

The following table describes the labels in this screen.

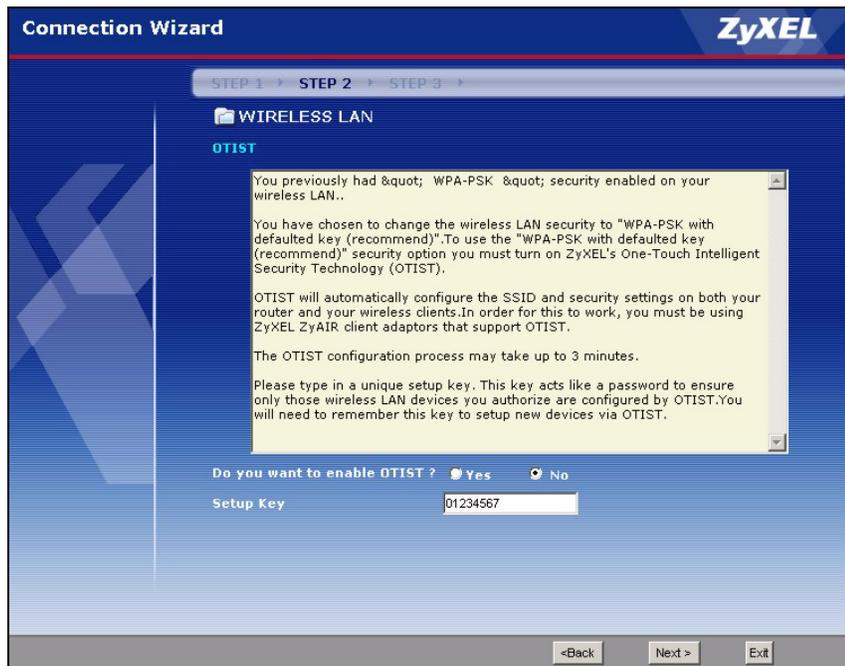
Table 11 Extend(WPA-PSK) Security

LABEL	DESCRIPTION
Pre-Shared Key	Type from 8 to 63 case-sensitive ASCII characters. You can set up the most secure wireless connection by configuring WPA in the wireless LAN screens. You need to configure an authentication server to do this.
Back	Click Back to display the previous screen.
Next	Click Next to proceed to the next screen.
Exit	Click Exit to close the wizard screen without saving.

3.3.3 OTIST

The following screen allows you to enable Prestige One-Touch Intelligent Security Technology (OTIST). One-Touch Intelligent Security Technology (OTIST) allows your Prestige to assign wireless clients the Prestige's SSID and static WEP or WPA-PSK encryption settings. The wireless client must also support OTIST and have OTIST enabled. See [Section 4.5 on page 72](#) for more information.

Figure 18 OTIST



The following table describes the labels in this screen.

Table 12 OTIST

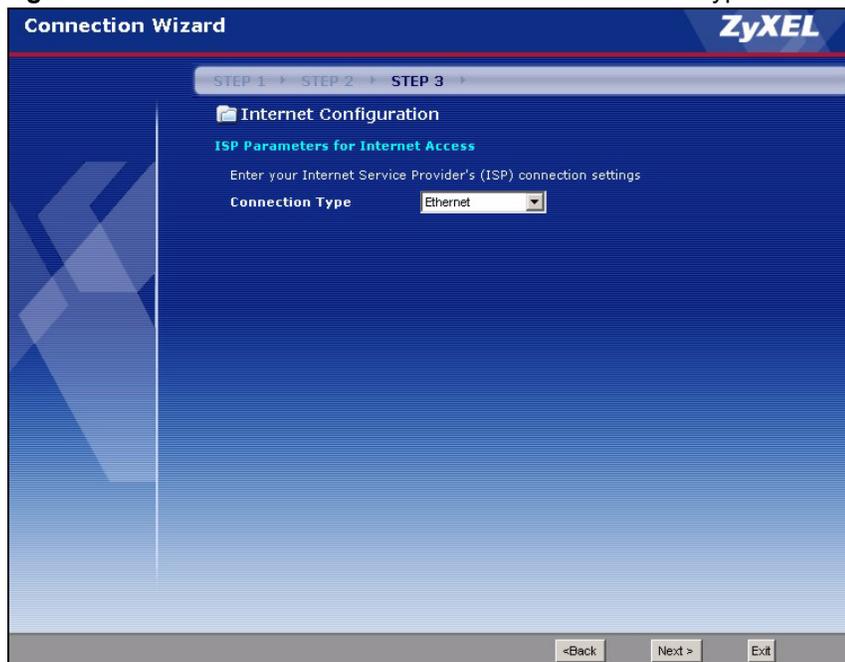
LABEL	DESCRIPTION
Do you want to enable OTIST?	Select the Yes radio button and click Next to proceed with the setup wizard and enable OTIST only when you click Finish in the final wizard screen. Click No and then Next to proceed to the following screen.
Setup Key	The default OTIST Setup Key is "01234567". This key can be changed in the web configurator. Be sure to use the same OTIST Setup Key on the Prestige and wireless clients.
Back	Click Back to display the previous screen.
Next	Click Next to proceed to the next screen.
Exit	Click Exit to close the wizard screen without saving.

Refer to the chapter on wireless LAN for more information.

3.4 Connection Wizard: STEP 3: Internet Configuration

The Prestige offers three Internet connection types. They are **Ethernet**, **PPP over Ethernet** or **PPTP**. The wizard attempts to detect which WAN connection type you are using. If the wizard does not detect a connection type, you must select one from the drop-down list box. Check with your ISP to make sure you use the correct type.

Figure 19 Connection Wizard: STEP 3: WAN Connection Type.



The following table describes the labels in this screen,

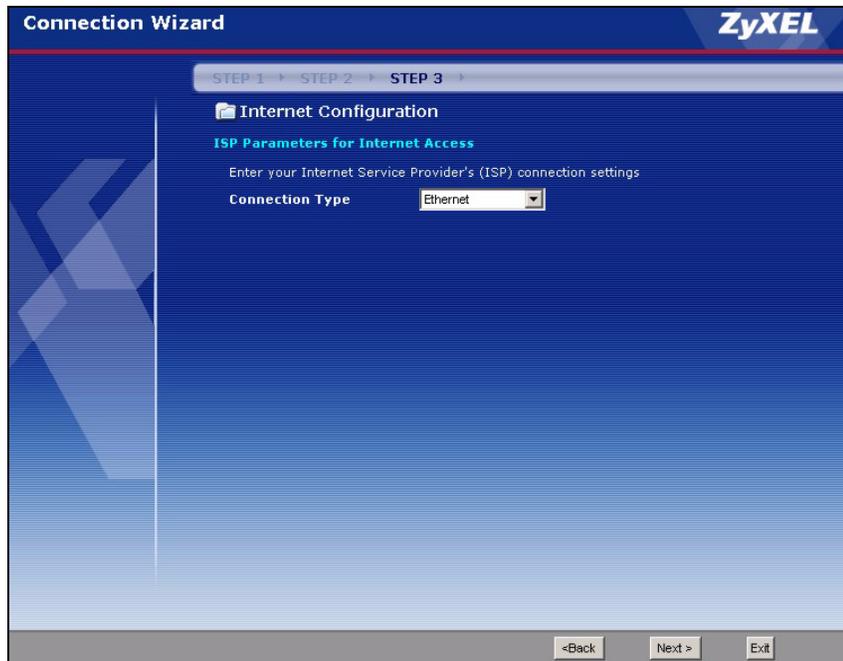
Table 13 Connection Wizard: STEP 3: WAN Connection Type

CONNECTION TYPE	DESCRIPTION
Ethernet	Select the Ethernet option when the WAN port is used as a regular Ethernet.
PPPoE	Select the PPP over Ethernet option for a dial-up connection. If your ISP gave you a an IP address and/or subnet mask, then select PPTP .
PPTP	Select the PPTP option for a dial-up connection.

3.4.1 Ethernet Connection Type

Choose **Ethernet** when the WAN port is used as a regular Ethernet.

Figure 20 Ethernet Connection Type



3.4.2 PPPoE Connection Type

Point-to-Point Protocol over Ethernet (PPPoE) functions as a dial-up connection. PPPoE is an IETF (Internet Engineering Task Force) standard specifying how a host personal computer interacts with a broadband modem (for example DSL, cable, wireless, etc.) to achieve access to high-speed data networks.

For the service provider, PPPoE offers an access and authentication method that works with existing access control systems (for instance, RADIUS).

One of the benefits of PPPoE is the ability to let end users access one of multiple network services, a function known as dynamic service selection. This enables the service provider to easily create and offer new IP services for specific users.

Operationally, PPPoE saves significant effort for both the subscriber and the ISP/carrier, as it requires no specific configuration of the broadband modem at the subscriber's site.

By implementing PPPoE directly on the Prestige (rather than individual computers), the computers on the LAN do not need PPPoE software installed, since the Prestige does that part of the task. Furthermore, with NAT, all of the LAN's computers will have Internet access.

Refer to the appendix for more information on PPPoE.

Figure 21 PPPoE Connection Type

The screenshot shows the ZyXEL Connection Wizard interface. At the top, it says 'Connection Wizard' and 'ZyXEL'. Below that, there are navigation tabs for 'STEP 1', 'STEP 2', and 'STEP 3'. The main content area is titled 'Internet Configuration' and 'ISP Parameters for Internet Access'. It prompts the user to 'Enter your Internet Service Provider's (ISP) connection settings'. The 'Connection Type' is set to 'PPP over Ethernet' in a dropdown menu. Below this are three input fields for 'Service Name', 'User Name', and 'Password'. At the bottom of the screen, there are three buttons: '<Back', 'Next >', and 'Exit'.

