

# *Prestige 782M*

*G.SHDSL Bridge*

## *User's Guide*

Version 2.50

March 2002

**ZyXEL**

TOTAL INTERNET ACCESS SOLUTION

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

- This device may not cause harmful interference.
- 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:

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

## **Notice 1**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## **Certifications**

Refer to the product page at [www.zyxel.com](http://www.zyxel.com).

# 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 label 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 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.

For their own protection, users should ensure that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

## **Caution**

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

## **Note**

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.

# ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in materials or workmanship for a period of up to two years from the date of purchase. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product is modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

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To obtain the services of this warranty, contact ZyXEL's Service Center for your Return Material Authorization number (RMA). Products must be returned Postage Prepaid. It is recommended that the unit be insured when shipped. Any returned products without proof of purchase or those with an out-dated warranty will be repaired or replaced (at the discretion of ZyXEL) and the customer will be billed for parts and labor. All repaired or replaced products will be shipped by ZyXEL to the corresponding return address, Postage Paid. This warranty gives you specific legal rights, and you may also have other rights that vary from country to country.

# Customer Support

Please have the following information ready when you contact customer support.

- Product model and serial number.
- Information in **Menu 24.2.1 — System Information**.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

METHOD	E-MAIL SUPPORT/SALES	TELEPHONE/FAX	WEB SITE/ FTP SITE	REGULAR MAIL
LOCATION				
WORLDWIDE	<a href="mailto:support@zyxel.com.tw">support@zyxel.com.tw</a>  <a href="mailto:sales@zyxel.com.tw">sales@zyxel.com.tw</a>	+886-3-578-3942  +886-3-578-2439	<a href="http://www.zyxel.com">www.zyxel.com</a>  <a href="http://www.europe.zyxel.com">www.europe.zyxel.com</a>  <a href="http://ftp.europe.zyxel.com">ftp.europe.zyxel.com</a>	ZyXEL Communications Corp., 6 Innovation Road II, Science- Based Industrial Park, HsinChu, Taiwan 300, R.O.C.
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# Preface

## About Your Prestige

Congratulations on your purchase of the Prestige 782M G.SHDSL Bridge.

The Prestige is a high-performance modem for Internet/LAN access via a telephone line. Your Prestige supports multi-protocol routing for TCP/IP and transparent bridging for other protocols.

The Prestige supports symmetrical multi-rate data transmission speeds from 72Kbps up to 2320Kbps. The actual rate depends on the copper category of your telephone wires, distance from the central office and the type of xDSL service you subscribe to. Its 10/100M auto-negotiating LAN interface enables fast data transfer of either 10Mbps or 100Mbps in either half-duplex or full-duplex mode depending on your Ethernet network. See the following section for more background information on xDSL.

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**Register your Prestige online at [www.zyxel.com](http://www.zyxel.com) for free future product updates and information.**

---

Your Prestige is easy to install and configure. All functions of the Prestige are software configurable via the SMT (System Management Terminal). Advanced users may configure the Prestige using CLI (Command Line Interface) commands.

## About This User's Guide

This user's guide covers all operations of the Prestige. It will guide you through the correct configuration of your Prestige for various applications and show you how to get the best out of the many advanced features of your modem.

## Related Documentation

- Supporting Disk  
More detailed information and examples can be found in our included disk (as well as on the [zyxel.com](http://zyxel.com) web site). This disk contains information on configuring your Prestige for Internet Access, general and advanced FAQs, Application Notes, Troubleshooting, a reference for CI Commands and bundled software.
- Read Me First

Our Read Me First is designed to help you get up and running right away. It contains a detailed easy-to-follow connection diagram, default settings, handy checklists and information on setting up your network and configuring for Internet access.

➤ **ZyXEL Glossary and Web Site**

Please refer to [www.zyxel.com](http://www.zyxel.com) for an online glossary of networking terms and additional support documentation.

### **Syntax Conventions**

- “Type” means for you to type one or more characters and press the carriage return. “Select” or “Choose” means for you to select one from the predefined choices.
- The SMT menu titles and labels are in **Bold Times New Roman** font. Predefined field choices are in **Bold Arial** font. Command and arrow keys are enclosed in square brackets. [ENTER] means the Enter, or carriage return key; [ESC] means the Escape key and [SPACE BAR] means the Space Bar.
- For brevity’s sake, we will use “e.g.,” as a shorthand for “for instance”, and “i.e.,” for “that is” or “in other words” throughout this manual.
- The Prestige 782 modem may be referred to as the P782M or the Prestige in this user’s guide.

---

**The following section offers some background information on DSL. Skip to *Chapter 1* if you wish to begin working with your modem right away.**

---



# What is DSL?

DSL (Digital Subscriber Line) technology enhances the data capacity of the existing twisted-pair wire that runs between the local telephone company switching offices and most homes and offices.

There are actually seven types of DSL service, ranging in speeds from 16 Kbits/sec to 52 Mbits/sec. The services are either symmetrical (traffic flows at the same speed in both directions), or asymmetrical (the downstream capacity is higher than the upstream capacity). Asymmetrical services (ADSL) are suitable for Internet users because more information is usually downloaded than uploaded. For example, a simple button click in a web browser can start an extended download that includes graphics and text.

As data rates increase, the carrying distance decreases. That means that users who are beyond a certain distance from the telephone company's central office may not be able to obtain the higher speeds.

A DSL connection is a point-to-point dedicated circuit, meaning that the link is always up and there is no dialing required.

## G.SHDSL

G.SHDSL (Single-pair High-speed Digital Subscriber Line) is a symmetrical, bi-directional DSL service that operates on one twisted-pair wire and provides data rates up to 2.3 Mbits/sec. The "G." in "G.SHDSL" is defined by the G.991.2 ITU (International Telecommunication Union) state-of-the-art industry standard.

### The Benefits of G.SHDSL:

- **Continuous Connection** You are always online.
- **Dedicated Bandwidth** Line speed is "symmetric," i.e., the same bandwidth in both directions.
- **Investment Protection** Scalability. Offers a flexible upgrade path. You can choose a higher access speed yourself - no site visit is necessary.
- **Low Maintenance** Connectivity requires no complex manual configuration.
- **Distance Capabilities** G.SHDSL achieves 20% better loop-reach than older versions of symmetric DSL. (Loop reach defines speed that can be attained at various distances).



# Chapter 1

## Getting to Know Your G.SHDSL Bridge

*This chapter covers the key features and main applications of your Prestige.*

The Prestige can be used for high-speed LAN-to-LAN connections or Internet access through a G.SHDSL connection over the telephone line.

### 1.1 Features of the Prestige

The following features make the Prestige a complete and the flexible networking solution for most users.

#### **High Speed Scalability**

Your Prestige G.SHDSL modem supports symmetrical multi-rate data transmission speeds from 72 Kbps up to 2312 Kbps. You can increase the capacity of the Internet connection (within certain distance limitations) without changing your ISP or purchasing new equipment. G.SHDSL's high symmetrical speeds are ideal for applications like web hosting and videoconferencing as well as the two-way data traffic needs of businesses.

#### **Symmetrical High Speed Internet Access**

The Prestige supports symmetrical transmission up to 2.3 Mbps. For NSP's (Network Service Provider) convenience, the Prestige also supports rate management depending on distances and service charges.

#### **10/100MB Auto-negotiation Ethernet/Fast Ethernet Interface**

This auto-negotiation feature allows the Prestige to detect the speed of incoming transmissions and adjust appropriately, providing a faster data transfer on the Ethernet network as required. It enables fast data transfer of either 10 Mbps or 100 Mbps in either half-duplex or full-duplex mode depending on your Ethernet network.

#### **Protocols Supported**

- TCP/IP (Transmission Control Protocol/Internet Protocol) network layer protocol.
- PPP (Point-to-Point Protocol) link layer protocol.

#### **Multiple Protocol Support**

- Transparent bridging (IEEE 802.1D) including PPP and BCP support
- Bridge Filters

- Packet Filtering
- User Authentication (PAP, CHAP) with PPP (RFC 1334, RFC 1994)
- Microsoft CHAP

### **Multiple PVC (Permanent Virtual Circuits) Support**

- Your Prestige supports up to 12 PVCs.

### **Data Compression**

Your Prestige incorporates Stac LZS data compression ratios of up to 4:1 to speed up data transfer. Stac is the de facto standard of data compression over PPP links.

### **ATM Support**

- PPP over ATM (RFC 2364)
- Multiple Protocols over ATM (RFC 1483)
- ATM AAL5
- VC and LLC-based Multiplexing
- Traffic Shaping
- ATM Forum UNI3.0/4.0 PVC
- OAM F4/F5 LoopBack

### **PPP Support**

- STAC LZS Data Compression of up to 4:1 (RFC 1974)

### **Full Network Management**

- Local menu-driven/password-protected SMT (System Management Terminal) management via console port
- Remote menu-driven/password-protected SMT management via LAN 10M/100M port
- TFTP and FTP firmware upgrade and configuration backup functionality
- CLI (Command Line Interface)
- F4/F5 OAM

### **Diagnostics Capabilities**

The Prestige can perform self-diagnostic tests. These tests check the integrity of the following circuitry:

- FLASH memory

- SHDSL circuitry
- RAM
- LAN port

### Upgrade Firmware via LAN

In addition to the direct console port connection, the Prestige supports the up/downloading of firmware and configuration files over the LAN.

### Ease of Installation

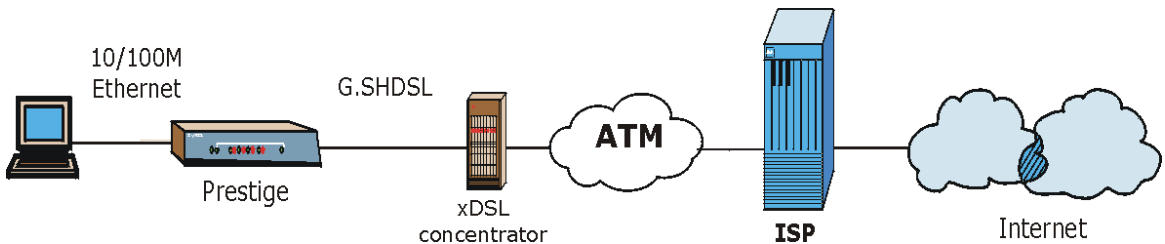
Your Prestige is designed for quick, easy and intuitive installation. Its compact size and light weight make it easy to position anywhere in your busy office.

### Wall-Mounting

On the underside of the housing are two slots that can be used to wall-mount your Prestige.

## 1.2 Application Scenarios for the Prestige

### 1.2.1 Internet Access



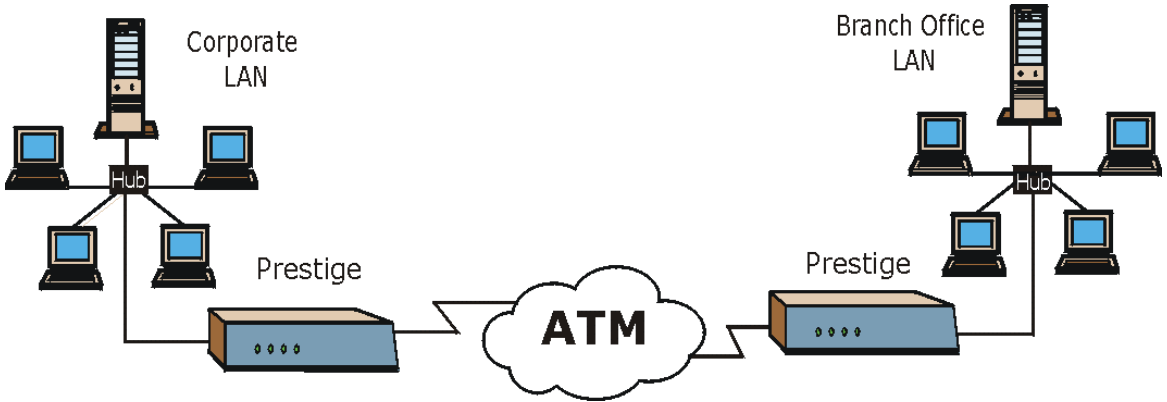
**Figure 1-1 Internet Access Application**

Your Prestige can act as either of the following:

- An IP LAN modem for a sub-network (Class C or smaller).
- A bridge for multi-computer/MAC bridging (RFC-1483, bridged Ethernet/802.3). For multi-computer use, the Prestige must connect with a switch or hub.

## 1.2.2 LAN-to-LAN Application

You can use the Prestige to connect two geographically dispersed networks over the DSL line. For multi-computer use, the Prestige must connect with a switch or hub. A typical LAN-to-LAN application is shown next.



**Figure 1-2 LAN-to-LAN Application**

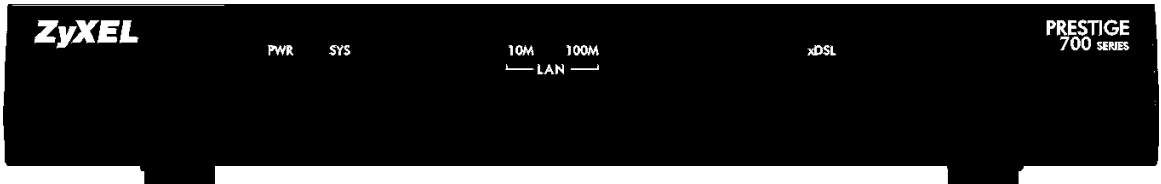
# Chapter 2

## Hardware Installation and Initial Setup

*This chapter shows how to make cable connections and set up your xDSL connection using the SMT.*

### 2.1 Front Panel LEDs of the P782

The LEDs on the front panel indicate the operational status of your Prestige



**Figure 2-1 Prestige 782 Front Panel**

**Table 2-1 Front Panel LED Description**

LED	COLOR	STATUS	DESCRIPTION
PWR	Green	On	The Prestige is receiving power.
		Blinking	The Prestige is performing a self-test.
		Off	The Prestige is not receiving power.
SYS	Green	On	The Prestige is functioning properly.
		Blinking	The Prestige is rebooting or performing self-diagnostics.
		Off	The Prestige is not ready or has malfunctioned.
LAN 100M	Orange	On	The Prestige has a successful 100Mb Ethernet connection.
		Blinking	The Prestige is sending/receiving data.
		Off	The Prestige does not have 100Mb Ethernet connection.
LAN 10M	Green	On	The Prestige has a successful 10Mb Ethernet connection.
		Blinking	The Prestige is sending/receiving data.

LED	COLOR	STATUS	DESCRIPTION
		Off	The Prestige does not have 10Mb Ethernet connection.
xDSL	Green	On	The Prestige has a successful Ethernet connection.
		Blinking	The Prestige is sending/receiving data.
		Off	The Prestige is not sending/receiving data.

## 2.2 Rear Panel and Connections of the Prestige 782

The following figure shows the rear panel of your Prestige.

