

Prestige 642

PPPoE Modem

User's Guide

Version 2.50

August 2001

ZyXEL

TOTAL INTERNET ACCESS SOLUTION

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Online Registration

Do not forget to register your Prestige (fast, easy online registration at www.zyxel.com) for free future product updates and information.

Federal Communications Commission (FCC) Interference Statement

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:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

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

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

Notice 1

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

Notice 2

Use of shielded RS-232 cables is required to ensure compliance with FCC Part 15, and it is the responsibility of the user to provide and use shielded RS-232 cables.

Note

CE and FC Certifications

For more information about your modem's Declaration of Conformity (DOC) please refer to www.zyxel.com.

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 LOCATION | E-MAIL SUPPORT/SALES | TELEPHONE/FAX | WEB SITE/ FTP SITE | REGULAR MAIL |
|--------------------|--|--|--|--|
| WORLDWIDE | support@zyxel.com.tw support@europe.zyxel.com sales@zyxel.com.tw | +886-3-578-3942 +886-3-578-2439 | www.zyxel.com www.europe.zyxel.com ftp.europe.zyxel.com | ZyXEL Communications Corp., 6 Innovation Road II, Science- Based Industrial Park, HsinChu, Taiwan 300, R.O.C. |
| NORTH AMERICA | support@zyxel.com sales@zyxel.com | +1-714-632-0882 800-255-4101 +1-714-632-0858 | www.zyxel.com ftp.zyxel.com | ZyXEL Communications Inc., 1650 Miraloma Avenue, Placentia, CA 92870, U.S.A. |
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Preface

About Your ADSL Modem

Congratulations on your purchase of the Prestige 642 Series ADSL Modem.

The Prestige 642 is an ADSL modem used for Internet access via an ADSL line. It can run upstream maximum rate at 832Kbps and downstream rate at 8Mbps. The rate selection depends on the copper category, distance and service provider configuration.

The P642's 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.

Your Prestige is easy to install and configure. All functions of the Prestige are software configurable via the Web Embedded Configurator. Use the CLI (Command Line Interface) as an alternate method of Prestige configuration.

About This User's Guide

This guide covers all aspects of the Prestige 642 operations and shows you how to get the best out of the multiple advanced features of your ADSL Internet Access System using the Web Embedded Configurator and the CLI. It is designed to guide you through the correct configuration of your Prestige 642 for various applications.

Related Documentation

Related documentation includes:

- A Packing List Card that lists all items that come with your Prestige.
- A Read Me First document that will help get your Prestige up and running right away. It contains detailed easy-to-follow instructions, Prestige default settings, handy checklists and information on setting up your computer.
- A Support CD. This CD includes:
 - This User's Guide.
 - Support Notes.
 - Supporting Software
 - Link to the ZYXEL Website for Product Registration.

General 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.
- Menu titles and labels are in **Bold Times** 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 642 may also be referred to as the Prestige or the P642 in this user’s guide.

What is DSL?

DSL (Digital Subscriber Line) technology enhances the data capacity of the existing telephone line running between the local telephone company switching offices and most homes and offices. While the wire itself can handle higher frequencies, the telephone switching equipment is designed to cut off signals above 4,000Hz to filter noise from the voice line. DSL services are either symmetrical (traffic flows at the same speed in both directions) or asymmetrical (the downstream capacity is higher than the upstream capacity).

As the carrying distance increases, data rates decrease. 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 for DSL maximum transmission distances. A DSL connection is a point-to-point dedicated circuit, meaning that the link is always up and there is no dialing required.

What is ADSL?

ADSL is an asymmetrical technology, meaning that the downstream data rate is much higher than the upstream data rate. This works well for a typical Internet session in which more information is downloaded, e.g., from Web servers, than is uploaded. ADSL operates in a frequency range that is above the frequency range of voice services, so the two systems can operate over the same cable.

Chapter 1

Getting to Know Your PPPoE Modem

This chapter describes the key features and applications of the Prestige 642 PPPoE modem.

1.1 The Prestige 642 PPPoE Modem

Your Prestige integrates a high-speed 10/100Mbps LAN interface and one high-speed ADSL port into a single package. The Prestige is ideal for high-speed Internet browsing and making LAN-to-LAN connections to remote networks.

1.2 Features of the Prestige 642 PPPoE Modem

Your Prestige is packed with a number of features that give it the flexibility to provide a complete networking solution for almost anyone.

Ease of Installation

Your Prestige is designed for quick, intuitive and easy installation. Your Prestige weighs very little and is extremely compact making it easy to position anywhere in your busy office.

Web Configurator

Configuration and maintenance of the Prestige is easy with the Web Configurator. Your web browser must be Java and JavaScript enabled to use the web configurator.

High Speed Internet Access

The Prestige can support downstream transmission rates of up to 8Mbps and upstream transmission rates of 832 Kbps. The Prestige also supports rate management. Rate management allows ADSL subscribers to select an Internet access speed that best suit their needs and budget.

10/100Mbps Fast Ethernet LAN Interface

The Prestige's 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.

ADSL Standards Supported

ETSI

ATM Forum UNI 3.1/ 4.0 PVC

Multiple Protocol over AAL5 (RFC1483)

PPP over Ethernet over AAL5

Protocols Supported

- The Prestige supports PPP over Ethernet (RFC 2516) and RFC 1483 encapsulation over ATM (idle timeout for PPPoE connections (100 seconds) may be altered via the web configurator).
- PPP (Point-to-Point Protocol) Bridge link layer protocol.
- IP Routing/Transparent Bridging
- DHCP Client, Server and Relay
- NAT for single IP address internet access
- RIP I and RIP II

Networking Compatibility

Your Prestige is compatible with the major ADSL DSLAM (Digital Subscriber Line Access Multiplexer) providers making configuration extremely simple.

Multiplexing

The Prestige supports VC-based and LLC-based multiplexing.

Full Network Management

- Command Line Interface.
- Telnet support (Password-protected telnet access to internal configuration manager).
- TFTP/FTP server, firmware upgrade and configuration backup/restore.
- F4/F5 OAM .

Diagnostic Capabilities

Your modem can perform self-diagnostic tests. These tests check the integrity of the following circuitry:

- FLASH memory, ADSL circuitry, RAM and the LAN port.

Security

Configure the following security features using the web configurator:

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

- The Prestige has filtering functions that allow added network security and management. Default net bios filters are turned on when PPPoE is selected.

1.3 Applications for the Prestige 642 PPPoE Modem

1.3.1 Internet Access

The Prestige is the ideal high-speed Internet access solution. Your Prestige supports TCP/IP protocol, which the Internet commonly uses. It is compatible with all major ADSL DSLAM (Digital Subscriber Line Access Multiplexer) providers. A DSLAM is a rack of ADSL line cards with data multiplexed into a backbone network interface/connection (e.g., T1, OC3, DS3, ATM or Frame Relay). Think of it as the equivalent of a modem rack for ADSL. A typical Internet Access application is shown below.

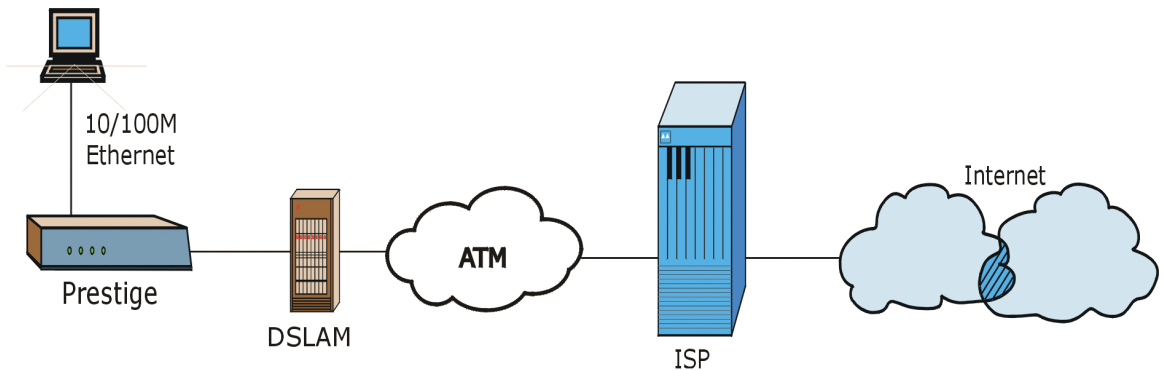


Figure 1-1 Internet Access Application

Chapter 2

Hardware Installation & Initial Setup

This chapter describes the physical features of the Prestige and how to make the cable connections.

2.1 Front Panel LEDs of the P642

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

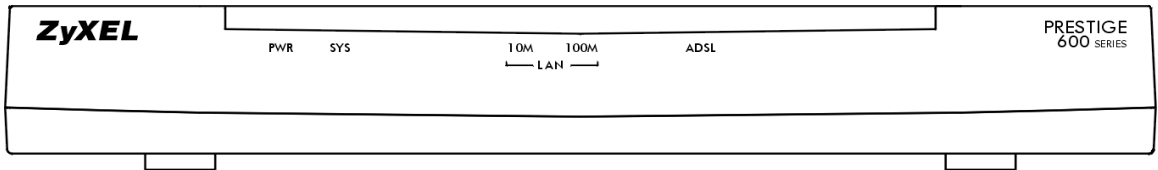


Figure 2-1 Front Panel of the P642

Table 2-1 Front Panel LED Description

| LED | COLOR | STATUS | MEANING |
|----------|-------|-----------------------|---|
| PWR | Green | On | Power is applied to the Prestige. |
| SYS | Green | On Off Blinking | The Prestige is on and functioning properly. The system is not ready or has malfunctioned. The system is rebooting. |
| LAN 10M | Green | On Blinking | The Prestige has a successful 10Mb Ethernet connection. Data is being sent/received. |
| LAN 100M | Green | On Blinking | The Prestige has a successful 100Mb Ethernet connection. Data is being sent/received. |
| ADSL | Green | On Off Blinking | The Prestige is connected successfully to a DSLAM. The link is down. Data is being sent/received. |

2.2 Rear Panel and Connections of the P642

The following figure shows the rear panel connections of your Prestige.

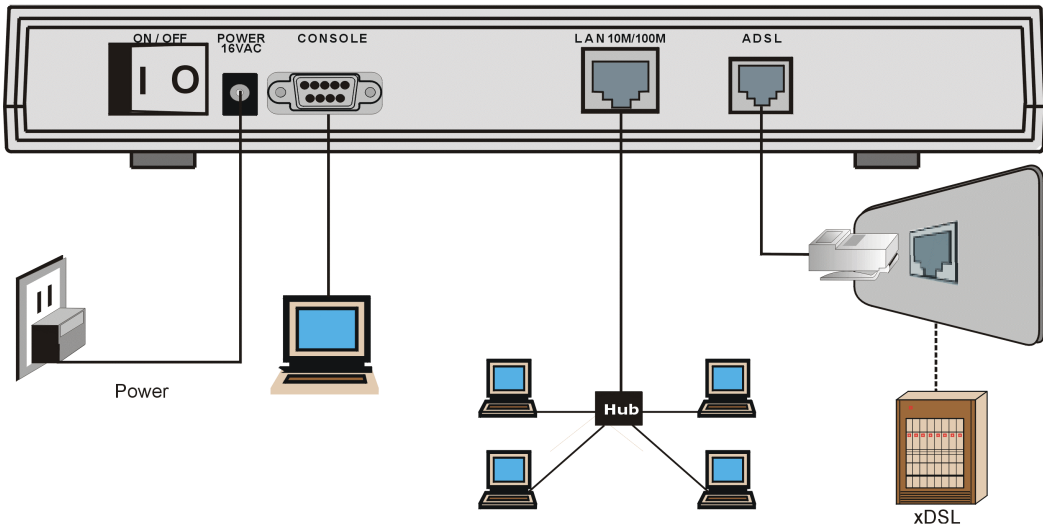


Figure 2-2 Rear Panel Connections of the P642

2.2.1 Connecting the ADSL Line

Connect the Prestige directly to the wall jack using the included ADSL cable. Connect a microfilter between the wall jack and your telephone(s) (see the *Connecting a Microfilter* figure). Microfilter(s) act as low pass filters (voice transmission takes place in the 0 to 4KHz bandwidth). A microfilter is an optional purchase.

2.2.2 Connecting a Computer to the Prestige 10/100M LAN 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 (red tag) to connect your Prestige to a computer directly. Use a straight-through Ethernet cable (white tag) to connect to an external hub and then connect one end of a straight-through Ethernet cable (white tag) from the hub to the NIC (Network Interface Card) on the computer.

2.2.3 Connecting the Power Adapter to your Prestige

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

2.2.4 Connecting the 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 (9-pin to 25-pin console cable supplied) to the console port of the Prestige and the 25-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.

2.3 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:

- A computer with Ethernet 10Base-T/100Base-T NIC.
- A computer equipped with communications software (for example, Hyper Terminal in Win98) configured to the following parameters:
 - VT100 terminal emulation.
 - 9600 Baud rate.
 - No parity, 8 Data bits, 1 Stop bit.
 - Flow Control set to None

After the Prestige has been successfully connected to your network, you can make future changes to the configuration through the telnet application.

2.4 Connecting a POTS Splitter

This is for the Prestige following the Full Rate (G.dmt) standard only. One major difference between ADSL and dial-up modems is the optional telephone splitter. This device keeps the telephone and ADSL signals separated, giving them the capability to provide simultaneous Internet access and telephone service on the same line. Splitters also eliminate the destructive interference conditions caused by telephone sets. The purchase of a POTS splitter is optional.

Noise generated from a telephone in the same frequency range as the ADSL signal can be disruptive to the ADSL signal. In addition the impedance of a telephone when off-hook may be so low that it shunts the strength of the ADSL signal. A POTS splitter will filter the telephone signals before combining the ADSL and telephone signals transmitted and received. The issues of noise and impedance are eliminated with a single POTS splitter installation.

A telephone splitter is easy to install as shown in the following figure.

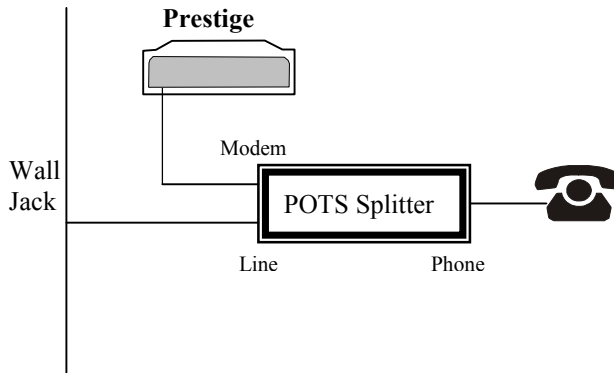


Figure 2-3 Connecting a POTS Splitter

- Step 1.** Connect the side labeled “Phone” to your telephone.
- Step 2.** Connect the side labeled “Modem” to your Prestige.
- Step 3.** Connect the side labeled “Line” to the telephone wall jack.