The following table describes the labels in this screen.

Table 14 PPPoE Connection Type

LABEL	DESCRIPTION
ISP Parameter for Internet Access	
Service Name	Type the name of your service provider.
User Name	Type the user name given to you by your ISP.
Password	Type the password associated with the user name above.
Next	Click Next to continue.
Back	Click Back to return to the previous screen.
Exit	Click Exit to close the wizard screen without saving.

3.4.3 PPTP Connection Type

Point-to-Point Tunneling Protocol (PPTP) is a network protocol that enables transfers of data from a remote client to a private server, creating a Virtual Private Network (VPN) using TCP/IP-based networks.

PPTP supports on-demand, multi-protocol, and virtual private networking over public networks, such as the Internet.

Refer to the appendix for more information on PPTP.

Note: The Prestige supports one PPTP server connection at any given time.

Figure 22 PPTP Connection Type

The screenshot shows the 'Connection Wizard' interface for ZyXEL. It is currently on 'STEP 3' of the 'Internet Configuration' process. The main heading is 'ISP Parameters for Internet Access', with a sub-heading 'PPTP Configuration'. Under 'ISP Parameters for Internet Access', there is a 'Connection Type' dropdown menu set to 'PPTP', and two input fields for 'User Name' and 'Password'. Under 'PPTP Configuration', there are two radio buttons: 'Get automatically from ISP (Default)' (which is selected) and 'Use Fixed IP Address'. Below these are four input fields: 'My IP Address' (with '0.0.0.0' entered), 'My IP Subnet Mask' (with '0.0.0.0' entered), 'Server IP Address', and 'Connection ID/Name'. At the bottom of the window are three buttons: '<Back', 'Next >', and 'Exit'.

The following table describes the fields in this screen

Table 15 PPTP Connection Type

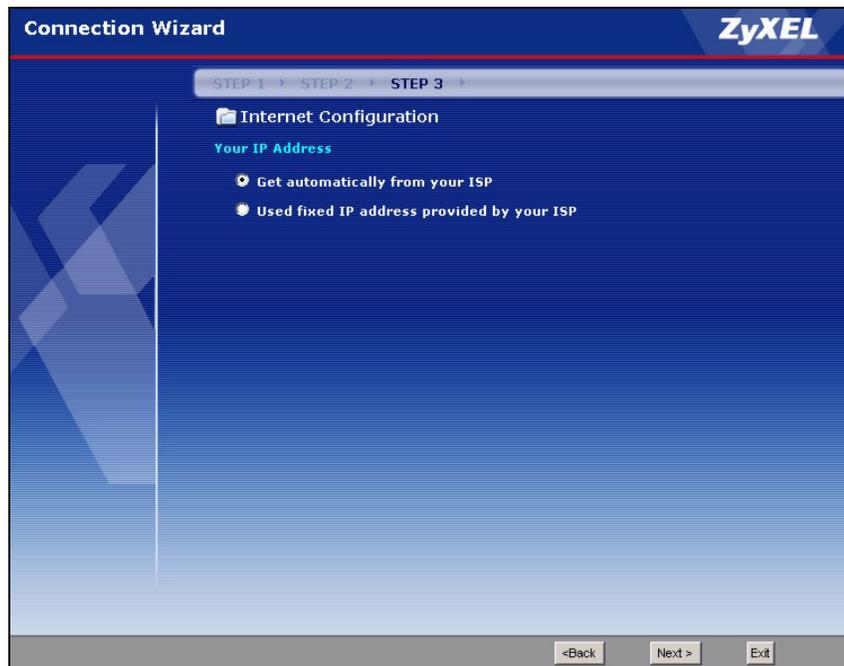
LABEL	DESCRIPTION
ISP Parameters for Internet Access	
User Name	Type the user name given to you by your ISP.
Password	Type the password associated with the User Name above.
PPTP Configuration	
Get automatically from ISP	Select this radio button if your ISP did not assign you a fixed IP address.
Use fixed IP address	Select this radio button, provided by your ISP to give the Prestige a fixed, unique IP address.
My IP Address	Type the (static) IP address assigned to you by your ISP.

Table 15 PPTP Connection Type

LABEL	DESCRIPTION
My IP Subnet Mask	Type the subnet mask assigned to you by your ISP (if given).
Server IP Address	Type the IP address of the PPTP server.
Connection ID/ Name	Enter the connection ID or connection name in this field. It must follow the "c:id" and "n:name" format. For example, C:12 or N:My ISP. This field is optional and depends on the requirements of your ISP.
Back	Click Back to return to the previous screen.
Next	Click Next to continue.
Exit	Click Exit to close the wizard screen without saving.

3.4.4 Your IP Address

The following wizard screen allows you to assign a fixed IP address or give the Prestige an automatically assigned IP address depending on your ISP.

Figure 23 Your IP Address

The following table describes the labels in this screen

Table 16 Your IP Address

LABEL	DESCRIPTION
Get automatically from ISP	Select this option If your ISP did not assign you a fixed IP address. This is the default selection.
Use fixed IP address provided by your ISP	Select this option If the ISP assigned a fixed IP address. The fixed IP address should be in the same subnet as your broadband modem or router.
Back	Click Back to return to the previous screen.
Next	Click Next to continue.
Exit	Click Exit to close the wizard screen without saving.

3.4.5 WAN MAC Address

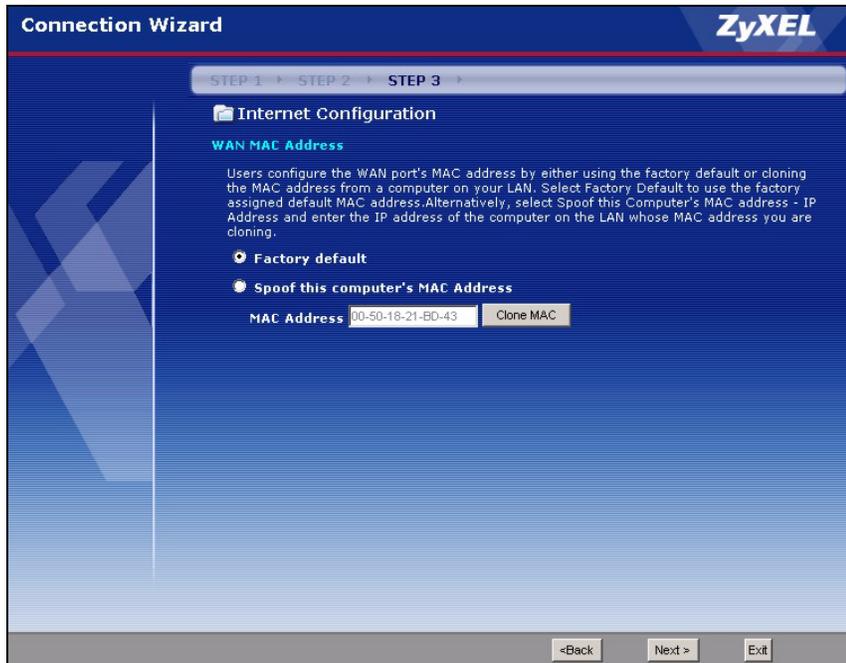
Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00-A0-C5-00-00-02.

You can configure the WAN port's MAC address by either using the factory default or cloning the MAC address from a computer on your LAN. Once it is successfully configured, the address will be copied to the "rom" file (ZyNOS configuration file). It will not change unless you change the setting or upload a different "rom" file.

Table 17 Example of Network Properties for LAN Servers with Fixed IP Addresses

Choose an IP address	192.168.1.2-192.168.1.32; 192.168.1.65-192.168.1.254.
Subnet mask	255.255.255.0
Gateway (or default route)	192.168.1.1(Prestige LAN IP)

This screen allows users to configure the WAN port's MAC address by either using the factory default or cloning the MAC address from a computer on your LAN.

Figure 24 WAN MAC Address

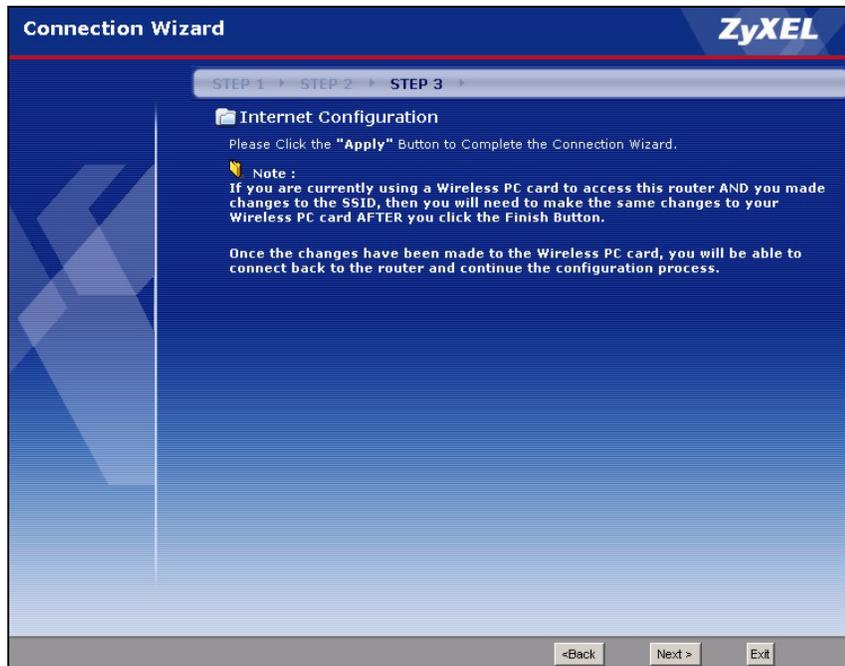
The following table describes the fields in this screen.

