Prestige 202

User's Guide

Version 2.40

(April 1999)

ZyXEL

TOTAL INTERNET ACCESS SOLUTION

FCC ID: I88PRESTIGE2024

INSTRUCTION MANUAL
CLASS B COMPUTING DEVICES

Use the provided shielded power supply cable so as not to interfere with radio and television reception. Also a shielded interface data cable must be used for video output port, parallel output port and serial output port to avoid causing Radio-TV interference Problems.
If you use other cables, it may cause interference with radio and television reception.

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

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Prestige 202

ISDN Router

The declarations of CE marking:

CE

The Prestige 202 routers have been approved for connection to the Public Switched Telecommunication Network using interfaces compatible with ITU-TSS recommendation I.420 (Basic Rate ISDN user access). The Prestige 202 complies with the following directives:

1. The Council Directive 89/336/EEC of 3 May 1992 on the approximation of the laws of the member states relation to Electro Magnetic Compatibility. (EMC Directive).
2. Council Directive 91/263/EEC of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunication terminal equipment. (The Telecom Terminal Equipment Directive).
3. 93/68/EEC of 22 July 1993 amending the Directives 89/336/EEC, 91/263 /EEC and 92/31/EEC. (Marking Directive).
4. The Council Directive 92/31/EEC of 28 April 1992 amending directive on the approximation of the laws of the member states relating to Electro Magnetic Compatibility

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 (2) 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.

Note

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. ZyXEL shall in no event be held liable for indirect or consequential damages of any kind of character to the purchaser.

To obtain the services of this warranty, contact ZyXEL's Service Center; refer to the separate Warranty Card 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 (USA and territories only). If the customer desires some other return destination beyond the U.S. borders, the customer shall bear the cost of the return shipment. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

Customer Support

If you have questions about your ZyXEL product or desire assistance, contact ZyXEL Communications Corporation offices worldwide, in one of the ways listed. Our ftp sites are also available for software and ROM upgrades.

Method	International	North America	Scandinavia
E-Mail Tech Support	support@zyxel.com.tw support@zyxel.com.at(Europe)	support@zyxel.com	support@zyxel.dk
E-Mail Sales	sales@zyxel.com.tw	sales@zyxel.com	sales@zyxel.dk
Web Site	www.zyxel.com	www.zyxel.com	www.zyxel.dk
Telephone	+886-3-578-3942 Ext.266	+1-714-632-0882 800-255-4101	+45-3955-0700
Fax	+886-3-578-2439	+1-714-632-0858	+45-3955-0707
FTP	ftp.zyxel.dk	ftp.zyxel.com	ftp.zyxel.dk
Regular Mail	ZyXEL Communications Corp., 6 Innovation Road II, Science-Based Industrial Park, Hsinchu 300, Taiwan, R.O.C.	ZyXEL Communications Inc., 1650 Miraloma Avenue, Placentia, CA 92870, U.S.A.	ZyXEL Communications A/S, Columbusvej 5, 2860 Soeborg, Copenhagen, Denmark

Table of Contents

Chapter 1
Getting to Know Your ISDN Router

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

1.1 Features of the Prestige

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

This auto-negotiation feature allows the P202 to detect the speed of incoming transmissions and adjust appropriately, providing a faster data transfer on the Ethernet network as required.

ISDN Basic Rate Interface (BRI) Support

The Prestige supports a single BRI. A BRI offers two 64 Kbps channels, which can be used independently for two destinations or be bundled to speed up data transfer.

Extensive Analog Phone Support

The Prestige is equipped with two standard phone jacks for you to connect analog devices such as telephones and FAX machines. It also supports supplementary services such as call waiting and 3-way calling.

Single User Account (SUA)

The SUA™ (Single User Account) feature allows multiple users to share a single IP address (either dynamic or static) assigned by your Internet Service Provider (ISP).

Incoming Call Support

In addition to making outgoing calls, you can configure the Prestige to act as a remote access server for telecommuting employees.

TCP/IP and PPP Support

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

Dial-On-Demand

The Dial-On-Demand feature allows the Prestige to automatically place a call to a remote gateway based on the triggering packet's destination without user intervention.

PPP Multilink

The Prestige can bundle multiple links in a single connection using PPP Multilink Protocol (MP). The number of links can be either statically configured or dynamically managed based on traffic demand.

