jose
Contact Person's Name= CC

Route IP= Yes
Route IPX= Yes
Bridge= No

Press ENTER to Confirm or ESC to Cancel:

```

Figure 3-6 Menu 1 - General Setup

1. **System Name** - Choose a descriptive name for identification purposes, e.g., p128l. This name should be no more than 8 alphanumeric characters. Spaces are not allowed, but “-” and “_” are accepted. This name can be retrieved remotely via SNMP, used for CHAP authentication, and will be displayed as the prompt in the Command Mode. See Chapter 11 for more information on CHAP; see Chapter 13 for more information on Command Mode.
2. **Location** - Enter the geographic location (up to 31 characters) of your Prestige, e.g., San Jose.
3. **Contact Person’s Name** - Enter the name (up to 8 characters) of the person in charge of your Prestige, e.g., Brent Harper. The Location and the Contact Person fields are optional.
4. **Protocols** - Turn on or off the individual protocols for your particular application. Unsupported protocols will have a N/A in their fields.

WAN Port Setup

Menu 2 is for entering information about your IDSL line.

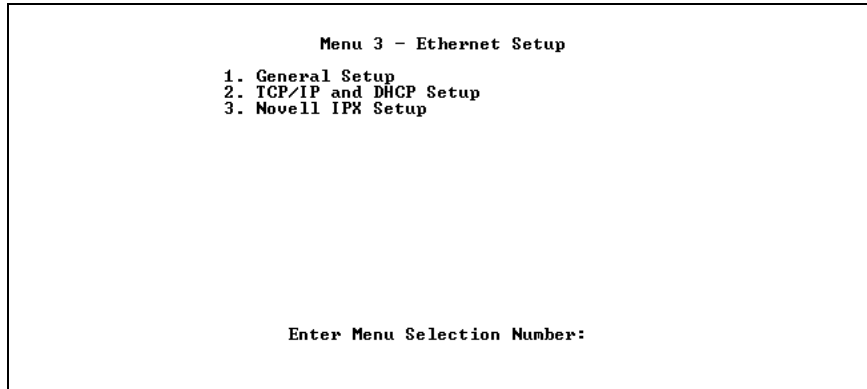
```
Menu 2 - WAN Port Setup
Service Type= Client
Transfer Rate= 128K

Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

1. **Service Type** - There are two options: Client or Server. Server provides clock to synchronize signals transmitted on the line.
2. **Transfer Type** - There are two options: Leased 128K or Leased 64K, which decide the IDSL line's baud rate.

Ethernet Setup

Menu 3 is used to enter Ethernet related information. Depending on the protocols (TCP/IP or IPX) on your LAN, you will need to configure each protocol separately.



General Ethernet Setup

This menu determines the type of Ethernet interface you are using as well as the filter sets you wish to implement to monitor your Ethernet traffic. From Menu 3 - Ethernet Setup, enter **1** to go to menu 3.1 - General Ethernet Setup.

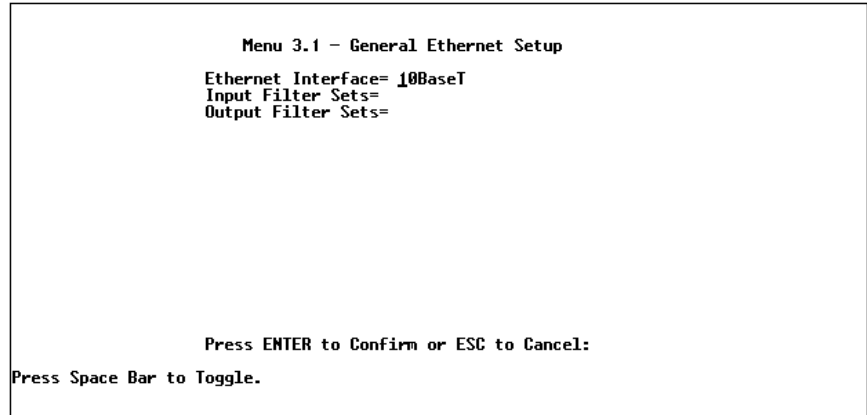


Figure 3-7 Menu 3.1 - General Ethernet Setup

1. **Ethernet Interface** - Your Prestige supports two types of Ethernet connections, AUI (15-pin) or the connection for the 10Base-T

network (looks like a bigger telephone plug). Determine which type you are using and select the appropriate option.

2. **Input and Output Filter Sets** - Filter sets are used to block certain packets to reduce traffic and to prevent a security breach. Filtering is a very involved subject, so leave these fields blank for the time being. After you have studied filtering in Chapter 9, come back and define the filter sets.

TCP/IP Ethernet Setup and DHCP

If you are setting up your network for the first time, read Chapter 4, Configuring for Internet Access, before proceeding. The chapter contains important information on how to assign IP addresses for your network.

From Menu 3 - Ethernet Setup, enter **2** to go to Menu 3.2 - TCP/IP Ethernet Setup.

```
Menu 3.2 - TCP/IP and DHCP Ethernet Setup

DHCP Setup:
DHCP= None
Client IP Pool Starting Address= N/A
Size of Client IP Pool= N/A
Primary DNS Server= N/A
Secondary DNS Server= N/A

TCP/IP Setup:
IP Address= 192.168.10.1
IP Subnet Mask= 255.255.255.0
RIP Direction= Both
Version= RIP-2B

Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

Figure 3-8 Menu 3.2 - TCP/IP Ethernet Setup

1. **DHCP** - This field determines what mode of DHCP (Dynamic Host Configuration Protocol) support your Prestige should use. If set to None, DHCP will not be used. If set to Server, your Prestige

will act as a DHCP server, capable of automatically assigning IP addresses to Windows 95, Windows NT, and other systems that support the DHCP client. When DHCP is used, the following four items need to be set.

Do not set this field to Server if there is already a DHCP server on your network.

2. **Client IP Pool Starting Address** - DHCP can assign IP addresses to hosts dynamically instead of requiring that each system have a fixed IP address. IP addresses are allocated from a block of addresses, usually assigned by your Internet provider. The Client IP Pool Starting Address gives the first address in the reserved block, which is also used as the LAN network address of your Prestige. This address will also serve as the default gateway for DHCP clients.
3. **Size of Client IP Pool** - Gives the size of the block of addresses reserved for DHCP address assignment. Your Prestige uses the first address in the block, and the remaining addresses in the pool are assigned to clients.
4. **Primary DNS Server/Secondary DNS Server** - These two fields are used by DHCP clients (such as Windows 95 and Windows NT systems) for Domain Name Servers. Usually your Internet provider will provide one or more name service hosts.
5. **IP Address** - Enter the IP address of your Prestige in dotted decimal notation (four 8-bit numbers, between 0 and 255, separated by periods), e.g., 192.68.135.5. Note that every machine on the TCP/IP network must have a unique IP address.
6. **IP Subnet Mask** - An IP address consists of two parts, the network ID and the host ID. The IP Subnet Mask is used to specify the network ID portion of the address, expressed in dotted decimal notation. Your Prestige will automatically calculate this mask based

on the IP address that you assign. Unless you have special need for subnetting, use the default subnet mask calculated by your Prestige.

7. **RIP Direction** - This parameter determines how your Prestige handles RIP (Routing Information Protocol). If set to Both (default), your Prestige will broadcast its routing table on the LAN, and incorporate RIP broadcasts by other routers into its routing table. If set to In Only, your Prestige will not broadcast its routing table on the LAN, if set to Out Only, your Prestige will broadcast its routing table but ignores any RIP broadcast packets that it receives. If set to None, your Prestige will not participate in any RIP exchange with other routers.

Usually, you should leave this parameter at its default of Both and let RIP propagate the routing information automatically.

8. **RIP: Version** - This parameter determines the format of the RIP packets used to exchange routing information. The choices are RIP-1, RIP-2B, and RIP-2M. The table below gives a brief description of your choices:

RIP-1:	Accept and send RIP-1 messages only.
RIP-2B:	accept RIP-1 and RIP-2 messages (both broadcast and multicast), and send RIP-2 messages in broadcast format.
RIP-2M:	accept RIP-1 and RIP-2 messages (both broadcast and multicast), and send RIP-2 messages in multicast format.

The suggested choice for this field is RIP-2B. Select RIP-1 if your Prestige is in an environment with other routers or workstations which have problems with RIP-2 broadcast packets. Select RIP-2M only if it is in a pure RIP-2 environment.

When you are finished, press **ENTER** at the message: Press ENTER to Confirm... to save your selections, or press **ESC** at any time to cancel them.

Novell IPX Ethernet Setup

Refer to the chapter on Novell IPX configuration.

Bridge Ethernet Setup

Refer to the chapter on Bridging configuration.

4 Configuring for Internet Access

Menu 4 of the SMT allows you to configure Internet access on one screen. Before you configure your Prestige for Internet access, you need to collect the following information from your ISP (Internet Service Provider).

- IP address of the ISP's gateway (optional).
- Login name (optional).
- Password (optional).

For your Workstation:

- Domain Name Server (DNS)

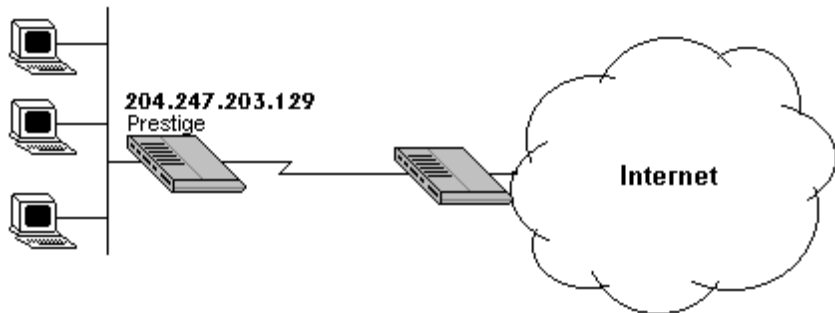


Figure 4-1 Internet Access

IP Addresses and the Internet


Conventionally, the Internet (with a capital I) refers the large-scale interconnected networks across the world that was originally developed by the US Department of Defense. The Internet uses exclusively the TCP/IP suite of protocols. The term “internet” (lower case i), however, refers to any interconnected networks using any protocol. An internet can be as simple as two hosts on a LAN, or it can be as complex as the Internet itself.

Every machine on the Internet must have a unique address within that internet. If your networks are isolated from the Internet, e.g., only between your two branch offices, you can assign any IP addresses to the hosts without problems. However, the Internet Assigned Numbers Authority (IANA) has reserved the following three blocks of IP addresses specifically for private networks:

10.0.0.0	-	10.255.255.255
172.16.0.0	-	172.31.255.255
192.168.0.0	-	192.168.255.255

For this reason, it is recommended that you choose your network number from the above list.

You can obtain your IP address from the IANA, from an ISP, or assigned from a private network. If you belong to a small organization and your Internet access is through an ISP, the ISP can provide you with the Internet addresses for your local networks. On the other hand, if you are part of a much larger organization, you should consult your network administrator for the appropriate IP addresses.

 **NOTE:** REGARDLESS OF YOUR PARTICULAR SITUATION, **DO NOT** CREATE AN ARBITRARY IP ADDRESS; ALWAYS FOLLOW THE GUIDELINES ABOVE. FOR MORE INFORMATION ON ADDRESS ASSIGNMENT, REFER TO RFC 1597, *ADDRESS*

ALLOCATION FOR PRIVATE INTERNET'S AND RFC 1466, GUIDELINES FOR MANAGEMENT OF IP ADDRESS SPACE.

Once you have determined the IP address range for your local network, you may want to use DHCP (Dynamic Host Configuration Protocol) to assign addresses to individual hosts on the network, as an alternative to manually configuring each host's IP settings. See the TCP/IP Ethernet Setup and DHCP section on page 26 for more information about DHCP.

Internet Access Configuration

The following steps describe the set-up procedure to configure your Prestige for Internet access. The information you will need to provide will be indicated in **bold** type.