Table 18 WAN MAC Address

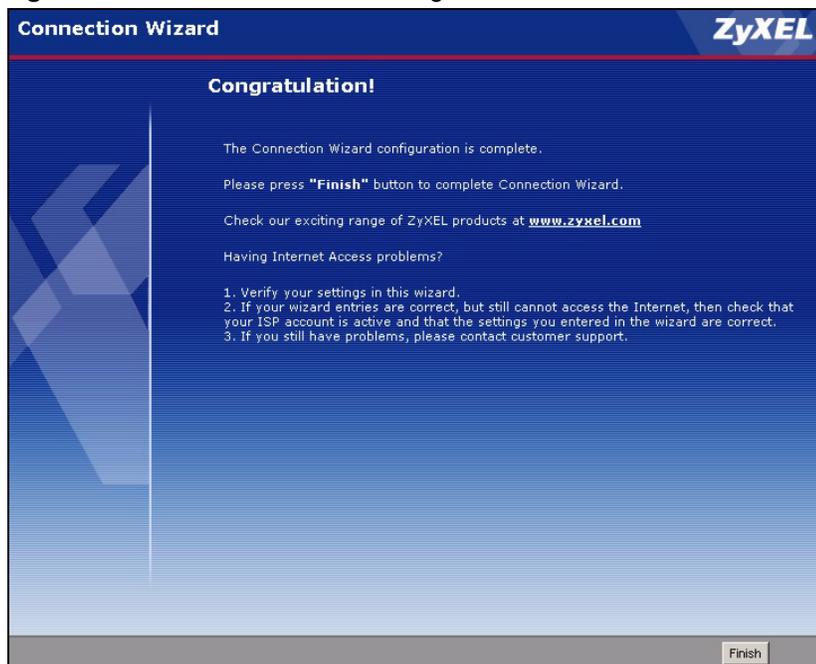
LABEL	DESCRIPTION
Factory Default	Select Factory Default to use the factory assigned default MAC address.
Spoof this computer's MAC address	Select this option and click Clone MAC to clone the MAC address in the MAC Address field. Once it is successfully configured, the address will be copied to the rom file (ZyNOS configuration file). It will not change unless you change the setting or upload a different ROM file. It is advisable to clone the MAC address from a computer on your LAN even if your ISP does not presently require MAC address authentication.
MAC Address	Enter the MAC address of the computer on the LAN whose MAC address you want to clone.
Back	Click Back to return to the previous screen.
Next	Click Next to continue.
Exit	Click Exit to close the wizard screen without saving.

3.4.6 Connection Wizard Complete

Follow the on-screen instructions and click **Next**.

Figure 25 Connection Wizard Complete

Click **Finish** to complete the wizard setup and save your configuration.

Figure 26 Connection Wizard: Congratulation

Well done! You have successfully set up your Prestige to operate on your network and access the Internet.

CHAPTER 4

Wireless LAN

This chapter discusses how to configure Wireless LAN.

4.1 Introduction

A wireless LAN can be as simple as two computers with wireless LAN adapters communicating in a peer-to-peer network or as complex as a number of computers with wireless LAN adapters communicating through access points which bridge network traffic to the wired LAN.

Note: See the WLAN appendix for more detailed information on WLANs.

4.2 Wireless Security Overview

Wireless security is vital to your network to protect wireless communication between wireless stations, access points and the wired network.

Wireless security methods available on the Prestige are data encryption, wireless client authentication, restricting access by device MAC address and hiding the Prestige identity.

4.2.1 Encryption

- Use WPA security if you have WPA-aware wireless clients and a RADIUS server. WPA has user authentication and improved data encryption over WEP.
- Use WPA-PSK if you have WPA-aware wireless clients but no RADIUS server.
- If you don't have WPA-aware wireless clients, then use WEP key encrypting. A higher bit key offers better security at a throughput trade-off. You can use Passphrase to automatically generate 64-bit or 128-bit WEP keys or manually enter 64-bit or 128-bit WEP keys.

4.2.2 Authentication

WPA has user authentication and you can also configure IEEE 802.1x to use a RADIUS server to authenticate wireless clients before joining your network.

- Use RADIUS authentication if you have a RADIUS server. See the appendices for information on protocols used when a client authenticates with a RADIUS server via the Prestige.

4.2.3 Restricted Access

The **MAC Filter** screen allows you to configure the AP to give exclusive access to devices (**Allow**) or exclude them from accessing the AP (**Deny**).

4.2.4 Hide Prestige Identity

If you hide the ESSID, then the Prestige cannot be seen when a wireless client scans for local APs. The trade-off for the extra security of “hiding” the Prestige may be inconvenient for some valid WLAN clients.

4.2.5 Using OTIST

In a wireless network, the wireless clients must have the same SSID and security settings as the access point (AP) or wireless router (we will refer to both as “AP” here) in order to associate with it. Traditionally this meant that you had to configure the settings on the AP and then manually configure the exact same settings on each wireless client.

OTIST (One-Touch Intelligent Security Technology) allows you to transfer your AP's SSID and WEP or WPA-PSK security settings to wireless clients that support OTIST and are within transmission range. You can also choose to have OTIST generate a WPA-PSK key for you if you didn't configure one manually.

Note: OTIST replaces the pre-configured wireless settings on the wireless clients.

4.3 Configuring Wireless LAN on the Prestige

- 1 Configure the **SSID** and **Security Mode** in the **Wireless** screen. If you configure **WEP**, you can't configure **WPA** or **WPA-PSK**.
- 2 Use the **MAC Filter** screen to restrict access to your wireless network by MAC address.
- 3 If you have OTIST-enabled clients, configure **OTIST** in the **OTIST** screen. **OTIST** transfers device SSID and WEP or WPA-PSK key settings (if enabled) to wireless clients.

The following figure shows the relative effectiveness of these wireless security methods available on your Prestige.

Table 19 ZyAIR Wireless Security Levels

Security Level	Security Type	
↑ ↓	Least Secure	Unique SSID (Default)
		Unique SSID with Hide SSID Enabled
		MAC Address Filtering
		WEP Encryption
		IEEE802.1x EAP with RADIUS Server Authentication
Most Secure	Wi-Fi Protected Access (WPA)	

Note: You must enable the same wireless security settings on the Prestige and on all wireless clients that you want to associate with it.

4.4 General Wireless LAN Screen

Note: If you are configuring the Prestige from a computer connected to the wireless LAN and you change the Prestige's SSID or WEP settings, you will lose your wireless connection when you press **Apply** to confirm. You must then change the wireless settings of your computer to match the Prestige's new settings.

Click the **Wireless LAN** link under **Network** to open the **General** screen.

Figure 27 Wireless: General

The screenshot shows the 'General' tab of the wireless configuration interface. It includes sections for 'Wireless Setup' and 'Security'. In the 'Wireless Setup' section, the 'Enable Wireless LAN' checkbox is checked, the SSID is set to 'ZyXEL', 'Hide SSID' is unchecked, and the channel is set to 'Channel-06 2427MHz'. In the 'Security' section, the 'Security Mode' is set to 'No Security'. At the bottom of the form, there are 'Apply' and 'Reset' buttons.

The following table describes the general wireless LAN labels in this screen.

Table 20 Wireless: General

LABEL	DESCRIPTION
Enable Wireless LAN	Click the check box to activate wireless LAN.
Name(SSID)	<p>(Service Set IDentity) The SSID identifies the Service Set with which a wireless station is associated. Wireless stations associating to the access point (AP) must have the same SSID. Enter a descriptive name (up to 32 printable 7-bit ASCII characters) for the wireless LAN.</p> <p>Note: If you are configuring the Prestige from a computer connected to the wireless LAN and you change the Prestige's SSID or WEP settings, you will lose your wireless connection when you press Apply to confirm. You must then change the wireless settings of your computer to match the Prestige's new settings.</p>
Hide SSID	Select this check box to hide the SSID in the outgoing beacon frame so a station cannot obtain the SSID through passive scanning using a site survey tool.
Channel Selection	<p>Set the operating frequency/channel depending on your particular region.</p> <p>Select a channel from the drop-down list box.</p> <p>Refer to the Connection Wizard chapter for more information on channels.</p>
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

See the rest of this chapter for information on the other labels in this screen.

4.4.1 No Security

Select **No Security** to allow wireless stations to communicate with the access points without any data encryption.

Note: If you do not enable any wireless security on your Prestige, your network is accessible to any wireless networking device that is within range.

Figure 28 Wireless: No Security

The screenshot shows a web-based configuration interface for a wireless router. At the top, there are tabs for 'General', 'OTIST', 'MAC Filter', and 'Advanced', with 'General' selected. Below the tabs is a 'Wireless Setup' section containing:

- Enable Wireless LAN
- Name(SSID): ZyXEL
- Hide SSID
- Channel Selection: Channel-06 2427MHz

 Below this is a 'Security' section containing:

- Security Mode: No Security

 At the bottom of the screen are two buttons: 'Apply' and 'Reset'.

The following table describes the labels in this screen.

Table 21 Wireless No Security

LABEL	DESCRIPTION
Security Mode	Choose No Security from the drop-down list box.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

4.4.2 WEP Encryption

WEP encryption scrambles the data transmitted between the wireless stations and the access points to keep network communications private. It encrypts unicast and multicast communications in a network. Both the wireless stations and the access points must use the same WEP key.

