



# Your PDF Guides

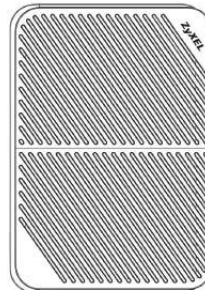
You can read the recommendations in the user guide, the technical guide or the installation guide for ZYXEL P-660HN-51. You'll find the answers to all your questions on the ZYXEL P-660HN-51 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual ZYXEL P-660HN-51**  
**User guide ZYXEL P-660HN-51**  
**Operating instructions ZYXEL P-660HN-51**  
**Instructions for use ZYXEL P-660HN-51**  
**Instruction manual ZYXEL P-660HN-51**

## P-660HN-51

*802.11n Wireless ADSL2+ 4-port Gateway*

### User's Guide



#### Default Login Details

IP Address	http://192.168.1.1
User Name	admin
Password	1234

Firmware Version 1.10  
Edition 1, 11/2010

[www.zyxel.com](http://www.zyxel.com)

# ZyXEL

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ZyXEL Communications Corporation



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Possible causes are no response from a DHCP server, no PPPoE response, PPPoE authentication failed. The ZyXEL Device does not have an IP connection. Off Refer to the Quick Start Guide for information on hardware connections. 1.7 The RESET Button If you forget your password or cannot access the web configurator, you will need to use the RESET button at the back of the device to reload the factory-default configuration file. This means that you will lose all configurations that you had previously and the password will be reset to "1234". 1.7.1 Using the RESET Button 1 2 Make sure the POWER LED is on (not blinking). To set the device back to the factory default settings, press the RESET button for ten seconds or until the POWER LED begins to blink and then release it. When the POWER LED begins to blink, the defaults have been restored and the device restarts. 26 P-660HN-51 User's Guide CHAPTER 2.

1 Overview 2 The Web Configurator The web configurator is an HTML-based management interface that allows easy device setup and management via Internet browser. Use Internet Explorer 6.0 and later versions or Mozilla Firefox 3 and later versions or Safari 2.0 and later versions. The recommended screen resolution is 1024 by 768 pixels. In order to use the web configurator you need to allow: · Web browser pop-up windows from your device. Web pop-up blocking is enabled by default in Windows XP SP (Service Pack) 2. · JavaScript (enabled by default). · Java permissions (enabled by default). See Appendix B on page 311 if you need to make sure these functions are allowed in Internet Explorer.

2.1.1 Accessing the Web Configurator 1 Make sure your ZyXEL Device hardware is properly connected (refer to the Quick Start Guide). Launch your web browser. Type "192.

168.1.1" as the URL. 2 3 P-660HN-51 User's Guide 27 Chapter 2 The Web Configurator A password screen displays. To access the administrative web configurator and manage the ZyXEL Device, type the default username admin and password 1234 in the password screen and click Login.

If you have changed the password, enter your password and click Login. For security reasons, you will be temporarily denied access to the ZyXEL Device for a period of time (15 minutes by default) if you have entered the incorrect username and password for a certain number of times (three times by default). 4 Figure 4 Password Screen 5 A welcome screen appears showing a summary of your last login, such as the time, number of failed login attempts, and when the password expires. It also shows if you are logged on from an IP address. Select Show this page next time to see the welcome screen on your next login. Otherwise, deselect it. Click Continue. Figure 5 Welcome Screen 28 P-660HN-51 User's Guide Chapter 2 The Web Configurator The Network Map page appears. 6 Figure 6 Network Map Note: For security reasons, the ZyXEL Device automatically logs you out if you do not use the web configurator for ten minutes (default). If this happens, log in again.

7 Click Status to display the Status screen, where you can view the ZyXEL Device's interface and system information. 2.2 The Web Configurator Layout Figure 7 The Web Configurator Layout B A C P-660HN-51 User's Guide 29 Chapter 2 The Web Configurator As illustrated above, the web configurator layout is divided into these parts: · A - title bar · B - main window · C - navigation panel 2.2.1 Title Bar The title bar provides some icons in the upper right corner. Click this icon to log out of the web configurator. 2.2.2 Main Window The main window displays information and configuration fields. It is discussed in the rest of this document.