```
Menu 4 - Internet Access Setup

ISP's Name= myisp
ISP IP Addr= 10.145.233.5
Pri Phone #= 5551000
Sec Phone #= 5552000
My Login= surfer
My Password= *****
Single User Account= No
  IP Addr= N/A
  Server IP Addr= N/A
Telco Option:
  Transfer Rate= 64K

Press ENTER to Confirm or ESC to Cancel:
```

Figure 4-2 Menu 4 - Internet Access Setup

1. From the Main Menu, enter 4 to go to Menu 4 - Internet Access Setup as seen above.
2. **ISP's Name** - Enter the name of your Internet Service Provider, e.g., myisp. This information is for identification purposes only.

3. **ISP IP Addr** - Enter the IP Address of the remote gateway at the ISP's site. If you do not have this data, just leave it blank.
4. **My Login Name** - Enter the login name provided by your ISP.
5. **My Password** - Enter the password associated with the login name above. Note that this login name/password pair is only for your Prestige to connect to the ISP's gateway. When you use TCP/IP applications, e.g., FTP, to access the Internet from your workstation, you will need a separate login name and password for each server.
6. **Single User Account** - See the following section for a more detailed discussion on the Single User Account feature. The default is No.
7. Press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections, or press **ESC** at any time to cancel your selections.
8. At this point, the SMT will ask if you wish to test the Internet connection. If you select Yes, your Prestige will call the ISP to test the Internet connection. If the test fails, note the error message that you receive and take the appropriate troubleshooting steps.

Single User Account

Typically, if there are multiple users on the LAN wanting to concurrently access the Internet, they will have to subscribe to multiple IP addresses or a Class C subnetwork from the ISP. In either case, these two approaches will cost more than a single user account.

The Single User Account (SUA) feature allows customers to have the same benefits as having a Class C address, but still only pay for one IP address, thus saving significantly on subscription fees. (Check with your ISP before you enable this feature).

This feature may also be used to connect to TCP/IP remote nodes other than Internet Service Providers. For example this feature can be used to simplify the allocation of IP addresses when connecting branch offices to the corporate network.

The IP address for the Single User Account can be either fixed or dynamically assigned by the ISP (or other remote node). In addition, you can also configure a server, e.g., a Web server, on your local network and make it accessible by outside users.

If you do not set a server IP address, SUA offers the additional benefit of firewall protection. This is because if no server is defined, all incoming inquiries will be filtered out by your Prestige even if you do have a server on your network. This can prevent intruders from probing your system.

Your Prestige accomplishes this address sharing by translating the internal LAN IP addresses to a single address that is globally unique on the Internet. For more information on IP address translation, refer to RFC 1631, *The IP Network Address Translator (NAT)*.

In summary:

- SUA is an ideal, cost-effective solution for small offices with less than 20 hosts using a LAN to concurrently access the Internet or other remote TCP/IP network.
- SUA can provide one server address to be accessed by Remote Dial-in Users, thus controlling the incoming packets.
- SUA can provide firewall protection if you do not configure a server IP address. All incoming inquiries will be filtered out by your Prestige. Therefore, servers on your network are protected.

- UDP and TCP datagrams can be routed. In addition, ICMP echo can also be routed.

The figure below shows an example of a small office connected to the Internet via a Single User Account using your Prestige. Note that if you enable the Single User Account feature, your local IP address **MUST** be selected from the list of IP addresses for private networks as defined by the IANA.

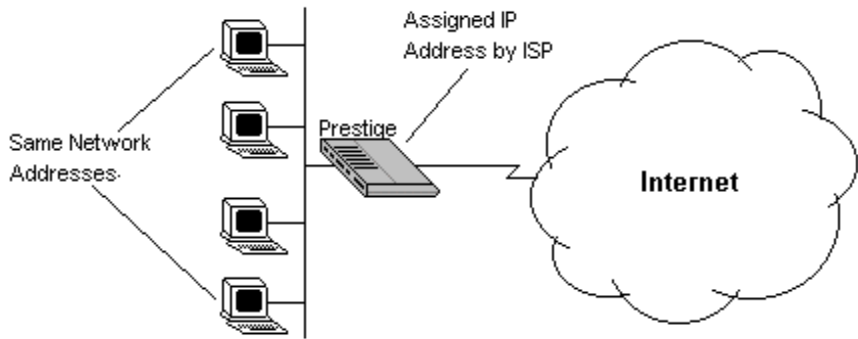


Figure 4-3 A Single User Account Using the Prestige

Configuration for Single User Account

The steps for configuring your Prestige for Single User Internet Access are identical to conventional Internet access with the exception that you need to fill in three extra fields.

Follow steps 1-8 from the previous section, Internet Access Configuration.

1. **Single User Account** - Enter Yes to enable the Single User Account feature. Use the space bar to toggle between Yes and No.
2. **Single User Account: IP Addr** - If your ISP assigns you a dynamic IP address, enter 0.0.0.0 here. If your ISP assigns you a

static IP address enter that IP address here. You have to use a static IP address if you are using a pair of Prestiges.

3. **Single User Account: Server IP Addr** - If you want to make a single server, e.g., a Web server, accessible to outside users, enter that server's IP address here.

Press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections or press **ESC** at any time to cancel your selections.

At this point, your Prestige will ask if you wish to test the Internet connection. If you select Yes, the Prestige will call the ISP to test the Internet connection. If the test fails, note the error message that you receive and take the appropriate troubleshooting steps.

5 Remote Node Configuration

A Remote Node represents both a remote gateway and the internet behind it, across an IDSL connection. A Remote Node is required for connecting to the remote network directly. Note that when you use Menu 4 to configure the Internet, your Prestige will automatically add a Remote Node for you.

Even though you can configure up to four remote nodes, the first active remote node will be used to connect to the remote LAN. It is a good practice to keep only one active remote node for your Prestige.

In this chapter, we will discuss the parameters that are protocol independent. The protocol dependent configuration will be covered in subsequent chapters. For TCP/IP, see Chapter 6. For IPX, see Chapter 7. For bridging, see Chapter 8.

From the Main Menu, enter **11** to go to Menu 11 - Remote Node Setup. When in menu 11, enter the number of the Remote Nodes (1 to 4) that you wish to configure as shown below:

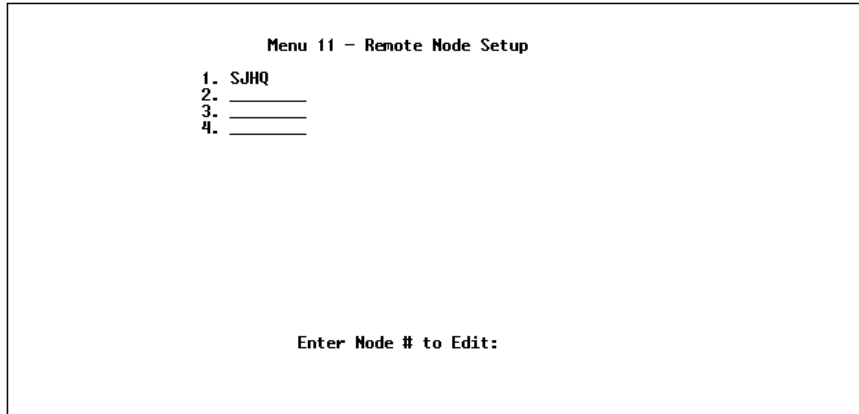


Figure 5-1 Menu 11 - Remote Node Setup

Enter the Remote Node number to edit and you will go to the next submenu: 11.1 - Remote Node Profile as shown below:

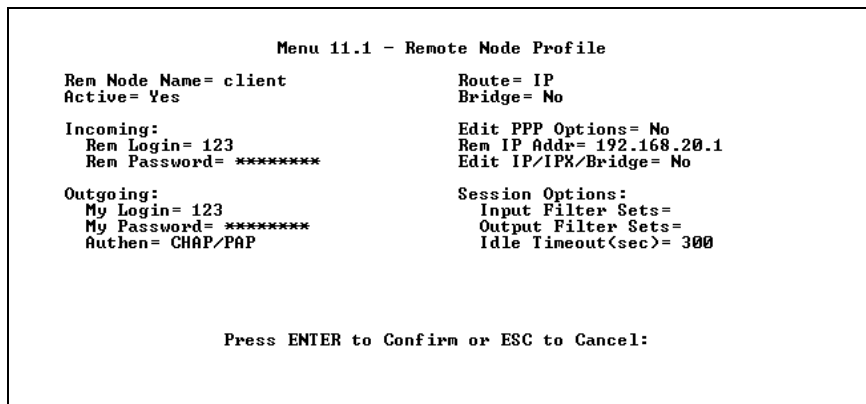


Figure 5-2 Menu 11.1 - Remote Node Profile

1. **Rem Node Name** - This is a required field. Enter a descriptive name for the Remote Node, e.g., SJHQ. This field can support up to eight characters. This name must be unique from any other Remote Node name or Remote Dial-in User name.

2. **Active** - Press the space bar to toggle between Yes and No. When a Remote Node is deactivated, it has no effect on the operation of your Prestige, even though it is still kept in the database and can be activated in the future. Deactivated nodes are displayed with a - (minus sign) at the beginning of the name in Menu 11.