Your Prestige allows you to configure up to four 64-bit or 128-bit WEP keys but only one key can be enabled at any one time.

In order to configure and enable WEP encryption; click **Wireless LAN** and **Wireless** to display the **General** screen.

Select **Static WEP** from the **Security Mode** list.

Figure 29 Wireless: Static WEP Encryption

The following table describes the wireless LAN security labels in this screen.

Table 22 Wireless: Static WEP Encryption

LABEL	DESCRIPTION
Passphrase	Enter a Passphrase (up to 32 printable characters) and clicking Generate . The Prestige automatically generates four different WEP keys.
Generate	After you enter the passphrase, click Generate to have the Prestige generates four different WEP keys automatically.
Clear	Click Clear to discard the passphrase you configured in the Passphrase field and the WEP key(s) generated automatically or manually configured.
WEP Encryption	Select 64-bit WEP or 128-bit WEP to enable data encryption.
Authentication Method	Select Auto , Open System or Shared Key from the drop-down list box.
ASCII	Select this option in order to enter ASCII characters as the WEP key.
Hex	Select this option in order to enter hexadecimal characters as a WEP key. The preceding "0x", that identifies a hexadecimal key, is entered automatically.

Table 22 Wireless: Static WEP Encryption

LABEL	DESCRIPTION
Key 1 to Key 4	<p>The WEP keys are used to encrypt data. Both the Prestige and the wireless stations must use the same WEP key for data transmission.</p> <p>If you chose 64-bit WEP, then enter any 5 ASCII characters or 10 hexadecimal characters ("0-9", "A-F").</p> <p>If you chose 128-bit WEP, then enter 13 ASCII characters or 26 hexadecimal characters ("0-9", "A-F").</p> <p>You must configure at least one key, only one key can be activated at any one time. The default key is key 1.</p>
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

4.4.3 Introduction to WPA

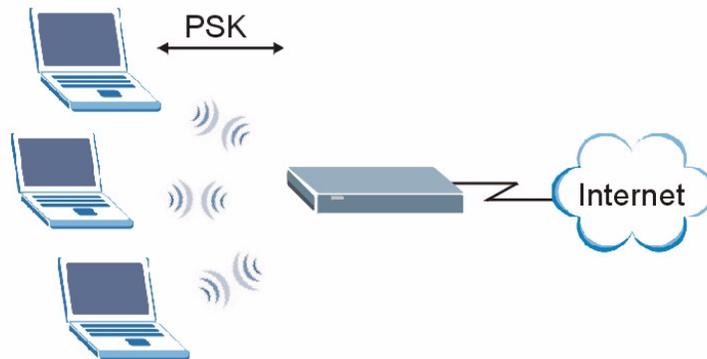
Wi-Fi Protected Access (WPA) is a subset of the IEEE 802.11i standard. WPA is preferred to WEP as WPA has user authentication and improved data encryption. See the appendix for more information on WPA user authentication and WPA encryption.

If both an AP and the wireless clients support WPA and you have an external RADIUS server, use WPA for stronger data encryption. If you don't have an external RADIUS server, you should use WPA-PSK (WPA-Pre-Shared Key) that only requires a single (identical) password entered into each access point, wireless gateway and wireless client. As long as the passwords match, a wireless client will be granted access to a WLAN.

4.4.4 WPA-PSK Application Example

A WPA-PSK application looks as follows.

- 1** First enter identical passwords into the AP and all wireless clients. The Pre-Shared Key (PSK) must consist of between 8 and 63 ASCII characters (including spaces and symbols).
- 2** The AP checks each wireless client's password and (only) allows it to join the network if the password matches.
- 3** The AP derives and distributes keys to the wireless clients.
- 4** The AP and wireless clients use the TKIP encryption process to encrypt data exchanged between them.

Figure 30 WPA-PSK Authentication

4.4.5 WPA-PSK Authentication Screen

In order to configure and enable WPA-PSK Authentication; click the **Wireless LAN** link under **Network** to display the **General** screen. Select **WPA-PSK** from the **Security Mode** list.

Figure 31 Wireless: WPA-PSK

The following table describes the labels in this screen.

Table 23 Wireless: WPA-PSK

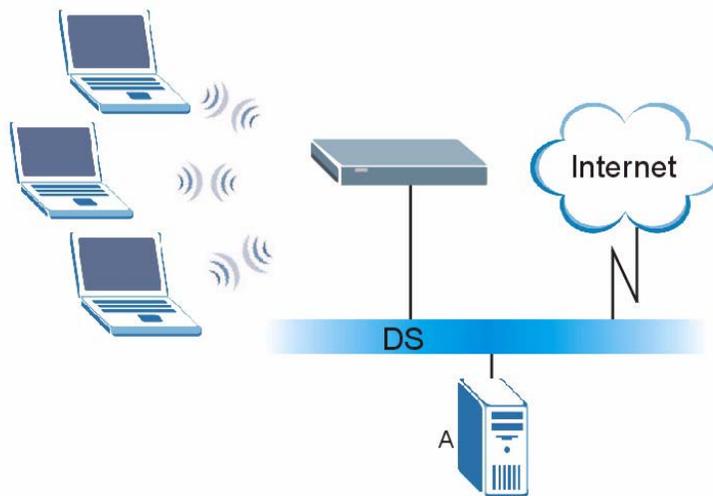
LABEL	DESCRIPTION
Pre-Shared Key	The encryption mechanisms used for WPA and WPA-PSK are the same. The only difference between the two is that WPA-PSK uses a simple common password, instead of user-specific credentials. Type a pre-shared key from 8 to 63 case-sensitive ASCII characters (including spaces and symbols).
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

4.4.6 WPA with RADIUS Application Example

You need the IP address of the RADIUS server, its port number (default is 1812), and the RADIUS shared secret. A WPA application example with an external RADIUS server looks as follows. "A" is the RADIUS server. "DS" is the distribution system.

- 1 The AP passes the wireless client's authentication request to the RADIUS server.
- 2 The RADIUS server then checks the user's identification against its database and grants or denies network access accordingly.
- 3 The RADIUS server distributes a Pairwise Master Key (PMK) key to the AP that then sets up a key hierarchy and management system, using the pair-wise key to dynamically generate unique data encryption keys to encrypt every data packet that is wirelessly communicated between the AP and the wireless clients.

Figure 32 WPA with RADIUS Application Example



4.4.7 Wireless Client WPA Supplicants

A wireless client supplicant is the software that runs on an operating system instructing the wireless client how to use WPA. At the time of writing, the most widely available supplicant is the WPA patch for Windows XP, Funk Software's Odyssey client.

The Windows XP patch is a free download that adds WPA capability to Windows XP's built-in "Zero Configuration" wireless client. However, you must run Windows XP to use it.

4.4.8 WPA Authentication Screen

In order to configure and enable WPA Authentication; click the **Wireless LAN** link under **Network** to display the **General** screen. Select **WPA** from the **Security Mode** list.

Figure 33 Wireless: WPA

The following table describes the labels in this screen.

Table 24 Wireless: WPA

LABEL	DESCRIPTION
Authentication Server	
IP Address	Enter the IP address of the external authentication server in dotted decimal notation.
Port Number	Enter the port number of the external authentication server. The default port number is 1812 . You need not change this value unless your network administrator instructs you to do so with additional information.
Shared Secret	Enter a password (up to 31 alphanumeric characters) as the key to be shared between the external authentication server and the Prestige. The key must be the same on the external authentication server and your Prestige. The key is not sent over the network.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

4.4.9 IEEE 802.1x Overview

You need the following for IEEE 802.1x authentication.

- A computer with an IEEE 802.11 a/b/g wireless LAN adapter and equipped with a web browser (with JavaScript enabled) and/or Telnet.

- A wireless station computer must be running IEEE 802.1x-compliant software. Not all Windows operating systems support IEEE 802.1x (see the Microsoft web site for details). For other operating systems, see their documentation. If your operating system does not support IEEE 802.1x, then you may need to install IEEE 802.1x client software.
- An optional network RADIUS server for remote user authentication and accounting.

4.4.10 IEEE 802.1x and Dynamic WEP Key Exchange Screen

In order to configure and enable 802.1x and dynamic WEP key exchange; click the **Wireless LAN** link under **Network** to display the **General** screen. Select **802.1x + Dynamic WEP** from the **Security Mode** list.

Figure 34 Wireless: 802.1x and Dynamic WEP

The screenshot shows a configuration window with two tabs: 'General' and 'Advanced'. The 'General' tab is selected. Under 'Wireless Setup', there is a checked box for 'Enable Wireless LAN', a text field for 'Name(SSID)' containing 'ZyXEL', an unchecked box for 'Hide SSID', and a dropdown for 'Channel Selection' set to 'Channel-06 2427MHz'. Under the 'Security' section, 'Security Mode' is a dropdown set to '802.1x + Dynamic WEP', 'Dynamic WEP Key Exchange' is a dropdown set to '64-bit WEP', and 'Authentication Server' includes fields for 'IP Address' (0.0.0.0), 'Port Number' (1812), and 'Shared Secret' (empty). At the bottom are 'Apply' and 'Reset' buttons.

The following table describes the labels in this screen.

Table 25 Wireless: 802.1x and Dynamic WEP

LABEL	DESCRIPTION
Dynamic WEP Key Exchange	Select 64-bit WEP or 128-bit WEP to enable data encryption. Up to 32 stations can access the Prestige when you configure dynamic WEP key exchange.
Authentication Server	
IP Address	Enter the IP address of the external authentication server in dotted decimal notation.
Port Number	Enter the port number of the external authentication server. The default port number is 1812 . You need not change this value unless your network administrator instructs you to do so with additional information.