2.5 Default Settings

Your Prestige is shipped with the following default settings:

- VPI: 8, VCI: 35
- WAN interface: PPPoE LLC mode
- Console port speed: 9600 bps
- DHCP: Server
- Password: “1234”

Depending on your region, the default password and VPI/VCI may differ.

2.6 Turning On the Prestige

At this point, you should have connected the console port, the ADSL line, the Ethernet port and the power port to the appropriate devices or lines. Execute the terminal emulation program if you plan to configure the Prestige with the Command Line Interface. Turn the power switch (located on the back of your Prestige) from **OFF** to **ON** to turn on your Prestige.

- Proceed to the *Web Configurator* chapter if you want to configure the Prestige using the web configurator. This is the most user-friendly configuration method.
- Proceed to the *Command Line Interface* chapter if you want to configure the Prestige using the Command Line Interface.

Chapter 3

Web Configurator

This chapter shows you how to configure and maintain your Prestige using the web configurator.

3.1 Introduction

The web configurator is a user-friendly GUI (Graphic User Interface) that allows you to easily configure and maintain the Prestige. The figure shown next details the menus contained in the web configurator.

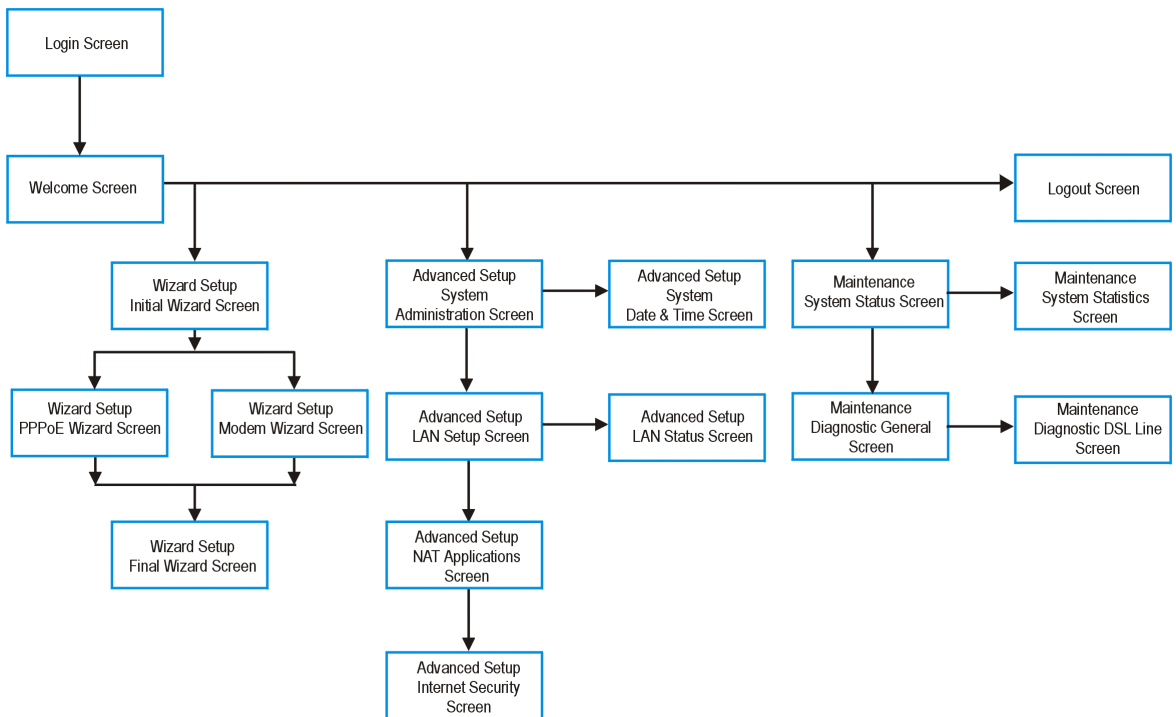


Figure 3-1 Web Configurator Overview

3.2 Login and Welcome Screens

Launch your web browser and enter 192.168.1.1 as the URL. This is the factory default IP address of the Prestige when shipped. You will see the following **Login** screen.

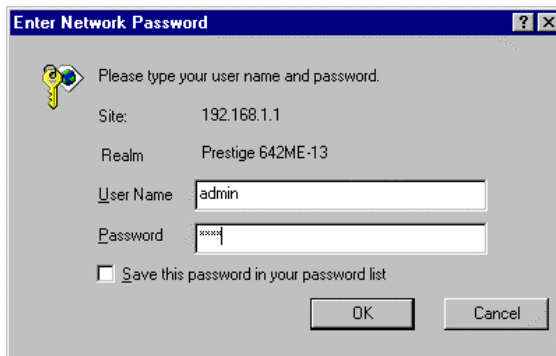


Figure 3-2 Login Screen as seen in Netscape

3.2.1 About the Login Screen

The default User Name and Password fields are "admin" and "1234" respectively.

The **Password** field is configurable; the **User Name** field is not.

The **Password** field is case sensitive.

The web configurator times out after five minutes of inactivity. The time out is not configurable via the web configurator.

Make sure that your web browser is Java and JavaScript enabled.

You can configure the Prestige via the Prestige web configurator or CLI (Command Line Interface) only.

You will not be able to access the Prestige web configurator from the WAN if you have applied a filter in on the LAN or block web service on the WAN.

3.2.2 About the Welcome Screen

After a successful login, you will see the **Welcome** screen shown next. When you are in a submenu and want to see all available menus, click on the **Main Menu** link (only visible when in a submenu) to return to the **Welcome** screen. If this is the first time configuring your Prestige you should click **Wizard Setup**.

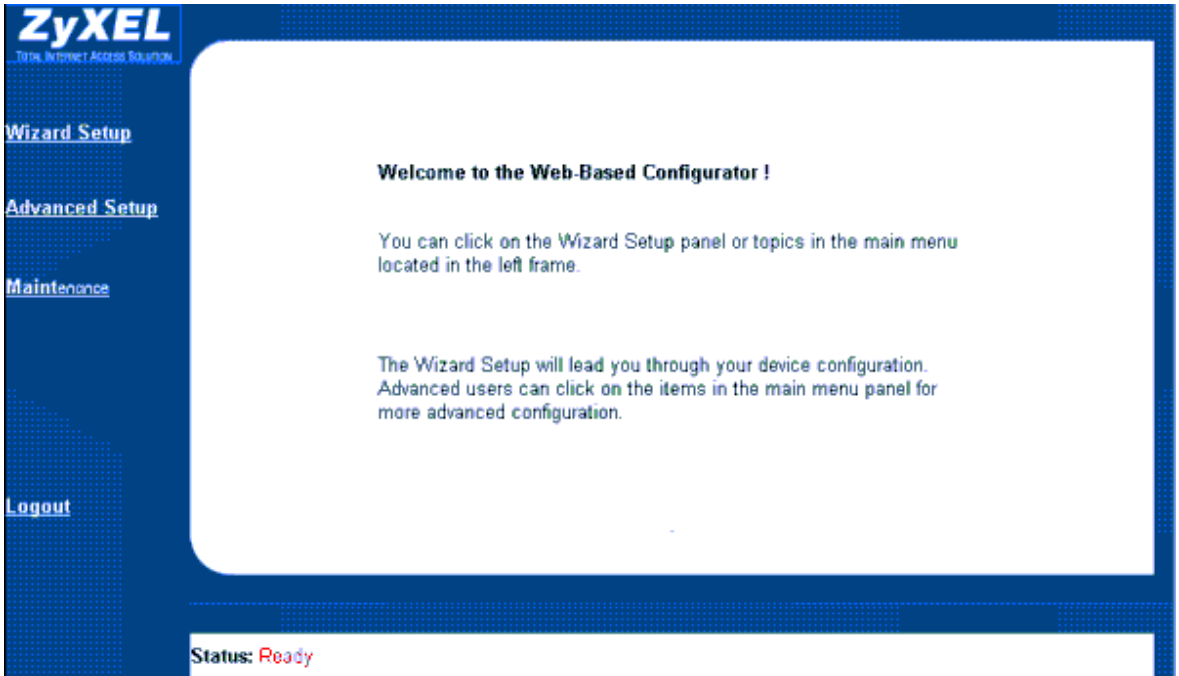


Figure 3-3 Welcome Screen

3.3 Wizard Setup Screen

Use the wizard setup for initial Prestige configuration. The Prestige comes with some default settings that should make configuration even easier.

Select **Modem** if you want your modem to function in bridge mode (you will need to download a VPN adapter later). Otherwise, select **PPPoE Modem** (default) as shown next.

Click **Next**.

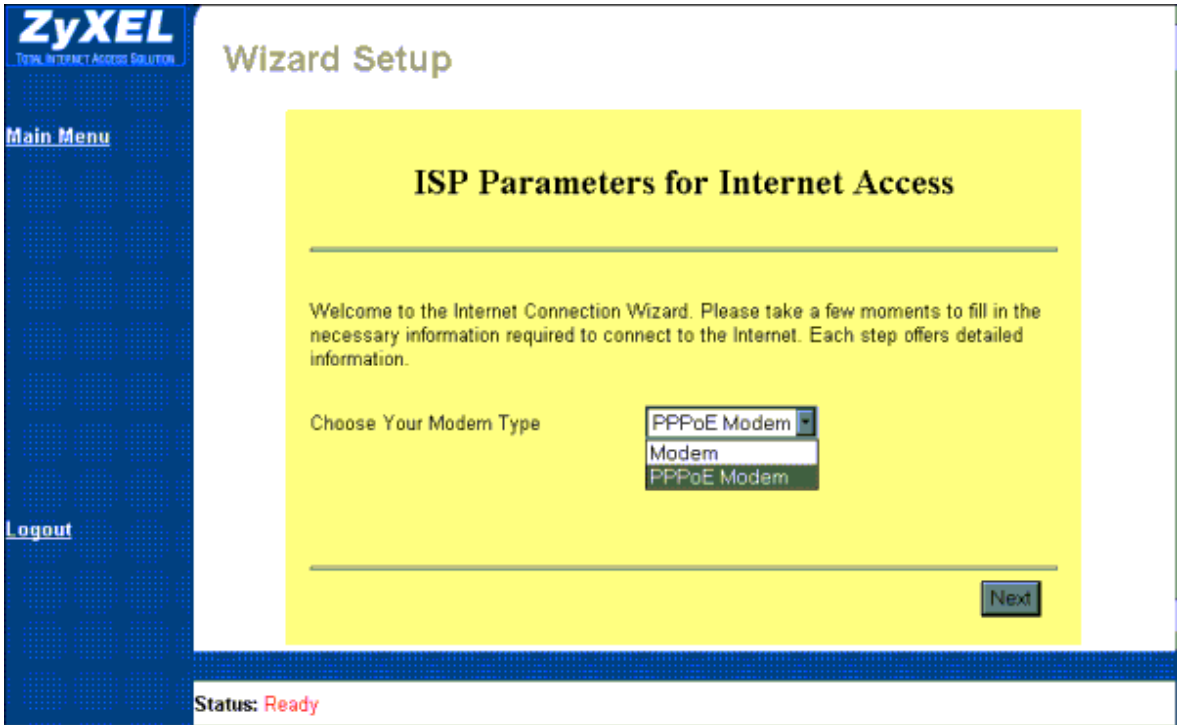


Figure 3-4 Initial Wizard Screen

3.3.1 Wizard Setup — PPPoE Modem Screen

The screen shown next appears if you selected **PPPoE Modem** from the initial **Wizard** screen and allows you to enter Internet Access information in one screen. Before you configure your Prestige for Internet access, you need to collect your Internet account information from your ISP and telephone company. Refer to the next table for a list of required account information.

A Note about IP Addresses.

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

| | | |
|-------------|---|-----------------|
| 10.0.0.0 | - | 10.255.255.255 |
| 172.16.0.0 | - | 172.31.255.255 |
| 192.168.0.0 | - | 192.168.255.255 |

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

Regardless of your particular situation, do not create an arbitrary IP address; always follow the guidelines above. For more information on address assignment, please refer to RFC 1597, *Address Allocation for Private Internets* and RFC 1466, *Guidelines for Management of IP Address Space*.

A Note about VPI and VCI Numbers

Be sure to use the correct Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) numbers supplied by the telephone company. The valid range for the VPI is 1 to 255 and for the VCI is 32 to 65535 (0 to 31 is reserved for local management of ATM traffic). Please see the *VPI & VCI Appendix* for more information

The screenshot displays the 'Wizard Setup' interface for configuring PPPoE Internet Access. The main content area is yellow and titled 'ISP Parameters for Internet Access'. It contains the following fields and values:

| Parameter | Value |
|--------------------|-------------|
| Modem Type | PPPoE Modem |
| Protocol | PPPoE |
| Multiplexing | LLC |
| Virtual Circuit ID | |
| VPI | 8 |
| VCI | 35 |
| Login Settings | |
| Service Name | any |
| User Name | ChangeMe |
| Password | [masked] |
| Idle Timeout (sec) | 100 |

At the bottom of the form are 'Back' and 'Finish' buttons. The status bar at the bottom left shows 'Status: Ready'.

Figure 3-5 PPPoE Wizard Screen

Table 3-1 PPPoE Wizard Screen Description

| FIELD LABEL | FIELD DESCRIPTION |
|---|--|
| Modem Type | This field reflects the type of modem you chose in the previous screen (READ ONLY). |
| Protocol | This field is dependent on the Modem Type field (READ ONLY) and reflects the protocol used by the modem selected in the previous screen. |
| Multiplexing | Select either VC or LLC . Obtain this information from your ISP. |
| Virtual Circuit ID | Be sure to use the correct Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) numbers supplied by the 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). |
| VPI | Enter the VPI assigned to you by your ISP. |
| VCI | Enter the VCI assigned to you by your ISP. |
| Login Settings | |
| Service Name | Type the name of your PPPoE service here. If you do not know your Service Name then leave this field blank. |
| User Name | Enter the login name that your ISP gives you. For PPPoE encapsulation this field must be of the form user@domain.xxx where the domain identifies your ISP. |
| Password | Enter the password associated with the User Name name above. |
| Idle Timeout (sec) | 100 (default) |
| When you have finished, click Finish to save your customized settings and exit this screen or Back to return to the previous screen without saving. | |

3.3.2 Wizard Setup — Modem Screen

The screen shown next appears if you selected **Modem** from the initial **Wizard** screen.

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Main Menu

Wizard Setup

ISP Parameters for Internet Access

Modem Type Modem

Protocol RFC 1483

Multiplexing LLC

Virtual Circuit ID

VPI 8

VCI 35

Back Finish

Status: Ready

Figure 3-6 Modem Wizard Screen

Table 3-2 Modem Wizard Screen Description

| FIELD LABEL | FIELD DESCRIPTION |
|---|---|
| Modem Type | This field reflects the type of modem you chose in the previous screen (READ ONLY). |
| Protocol | This field is dependent on the Modem Type field (READ ONLY). |
| Multiplexing | Select either VC or LLC . Obtain this information from your ISP. |
| Virtual Circuit ID | |
| VPI | Enter the VPI assigned to you by your ISP. |
| VCI | Enter the VCI assigned to you by your ISP. |
| When you have finished, click Finish to save your customized settings and exit this screen or Back to return to the previous screen without saving. | |

3.3.3 Wizard Setup — Final Wizard Screen

After you configure your modem, you will see the final Wizard screen shown next.