Bandwidth-On-Demand

The Prestige dynamically allocates bandwidth by dialing and dropping connections according to traffic demand.

Full Network Management

- Accessing SMT (System Management Terminal) through telnet connection.
- Windows-based PNC (Prestige Network Commander).

Logging and Tracing

- CDR (Call Detail Record) to help to analyze and manage the telephone bill.
- Built-in message logging and packet tracing.
- Unix syslog facility support.

PAP and CHAP Security

The Prestige supports PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol). CHAP is more secure than PAP; however, PAP is readily available on more platforms.

DHCP Support

DHCP (Dynamic Host Configuration Protocol) allows the workstations on your LAN to obtain the configuration from the Prestige.

Data Compression

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

Networking Compatibility

Your Prestige is compatible with remote access products from other manufacturers such as Ascend, Cisco, and 3Com. Furthermore, it supports Microsoft Windows 95 and Windows NT remote access capability.

Prestige Network Commander

The Prestige Network Commander is a C++ based utility designed to allow users to access the Prestige's management settings via a Worldwide Web browser.

Upgrade Firmware via LAN

In addition to the direct console port connection, the Prestige supports the up/downloading of firmware and the configuration file using TFTP (Trivial File Transfer Protocol) over the LAN. Even though TFTP should work over the WAN as well, it is not recommended because of potential data corruption problems.

Supplementary Voice Features

The Prestige supports the following Supplementary Voice Features on both of its analog or POTS (Plain Old Telephone Service) phone ports:

- Call Waiting
- Three Way Calling (Conference Calling)
- Call Transfer
- Call Forwarding
- Reminder Ring

Caller ID Display Services on Analog PSTN lines

The Prestige 202 supports Caller ID information on both phone ports. To use Caller ID Display you need a special telephone or display unit that can show and store incoming telephone numbers.

1.2 Internet Access with the Prestige 202

1.2.1 Internet Access

The Prestige is the ideal high-speed Internet access solution. Your Prestige supports the TCP/IP protocol, which the Internet uses exclusively. It is also compatible with access servers manufactured by major vendors such as Cisco and Ascend. A typical Internet Access application is shown next.

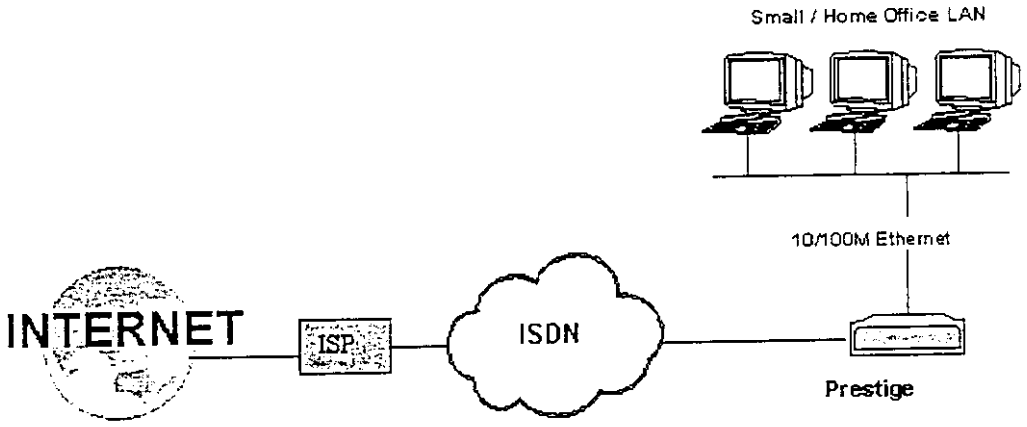

Figure 1-1 Internet Access Application

Internet Single User Account

For a SOHO (Small Office/Home Office) environment, your Prestige offers the Single User Account (SUA) feature that allows multiple users on the LAN (Local Area Network) to access the Internet concurrently for the cost of a single user. Single User Account address mapping can also be used for other LAN to LAN connections.

1.2.2 LAN-to-LAN Connection

You can use the Prestige to connect two geographically dispersed networks over the ISDN line. A typical LAN-to-LAN application for your Prestige is shown as follows.