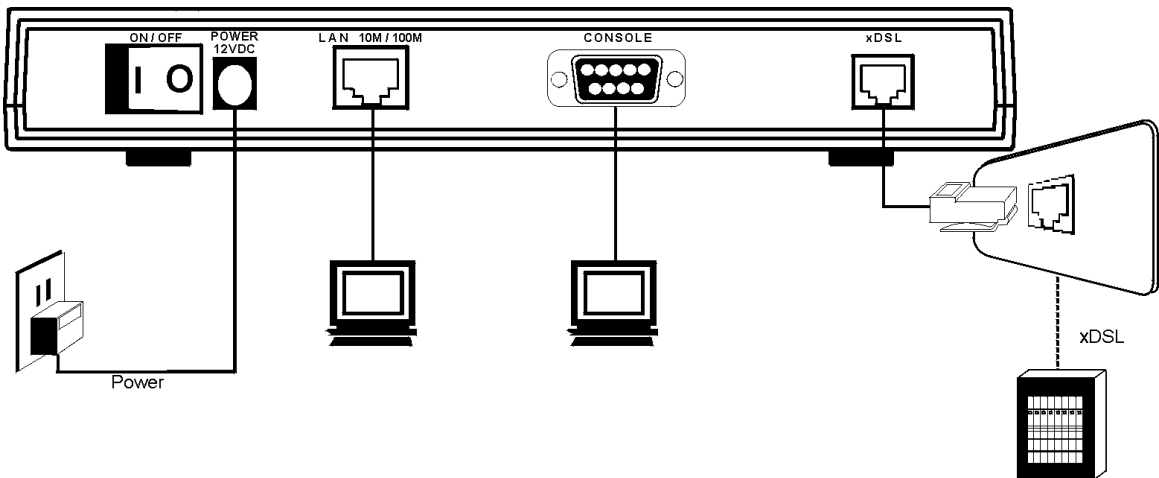


Figure 2-2 Prestige 782 Rear Panel and Connections

### 2.2.1 xDSL Port

Connect the Prestige (port labeled xDSL) to the telephone jack using the RJ-11 cable (supplied).

### 2.2.2 Console Port

For the initial configuration of your Prestige, you need to use terminal emulator software on a computer and connect it to the Prestige through the console port. Connect the 9-pin end of the console cable to the console port of the Prestige and the other 9-pin end to a serial port (COM1, COM2 or other COM port) of your computer. You can use an extension RS-232 cable if the enclosed one is too short.



### 2.2.3 LAN 10/100M Port

Ethernet 10Base-T/100Base-T networks use Shielded Twisted Pair (STP) cable with RJ-45 connectors that look like a bigger telephone plug with 8 pins. Use the crossover cable to connect your Prestige to a computer directly or use a straight-through Ethernet cable to connect to an external hub, then connect one end of the straight-through cable from the hub to the NIC on the computer.

---

**When the Prestige is on and properly connected to a computer or a hub, the corresponding LAN LED on the front panel turns on.**

---

### 2.2.4 Power Port

Connect the power adapter to the port labeled POWER on the rear panel of your Prestige.

---

**To avoid damage to the Prestige, make sure you use the correct power adapter. Refer to the *Power Adapter Specification Appendix* for this information.**

---

## 2.3 Additional Installation Requirements

- An Ethernet 10/100Base-T NIC (Network Interface Card).
- Communications software configured as follows:
  - VT100 terminal emulation
  - 9600 baud
  - parity set to none, 8 data bits, 1 stop bit
  - flow control set to none

## 2.4 Turning On Your Prestige

At this point, you should have connected the xDSL, LAN 10/100M, console and power ports to the appropriate devices. Make sure the power adapter is plugged into an appropriate power source and the power switch (located on the back of your Prestige) is “on” (or pressed).

## 2.5 Configuring Your Prestige For Internet Access

Configure your Prestige for Internet access using:

- SMT (System Management Terminal). Access the SMT via:
  - LAN or WAN using Telnet

- o Console port using terminal emulation software

The remainder of this user’s guide shows you how to configure the Prestige for Internet access using SMT screens. There are also some sections in this guide that also focus on using Telnet to configure the Prestige.

### 2.5.1 Initial Screen

When you turn on your Prestige, it performs several internal tests as well as line initialization. After the initialization, the Prestige asks you to press [ENTER] to continue, as shown.

```
Copyright (c) 1994 - 2002 ZyXEL Communications Corp.  
initialize ch =0, ethernet address: 00:a0:c5:01:23:45  
Wan Channel init ..... done  
Press ENTER to continue...
```

**Figure 2-3 Power-On Display**

### 2.5.2 Entering Password

The login screen appears after you press [ENTER], prompting you to enter the password, as shown next.

For your first login, enter the default password “1234”. As you type the password, the screen displays an “X” for each character you type.

Please note that if there is no activity for longer than five minutes after you log in, your Prestige will automatically log you out and will display a blank screen. If you see a blank screen, press [ENTER] to display the login screen again.

```
Enter Password : XXXX
```

**Figure 2-4 Login Screen**

---

**If, after logging on, there is no activity for longer than 5 minutes, your Prestige will automatically log you out and display a blank screen. Press [ENTER] to bring up the login screen again.**

---

## 2.6 Resetting the Prestige

If you forget your password or cannot access the Prestige, you will need to reload the factory-default configuration file. Uploading the configuration file replaces the current configuration file with the factory-default configuration file. This means that you will lose all configurations that you had previously and the speed of the console port will be reset to the default of 9600bps with 8 data bit, no parity, one stop bit and flow control set to none. The password will be reset to “1234” and the LAN IP address to 192.168.1.1also.

To obtain the default configuration file, download it from the ZyXEL FTP site, unzip it and save it in a folder. Turn the Prestige off and then on to begin a session. When you turn on the Prestige again you will see the initial screen. When you see the message “Press any key to enter Debug Mode within 3 seconds” press any key to enter debug mode.

To upload the configuration file, do the following:

1. Type `atlc` after the `Enter Debug Mode` message.
2. Wait for the `Starting XMODEM upload` message before activating XMODEM upload on your terminal.
3. After a successful firmware upload, type `atgo` to restart the Prestige.

The Prestige is now reinitialized with a default configuration file including the default password of “1234”.

### 2.6.1 Methods of Restoring Factory-Defaults

You can erase the current configuration and restore factory defaults by uploading the default configuration file via the console port as described above. See later in this User’s Guide for more information on how to transfer the configuration file to your Prestige using the SMT menus.

## 2.7 Prestige 782 SMT Menu Overview

The following figure gives you an overview of the various SMT menu screens of your Prestige.

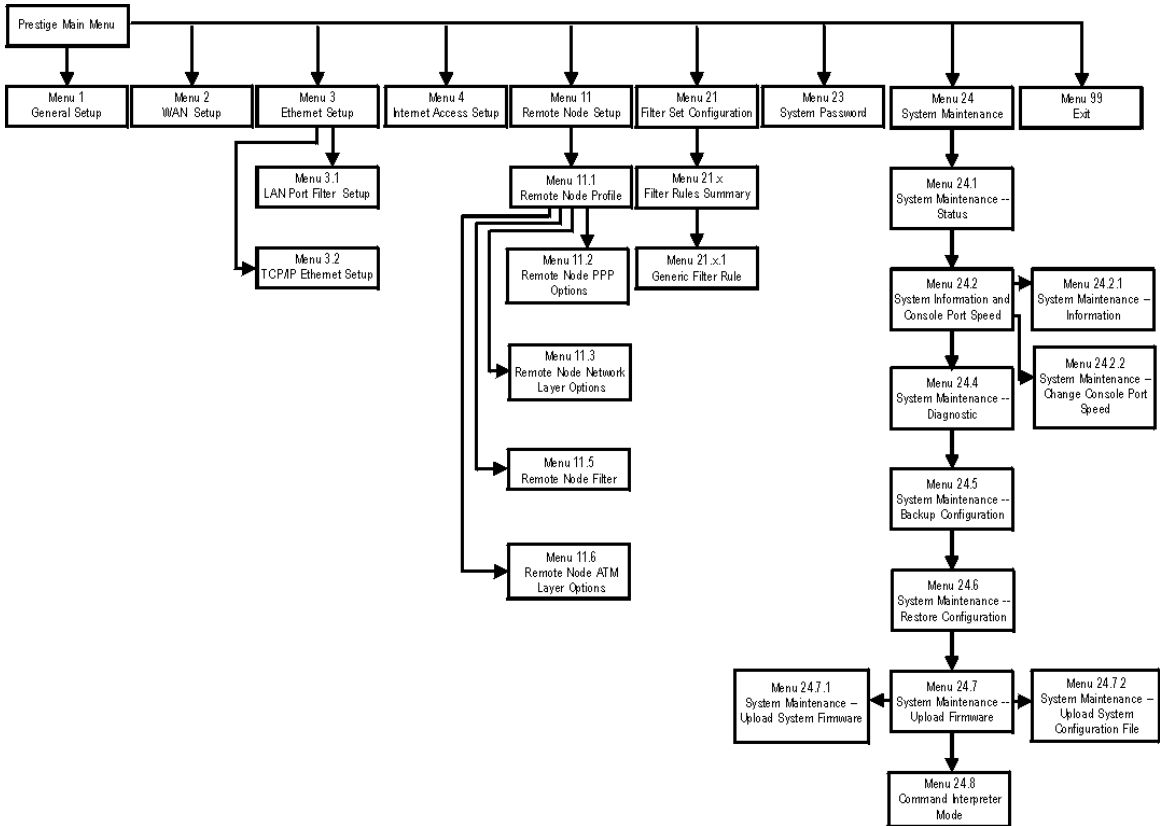


Figure 2-5 Prestige 782 SMT Menu Overview

## 2.8 Navigating the SMT Interface

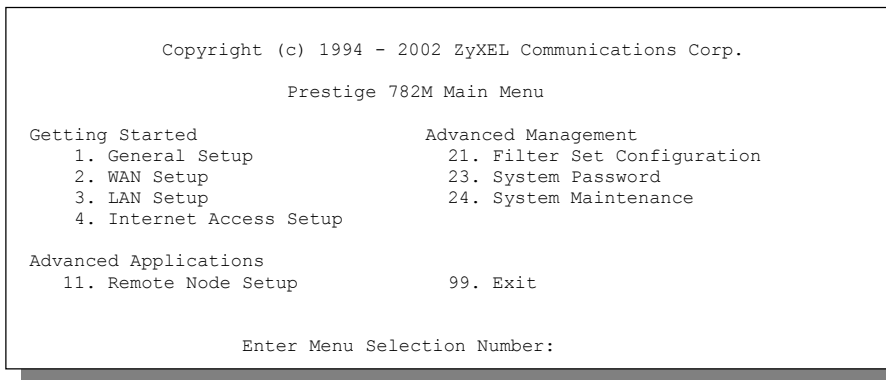
The SMT (System Management Terminal) is the interface that you use to configure your Prestige.

Several operations that you should be familiar with before you attempt to modify the configuration are listed in the table shown next.

Table 2-2 Main Menu Commands

OPERATION	KEYSTROKE	DESCRIPTION
Move down to another menu	[ENTER]	To move forward to a submenu, type in the number of the desired submenu and press [ENTER].
Move up to a previous menu	[ESC]	Press [ESC] to move back to the previous menu.
Move to a "hidden" menu	Press [SPACE BAR] to change <b>No</b> to <b>Yes</b> then press [ENTER].	Fields beginning with "Edit" lead to hidden menus and have a default setting of <b>No</b> . Press [SPACE BAR] once to change <b>No</b> to <b>Yes</b> , then press [ENTER] to go to the "hidden" menu.
Move the cursor	[ENTER] or [UP]/[DOWN] arrow keys.	Within a menu, press [ENTER] to move to the next field. You can also use the [UP]/[DOWN] arrow keys to move to the previous and the next field, respectively.
Entering information	Type in or press [SPACE BAR], then press [ENTER].	You need to fill in two types of fields. The first requires you to type in the appropriate information. The second allows you to cycle through the available choices by pressing [SPACE BAR].
Required fields	<?>	All fields with the symbol <?> must be filled in order to be able to save the new configuration.
N/A fields	<N/A>	Some of the fields in the SMT will show a <N/A>. This symbol refers to an option that is Not Applicable.
Save your configuration	[ENTER]	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.
Exit the SMT	Type 99, then press [ENTER].	Type 99 at the main menu prompt and press [ENTER] to exit the SMT interface.

After you enter the password, the SMT displays the main menu, as shown next.



**Figure 2-6 SMT Main Menu**

## 2.8.1 System Management Terminal Interface Summary

**Table 2-3 Main Menu Summary**

#	MENU TITLE	DESCRIPTION
1	General Setup	Use this menu to set up your general information.
2	WAN Setup	Use this menu to set up your WAN connection.
3	LAN Setup	Use this menu to set up your LAN connection.
4	Internet Access Setup	A quick and easy way to set up an Internet connection.
11	Remote Node Setup	Use this menu to set up the Remote Node for LAN-to-LAN connection, including Internet connection.
21	Filter Set Configuration	Use this menu to set up filters to provide security, etc.
23	System Password	Use this menu to change your password.
24	System Maintenance	This menu provides system status, diagnostics, software upload, etc.
99	Exit	Use this to exit from SMT and return to a blank screen.

## 2.9 Changing the System Password

Change the default system password by performing the following steps.

- Step 1.** From the main menu, enter 23 to display **Menu 23 — System Password** as shown in the following figure. When the menu appears, type the old system password, for example “1234”, and press [ENTER].

```
Menu 23 - System Password

Old Password= ****
New Password= ****
Retype to confirm= ****

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

**Figure 2-7 Menu 23 — System Password**

**Step 2.** Type your new system password (up to 30 characters) and press [ENTER].

**Step 3.** Re-type your new system password to confirm and press [ENTER].

The screen displays an asterisk "\*" for each character you type.

## 2.10 General Setup

**Menu 1 — General Setup** contains administrative and system-related information (shown next). The **System Name** field is for identification purposes. However, because some ISPs check this name you should enter your computer's "Computer Name".

- In Windows 95/98 click **Start -> Settings -> Control Panel -> Network**. Click the **Identification** tab, note the entry for the **Computer name** field and enter it as the **Prestige System Name**.
- In Windows 2000 click **Start->Settings->Control Panel** and then double-click **System**. Click the **Network Identification** tab and then the **Properties** button. Note the entry for the **Computer name** field and enter it as the **Prestige System Name**.
- In Windows XP, click **start -> My Computer -> View system information** and then click the **Computer Name** tab. Note the entry in the **Full computer name** field and enter it as the **Prestige System Name**.

### 2.10.1 Procedure To Configure Menu 1

Enter 1 in the main menu to open **Menu 1 — General Setup** (shown next).

```

Menu 1 - General Setup

System Name= ?
Location=
Contact Person's Name=

Press ENTER to Confirm or ESC to Cancel:

```

**Figure 2-8 Menu 1 — General Setup****Table 2-4 General Setup Menu Fields**

FIELD	DESCRIPTION	EXAMPLE
System Name	Choose a descriptive name for identification purposes. This name can be up to 30 alphanumeric characters long. Spaces are not allowed, but dashes "-" and underscores "_" are accepted.	P782
Location (optional)	Enter the geographic location (up to 31 characters) of your Prestige.	MyHouse
Contact Person's Name (optional)	Enter the name (up to 30 characters) of the person in charge of this Prestige.	JohnDoe

## 2.11 Setting Up the WAN Link

Use **Menu 2 — WAN Setup** to configure G.SHDSL settings for your WAN line. Different telephone companies deploy different types of G.SHDSL service. If you are unsure of any of this information, please check with your telephone company.

### 2.11.1 Service Type

Is your Prestige acting as a Server or Client?

1. The Prestige is a server if it is acting as a COE (Central Office Equipment).
2. The Prestige is a client if it is acting as a CPE (Customer Premise Equipment).

### 2.11.2 Rate Adaption

Both the Prestige and the peer must have the same transmission rate. Rate Adaption allows the Prestige to auto-detect the peer **Transfer Rate** (this feature may not be available on all models).



### 2.11.3 Transfer Rates

The Prestige supports the following symmetrical multi-rate data transmission speeds: 72, 136, 200, 264, 392, 520, 776, 1032, 1160, 1544, 1736, 2056 and 2312 Kbps.

You can increase the capacity of the Internet connection (within certain limitations) without changing your ISP or buying new equipment.

For back-to-back applications make sure that your Prestige and its peer have the same **Transfer Max Rate** and the same **Transfer Min Rate**. Two (maximum and minimum) transfer rates are used to accommodate fluctuations in line speed. This is known as Dynamic Bandwidth Allocation.

### 2.11.4 Standard Mode

If your Prestige is a server, then select the mode that applies to your region: ANSI (American National Standards Institute) and ETSI (European Telecommunications Standards Institute). If your Prestige is a client, select the same **Standard Mode** that the server side selects. ANSI and ETSI create recommendations and standards for the telecommunications industry.