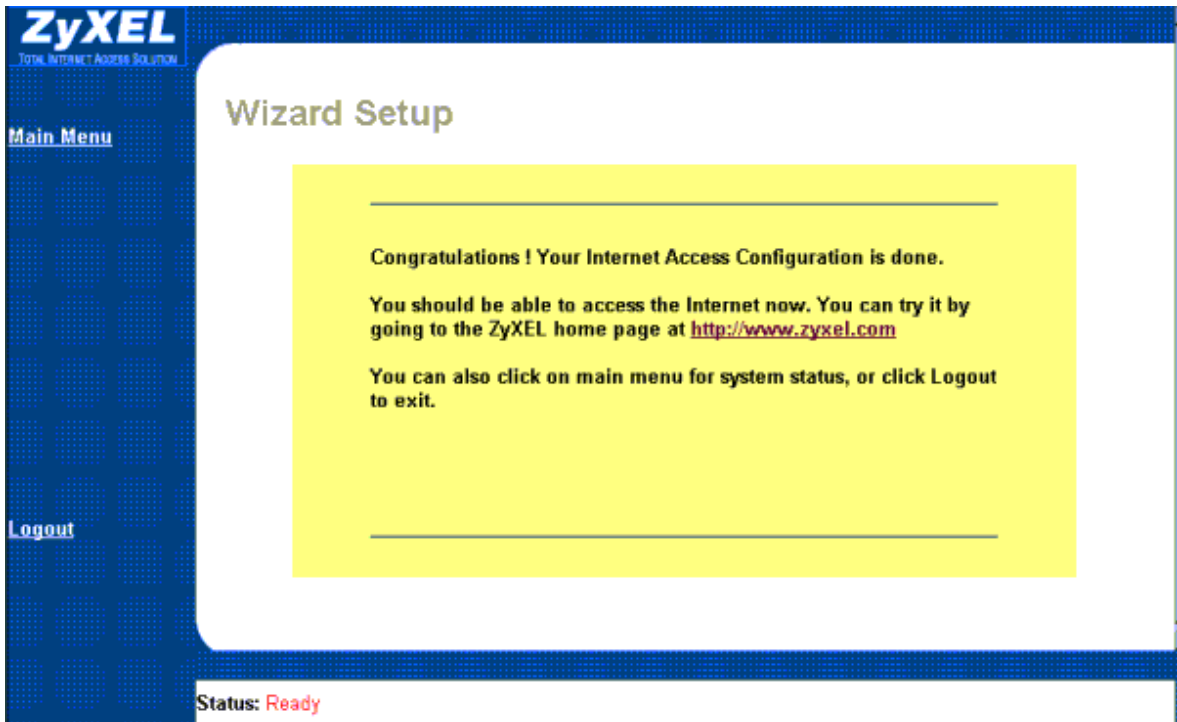


Figure 3-7 Final Wizard Screen

Congratulations! You should now be set up to access the Internet. Test your Internet connection by clicking <http://www.zyxel.com> in the previous figure.

If there are any problems recheck all the parameters you entered in this Wizard. Make certain they are the same as what your ISP gave you. Also, check your cable connections and reboot if necessary. Please the *Troubleshooting* chapter of this manual for more detailed troubleshooting information.

3.4 Advanced Setup

Advanced setup allows you access to more advanced configuration. Use the **Advanced Setup** screens to configure **System Administration**, **Date and Time Settings**, **Ethernet**, **NAT (Network Address Translation) Applications** and **Internet Security**.

3.4.1 Advanced Setup — System Administration Screen

Click the **Advanced Setup** link to display the screen shown next.

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System

Administration Date & Time

System Information

System Name P642ME-13

Location

Administrator

Password

Old Password

New Password

Retype to confirm

Please note your new password whenever changes are made. The system will lock you out if you have forgotten your password.

Apply Reset

Status: Ready

Figure 3-8 Advanced Setup — System Administration Screen

Table 3-3 Advanced Setup — System Administration Screen Description

| FIELD LABEL | FIELD DESCRIPTION |
|---------------------------|---|
| System Information | |
| System Name | Enter a descriptive name for identification purposes. It is recommended you enter your computer's "Computer name". This name can be up to 30 alphanumeric characters long. Spaces are not allowed, but dashes "-" and underscores "_" are accepted. |
| Location | Enter the geographic location (up to 31 characters) of your Prestige. |
| Administrator | Enter the name (up to 30 characters) of the person in charge of this Prestige. |

| FIELD LABEL | FIELD DESCRIPTION |
|-------------------|--|
| Password | Changing the system password is highly recommended. |
| Old Password | Type in your existing system password, i.e., 1234, the default password. |
| New Password | Enter your new system password (up to 30 characters). Note that as you type a password, the screen displays a “*” for each character you type. |
| Retype to confirm | Retype your new system password for confirmation. |

When you have finished, click **Apply** to save these settings back to the Prestige or **Reset** to reset the fields in this screen.

3.4.2 Advanced Setup — System Date & Time Screen

Click the **Advanced Setup** link and then click the **Date & Time** tab to display the screen shown next.

Use this screen to manually configure the current time and date

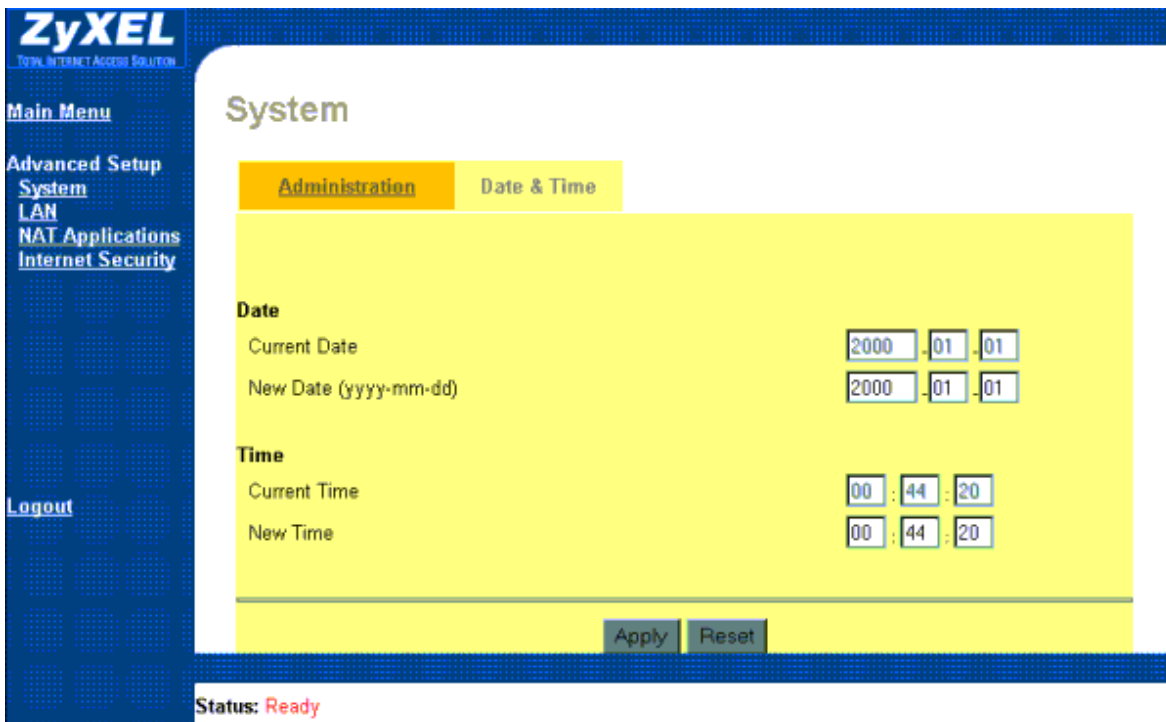


Figure 3-9 Advanced Setup — System Date & Time Screen

Table 3-4 Advanced Setup — System Date & Time Screen Description

| FIELD LABEL | FIELD DESCRIPTION |
|--|---|
| Date | |
| Current Date | This read-only field displays the current date. |
| New Date | Enter the new date in year, month and day and format. |
| Time | |
| Current Time | This read-only field displays the current time. |
| New Time | Enter the new time in hour, minute and second format. |
| When you have finished, click Apply to save these settings back to the Prestige or Reset to reset the fields in this screen. | |

3.4.3 Advanced Setup — LAN Screen

Click the **Advanced Setup** link and then click the **LAN** link to display the screen shown next.

DHCP

DHCP (Dynamic Host Configuration Protocol) allows individual clients (computers) to obtain the TCP/IP configuration at start-up from a centralized DHCP server. The Prestige has built-in DHCP server capability, enabled by default, which means it can assign IP addresses, an IP default gateway and DNS servers to Windows 98, Windows NT and other systems that support the DHCP client. The Prestige can also act as a surrogate DHCP server where it relays IP address assignments from the actual DHCP server to clients.

IP Pool Setup

The Prestige is pre-configured with a pool of 32 IP addresses starting from 192.168.1.33 to 192.168.1.64 for the client computers. This leaves 31 IP addresses, 192.168.1.2 to 192.168.1.32 (excluding the Prestige itself which has a default IP of 192.168.1.1), for other server computers, e.g., server for mail, FTP, telnet, web, etc., that you may have.

DNS

DNS Server Address DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa, e.g., the IP address of www.zyxel.com is 204.217.0.2. The DNS server is extremely important because without it, you must know the IP address of a computer before you can access it. The DNS server addresses that you enter in the DHCP setup are passed to the client computers along with the assigned IP address and subnet mask. There are two ways that an ISP disseminates the DNS server addresses. The first is for an ISP to tell a customer the DNS server addresses, usually in the form of an information sheet, when

s/he signs up. If your ISP does give you the DNS server addresses, enter them in the DNS Server fields in DHCP Setup, otherwise, leave them blank. If the Primary and Secondary DNS Server fields in DHCP Setup are not specified, i.e., left as 0.0.0.0, the Prestige tells the DHCP clients that it itself is the DNS server. When a computer sends a DNS query to the Prestige, the Prestige forwards the query to the real DNS server learned through IPCP and relays the response back to the computer. Please note that DNS proxy works only when the ISP uses the IPCP DNS server extensions. It does not mean you can leave the DNS servers out of the DHCP setup under all circumstances.

IP Address

If the ISP did not explicitly give you an IP network number, then you most likely 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 (it is enabled by default).

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.

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[Main Menu](#)

[Advanced Setup](#)

[System](#)

[LAN](#)

[NAT Applications](#)

[Internet Security](#)

[Logout](#)

LAN

[Setup](#) [Status](#)

DHCP

| | |
|---------------------------------|-------------|
| DHCP | Server |
| Client IP Pool Starting Address | 192.168.1.2 |
| Size of Client IP Pool | 4 |
| Primary DNS Server | 0.0.0.0 |
| Secondary DNS Server | 0.0.0.0 |
| Remote DHCP Server | N/A |

TCP/IP

| | |
|----------------|---------------|
| IP Address | 192.168.1.1 |
| IP Subnet Mask | 255.255.255.0 |

Status: **Ready**

Figure 3-10 Advanced Setup — LAN Screen

Table 3-5 Advanced Setup — LAN Screen Description

| FIELD LABEL | FIELD DESCRIPTION |
|--|--|
| DHCP | |
| DHCP | If set to Server , your Prestige can assign IP addresses, an IP default gateway and DNS servers to Windows and other systems that support the DHCP client. If set to None , the DHCP server will be disabled. If set to Relay , the Prestige acts as a surrogate DHCP server and relays DHCP requests and responses between the remote server and clients. Enter the IP address of the actual, remote DHCP server in the Remote DHCP Server field in this case. When DHCP is used, the following items need to be set: |
| Client IP Pool Starting Address | This field specifies the first of the contiguous addresses in the IP address pool. |
| Size of Client IP Pool | This field specifies the size or count of the IP address pool. |
| Primary DNS Server | Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the subnet mask. |
| Secondary DNS Server | As above. |
| Remote DHCP Server | If Relay is selected in the DHCP field above then enter the IP address of the actual remote DHCP server here. |
| TCP/IP | |
| IP Address | Enter the IP address of your Prestige in dotted decimal notation, for example, 192.168.1.1 (factory default). |
| 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. |
| When you have finished, click Apply to save these settings back to the Prestige or Reset to reset the fields in this screen. | |

3.4.4 Advanced Setup - LAN Status

Click the **Advanced Setup** link, the **LAN** link and then click the **Status** tab.

Use the following screen to view particulars about your LAN setup. This screen is READ-ONLY.

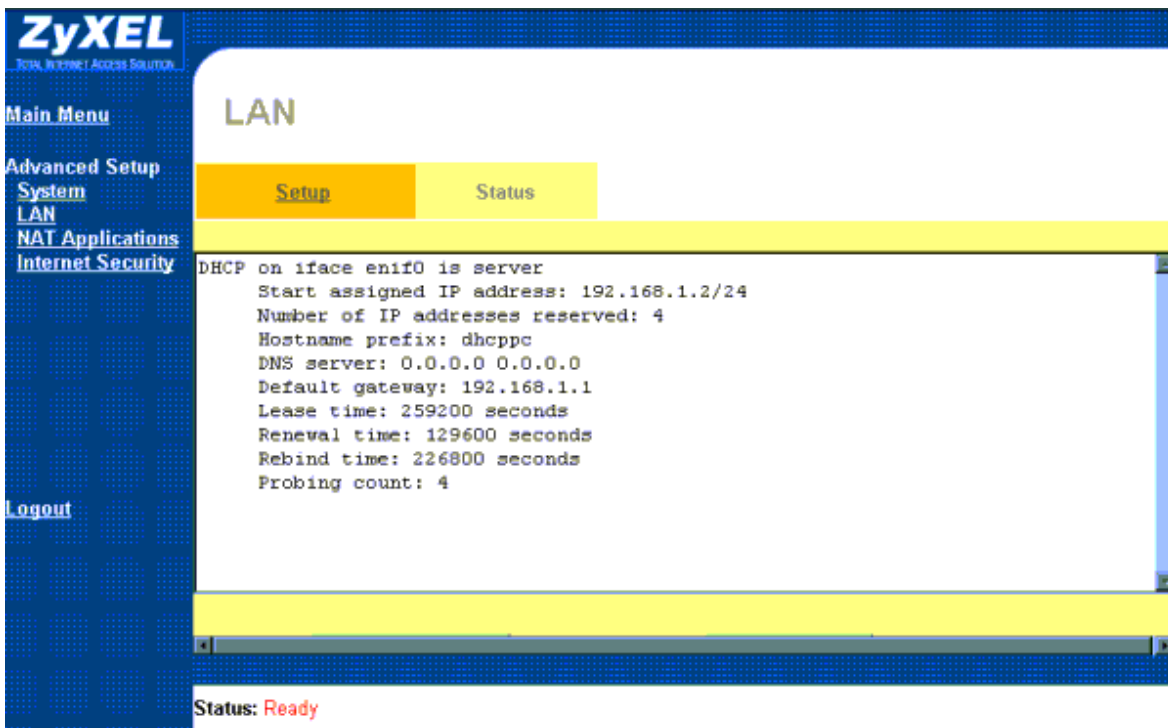


Figure 3-11 Advanced Setup — LAN Screen — Status Tab

Table 3-6 Advanced Setup — LAN Screen — Status Tab Description

| BUTTON | DESCRIPTION |
|---------------|--|
| Previous Page | Click Previous Page to view the previous page. |
| Next Page | Click Next Page to view more items in the list (if your list that exceeds this page). |

3.4.5 Advanced Setup — NAT (Network Address Translation) Applications

Click the **Advanced Setup** link and then click the **NAT Applications** link to display the screen shown next.