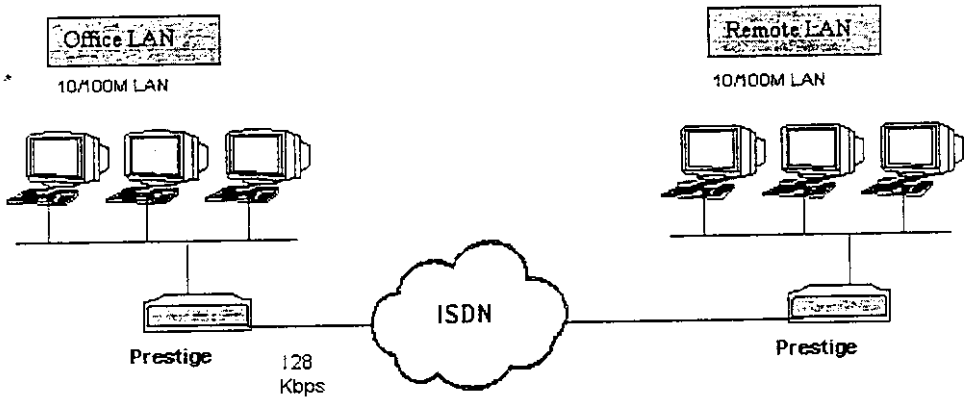

Figure 1-2 LAN-to-LAN Connection Application

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Preface

About Your Prestige

Congratulations on your purchase of the Prestige 202 ISDN Router.

The Prestige 202 is a high-performance router that offers a complete Internet Access solution.

You do not need to set any switches to configure the Prestige. The user-friendly Prestige Network Commander (PNC) is a C++ utility that allows you to manage the Prestige via a Graphical User Interface (GUI). You can also manage the Prestige via the SMT (System Management Terminal), a menu-driven interface that you can access from either a terminal emulator or telnet.

Setup Information

ISDN Line

1. Contact your local telephone company's ISDN Ordering Center to find out what type of ISDN service is available and the switch type.
2. When the telephone company installs your ISDN line, please be sure to obtain and write down the following information for future use:
   - ISDN switch type
   - ISDN telephone number(s)
   - ISDN Service Profile Identifiers (SPID) number(s) (only for North America).

Supplemental services such as Call Forwarding are supported by the Prestige but must be subscribed to separately from the telephone company.

Ethernet Setup Information

IP Address - The IP Address is the unique 32-bit number assigned to your Prestige. This address is written in dotted decimal notation (four 8-bit numbers, between 0 and 255, separated by periods), e.g., 192.168.1.1.

Please note that every machine on an internet must have a unique IP address - do not assign an arbitrary address to any machine. If you are not sure as to which IP address to assign to the Prestige, contact your Internet Service Provider (ISP) or refer to Chapter 3 of this guide for more details.

IP Subnet Mask - An IP address consists of two parts, the network ID and the host ID. The IP Subnet Mask is used to specify the network ID portion of the address, expressed in dotted decimal notation. The Prestige automatically calculates this mask based on the IP address that you assign. Unless you have a special need for subnetting, use the default mask as calculated by the Prestige.

Syntax Conventions

- "Enter" 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** font. The choices of a menu item are in **Bold Arial** font. A single keystroke is in Arial font and enclosed in square brackets, for instance, [ENTER] means the Enter, or carriage return, key; [ESC] means the Escape key.
- For brevity's sake, we will use "e.g." as a shorthand for "for instance", and "i.e." as a shorthand for "that is" or "in other words" throughout this manual.
- The Prestige 202 may also be referred to as the Prestige or the P202 from now on, in this manual.