3. **Incoming: Rem Node Login Name** - Enter the login name that this Remote Node will use when it calls into your Prestige. The login name in this field combined with the Rem Node Password will be used to authenticate the incoming calls from this node.
4. **Incoming: Rem Node Password** - Enter the password used when this Remote Node calls into your Prestige.
5. **Outgoing: My Login Name** - This is a required field if Call Direction is either Both or Out. Enter the login name for your Prestige when it calls this Remote Node.
6. **Outgoing: My Password** - This is a required field if Call Direction is either Both or Out. Enter the password for your Prestige when it calls this Remote Node.
7. **Outgoing: Authen** - This field sets the authentication protocol used for outgoing calls.

Your Prestige supports two authentication protocols: PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol).

- **PAP** sends the user name and password in plain text.
- **CHAP** scrambles the password before it is sent over the wire.

Generally speaking, CHAP is more secure than PAP; however, PAP is readily available on more platforms. The recommendation is to use CHAP whenever possible. Turning off the authentication is **STRONGLY** discouraged.

Options for this field are:

- **CHAP/PAP** - Your Prestige will try CHAP when CHAP is requested by the Remote Node or PAP when PAP is requested by the Remote Node.
 - **CHAP** - Use CHAP only.
 - **PAP** - Use PAP only.
8. **Route** - This field determines the protocols that your Prestige will route. The choices for this field are determined by the features that are enabled.
 9. **Bridge** - Bridging is used for protocols that are not supported or not turned on in the previous Route field, e.g., SNA. When bridging is enabled, your Prestige will forward any packet that it does not recognize to this Remote Node; otherwise, the unrecognized packets are discarded. The disadvantage of bridging is that it usually generates large amounts of traffic. Press the space bar to select either Yes or No.
 10. **Edit PPP Options** - To edit the PPP options for this Remote Node, move the cursor to this field, use the space bar to select **Yes** and press **ENTER**. This will bring you to Menu 11.2 - Remote Node PPP Options For more information on configuring PPP options, see the section Editing PPP Options.
 11. **IP Addr** - This is a required field if Route is set to IP. Enter the IP address of this Remote Node.
 12. **Edit IP/IPX/Bridge Options** - To edit the parameters of the protocols, go to this field, select **Yes** and press **ENTER**. This will bring you to Menu 11.3 - Remote Node Network Layer Options. For more information on filling out this screen, refer to the chapter pertaining to your specific protocol.
 13. **Session Option: Input Filter Sets and Output Filter Sets** - In these fields, select which filter set(s) you would like to implement to filter the incoming and outgoing traffic between this Remote Node

and your Prestige. You can choose from 12 different filter sets. In addition, you can link up to 4 filter sets together for further customization (e.g., 1, 5, 9, 12). Note that spaces and , are accepted in this field.

For more information on customizing your filter sets, see Chapter 9. The default is blank, i.e., no filters defined.

14. **Session Option: Idle Timeout (sec)** - This value specifies the number of idle seconds that elapses before sending a ppp-echo packet to verify whether the line is up.

Once you have completed filling in Menu 11.1 - Remote Node Profile, press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections, or press **ESC** at any time to cancel your selections.

Editing PPP Options

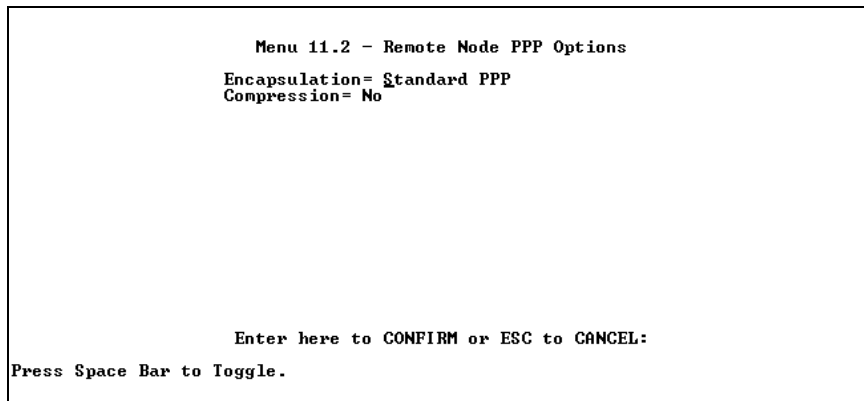


Figure 5-3 Remote Node PPP Options

1. **Encapsulation** - Select CCP (Compression Control Protocol) for the PPP or MP link. There are two options in this field.
 - **Standard PPP** - Standard PPP options will be used.
 - **CISCO PPP** - Cisco PPP options will be used.

2. **Compression** - Turns on Stac Compression. The default for this field is Off.

Once you have completed Menu 11.2 - Remote Node PPP Options, press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections, or press **ESC** to cancel your selections.

6 TCP/IP Configuration

This chapter shows you how to configure your Prestige for TCP/IP. Depending on your particular applications, you will need to configure different menus. For instance, Internet access is the most common application of TCP/IP. For this application, you should configure Menu 4. We will illustrate the configuration for other applications in the following sections.

IP Subnet Mask

A subnet mask is a 32-bit quantity that, when logically ANDed with an IP address, yields the network number. For instance, the subnet masks for class A, B and C without subnetting are 255.0.0.0, 255.255.0.0 and 255.255.255.0, respectively.

To create more network numbers, you shift some bits from the host ID to the network ID. For instance, to partition a class C network number 192.68.135.0 into two, you shift 1 bit from the host ID to the network ID. Thus the new subnet mask will be 255.255.255.128; the first subnet will have network number 192.68.135.0 with hosts 192.68.135.1 to 192.68.135.126 and the second subnet will have network number 192.68.135.128 with hosts 192.68.135.129 to 192.68.135.254.

It is recommended that you use the same subnet mask for all physical networks that share an IP network number. The table below lists the additional subnet mask bits in dot decimal notations. To use to following table, write down the original subnet mask and substitute the higher order 0s with the dot decimal of the additional subnet bits. For instance,

to partition your class C network 204.247.203.0 with subnet mask 255.255.255.0 into 16 subnets (4 bits), the new subnet mask becomes 255.255.255.240.

Number of Bits	Dot Decimal
1	128
2	192
3	224
4	240
5	248
6	252
7	254
8	255

LAN-to-LAN Application

A typical LAN-to-LAN application is to use your Prestige to call from a branch office to the headquarters, as depicted in the following diagram.

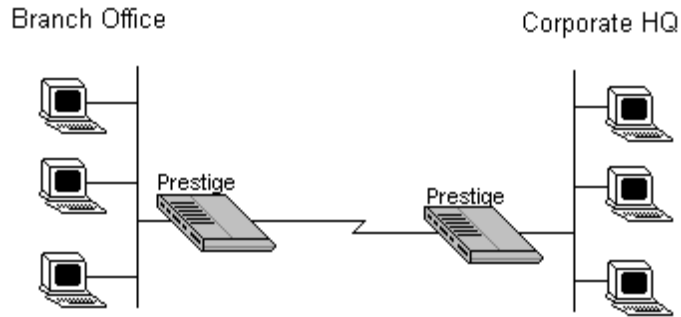


Figure 6-1 LAN-to-LAN Application

For the branch office, you need to configure a Remote Node in order to dial out to the headquarters. Additionally, you may also need to

configure Static Routes if some services reside beyond the immediate remote LAN.

Remote Node Setup

Follow the procedure in Chapter 5 to fill the protocol-independent parameters in Menu 11, Remote Node Profile. For the protocol-dependent parameters, follow the instructions below.

1. **Route** - Make sure IP is among the protocols in the Route field.
2. **IP Address** - Enter the IP address of the gateway at the remote site (in this case, headquarters). If the remote router is using a different IP address than the one entered here, your Prestige will drop the call.

Edit IP/IPX/Bridge - Press the space bar to change it to **Yes** and press **Enter** to go to the Menu 11.3 - Remote Node Network Layer Options menu shown below:

```
Menu 11.3 - Remote Node Network Layer Options

IP Options:
Rem IP Addr: 192.168.20.1
Rem Subnet Mask= 255.255.255.0
My WAN Addr= 0.0.0.0
Single User Account= No
Server IP Addr= N/A
Metric= 2
Private= No
RIP Direction= Both
Version= RIP-2B

IPX Options:
Rem LAN Net #= N/A
My WAN Net #= N/A
Hop Count= N/A
Tick Count= N/A
W/D Spoofing(min)= N/A
SAP/RIP Timeout(min)= N/A

Bridge Options:
Ethernet Addr Timeout(min)= N/A

Enter here to CONFIRM or ESC to CANCEL:
```

Figure 6-2 Menu 11.3 - Remote Node Network Layer Options

1. **Rem IP Address** - This will show the IP address you entered for this Remote Node in the previous menu.

2. **Rem IP Subnet Mask** - Enter the subnet mask for the remote network.
3. **My WAN Addr** - Some implementations, especially the UNIX derivatives, require hosts on both ends of the ISDN link to have separate addresses from the LAN, and that the addresses must have the same network number. If this is the case, enter the IP address assigned to the WAN port of your Prestige. Note that this is the address assigned to the local Prestige, not the remote router.

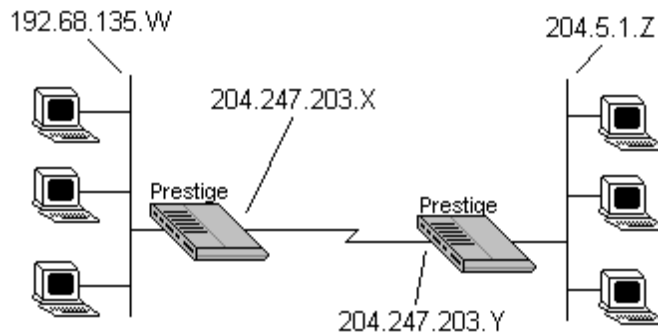


Figure 6-3 Sample IP Addresses

4. **Single User Account** - This field should be set to yes to enable the Single User Account (Network Address Translation) feature for this site. Use the space bar to toggle between yes and no.
5. **Server IP address** - If you are using the Single User Account feature and you want to make a server accessible on your LAN, e.g., a web server, accessible to outside users, enter that servers IP address here.
6. **Metric** - The metric represents the “cost” of transmission for routing purpose. IP routing uses hop count as the measurement of cost, with a minimum of 1 for directly connected networks. Enter a number that approximates the cost for this link. The number need

not be precise, but it must be between 1 and 16. In practice, 2 or 3 is usually a good number.

7. **Private** - This parameter determines if your Prestige will include the route to this Remote Node in its RIP broadcasts. If set to yes, this route is kept private and not included in RIP broadcast. If no, the route to this Remote Node will be propagated to other hosts through RIP broadcasts.
8. **RIP** - This parameter determines how your Prestige handles RIP (Routing Information Protocol), and the default is Both. If set to Both, your Prestige will broadcast its routing table on the WAN, and incorporate RIP broadcasts by the other router into its routing table. If set to In Only, your Prestige will not broadcast its routing table on the WAN; if set to Out Only, your Prestige will broadcast its routing table but ignores any RIP broadcast packets that it receives. If set to None, your Prestige will not participate in any RIP exchange with other routers. Usually, you should leave this parameter at its default of Both and let RIP propagate the routing information automatically.

Once you have completed filling in the Network Layer Options Menu, press **ENTER** to return to Menu 11. Press **ENTER** at the message: Press ENTER to Confirm ... to save your selections, or press **ESC** at any time to cancel your selections.

Static Route Setup

On a directly connected internet, RIP usually handles the routing automatically. However, RIP cannot propagate across isolated networks, as in the case before a connection is made between the two subnetworks using one Class C IP address. Without a route, no packets can be forwarded to their destinations. A static route is used to resolve this problem by providing your Prestige with some static routing information. As a matter of fact, when you configure the Internet Access

or a Remote Node, a static route is implicitly created by your Prestige. An example is given below. In the example, stations on the 204.5.1.0/24 subnetwork can access the remote stations using the static route. The route will have a destination of 204.5.1.64/26 with the gateway address being that of the Remote Node (204.5.1.150).

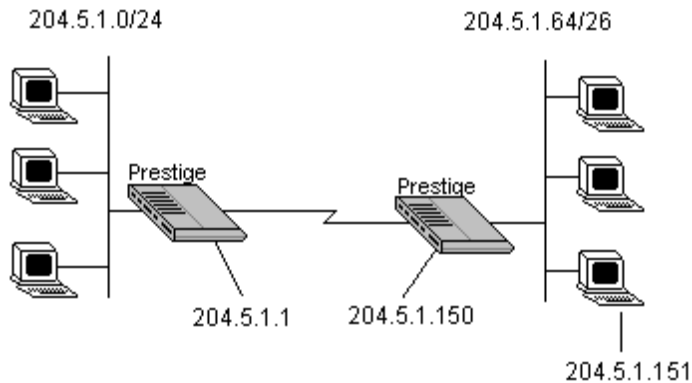


Figure 6-4 Static Routing Example

Note that in normal circumstances, your Prestige will have adequate routing information after you configure the Internet access and Remote Nodes; you do not need to configure additional static routes. You will need to configure static routes only for unusual cases, e.g., subnetting. To create additional static routes for IP, use Menu 12, Static Route Setup as shown below:

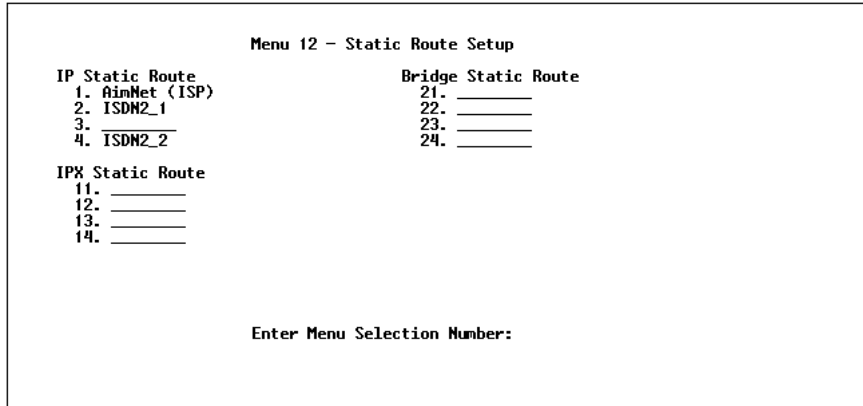


Figure 6-5 Menu 12 - Static Route Setup - Main Menu

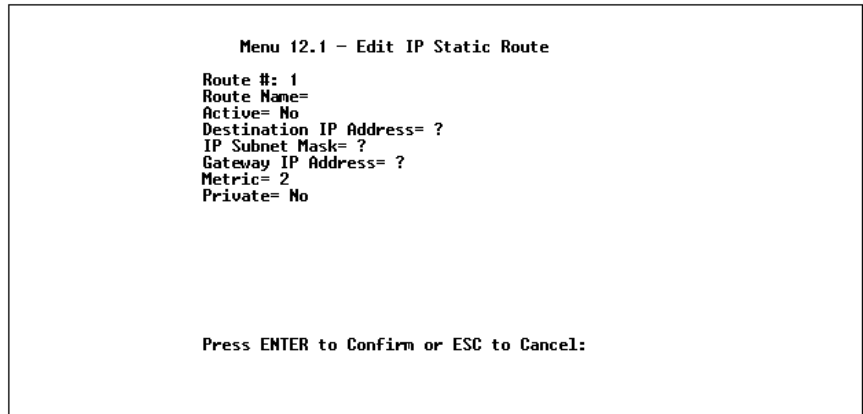


Figure 6-6 IP Static Route Setup

1. **Route Name** - Enter a descriptive name for this route. This is for identification purpose only.
2. **Active** - This fields allows you to activate/deactivate this static route.
3. **Destination IP Address** - This parameter specifies the IP *network* address of the final destination. Routing is always based on network number. If you need to specify a route to a single host,

use a subnet mask of 255.255.255.255 in the subnet mask field to force the network number to be identical to the host ID.

4. **IP Subnet Mask** - Enter the subnet mask for this destination. Follow the discussion on IP subnet mask in this chapter.
5. **Gateway IP Address** - Enter the IP address of the gateway. The gateway is an *immediate* neighbor of your Prestige that will forward the packet to the destination. On the LAN, the gateway must be a router on the same segment as your Prestige; over ISDN, the gateway must be the IP address of one of the Remote Nodes.
6. The Metric and the Private parameters have the same meaning as those in the Remote Node Setup.

Once you have completed filling in the menu, press **ENTER** at the message: Press ENTER to Confirm ... to save your selections, or press **ESC** at any time to cancel your selections.

7

Novell IPX Configuration

This chapter shows you how to configure your Prestige for IPX. Depending on your particular applications, you will need to configure different menus. We will illustrate the configuration for some applications in the following sections.

IPX Network Environment

Frame Type

The stations on an IPX network (both clients and servers) can run on four different frame types existing on one physical Ethernet cable. These frame types include 802.2, 802.3, Ethernet II (DIX), and SNAP.

Network Numbers

Whenever you are setting up an IPX routing environment, it is important to correctly configure the network numbers on the LAN. On any IPX network, there is an external network number that is, the number associated with the frame type on the Ethernet cable to which the stations on the network are joined. In addition to this external network number, each NetWare server has its own internal network number. It is important to remember that every network number has to be unique for that entire internetwork. So if a server station had an internal network number of 00000011, there is no other network number (internal or external) of 00000011 anywhere on the network.

There are two different scenarios in which you would connect your Prestige to a LAN: one with a server (server side), and one without a server (client side).

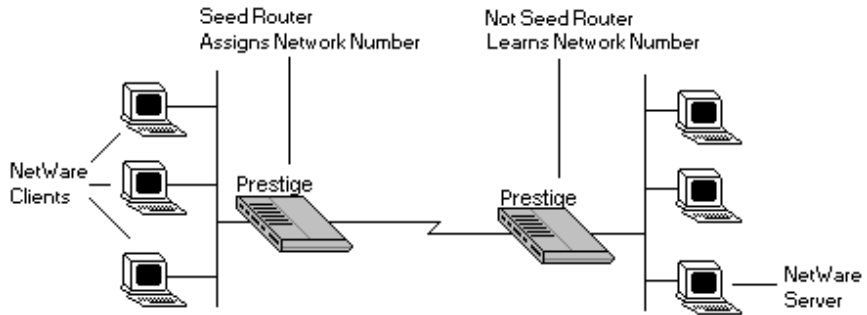


Figure 7-1 Prestige Operating in IPX Environment

Prestige on LAN with Server

When your Prestige is being connected to a LAN with an existing NetWare server station, you will not need to configure it as a seed router, and hence the network number parameter in the Ethernet Setup Menu. Rather, your Prestige will learn the network number of the network it is attached to through the regular RIP broadcasts sent by the server and add this route to its routing table.

Prestige on LAN without Server

If your Prestige is connected to a LAN without an existing NetWare server station, then it needs to create a unique external network number to apply to that frame on the LAN. Your Prestige must then be configured as a Seed Router, and the network number can be configured in the Ethernet Setup Menu. The network number must be unique and not used anywhere else on the entire network.

IPX Ethernet Setup

The first step is to set up your Prestige on the LAN. From menu 3, select option 3 to go to Menu 3.3 - Novell IPX Ethernet Setup as seen below:

```
Menu 3.3 - Novell IPX Ethernet Setup
Seed Router= Yes
Frame Type 802.2= Yes
IPX Network #= 12345678
Frame Type 802.3= No
IPX Network #= N/A
Frame Type Ethernet II= No
IPX Network #= N/A
Frame Type SNAP= No
IPX Network #= N/A

Press ENTER to Confirm or ESC to Cancel:
```

Figure 7-2 Menu 3.3 - Novell IPX Ethernet Setup

1. **Seed Router** - Determine if your Prestige is to act as a seed router. This value depends on the existing network. If there is a NetWare server providing the network number, select No. If there is no NetWare server providing the network number, select Yes.
2. **Frame Type** - For every frame type that your Prestige needs to support, you need to set the corresponding field to Yes. The frame type(s) selected here must be the same frame type(s) as the server or client stations on that network. Otherwise, the devices will not be able to communicate. You can select one or more of these four frame types:
 - 802.2
 - 802.3
 - Ethernet II

- SNAP
3. **IPX Network #** - If you selected your Prestige to act as a seed router, you need to provide a unique network number to be associated with the network that it has joined. Keep in mind that this number must not be used anywhere else on the network.

Once you have completed filling in the Menu 3.3, press **ENTER** the save message to save your selections, or press **ESC** at any time to cancel your selections.

LAN-to-LAN Application

A typical LAN-to-LAN application is to use your Prestige to call from a branch office to headquarters such that all of the stations on the branch office network have access to the server at the headquarters, as depicted in the following diagram:

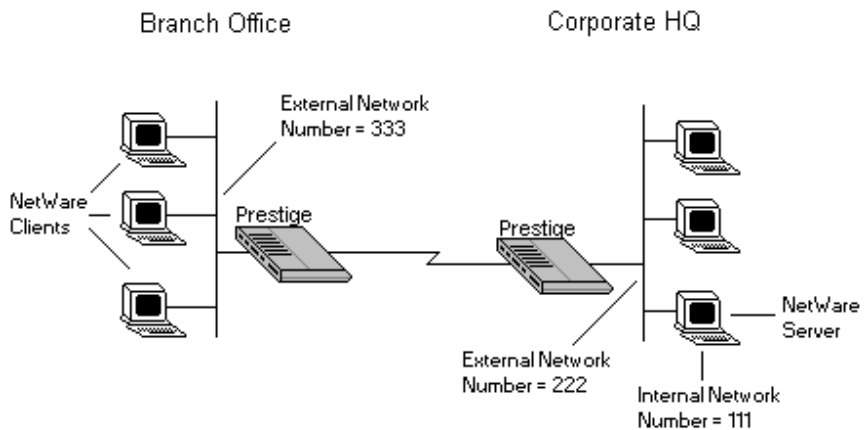


Figure 7-3 LAN-to-LAN application

For the branch office, you need to configure a Remote Node in order to dial out to headquarters.

Remote Node Setup

Follow the procedure in Chapter 5 to fill the protocol-independent parameters in Menu 11, Remote Node Profile. For the protocol-dependent parameters, follow the ensuing instructions.

1. Route - Make sure IPX is among the protocols in the Route field.
2. Edit IP/IPX/Bridge - Press the space bar to change it to Yes and press Enter to go to the network layer options menu.