Network Address Translation (NAT)

Typically, if there are multiple users on the LAN that want concurrent access to the Internet, you must lease a block of legal or globally unique IP addresses from an ISP. The NAT feature lets you enjoy the same benefits

as having multiple legal addresses, but only pay for one IP address, thus saving significantly on subscription fees (check with your ISP before you enable this feature). The IP address for the NAT can be either fixed or dynamically assigned by the ISP. In addition, you can designate servers, e.g., a web server and a Telnet server, on your local network and make them accessible to the outside world (see *below*). If you do not define a server, NAT offers the additional benefit of firewall protection. If no server is defined, all incoming inquiries will be filtered out by your Prestige, thus preventing intruders from probing your network. Your Prestige accomplishes address sharing by translating the internal LAN IP addresses to a single address that is globally unique on the Internet. For more information on IP address translation, refer to *RFC 1631 - The IP Network Address Translator (NAT)*.

Multiple Servers behind NAT

Even though NAT makes your whole inside network appear as a single computer to the outside world, A service is identified by the port number; the following table shows the most common services and their corresponding port numbers.

Table 3-7 Common Services and Corresponding Port Numbers

| SERVICES | PORT NUMBER |
|--|-------------|
| FTP (File Transfer Protocol) | 21 |
| Telnet | 23 |
| SMTP (Simple Mail Transfer Protocol) | 25 |
| DNS (Domain Name System) | 53 |
| HTTP (Hyper Text Transfer Protocol or WWW Web) | 80 |
| PPTP (Point-to-Point Tunneling Protocol) | 1723 |

So, if you have a web server at IP address 192.168.1.2 and a FTP server at IP address 192.168.1.3, then you need to specify port 80 (web) for the server at IP address 192.168.1.2 and port 21 (FTP) for the FTP server at IP address 192.168.1.3.

A server can support more than one service, e.g., a server can provide both FTP and DNS service, while another provides only web service. Furthermore, since you need to specify the IP address of a server in the Prestige, a server must have a fixed IP address and not be a DHCP client whose IP address potentially changes each time it is turned on.

In addition to servers for specific services, NAT supports a default server. A service request that does not have a server explicitly designated for it is forwarded to the default server. If the default server is not defined, the service request is simply discarded. To make a server visible to the outside world, specify the port number of the service in the **Port Number** field and the inside IP address of the server in the **Server IP Address** field.

The Prestige has some of the more popular applications already pre-configured. Select an application from the drop-down list box and the corresponding port number should display in the **Port Number** field. To

configure a different application not already pre-configured, choose **Manual** and then enter the port number in the **Port Number** field.

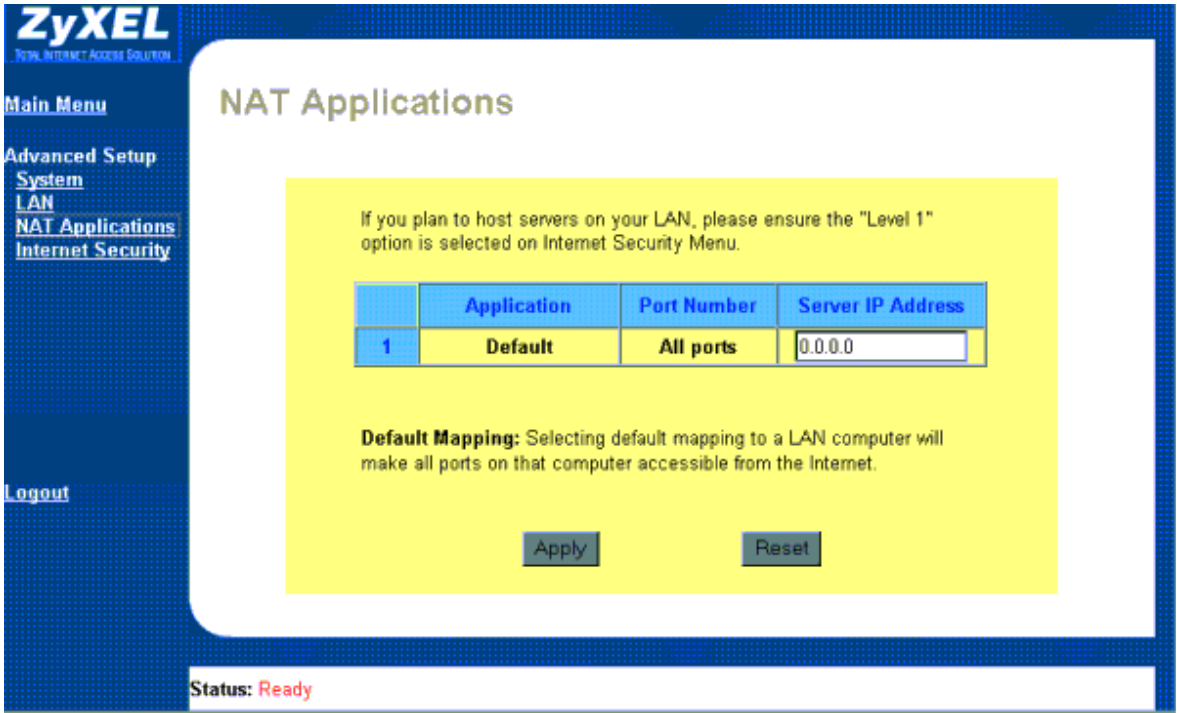


Figure 3-12 Advanced Setup — NAT Applications Screen

Table 3-8 Advanced Setup — NAT Applications Screen Description

| APPLICATION | FIELD DESCRIPTION |
|--|--|
| Application | This READ-ONLY field is preset to Default and cannot be changed. Default means that all incoming packets will be transferred to the server IP address you enter in the Server IP Address field. Refer to the table shown next for a list of different applications. |
| Port Number | This READ-ONLY field is preset to ALL ports and cannot be changed. All ports means that your Prestige supports all ports. Refer to the table shown next for a list of different ports. |
| Server IP Address | Type in the server IP address of your computer here. |
| When you have finished, click Apply to save these settings back to the Prestige or Reset to reset the fields in this screen. | |

Table 3-9 Applications and Port Numbers

| APPLICATIONS | PORT NUMBER | SERVER IP ADDRESS |
|---|---|---|
| HTTP - Hyper Text Transfer Protocol or WWW Web | 80 | Enter the inside IP address of the server here. |
| FTP - File Transfer Protocol | 21 | Enter the inside IP address of the server here. |
| Telnet - a common login and terminal emulation protocol used on the Internet. | 23 | Enter the inside IP address of the server here. |
| POP3 - Post Office Protocol is an Internet mail server protocol that provides an incoming message storage system. The current version is called POP3. | 110 | Enter the inside IP address of the server here. |
| NetMeeting_1 - this is a popular Internet chat program. Two port numbers must be configured - one for audio and one for video. | 1720 | Enter the inside IP address of the server here. |
| NetMeeting_2 | 1503 | Enter the inside IP address of the server here. |
| StarCraft - this is a popular Internet gaming program. | 6112 | Enter the inside IP address of the server here. |
| Manual - choose this option to configure an application not already pre-configured. | Enter the port number for this application. | Enter the inside IP address of the server here. |
| When you have finished, click Apply to save these settings back to the Prestige or Reset to reset the fields in this screen. | | |

3.4.6 Advanced Setup — Internet Security

Click the **Advanced Setup** link and then click the **Internet Security** link to display the screen shown next. Use this screen to configure your security settings.

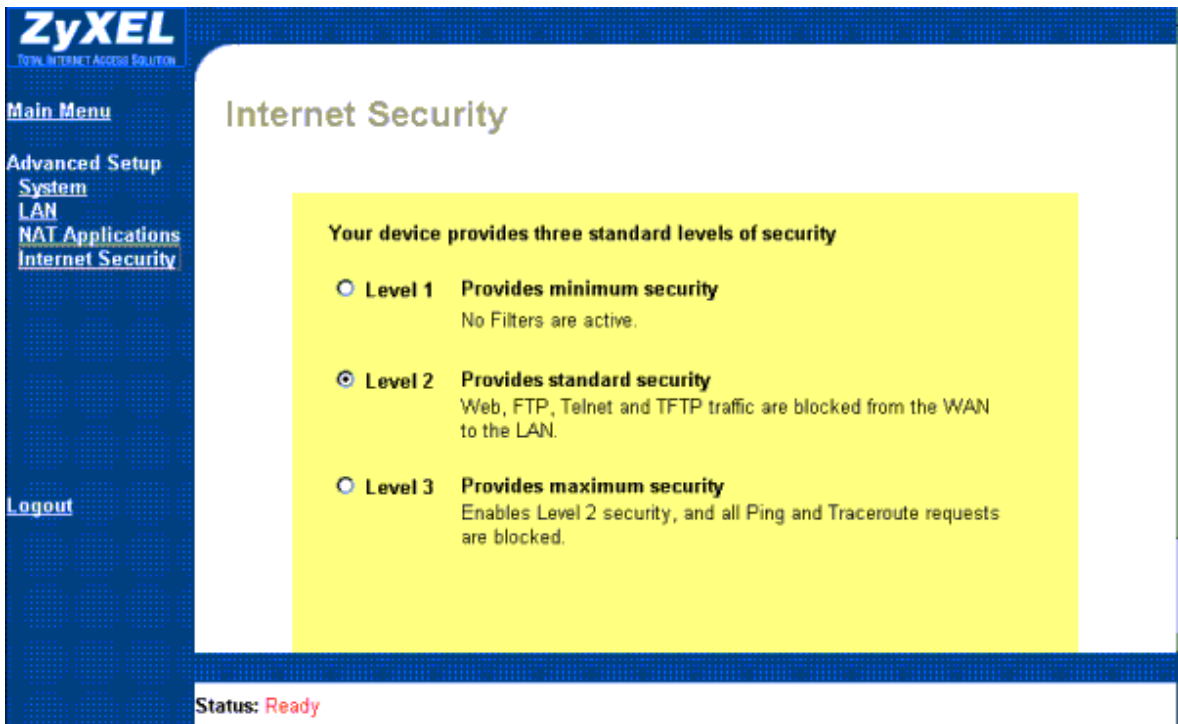


Figure 3-13 Advanced Setup — Internet Security Screen

Select one of three levels of security.

Table 3-10 Advanced Setup — Internet Security Screen Description

| SECURITY LEVEL | DESCRIPTION |
|----------------|--|
| Level 1 | Level 1 applies <i>no security</i> - no packet filters are applied to the LAN and/or remote node. Remote configuration using TELNET, and HTTP is allowed. FTP and TFTP file transfer is also possible as are Ping and Traceroute (using ICMP). Pre-configured packet filters still exist but they are not applied. |

| SECURITY LEVEL | DESCRIPTION |
|---|--|
| Level 2 | <p>Level 2 security applies filter rules to prevent incoming (to the Prestige) telnet and FTP/TFTP sessions as well as stop outgoing NetBIOS calls to the remote node (ISP).</p> <p>A PPPoE filter that filters out all packets except PPOE packets going out from the Prestige to the ISP or remote node is also applied.</p> |
| Level 3 | <p>Level 3 security applies an additional filter (in addition to Level 2 security filters) that drops all incoming ICMP packets. Many discovery tools such as Ping and Traceroute use ICMP packets.</p> |
| <p>When you have finished, click Apply to save these settings back to the Prestige or Reset to reset the fields in this screen.</p> | |

3.5 Maintenance

Use the Maintenance link to access tools to diagnose and monitor the LAN and WAN status of your Prestige.

3.5.1 Maintenance — System Status

Click the **Maintenance** link and then click the **System Status** link to display the screen shown next. Use this screen to view system status.

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SYSTEM STATUS

Main Menu

Maintenance
System Status
Diagnostic

Logout

System Name: **P642ME-13**
ZyNOS S/W Version: **V2.50(EJ.0) | 7/5/2001**
DSL F/W Version: **Alcatel, Version 2.5.7**

WAN Information:
IP Address: **0.0.0.0**
Mask: **0x00000000**
Primary DNS: **0.0.0.0**
Secondary DNS: **0.0.0.0**
Default Gateway:

LAN Information:
MAC Address: **00:a0:c5:01:23:45**
IP Address: **192.168.1.1**
IP Mask: **255.255.255.0**
DHCP: **Server**
DHCP Start IP: **192.168.1.2**
DHCP Pool Size: **4**

Status: **Ready**

Figure 3-14 Maintenance — System Status Screen

This screen shows you the status of your Prestige. These fields are READ-ONLY and are meant to be used for diagnostic purposes only.

Table 3-11 Maintenance — System Status Screen Description

| FIELD LABEL | FIELD DESCRIPTION |
|-------------------|--|
| System Name | This field displays the system name you entered in the system screen. |
| ZyNOS S/W Version | ZyNOS (ZyXEL Network Operating System) is the name of the Prestige firmware. This file is also named "ras" on the Prestige. This field displays the firmware version number and the date it was released. You should periodically check the zyxel.com web site for new firmware releases. Check this field to make sure your firmware is current or a new firmware upload is successful. |
| DSL F/W Version | This field shows the chipset and chipset version that your Prestige uses. |

| FIELD LABEL | FIELD DESCRIPTION |
|------------------------|--|
| Standard | This field denotes the ADSL standard your Prestige uses This field cannot be changed via the web configurator. |
| WAN Information | |
| IP Address | This is the IP address you received from you ISP. |
| Mask | This is the mask you received from your ISP. |
| Primary DNS | This field displays what you entered in the LAN Setup screen. |
| Secondary DNS | This field displays what you entered in the LAN Setup screen. |
| Default Gateway | This is the Default Gateway you received from you ISP. |
| LAN Information | |
| MAC Address | This is address is specific to your Prestige. |
| IP Address | This field displays what you entered in the LAN Setup screen. |
| IP Mask | This field displays what you entered in the LAN Setup screen. |
| DHCP | This field displays what you entered in the LAN Setup screen. |
| DHCP Start IP | This field displays what you entered in the LAN Setup screen. |
| DHCP Pool Size | This field displays what you entered in the LAN Setup screen. |
| Show Statistics | Click Show Statistics to view performance statistics for the WAN and LAN. |

3.5.2 Maintenance — System Statistics

Click the **Show Statistics** button in the **System Status** screen to display the screen shown next. Use this screen to display performance statistics.