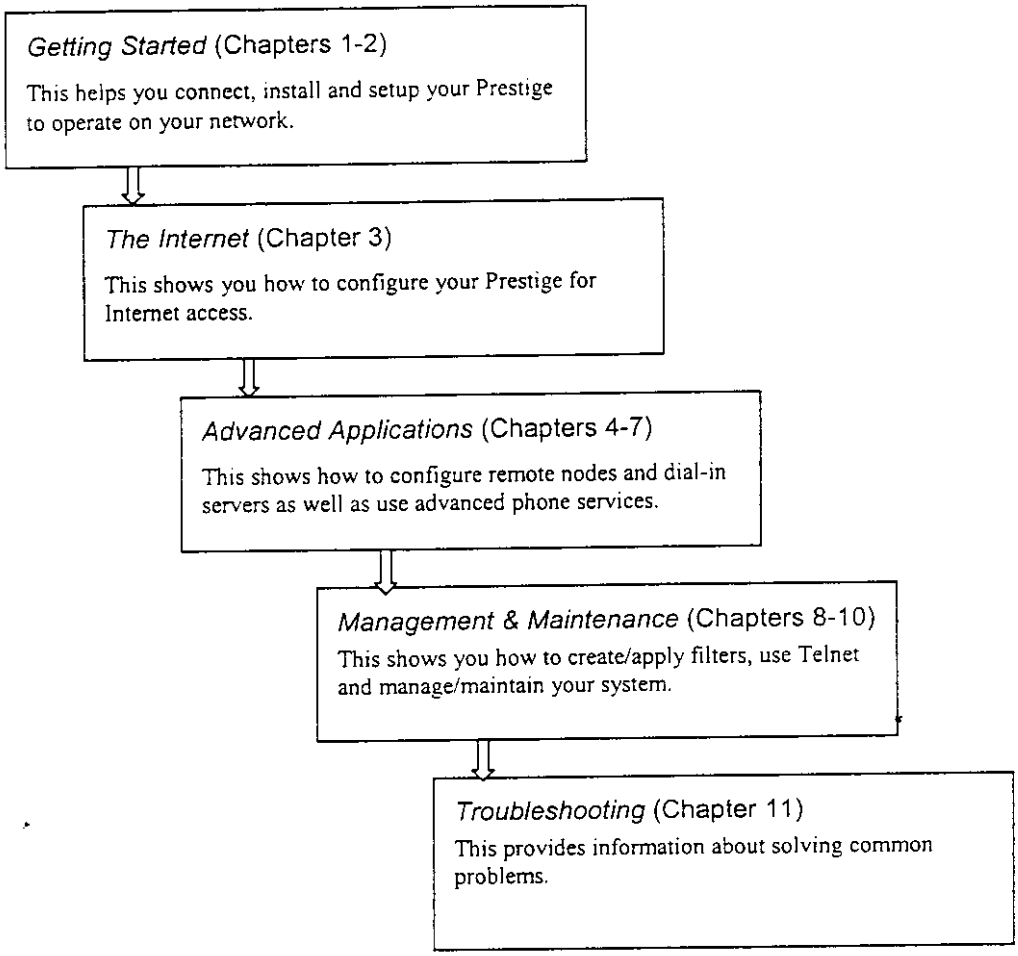
Prestige Scenarios

For fast access to example SMT menus to show you how to configure the Prestige for various scenarios go to the following sections.

SCENARIO	GO TO SECTION
To reset your Prestige	2.8
DHCP	3.3
Internet Access	3.4.1
To configure SUA	3.5.2
LAN-to-LAN application	5.1
Remote Access under Windows	6.4.1
Callback	6.4.3
Callback with CLID	6.4.4
To apply filters	8.4

Table 1-1 Prestige Scenarios

General Structure of this Manual



1.2.3 Remote Access Server

Your Prestige allows remote users to dial-in and gain access to your LAN. This feature enables users that have workstations with remote access capabilities, e.g., Windows 95, to dial in to access the network resources without physically being in the office. Either PAP (Password Authentication Protocol) or CHAP (Challenge Handshake Authentication Protocol) authentication can be used to control the access from the remote users. You can also use callback for security and/or accounting purposes.