```
Menu 11.3 - Remote Node Network Layer Options

IP Options:
Rem IP Addr: 192.168.20.1
Rem Subnet Mask= 255.255.255.0
My WAN Addr= 0.0.0.0
Single User Account= No
Server IP Addr= N/A
Metric= 2
Private= No
RIP Direction= Both
Version= RIP-2B

IPX Options:
Rem LAN Net #= N/A
My WAN Net #= N/A
Hop Count= N/A
Tick Count= N/A
W/D Spoofing<min>= N/A
SAP/RIP Timeout<min>= N/A

Bridge Options:
Ethernet Addr Timeout<min>= N/A

Enter here to CONFIRM or ESC to CANCEL:
```

Figure 7-4 Menu 14.1 - Edit Dial-in User

3. **Rem LAN Net #** - In this field, enter the internal network number of the NetWare server on the remote side LAN. Your Prestige will create a route to access this server.
4. **My WAN Net #** - In this field, you can enter the WAN network number of the device that you are connecting to. This number will be used for negotiation between your Prestige and the remote device. If you leave this field as 00000000, your Prestige will select the greater WAN network number between the two devices.
5. **Hop Count** - This field indicates the number of intermediate networks that must be passed through to reach the Remote Node. The default is one (1).

6. **Tick Count** - This field indicates the time-ticks required to reach the Remote Node. The default is two (2).
7. **W/D Spoofing (min)** - This field is used for your Prestige on the server side LAN. Your Prestige can spoof a response to a server's Watch Dog request after an expected drop of connection. In this field, enter in the time (number of minutes) that you want your Prestige to spoof the Watch Dog response.
8. **SAP/RIP Timeout (min)** - This field indicates the amount of time that you want your Prestige to maintain the SAP and RIP entries learned from this Remote Node in its internal tables after the connection has been dropped. If this information is retained, then your Prestige will not have to get the SAP information when the line is brought back up. Enter the desired time (in minutes) in this field.

Once you have completed filling in the Network Layer Options Menu, press **ENTER** to return to Menu 11.1. Press **ENTER** at the message: Press ENTER to Confirm ... to save your selections, or press **ESC** at any time to cancel your selections.

Static Route Setup

If your LAN-to-LAN application has NetWare servers on both sides of the link, then all NetWare client stations will have access to a server on their LAN as shown below:

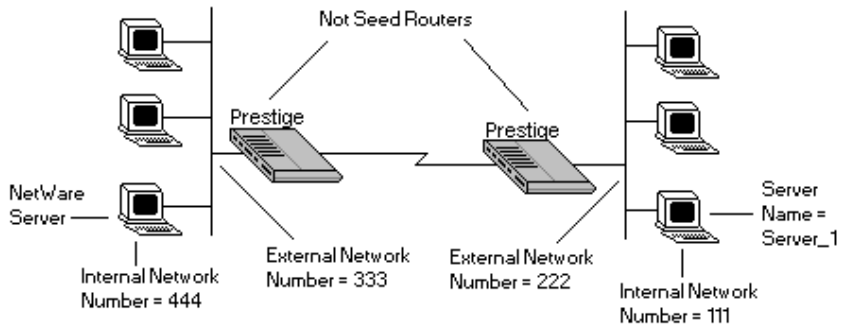


Figure 7-5 NetWare Servers on Both Sides of the Link

This may present a problem if you desire your client station to access a server at a remote site. For example, in the above diagram, suppose that a client station on the network on the left wishes to access the NetWare server on the right (internal network number = 111). However, the SAP broadcasts will receive a response from the server on the left (internal network number = 444). A static route is used to resolve this problem by providing your Prestige with some static routing information to access the remote server.

From Menu 12, select one of the four possible IPX Static Routes as shown below:

```
Menu 12.2 - Edit IPX Static Route

Route #= 11
Server Name= Server_1
Active= Yes
Network #= 00000222
Node #= 000000000001
Socket #= 0451
Type #= 0004
Hop Count= 2
Tick Count= 3
Gateway Node= 1

Press ENTER to Confirm or ESC to Cancel:
```

Figure 7-6 Menu 12.2 - Edit IPX Static Route

1. **Server Name** - In this field, enter in the name that has been configured for the server. This name must be the *exact* name configured in the NetWare server.
2. **Network #** - This field contains the internal network number of the remote server which you wish to access. Do not use 00000000 or FFFFFFFF for this field.
3. **Node #** - This field contains the address of the node on which the server resides. If you are using a Novell IPX implementation, this value is 000000000001.
4. **Socket #** - This field contains the socket number on which the server will receive service requests. The default for this field is hex 0451.
5. **Type #** - This field identifies the type of service the server provides. The default for this field is hex 0004.
6. **Gateway Node** - In this field, enter the number (1-4) of the Remote Node that is linked to this static route. That is, the Remote Node that you wish to route the packet to.

The Hop Count and Tick Count fields have the same meaning as those in the Remote Node Setup.

Once you have completed filling in the menu, press **ENTER** at the message: Press ENTER to Confirm ... to save your selections, or press **ESC** at any time to cancel your selections.

8 Bridging Configuration

This chapter shows you how to configure the Bridging options for your Prestige. Depending on your particular applications, you will need to configure different menus. We will illustrate the configuration for some applications in the following sections.

Bridge Ethernet Setup

Bridging is used to forward packets of unsupported protocols whose destination is not on the local Ethernet to the WAN.

LAN-to-LAN Application

A typical LAN-to-LAN application is to use your Prestige to call from one office to another office such that stations on one network have access to stations on the remote side and vice versa. You will need to configure a Remote Node in order to dial out to another office.

Remote Node Setup

Follow the procedure in Chapter 5 to fill the protocol-independent parameters in Menu 11, Remote Node Profile. For the protocol-dependent parameters, follow the ensuing instructions:

1. **Bridge** - Make sure this field is set to Yes.
2. **Edit IP/IPX/Bridge** - Press the space bar to change it to Yes and press Enter to go to the network layer options menu as seen below:

```
Menu 11.3 - Remote Node Network Layer Options

IP Options:
Rem IP Addr: 192.168.20.1
Rem Subnet Mask= 255.255.255.0
My WAN Addr= 0.0.0.0
Single User Account= No
Server IP Addr= N/A
Metric= 2
Private= No
RIP Direction= Both
Version= RIP-2B

IPX Options:
Rem LAN Net #= N/A
My WAN Net #= N/A
Hop Count= N/A
Tick Count= N/A
W/D Spoofing(min)= N/A
SAP/RIP Timeout(min)= N/A

Bridge Options:
Ethernet Addr Timeout(min)= N/A

Enter here to CONFIRM or ESC to CANCEL:
```

Figure 8-7 Remote Node Bridging Configuration

3. **Ethernet Addr Timeout (min)** - In this field, enter the time (number of minutes) that you wish your Prestige to retain the Ethernet Addr information in its internal tables while the line is down. If this information is retained, then your Prestige will not have to re-negotiate the protocol and recompile the tables when the line is brought back up.

Once you have completed filling in the Network Layer Options Menu, press **ENTER** to return to Menu 11. Press ENTER at the message: Press ENTER to Confirm ... to save your selections, or press **ESC** at any time to cancel your selections.

Bridge Static Route Setup

You can configure Bridge static routes for your Bridging applications.

```
Menu 12.4 - Edit Bridge Static Route

Route #: 31
Route Name= Remote
Active= Yes
Ether Address= ?
IP Address=
Gateway Node= 1