```

Menu 2 - WAN Setup

Service Type: Client
Rate Adaption= Enable
Transfer Max Rate(Kbps)= 2312K
Transfer Min Rate(Kbps)= 72K
Standard Mode= ANSI (ANNEX_A)

Press ENTER to Confirm or ESC to Cancel:

Press Space Bar to Toggle.
```

**Figure 2-9 Menu 2 — WAN Setup**

**Table 2-5 Menu 2 — WAN Setup**

FIELD	DESCRIPTION
Service Type	Press [SPACE BAR] to select <b>Server</b> (COE) or <b>Client</b> (CPE).
Rate Adaption	Press [SPACE BAR] to select <b>Enable</b> (activate) or <b>Disable</b> (deactivate).
Transfer Max Rate (2312 Kbps)	Press [SPACE BAR] to select a <b>Transfer Max Rate</b> greater than or equal to the Transfer Min Rate and press [ENTER] to continue.
Transfer Min Rate (72 Kbps)	Press [SPACE BAR] to select a <b>Transfer Min Rate</b> less than or equal to the Transfer Max Rate and press [ENTER] to continue.
Standard Mode	Press [SPACE BAR] to select <b>ANSI</b> (ANNEX A) or <b>ETSI</b> (ANNEX B) and press [ENTER] to continue. The Client side must match the Server side.



# Chapter 3

## Internet Access

*This chapter shows you how to configure the LAN and WAN of your Prestige for Internet access.*

### 3.1 Factory Ethernet Defaults

The Ethernet parameters of the Prestige are preset in the factory with the following values:

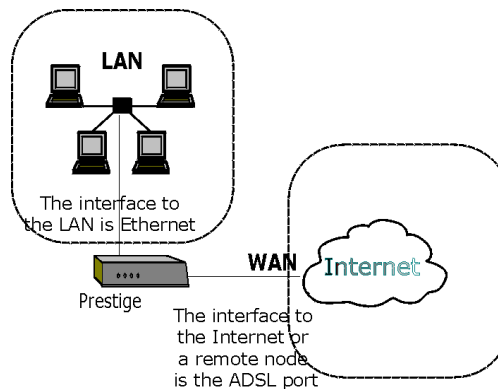
- ◆ IP address of 192.168.1.1 with subnet mask of 255.255.255.0 (24 bits).

### 3.2 LANs and WANs

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

#### 3.2.1 LANs, WANs and the Prestige

The actual physical connection determines whether the Prestige ports are LAN or WAN ports. There are two separate IP networks, one inside, the LAN network; the other outside: the WAN network as shown next:



**Figure 3-1 LAN & WAN IPs**

## 3.3 TCP/IP Parameters

### 3.3.1 IP Address and Subnet Mask

Like houses on a street that share a common street name, the computers on a LAN share one common network number.

Where you obtain your network number depends on your particular situation. If the ISP or your network administrator assigns you a block of registered IP addresses, follow their instructions in selecting the IP addresses and the subnet mask.

If the ISP did not explicitly give you an IP network number, then most likely you have a single user account and the ISP will assign you a dynamic IP address when the connection is established. If this is the case, it is recommended that you select a network number from 192.168.0.0 to 192.168.255.0 (ignoring the trailing zero) and you must enable the Single User Account feature of the Prestige. The Internet Assigned Number Authority (IANA) reserved this block of addresses specifically for private use; please do *not* use any other number unless you are told otherwise. Let's say you select 192.168.1.0 as the network number; which covers 254 individual addresses, from 192.168.1.1 to 192.168.1.254 (zero and 255 are reserved). In other words, the first three numbers specify the network number while the last number identifies an individual computer on that network.

The subnet mask specifies the network number portion of an IP address. Your Prestige will compute the subnet mask automatically based on the IP address that you entered. You don't need to change the subnet mask computed by the Prestige unless you are instructed to do otherwise.

## 3.4 Ethernet Setup

This section describes how to configure the Ethernet using **Menu 3 — Ethernet Setup**. From the main menu, enter 3 to display menu 3. Settings configured in **Menu 3 — Ethernet Setup** apply to the LAN side of the modem only.

```
Menu 3 - Ethernet Setup

1. LAN Port Filter Setup
2. TCP/IP and DHCP Setup

Enter Menu Selection Number:
```

**Figure 3-2 Menu 3 — LAN Setup**

### 3.4.1 LAN Port Filter Setup

This menu allows you to specify filter set(s) that you wish to apply to the Ethernet traffic. You seldom need to filter Ethernet traffic; however, the filter sets may be useful to block certain packets, reduce traffic and prevent security breaches.

```
Menu 3.1 - LAN Port Filter Setup

Input Filter Sets:
device filters=

Output Filter Sets:
device filters=

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

**Figure 3-3 Menu 3.1 — LAN Port Filter Setup**

If you need to define filters, please read the *Filter Set Configuration* chapter first, then return to this menu to define the filter sets.

## 3.5 Protocol Dependent Ethernet Setup

Depending on the protocols for your applications, you need to configure the respective Ethernet Setup, as outlined next.

For TCP/IP Ethernet setup refer to *Internet Access Application*.

## 3.6 TCP/IP Ethernet Setup

This section describes how to configure the Ethernet (or LAN) using **Menu 3 — TCP/IP Ethernet Setup**. From the main menu, enter 3 to display the menu shown next.

```
Menu 3 - TCP/IP Ethernet Setup

TCP/IP Setup:
IP Address: 192.168.1.1
IP Subnet Mask: 255.255.255.0

Enter Menu Selection Number:
```

**Figure 3-4 Menu 3 —Ethernet Setup**

**Table 3-1 TCP/IP Ethernet Setup Menu Fields**

FIELD	DESCRIPTION	EXAMPLE
TCP/IP Setup		
IP Address	Enter the (LAN) IP address of your Prestige in dotted decimal notation	192.168.1.1
IP Subnet Mask	Your Prestige will automatically calculate the subnet mask based on the IP address that you assign. Unless you are implementing subnetting, use the subnet mask computed by the Prestige.	255.255.255.0
When you have completed this menu, press [ENTER] at the prompt "Press ENTER to Confirm..." to save your configuration, or press [ESC] at any time to cancel.		

## 3.7 VPI and VCI

Be sure to use the correct Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) numbers supplied by your telephone company. The valid range for the VPI is 0 to 255 and for the VCI is 32 to 65535 (0 to 31 is reserved for local management of ATM traffic). Please see the Appendices for more information.

## 3.8 Multiplexing

There are two conventions to identify what protocols the virtual circuit (VC) is carrying. Be sure to use the multiplexing method required by your ISP.

### 3.8.1 VC—based Multiplexing

In this case, by prior mutual agreement, each protocol is assigned to a specific virtual circuit, for example, VC1 carries IP, etc. VC-based multiplexing may be dominant in environments where dynamic creation of large numbers of ATM VCs is fast and economical.

### 3.8.2 LLC—based Multiplexing

In this case one VC carries multiple protocols with protocol identifying information being contained in each packet header. Despite the extra bandwidth and processing overhead, this method may be advantageous if it is not practical to have a separate VC for each carried protocol, for example, if charging heavily depends on the number of simultaneous VCs.

## 3.9 Encapsulation

Be sure to use the encapsulation method required by your ISP. The Prestige supports the following methods.

### 3.9.1 PPP

Please refer to RFC 2364 for more information on PPP over ATM Adaptation Layer 5 (AAL5). Refer to RFC 1661 for more information on PPP.

### 3.9.2 RFC 1483

RFC 1483 describes two methods for Multiprotocol Encapsulation over ATM Adaptation Layer 5 (AAL5). The first method allows multiplexing of multiple protocols over a single ATM virtual circuit (LLC-based multiplexing) and the second method assumes that each protocol is carried over a separate ATM virtual circuit (VC-based multiplexing). Please refer to the RFC for more detailed information.

## 3.10 IP Address Assignment

A static IP is a fixed IP that your ISP gives you. A dynamic IP is not fixed; the ISP assigns you a different one each time.

## 3.11 Internet Access Configuration

Menu 4 allows you to enter your Internet Access information in one screen. Menu 4 is actually a simplified setup for one of the remote nodes that you can access in menu 11. Before you configure your Prestige for Internet access, you need to collect your Internet account information from your ISP and telephone company.

Use the following table to record your Internet Account Information. Note that if you are using PPP or encapsulation the only ISP information you need is a login name and password. If you are using RFC 1483, you do not need a login name or password.

**Table 3-2 Internet Account Information**

FIELD	DESCRIPTION	YOUR INFO
ISP's Name	Name of your ISP (optional).	
Encapsulation	<b>PPP</b> or <b>RFC 1483</b> .	
Multiplexing	<b>LLC-based</b> or <b>VC-based</b> . If this information is not given, use the default.	

FIELD	DESCRIPTION	YOUR INFO
VPI	Enter your Virtual Path Identifier here.	
VCI	Enter your Virtual Channel Identifier here.	
My Login	Enter the login name assigned by your ISP (for PPP only).	
My Password	Enter the password associated with your ISP assigned <b>My Login</b> (for PPP only).	

### 3.11.1 Peak Cell Rate (PCR)

Peak Cell Rate (PCR) is the maximum rate at which the sender can send cells. This parameter may be lower (but not higher) than the maximum line speed. 1 ATM cell is 53 bytes (424 bits), so a maximum speed of 832 Kbps gives a maximum PCR of 1962 cells/sec. This rate is not guaranteed because it is dependent on the line speed.

---

**If the PCR is set to the default of “0”, the system will assign a maximum value that correlates to your upstream line rate.**

---

From the main menu, enter 4 to display **Menu 4 — Internet Access Setup**, as shown next.

```

Menu 4 - Internet Access Setup

ISP's Name= Change Me
Encapsulation= RFC 1483
Multiplexing= LLC-based
VPI #= 0
VCI #= 33
Peak Cell Rate (PCR)= 0
My Login= N/A
My Password= N/A

Press ENTER to confirm or ESC to cancel:

```

**Figure 3-5 Internet Access Setup**

The following table contains instructions on how to configure your Prestige for Internet access.



**Table 3-3 Internet Access Setup Menu Fields**

<b>FIELD</b>	<b>DESCRIPTION</b>	<b>EXAMPLE</b>
ISP's Name	Enter the name of your Internet Service Provider. This information is for identification purposes only.	Change Me
Encapsulation	Press [SPACE BAR] to select the method of encapsulation used by your ISP. Choices are <b>PPP</b> or <b>RFC 1483</b> .	<b>RFC 1483</b>
Multiplexing	Press [SPACE BAR] to select the method of multiplexing used by your ISP. Choices are <b>VC-based</b> or <b>LLC-based</b> .	<b>LLC-based</b>
VPI #	Enter the Virtual Path Identifier (VPI) that the telephone company gives you.	0
VCI #	Enter the Virtual Channel Identifier (VCI) that the telephone company gives you.	33
Peak Cell Rate (cell/sec)	This is the maximum rate at which the sender can send cells. Type the PCR.	0
My Login	Enter the login name that your ISP gives you.	N/A
My Password	Enter the password associated with the login name above.	N/A
When you have completed this menu, press [ENTER] at the prompt "Press ENTER to Confirm..." to save your configuration, or press [ESC] at any time to cancel.		

If all your settings are correct your Prestige should connect automatically to the Internet. If the connection fails, note the error message that you receive on the screen and take the appropriate troubleshooting steps.



# Chapter 4

## Remote Node Configuration

*This chapter covers the parameters that are protocol-independent. The protocol-dependent configurations (TCP/IP and Bridging) are covered in the next chapters.*

### 4.1 Remote Node Setup

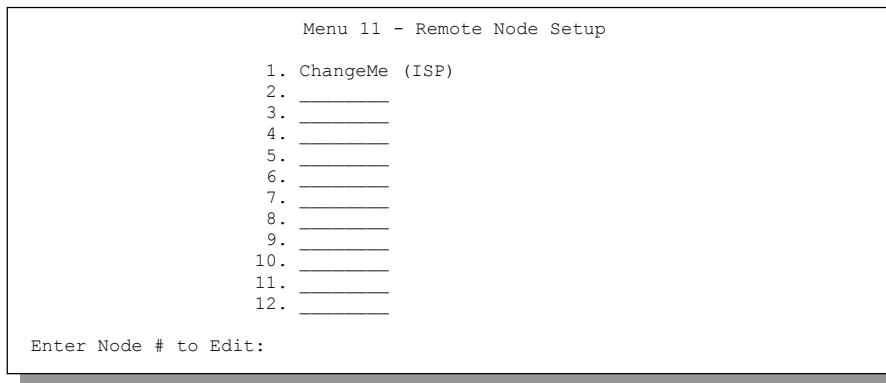
A remote node is required for placing calls to a remote gateway. A remote node represents both the remote gateway and the network behind it across a WAN connection. When you use menu 4 to set up Internet access, you are configuring one of the remote nodes.

This section describes the protocol-independent parameters for a remote node.

#### 4.1.1 Remote Node Profile

To configure a remote node, follow these steps:

- Step 1.** From the main menu, enter 11 to display **Menu 11 — Remote Node Setup**.
- Step 2.** When menu 11 appears, as shown in the following figure, type the number of the remote node that you want to configure.



**Figure 4-1 Menu 11 — Remote Node Setup**

## 4.1.2 Encapsulation and Multiplexing Scenarios

For Internet access you should use the encapsulation and multiplexing methods used by your ISP. For LAN-to-LAN applications, e.g., branch office and corporate headquarters, prior agreement on methods is necessary because encapsulation and multiplexing cannot be automatically determined. Which methods to use depends on how many VCs you have and how many different network protocols you need. The extra overhead that ENET ENCAP encapsulation entail makes them a poor choice in a LAN-to-LAN application. Here are some examples of more suitable combinations in such an application.

### Scenario 1. One VC, Multiple Protocols

**PPP** (RFC-2364) encapsulation with **VC-based** multiplexing is the best combination because no extra protocol identifying headers are needed. The **PPP** protocol already contains this information.

### Scenario 2. One VC, One Protocol (IP)

Selecting **RFC 1483** encapsulation with **VC-based** multiplexing requires the least amount of overhead (0 octets). However, if there is a potential need for multiple protocol support in the future, it may be safer to select **PPP** encapsulation instead of **RFC-1483**, so you do not need to reconfigure either computer later.

### Scenario 3. Multiple VCs

If you have an equal number (or more) of VCs than the number of protocols, then select **RFC 1483** encapsulation and **VC-based** multiplexing.

```

Menu 11.1 - Remote Node Profile

Rem Node Name= Change Me
Active= Yes

Encapsulation= RFC 1483           Edit PPP Options= N/A
Multiplexing= LLC-based          Edit Bridge= No
Incoming:
  Rem Login= N/A                 Edit ATM Options= No
  Rem Password= N/A
Outgoing:                        Session Options:
  My Login= N/A                 Edit Filter Sets= No
  My Password= N/A
  Authen= N/A

Press ENTER to Confirm or ESC to Cancel:

```

**Figure 4-2 Menu 11.1 — Remote Node Profile**

In **Menu 11.1 — Remote Node Profile**, fill in the fields as described in the following table.