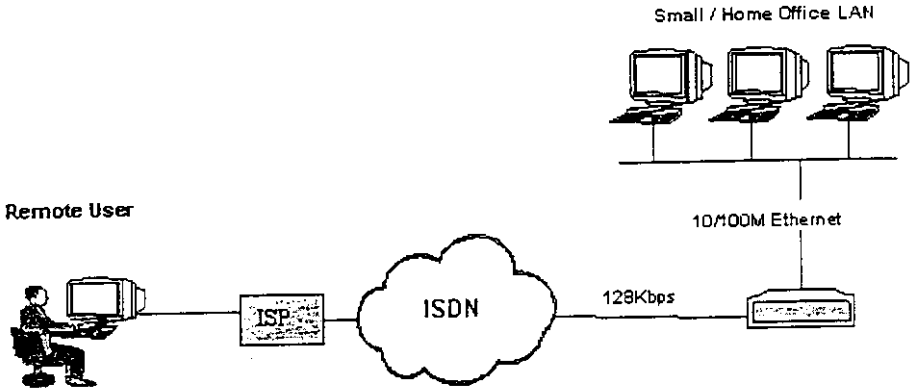


Figure 1-3 Remote Access

Chapter 2
Hardware Installation & Initial Setup

This chapter shows you how to make the cable connections to your Prestige as well as set up your ISDN connection using the SMT.

2.1 Front Panel LEDS OF P202

The LED indicators on the front panel indicate the operational status of the Prestige 202. The table below the diagram describes the LED functions:

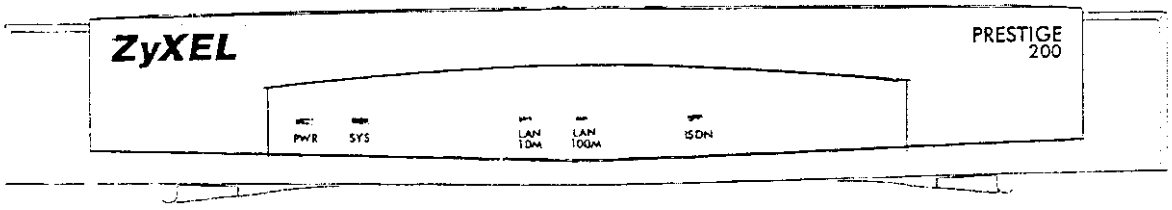


Figure 2-1 Front Panel Of P202

Table 2-1 LED functions

PWR	The PWR (power) LED is on when power is applied to the Prestige.
SYS	A steady on SYS (system) LED indicates the Prestige is on and functioning properly while an off SYS LED indicates the system is not ready or a malfunction. The system is rebooting when the SYS LED is blinking.
LAN 10M	A steady *green* light indicates a successful 10Mb Ethernet connection. The LED will blink when data is being sent/received.
LAN 100M	A steady *orange* light indicates a successful 100Mb Ethernet connection. The LED will blink when data is being sent/received.
ISDN	The ISDN LED is on when the Prestige is connected to an ISDN switch and the line has been successfully initialized.

2.2 Prestige 202 Rear Panel and Connections

The next figure shows the rear panel connectors of your Prestige 202.

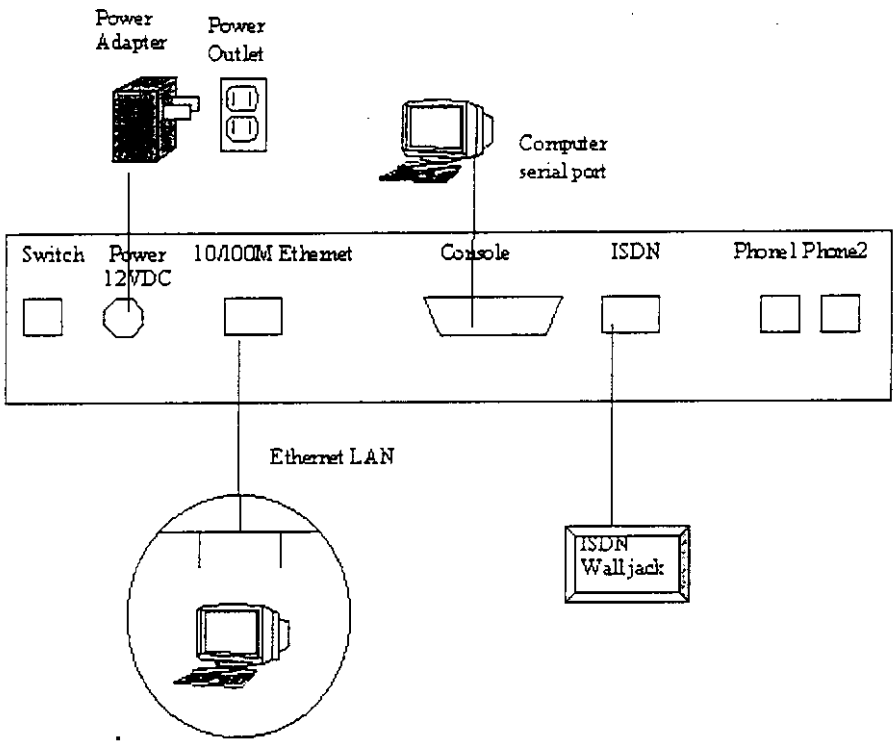


Figure 2-2 Prestige 202 Rear Panel

This section outlines how to connect your Prestige 202 to the LAN and to the ISDN network.