Table 25 Wireless: 802.1x and Dynamic WEP

LABEL	DESCRIPTION
Shared Secret	Enter a password (up to 31 alphanumeric characters) as the key to be shared between the external authentication server and the Prestige. The key must be the same on the external authentication server and your Prestige. The key is not sent over the network.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

4.5 OTIST

OTIST (One-Touch Intelligent Security Technology) allows your Prestige to set the wireless client to use the same wireless settings as the Prestige.

Note: The wireless client must support OTIST and have OTIST enabled.

The following are the wireless settings that the Prestige assigns to the wireless client if OTIST is enabled on both devices and the OTIST setup keys are the same.

- SSID
- Security (WEP or WPA-PSK)

Note: This will replace the pre-configured wireless settings on the wireless clients.

4.5.1 Enabling OTIST

You must enable OTIST on both the AP and wireless client before you start transferring settings.

Note: The AP and wireless client(s) **MUST** use the same **Setup key**.

4.5.1.1 AP

You can enable OTIST using the Reset button or the web configurator.

4.5.1.1.1 Reset button

If you use the **Reset** button, the default (01234567) or previous saved (through the web configurator) **Setup key** is used to encrypt the settings that you want to transfer.

Hold in the **Reset** button for one or two seconds.

Note: If you hold in the **Reset** button too long, the device will reset to the factory defaults!

4.5.1.1.2 Web Configurator

Click the **Wireless LAN** link under **Network** and then the **OTIST** tab. The following screen displays.

Figure 35 Wireless: OTIST

The following table describes the labels in this screen.

Table 26 Wireless: OTIST

LABEL	DESCRIPTION
Setup Key	Type an OTIST Setup Key of exactly eight ASCII characters in length. The default OTIST setup key is "01234567". Note: If you change the OTIST setup key here, you must also make the same change on the wireless client(s).

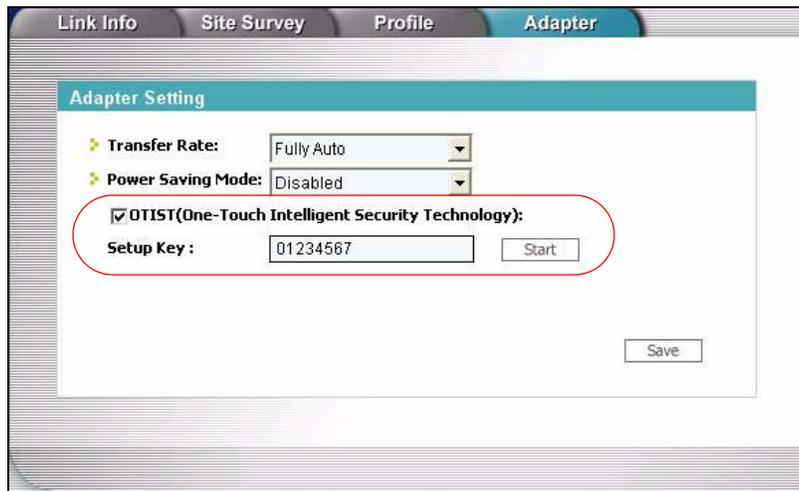
Table 26 Wireless: OTIST

LABEL	DESCRIPTION
Yes!	<p>To have OTIST automatically generate a WPA-PSK key, select this check box. If you manually configured a WEP key or a WPA-PSK key and you also select this check box, then the key you manually configured is used.</p> <p>If you want to configure your own WPA-PSK and have OTIST use that WPA-PSK, you must:</p> <ul style="list-style-type: none"> • Configure a WPA-PSK in the Wireless General screen. • Clear the Yes! checkbox in the OTIST screen and click Apply. <p>Note: If you already have a WPA-PSK configured in the Wireless General screen, and you run OTIST with Yes! selected, OTIST will not replace the WPA-PSK. Clear the checkbox in the OTIST screen.</p> <p>If you want OTIST to automatically generate a WPA-PSK, you must:</p> <ul style="list-style-type: none"> • Change your security to No Security in the Wireless General screen. • Select the the Yes! checkbox in the OTIST screen and click Apply. • The Wireless General screen displays an auto generated WPA-PSK and is now in WPA-PSK security mode. <p>The WPA-PSK security settings are assigned to the wireless client when you start OTIST.</p>
Start	<p>Click Start to encrypt the wireless security data using the setup key and have the Prestige set the wireless station to use the same wireless settings as the Prestige. You must also activate and start OTIST on the wireless station at the same time.</p> <p>The process takes three minutes to complete.</p>

4.5.1.2 Wireless Client

Start the ZyXEL utility and click the **Adapter** tab. Select the **OTIST** check box, enter the same **Setup Key** as your AP's and click **Save**.

Figure 36 Example Wireless Client OTIST Screen



4.5.2 Starting OTIST

Note: You must click **Start** in the AP **OTIST** web configurator screen and in the wireless client(s) **Adapter** screen all within three minutes (at the time of writing). You can start OTIST in the wireless clients and AP in any order but they must all be within range and have OTIST enabled.

- 1 In the AP, a web configurator screen pops up showing you the security settings to transfer. After reviewing the settings, click **OK**.

Figure 37 Security Key

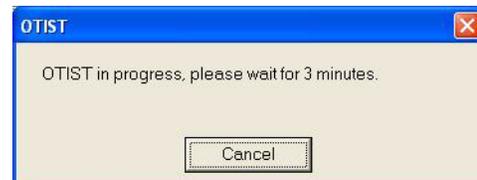


- 2 This screen appears while OTIST settings are being transferred. It closes when the transfer is complete.

Figure 38 OTIST in Progress (AP)



Figure 39 OTIST in Progress (Client)



- In the wireless client, you see this screen if it can't find an OTIST-enabled AP (with the same **Setup key**). Click **OK** to go back to the ZyXEL utility main screen.

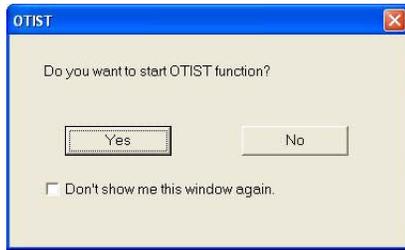
Figure 40 No AP with OTIST Found



- If there is more than one OTIST-enabled AP within range, you see a screen asking you to select one AP to get settings from.

4.5.3 Notes on OTIST

- 1 If you enabled OTIST in the wireless client, you see this screen each time you start the utility. Click **Yes** for it to search for an OTIST-enabled AP.

Figure 41 Start OTIST?

- 2** If an OTIST-enabled wireless client loses its wireless connection for more than ten seconds, it will search for an OTIST-enabled AP for up to one minute. (If you manually have the wireless client search for an OTIST-enabled AP, there is no timeout; click **Cancel** in the OTIST progress screen to stop the search.)
- 3** When the wireless client finds an OTIST-enabled AP, you must still click **Start** in the AP **OTIST** web configurator screen or hold in the **Reset** button (for one or two seconds) for the AP to transfer settings.
- 4** If you change the SSID or the keys on the AP after using OTIST, you need to run OTIST again or enter them manually in the wireless client(s).
- 5** If you configure OTIST to generate a WPA-PSK key, this key changes each time you run OTIST. Therefore, if a new wireless client joins your wireless network, you need to run OTIST on the AP and ALL wireless clients again.

4.6 MAC Filter

The MAC filter screen allows you to configure the Prestige to give exclusive access to up to 32 devices (**Allow**) or exclude up to 32 devices from accessing the Prestige (**Deny**). Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00-A0-C5-00-00-02. You need to know the MAC address of the devices to configure this screen.

To change your Prestige's MAC filter settings, click the **Wireless LAN** link under **Network** and then the **MAC Filter** tab. The screen appears as shown.

Figure 42 Wireless: MAC Address Filter

MAC Address Filter

Active

Filter Action: Allow Deny

Set	MAC Address	Set	MAC Address
1	00-00-00-00-00-00	17	00-00-00-00-00-00
2	00-00-00-00-00-00	18	00-00-00-00-00-00
3	00-00-00-00-00-00	19	00-00-00-00-00-00
4	00-00-00-00-00-00	20	00-00-00-00-00-00
5	00-00-00-00-00-00	21	00-00-00-00-00-00
6	00-00-00-00-00-00	22	00-00-00-00-00-00
7	00-00-00-00-00-00	23	00-00-00-00-00-00
8	00-00-00-00-00-00	24	00-00-00-00-00-00
9	00-00-00-00-00-00	25	00-00-00-00-00-00
10	00-00-00-00-00-00	26	00-00-00-00-00-00
11	00-00-00-00-00-00	27	00-00-00-00-00-00
12	00-00-00-00-00-00	28	00-00-00-00-00-00
13	00-00-00-00-00-00	29	00-00-00-00-00-00
14	00-00-00-00-00-00	30	00-00-00-00-00-00
15	00-00-00-00-00-00	31	00-00-00-00-00-00
16	00-00-00-00-00-00	32	00-00-00-00-00-00

Apply Reset

The following table describes the labels in this menu.

Table 27 MAC Address Filter

LABEL	DESCRIPTION
Active	Select Yes from the drop down list box to enable MAC address filtering.
Filter Action	Define the filter action for the list of MAC addresses in the MAC Address table. Select Deny to block access to the Prestige, MAC addresses not listed will be allowed to access the Prestige Select Allow to permit access to the Prestige, MAC addresses not listed will be denied access to the Prestige.
Set	This is the index number of the MAC address.
MAC Address	Enter the MAC addresses of the wireless station that are allowed or denied access to the Prestige in these address fields. Enter the MAC addresses in a valid MAC address format, that is, six hexadecimal character pairs, for example, 12:34:56:78:9a:bc.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

4.7 Wireless LAN Advanced Screen

See the appendix for background information on roaming.