Press ENTER to Confirm or ESC to Cancel:
```

Figure 8-8 Menu 12.4 - Bridge Static Route

1. **Route Name** - For identification purposes enter a name for the bridge static route.
2. **Active** - Indicates whether the static route is active or not.
3. **Ether Address** -Enter the MAC address of the destination device that you wish to bridge your packets to.
4. **IP Address** - If available, enter the IP address of the destination device that you wish to bridge your packets to.
5. **Gateway Node** - Enter the number (1-4) of the Remote Node that is linked to this static route. When an incoming packet's destination Ether (MAC) address matches the value entered above, then it will trigger a call to this Remote Node.

Once you have completed filling in the menu, press **ENTER** at the message: Press ENTER to Confirm ... to save your selections, or press **ESC** at any time to cancel your selections.

9 Filter Configuration

About Filtering

Your Prestige uses filters to decide whether or not to allow passage of a data packet and/or to make a call over the ISDN line. There are two types of filters involved: incoming data filters and outgoing data filters. Data filters screen the data to determine if the packet should be allowed to pass.

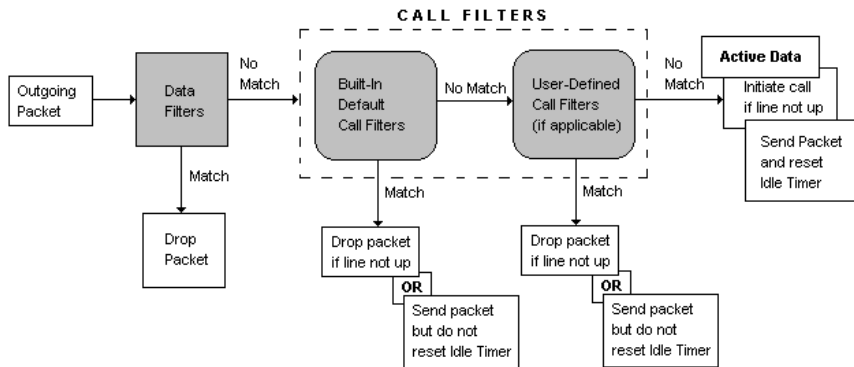


Figure 9-1 Outgoing packet filtering Process

For incoming packets, your Prestige applies data filters only. Packets are processed depending upon whether a match is made. Your Prestige allows you to customize the filter sets that you wish to use. The following sections describe how to configure your Prestige filter sets.

Prestige's Filter Structure

You can configure up to twelve filter sets with six rules in each set. Therefore, your Prestige allows you to customize up to 72 filter rules (12 x 6).

When implementing these filter sets, you can link up to four of the filter sets together to screen the data packet. Therefore, with each filter set having up to six rules, you can have a maximum of 24 rules active for a single filtering application.

Configuring a Filter Set

In order to distinguish between the 12 filter sets, each filter set should have a name or some comments. You can edit these comments in the following way.

1. From the Main Menu, select option 21. Filter Set Configuration. This will bring you to Menu 21 - Filter Set Configuration.
2. From this menu, you can choose from among the twelve filter sets. Select the filter set you wish to configure (1-12).

This will bring you to the Edit Comments field. Whatever the comments are for that filter set will be displayed in this field. You can edit the comments you wish to use to identify that filter set.

Once you have completed filling in the Edit Comments field, press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections, or press **ESC** at any time to cancel your selections. The new information will now be displayed in the read-only section of Menu 21 - Filter Set Configuration as shown below:

Menu 21 - Filter Set Configuration			
Filter Set #	Comments	Filter Set #	Comments
1	Filter Set #1	7	_____
2	Filter Set #2	8	_____
3	_____	9	_____
4	_____	10	_____
5	_____	11	_____
6	_____	12	_____

Enter Filter Set Number to Configure= 0

Edit Comments=

Press ENTER to Confirm or ESC to Cancel:

Figure 9-2 Menu 21 - Filter Set Configuration

Once you press ENTER, you will be taken to Menu - 21.1 - Filter Rules Summary as seen below. The information displayed in this menu is read-only. From here, you can examine the parameters of each rule that you have configured for that set. The following is a brief description of the abbreviations used in this menu.

- # - Refers to the filter rule number (1-6).
- A - Refers to Active. Y means the filter rule is active and N means the filter rule is inactive.
- **Type** - Refers to the type of filter rule. This can display GEN for generic, IP for TCP/IP, or IPX for Novell IPX.
- **Filter Rules** - The filter rule parameters will be displayed here (see below).
- M - Refers to More. Y means there are more rules to check, N means there aren't.

- **m** - Refers to Action Matched. F means to forward the packet, D means to drop the packet, and N means check the next rule.
- **n** - Refers to Action Not Matched. F means to forward the packet, D means to drop the packet, and N means check the next rule.

Menu 21.1 - Filter Rules Summary						
#	A	Type	Filter Rules	M	m	n
1	V	IP	Pr=17, SA=204.247.203.2, SP=520, DA=192.68.135.1	N	F	D
2	V	Gen	Off=4, Len=2, Mask=FFFF, Value=0002	N	D	N
3	V	IPX	PT=ad, SS<2222, DS!=1111	N	F	N
4	V	APT	DT=244, DN=[32-64], DS!=200, SM=[100-450], SS>100	N	D	F
5	N					
6	N					

Enter Filter Rule Number (1-6) to Configure: _

Figure 9-3 Menu 21.1 - Filter Rules Summary

If the filter type is IP (TCP/IP), the following abbreviations will be used:

- **Pr** - Protocol.
- **SA** - Source Address.
- **SP** - Source Port number.
- **DA** - Destination Address.
- **DP** - Destination Port number.

If the filter type is GEN (generic), the following abbreviations will be used:

- **Off** - Offset.
- **Len** - Length.

If the filter type is IPX (Novell IPX), the following abbreviations will be used:

- **PT** - IPX Packet Type.
- **SS** - Source Socket.
- **DS** - Destination Socket.

For more information on configuring the filter rule parameters, refer to the next section.

To configure a specific filter rule, simply select the number of the filter rule (1-6) you wish to configure and press ENTER. This will take you to Menu 21.1.1 - TCP/IP Filter Rule (next section).

Configuring a Filter Rule

There are four types of filter rules that you can configure. Some of the parameters will differ depending on the type of rule. When you first enter the filter rule menu, you will be presented with Menu 21.1.1 - TCP/IP Filter Rule. If you wish to configure another type of filter rule, you need to select the appropriate type (by pressing the SPACE bar) under the **Filter Type** field and press ENTER. This will bring you to the corresponding menu.

TCP/IP Filter Rule

This section will show you how to configure a TCP/IP filter rule for your Prestige. The fields in the menu are indicated in **bold** type.

```
Menu 21.1.1 - TCP/IP Filter Rule
Filter #: 1,1
Filter Type= ICP/IP Filter Rule
Active= Yes
IP Protocol= 17      IP Source Route= No
Destination: IP Addr= 192.68.135.1
              IP Mask= 255.255.255.255
              Port # = 520
              Port # Comp= None
Source:       IP Addr= 204.247.203.2
              IP Mask= 255.255.255.255
              Port # = 520
              Port # Comp= Equal
TCP Estab= N/A
More= No      Log= None
Action Matched= Forward
Action Not Matched= Drop

Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

Figure 9-4 Menu 21.1.1 - TCP/IP Filter Rule

1. **Active** - In this field, you can make the filter rule active or inactive. There are two options:
 - Yes.
 - No.
2. **IP Protocol** - Protocol refers to the IP specific number of the protocol. The range for this value should be between 0 and 255. For example, 6 refers to the TCP protocol.
3. **IP Source Route** - Determine, Yes or No, to check the source route.
4. **Destination: IP Addr** - In this field, enter the destination IP Address of the packet you wish to filter. The address is usually written in dotted decimal notation such as a.b.c.d where a, b, c, and d are numbers between 0 and 255.
5. **Destination: IP Mask** - In this field, enter the IP mask that will be used to mask the bits of the IP Address given in **Destination: IP Addr**.

6. **Destination: Port #** - Enter the destination port of the packets that you wish to filter. The range of this field is 0 to 65535.
7. **Destination: Port # Comp** - In this field, you can select what comparison quantifier you wish to enable to compare to the value given in **Destination: Port #**. There are five options for this field:
 - None.
 - Less.
 - Greater.
 - Equal.
 - Not Equal.
8. **Source: IP Addr** - In this field, enter the source IP Address of the packet you wish to filter. The address is usually written in dotted decimal notation such as a.b.c.d where a, b, c, and d are numbers between 0 and 255.
9. **Source: IP Mask** - In this field, enter the IP mask that will be used to mask the bits of the IP Address given in **Source: IP Addr**.
10. **Source: Port #** - Enter the source port of the packets that you wish to filter. The range of this field is 0 to 65535.
11. **Source: Port # Comp** - In this field, you can select what comparison quantifier you wish to use to compare to the value given in **Source: Port #**. There are five options for this field:
 - None.
 - Less.
 - Greater.
 - Equal.
 - Not Equal.
12. **TCP Estab** - This field is dependent upon the IP Protocol field. This field will be inactive (N/A) unless the value in that field is 6

(TCP protocol). In this field you determine what type of TCP packets to filter. There are two options:

- Yes - filter matches only established TCP connections.
- No - filter matches both initial and established TCP connections.

13. **More** - In this field, you can determine if you want to pass the packet through the next filter rule before any action is taken. There are two options for this field:

- Yes.
- No.

If More is Yes, then Action Matched and Action Not Matched will be N/A.

14. **Log** - In this field, you can determine if you wish to log the results of packets attempting to pass the filter rule. These results will be displayed on the System Log (see Chapter 13). There are 4 options for this field:

- None - No packets will be logged.
- Action Matched - Only packets that match the rule parameters will be logged.
- Action Not Matched - Only packets that do not match the rule parameters will be logged.
- Both - All packets will be logged.

15. **Action Matched** - If the conditions for the filter rule are met, you can specify what to do with the packet. There are three options for this field:

- Check Next Rule.
- Forward.
- Drop.

16. **Action Not Matched** - If the conditions for the filter rule are not met, you can specify what to do with the packet. There are three options for this field:

- Check Next Rule.
- Forward.
- Drop.

Once you have completed filling in Menu 21.1.1 - TCP/IP Filter Rule, press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections, or press **ESC** at any time to cancel your selections. This data will now be displayed on Menu 21.1 - Filter Rules Summary.

Generic Filter Rule

This section will show you how to configure the protocol-independent parameters for a Generic filter rule for your Prestige. For information on the protocol-dependent fields, refer to the previous section, TCP/IP Filter Rule and the following section, Novell IPX Filter Rule. The fields in the menu are indicated in **bold** type.

```
Menu 21.1.2 - Generic Filter Rule

Filter #: 1,2
Filter Type= Generic Filter Rule
Active= Yes
Offset= 4
Length= 2
Mask= ffff
Uvalue= 0802
More= No           Log= None
Action Matched= Drop
Action Not Matched= Check Next Rule

Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

Figure 9-5 Menu 21.1.1 - Generic Filter Rule

1. **Offset** - Offset refers to the value of the byte that you want to use as your starting offset. That is, in the data packet, at what point do you want to begin the comparison. The range for this field is from 0 to 255. *Default = 0*
2. **Length** - This field refers to the length (in bytes) of the data in the packet that your Prestige should use for comparison and masking. The starting point of this data is determined by Offset. The range for this field is 0 to 8. *Default = 0*
3. **Mask** - In this field, specify (in Hexadecimal) the value that your Prestige should logically qualify [and] the data in the packet. Since Length is given in bytes, you need to enter in twice the length hexadecimal numbers for this field. For example, if Length were 4, then a valid Mask must have 8 hexadecimal numbers, like 1155ABF8.
4. **Value** - In this field, specify (in Hexadecimal) the value that your Prestige should use to compare with the masked packet. The value should align with Offset. Since Length is given in bytes, you need to enter in twice the length hexadecimal numbers for this field. For example, if Length were 4, then a valid Value must have 8 hexadecimal numbers, like 1155ABF8. If the result from the masked packet matches Value, then the packet is considered matched.

Once you have completed filling in Menu 21.1.1 - Generic Filter Rule, press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections, or press **ESC** at any time to cancel your selections. This data will now be displayed on Menu 21.1 - Filter Rules Summary.

Novell IPX Filter Rule

This section will show you how to configure the protocol-dependent parameters for an IPX filter. The fields in the menu are displayed in **bold type**.

```
Menu 21.1.3 - IPX Filter Rule

Filter #: 1,3
Filter Type= IPX Filter Rule
Active= Yes
IPX Packet Type= ad
Destination: Network #= 12345678
              Node #= abcdef123456
              Socket #= 1111
              Socket # Comp= Not Equal
Source: Network #= 87654321
          Node #= 654321fedcba
          Socket #= 2222
          Socket # Comp= Less

Operation= N/A
More= No           Log= None
Action Matched= Forward
Action Not Matched= Check Next Rule

Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

Figure 9-6 Menu 21.1.3 - IPX Filter Rule

1. **IPX Packet Type** - Enter the IPX packet type value of the packet you wish to filter. This value should be two hex-bytes.
2. **Destination/Source Network #** - Enter the four hex-byte destination/source network numbers of the packet that you wish to filter.
3. **Destination/Source Node #** - Enter in the six hex-byte value for the destination/source node number of the packet you wish to filter.
4. **Destination/Source Socket #** - Enter the destination/source socket number of the packets that you wish to filter. This should be a 4-byte hex value.
5. **Destination/Source Socket # Comp** - You can select what comparison quantifier you wish to use to compare to the value given in Destination Socket # and Source Socket #.