**Table 4-1 Remote Node Profile Menu Fields**

FIELD	DESCRIPTION	EXAMPLE
Rem Node Name	Type a unique, descriptive name of up to eight characters for this node.	Change Me
Active	Press [SPACE BAR] and then [ENTER] to select <b>Yes</b> to activate or <b>No</b> to deactivate this node. Inactive nodes are displayed with a minus sign “-“ in SMT menu 11.	<b>Yes</b>
Encapsulation	<b>PPP</b> refers to RFC-2364 (PPP Encapsulation over ATM Adaptation Layer 5). If you select <b>RFC 1483</b> (Multiprotocol Encapsulation over ATM Adaptation Layer 5) then <b>Rem Login</b> , <b>Rem Password</b> , <b>My Login</b> , <b>My Password</b> and <b>Edit PPP Options</b> fields are not applicable ( <b>N/A</b> ).	<b>RFC 1483</b>
Multiplexing	Press [SPACE BAR] and then [ENTER] to select the method of multiplexing that your ISP uses, either <b>VC-based</b> or <b>LLC-based</b> .	<b>LLC-based</b>
Incoming: Rem Login	Type the login name that this remote node will use to call your Prestige. The login name and the <b>Rem Password</b> will be used to authenticate this node.	

FIELD	DESCRIPTION	EXAMPLE
Rem Password	Type the password used when this remote node calls your Prestige.	
Outgoing: My Login	Type the login name assigned by your ISP when the Prestige calls this remote node.	
My Password	Type the password assigned by your ISP when the Prestige calls this remote node.	
Authen	This field sets the authentication protocol used for outgoing calls. Options for this field are:  <b>CHAP/PAP</b> — Your Prestige will accept either <b>CHAP</b> or <b>PAP</b> when requested by this remote node.  <b>CHAP</b> — accept <b>CHAP</b> (Challenge Handshake Authentication Protocol) only.  <b>PAP</b> — accept <b>PAP</b> (Password Authentication Protocol) only.	<b>CHAP/PAP</b>
Edit PPP Options	To edit the <b>PPP</b> options, move the cursor to this field. Use [SPACE BAR] to select <b>Yes</b> and press [ENTER]. This will take you to <b>Menu 11.2 — Remote Node PPP Options</b> . For more information on configuring PPP options, see the section <i>Editing PPP Options</i> .	<b>Yes</b>
Edit Bridge	Press [SPACE BAR] to select <b>Yes</b> and press [ENTER] to display <b>Menu 11.3 — Remote Node Network Layer Options</b> .	<b>No</b>
Edit ATM Options	Press [SPACE BAR] to select <b>Yes</b> and press [ENTER] to display <b>Menu 11.6 — Remote Node ATM Layer Options</b> .	<b>No</b>
Session Options: Edit Filter Sets	Use [SPACE BAR] to choose <b>Yes</b> and press [ENTER] to open menu 11.5 to edit the filter sets. See the <i>Remote Node Filter</i> section for more details.	<b>No</b> (default)
When you have completed this menu, press [ENTER] at the prompt "Press [ENTER] to confirm or [ESC] to cancel" to save your configuration or press [ESC] to cancel and go back to the previous screen.		

### 4.1.3 Outgoing Authentication Protocol

For obvious reasons, you should employ the strongest authentication protocol possible. However, some vendors' implementation includes specific authentication protocol in the user profile. It will disconnect if

the negotiated protocol is different from that in the user profile, even when the negotiated protocol is stronger than specified. If the peer disconnects right after a successful authentication, make sure that you specify the correct authentication protocol when connecting to such an implementation.

#### 4.1.4 Editing PPP Options

To edit the remote node PPP options, move the cursor to the **Edit PPP Options** field in **Menu 11.1 — Remote Node Profile**, use [SPACE BAR] to select **Yes** and then press [ENTER] to open menu 11.2, as shown next.

```

Menu 11.2 - Remote Node PPP Options

Encapsulation= Standard PPP
Compression= No

Press ENTER to Confirm or ESC to Cancel:

Press Space Bar to Toggle.

```

**Figure 4-3 Menu 11.2 — Remote Node PPP Options**

The following table describes the menu 11.2 and how to configure the PPP options.

**Table 4-2 Remote Node PPP Options Menu Fields**

FIELD	DESCRIPTION	OPTIONS
Encapsulation	Select <b>Standard PPP</b> . Select <b>CISCO PPP</b> only if the node is a Cisco computer.	<b>Standard PPP</b> <b>CISCO PPP</b>
Compression	Turn on/off Stac Compression. The default is <b>No</b> .	<b>Yes/No</b>
When you have completed this menu, press [ENTER] at the prompt "Press [ENTER] to confirm or [ESC] to cancel" to save your configuration or press [ESC] to cancel and go back to the previous screen.		

## 4.2 Remote Node Setup

For the TCP/IP parameters, perform the following steps to edit **Menu 11.3 — Remote Node Network Layer Options** as shown next.

**Step 1.** In menu 11.1, make sure the **Edit Bridge** field is set to **Yes** and then press [ENTER] to display **Menu 11.3 — Remote Node Network Layer Options** (shown next).

```

Menu 11.3 - Remote Node Network Layer Options

Ethernet Addr Timeout(min)= 0

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

**Figure 4-4 Remote Node Network Layer Options**

The next table shows you how to configure remote node network layer options.

**Table 4-3 TCP/IP-related Fields in Menu 11.1 — Remote Node Profile**

FIELD	DESCRIPTION	EXAMPLE
Ethernet Addr Timeout (min.)	Type the time (in minutes) for the Prestige to retain the Ethernet Address information in its internal tables while the line is down. If this information is retained, your Prestige will not have to recompile the tables when the line comes back up.	10
When you have completed this menu, press [ENTER] at the prompt “Press [ENTER] to confirm or [ESC] to cancel” to save your configuration or press [ESC] to cancel and go back to the previous screen.		

### 4.3 Remote Node Filter

In menu 11.1, make sure the **Edit Filter Sets** field is set to **Yes** and then press [ENTER] to display **Menu 11.5 — Remote Node Filter** (shown next).

```

Menu 11.5 - Remote Node Filter

Input Filter Sets:
device filters=

Output Filter Sets:
device filters=

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

**Figure 4-5 Menu 11.5 — Remote Node Filter**



Use **Menu 11.5 — Remote Node Filter** to specify the filter set(s) to apply to the incoming and outgoing traffic between this remote node and the Prestige and also to prevent certain packets from triggering calls. You can specify up to 4 filter sets separated by comma, e.g., 1, 5, 9, 12, in each filter field.



# Chapter 5

## Remote Node TCP/IP Configuration

*This chapter shows a sample LAN-to-LAN application and how to configure TCP/IP remote nodes.*

### 5.1.1 Traffic Shaping

Traffic Shaping is an agreement between the carrier and the subscriber to regulate the average rate and “burstiness” or fluctuation of data transmission over an ATM network. This agreement helps eliminate congestion, which is important for transmission of real time data such as audio and video connections.

Peak Cell Rate (PCR) is the maximum rate at which the sender can send cells. This parameter may be lower (but not higher) than the maximum line speed. 1 ATM cell is 53 bytes (424 bits), so a maximum speed of 832 Kbps gives a maximum PCR of 1962 cells/sec. This rate is not guaranteed because it is dependent on the line speed.

Sustained Cell Rate (SCR) is the mean cell rate of a bursty, on-off traffic source that can be sent at the peak rate, and a parameter for burst-type traffic. SCR may not be greater than the PCR; the system default is 0 cells/sec.

Maximum Burst Size (MBS) is the maximum number of cells that can be sent at the PCR. After MBS is reached, cell rates fall below SCR until cell rate averages to the SCR again. At this time, more cells (up to the MBS) can be sent at the PCR again.

---

**If the PCR, SCR or MBS is set to the default of “0”, the system will assign a maximum value that correlates to your upstream line rate.**

---

The following figure illustrates the relationship between PCR, SCR and MBS.

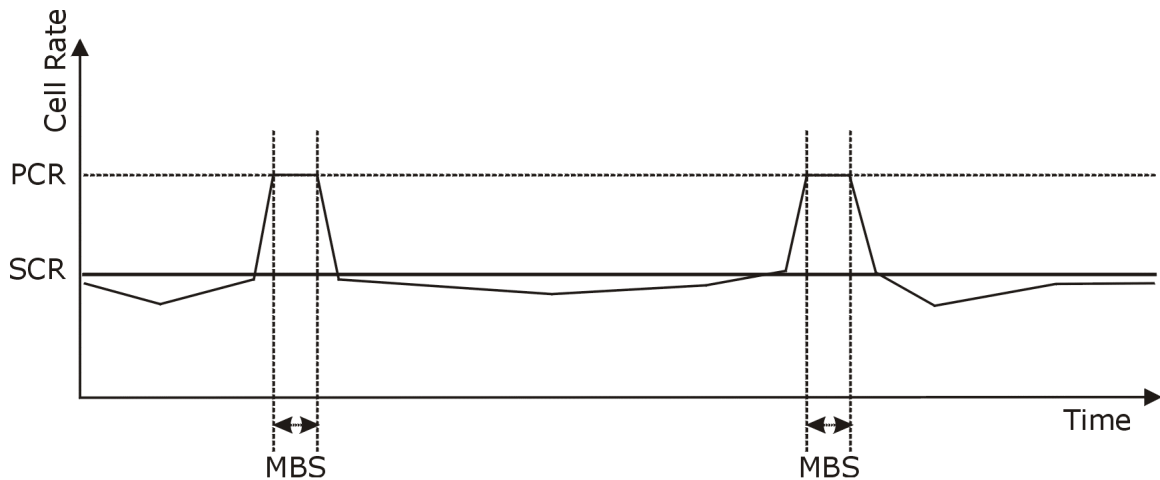


Figure 5-1 Example of Traffic Shaping

## 5.2 TCP/IP Configuration

The following sections describe how to configure the TCP/IP parameters of a remote node.

### 5.2.1 Editing TCP/IP Options

Follow the steps ahead to edit **Menu 11.6 — Remote Node ATM Layer Options**.

In menu 11.1, make sure the **Edit ATM Options** field is set to **Yes** and then press [ENTER] to display **Menu 11.6 — Remote Node ATM Layer Options** (shown next).

Only one set of VPI and VCI numbers need be specified for all protocols. The valid range for the VPI is 0 to 255 and for the VCI is 32 to 65535 (1 to 31 is reserved for local management of ATM traffic).

```

Menu 11.6 - Remote Node ATM Layer Options

VPI #= 8
VCI #= 38
Peak Cell Rate (cell/sec)= 5500
Sustain Cell Rate (cell/sec)= 0
Maximum Burst Size (cell)= 0

ENTER here to CONFIRM or ESC to CANCEL:

```

**Figure 5-2 Menu 11.6 — Remote Node ATM Layer Options**

Refer to *Chapter 3* for field descriptions found in the last figure.

The following table contains instructions on how to configure your Prestige for Internet access.

**Table 5-1 Fields in Menu 11.6 — Remote Node ATM Layer Options**

FIELD	DESCRIPTION	EXAMPLE
VPI #	Enter the Virtual Path Identifier (VPI) that the telephone company gives you.	8
VCI #	Enter the Virtual Channel Identifier (VCI) that the telephone company gives you.	35
Peak Cell Rate (PCR)	This is the maximum rate at which the sender can send cells. Type the PCR.	0
Sustain Cell Rate (SCR)= 0	Sustained Cell Rate is the mean cell rate of a bursty, on-off traffic source that can be sent at the peak rate, and a parameter for burst-type traffic. Type the SCR; it must be less than the PCR.	0
Maximum Burst Size (MBS)= 0	Refers to the maximum number of cells that can be sent at the peak rate. Type the MBS. The MBS must be less than 65535.	0

When you have completed this menu, press [ENTER] at the prompt "Press ENTER to Confirm..." to save your configuration, or press [ESC] at any time to cancel.



# Chapter 6

## Filter Set Configuration

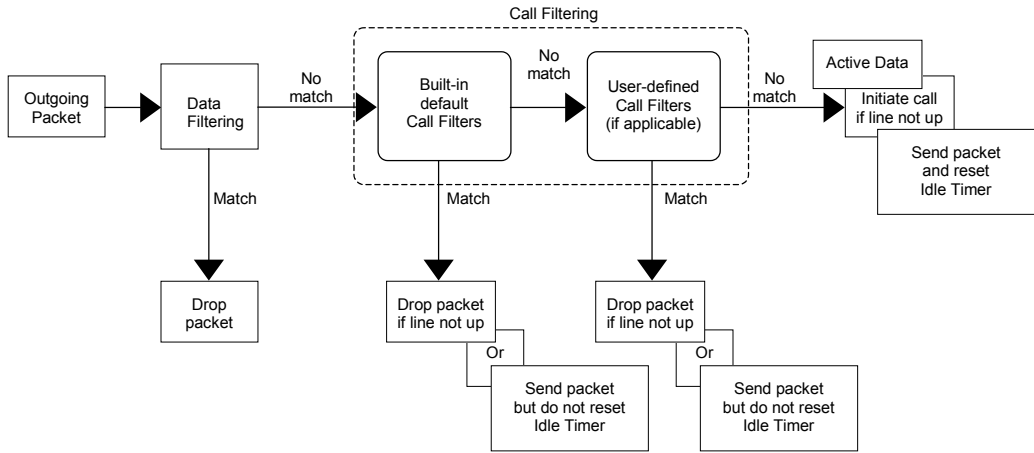
*This chapter shows you how to create and apply filters.*

### 6.1 About Filtering

Your Prestige uses filters to decide whether or not to allow passage of a data packet and/or to make a call. There are two types of filter applications: data filtering and call filtering. Filters are subdivided into device filters, which are discussed later.

Data filtering examines the data to determine if the packet should be allowed to pass. Data filters are divided into incoming and outgoing filters, depending on the direction of the packet relative to a port. Data filtering can be applied on either the WAN side or the Ethernet side. Call filtering is used to determine if a packet should be allowed to trigger a call.

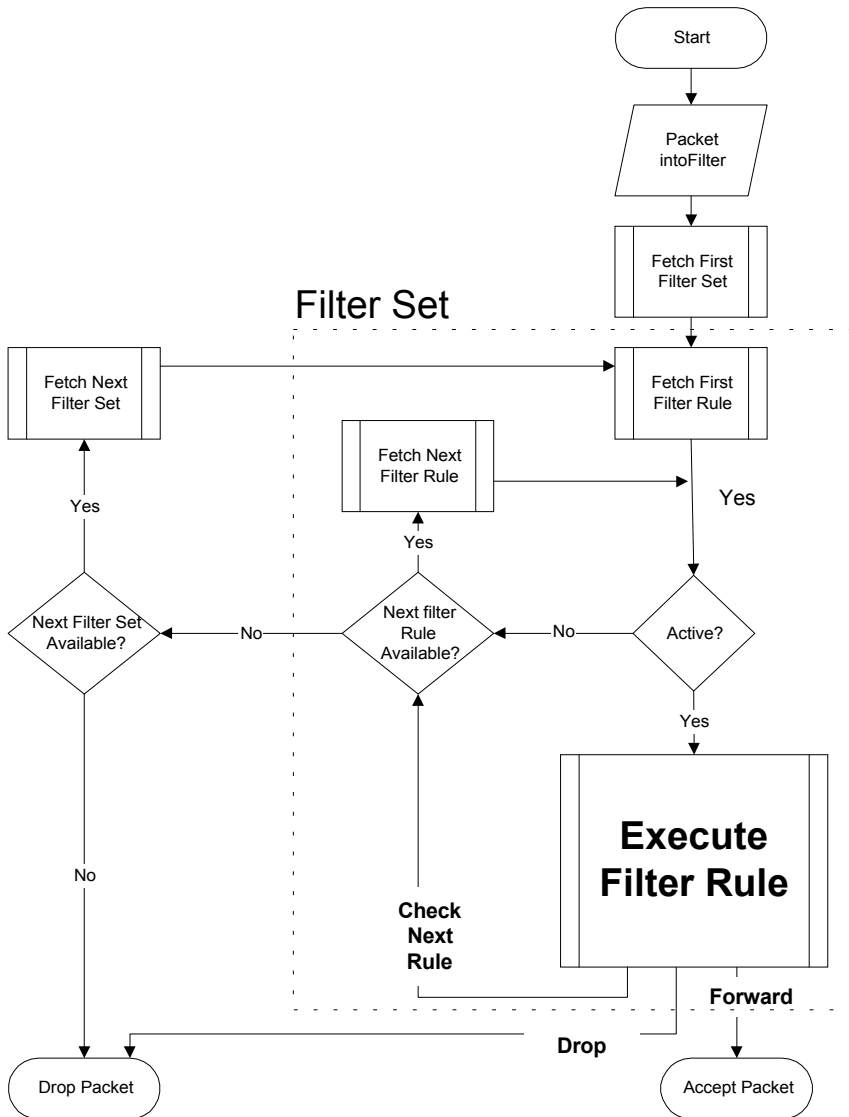
Outgoing packets undergo data filtering before they encounter call filtering. Call filters are divided into two groups, the built-in call filters and user-defined call filters. Your Prestige has built-in call filters that prevent administrative, for example, RIP packets from triggering calls. These filters are always enabled and not accessible to you. Your Prestige applies the built-in filters first and then the user-defined call filters, if applicable, as illustrated in the figure shown next.