To enable roaming on your Prestige, click the **Wireless LAN** link under **Network** and then the **Advanced** tab. The screen appears as shown.

Figure 43 Wireless: Advanced

The following table describes the labels in this screen.

Table 28 Wireless: Advanced

LABEL	DESCRIPTION
Wireless Advanced Setup	
RTS/CTS Threshold	Enter a value between 0 and 2432.
Fragmentation Threshold	It is the maximum data fragment size that can be sent. Enter a value between 256 and 2432.
Preamble	<p>Preamble is used to signal that data is coming to the receiver. Short preamble increases performance as less time sending preamble means more time for sending data. All IEEE 802.11b compliant wireless adapters support long preamble, but not all support short preamble.</p> <p>Select Long preamble if you are unsure what preamble mode the wireless adapters support, and to provide more reliable communications in busy wireless networks.</p> <p>Select Short preamble if you are sure the wireless adapters support it, and to provide more efficient communications.</p> <p>Note: The Prestige and the wireless stations MUST use the same preamble mode in order to communicate.</p>
802.11 Mode	<p>Select 802.11b Only to allow only IEEE 802.11b compliant WLAN devices to associate with the Prestige.</p> <p>Select 802.11g Only to allow only IEEE 802.11g compliant WLAN devices to associate with the Prestige.</p> <p>Select Mixed to allow either IEEE802.11b or IEEE802.11g compliant WLAN devices to associate with the Prestige. The transmission rate of your Prestige might be reduced.</p>

Table 28 Wireless: Advanced

LABEL	DESCRIPTION
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to reload the previous configuration for this screen.

CHAPTER 5

WAN

This chapter describes how to configure WAN settings.

5.1 WAN IP Address Assignment

Every computer on the Internet must have a unique IP address. If your networks are isolated from the Internet, for instance, 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.

Table 29 Private IP Address Ranges

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

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

5.2 IP Address and Subnet Mask

Similar to the way houses on a street share a common street name, so too do computers on a LAN share one common network number.

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

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

Once you have decided on the network number, pick an IP address that is easy to remember, for instance, 192.168.1.1, for your Prestige, but make sure that no other device on your network is using that IP address.

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.

5.3 DNS Server Address Assignment

Use DNS (Domain Name System) to map a domain name to its corresponding IP address and vice versa, for instance, 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 Prestige can get the DNS server addresses in the following way.

- 1 The ISP tells you the DNS server addresses, usually in the form of an information sheet, when you sign up. If your ISP gives you DNS server addresses, enter them in the DNS Server fields in DHCP Setup.

If the ISP did not give you DNS server information, leave the DNS Server fields in DHCP Setup set to 0.0.0.0 for the ISP to dynamically assign the DNS server IP addresses.

5.4 TCP/IP Priority (Metric)

The metric represents the "cost of transmission". A router determines the best route for transmission by choosing a path with the lowest "cost". RIP routing uses hop count as the measurement of cost, with a minimum of "1" for directly connected networks. The number must be between "1" and "15"; a number greater than "15" means the link is down. The smaller the number, the lower the "cost".

The metric sets the priority for the Prestige's routes to the Internet. If the routes have the same metric, the Prestige uses the following pre-defined priorities:

- 1 **WAN**: designated by the ISP or a static route (see [Chapter 10 on page 115](#))

2 Traffic Redirect (see [Section 5.9 on page 90](#))

For example, if **WAN** has a metric of "1" and **Traffic Redirect** has a metric of "2", the **WAN** connection acts as the primary default route. If the **WAN** route fails to connect to the Internet, the Prestige tries **Traffic Redirect** next.

5.5 WAN MAC Address

Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00-A0-C5-00-00-02.

You can configure the WAN port's MAC address by either using the factory default or cloning the MAC address from a computer on your LAN. Once it is successfully configured, the address will be copied to the "rom" file (ZyNOS configuration file). It will not change unless you change the setting or upload a different "rom" file.

Table 30 Example of Network Properties for LAN Servers with Fixed IP Addresses

Choose an IP address	192.168.1.2-192.168.1.32; 192.168.1.65-192.168.1.254.
Subnet mask	255.255.255.0
Gateway (or default route)	192.168.1.1(Prestige LAN IP)

5.6 Internet Connection

To change your Prestige's WAN ISP, IP and MAC settings, click **WAN** under **Network**. The screen differs by the encapsulation.

5.6.1 Ethernet Encapsulation

The screen shown next is for **Ethernet** encapsulation.

Figure 44 WAN: Ethernet Encapsulation

The following table describes the labels in this screen.

Table 31 WAN: Ethernet Encapsulation

LABEL	DESCRIPTION
Encapsulation	You must choose the Ethernet option when the WAN port is used as a regular Ethernet.
Service Type	Choose from Standard , Telstra (RoadRunner Telstra authentication method), RR-Manager (Roadrunner Manager authentication method), RR-Toshiba (Roadrunner Toshiba authentication method) or Telia Login . The following fields do not appear with the Standard service type.
WAN IP Address Assignment	
Get automatically from ISP	Select this option If your ISP did not assign you a fixed IP address. This is the default selection.
Use fixed IP address	Select this option If the ISP assigned a fixed IP address.
IP Address	Enter your WAN IP address in this field if you selected Use Fixed IP Address .
Remote IP Subnet Mask	Enter the Remote IP Subnet Mask (if your ISP gave you one) in this field.
Backup Gateway IP Address	Enter a Backup Gateway IP Address (if your ISP gave you one) in this field.
WAN MAC Address	

Table 31 WAN: Ethernet Encapsulation

LABEL	DESCRIPTION
Spoof WAN MAC Address	The MAC address section allows users to configure the WAN port's MAC address by either using the factory default or cloning the MAC address from a computer on your LAN. Clear the check box to use the factory assigned default MAC Address. Select this option and and click Clone MAC to clone the MAC address in the MAC Address field.
Clone MAC address	Enter the MAC address of the computer on the LAN whose MAC you are cloning. Once it is successfully configured, the address will be copied to the rom file (ZyNOS configuration file). It will not change unless you change the setting or upload a different ROM file.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

5.6.2 PPPoE Encapsulation

The Prestige supports PPPoE (Point-to-Point Protocol over Ethernet). PPPoE is an IETF standard (RFC 2516) specifying how a personal computer (PC) interacts with a broadband modem (DSL, cable, wireless, etc.) connection. The **PPP over Ethernet** option is for a dial-up connection using PPPoE.

For the service provider, PPPoE offers an access and authentication method that works with existing access control systems (for example RADIUS).

One of the benefits of PPPoE is the ability to let you access one of multiple network services, a function known as dynamic service selection. This enables the service provider to easily create and offer new IP services for individuals.

Operationally, PPPoE saves significant effort for both you and the ISP or carrier, as it requires no specific configuration of the broadband modem at the customer site.

By implementing PPPoE directly on the Prestige (rather than individual computers), the computers on the LAN do not need PPPoE software installed, since the Prestige does that part of the task. Furthermore, with NAT, all of the LANs' computers will have access.

The screen shown next is for **PPPoE** encapsulation.

Figure 45 WAN: PPPoE Encapsulation

The following table describes the labels in this screen.

Table 32 WAN: PPPoE Encapsulation

LABEL	DESCRIPTION
ISP Parameters for Internet Access	
Encapsulation	The PPP over Ethernet choice is for a dial-up connection using PPPoE. The Prestige supports PPPoE (Point-to-Point Protocol over Ethernet). PPPoE is an IETF standard (RFC 2516) specifying how a personal computer (PC) interacts with a broadband modem (i.e. xDSL, cable, wireless, etc.) connection. Operationally, PPPoE saves significant effort for both the end user and ISP/carrier, as it requires no specific configuration of the broadband modem at the customer site. By implementing PPPoE directly on the router rather than individual computers, the computers on the LAN do not need PPPoE software installed, since the router does that part of the task. Further, with NAT, all of the LAN's computers will have access.
Service Name	Type the PPPoE service name provided to you. PPPoE uses a service name to identify and reach the PPPoE server.
User Name	Type the User Name given to you by your ISP.
Password	Type the password associated with the User Name above.
Retype to Confirm	Type your password again to make sure that you have entered is correctly.
Nailed-Up Connection	Select Nailed-Up Connection if you do not want the connection to time out.

Table 32 WAN: PPPoE Encapsulation

LABEL	DESCRIPTION
Idle Timeout	This value specifies the time in seconds that elapses before the router automatically disconnects from the PPPoE server.
WAN IP Address Assignment	
Get automatically from ISP	Select this option If your ISP did not assign you a fixed IP address. This is the default selection.
Use fixed IP address	Select this option If the ISP assigned a fixed IP address.
My WAN IP Address	Enter your WAN IP address in this field if you selected Use Fixed IP Address .
Remote IP Address	Enter the Remote IP Address (if your ISP gave you one) in this field.
Remote IP Subnet Mask	Enter the Rmote IP subnet Mask in this field.
WAN MAC Address	
Spoof WAN MAC Address	The MAC address section allows users to configure the WAN port's MAC address by either using the factory default or cloning the MAC address from a computer on your LAN. Clear the check box to use the factory assigned default MAC Address. Select this option and and click Clone MAC to clone the MAC address in the MAC Address field.
Clone MAC address	Enter the MAC address of the computer on the LAN whose MAC you are cloning. Once it is successfully configured, the address will be copied to the rom file (ZyNOS configuration file). It will not change unless you change the setting or upload a different ROM file.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

5.6.3 PPTP Encapsulation

Point-to-Point Tunneling Protocol (PPTP) is a network protocol that enables secure transfer of data from a remote client to a private server, creating a Virtual Private Network (VPN) using TCP/IP-based networks.