System up Time: 0:48:49

WAN Port Statistics:
Link Status: **Wait for Init**
Upstream Speed: **0 kbps**
Downstream Speed: **0 kbps**

| Node-Link | Status | TxPkts | RxPkts | Errors | Tx B/s | Rx B/s | Up Time |
|-----------|--------|--------|--------|--------|--------|--------|---------|
| 1-1483 | N/A | 0 | 0 | 0 | 0 | 0 | 0:00:00 |

LAN Port Statistics:
Status: **100M/Full Duplex**
Collisions: **0**
CPU Load: **0.00%**

Tx Pkts: **558**
Rx Pkts: **638**

Poll Interval(s) :

Figure 3-15 Maintenance — System Statistics Screen

This screen shows you statistics for the ISP node. Note that these fields are READ-ONLY (excepting the **Poll Interval(s)** field) and are meant to be used for diagnostic purposes. See the table shown next for a description of the fields shown previously.

Table 3-12 Maintenance — System Statistics Screen Description

| FIELD | FIELD DESCRIPTION |
|----------------------------|--|
| System up Time | This field displays the elapsed time your system has been on. |
| WAN Port Statistics | (These packets come from your Prestige and go to the WAN). |
| Link Status | Shows the current status of the ADSL line which can be Up, Down, Wait for Init or Initializing. |
| Upstream Speed | Shows the ADSL line upstream speed. |
| Downstream Speed | Shows the ADSL line downstream speed |
| Node-Link | This field displays the remote node index number and link type. Link types are PPP, ENET and 1483 . |
| Status | Shows the port speed and duplex setting if you're using Ethernet encapsulation. |
| TxPkts | Displays the number of packets transmitted on this port. |
| RxPkts | Displays the number of packets received on this port. |
| Errors | Displays the number of error packets on this port. |
| Tx B/s | Displays the number of bytes transmitted in the last second. |
| Rx B/s | Displays the number of bytes received in the last second. |
| Up Time | Displays the elapsed time this port has been up. |
| LAN Port Statistics | (These packets come from the LAN and go to the Prestige). |
| Status | This screen displays the current status of the LAN. |
| Collisions | This screen displays the number of collisions. |
| CPU Load | This screen displays the number of packets transmitted on this port. |
| Tx Packets | Displays the number of packets transmitted on this port. |
| Rx Packets | This screen displays the number of packets received on this port. |
| Poll Interval(s) | Type the time interval for the browser to refresh system statistics. The default is five seconds. |
| Set Interval | Click Set Interval to apply the new poll interval you entered in the Poll Interval(s) field above. |
| Stop | Click Stop to stop the browser from refreshing system statistics. |

3.5.3 Maintenance — Diagnostic Screen — General Tab

Click the **Maintenance** link and then the **Diagnostic** link to display the screen shown next. Use this screen to view diagnostics.

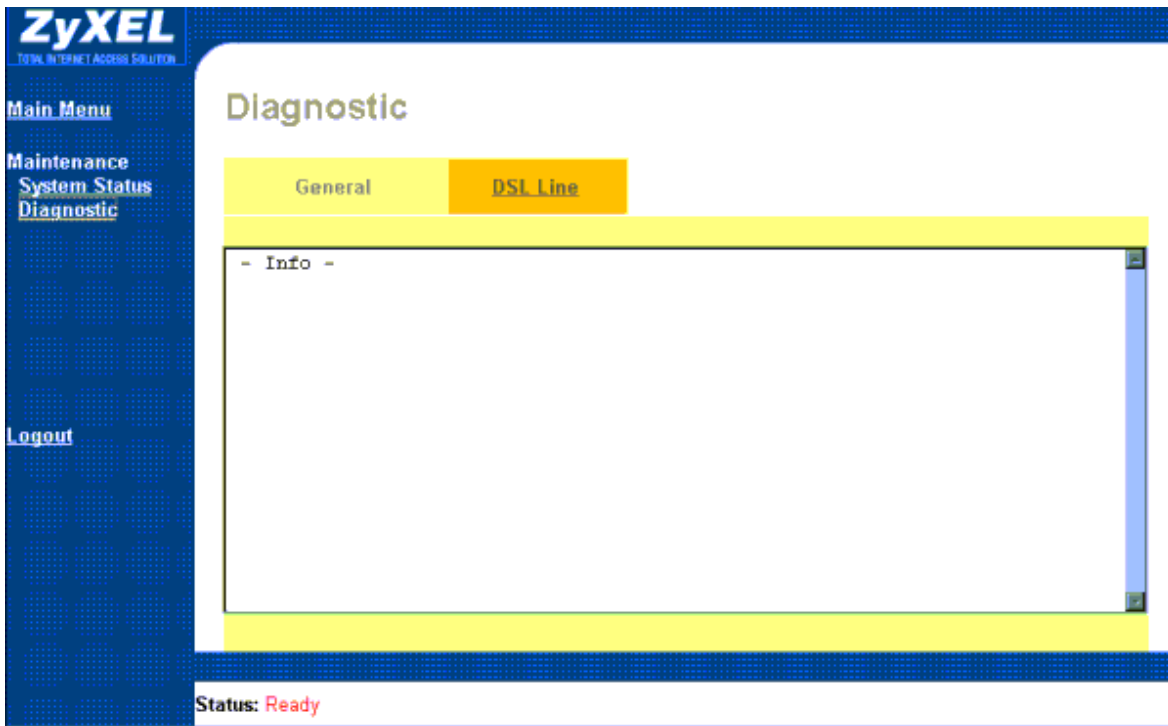


Figure 3-16 Maintenance — Diagnostic Screen — General Tab

The screen above and the one shown next display information to help you identify problems with the Prestige.

Table 3-13 Maintenance — Diagnostic Screen — General Tab Description

| FIELD LABEL | DESCRIPTION |
|--------------|--|
| IP Address | Type in the IP address you want to ping in this field. Click Ping to test your connection to this address. |
| Reset System | Click this button to reboot the Prestige. A warning dialog box is then displayed asking if you're sure you want to restart the system. Click OK to proceed. |

3.5.4 Maintenance — Diagnostic Screen — DSL Line Tab

Click the **Maintenance** link, the **Diagnostic** link and then the **DSL Line** tab to display the screen shown next. Use this screen to view diagnostics.

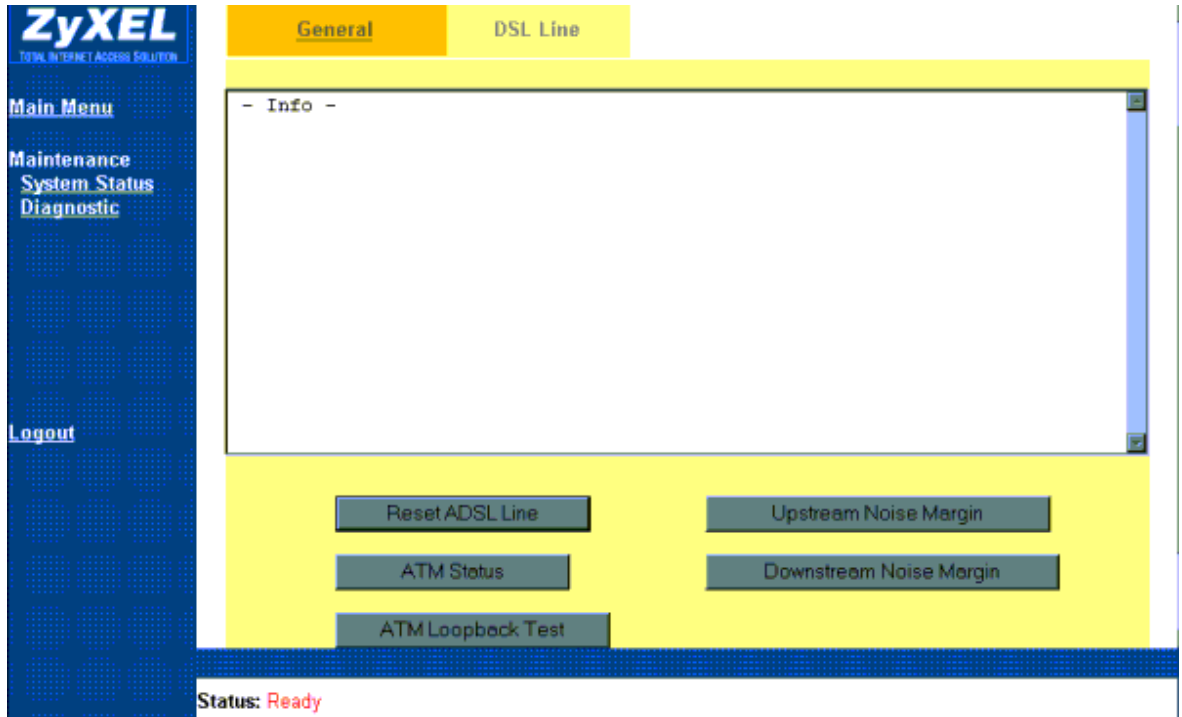


Figure 3-17 Maintenance — Diagnostic Screen — DSL Line Tab

Table 3-14 Maintenance — Diagnostic Screen — DSL Line Tab Description

| BUTTON | DESCRIPTION |
|-----------------|--|
| Reset ADSL Line | Click this button to reinitialize the ADSL line. The large text box above then displays the progress and result of this operation, for example; "Start to reset ADSL Loading ADSL modem F/W... Reset ADSL Line Successfully!" |
| ATM Status | Click ATM Status to display ATM (Asynchronous Transfer Mode) status. |

| BUTTON | DESCRIPTION |
|-------------------------|--|
| ATM Loopback Test | Click ATM Loopback Test to send an F4/F5 OAM (Operation and Maintenance) packet to test the ADSL loop. The operability of this feature depends on the capability of your ISP. |
| Upstream Noise Margin | Click Upstream Noise Margin to display the upstream noise-related margins such as attenuation, carrier load and tone. |
| Downstream Noise Margin | Click Downstream Noise Margin to display the downstream noise-related margins such as attenuation, carrier load and tone. |

3.6 Logout Screen

3.6.1 About the Logout Screen

Click the **Logout** link to quit the web configurator and to see the screen shown next.

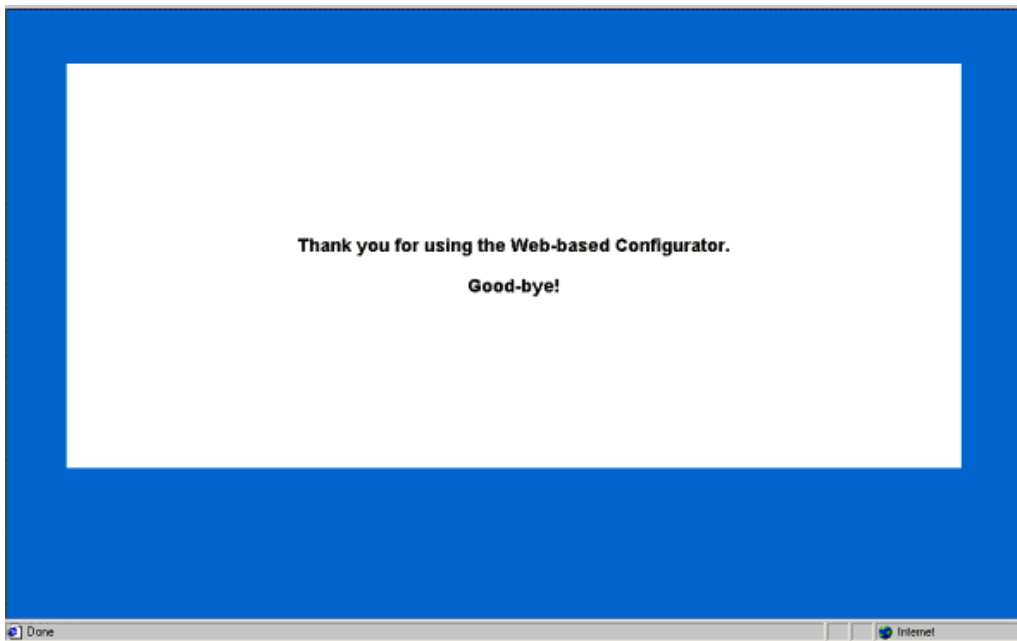


Figure 3-18 Logout Screen

Congratulations! Configuration of your Prestige using the web configurator is complete. For alternative configuration using the Command Line Interface (CI or CLI) see the *Command Line Interface* chapter.

Chapter 4

Command Line Interface

This chapter shows you how to configure and maintain your Prestige using the command line interface.

The command line interface is an alternate way to configure the Prestige. If you want to configure your Prestige with the (more user-friendly) web configurator, refer to the previous chapter.

4.1 Getting Started

4.1.1 Initial Screen

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

```
Copyright (c) 1994 - 2001 ZyXEL Communications Corp.
initialize ch =0, ethernet address: 00:a0:c5:01:23:45

HWSAR (FPGA) : programming (11969) ... done
HWSAR (FPGA) : testing ... done
Wan Channel init ..... done
Loading ADSL modem F/W
..... done
Press ENTER to continue...
```

Figure 4-1 Power-On Display

4.1.2 Entering A Password

The login screen appears after you press [ENTER], prompting you to type in your password, as shown next.

```
Enter Password : XXXX
```

Figure 4-2 Login Screen

For your first login, enter the default password (1234). As you type the password, the screen displays a (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 bring up the login screen again.

Press [ENTER], after you enter your password, to display the screen shown next.

```
Copyright (c) 1994 - 2001 ZyXEL Communications Corp.  
P642ME-13>
```

Figure 4-3 Configuration and Management Prompt

You are now ready to type in CI commands.

4.2 Command Structure

4.2.1 Conventions for Using CI Commands

General Conventions

- CI commands may be typed in a variety of ways depending on what you want to configure, display, etc. The conventions for typing in most CI commands are shown next.

```
command <interface|device> subcommand [parameter]  
command subcommand [parameter]  
?|help  
command ?|help  
command subcommand ?|help
```

Syntax Conventions

- CI command keywords are in regular `courier` font and should be typed in as they appear or in abbreviated form (see the next section).
- Required fields (parameters) in a CI command are enclosed in “<>” brackets. For example,
`P642ME-13> set ppp password <xxxxxxxx> <VC#>`
- Optional fields (parameters) in a CI command are enclosed in “[]” brackets. For example,
`P642ME-13>device dial [node#]`
- The “|” symbol is shorthand for the word “or”. For example, `sys log online [on|off]`

4.2.2 Using Abbreviated CI Commands

Some CI commands have abbreviated forms that allow quicker Prestige configuration (and fewer keystrokes). Type enough of a CI command to distinguish it from other CI commands. For example, typing the `sys v` CI command is the same as typing `sys version`. On the other hand, typing the `sys trc` CI command will cause the Prestige to temporarily hang because this command can't distinguish itself from `sys trcdisp`, `sys trc log` or `sys trcpacket` CI commands. Shown next, are some examples of abbreviated CI commands.