**Figure 6-1 Outgoing Packet Filtering Process**

The following figure illustrates the logic flow when executing a filter rule.





**Figure 6-2 Filter Rule Process**

You can apply up to four filter sets to a particular port to block various types of packets. Because each filter set can have up to six rules, you can have a maximum of 24 rules active for a single port.

For incoming packets, your Prestige applies data filters only. Packets are processed depending on whether a match is found. The following sections describe how to configure filter sets.

## 6.2 Configuring a Filter Set

To configure a filter set, follow the steps shown next.

**Step 1.** Enter 21 in the main menu to display **Menu 21 — Filter Set Configuration**

```
Menu 21 - Filter Set Configuration

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

Enter Filter Set Number to Configure= 0

Edit Comments= N/A

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

**Figure 6-3 Menu 21 — Filter Set Configuration**

**Step 2.** Type the filter set to configure (no. 1 to 12) and press [ENTER].

**Step 3.** Type a descriptive name or comment in the **Edit Comments** field and press [ENTER].

**Step 4.** Press [ENTER] at the message “Press [ENTER] to confirm...” to display **Menu 21.1 — Filter Rules Summary** (that is, if you selected filter set 1 in menu 21).

```

Menu 21.1 - Filter Rules Summary

# A Type                               Filter Rules                               M m n
- - - - -                               - - - - -                               - - -
1 N Gen  Off=0, Len=0, Mask=, Value=    N N N
2 N
3 N
4 N
5 N
6 N

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

```

**Figure 6-4 Menu 21.1 — Filter Rules Summary**

## 6.2.1 Filter Rules Summary Menus

The following tables briefly describe the abbreviations used in menus 21.1 and 21.2.

**Table 6-1 Abbreviations Used in the Filter Rules Summary Menu**

FIELD	DESCRIPTION
#	The filter rule number: 1 to 6.
A	Active: "Y" means the rule is active. "N" means the rule is inactive.
Type	The type of filter rule: "GEN" for Generic
Filter Rules	These parameters are displayed here.
M	More. "Y" means there are more rules to check which form a rule chain with the present rule. An action cannot be taken until the rule chain is complete.  "N" means there are no more rules to check. You can specify an action to be taken for instance, forward the packet, drop the packet or check the next rule. For the latter, the next rule is independent of the rule just checked.
m	Action Matched. "F" means to forward the packet immediately and skip checking the remaining rules. "D" means to drop the packet. "N" means to check the next rule.
n	Action Not Matched. "F" means to forward the packet immediately and skip checking the remaining rules. "D" means to drop the packet. "N" means to check the next rule.

**Table 6-2 Rule Abbreviations Used**

<b>FILTER TYPE</b>	<b>DESCRIPTION</b>
GEN	
Off	Offset
Len	Length

## 6.3 Generic Filter Rule

The purpose of generic rules is to allow you to filter non-IP packets. For generic rules, the Prestige treats a packet as a byte stream as opposed to an IP packet. You specify the portion of the packet to check with the Offset (from 0) and the Length fields, both in bytes. The Prestige applies the Mask (bit-wise ANDing) to the data portion before comparing the result against the Value to determine a match. The Mask and Value are specified in hexadecimal numbers.

Two hexadecimal digits represent a byte, so if the length is 4, the value in either field will take 8 digits, e.g., FFFFFFFF.

### 6.3.1 Example Generic Filter Rule Configuration

- Step 1.** Type a filter set number in **Menu 21 — Filter Set Configuration**, (“5” in this example), and press [ENTER] to display menu 21.5.
- Step 2.** Type a filter rule number in **Menu 21.5 — Filter Rules Summary**, (“1” in this example), and press [ENTER] to display **Menu 21.5.1 — Generic Filter Rule** (shown next).

```

Menu 21.5.1 - Generic Filter Rule

Filter #: 5,1
Filter Type= Generic Filter Rule
Active= No
Offset= 0
Length= 0
Mask= N/A
Value= N/A
More= No           Log= None
Action Matched= Check Next Rule
Action Not Matched= Check Next Rule

Press ENTER to Confirm or ESC to Cancel:

Press Space Bar to Toggle.

```

**Figure 6-5 Menu 21.5.1 — Generic Filter Rule**

The table, shown next, describes the fields in **Menu 21.5.1 — Generic Filter Rule**.

**Table 6-3 Menu 21.5.1 — Generic Filter Rule Fields**

<b>FIELD</b>	<b>DESCRIPTION</b>	<b>EXAMPLE</b>
Filter #	This is the filter set, filter rule coordinates, for instance, 2, 3 refers to the second filter set and the third rule of that set.	5,1
Filter Type	This field may not be changed.	<b>Generic Filter Rule</b>
Active	Select <b>Yes</b> to turn on or <b>No</b> to turn off the filter rule.	<b>No</b> (default)
Offset	Type the starting byte of the data portion in the packet that you want to compare. The range for this field is from 0 to 255.	0 (default)
Length	Type the byte count of the data portion in the packet that you want to compare. The range for this field is 0 to 8.	0 (default)
Mask	Type the mask (in Hexadecimal) to apply to the data portion before comparison.	
Value	Type the value (in Hexadecimal) to compare with the data portion.	
More	If <b>Yes</b> , a matching packet is passed to the next filter rule before an action is taken or else the packet is disposed of according to the action fields.  If <b>More</b> is <b>Yes</b> , then <b>Action Matched</b> and <b>Action Not Matched</b> will be <b>N/A</b> .	<b>No</b> (default)
Log	Select the logging option from the following:  <b>None</b> — No packets will be logged. <b>Action Matched</b> — Only matching packets and rules will be logged. <b>Action Not Matched</b> — Only packets that do not match the rule parameters will be logged. <b>Both</b> — All packets will be logged.	<b>None</b>
Action Matched	Select the action for a matching packet. Choices are <b>Check Next Rule</b> , <b>Forward</b> or <b>Drop</b> .	<b>Check Next Rule</b> (default)
Action Not Matched	Select the action for a packet not matching the rule. Choices are <b>Check Next Rule</b> , <b>Forward</b> or <b>Drop</b> .	<b>Check Next Rule</b> (default)
When you have completed this menu, press [ENTER] at the prompt "Press [ENTER] to confirm or [ESC] to cancel" to save your configuration or press [ESC] to cancel and go back to the previous screen.		

## 6.4 Filter Configuration Example

Let us look at a sample filter. See the supporting disk for more sample filters.

- Step 1.** Enter 21 from the main menu to open **Menu 21 — Filter Set Configuration**.
- Step 2.** Enter the index of the filter set you want to configure (in this case 3).
- Step 3.** Enter a descriptive name or comment in the **Edit Comments** field (in this case, test).
- Step 4.** Press [ENTER] at the message “Press [ENTER] to confirm or [ESC] to cancel” to open **Menu 21.3 — Filter Rules Summary**.
- Step 5.** Enter 1 to configure the first filter rule. When you press [ENTER] to confirm, the following screen appears. Note that there is only one filter rule in this set.

Make the entries in this menu as shown next.

The screenshot shows the following text in the terminal window:

```

Menu 21.3.1 - Generic Filter Rule

Filter #: 3,1
Filter Type= Generic Filter Rule
Active= Yes
Offset= 9
Length= 4
Mask= 789abcde
Value= 789abcde
More= No          Log= None
Action Matched= Drop
Action Not Matched= Forward

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

Callout boxes provide the following explanations:

- Active= Yes:** Select **Yes** to make the rule active.
- Offset= 9:** This is the first byte of the data portion in the packet that you want to compare.
- Length= 4:** This is the length (in bytes) of the data portion in the packet that you want to compare.
- Mask= 789abcde:** The Mask is applied to the data portion before comparing the result against the Value to determine a match. It is specified in hexadecimal, and it takes two hexadecimal digits to represent a byte i.e., Length is 4, therefore there are 8 hex numbers.
- Value= 789abcde:** Enter the value (in hex) to compare with the data portion.
- Log= None:** This setting logs all packets that match these rule parameters.
- Action Matched= Drop:** Select **Drop** here so that the packet will be dropped if the action is not matched.
- Action Not Matched= Forward:** Select **Forward** here so that the packet will be forwarded if the action is matched.

Additional callouts include:

- There are no more rules to check in this filter set.** (pointing to the bottom of the menu)

**Figure 6-6 Sample Filter — Menu 21.3.1**

When you press [ENTER] to confirm, you will see the next screen. Note that there is only one filter rule in this set.

The screenshot shows a terminal window titled "Menu 21.3 - Filter Rules Summary". It displays a table of filter rules:

#	A	Type	Filter Rules	M	m	n
1	Y	Gen	Off=9, Len=4, Mask=789abcde, Value=789abcde	N	F	D
2	N					
3	N					
4	N					
5	N					
6	N					

Below the table, it says "Enter Filter Rule Number (1-6) to Configure: 1".

Two callout boxes are present:

- A box pointing to the first rule's details: "This shows what you configured in the previous menu."
- A box pointing to the "M m n" column: "M = N means an action can be taken immediately. The action is to drop the packet (m = D) if the action is matched and to forward the packet immediately (n = F) if the action is not matched no matter whether there are more rules to be checked (there are not in this example)."

**Figure 6-7 Sample Filter Rules Summary — Menu 21.3**

After you have created the filter set, you must apply it.

- Step 1.** Enter 11, in the main menu, to display menu 11.
- Step 2.** Enter the remote node number to edit.
- Step 3.** Make sure the **Edit Filter Sets** field is set to **Yes** and press [ENTER] to display menu 11.5.
- Step 4.** Apply the example filter set (eg. filter set 3) in this menu as shown in the next section.

## 6.5 Applying Filters

This section shows you where to apply the filters after you design them. Filter rules may be configured in menu 21 to filter traffic.

FILTER SETS	DESCRIPTION
Input Filter Sets:	Apply filters for incoming traffic. You may apply device filter rules. See earlier in this chapter for information on filters.
Output Filter Sets:	Apply filters for traffic leaving the Prestige. You may apply device filters. See earlier in this section for information on f filters.



## 6.5.1 Ethernet Traffic

## 6.5.2 Ethernet Traffic

You seldom need to filter Ethernet traffic; however, the filter sets may be useful to block certain packets, reduce traffic and prevent security breaches. Go to menu 3.1 (shown next) and type the number(s) of the filter set(s) that you want to apply as appropriate. You can choose up to four filter sets (from twelve) by typing their numbers separated by commas, for example, 3, 4, 6, 11.

```
Menu 3.1 - LAN Port Filter Setup

Input Filter Sets:
  device filters=

Output Filter Sets:
  device filters=

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

**Figure 6-8 Filtering Ethernet Traffic**

## 6.5.3 Remote Node Filters

Go to menu 11.5 (shown next) and type the number(s) of the filter set(s) as appropriate. You can cascade up to four filter sets by type ing their numbers separated by commas.

```
Menu 11.5 - Remote Node Filter

Input Filter Sets:
  device filters=

Output Filter Sets:
  device filters=

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

**Figure 6-9 Filtering Remote Node Traffic**



# Chapter 7

## System Information and Diagnosis

*This chapter covers the information and diagnostic tools in SMT menus 24.1 to 24.4 and 24.8.*

These tools include updates on system status, port status and upgrades for the system software. This chapter describes how to use these tools in detail.

Enter 24 in the main menu to display **Menu 24 — System Maintenance**, shown next.

```
Menu 24 - System Maintenance

1. System Status
2. System Information and Console Port Speed
4. Diagnostic
5. Backup Configuration
6. Restore Configuration
7. Upload Firmware
8. Command Interpreter Mode

Enter Menu Selection Number:
```

**Figure 7-1 Menu 24 — System Maintenance**

### 7.1 System Status

System Status displays status and statistics of the Prestige. **Menu 24.1 — System Maintenance — Status** is meant for diagnostic purposes.

From the main menu, enter 24 to display **Menu 24 — System Maintenance**. Enter 1 to display **Menu 24.1 — System Maintenance — Status**, shown next.

```

Menu 24.1 - System Maintenance - Status

Node-Lnk Status      TxPkts      RxPkts      Errors      Tx B/s      Rx B/s      Up Time
1-1483  N/A          0            0            0            0            0      0:00:00
2        N/A          0            0            0            0            0      0:00:00
3        N/A          0            0            0            0            0      0:00:00
4        N/A          0            0            0            0            0      0:00:00
5        N/A          0            0            0            0            0      0:00:00
6        N/A          0            0            0            0            0      0:00:00
7        N/A          0            0            0            0            0      0:00:00
8        N/A          0            0            0            0            0      0:00:00
9        N/A          0            0            0            0            0      0:00:00
10       N/A          0            0            0            0            0      0:00:00
11       N/A          0            0            0            0            0      0:00:00
12       N/A          0            0            0            0            0      0:00:00

Ethernet:
  Status: Down          Tx Pkts: 0          Line Status: Down
  Collisions: 0        Rx Pkts: 197       Transfer Rate: 0 kbps
CPU Load = 3.71%

Press Command:
COMMANDS: 1-Reset Counters  ESC-Exit
    
```

**Figure 7-2 Menu 24.1 — System Maintenance — Status**

The following table describes the fields present in **Menu 24.1 — System Maintenance — Status**.

**Table 7-1 System Maintenance — Status Menu Fields**

FIELD	DESCRIPTION
Node-Lnk	This is the node index number and link type. Link types are: PPP, ENET, 1483.
Status	Shows the status of the remote node.
TxPkts	The number of transmitted packets to this remote node.
RxPkts	The number of received packets from this remote node.
Errors	The number of error packets on this connection.
Tx B/s	Shows the transmission rate in bytes per second.
Rx B/s	Shows the receiving rate in bytes per second.
Up Time	Time this channel has been connected to the current remote node.
Ethernet	Shows statistics for the LAN.
Status	Shows the current status of the LAN.
Collisions	Number of collisions.
CPU Load	Specifies the percentage of CPU utilization.

FIELD	DESCRIPTION
WAN	Shows statistics for the WAN.
Tx Pkts	The number of transmitted packets to the LAN.
Rx Pkts	The number of received packets from the LAN.
Line Status	Shows the current status of the xDSL line which can be Up or Down.
Transfer Rate	Shows the transfer rate of the Prestige.
Commands	
1	Enter 1 to reset the counters
ESC	Press [ESC] to display the previous screen.

## 7.2 System Information and Console Port Speed

This section describes your system and allows you to choose different console port speeds. To display the System Information and Console Port Speed menu, follow the steps shown next.