After you click Status on the Network Map page, the Status screen is displayed. See Chapter 3 on page 37 for more information about the Status screen. 2.2.3 Navigation Panel Use the menu items on the navigation panel to open screens to configure ZyXEL Device features.

The following tables describe each menu item. 2 Table 2 Navigation Panel Summary LINK Network Map Network Settings Broadband Broadband Use this screen to view and configure ISP parameters, WAN IP address assignment, and other advanced properties. You can also add new WAN connections. TAB FUNCTION This screen shows the network status of the ZyXEL Device and computers/devices connected to it. 30 P-660HN-51 User's Guide Chapter 2 The Web Configurator Table 2 Navigation Panel Summary (continued) LINK Wireless TAB General More AP MAC Authentication WPS WMM WDS Others FUNCTION Use this screen to configure the wireless LAN settings and WLAN authentication/security settings.

Use this screen to configure multiple BSSs on the ZyXEL Device. Use this screen to block or allow wireless traffic from wireless devices of certain SSIDs and MAC addresses to the ZyXEL Device. Use this screen to configure and view your WPS (Wi-Fi Protected Setup) settings. Use this screen to enable or disable Wi-Fi MultiMedia (WMM). Use this screen to set up Wireless Distribution System (WDS) links to other access points. Use this screen to configure advanced wireless settings. Use this screen to configure LAN TCP/IP settings, and other advanced properties. Use this screen to assign specific IP addresses to individual MAC addresses. Use this screen to enable the UPnP function. Use this screen to make your local servers visible to the outside world.

Use this screen to configure servers behind the ZyXEL Device. Use this screen to change your ZyXEL Device's port triggering settings. Use this screen to configure a default server which receives packets from ports that are not specified in the Port Forwarding screen. Use this screen to enable or disable SIP ALG. Use this screen to limit the number of NAT sessions all clients can establish. Use this screen to configure the ZyXEL Device to give exclusive access to specific devices or exclude specific devices from accessing the ZyXEL Device. Use this screen to configure the security level of your firewall. Use this screen to add or remove predefined Internet services and configure firewall rules. Use this screen to enable specific traffic directions for network services. Use this screen to enable specific traffic directions for network services.

Use this screen to view a summary list of certificates and manage certificates and certification requests. Use this screen to view and manage the list of the trusted CAs. Use this screen to view the status of IPSec tunnels. Use this screen to add and configure IPSec tunnels. Home Networking LAN Setup Static DHCP UPnP NAT Port Forwarding Applications Port Triggering DMZ ALG Sessions Security Settings MAC Filter MAC Filter Firewall General Protocol Access Control Remote MGMT Certificates Remote MGMT Local Certificates Trusted CA Status Settings IPSec VPN P-660HN-51 User's Guide 31 Chapter 2 The Web Configurator Table 2 Navigation Panel Summary (continued) LINK Parental Control Advanced Routing DNS Setting Routing DNS Entry Dynamic DNS QoS General Queue Setup Class Setup Policer Setup Monitor TR-069 Client Time Setting Scheduler Rules Policy Forwarding TR-069 Client Time Setting Scheduler Rules Policy Forwarding ARP Table System Log Security Log Traffic Status WAN LAN Maintenance Users Configuration Logs Setting Firmware Upgrade Configuration Reboot Users Configuration Logs Setting Firmware Upgrade Configuration Reboot Use this screen to add and configure user accounts on the ZyXEL Device.



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Use this screen to select which logs and/or immediate alerts your device is to record. You can also set it to e-mail the logs to you. Use this screen to upload firmware to your device. Use this screen to backup and restore your device's configuration (settings) or reset the factory default settings. Use this screen to reboot the ZyXEL Device without turning the power off.

Use this screen to view and set up static routes on the ZyXEL Device. Use this screen to view and configure DNS entries. Use this screen to allow a static hostname alias for a dynamic IP address. Use this screen to enable QoS and traffic prioritizing. You can also configure the QoS rules and actions. Use this screen to configure QoS queues. Use this screen to define a classifier. Use these screens to configure QoS policers. Use this screen to view QoS packets statistics. Use this screen to configure the ZyXEL Device to be managed by an Auto Configuration Server (ACS).