Step 1. Connecting the ISDN Line

Connect the Prestige to the ISDN network using the included ISDN (black) cable. Plug one end of the cable into the port labeled **ISDN BRI** and the other to the ISDN wall jack.

Step 2. Connecting a Workstation to the Prestige

Ethernet 10Base-T networks use Unshielded Twisted Pair (UTP) cable with RJ-45 connectors that look like a bigger telephone plug with 8 pins. Use the crossover cable (red tag) to connect your Prestige 202 to a computer directly or use straight through Ethernet cable (white tag) to connect to an external hub.

Step 3. Connecting a Telephone/Fax to the Prestige

If you wish, you can connect regular telephones, fax machines or other analog devices to the Prestige. To connect an analog device, plug the end of the telephone cord from the device to either port **PHONE1** or **PHONE2** on the rear panel of the Prestige.

Step 4. Connecting the Power Adapter to your Prestige

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

Step 5. Connecting the Console Port

For the initial configuration of your Prestige, you need to use terminal emulator software on a workstation and connect it to the Prestige through the console port. Connect the 9-pin (smaller) end of the console cable to the console port of the Prestige and the 25-pin (bigger) end to a serial port (COM1, COM2 or other COM port) of your workstation. You can use an extension RS-232 cable if the enclosed one is too short.

After the initial setup, you can modify the configuration remotely through telnet connections. See the *Telnet Configuration and Capabilities* chapter for detailed instructions on using telnet to configure your Prestige.

2.3 Additional Installation Requirements

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

1. A computer with Ethernet 10Base-T NIC (Network Interface Card).
2. A computer equipped with communications software configured to the following parameters:

- VT100 terminal emulation.
- 9600 Baud.
- No parity, 8 Data bits, 1 Stop bit.

After the Prestige is properly set up, you can make future changes to the configuration through telnet connections.

2.4 Housing

Your Prestige's housing has ventilation slots for cooling and clip-out legs that fit snugly into grooves for sturdy stacking with better air flow. ZyXEL recommends that you do not stack more than 4 routers for maximum stack stabilty and cooling.

2.5 Power On Your Prestige

At this point, you should have connected the console port, the ISDN BRI port, the Ethernet port and the power port to the appropriate devices or lines. You can now apply power to the Prestige by flipping the power switch to on (**I** is ON, **O** is OFF).

Appendix
Acronyms and Abbreviations

BAP/BACP	Bandwidth Allocation Protocol/Bandwidth Allocation Control protocol
BOD	Bandwidth on Demand
CDR	Call Detail Record
CHAP	Challenge Handshake Authentication Protocol
CLID	Calling Line IDentification
CSU/DSU	Channel Service Unit/Data Service Unit
DCE	Data Communications Equipment
DOVBS	Data Over Voice Bearer Service
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
DTE	Data Terminal Equipment
IANA	Internet Assigned Number Authority
IP	Internet protocol
IPCP	IP Control Protocol
IPX	Internetwork Packet eXchange
ISDN	Integrated Service Digital Network
ISP	Internet Service Provider
LAN	Local Area Network
MAC	Media Access Control
MP	(PPP) Multilink Protocol
NAT	Network Address Translation
PAP	Password Authentication Protocol
POTS	Plain Old Telephone Service

PPP	Point to Point Protocol
PSTN	Public Switched Telephone Network
RFC	Request For Comment
RIP	Routing Information Protocol
SAP	(IPX) Service Advertising Protocol
SPID	Service Profile IDentifier
SNMP	Simple Network Management Protocol
SUA	Single User Account
TA	(ISDN) Terminal Adapter
TFTP	Trivial File Transfer Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
UTP	Unshielded Twisted Pair (cable)
WAN	Wide Area Network