Table 4-1 Examples of Abbreviated CI Commands

| CI COMMAND | ABBREVIATED CI COMMAND |
|----------------|------------------------|
| wan ADSL opmod | wan ad op |
| sys version | sys ver |
| ip address | ip ad |

4.2.3 General CI Command Usage

The table, shown next, lists general CI commands and how they may be used.

Table 4-2 General CI Command Usage

| GENERAL CI COMMANDS | DESCRIPTION |
|---------------------|--|
| set | The <code>set</code> commands allow you to configure options for a remote node and configure the local baudrate. |
| show | The <code>show</code> commands display remote node information. |
| system | The <code>sys</code> commands display system-related information. |
| wan | The <code>wan</code> commands display ADSL related information. |
| ip | The <code>ip</code> commands display TCP/IP protocol related information. |
| device | The <code>device</code> commands display channel related information. |

4.3 CI Commands

The following sections list CI commands you may use with your system. Examples, after each table, denote proper command usage and describe what specific CI commands accomplish.

4.3.1 Set Related CI Commands

Table 4-3 Set Related CI Commands

| CI COMMAND | | | PARAMETER(S) | DESCRIPTION |
|------------|----------|-------------|--|--|
| set | baudrate | | <baudrate> | Set the baudrate of your device. Baudrate choices are 9600, 19200, 38400, 57600 or 115200. |
| set | mpoa | help | | Display help options. |
| set | mpoa | mux | <VC LLC> <VC#> | Configure multiplexing type for a remote node. |
| set | mpoa | vpi | <value> <VC#> | Configure VPI for a remote node. |
| set | mpoa | vci | <value> <VC#> | Configure VCI for a remote node. |
| set | mpoa | assignip | <dynamic static> <IP address> <VC#> | Configure WAN IP address for a remote node. |
| set | mpoa | bridge | <VC#> | Turn on bridge mode. |
| set | mpoa | iproute | <VC#> | Turn on IP routing mode. |
| set | ppp | username | <xxxxxxxx> <VC#> | Configure user name for a remote node. |
| set | ppp | password | <xxxxxxxx> <VC#> | Configure password for a remote node. |
| set | pppoe | servicename | <xxxxxxxx> <VC#> | Configure service name for a remote node. |
| set | pppoe | on | <on> | Set PPPoE routing mode directly. |
| set | pppoe | off | <off> | Set into 1483 LLC bridge mode. |

4.3.2 Set Related CLI Commands — Examples

Set Mpoa Mux Command

- The `set mpoa mux` command configures the multiplexing type for a remote node. The multiplexing type “vc” is configured for virtual circuit (remote node) 0, in the example shown next.

```
P642ME-13> set mpoa mux vc 0
```

Syntax:

```
P642ME-13> set mpoa mux <VC|LLC> <VC#>
```

where <VC|LLC> are types of multiplexing and <VC#> is the virtual circuit (remote node) number. The “<>” brackets specify a required field.

Set Mpoa VPI Command

- The `set mpoa vpi` command allows you to change the VPI (Virtual Path Identifier) for a virtual circuit (remote node). To set the VPI to 22 for virtual circuit (remote node) 0, see the example shown next.

```
P642ME-13> set mpoa vpi 22 0
```

Syntax:

```
P642ME-13> set mpoa vpi <value> <VC#>
```

where <value> is the VPI number and <VC#> is the virtual circuit (remote node) number.

Set PPP Password Command

- The `set ppp password` changes the PPP/PPPoE password of a remote node. To set the password to 12345678 for remote node 0, see the example shown next.

```
P642ME-13> set ppp password 12345678 0
```

Syntax:

```
P642ME-13> set ppp password <xxxxxxxx> <VC#>
```

where <xxxxxxxx> is your new password and <VC#> is the virtual circuit (remote node).

Set Baudrate Command

- The `set baudrate` command changes the console port speed to one of the following predefined baudrates: 9600, 19200, 38400, 57600 or 115200. In the example shown next, the console port speed is configured to 9600.

```
P642ME-13> set baudrate 9600
```

Change Console Speed to 9600. Then hit any key to continue

Syntax:

```
P642ME-13> set baudrate x
```

where x is the console port speed.

4.3.3 Show Related CI Commands

Table 4-4 Show Related CI Commands

| CI Command | | | PARAMETER(S) | Description |
|------------|------|--------|--------------|---|
| show | mpoa | help | | Display help information. |
| show | mpoa | status | [node#] | Display remote node status information. |

4.3.4 Show Related CI Commands — Example

Show Mpoa Status Command

- The `show mpoa status` command displays the status of a node you select. To display the status of node 0, follow the example shown next.

```
P642ME-13> show mpoa status 0
Encapsulation = <empty>
Multiplexing = VC-based
Channel active = Yes
VPI/VCI value = 22/0
IP Routing mode= Yes
Bridge mode = No
IP address assignment type = Dynamic
```

Syntax:

```
P642ME-13> show mpoa status [node#]
```

where [node#] is the remote node you want to display. The “[]” brackets specify an optional field.

4.3.5 Sys Related CI Commands

Table 4-5 Sys Related CI Commands

| CI COMMAND | | | PARAMETER(S) | DESCRIPTION |
|------------|------------|---------|-------------------|---|
| sys | cpu | display | | Display CPU usage status. |
| sys | date | | [year month date] | Display system date. |
| sys | domainname | | [domain name] | Display domain name. |
| sys | edit | | <filename> | Edit a system file. |
| sys | hostname | | | Display host name. |
| sys | hostname | | <xxxxxxx> | Change host name. |
| sys | log | clear | | Clear error log. |
| sys | log | disp | | Display error log. |
| sys | log | online | [on off] | Turn on/off error log online display. |
| sys | quit | | | Exit menu. |
| sys | reboot | | | Reboot. |
| sys | stdio | | [second] | Change terminal time out value. |
| sys | time | | [min [sec]] | Display time or change time. |
| sys | trcdisp | | | Monitor (online) packets. |
| sys | trcdisp | parse | | System will display the (online) protocol in detail. You must turn on the trclog switch before trcdisp will function (see below). |
| sys | trcdisp | brief | | System will display (online) information summation. |
| sys | trcdisp | empty | | System will display (online) raw data (binary information). |
| sys | trclog | switch | [on off] | Set system trace log. |
| sys | trclog | online | [on off] | Set on/off trace log online. |
| sys | trclog | level | [#] | Set trace level of trace log#: 1-10. |
| sys | trclog | type | <bitmap> | Set trace type of trace log. |
| sys | trclog | disp | | Display trace log. |

| CI COMMAND | | | PARAMETER(S) | DESCRIPTION |
|------------|-----------|---------|--|--|
| sys | trclog | clear | | Clear trace log. |
| sys | trcpacket | create | <entry> <size> | Create packet trace buffer. |
| sys | trcpacket | destroy | | Destroy trace buffer. |
| sys | trcpacket | channel | <name> [none/incoming/ outgoing/ bothway] | Define what kind of packet you want to trace. The required parameter <name> equals enet0 or mpoa00. |
| sys | trcpacket | switch | [on off] | Turn (offline) packet trace on/off. |
| sys | trcpacket | disp | | Display packet traced buffer. |
| sys | trcpacket | parse | | Parse or analyze all (offline) packet contents. |
| | | parse | [from_index] [to_index] | Parse or analyze specified (offline) packet contents. |
| sys | version | | | Displays the ZyNOS version, romRasSize (total rom and ras file size), system up time, bootbase version and ZyNOS CODE. |
| sys | wdog | switch | [on off] | Turn off/on system watchdog. |

4.3.6 Sys Related CI Commands — Examples

Change Your Hostname

- Change the default P642ME-13> hostname (prompt) to a name of your choice. Change the hostname by following the example shown next.

```
P642ME-13> sys hostname mycompany
```

```
mycompany>
```

Syntax:

```
P642ME-13> sys hostname x
```

where x is the hostname you want.

Sys Reboot Command

- The `sys reboot` command instructs the system to perform a warm start. A “warm start” restarts the system without turning the power off and on.

Syntax:

```
P642ME-13> sys reboot
```

Sys Log Command

- The `sys log` command displays error log information and allows you to turn log online on or off.
- Display log error information by typing:

```
P642ME-13> sys log disp
```

- Turn on log error online by typing:

```
P642ME-13> sys log online on
```

- Turn off log error online by typing:

```
P642ME-13> sys log online off
```

Sys Time Command

- The `sys time` command displays the Prestige's current time and allows you to set a new time. Display the current time and set a new current time by following the example shown next.

```
P642ME-13> sys time
```

```
Current time is 09:46:38
```

```
P642ME-13> sys time 10 35 59
```

```
Set time to 10:35:59
```

Syntax:

```
P642ME-13> sys time a b c
```

where a = hour, b = minute and c = second.

Sys Date Command

- The `sys date` command displays the Prestige's current date and allows you to set a new date. Display the current date and set a new current date by following the example shown next.

```
P642ME-13> sys date
```

```
Current date is Sat 2000/01/01
```

```
P642ME-13> sys date 2001 10 28
```

```
Set date to 2001/10/28
```

Syntax:

```
P642ME-13> sys date a b c
```

where a = year, b = month and c = day.

Sys Trcpacket Channel Command

- The `sys trcpacket channel` command defines the port and direction of the packets that you want to analyze. Use `sys trcdisplay` commands to analyze packets specified by the `sys trcpacket channel` command. To obtain information from an incoming packet via Prestige Ethernet port 0 (`enet0`), see the example shown next.

```
sys trcpacket channel enet0 incoming
```

Syntax:

```
P642ME-13> sys trcpacket channel <name> [none/incoming/outgoing/bothway]
```

where `<name>` is `enet0` (Prestige Ethernet port) or `mpoa00` (Prestige WAN port). The subcommands `[none/incoming/outgoing/bothway]` are defined in the table shown next.

Table 4-6 Sys Trcpacket Channel CI Command — Optional Subcommand Meanings

| OPTIONAL SUBCOMMANDS | MEANING |
|-----------------------|---|
| <code>none</code> | Do not acquire information about packets. |
| <code>incoming</code> | Obtain information about incoming packets only. |
| <code>outgoing</code> | Obtain information about outgoing packets only. |
| <code>bothway</code> | Obtain information about incoming and outgoing packets. |

Sys Exit Command

- The `exit` command terminates the console or telnet management session.

Syntax:

```
P642ME-13> exit
```

4.3.7 WAN Related CI Commands

Table 4-7 WAN Related CI Commands

| CI COMMAND | | | PARAMETER(S) | DESCRIPTION |
|------------|-------|---------------|--------------|---|
| wan | adsl | bert | | Check ADSL line BERT (Bit Error Rate Test). |
| wan | adsl | chandata | | Check ADSL channel status. |
| wan | adsl | close | | Close ADSL line. |
| wan | adsl | coding | | Display ADSL line coding. |
| wan | adsl | ctrleint | | Display ADSL line response status. |
| wan | adsl | defbitmap | | Check ADSL defect bit map table. |
| wan | adsl | dyinggasp | | Send dying gasp (ADSL signal) to ATUC. |
| wan | adsl | linedata | [near far] | Show ADSL line/noise margin status. |
| wan | adsl | open | | Open ADSL line. |
| wan | adsl | perfdata | | Display ADSL line performance. |
| wan | adsl | reset | | Reset ADSL Line connection. |
| wan | adsl | selftest | [long short] | ADSL module self-test. |
| wan | adsl | status | | Check ADSL line status. |
| wan | adsl | rateadap | [on off] | Turn on/off rate adaption feature. |
| wan | adsl | dumpcondition | | Dump ADSL line adaption information online. |
| wan | hwsar | clear | | Clear SAR (Segmentation And Reassembly) statistics. |
| wan | hwsar | disp | | Display SAR statistics. |

4.3.8 WAN Related CI Commands — Examples

WAN ADSL Open Command/WAN ADSL Close Commands

- The `wan adsl open` and `wan adsl close` commands respectively opens or closes the WAN ADSL line as shown next.

```
P642ME-13> wan adsl open
```

```
ok
```

```
P642ME-13> wan adsl close
```

ok

Syntax:

```
P642ME-13> wan adsl [open|close]
```

where [open|close] opens or closes the WAN ADSL line.

WAN ADSL Opmode Command

- The `wan adsl opmode` command displays the ADSL standard (operational mode) your Prestige is using as shown next.

```
P642ME-13>wan adsl opmode
operational mode: ITU G.992.1(G.DMT)
ras> wan ad status
current modem status: up
```

Syntax:

```
P642ME-13> wan adsl opmode
```

WAN ADSL Status Command

- The `WAN ADSL status` command displays the status of your WAN ADSL line as shown next.

```
P642ME-13> wan adsl status
current modem status: wait for initialization
```

Syntax:

```
P642ME-13> wan adsl status
```

4.3.9 Device Related CI Commands

Table 4-8 Device Related CI Commands

| CI COMMAND | | PARAMETER(S) | DESCRIPTION |
|------------|------|--------------|--|
| device | dial | [node#] | Initiates remote node # used by PPPoE. |

4.3.10 Device Related CI Commands — Example

Device Dial Command

- The `device dial` command initiates a PPPoE session. In the example shown next, remote node 1 is initiated by typing:

```
P642ME-13> device dial 1

Start dialing for node <pppoe>...
### Hit any key to continue.###
$$$ DIALING dev=6 ch=0.....
$$$ OUTGOING-CALL phone(ffa)
$$$ CALL CONNECT speed<512000> type<6> chan<0>
$$$ LCP opened
$$$ CHAP login to remote OK
$$$ IPCP negotiation started
$$$ BCP stopped
$$$ BACP stopped
$$$ IPCP opened
```

Syntax:

```
P642ME-13>device dial [node#]
```

where [node#] is the remote node number.

4.3.11 IP Related CI Commands

Table 4-9 IP Related CI Commands

| CI COMMAND | | PARAMETER(S) | DESCRIPTION |
|------------|----------|--------------|--|
| ip | Address | | Display host IP address. |
| ip | arp | status | Display IP ARP (Address Resolution Protocol) status. |
| ip | dhcp | enif0 status | Show DHCP configuration. |
| ip | dns | stats disp | [disp clear] Display or clear DNS server information and statistics. |
| ip | icmp | status | Display ICMP status. |
| ip | ifconfig | | Display WAN/LAN interface information. |
| ip | ping | <hostid> | Ping an IP address or host. |

| CI COMMAND | | | PARAMETER(S) | DESCRIPTION |
|------------|--------|------------|--------------|--------------------------------------|
| ip | route | status | | Display routing table. |
| ip | route | add | | Add a gateway to a routing table. |
| ip | route | addiface | | Add an interface to a routing table. |
| ip | route | addprivate | | Add a private routing entry. |
| ip | route | drop | | Drop a routing entry. |
| ip | status | | | Display IP layer's status. |

4.3.12 IP Related CI Commands — Examples

IP DHCP Enif0 Status Command

The `ip dhcp enif0 status` command displays DHCP configuration, as shown in the following example.

```

ras> ip dhcp enif0 status
DHCP on iface enif0 is server
Start assigned IP address: 192.168.1.2/24
Number of IP addresses reserved: 4
Hostname prefix: dhcppe
DNS server: 0.0.0.0 0.0.0.0
Default gateway: 192.168.1.1
Lease time: 259200 seconds
Renewal time: 129600 seconds
Rebind time: 226800 seconds
Probing count: 4
slot state timer type hardware address
0 UNCERTAIN 0 0 00
1 UNCERTAIN 0 0 00
2 UNCERTAIN 0 0 00
3 UNCERTAIN 0 0 00
Status:
Packet InCount: 0, OutCount: 0, DiscardCount: 0

Syntax:
Ip dhcp enif0 status

```

IP Ping Command

The `ip ping` command sends a signal to a host (IP address) on a network to see if that host is reachable from your host, as shown in the next example.

```
P642ME-13> ip ping 192.168.1.2
Resolving 192.168.1.2... 192.168.1.2
      sent      rcvd  rate   rtt    avg    mdev    max    min
        1         1  100    1     1     0       1     1
        2         2  100   369    47    92     369    1
        3         3  100    1     41    81     369    1
```

Syntax:

```
ip ping <hostid>
```

where <hostid> is the destination host (IP address) you want to ping.