Use this screen to change your ZyXEL Device's time and date. Use this screen to configure the days and times when a configured restriction (such as parental control) is enforced. Use this screen to configure policy routing on the ZyXEL Device. TAB Parental Control FUNCTION Use this screen to block web sites with the specific URL. System Monitor ARP Table Log Use this screen to view the ARP table. It displays the IP and MAC address of each DHCP connection. Use this screen to view the status of events that occurred to the ZyXEL Device. You can export or e-mail the logs. Use this screen to view the login record of the ZyXEL Device. You can export or e-mail the logs.

Use this screen to view the status of all network traffic going through the WAN port of the ZyXEL Device. Use this screen to view the status of all network traffic going through the LAN ports of the ZyXEL Device. 32 P-660HN-51 User's Guide Chapter 2 The Web Configurator Table 2 Navigation Panel Summary (continued) LINK Diagnostic TAB Ping & TraceRoute & Nslookup OAM Ping FUNCTION Use this screen to identify problems with the DSL connection.

You can use Ping, TraceRoute, or Nslookup to help you identify problems. Use this screen to send an ATM OAM (Operation, Administration and Maintenance) packet to verify the connectivity of a specific PVC.

P-660HN-51 User's Guide 33 Chapter 2 The Web Configurator 34 P-660HN-51 User's Guide CHAPTER 3.1 Overview 3 Network Map and Status Screens

After you log into the Web Configurator, the Network Map screen appears. This shows the network connection status of the ZyXEL Device and clients connected to it. You can use the Status screen to look at the current status of the ZyXEL Device, system resources, and interfaces (LAN, WAN, and WLAN). 3.

2 The Network Map Screen Use this screen to view the network connection status of the device and its clients. A warning message appears if there is a connection problem. P-660HN-51 User's Guide 35 Chapter 3 Network Map and Status Screens If you prefer to view the status in a list, click List View in the Viewing Mode selection box. You can configure how often you want the ZyXEL Device to update this screen in Refresh Interval. Figure 8 Network Map: Icon View Figure 9 Network Map: List View In Icon View, if you want to view information about a client, click the client's name and Info. Click the IP address if you want to change it. If you want to change the name or icon of the client, click Change name/icon. In List View, you can also view the client's information and click on the IP address if you want to change it. 36 P-660HN-51 User's Guide Chapter 3 Network Map and Status Screens 3.3 The Status Screen Use this screen to view the status of the ZyXEL Device.

Click Network Map > Status to open this screen. Figure 10 Status Screen Each field is described in the following table. Table 3 Status Screen LABEL DESCRIPTION Refresh Interval Select how often you want the ZyXEL Device to update this screen. Device Information Host Name Model Number Firmware Version WAN Information MAC Address This shows the WAN Ethernet adapter MAC (Media Access Control) Address of your device. This field is available only when your WAN type is IPoE or PPPoE. IP Address This field displays the current IP address of the ZyXEL Device in the WAN. This field displays the ZyXEL Device system name. It is used for identification. This shows the model number of your ZyXEL Device. This is the current version of the firmware inside the device.

P-660HN-51 User's Guide 37 Chapter 3 Network Map and Status Screens Table 3 Status Screen (continued) LABEL IP Subnet Mask DESCRIPTION This field displays the current subnet mask in the WAN. This field is available only when your WAN type is IPoE or IPoA. WAN Type LAN Information MAC Address IP Address IP Subnet Mask DHCP This field displays the current IP address of the ZyXEL Device in the LAN. This is the current IP address of the ZyXEL Device in the LAN.

This is the current subnet mask in the LAN. This field displays what DHCP services the ZyXEL Device is providing to the LAN. Choices are: Server - The ZyXEL Device is a DHCP server in the LAN. It assigns IP addresses to other computers in the LAN. Relay - The ZyXEL Device acts as a surrogate DHCP server and relays DHCP requests and responses between the remote server and the clients.

None - The ZyXEL Device is not providing any DHCP services to the LAN. WLAN Information MAC Address Status Name (SSID) Channel Security Mode 802.11 Mode WPS Interface Status Interface This column displays each interface the ZyXEL Device has. This shows the wireless adapter MAC (Media Access Control) Address of your device. This displays whether WLAN is activated. This is the descriptive name used to identify the ZyXEL Device in a wireless LAN.