- Step 1.** Enter 24 to display **Menu 24 — System Maintenance**.
- Step 2.** Enter 2 to display **Menu 24.2 — System Information and Console Port Speed**.
- Step 3.** From this menu you have two choices as shown in the next figure:

```

Menu 24.2 - System Information and Console Port Speed
  1. System Information
  2. Console Port Speed

Please enter selection:

```

**Figure 7-3 Menu 24.2 — System Information and Console Port Speed**

### 7.2.1 System Information

Enter 1 in menu 24.2 to display the screen shown next.

```

Menu 24.2.1 - System Maintenance - Information

Name:
ZyNOS F/W Version: V2.50(BM.0)b2 | 1/30/2002
xDSL Firmware Version: R.1.5

LAN
Ethernet Address: 00:a0:c5:01:23:45
IP Address: 192.168.1.1
IP Mask: 255.255.255.0

Press ESC or RETURN to Exit:
    
```

**Figure 7-4 Menu 24.2.1 — System Maintenance — Information**

**Table 7-2 Fields in System Maintenance**

FIELD	DESCRIPTION
Name	Displays the system name of your Prestige. This information can be changed in <b>Menu 1 — General Setup</b> .
ZyNOS F/W Version	Refers to the ZyNOS (ZyXEL Network Operating System) system firmware version. ZyNOS is a registered trademark of ZyXEL Communications Corporation.
xDSL Firmware Version	Displays the xDSL firmware version.
LAN	
Ethernet Address	Refers to the Ethernet MAC (Media Access Control) of your Prestige.
IP Address	This is the IP address of the Prestige in dotted decimal notation.
IP Mask	This shows the subnet mask of the Prestige.

### 7.2.2 Console Port Speed

You can set up different port speeds for the console port through **Menu 24.2.2 — System Maintenance — Console Port Speed**. Your Prestige supports 9600 (default), 19200, 38400, 57600 and 115200bps. Use [SPACE BAR] and then [ENTER] to select the desired speed in menu 24.2.2, as shown in the following figure.

```

Menu 24.2.2 - System Maintenance - Change Console Port Speed

          Console Port Speed: 9600

          Press ENTER to Confirm or ESC to Cancel:

Press Space Bar to Toggle.

```

**Figure 7-5 Menu 24.2.2 — System Maintenance — Change Console Port Speed**

## 7.3 Diagnostic

The diagnostic facility allows you to test the different aspects of your Prestige to determine if it is working properly. Menu 24.4 allows you to choose among various types of diagnostic tests to evaluate your system. Follow the procedure next display menu 24.4.

- Step 1.** From the main menu, enter 24 to display **Menu 24 — System Maintenance**.
- Step 2.** Enter 4 to display **Menu 24.4 — System Maintenance — Diagnostic**, shown next.

```

Menu 24.4 - System Maintenance - Diagnostic

xDSL                               System
1.  Reset xDSL                      21. Reboot System
                                   22. Command Mode

          Enter Menu Selection Number:

          Host IP Address= N/A

```

**Figure 7-6 Menu 24.4 — System Maintenance — Diagnostic**

The following table describes the diagnostic tests available in menu 24.4 for and the connections.

**Table 7-3 System Maintenance Menu — Diagnostic**

FIELD	DESCRIPTION
Reset xDSL	Type 1 to re-initialize the xDSL link to the telephone company.
Reboot System	Type 21 to reboot the Prestige.
Command Mode	Type 22 to test and diagnose your Prestige using specified commands.

## 7.4 Command Interpreter Mode

The Command Interpreter (CI) is a part of the main system firmware. The CI provides much of the same functionality as the SMT, while adding some low-level setup and diagnostic functions. Access can be by Telnet or by a serial connection to the console port, although some commands are only available with a serial connection. See the included disk or the [zyxel.com](http://zyxel.com) web site for more detailed information on CI commands.

Enter 8 from **Menu 24 — System Maintenance**. A list of valid commands can be found by typing `help` or `?` at the command prompt. Type “`exit`” to return to the SMT main menu when finished.

```
Menu 24 - System Maintenance

1. System Status
2. System Information and Console Port Speed
4. Diagnostic
5. Backup Configuration
6. Restore Configuration
7. Firmware Update
8. Command Interpreter Mode

Enter Menu Selection Number:
```

**Figure 7-7 Command Mode in Menu 24**

```
Copyright (c) 1994 - 2002 ZyXEL Communications Corp.
ras> ?
Valid commands are:
sys          exit          device        ether
wan          poe            xdsl          atm
fpga         ip              ppp           bridge
hdap
emitest>
```

**Figure 7-8 Valid Commands**



---

# Chapter 8

## Firmware and Configuration File Maintenance

*This chapter shows you how to back up and restore your configuration file as well as upload new firmware and a new configuration file.*

### 8.1 Filename Conventions

The configuration file (often called the romfile or rom-0) contains the factory default settings in the menus such as password, DHCP Setup, TCP/IP Setup, etc. It arrives from ZyXEL with a “rom” filename extension. Once you have customized the Prestige's settings, they can be saved back to your computer under a filename of your choosing.

ZyNOS (ZyXEL Network Operating System sometimes referred to as the “ras” file) is the system firmware and has a “bin” filename extension. With many FTP and TFTP clients, the filenames are similar to those seen next.

```
ftp> put firmware.bin ras
```

This is a sample FTP session showing the transfer of the computer file " firmware.bin" to the Prestige.

```
ftp> get rom-0 config.cfg
```

This is a sample FTP session saving the current configuration to the computer file “config.cfg”.

If your (T)FTP client does not allow you to have a destination filename different than the source, you will need to rename them as the Prestige only recognizes “rom-0” and “ras”. Be sure you keep unaltered copies of both files for later use.

The following table is a summary. Please note that the internal filename refers to the filename on the Prestige and the external filename refers to the filename not on the Prestige, that is, on your computer, local network or FTP site and so the name (but not the extension) may vary. After uploading new firmware, see the **ZyNOS F/W Version** field in **Menu 24.2.1 — System Maintenance — Information** to confirm that you have uploaded the correct firmware version. The AT command is the command you enter after you press “y” when prompted in the SMT menu to go into debug mode.

**Table 8-1 Filename Conventions**

FILE TYPE	INTERNAL NAME	EXTERNAL NAME	DESCRIPTION
Configuration File	Rom-0	This is the configuration filename on the Prestige. Uploading the rom-0 file replaces the entire ROM file system, including your Prestige configurations, system-related data (including the default password), the error log and the trace log.	*.rom
Firmware	Ras	This is the generic name for the ZyNOS firmware on the Prestige.	*.bin

## 8.2 Backup Configuration

---

**The Prestige displays different messages explaining different ways to backup, restore and upload files in menus 24.5, 24.6, 24.7.1 and 24.7.2; depending on whether you use the console port or Telnet.**

---

Option 5 from **Menu 24 — System Maintenance** allows you to backup the current Prestige configuration to your computer. Backup is highly recommended once your Prestige is functioning properly. FTP is the preferred methods for backing up your current configuration to your computer since they are faster. You can also perform backup and restore using menu 24 through the console port. Any serial communications program should work fine; however, you must use Xmodem protocol to perform the download/upload and you don't have to rename the files.

Please note that terms “download” and “upload” are relative to the computer. Download means to transfer from the Prestige to the computer, while upload means from your computer to the Prestige.

## 8.2.1 Backup Configuration

Follow the instructions as shown in the next screen.

```
Menu 24.5 - System Maintenance - Backup Configuration

To transfer the configuration file to your workstation, follow the procedure
below:

1. Launch the FTP client on your workstation.
2. Type "open" and the IP address of your system. Then type "root" and
   SMT password as requested.
3. Locate the 'rom-0' file.
4. Type 'get rom-0' to back up the current system configuration to
   your workstation.

For details on FTP commands, please consult the documentation of your FTP
client program. For details on backup using TFTP (note that you must remain
in this menu to back up using TFTP), please see your system manual.

Press ENTER to Exit:
```

**Figure 8-1 Telnet in Menu 24.5**

## 8.2.2 Using the FTP Command from the Command Line

- Step 1.** Launch the FTP client on your computer.
- Step 2.** Enter “open”, followed by a space and the IP address of your Prestige.
- Step 3.** Press [ENTER] when prompted for a username.
- Step 4.** Enter your password as requested (the default is “1234”).
- Step 5.** Enter “bin” to set transfer mode to binary.
- Step 6.** Use “get” to transfer files from the Prestige to the computer, for example, “get rom-0 config.rom” transfers the configuration file on the Prestige to your computer and renames it “config.rom”. See earlier in this chapter for more information on filename conventions.
- Step 7.** Enter “quit” to exit the ftp prompt.

## 8.2.3 Example of FTP Commands from the Command Line

```

331 Enter PASS command
Password:
230 Logged in
ftp> bin
200 Type I OK
ftp> get rom-0 zyxel.rom
200 Port command okay
150 Opening data connection for STOR ras
226 File received OK
ftp: 16384 bytes sent in 1.10Seconds 297.89Kbytes/sec.
ftp> quit

```

**Figure 8-2 FTP Session Example**

## 8.2.4 GUI-based FTP Clients

The following table describes some of the commands that you may see in GUI-based FTP clients.

**Table 8-2 General Commands for GUI-based FTP Clients**

COMMAND	DESCRIPTION
Host Address	Enter the address of the host server.
Login Type	Anonymous.  This is when a user I.D. and password is automatically supplied to the server for anonymous access. Anonymous logins will work only if your ISP or service administrator has enabled this option.  Normal.  The server requires a unique User ID and Password to login.
Transfer Type	Transfer files in either ASCII (plain text format) or in binary mode.
Initial Remote Directory	Specify the default remote directory (path).
Initial Local Directory	Specify the default local directory (path).

**TFTP and FTP over WAN will not work when you have an SMT console session running.**

## 8.2.5 Backup Configuration Using TFTP

The Prestige supports the up/downloading of the firmware and the configuration file using TFTP (Trivial File Transfer Protocol) over LAN. Although TFTP should work over WAN as well, it is not recommended.

To use TFTP, your computer must have both telnet and TFTP clients. To backup the configuration file, follow the procedure shown next.

- Step 1.** Use telnet from your computer to connect to the Prestige and log in. Because TFTP does not have any security checks, the Prestige records the IP address of the telnet client and accepts TFTP requests only from this address.
- Step 2.** Put the SMT in command interpreter (CI) mode by entering 8 in **Menu 24 — System Maintenance**.
- Step 3.** Enter command “sys stdio 0” to disable the SMT timeout, so the TFTP transfer will not be interrupted. Enter command “sys stdio 5” to restore the five-minute SMT timeout (default) when the file transfer is complete.
- Step 4.** Launch the TFTP client on your computer and connect to the Prestige. Set the transfer mode to binary before starting data transfer.
- Step 5.** Use the TFTP client (see the example below) to transfer files between the Prestige and the computer. The file name for the configuration file is “rom-0” (rom-zero, not capital o).

Note that the telnet connection must be active and the SMT in CI mode before and during the TFTP transfer. For details on TFTP commands (see following example), please consult the documentation of your TFTP client program. For UNIX, use “get” to transfer from the Prestige to the computer and “binary” to set binary transfer mode.

## 8.2.6 TFTP Command Example

The following is an example TFTP command:

```
tftp [-i] host get rom-0 config.rom
```

where “i” specifies binary image transfer mode (use this mode when transferring binary files), “host” is the Prestige IP address, “get” transfers the file source on the Prestige (rom-0, name of the configuration file on the Prestige) to the file destination on the computer and renames it config.rom.

## 8.2.7 GUI—based TFTP Clients

The following table describes some of the fields that you may see in GUI-based TFTP clients.

**Table 8-3 General Commands for GUI-based TFTP Clients**

COMMAND	DESCRIPTION
Host	Enter the IP address of the Prestige. 192.168.1.1 is the Prestige’s default IP address when shipped.
Send/Fetch	Use “Send” to upload the file to the Prestige and “Fetch” to back up the file on your computer.
Local File	Enter the path and name of the firmware file (*.bin extension) or configuration file (*.rom extension) on your computer.

Remote File	This is the filename on the Prestige. The filename for the firmware is “ras” and for the configuration file, is “rom-0”.
Binary	Transfer the file in binary mode.
Abort	Stop transfer of the file.

Refer to *section 0* to read about configurations that disallow TFTP and FTP over WAN.

## 8.2.8 Backup Via Console Port

Back up configuration via console port by following the HyperTerminal procedure shown next. Procedures using other serial communications programs should be similar.

**Step 1.** Display menu 24.5 and enter “y” at the following screen.

```
Ready to backup Configuration via Xmodem.  
Do you want to continue (y/n):
```

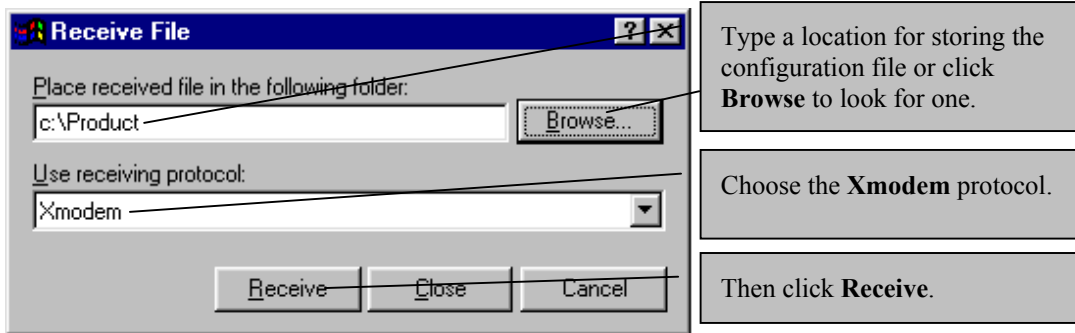
**Figure 8-3 System Maintenance — Backup Configuration**

**Step 2.** The following screen indicates that the Xmodem download has started.

```
You can enter ctrl-x to terminate operation any time.  
Starting XMODEM download...
```

**Figure 8-4 System Maintenance — Starting Xmodem Download Screen**

**Step 3.** Run the HyperTerminal program by clicking **Transfer**, then **Receive File** as shown in the following screen.



**Figure 8-5 Backup Configuration Example**

- Step 4.** After a successful backup you will see the following screen. Press any key to return to the SMT menu.

```

** Backup Configuration completed. OK.
### Hit any key to continue.###

```

**Figure 8-6 Successful Backup Confirmation Screen**

## 8.3 Restore Configuration

This section shows you how to restore a previously saved configuration. Note that this function erases the current configuration before restoring a previous back up configuration; please do not attempt to restore unless you have a backup configuration file stored on disk.

FTP is the preferred method for restoring your current computer configuration to your Prestige since FTP is faster. Please note that you must wait for the system to automatically restart after the file transfer is complete.

---

**WARNING!**  
**DO NOT INTERRUPT THE FILE TRANSFER PROCESS AS THIS MAY PERMANENTLY DAMAGE YOUR PRESTIGE. WHEN THE RESTORE CONFIGURATION PROCESS IS COMPLETE, THE PRESTIGE WILL AUTOMATICALLY RESTART.**

---

### 8.3.1 Restore Using FTP

For details about backup using (T)FTP please refer to earlier sections on FTP and TFTP file upload in this chapter.

```
Menu 24.6 -- System Maintenance - Restore Configuration

To transfer the firmware and configuration file to your workstation, follow the procedure below:

1. Launch the FTP client on your workstation.
2. Type "open" and the IP address of your system. Then type "root" and SMT password as requested.
3. Type "put backupfilename rom-0" where backupfilename is the name of your backup configuration file on your workstation and rom-0 is the remote file name on the system. This restores the configuration to your system.
4. The system reboots automatically after a successful file transfer

For details on FTP commands, please consult the documentation of your FTP client program. For details on backup using TFTP (note that you must remain in this menu to back up using TFTP), please see your system manual.

Press ENTER to Exit:
```

**Figure 8-7 Telnet into Menu 24.6**

- Step 1.** Launch the FTP client on your computer.
- Step 2.** Enter “open”, followed by a space and the IP address of your Prestige.
- Step 3.** Press [ENTER] when prompted for a username.
- Step 4.** Enter your password as requested (the default is “1234”).
- Step 5.** Enter “bin” to set transfer mode to binary.
- Step 6.** Find the “rom” file (on your computer) that you want to restore to your Prestige.