IP Route Status Command

The `ip route status` command displays a routing table. A routing table consists of routing information specific to your system, as shown in the next example.

```
P642ME-13> ip route status
```

| Dest | FF | Len | Interface | Gateway | Metric | stat | Timer | Use |
|-------------|----|-----|-----------|-------------|--------|------|-------|-----|
| 192.168.1.0 | 00 | 29 | enif0 | 192.168.1.1 | 1 | 041b | 0 | 3 |
| default | 00 | 0 | wanIdle | MyISP | 2 | 002b | 0 | 0 |

Syntax:

```
P642ME-13> ip route status
```


Chapter 5

Firmware and Configuration Maintenance

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

5.1 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) will vary. After uploading new firmware see the **ZyNOS F/W Version** field in the **System Status** screen to confirm that you have uploaded the correct firmware version.

Table 5-1 Filename Conventions

| FILE TYPE | INTERNAL NAME | EXTERNAL NAME | DESCRIPTION |
|--------------------|---------------|---------------|--|
| Configuration File | Rom-0 | *.rom | 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. |
| Firmware | Ras | *.bin | This is the generic name for the ZyNOS firmware on the Prestige. |

FTP over WAN will not work if security level 2 or 3 is enabled.

5.2 Backup Configuration

Backup is highly recommended once your Prestige is functioning properly. FTP and TFTP are the preferred methods for backing up your current configuration to your computer since FTP and TFTP are faster. 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 (see *section 5.1*).

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.

5.2.1 Backup Configuration Using FTP

Follow the instructions shown next.

5.2.2 Using the FTP command from the DOS Prompt

- 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.
- Step 8.** Enter “atgo” to restart the Prestige.

```

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 5-1 FTP Session Example

Third Party FTP Clients

The following table describes some of the commands that you may see in third party FTP clients.

Table 5-2 General Commands for Third Party 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). |

5.2.3 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.** Enter the Command Line Interface by following the instructions in the *Command Line Interface* chapter.
- Step 3.** Enter 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 configuration file is “rom-0” (rom-zero, not capital o).

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 and “binary” to set binary transfer mode.

5.2.4 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.

Third Party TFTP Clients

The following table describes some of the fields that you may see in third party TFTP clients.

Table 5-3 General Commands for Third Party 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. |

5.2.5 Backup Via Console Port

This chapter has examples for backup configuration, restore configuration, and upload firmware using the HyperTerminal program. Other serial communications programs should be similar.

- Step 1.** Enter the Command Line Interface by following the instructions in the *Command Line Interface* chapter.
- Step 2.** Enter "r s".
- Step 3.** Enter "attd".
- Step 4.** Run the HyperTerminal program. Click **Transfer**, then **Receive File** as shown in the following screen.

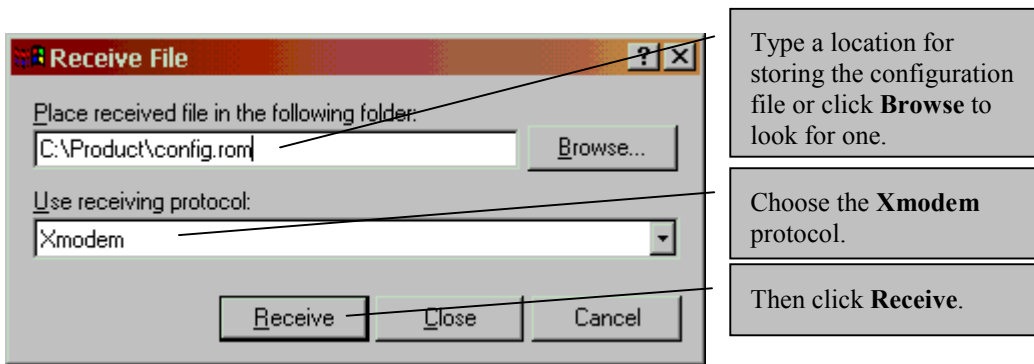


Figure 5-2 Backup Configuration Example

After a successful backup you will see the following screen. Enter “atgo” to restart the system.



Figure 5-3 Completion of Prestige Backup

5.3 Restore Configuration

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

FTP and TFTP are the preferred methods for restoring your current computer configuration to your Prestige since FTP and TFTP are faster. Please note that you must restart the system after the file transfer is complete.

5.3.1 Restore Using FTP or TFTP

Follow the instructions as shown in the next screen. For details about backup using (T)FTP please refer to later sections on FTP and TFTP file upload in this chapter.

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 on the Prestige to your computer and renames it “config.rom”. See earlier in this chapter for more information on filename conventions.
- Step 8.** Enter “quit” to exit the ftp prompt.

```
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 5-4 FTP Session Example

- Step 9.** Enter “atgo” to restart the Prestige.

5.3.2 Restore Via Console Port

This chapter has examples for backup configuration, restore configuration, and upload firmware using the HyperTerminal program. Other serial communications programs should be similar.

- Step 1.** Enter the Command Line Interface by following the instructions in the *Command Line Interface* chapter.
- Step 2.** Enter “r s”.
- Step 3.** Enter “atlc”.
- Step 4.** Run the HyperTerminal program. Click **Transfer**, then **Send File** as shown in the following screen.

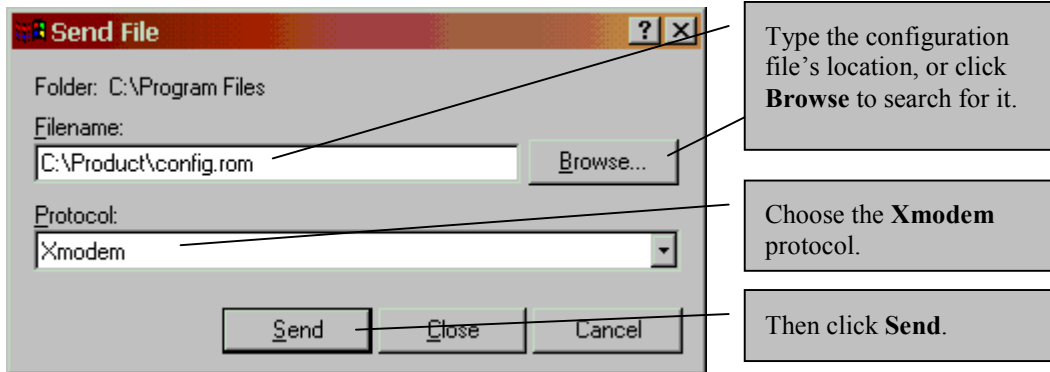


Figure 5-5 Restore Configuration Example

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

After the restoration or configuration file transfer process has completed, you will see the following screen.

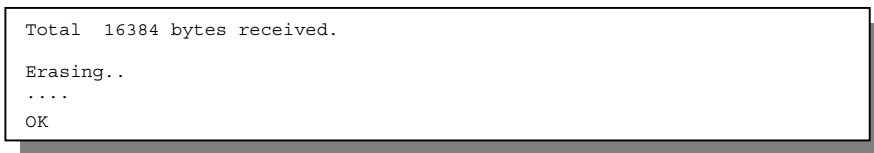


Figure 5-6 Completion of the Restore Process

Enter “atgo” to restart the system.

5.4 Uploading Firmware Files

This section shows you how to upload a firmware file. If you want to upload a configuration file, follow the procedure in the previous *Restore Configuration* section.

WARNING!

DO NOT INTERRUPT THE FILE TRANSFER PROCESS AS THIS MAY PERMANENTLY DAMAGE YOUR PRESTIGE. WHEN THE FIRMWARE UPLOAD PROCESS IS COMPLETE, THE PRESTIGE WILL AUTOMATICALLY RESTART.

5.4.1 FTP File Upload

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

To upload a firmware file, follow the next example.