6. **Operation** - This field is only active if one of the Socket # fields is 0452 or 0453 indicating SAP and RIP packets. There are seven options for this field which determines the operation for the IPX packet.
- None.
 - RIP Request.
 - RIP Response.
 - SAP Request.
 - SAP Response.
 - SAP Get Nearest Server Request.
 - SAP Get Nearest Server Response.

Once you have completed filling in Menu 21.1.3 - IPX Filter Rule, press **ENTER** at the message: Press ENTER to Confirm ... to confirm your selections, or press **ESC** at any time to cancel your selections. This data will now be displayed on Menu 21.1 - Filter Rules Summary.

10 SNMP

About SNMP

The Simple Network Management Protocol (SNMP) is a protocol governing network management and the monitoring of network devices and their functions. The Prestige 128L supports the utilization of SNMP to regulate the communication that occurs between the manager station and the agent stations in a network. Basically, your Prestige, when connected to the LAN, acts as an agent station. In this way, the manager station on your LAN can monitor your Prestige as it would another station on the network. Keep in mind that SNMP is only available if TCP/IP is configured.

Configuring Your Prestige For SNMP Support

The following steps describe a simple setup procedure for configuring SNMP management.

```
Menu 22 - SNMP Configuration

SNMP:
Get Community= public
Set Community= netman
Trusted Host= 204.247.203.142
Trap:
Community= public
Destination= 0.0.0.0

Press ENTER to Confirm or ESC to Cancel:
```

Figure 10-1 Menu 22 - SNMP Configuration

1. From the Main Menu, select option 22. SNMP Configuration. This will bring you to Menu 22 - SNMP Configuration.
2. You will then be prompted to enter the following information. Steps 3 -7 will describe the specific parameters involved in the configuration. The parameters you will have to fill in will be indicated in **bold** type.
3. **Get Community** - From this field, you can determine what the Get Community is for your Prestige. The value entered into this field will be used to authenticate the community field for the incoming Get- and GetNext- requests from the management station. The default is public.
4. **Set Community** - In this field, enter the Set Community for your Prestige. The value entered in this field will be used to authenticate the community field for the incoming Set- requests from the management station. The default is public.
5. **Trusted Host** - Enter the IP address of the trusted host SNMP management station. If this field is configured, then your Prestige will only respond to SNMP messages coming from this address. If you

leave the field blank (default), then your Prestige will respond to all SNMP messages it receives, regardless of origin.

6. **Trap: Community** - In this field, enter the community name that is sent with each trap to the SNMP manager. This should be treated like a password and match what the SNMP manager is expecting. The default is public.
7. **Trap: Destination** - This field contains the IP address of the station that you wish to send your SNMP traps.

Once you have completed filling in Menu 22 - SNMP Configuration, press **ENTER** to confirm your selections or press **ESC** to cancel your selections.

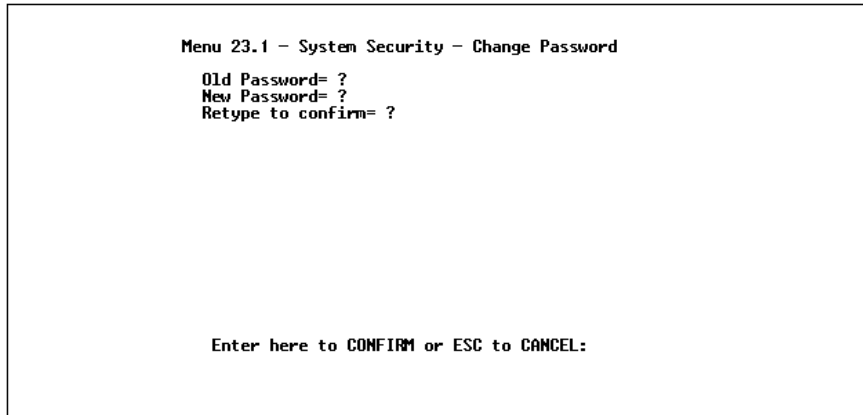
If you are unsure how to configure the fields for the SNMP configuration, consult your network administrator.

11 System Security

The Prestige 128L incorporates a number of security measures to prevent unauthorized access to your network. For example, your Prestige supports both PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol) in authenticating a Remote Node.

In addition, your Prestige also implements a user password to get into the SMT screen. You will have three attempts to enter the correct system password. If all three attempts fail, the SMT will log out. In addition, your Prestige will only support one user in the SMT at one time.

Configuring the SMT Password



```
Menu 23.1 - System Security - Change Password
Old Password= ?
New Password= ?
Retype to confirm= ?

Enter here to CONFIRM or ESC to CANCEL:
```

Figure 11-2 Menu 23.1 - System Security - Change Password

The following steps describe a simple setup procedure for configuring the SMT password.

1. From the Main Menu, select option 23. System Security. This will bring you to Menu 23 - System Security.
2. From this menu, you can select option 1. Change Password. This will bring you to Menu 23.1 - System Security - Change Password.
3. Type in your previous system password and press **ENTER**.
4. Type in your new system password and press **ENTER**.
5. Re-type your new system password for confirmation purposes and press **ENTER**.

You will now need to enter in this password when you try to get into the SMT. In addition, this password will also be used when a network administrator attempts to telnet to your Prestige.

12 Telnet Configuration and Capabilities

About Telnet Configuration

When you first configure your Prestige, it must be done via a computer connected to the RS-232 port. However, once your Prestige has been initially configured, you can use `telnet` to configure the device remotely as shown below:

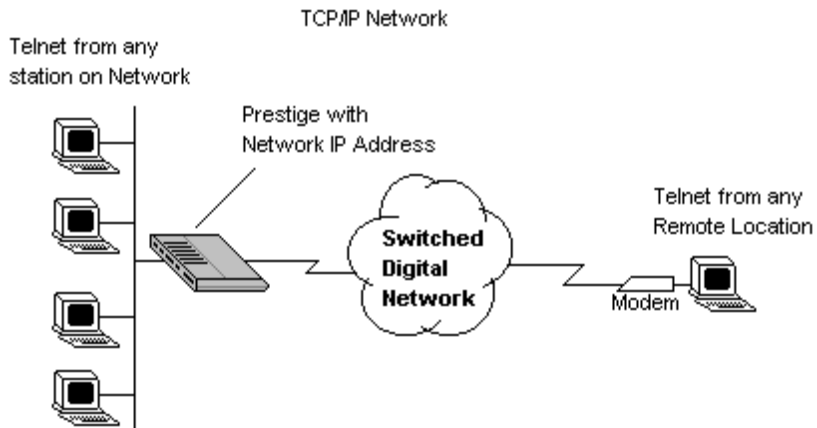


Figure 12-1 Telnet Configuration on a TCP/IP Network

In order to configure your Prestige in this way, you need to have assigned an IP Address to your device and have connected it to your network. See Chapter 3 for more information on assigning an IP Address. Once this is configured, any station on the LAN or remote network that has TCP/IP installed can use `telnet` remote

management. If your Prestige is configured for IPX routing but not IP in menu 1, `telnet` will still be available provided you assign your Prestige an IP address.

Telnet Capabilities

Single Administrator

To prevent confusion and discrepancy on the configuration, your Prestige will only allow one terminal connection at any time. Your Prestige also gives priority to the RS-232 connection over `telnet`. If you have already connected to your Prestige via `telnet`, you will be logged out if another user is connecting to your Prestige via the RS-232 cable. Only after the other administrator has been disconnected will you be able to `telnet` to your Prestige again.

System Timeout

When you are connected to your Prestige via `telnet`, there is a system timeout of 5 minutes (300 seconds). If you are not configuring the device and leave it inactive for this timeout period, then your Prestige will be disconnected automatically.

13 System Maintenance

The Prestige 128L provides a full range of diagnostic tools to help you monitor and maintain your system. Some of these tools provide updates on system status, ISDN B channel status, log and trace capabilities and upgrades to system software.

System Status

System Status can be used to monitor your Prestige. Specifically, it will give you information on the status of your system software version, ISDN telephone line, number of packets sent and number of packets received.

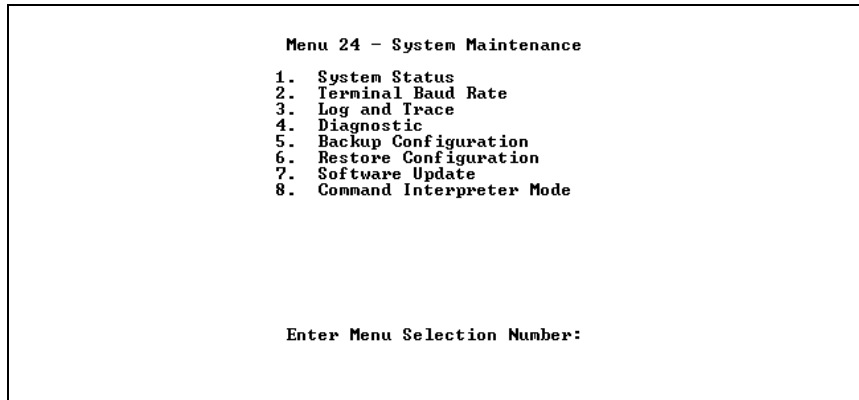


Figure 13-1 Menu 24 - System Maintenance

```

Menu 24.1 -- System Maintenance - Status
CHAN  Link      Type      TXPkt    RXPkt    Error    CLU    ALU    Up Time
  1    Down      0Kbps    0        0        0        0%    0%    0:00:00

Ethernet (U 1.00)
Status: 10M/Half Duplex
TX Pkt: 503
RX Pkt: 0
Collision: 0

Name:
RAS S/W Version: U1.42(B.00) : 11/7/97
IDSL F/W Version: U 069
Ethernet Address: 00:a0:c5:20:26:35

Press Command: _
COMMANDS: 3-Reset Counters  ESC-Exit

```

Figure 13-2 Example of Menu 24.1 - System Maintenance - Status

1. To get to the System Status, select option 24. System Maintenance. This will bring you to Menu 24 - System Maintenance.
2. From this menu, select option 1. System Status.
3. There are two (2) possible commands in Menu 24.1. 3 will reset the counters; and ESC will exit this screen.
4. Items 5 - 22 describes the fields present in Menu 24.1 - System Maintenance - Status. It should be noted that these fields are READ-ONLY and are meant to be used for diagnostic purposes.
5. **CHAN** - shows statistics for logical channel.
6. **Link** - shows the Remote Node the channel is currently connected to or the status of the channel (Idle, Calling, or Answering).
7. **Type** - the current connecting speed (56K or 64K).
8. **TXPkt** - the number of transmitted packets on this channel.
9. **RXPkt** - the number of received packets on this channel.
10. **Error** - the number of error packets on this channel.