PPTP supports on-demand, multi-protocol and virtual private networking over public networks, such as the Internet.

The screen shown next is for **PPTP** encapsulation.

Figure 46 PPTP Encapsulation

The following table describes the labels in this screen.

Table 33 PPTP Encapsulation

LABEL	DESCRIPTION
ISP Parameters for Internet Access	
Encapsulation	Point-to-Point Tunneling Protocol (PPTP) is a network protocol that enables secure transfer of data from a remote client to a private server, creating a Virtual Private Network (VPN) using TCP/IP-based networks. PPTP supports on-demand, multi-protocol, and virtual private networking over public networks, such as the Internet. The Prestige supports only one PPTP server connection at any given time. To configure a PPTP client, you must configure the User Name and Password fields for a PPP connection and the PPTP parameters for a PPTP connection.
User Name	Type the user name given to you by your ISP.

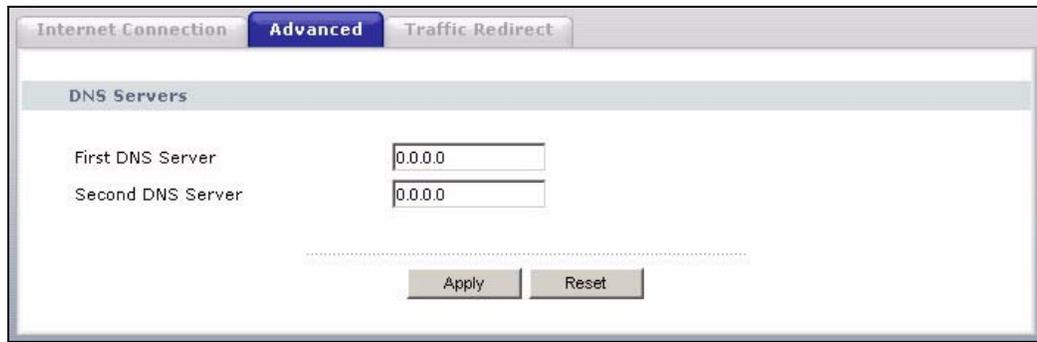
Table 33 PPTP Encapsulation

LABEL	DESCRIPTION
Password	Type the password associated with the User Name above.
Retype to Confirm	Type your password again to make sure that you have entered is correctly.
Nailed-up Connection	Select Nailed-Up Connection if you do not want the connection to time out.
Idle Timeout	This value specifies the time in seconds that elapses before the Prestige automatically disconnects from the PPTP server.
PPTP Configuration	
Get automatically from ISP	Select this option If your ISP did not assign you a fixed IP address. This is the default selection.
Use fixed IP address	Select this option If the ISP assigned a fixed IP address.
My IP Address	Type the (static) IP address assigned to you by your ISP.
My 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.
Server IP Address	Type the IP address of the PPTP server.
Connection ID/ Name	Type your identification name for the PPTP server.
WAN IP Address Assignment	
Get automatically from ISP	Select this option If your ISP did not assign you a fixed IP address. This is the default selection.
Use fixed IP address	Select this option If the ISP assigned a fixed IP address.
My WAN IP Address	Enter your WAN IP address in this field if you selected Use Fixed IP Address .
Remote IP Address	Enter the Remote IP Address (if your ISP gave you one) in this field.
Remote IP Subnet Mask	Enter the Rmote IP subnet Mask in this field.
WAN MAC Address	
Spoof WAN MAC Address	The MAC address section allows users to configure the WAN port's MAC address by either using the factory default or cloning the MAC address from a computer on your LAN. Clear the check box to use the factory assigned default MAC Address. Select this option and and click Clone MAC to clone the MAC address in the MAC Address field.
Clone MAC address	Enter the MAC address of the computer on the LAN whose MAC you are cloning. Once it is successfully configured, the address will be copied to the rom file (ZyNOS configuration file). It will not change unless you change the setting or upload a different ROM file.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

5.7 Advanced WAN Screen

To change your Prestige's advanced WAN settings, click the **WAN** link under Network, and the **Advanced** tab. The screen appears as shown.

Figure 47 Advanced



The following table describes the labels in this screen.

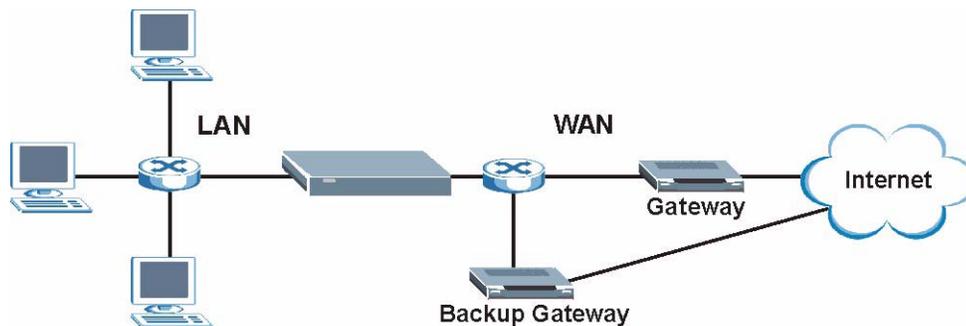
Table 34 Advanced

LABEL	DESCRIPTION
DNS Servers	
First DNS Server Second DNS Server	Enter the IP address(es) of the DNS server(s). If you do not configure a DNS server, you must know the IP address of a computer in order to access it.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

5.8 Traffic Redirect

Traffic redirect forwards WAN traffic to a backup gateway when the Prestige cannot connect to the Internet through its normal gateway. Connect the backup gateway on the WAN so that the Prestige still provides firewall protection.

Figure 48 Traffic Redirect WAN Setup



5.9 Traffic Redirect Screen

To change your Prestige's Traffic Redirect settings, click the **WAN** link under **Network** and the **Traffic Redirect** tab. The screen appears as shown.

Figure 49 WAN: Traffic Redirect

The following table describes the labels in this screen.

Table 35 Traffic Redirect

LABEL	DESCRIPTION
Active	Select this check box to have the Prestige use traffic redirect if the normal WAN connection goes down.
Backup Gateway IP Address	Type the IP address of your backup gateway in dotted decimal notation. The Prestige automatically forwards traffic to this IP address if the Prestige's Internet connection terminates.
Check WAN IP Address	Configuration of this field is optional. If you do not enter an IP address here, the Prestige will use the default gateway IP address. Configure this field to test your Prestige's WAN accessibility. Type the IP address of a reliable nearby computer (for example, your ISP's DNS server address). If you are using PPTP or PPPoE Encapsulation, type "0.0.0.0" to configure the Prestige to check the PVC (Permanent Virtual Circuit) or PPTP tunnel.
Fail Tolerance	Type the number of times your Prestige may attempt and fail to connect to the Internet before traffic is forwarded to the backup gateway.
Period (seconds)	Type the number of seconds for the Prestige to wait between checks to see if it can connect to the WAN IP address (Check WAN IP Address field) or default gateway. Allow more time if your destination IP address handles lots of traffic.
Timeout (seconds)	Type the number of seconds for your Prestige to wait for a ping response from the IP Address in the Check WAN IP Address field before it times out. The WAN connection is considered "down" after the Prestige times out the number of times specified in the Fail Tolerance field. Use a higher value in this field if your network is busy or congested.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

CHAPTER 6

LAN

This chapter describes how to configure LAN settings.

6.1 LAN Overview

Local Area Network (LAN) is a shared communication system to which many computers are attached. The LAN screens can help you configure a LAN DHCP server, manage IP addresses, and partition your physical network into logical networks.

6.1.1 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. This configuration leaves 31 IP addresses (excluding the Prestige itself) in the lower range for other server computers, for instance, servers for mail, FTP, TFTP, web, etc., that you may have.

6.1.2 System DNS Servers

Refer to the *IP Address and Subnet Mask* section in the **Wizard Connection** chapter.

6.2 LAN TCP/IP

The Prestige has built-in DHCP server capability that assigns IP addresses and DNS servers to systems that support DHCP client capability.

6.2.1 Factory LAN Defaults

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

- IP address of 192.168.1.1 with subnet mask of 255.255.255.0 (24 bits)
- DHCP server enabled with 32 client IP addresses starting from 192.168.1.33.

These parameters should work for the majority of installations. If your ISP gives you explicit DNS server address(es), read the embedded web configurator help regarding what fields need to be configured.

6.2.2 IP Address and Subnet Mask

Refer to the section about IP address and subnet mask in the **Wizard Setup** chapter for this information.

6.3 IP Screen

Click the **LAN** link under **Network** to open the **IP** screen.

Figure 50 LAN IP

The following table describes the labels in this screen.