FTP 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”.
- Step 7.** Enter “quit” to exit the ftp prompt.

```
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 5-7 FTP Session Example

- Step 8.** Enter “atgo” to restart the Prestige.

More commands that you may find in third party FTP clients, are listed earlier in this chapter.

5.4.2 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.** Enter the Command Line Interface by following the instructions in the *Command Line Interface* chapter.
- 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.

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, “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 third party TFTP clients are listed earlier in this chapter.

5.4.3 Uploading Files Via Console Port

FTP or TFTP are the preferred methods for uploading firmware to your Prestige. However, if your network is 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 upload.

Example Xmodem Firmware Upload Using HyperTerminal

- Step 1.** Enter the Command Line Interface by following the instructions in the *Command Line Interface* chapter.
- Step 2.** Enter “r s”.
- Step 3.** Enter “atur”.
- Step 4.** Run the HyperTerminal program. Click **Transfer**, then **Send File** as shown in the following screen.
- Step 5.** 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 6.** Click **Transfer**, then **Send File** to display the following screen.

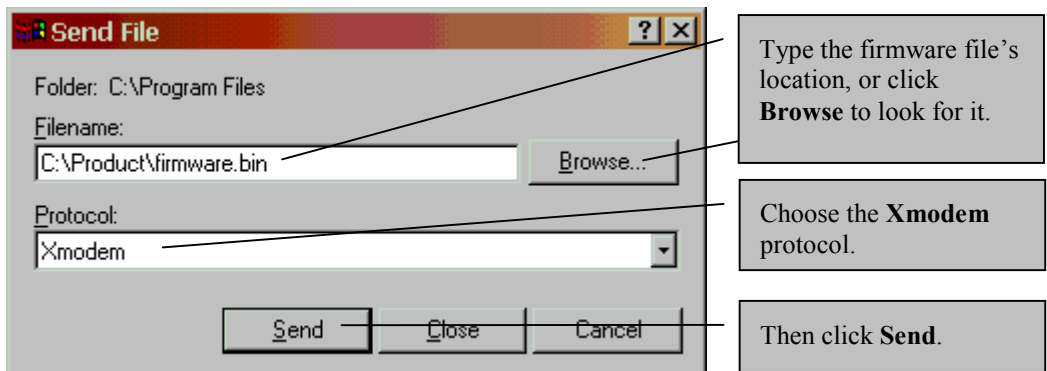


Figure 5-8 Example Xmodem Upload

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

FTP over WAN will not work if security level 2 or 3 is enabled.

Chapter 6

Troubleshooting

This chapter covers potential problems and possible remedies.

After each problem description, corrective instructions are provided to help you diagnose and solve the correlating problem.

6.1 Problems Starting Up the Prestige

Table 6-1 Troubleshooting the Start-Up of your Prestige

| PROBLEM | CORRECTIVE ACTION | | |
|---|---|---------------------------|-----------|
| None of the LEDs light when I turn on the Prestige. | <ol style="list-style-type: none"> 1. Check the connection between the AC adapter and the Prestige. 2. If the error persists, you may have a hardware problem. In this case you should contact your vendor. | | |
| I 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. The communications software should be configured as follows: | | |
| | <table border="1"> <tr> <td>VT100 terminal emulation.</td> </tr> <tr> <td>9600 bps.</td> </tr> <tr> <td>No parity, 8 data bits, 1 stop bit, flow control set to none.</td> </tr> </table> | VT100 terminal emulation. | 9600 bps. |
| VT100 terminal emulation. | | | |
| 9600 bps. | | | |
| No parity, 8 data bits, 1 stop bit, flow control set to none. | | | |

6.2 Problems With the WAN Interface

Table 6-2 Troubleshooting the ADSL connection

| PROBLEM | CORRECTIVE ACTION |
|--|---|
| Initialization of the PVC connection failed. | Ensure that the cable is connected properly from the ADSL port to the wall jack. The ADSL LED on the front panel of the Prestige should be on. Check that your VPI, VCI, type of encapsulation and type of multiplexing settings are the same as what you collected from your telephone company and ISP. Reboot the Prestige. If you still have problems then you may need to verify these variables with the telephone company and/or ISP. |

6.3 Problems with the LAN Interface

Table 6-3 Troubleshooting the LAN Interface

| PROBLEM | CORRECTIVE ACTION |
|--|---|
| I cannot ping any computer on the LAN. | Check the LAN LEDs on the front panel. The LEDs should be on for a port that has a station connected. If it is off, check the cables between your Prestige and the station. |
| | Verify that the IP address and the subnet mask are consistent between the Prestige and the computers. |

6.4 Problems Connecting to a Remote Node or ISP

Table 6-4 Troubleshooting a Connection to a Remote Node or ISP

| PROBLEM | CORRECTIVE ACTION |
|---|--|
| I cannot connect to a remote node or ISP. | Verify the line status. |
| | Verify your login name and password for the remote node. |
| | In the Web Configurator, click the Maintenance link, the General tab and then click the Reset System button to reset the Prestige. A warning dialog box is then displayed asking if you're sure you want to restart the system. Click OK to proceed. |

Appendix A

VPI & VCI

This appendix describes VPI and VCI.

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 end stations
- **Virtual Path** A bundle of virtual channels

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 and a **VCI** (Virtual Channel Identifier) identifies a channel within a virtual path. The **VPI** and **VCI** are identified and correspond to termination points at ATM switches as shown. Your telephone company should supply you with these numbers.

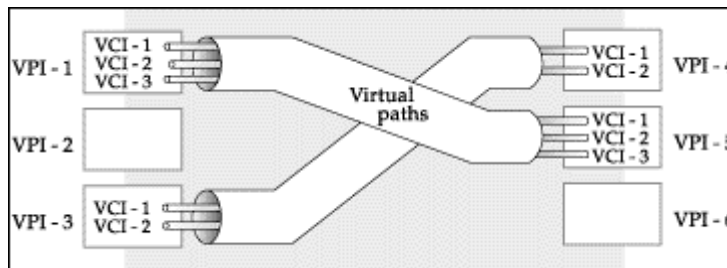


Diagram 1 VPI's & VCI's.

Glossary

| | |
|---------------------|---|
| 100Base-T | Uses two pairs of twisted-pair wire with a maximum distance of 100 meters between the hub and the workstation. |
| 10Base-T | The 10-Mbps baseband Ethernet specification that uses two pairs of twisted-pair cabling (Category 3 or 5), one pair for transmitting data and the other for receiving data. |
| ADSL | Asymmetrical Digital Subscriber Line is an asymmetrical technology which means that the downstream data rate of the line is much higher than the upstream data rate. ADSL operates in a frequency range that is above the frequency range of voice services, so the two systems can operate over the same cable. |
| Analog | An electrical circuit that is represented by means of continuous, variable physical quantities (such as voltages and frequencies), as opposed to discrete representations (like the 0/1, off/on representation of digital circuits). |
| ARP | Address Resolution Protocol is a protocol for mapping an Internet Protocol address (IP address) to a physical computer address that is recognized in the local network. |
| Bandwidth | This is the capacity on a link usually measured in bits-per-second (bps). |
| Bit | A Binary Digit (either a one or a zero); a single digit number in base-2. A bit is the smallest unit of computerized data. |
| Byte | A set of bits that represent a single character. There are eight bits in a byte. |
| Camping Out | Staying in a "safe" place once a hacker has broken into a system. The term can be used with a physical location, electronic reference or an entry point for future attacks. |
| CHAP | Challenge Handshake Authentication Protocol is an alternative protocol that avoids sending passwords over the wire by using a challenge/response technique. |
| Client | A software program that is used to contact and obtain data from a server software program on another computer. Each client program is designed to work with one or more specific kinds of Server programs and each server requires a specific kind of client. A web browser, for example, is a specific kind of client. |
| CO | Central Office. A CO is a facility that serves local telephone subscribers. In the CO, subscribers' lines are joined to switching equipment that allows them to connect to each other for both local and long distance calls. |
| COE | Central Office Equipment. COE is where home and office phone lines terminate and connect to a much larger switching system. |
| Command Line | A command line interface is a computer environment in which you enter predefined commands on the command line to modify, configure and display information about a |

| | |
|---------------------------------|---|
| Interface | device or devices. A command line is the line on the display screen where a command is expected. Generally, the command line is the line that contains the most recently displayed command prompt. An interface is a set of commands (for example, a ZyXEL Command Line Interface) or menus (for example, a ZyXEL web configurator) used to communicate with a program. A command-driven interface is an interface in which you enter commands. |
| CPE | Customer Premise Equipment. CPE is privately-owned telecommunication equipment at an organization's site that is attached to the telecommunication network. CPE includes routers, modems, PBXs, telephones, key systems, facsimile products, voice processing equipment and video communication equipment. |
| Crossover Ethernet Cable | A cable that wires a pin to its opposite pin, for example, RX+ is wired to TX+. This cable connects two similar devices, for example, two data terminal equipment (DTE) or data communications equipment (DCE) devices. |
| DHCP | Dynamic Host Configuration Protocol automatically assigns IP addresses to clients when they log on. DHCP centralizes IP address management on central computers that run the DHCP server program. DHCP leases addresses, for a period of time, which means that past addresses are "recycled" and made available for future reassignment to other systems. |
| Domain Name | The unique name that identifies an Internet site. Domain Names always have two or more parts that are separated by dots. The part on the left is the most specific and the part on the right is the most general. |
| DRAM | Dynamic RAM (Random Access Memory) stores information in capacitors that must be refreshed periodically. |
| DSL | Digital Subscriber Line technologies enhance 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). DSL connections are point-to-point dedicated circuits, meaning that they are always connected. There is no dial-up. There is also no switching, which means that the line is a direct connection into the carrier's frame relay, ATM (Asynchronous Transfer Mode) or Internet-connect system. |
| DSLAM | A Digital Subscriber Line Access Multiplexor (DSLAM) is a network device, usually at a telephone company central office, that receives signals from multiple customer Digital Subscriber Line connections and puts the signals on a high-speed backbone line using multiplexing techniques. Depending on the product, DSLAM multiplexers connect DSL lines with some combination of asynchronous transfer mode ATM, frame relay or IP networks. |
| Embedded Web | This is an HTML-based configurator that usually includes an Internet Access Wizard |

| | |
|---------------------|--|
| Configurator | and menus for configuring key settings and features. |
| Ethernet | A very common method of networking computers in a LAN. There are a number of adaptations to the IEEE 802.3 Ethernet standard, including adaptations with data rates of 10 Mbits/sec and 100 Mbits/sec over coaxial cable, twisted-pair cable and fiber-optic cable. The latest version of Ethernet, Gigabit Ethernet, has a data rate of 1 Gbit/sec. |
| FAQ | Frequently Asked Questions. FAQs are documents that list and answer the most common questions on a particular subject. |
| FCC | The FCC (Federal Communications Commission) is in charge of allocating the electromagnetic spectrum and thus the bandwidth of various communication systems. |
| Gateway | A gateway is a computer system or other device that acts as a translator between two systems that do not use the same communication protocols, data formatting structures, languages, and/or architecture. |
| Host | Any computer on a network that is a repository for services available to other computers on the network. It is quite common to have one host machine provide several services, such as WWW and USENET. |
| IANA | Internet Assigned Number Authority acts as the clearing house to assign and coordinate the use of numerous Internet protocol parameters such as Internet addresses, domain names, protocol numbers, and more. Use a search engine to find the current IANA web site. |
| ICMP | Internet Control Message Protocol is a message control and error-reporting protocol between a host server and a gateway to the Internet. ICMP uses Internet Protocol (IP) datagrams, but the messages are processed by the TCP/IP software and are not directly apparent to the application user. |
| Internet | (Upper case “I”). The vast collection of inter-connected networks that use TCP/IP protocols evolved from the ARPANET (Advanced Research Projects Agency Network) of the late 1960’s and early 1970’s. |
| internet | (Lower case “i”). Any time you connect two or more networks together, you have an internet. |
| Intranet | A private network inside a company or organization that uses the same kinds of software that you would find on the public Internet, but that is only for internal use. |
| IP | Internet Protocol. (Currently IP version 4 or IPv4). The underlying protocol for routing packets on the Internet and other TCP/IP-based networks. |
| IPCP (PPP) | IP Control Protocol allows changes to IP parameters such as the IP address. |
| ISP | Internet Service Providers provide connections into the Internet for home users and businesses. There are local, regional, national, and global ISPs. You can think of local ISPs as the gatekeepers into the Internet. |
| LAN | Local Area Network is a shared communication system to which many computers are |

| | |
|-------------------------|--|
| | attached. A LAN, as its name implies, is limited to a local area. This has to do more with the electrical characteristics of the medium than the fact that many early LANs were designed for departments, although the latter accurately describes a LAN as well. LANs have different topologies, the most common being the linear bus and the star configuration. |
| LED | Light Emitting Diode. LEDs are visual indicators that relay information about the status of specific MI1951 functions to the user by lighting up, turning off or blinking. LEDs are usually found on the front panel of the physical device. Examples include Status, Power and System LEDs. |
| LLC-Multiplexing | 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, eg., if charging heavily depends on the number of simultaneous VCs. |
| Loop-reach | Loop reach defines speed that can be attained at various distances. This is very important for DSL technology as distance from the CO (Central Office) influences attainable speeds. |
| MAC | On a local area network (LAN) or other network, the MAC (Media Access Control) address is a computer's unique hardware number. (On an Ethernet LAN, it's the same as your Ethernet address). The MAC layer frames data for transmission over the network, then passes the frame to the physical layer interface where it is transmitted as a stream of bits. |
| Multiplexor | Multiplexors or MUXs, as they are often called, are devices that combine signals from various sources such as PBX (Private Branch Exchange), asynchronous terminals or a bridge connected to a WAN. A multiplexor transmits these signals as a single data stream over a digital line. Multiplexors, among other tasks, conserve bandwidth. |
| NAT | Network Address Translation is the translation of an Internet Protocol address used within one network to a different IP address known within another network - see also SUA. |
| Network | Any time you connect two or more computers together, allowing them to share resources, you have a computer network. Connect two or more networks together and you have an internet. |
| NIC | Network Interface Card. A board that provides network communication capabilities to and from a computer system. Also called an adapter. |
| Node | Any single computer connected to a network. |
| PAP | Password Authentication Protocol is a security protocol that requires users to enter a password before accessing a secure system. The user's name and password are sent over the wire to a server where they are compared with a database of user account |

| | |
|-------------------|--|
| | names and passwords. This technique is vulnerable to wiretapping (eavesdropping) because the password can be captured and used by someone to log onto the system. |
| POP | Post Office Protocol. This is a common protocol used for sending, receiving, and delivering mail messages. |
| Port | An Internet port refers to a number that is part of a URL, appearing after a colon (:), directly following the domain name. Every service on an Internet server listens on a particular port number on that server. Most services have standard port numbers, e.g. Web servers normally listen on port 80. |
| Port (H/W) | An interface on a computer for connecting peripherals or devices to the computer. A printer port, for example, is an interface that is designed to have a printer connected to it. Ports can be defined by specific hardware (such as a keyboard port) or through software. |
| POTS | Plain Old Telephone Service is the analog telephone service that runs over copper twisted-pair wires and is based on the original Bell telephone system. Twisted-pair wires connect homes and businesses to a neighborhood central office. This is called the local loop. The central office is connected to other central offices and long-distance facilities. |
| PPP | Point to Point Protocol. PPP encapsulates and transmits IP (Internet Protocol) datagrams over serial point-to-point links. PPP works with other protocols such as IPX (Internetwork Packet Exchange). The protocol is defined in IETF (Internet Engineering Task Force) RFC 1661 through 1663. PPP provides router-to-router, host-to-router, and host-to-host connections. |
| PPPoE | PPPoE (Point-to-Point Protocol over Ethernet) relies on two widely accepted standards: PPP and Ethernet. PPPoE is a specification for connecting the users on an Ethernet to the Internet through a common broadband medium, such as a single DSL line, wireless device or cable modem. All the users over the Ethernet share a common connection, so the Ethernet principles supporting multiple users in a LAN combine with the principles of PPP, which apply to serial connections. From authentication, accounting and secure access to configuration management, PPPoE supports a broad range of existing applications and services. |
| Protocol | A “language” for communicating on a network. Protocols are sets of standards or rules used to define, format and transmit data across a network. There are many different protocols used on networks. For example, most web pages are transmitted using the HTTP protocol. |
| PSTN | Public Switched Telephone Network was put into place many years ago as a voice telephone call-switching system. The system transmits voice calls as analog signals across copper twisted cables from homes and businesses to neighborhood COs (central |

| | |
|--|--|
| | offices); this is often called the local loop. The PSTN is a circuit-switched system, meaning that an end-to-end private circuit is established between caller and callee. |
| PVC | Permanent Virtual Circuit. A PVC is a logical point-to-point circuit between customer sites. PVCs are low-delay circuits because routing decisions do not need to be made along the way. Permanent means that the circuit is preprogrammed by the carrier as a path through the network. It does not need to be set up or torn down for each session. |
| RFC | An RFC (Request for Comments) is an Internet formal document or standard that is the result of committee drafting and subsequent review by interested parties. Some RFCs are informational in nature. Of those that are intended to become Internet standards, the final version of the RFC becomes the standard and no further comments or changes are permitted. Change can occur, however, through subsequent RFCs. |
| RIP | Routing Information Protocol is an interior or intra-domain routing protocol that uses distance-vector routing algorithms. RIP is used on the Internet and is common in the NetWare environment as a method for exchanging routing information between routers. |
| Splitter | In telephony, a splitter, sometimes called a “plain old telephone service splitter” is a device that divides a telephone signal into two or more signals, each carrying a selected frequency range, and can also reassemble signals from multiple signal sources into a single signal |
| STP | Shielded Twisted-Pair cable consists of copper-core wires surrounded by an insulator. Two wires are twisted together to form a pair; the pair form a balanced circuit. The twisting prevents interference problems, STP provides protection against external crosstalk. |
| Straight-through Ethernet cable | A cable that wires a pin to its equivalent pin. This cable connects two dissimilar devices, for example, a data terminal equipment (DTE) device and a data communications equipment (DCE) device. A straight through Ethernet cable is the most commonly used Ethernet cable. |
| SUA | Single User Account. Your system’s SUA feature allows multiple user Internet access for the cost of a single ISP account. See also NAT. |
| TCP | Transmission Control Protocol is a connection-oriented transport service that ensures the reliability of message delivery. It verifies that messages and data were received. |
| Telnet | Telnet is the login and terminal emulation protocol common on the Internet and in UNIX environments. It operates over TCP/IP networks. Its primary function is to allow users to log into remote host systems. |
| Terminal | A device that allows you to send commands to a computer somewhere else. At a minimum, this usually means a keyboard, display screen and some simple circuitry. |
| Terminal | Software that pretends to be (emulates) a physical terminal and allows you to type |

| | |
|------------------------------|---|
| Software | commands to a computer somewhere else. |
| TFTP | Trivial File Transfer Protocol is an Internet file transfer protocol similar to FTP (File Transfer Protocol), but it is scaled back in functionality so that it requires fewer resources to run. TFTP uses the UDP (User Datagram Protocol) rather than TCP (Transmission Control Protocol). |
| Twisted Pair | Two insulated wires, usually copper, twisted together and often bound into a common sheath to form multi-pair cables. In ISDN, the cables are the basic path between a subscriber's terminal or telephone and the PBX or the central office. |
| UDP | User Datagram Protocol. DP is a connectionless transport service that dispenses with the reliability services provided by TCP. UDP gives applications a direct interface with the Internet Protocol (IP) and the ability to address a particular application process running on a host via a port number without setting up a connection session. |
| URL | Uniform Resource Locator. URL is an object on the Internet or an intranet that resides on a host system. Objects include directories and an assortment of file types, including text files, graphics, video and audio. A URL is the address of an object that is normally typed in the Address field of a Web browser. A URL is basically a pointer to the location of an object. |
| VC-based Multiplexing | By prior mutual agreement, each protocol is assigned to a specific virtual circuit, eg., VCI carries IP, VC2 carries IPX, etc. VC-based multiplexing may be dominant in environments where dynamic creation of large numbers of ATM VCs is fast and economical. |
| VCI | A Virtual Channel Identifier is a number that denotes a particular logical connection between end stations (users or networks). See also, VPI. |
| VPI | A Virtual Path Identifier is a number that denotes a bundle of virtual channels. See also VCI. |
| VPN | Virtual Private Network. These networks use public connections (such as the Internet) to transfer information. That information is usually encrypted for security purposes. |
| WAN | Wide Area Networks link geographically dispersed offices in other cities or around the globe. Just about any long-distance communication medium can serve as a WAN link including switched and permanent telephone circuits, terrestrial radio systems and satellite systems. |
| WWW | World Wide Web. Frequently used (incorrectly) when referring to "The Internet". WWW has two major definitions. One, the whole constellation of resources that can be accessed using Gopher, FTP, HTTP, telnet, USENET, WAIS and other tools. Two, the universe of hypertext servers (HTTP servers). |
| xDSL | Digital Subscriber Line(s) where x, when specified, denotes a particular flavor of DSL, eg., ADSL, G.SHDSL, SDSL, VDSL, RDSL, etc. |

ZyNOS

ZyXEL Network Operating System is the firmware used in many ZyXEL products.

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