11. **CLU** - (Current Line Utilization) - percentage of current bandwidth used on this channel.
12. **ALU** - (Average Line Utilization) - average CLU for this channel.
13. **Up Time** - time this channel has been connected to the current Remote Node.
14. **Ethernet** - shows the current status of the LAN connection on your Prestige.
15. **Status** - shows the current status of the LAN which may be 10M/Half Duplex, 10M/Full Duplex, 100M/Half Duplex, or 100M/Full Duplex. Left hand side of the “/” is the speed of the Ethernet, and the right hand side is the mode of the Ethernet.
16. **TX Pkt** - the number of transmitted packets to LAN.
17. **RX Pkt** - the number of received packets from LAN.
18. **Collision** - number of collisions.
19. **Name** - displays the system name of your Prestige. This information can be modified in Menu 1 - General Setup.
20. **RAS S/W Version** - refers to the version of the current RAS software.
21. **ISDL F/W Version** - refers to the version of the current ISDN firmware.
22. **Ethernet Address** - refers to the Ethernet MAC address assigned to your Prestige.

Terminal Baud Rate

Users can set up different baud rates for the RS-232 connection through menu 24.2 Terminal Baud rate. Your Prestige supports 9600 (default), 19200, and 38400bps for the RS-232 connection.

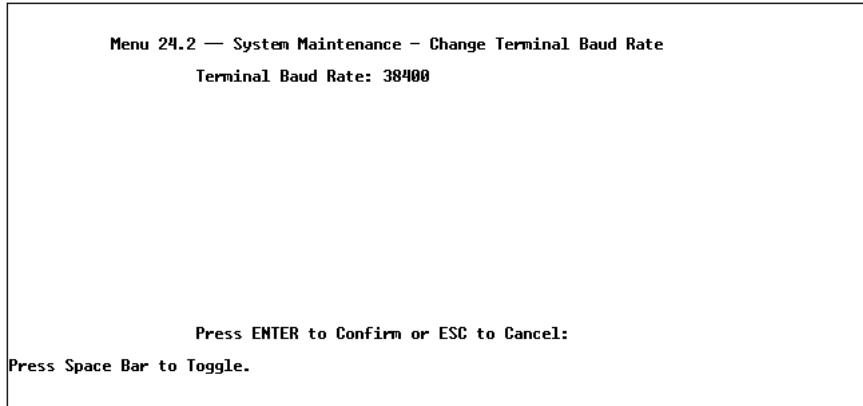


Figure 13-3 Menu 24.2 -System Maintenance - Change Terminal Baud Rate

Log and Trace

Log and trace tools allow you to view the error logs and trace records to troubleshoot any errors that may occur. Your Prestige is also able to generate syslogs to send to other machines.

1. To get to the Log and Trace, select option 24. System Maintenance. This will bring you to Menu 24 - System Maintenance.
2. From this menu, select option 3. Log and Trace. This will bring you to Menu 24.3 - System Maintenance - Log and Trace.
3. You will be given two options.
 - View Error Log.
 - Syslog and Accounting.

The following list describes the fields involved in the trace and log options:

View Error Log

Selecting the first option from Menu 24.3 - System Maintenance - Log and Trace will display the system Error Log. The Error Log does not only provide the error messages but it is also a source of information about your Prestige.

You can also clear the Error Log on your Prestige. After each display, you are prompted with an option to do so. Enter the appropriate choice and press Enter.

Syslog

Syslog can be configured in Menu 24.3.2 - System Maintenance - Syslog. This menu configures your Prestige to send UNIX syslogs to another machine.

```
Menu 24.3.2 — System Maintenance - Syslog and Accounting
Syslog:
Active= No
Syslog IP Address= ?
Log Facility= Local 1


Press ENTER to Confirm or ESC to Cancel:
Press Space Bar to Toggle.
```

Figure 13-4 Menu 24.3.2 - System Maintenance - Syslog and Accounting

The User needs to configure the following 3 parameters to activate syslog:

1. **Active** - Use the space bar to turn the syslog option on or off.

2. **Syslog IP Address** - Input the IP Address that you wish to send your syslog to. The address is usually written in dotted decimal notation such as a.b.c.d where a, b, c, and d are numbers between 0 and 255.
3. **Log Facility** - Use the space bar to toggle between the 7 different Local options. This feature is used for UNIX application.

 **NOTE:** YOUR PRESTIGE WILL SEND TWO DIFFERENT TYPES OF SYSLOG MESSAGES: ERROR INFORMATION MESSAGES AND SESSION INFORMATION MESSAGES.

Diagnostic

The diagnostic functions of your Prestige allow you to test aspects of your device to determine if they are working properly. The following list provides a short description to the types of diagnostic tests available to your system.

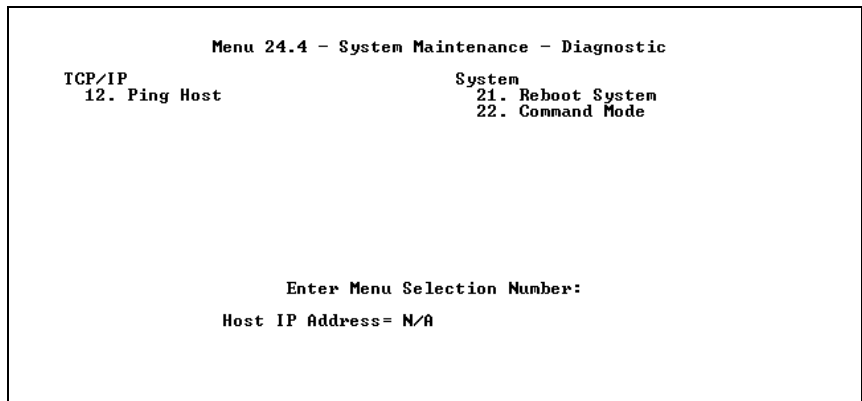


Figure 13-5 Menu 24.4 - System Maintenance - Diagnostic

1. From the Main Menu, select option 24. System Maintenance. This will bring you to Menu 24 - System Maintenance.
2. From this menu, select option 4. Diagnostic. This will bring you to Figure 15.4 Menu 24.4 - System Maintenance - Diagnostic.

3. Items 4 - 7 will describes the four (4) options to test your Prestige and its connections.
4. **Internet Setup Test** - This test checks to see if your Internet access configuration has been done correctly. When this option is chosen, your Prestige will PING the Internet IP Address. If everything is working properly, you will receive an appropriate response. Otherwise, note the error message and consult your network administrator.
5. **Ping Host** - This diagnostic test pings the host which determines the functionality of the TCP/IP protocol on your system.
6. **Reboot System** - This option reboots the system. This serves to implement any changes that may have been recently added to your system.
7. **Command Mode** - This option allows the user to enter the command mode. This mode allows you to diagnose and test your Prestige using a specified set of commands.

Backup Configuration

Selecting option 5 from Menu 24 - Maintenance will allow you to backup your current configuration onto disk. Backup is highly recommended.

You need to download the configuration onto disk. Procedure for downloading varies depending on the type of software used to access your Prestige but you must use the XMODEM protocol to perform the download.

Restore Configuration

Selecting option 6 from Menu 24 - Maintenance will restore backup configuration from disk to your Prestige. You need to upload a backup file to your Prestige. Procedure for uploading varies depending on the type of software used to access the Prestige but you must use the XMODEM protocol to restore the configuration.

Keep in mind that configuration is stored on flash ROM in your Prestige so even if power failure were to occur, your configuration is safe.

Software Update

Software updates are only possible through the RS-232 cable connection, `telnet` cannot be used. Note that this function will delete the old software before installing the new software. Do not attempt to utilize this menu unless you have the new software version. There are two different software updates: RAS code and ISDN code.

- **RAS and ISDN code update** - Type `atur` and wait until your Prestige responds with an OK to begin uploading the new software (upload procedure varies depending on the type of software used to access your Prestige). You must use the XMODEM protocol to perform the upload. After uploading is successful, type `atgo` to start your Prestige. Below is an example of downloading RAS and ISDN using *PCPLUS*.

```
To update software, system needs to be rebooted.
After system is rebooted, 'Enter Debug Mode' will be displayed.
Please enter 'atur' to upload RAS code.
Or enter 'atrs', 'atis', then 'atupx' to upload ISDN code.
Do you want to continue (y/n):
Enter Debug Mode
atur
Now erase flash ROM for uploading RAS code...

Starting XMODEM upload.....
S
Programing successful....

OK
atgo
Initialing Driver...

Alt-Z FOR HELP  ANSI  FDX  38400 N81  LOG CLOSED  PRINT OFF  OFF-LINE
```

Figure 13-6 Example of uploading RAS using PCPLUS

Command Interpreter Mode

This option allows the user to enter the command interpreter mode. This mode allows you to diagnose, test, and configure your Prestige using a specified set of commands. A list of valid commands can be found by typing help at the command prompt. For more detailed information, check the ZyXEL Web site or send email to the ZyXEL Support Group.

14 Troubleshooting

This chapter contains some problems you may run into when using your Prestige. After each problem description, we have provided some instructions to help you diagnose and solve the problem.

Problems Starting Up the Prestige

None of the LEDs are on when you power up the Prestige

- Check the power cord and the power supply and make sure it is properly connected to your Prestige. If the error persists you may have a hardware problem. In this case you should contact technical support.

Connecting the RS-232 cable, cannot access the SMT

- Check to see if your Prestige is connected to your computer's serial port.
- Check to see if the communications program is configured correctly. The communications software should be configured as follows:
 - VT100 terminal emulation.
 - 9600 Baud rate.
 - No parity, 8 Data bits, 1 Stop bit.

Problems With the IDSL Line

The IDSL LEDs Not On

Check the connection between your two routers. When they are connected, the link and B1/B2 LED should be on if the transfer type is leased 128; and the link and B1 LED are on if the transfer type is leased 64.

1. Check the IDSL line if it is a single line to connect a pair of routers.
2. Check the counter Prestige see whether it is still alive.
3. Check with telephone company if the IDSL line is connected to telephone company.

Problems with the LAN Interface

Can not PING any station on the LAN

1. Check the LAN LED on the front panel of your Prestige. If it is on, then the link is up. If it is off, then check the cables connecting your Prestige to your LAN.
2. The type of Ethernet interface that you have configured in menu 3.1. Verify that you are using the same (AUI or 10Base-T) as configured in this menu.
3. Verify with your network administrator that the IP address and the IP subnet mask configured in menu 3.2 are valid for that LAN.
4. Check the physical Ethernet cable, and make sure the connections on your Prestige and the hub are secure.

Problems Connecting to a Remote Node or ISP

1. Check menu 24.1 to verify the IDSL status. If it is down then refer to the section on the IDSL line problems.
2. If you check the error log in menu 24.3.1, this will usually give you some logs regarding where goes wrong. If there is nothing in the log, it may be an IP address configuration error.

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