Table 36 LAN IP

LABEL	DESCRIPTION
LAN TCP/IP	
IP Address	Type the IP address of your Prestige in dotted decimal notation 192.168.1.1 (factory default).
IP Subnet Mask	The subnet mask specifies the network number portion of an IP address. Your Prestige will automatically calculate the subnet mask based on the IP address that you assign. Unless you are implementing subnetting, use the subnet mask computed by the Prestige 255.255.255.0.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

CHAPTER 7

DHCP Server

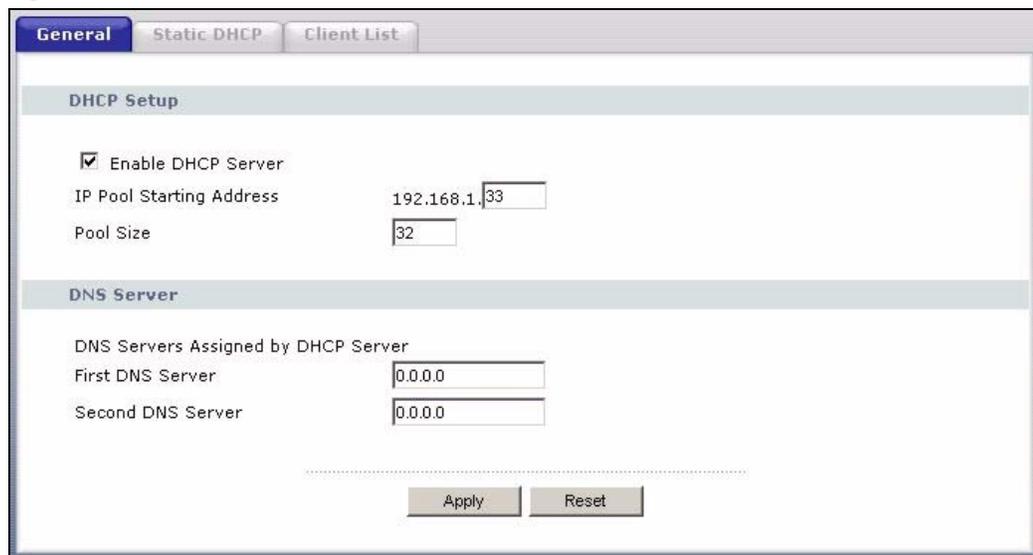
7.1 DHCP

DHCP (Dynamic Host Configuration Protocol, RFC 2131 and RFC 2132) allows individual clients to obtain TCP/IP configuration at start-up from a server. You can configure the Prestige as a DHCP server or disable it. When configured as a server, the Prestige provides the TCP/IP configuration for the clients. If DHCP service is disabled, you must have another DHCP server on your LAN, or else the computer must be manually configured.

7.2 DHCP Screen

Click the **DHCP Server** link under **Network** and the **General** tab. The following screen displays.

Figure 51 General



The screenshot shows the DHCP Server configuration interface with the following fields and controls:

- General** (selected tab), Static DHCP, Client List
- DHCP Setup**
 - Enable DHCP Server
 - IP Pool Starting Address: 192.168.1.33
 - Pool Size: 32
- DNS Server**
 - DNS Servers Assigned by DHCP Server
 - First DNS Server: 0.0.0.0
 - Second DNS Server: 0.0.0.0
- Buttons: Apply, Reset

The following table describes the labels in this screen.

Table 37 General

LABEL	DESCRIPTION
Enable DHCP Server	DHCP (Dynamic Host Configuration Protocol, RFC 2131 and RFC 2132) allows individual clients (computers) to obtain TCP/IP configuration at startup from a server. Leave the Enable DHCP Server check box selected unless your ISP instructs you to do otherwise. Clear it to disable the Prestige acting as a DHCP server. When configured as a server, the Prestige provides TCP/IP configuration for the clients. If not, DHCP service is disabled and you must have another DHCP server on your LAN, or else the computers must be manually configured. When set as a server, fill in the following four fields.
IP Pool Starting Address	This field specifies the first of the contiguous addresses in the IP address pool.
Pool Size	This field specifies the size, or count of the IP address pool.
DNS Servers Assigned by DHCP Server The Prestige passes a DNS (Domain Name System) server IP address (in the order you specify here) to the DHCP clients. The Prestige only passes this information to the LAN DHCP clients when you select the Enable DHCP Server check box. When you clear the Enable DHCP Server check box, DHCP service is disabled and you must have another DHCP server on your LAN, or else the computers must have their DNS server addresses manually configured.	
First DNS Server Second DNS Server	Enter the IP address(es) of the DNS server(s). If you do not configure a DNS server, you must know the IP address of a computer in order to access it.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

7.3 Static DHCP Screen

This table allows you to assign IP addresses on the LAN to specific individual computers based on their MAC addresses.

Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00-A0-C5-00-00-02.

To change your Prestige's Static DHCP settings, click the **DHCP Server** link under **Network** and the **Static DHCP** tab. The following screen displays.

Figure 52 Static DHCP

#	MAC Address	IP Address
1	00-00-00-00-00-00	192.168.1.0
2	00-00-00-00-00-00	192.168.1.0
3	00-00-00-00-00-00	192.168.1.0
4	00-00-00-00-00-00	192.168.1.0
5	00-00-00-00-00-00	192.168.1.0
6	00-00-00-00-00-00	192.168.1.0
7	00-00-00-00-00-00	192.168.1.0
8	00-00-00-00-00-00	192.168.1.0

The following table describes the labels in this screen.

Table 38 Static DHCP

LABEL	DESCRIPTION
#	This is the index number of the Static IP table entry (row).
MAC Address	Type the MAC address (with colons) of a computer on your LAN.
IP Address	Type the LAN IP address of a computer on your LAN.
Apply	Click Apply to save your changes back to the Prestige.
Reset	Click Reset to begin configuring this screen afresh.

7.4 Client List Screen

The DHCP table shows current DHCP client information (including **IP Address**, **Host Name** and **MAC Address**) of all network clients using the Prestige's DHCP server.

Configure this screen to always assign an IP address to a MAC address (and host name). Click the **DHCP Server** link under **Network** and the **Client List** tab.

Note: You can also view a read-only client list by clicking the **DHCP Table (Detail)** hyperlink in the **Status** screen.

The following screen displays.

Figure 53 Client List

#	IP Address	Host Name	MAC Address	Reserve
1	192.168.1.49	tw	00-00-E8-7C-14-80	<input type="checkbox"/>
2	192.168.1.59	x31	00-04-23-8E-4F-CF	<input type="checkbox"/>

The following table describes the labels in this screen.

Table 39 Client List

LABEL	DESCRIPTION
#	This is the index number of the host computer.
IP Address	This field displays the IP address relative to the # field listed above.
Host Name	This field displays the computer host name.
MAC Address	The MAC (Media Access Control) or Ethernet address on a LAN (Local Area Network) is unique to your computer (six pairs of hexadecimal notation). A network interface card such as an Ethernet adapter has a hardwired address that is assigned at the factory. This address follows an industry standard that ensures no other adapter has a similar address.
Reserve	Select this check box to have the Prestige always assign this IP address to this MAC address (and host name). You can select up to 8 entries in this table. After you click Apply , the MAC address and IP address also display in the Static DHCP screen (where you can edit them).
Apply	Click Apply to save your changes back to the Prestige.
Refresh	Click Refresh to reload the DHCP table.

CHAPTER 8

Network Address Translation (NAT)

This chapter discusses how to configure NAT on the Prestige.

8.1 NAT Overview

NAT (Network Address Translation - NAT, RFC 1631) is the translation of the IP address of a host in a packet. For example, the source address of an outgoing packet, used within one network is changed to a different IP address known within another network.

8.1.1 NAT Definitions

Inside/outside denotes where a host is located relative to the Prestige. For example, the computers of your subscribers are the inside hosts, while the web servers on the Internet are the outside hosts.

Global/local denotes the IP address of a host in a packet as the packet traverses a router. For example, the local address refers to the IP address of a host when the packet is in the local network, while the global address refers to the IP address of the host when the same packet is traveling in the WAN side.

Note that inside/outside refers to the location of a host, while global/local refers to the IP address of a host used in a packet. Thus, an inside local address (ILA) is the IP address of an inside host in a packet when the packet is still in the local network, while an inside global address (IGA) is the IP address of the same inside host when the packet is on the WAN side. The following table summarizes this information.

Table 40 NAT Definitions

TERM	DESCRIPTION
Inside	This refers to the host on the LAN.
Outside	This refers to the host on the WAN.
Local	This refers to the packet address (source or destination) as the packet travels on the LAN.
Global	This refers to the packet address (source or destination) as the packet travels on the WAN.

Note: NAT never changes the IP address (either local or global) of an outside host.

8.1.2 What NAT Does

In the simplest form, NAT changes the source IP address in a packet received from a subscriber (the inside local address) to another (the inside global address) before forwarding the packet to the WAN side. When the response comes back, NAT translates the destination address (the inside global address) back to the inside local address before forwarding it to the original inside host. Note that the IP address (either local or global) of an outside host is never changed.

The global IP addresses for the inside hosts can be either static or dynamically assigned by the ISP. In addition, you can designate servers (for example a web server and a telnet server) on your local network and make them accessible to the outside world. If you do not define any servers (for Many-to-One and Many-to-Many Overload mapping), NAT offers the additional benefit of firewall protection. With no servers defined, your Prestige filters out all incoming inquiries, thus preventing intruders from probing your network. For more information on IP address translation, refer to *RFC 1631, The IP Network Address Translator (NAT)*.

8.1.3 How NAT Works

Each packet has two addresses – a source address and a destination address. For outgoing packets, the ILA (Inside Local Address) is the source address on the LAN, and the IGA (Inside Global Address) is the source address on the WAN. For incoming packets, the ILA is the destination address on the LAN, and the IGA is the destination address on the WAN. NAT maps private (local) IP addresses to globally unique ones required for communication with hosts on other networks. It replaces the original IP source address (and TCP or UDP source port numbers for Many-to-One and Many-to-Many Overload NAT mapping) in each packet and then forwards it to the Internet. The Prestige keeps track of the original addresses and port numbers so incoming reply packets can have their original values restored. The following figure illustrates this.