- Step 7.** Use “put” to transfer files from the Prestige to the computer, for example, “put config.rom rom-0” transfers the configuration file “config.rom” on your computer to the Prestige. See earlier in this chapter for more information on filename conventions.
- Step 8.** Enter “quit” to exit the ftp prompt. The Prestige will automatically restart after a successful restore process.

### 8.3.2 Restore Using FTP Session Example

```
ftp> put config.rom rom-0
200 Port command okay
150 Opening data connection for STOR rom-0
226 File received OK
221 Goodbye for writing flash
ftp: 16384 bytes sent in 0.06Seconds 273.07Kbytes/sec.
ftp>quit
```

**Figure 8-8 Restore Using FTP Session Example**

Refer to *section 0* to read about configurations that disallow TFTP and FTP over WAN.

### 8.3.3 Restore Via Console Port

Restore configuration via console port by following the HyperTerminal procedure shown next. Procedures using other serial communications programs should be similar.

- Step 1.** Display menu 24.6 and enter “y” at the following screen.

```
Ready to restore Configuration via Xmodem.
Do you want to continue (y/n):
```

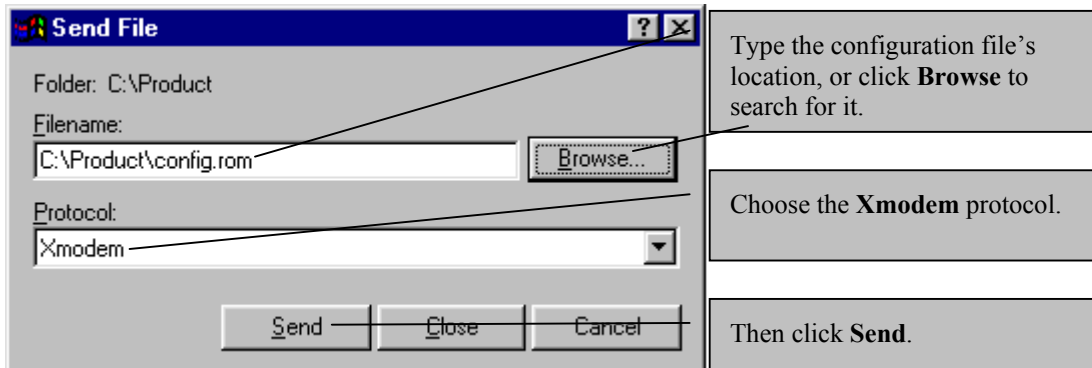
**Figure 8-9 System Maintenance — Restore Configuration**

- Step 2.** The following screen indicates that the Xmodem download has started.

```
Starting XMODEM download (CRC mode) ...
CCCCCCCC
```

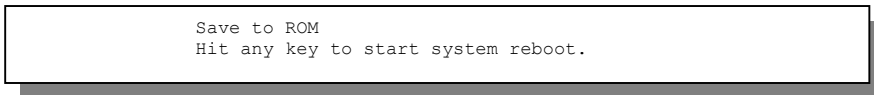
**Figure 8-10 System Maintenance — Starting Xmodem Download Screen**

- Step 3.** Run the HyperTerminal program by clicking **Transfer**, then **Send File** as shown in the following screen.



**Figure 8-11 Restore Configuration Example**

- Step 4.** After a successful restoration you will see the following screen. Press any key to restart the Prestige and return to the SMT menu.



**Figure 8-12 Successful Restoration Confirmation Screen**

## 8.4 Uploading Firmware and Configuration Files

This section shows you how to upload firmware and configuration files. You can upload configuration files by following the procedure in the previous *Restore Configuration* section or by following the instructions in **Menu 24.7.2 — System Maintenance — Upload System Configuration File** (for console port).

---

### **WARNING!**

**DO NOT INTERRUPT THE FILE TRANSFER PROCESS AS THIS MAY PERMANENTLY DAMAGE YOUR PRESTIGE.**

---

### 8.4.1 Firmware File Upload

FTP is the preferred method for uploading the firmware and configuration. To use this feature, your computer must have an FTP client.

When you telnet into the Prestige, you will see the following screens for uploading firmware and the configuration file using FTP.

```
Menu 24.7.1 - System Maintenance - Upload System Firmware

To upload the system firmware, follow the procedure below:

1. Launch the FTP client on your workstation.
2. Type "open" and the IP address of your system. Then type "root" and
   SMT password as requested.
3. Type "put firmwarefilename ras" where "firmwarefilename" is the name
   of your firmware upgrade file on your workstation and "ras" is the
   remote file name on the system.
4. The system reboots automatically after a successful firmware upload.

For details on FTP commands, please consult the documentation of your FTP
client program. For details on uploading system firmware using TFTP (note
that you must remain on this menu to upload system firmware using TFTP),
please see your manual.

Press ENTER to Exit:
```

**Figure 8-13 Telnet Into Menu 24.7.1 — Upload System Firmware**

## 8.4.2 Configuration File Upload

You see the following screen when you telnet into menu 24.7.2.

```
Menu 24.7.2 - System Maintenance - Upload System Configuration File

To upload the system configuration file, follow the procedure below:

1. Launch the FTP client on your workstation.
2. Type "open" and the IP address of your system. Then type "root" and
   SMT password as requested.
3. Type "put configurationfilename rom-0" where "configurationfilename"
   is the name of your system configuration file on your workstation, which
   will be transferred to the "rom-0" file on the system.
4. The system reboots automatically after the upload system configuration
   file process is complete.

For details on FTP commands, please consult the documentation of your FTP
client program. For details on uploading system firmware using TFTP (note
that you must remain on this menu to upload system firmware using TFTP),
please see your manual.

Press ENTER to Exit:
```

**Figure 8-14 Telnet Into Menu 24.7.2 — System Maintenance**

To upload the firmware and the configuration file, follow these examples

### 8.4.3 FTP File Upload Command from the DOS Prompt Example

- Step 1.** Launch the FTP client on your computer.
- Step 2.** Enter “open”, followed by a space and the IP address of your Prestige.
- Step 3.** Press [ENTER] when prompted for a username.
- Step 4.** Enter your password as requested (the default is “1234”).
- Step 5.** Enter “bin” to set transfer mode to binary.
- Step 6.** Use “put” to transfer files from the computer to the Prestige, for example, “put firmware.bin ras” transfers the firmware on your computer (firmware.bin) to the Prestige and renames it “ras”. Similarly, “put config.rom rom-0” transfers the configuration file on your computer (config.rom) to the Prestige and renames it “rom-0”. Likewise “get rom-0 config.rom” transfers the configuration file on the Prestige to your computer and renames it “config.rom.” See earlier in this chapter for more information on filename conventions.
- Step 7.** Enter “quit” to exit the ftp prompt.

### 8.4.4 FTP Session Example of Firmware File Upload

```
331 Enter PASS command
Password:
230 Logged in
ftp> bin
200 Type I OK
ftp> put firmware.bin ras
200 Port command okay
150 Opening data connection for STOR ras
226 File received OK
ftp: 1103936 bytes sent in 1.10Seconds 297.89Kbytes/sec.
ftp> quit
```

**Figure 8-15 FTP Session Example of Firmware File Upload**

More commands (found in GUI-based FTP clients) are listed earlier in this chapter.

Refer to *section 0* to read about configurations that disallow TFTP and FTP over WAN.

### 8.4.5 TFTP File Upload

The Prestige also supports the uploading of firmware files using TFTP (Trivial File Transfer Protocol) over LAN. Although TFTP should work over WAN as well, it is not recommended.

To use TFTP, your computer must have both telnet and TFTP clients. To transfer the firmware and the configuration file, follow the procedure shown next.

- Step 1.** Use telnet from your computer to connect to the Prestige and log in. Because TFTP does not have any security checks, the Prestige records the IP address of the telnet client and accepts TFTP requests only from this address.
- Step 2.** Put the SMT in command interpreter (CI) mode by entering 8 in **Menu 24 — System Maintenance**.
- Step 3.** Enter the command “sys stdio 0” to disable the console timeout, so the TFTP transfer will not be interrupted. Enter “command sys stdio 5” to restore the five-minute console timeout (default) when the file transfer is complete.
- Step 4.** Launch the TFTP client on your computer and connect to the Prestige. Set the transfer mode to binary before starting data transfer.
- Step 5.** Use the TFTP client (see the example below) to transfer files between the Prestige and the computer. The file name for the firmware is “ras”.

Note that the telnet connection must be active and the Prestige in CI mode before and during the TFTP transfer. For details on TFTP commands (see following example), please consult the documentation of your TFTP client program. For UNIX, use “get” to transfer from the Prestige to the computer, “put” the other way around, and “binary” to set binary transfer mode.

### 8.4.6 TFTP Upload Command Example

The following is an example TFTP command:

```
tftp [-i] host put firmware.bin ras
```

where “i” specifies binary image transfer mode (use this mode when transferring binary files), “host” is the Prestige’s IP address and “put” transfers the file source on the computer (firmware.bin – name of the firmware on the computer) to the file destination on the remote host (ras - name of the firmware on the Prestige).

Commands that you may see in GUI-based TFTP clients are listed earlier in this chapter.

### 8.4.7 Uploading Via Console Port

FTP or TFTP are the preferred methods for uploading firmware to your Prestige. However, in the event of your network being down, uploading files is only possible with a direct connection to your Prestige via the console port. Uploading files via the console port under normal conditions is not recommended since FTP or TFTP is faster. Any serial communications program should work fine; however, you must use the Xmodem protocol to perform the download/upload.

## 8.4.8 Uploading Firmware File Via Console Port

**Step 1.** Select 1 from **Menu 24.7 — System Maintenance — Upload Firmware** to display **Menu 24.7.1 — System Maintenance — Upload System Firmware**, then follow the instructions as shown in the following screen.

```

Menu 24.7.1 - System Maintenance - Upload System Firmware

To upload system firmware:
1. Enter "y" at the prompt below to go into debug mode.
2. Enter "atur" after "Enter Debug Mode" message.
3. Wait for "Starting XMODEM upload" message before activating
   Xmodem upload on your terminal.
4. After successful firmware upload, enter "atgo" to restart the
   system.

Warning: Proceeding with the upload will erase the current system
firmware.

Do You Wish To Proceed:(Y/N)

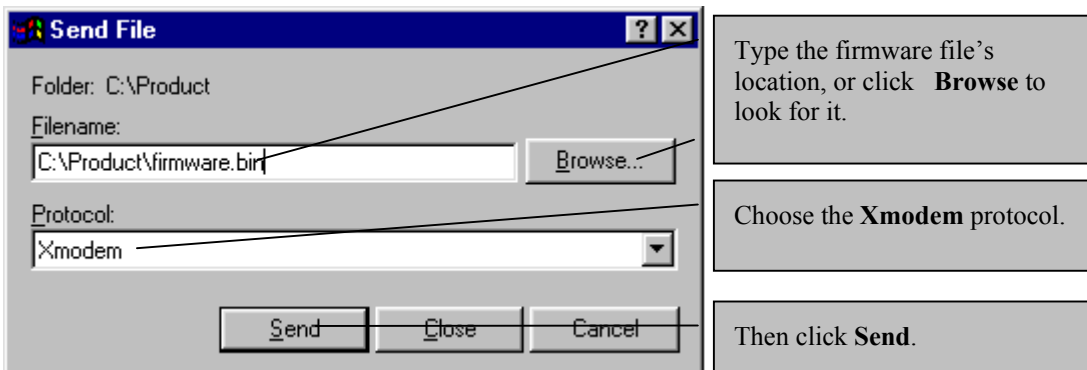
```

**Figure 8-16 Menu 24.7.1 as seen using the Console Port**

**Step 2.** After the "Starting Xmodem upload" message appears, activate the Xmodem protocol on your computer. Follow the procedure as shown previously for the HyperTerminal program. The procedure for other serial communications programs should be similar.

## 8.4.9 Example Xmodem Firmware Upload Using HyperTerminal

Click **Transfer**, then **Send File** to display the following screen.



**Figure 8-17 Example Xmodem Upload**

After the firmware upload process has completed, the Prestige will automatically restart.

## 8.4.10 Uploading Configuration File Via Console Port

- Step 1.** Select 2 from **Menu 24.7 — System Maintenance — Upload Firmware** to display **Menu 24.7.2 — System Maintenance — Upload System Configuration File**. Follow the instructions as shown in the next screen.

```
Menu 24.7.2 - System Maintenance - Upload System Configuration File

To upload system configuration file:
1. Enter "y" at the prompt below to go into debug mode.
2. Enter "atlc" after "Enter Debug Mode" message.
3. Wait for "Starting XMODEM upload" message before activating
   Xmodem upload on your terminal.
4. After successful firmware upload, enter "atgo" to restart the
   system.

Warning:
1. Proceeding with the upload will erase the current
   configuration file.
2. The system's console port speed (Menu 24.2.2) may change
   when it is restarted; please adjust your terminal's speed
   accordingly. The password may change (menu 23), also.
3. When uploading the DEFAULT configuration file, the console
   port speed will be reset to 9600 bps and the password to
   "1234".

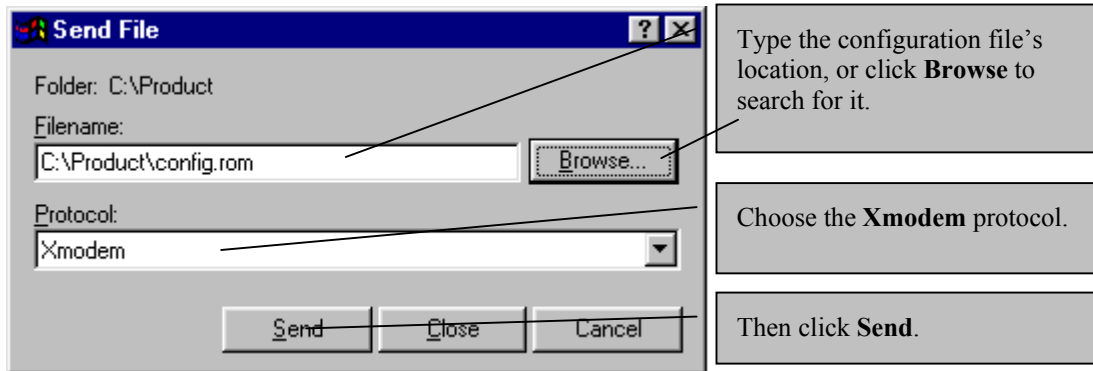
Do You Wish To Proceed: (Y/N)
```

**Figure 8-18 Menu 24.7.2 as seen using the Console Port**

- Step 2.** After the "Starting Xmodem upload" message appears, activate the Xmodem protocol on your computer. Follow the procedure as shown previously for the HyperTerminal program. The procedure for other serial communications programs should be similar.
- Step 3.** Enter "atgo" to restart the Prestige.

## 8.4.11 Example Xmodem Configuration Upload Using HyperTerminal

Click **Transfer**, then **Send File** to display the following screen.



**Figure 8-19 Example Xmodem Upload**

After the configuration upload process has completed, restart the Prestige by entering “atgo”.



# Chapter 9

## Troubleshooting

*This chapter covers potential problems and the corresponding remedies.*

### 9.1 Problems Starting the Prestige

**Table 9-1 Problems Starting the Prestige**

PROBLEM	CORRECTIVE ACTION
No LEDs are on when the Prestige is turned on.	<p>Make sure that the Prestige's power adapter is connected to the Prestige and plugged in to an appropriate power source. Check that the Prestige and the power source are both turned on.</p> <p>Turn the Prestige off and on.</p> <p>If error persists, it may be a hardware problem. Contact technical support.</p>
Cannot access the Prestige via the console port.	1. Check to see if the Prestige is connected to your computer's serial port.
	2. Check to see if the communications program is configured correctly. It should be configured as follows:
	<p>VT100 terminal emulation.</p> <p>9600 bps is the Prestige factory default speed. Try other speeds in case it has been changed.</p> <p>No parity, 8 data bits, 1 stop bit, no flow control.</p>

### 9.2 Problems Connecting with the WAN or Remote Node/ISP

**Table 9-2 Problems Connecting with the WAN or Remote Node/ISP**

PROBLEM	CORRECTIVE ACTION
Cannot initialize the PVC connection.	<p>Verify the xDSL port/wall jack cable connection. The xDSL LED should be on. If not, verify in menu 24.1 that the <b>Line Status</b> field reads <b>Down</b>. Wait 10 minutes until the PVC synchronizes and the field reads <b>Up</b>.</p> <p>If problems persist, check with the telephone company, ISP and/or the peer modem (in a LAN-to-LAN application).</p>

PROBLEM	CORRECTIVE ACTION
Cannot connect to a remote node or ISP.	Check menu 4 or menu 11.1 to verify the <b>Encapsulation</b> for the remote node.
I cannot get a WAN IP address from the ISP.	The WAN IP is provided after the ISP verifies the MAC address, host name or user ID. Find out the verification method used by your ISP and configure the corresponding fields.

### 9.3 Problems Connecting with the LAN

**Table 9-3 Problems Connecting with the LAN**

PROBLEM	CORRECTIVE ACTION
Cannot ping any station on the LAN.	Check the LAN LEDs on the front panel. The LED should be on for a port that has a station connected. If it is off, check the cables between your Prestige and the station.
	Make sure you are using a crossover Ethernet cable if you are connecting the Prestige directly to one computer and a straight-through cable if you are connecting your Prestige to LAN computers via a hub.
	Make sure your computer NIC (Network Interface Card) is working properly.
	Check the TCP/IP configuration on your computer. Make sure that the IP address and the subnet mask of the Prestige and the LAN computer(s) are on the same subnet.

### 9.4 Problems Accessing SMT Menus

**Table 9-4 Problems Accessing SMT Menus**

PROBLEM	CORRECTIVE ACTION
I cannot access the SMT menu.	The default SMT password is "1234". If you have changed the password and have now forgotten it, you will need to upload the default configuration file (see <i>User's Guide</i> ).

## 9.5 Problems Accessing the Internet

**Table 9-5 Problems Accessing the Internet**

<b>PROBLEM</b>	<b>CORRECTIVE ACTION</b>
I cannot access the Internet.	Make sure the Prestige is turned on and connected to the network. If the Prestige's DSL LED is off, check the cable between the Prestige and the telephone wall jack. Check whether your Prestige requires a crossover or straight-through cable. Use a crossover cable if you are connecting directly to a computer; use a straight-through cable if you are connecting via a hub. Make sure you entered your user name correctly. A user name may be case-sensitive.
The DSL LED is off.	Check the connection between the Prestige DSL port and the wall jack.



# Appendix A

## Power Adapter Specifications

SPECIFICATIONS	NORTH AMERICA	EUROPEAN UNION	UK	JAPAN
<b>AC Power Adapter model</b>	AD48-1201200DUY	AD-1201200DV	AD-1201200DK	JOD-48-1124
<b>Input power</b>	AC120Volts/60Hz/ 0.25A	AC230Volts/50Hz/ 0.2A	AC230Volts/50Hz/ 0.2A	AC100Volts/50/60Hz / 27VA
<b>Output power</b>	DC12Volts/1.2A	DC12Volts/1.2A	DC12Volts/1.2A	DC12Volts/1.2A
<b>Power consumption</b>	10 W	10 W	10 W	10 W
<b>Plug Standards</b>	North American	European Union	United Kingdom	Japan
<b>Safety standards</b>	UL, CUL (UL1950, CSA C22.2 No. 234- M90)	TUV, CE (EN 60950)	TUV, CE (EN 60950, BS7002)	T-Mark (Japan Dentori)

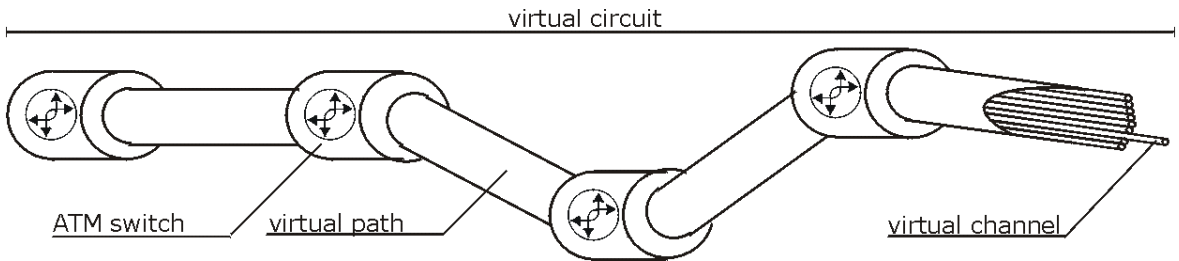
**Diagram 1 Power Adapter Specifications**

# Appendix B

## Virtual Circuit Topology

ATM is a connection-oriented technology, meaning that it sets up virtual circuits over which end systems communicate. The terminology for virtual circuits is as follows:

- Virtual Channel Logical connections between ATM switches
- Virtual Path A bundle of virtual channels
- Virtual Circuit A series of virtual paths between circuit end points



**Diagram 2 Virtual Circuit Topology**

Think of a virtual path as a cable that contains a bundle of wires. The cable connects two points and wires within the cable provide individual circuits between the two points. In an ATM cell header, a VPI (Virtual Path Identifier) identifies a link formed by a virtual path; a VCI (Virtual Channel Identifier) identifies a channel within a virtual path.

The VPI and VCI identify a virtual path, that is, termination points between ATM switches. A series of virtual paths make up a virtual circuit.

Your service provider should supply you with VPI/VCI numbers.

# Appendix C

## Boot Module Commands

When you reboot your Prestige, you will be given a choice to go into debug mode by pressing a key at the prompt shown in the following screen. In debug mode you have access to a series of boot module commands, for example ATUR (for uploading firmware) and ATLC (for uploading the configuration file) already discussed in a previous section.

```
Bootbase Version: V2.06 | 1/8/2002 11:34:40
RAM: Size = 8192 Kbytes
FLASH: Intel 8M
ZyNOS Version: V2.50(BM.0)b2 | 1/30/2002 19:58:46
Press any key to enter debug mode within 3 seconds.....
```

### Diagram 3 Option to Enter Debug Mode

Type "ATHE" to view all available Prestige boot module commands. Some are shown in the next screen. Most commands aid in advanced troubleshooting and should only be used by qualified engineers.

```
=====  
===== Debug Command Listing =====  
AT          just answer OK  
ATHE       print help  
ATBAX      change baudrate. 1:38.4k, 2:19.2k, 3:9.6k 4:57.6k 5:115.2k  
ATENx,(y)  set BootExtension Debug Flag (y=password)  
ATSE       show the seed of password generator  
ATTI(h,m,s) change system time to hour:min:sec or show current time  
ATDA(y,m,d) change system date to year/month/day or show current date  
ATDS       dump RAS stack  
ATDT       dump Boot Module Common Area  
ATDUx,y    dump memory contents from address x for length y  
ATRBx      display the 8-bit value of address x  
ATRWx      display the 16-bit value of address x  
ATRLx      display the 32-bit value of address x  
ATGO(x)    run program at addr x or boot router  
ATGR       boot router  
ATGT       run Hardware Test Program  
ATRTw,x,y,(z) RAM test level w, from address x to y (z iterations)  
ATSH       dump manufacturer related data in ROM  
ATDOx,y    download from address x for length y to PC via XMODEM  
ATTD       download router configuration to PC via XMODEM  
ATUR       upload router firmware to flash ROM  
ATLC       upload router configuration file to flash ROM  
ATXSx      xmodem select: x=0: CRC mode(default); x=1: checksum mode
```

**Diagram 4 Boot Module Commands**



# Appendix D

## TCP/IP

All computers must have a 10M or 100M Ethernet adapter card and TCP/IP installed. Use straight-through Ethernet cables to connect your computer's Ethernet adapter to a hub or switch and to connect the hub or switch to the Prestige's LAN port. Otherwise, connect your computer's Ethernet adapter directly to the LAN port with a crossover Ethernet cable.

Windows 95/98/Me/NT/2000/XP, Macintosh OS 7 and later operating systems and all versions of UNIX/LINUX include the software components you need to install and use TCP/IP on your computer. Windows 3.1 requires the purchase of a third-party TCP/IP application package.

TCP/IP should already be installed on computers using Windows NT/2000/XP, Macintosh OS 7 and later operating systems.

After the appropriate TCP/IP components are installed, configure the TCP/IP settings in order to "communicate" with your network.

### Setting up Your Windows 95/98/Me Computer

#### Installing TCP/IP Components

1. Click **Start, Settings, Control Panel** and double-click the **Network** icon.

The **Network** window **Configuration** tab displays a list of installed components. You need a network adapter, the TCP/IP protocol and Client for Microsoft Networks.

If you need the adapter:

- a. In the **Network** window, click **Add**.
- b. Select **Adapter** and then click **Add**.
- c. Select the manufacturer and model of your network adapter and then click **OK**.

If you need TCP/IP:

- a. In the **Network** window, click **Add**.
- b. Select **Protocol** and then click **Add**.
- c. Select **Microsoft** from the list of manufacturers.
- d. Select **TCP/IP** from the list of network protocols and then click **OK**.

If you need Client for Microsoft Networks:

- a. Click **Add**.

- b. Select **Client** and then click **Add**.
- c. Select **Microsoft** from the list of manufacturers.
- d. Select **Client for Microsoft Networks** from the list of network clients and then click **OK**.
- e. Restart your computer so the changes you made take effect.

### Configuring TCP/IP

1. In the **Network** window **Configuration** tab, select your network adapter's TCP/IP entry and click **Properties**.
  - If your IP address is dynamic, select **Obtain an IP address automatically**.
  - If you have a static IP address, select **Specify an IP address** and type your information into the **IP Address** and **Subnet Mask** fields.
3. Click the **DNS Configuration** tab.
  - If you do not know your DNS information, select **Disable DNS**.
  - If you know your DNS information, select **Enable DNS** and type the information in the fields below (you may not need to fill them all in).
4. Click the **Gateway** tab.
  - If you were not given a gateway IP address, remove previously installed gateways.
  - If you have a gateway IP address, type it in the **New gateway** field and click **Add**.
5. Click **OK** to save and close the **TCP/IP Properties** window.
6. Click **OK** to close the **Network** window. Insert the Windows CD if prompted.
7. Turn on your Prestige and restart your computer when prompted.

### Verifying TCP/IP Properties

1. Click **Start** and then **Run**.
2. In the **Run** window, type "winipcfg" and then click **OK** to open the **IP Configuration** window.
3. Select your network adapter. You should see your computer's IP address, subnet mask and default gateway.

## Setting up Your Windows NT/2000 Computer

### Configuring TCP/IP

1. Click **Start, Settings, Network** and **Dial-up Connections** and right-click **Local Area Connection** or the connection you want to configure and click **Properties**.
2. Select **Internet Protocol (TCP/IP)** (you may need to scroll down) and click **Properties**.
3. The **Internet Protocol TCP/IP Properties** window opens.
  - If your IP address is dynamic, click **Obtain an IP address automatically**.
  - If you have a static IP address click Use the following IP Address and fill in the **IP address, Subnet mask**, and **Default gateway** fields.
4. In the **Internet Protocol TCP/IP Properties** window:
  - Click **Obtain DNS server automatically** if you do not know your DNS server IP address(es).
  - If you know your DNS server IP address(es), type them in the **Preferred DNS server** and **Alternate DNS server** fields. If you have previously configured DNS servers, click **Advanced** and then the **DNS tab** to order them.
5. Click **Advanced**:
  - If you do not know your gateway's IP address, remove any previously installed gateways in the **IP Settings** tab and click **OK**.
6. Click **OK** to save and close the **Internet Protocol (TCP/IP) Properties** window.
7. Click **OK** to close the **Local Area Connection Properties** window.
8. Turn on your Prestige and restart your computer (if prompted).

### Verifying TCP/IP Properties

Click **Start, Programs, Accessories** and then **Command Prompt**.

In the **Command Prompt** window, type "ipconfig" and then press [ENTER]. The window will display information about your connection-specific DNS suffix, IP Address, Subnet Mask and Default Gateway.

## Setting up Your Windows XP Computer

### Configuring TCP/IP

1. Click **start, Control Panel, Network and Internet Connections** and then **Network Connections**.
2. Right-click the network connection you want to configure and then click **Properties**.
3. Under the **General** tab, select Internet Protocol (TCP/IP) (you may need to scroll down) and click **Properties**.

4. The **Internet Protocol TCP/IP Properties** window opens.

-If you have a dynamic IP address click **Obtain an IP address automatically**.

-If you have a static IP address click **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields. To configure advanced static address settings for a local area connection, click **Advanced**, and do one or more of the following to configure additional IP addresses:

-In the **IP Settings** tab, in **IP addresses**, click **Add**.

-In **TCP/IP Address**, type an IP address in **IP address** and a subnet mask in **Subnet mask**, and then click **Add**.

-Repeat the above two steps for each IP address you want to add.

-Configure additional default gateways in the **IP Settings** tab by clicking **Add** in **Default gateways**.

-In **TCP/IP Gateway Address**, type the IP address of the default gateway in **Gateway**. To manually configure a default metric (the number of transmission hops), clear the **Automatic metric** check box and type a metric in **Metric**.

-Click **Add**.

-Repeat the previous three steps for each default gateway you want to add.

-Click **OK** when finished.

5. In the **Internet Protocol TCP/IP Properties** window's **General** tab:

-Click **Obtain DNS server address automatically** if you do not know your DNS server IP address(es).

-If you know your DNS server IP address(es), click **Use the following DNS server addresses**, type them in the **Preferred DNS server** and **Alternate DNS server** fields. If you have previously configured DNS servers, click **Advanced** and then the **DNS** tab to order them.

6. Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

7. Click **OK** to close the **Local Area Connection Properties** window.

8. Turn on your Prestige and restart your computer (if prompted).

### **Verifying TCP/IP Properties**

1. Click **Start, All Programs, Accessories** and then **Command Prompt**.

2. In the **Command Prompt** window, type "ipconfig" and then press [ENTER]. You can also open **Network Connections**, right-click a network connection, click **Status** and then click the **Support tab**.

## Setting up Your Macintosh Computer

### Configuring TCP/IP Properties

1. Click the **Apple** menu, **Control Panel** and double-click **TCP/IP** to open the **TCP/IP Control Panel**.
2. Select **Ethernet** from the **Connect via** list.
3. For dynamically assigned settings, select **Using DHCP Server** from the **Configure:** list.
4. For statically assigned settings, do the following:
  - From the **Configure** box, select **Manually**.
  - Type your IP address in the **IP Address** box.
  - Type your subnet mask in the **Subnet mask** box.
  - Type the IP address of your Prestige in the **address** box.
5. Close the **TCP/IP Control Panel**.
6. Click **Save** if prompted, to save changes to your configuration.
7. Turn on your Prestige and restart your computer (if prompted).

### Verifying TCP/IP Properties

Check your TCP/IP properties in the **TCP/IP Control Panel**.



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