This is the channel number used by the ZyXEL Device now. This displays the type of security mode the ZyXEL Device is using in the wireless LAN. This displays the type of 802.11 mode the ZyXEL Device is using in the wireless LAN.

This displays whether WPS is activated. 38 P-660HN-51 User's Guide Chapter 3 Network Map and Status Screens Table 3 Status Screen (continued) LABEL Status DESCRIPTION This field indicates whether or not the ZyXEL Device is using the interface. For the DSL interface, this field displays Down (line is down), Up (line is up or connected) if you're using Ethernet encapsulation and Down (line is down), Up (line is up or connected), Idle (line (ppp) idle), Dial (starting to trigger a call) and Drop (dropping a call) if you're using PPPoE encapsulation. For the LAN interface, this field displays Up when the ZyXEL Device is using the interface and Down when the ZyXEL Device is not using the interface. For the WLAN interface, it displays Active when WLAN is enabled or InActive when WLAN is disabled. Rate For the LAN interface, this displays the port speed and duplex setting.



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For the DSL interface, it displays the downstream and upstream transmission rate. For the WLAN interface, it displays the maximum transmission rate when WLAN is enabled or N/A when WLAN is disabled. System Status System Up Time Current Date/Time This field displays how long the ZyXEL Device has been running since it last started up. The ZyXEL Device starts up when you plug it in, when you restart it (Maintenance > Reboot), or when you reset it.

This field displays the current date and time in the ZyXEL Device. You can change this in Advanced > Time Setting. This field displays what percentage of the ZyXEL Device's processing ability is currently used. When this percentage is close to 100%, the ZyXEL Device is running at full load, and the throughput is not going to improve anymore. If you want some applications to have more throughput, you should turn off other applications (for example, using QoS; see Chapter 17 on page 211).

This field displays what percentage of the ZyXEL Device's memory is currently used. Usually, this percentage should not increase much. If memory usage does get close to 100%, the ZyXEL Device is probably becoming unstable, and you should restart the device. See Section 28.2 on page 267, or turn off the device (unplug the power) for a few seconds.

System Resource CPU Usage Memory Usage P-660HN-51 User's Guide 39 Chapter 3 Network Map and Status Screens 40 P-660HN-51 User's Guide CHAPTER 4.1 Overview 4 Tutorials This chapter shows you how to use the ZyXEL Device's various features. · Setting Up Your DSL Connection Using PPPoE, see page 41 · Setting Up a Secure Wireless Network, see page 44 · Setting Up Multiple Wireless Groups, see page 52 · Configuring Static Route for Routing to Another Network, see page 55 · Access the ZyXEL Device Using DDNS, see page 58 4.2 Setting Up Your DSL Connection Using PPPoE This tutorial shows you how to set up your Internet connection using the Web Configurator. If you connect to the Internet through a DSL connection, use the information from your Internet Service Provider (ISP) to configure the ZyXEL Device. Be sure to contact your service provider for any information you need to configure the Broadband screens. 1 Click Network Settings > Broadband to open the following screen. Click Add new WAN Interface. 2 In this example, the DSL connection has the following information. P-660HN-51 User's Guide 41 Chapter 4 Tutorials General Connection Name Connection Mode Encapsulation ATM PVC Configuration VPI/VCI Encapsulation Mode Service Category Account Information PPP User Name PPP Password PPPoE Service Name Static IP Address Others 1234@DSL-Ex.

com ABCDEF! My DSL 192.168.1.32 PPPoE Passthrough: Disabled NAT: Enabled IGMP Multicast Proxy: Enabled Apply as Default Gateway: Enable Static DNS: Server 1: 192.168.1.254 Server 2: 192.168.1.253 36/48 LLC/SNAP-Bridging UBR without PCR MyDSLConnection Routing PPPoE 3 Select the Active check box.

Enter the General and ATM PVC Configuration settings as provided above. Choose the Encapsulation specified by your DSL service provider. For this example, the service provider requires a username and password to establish Internet connection. Therefore, select PPPoE as the WAN encapsulation type. 4 5 Enter the account information provided to you by your DSL service provider.

Configure this rule as your default Internet connection by selecting the Apply as Default Gateway check box. Then select DNS as Static and enter the DNS server addresses provided to you, such as 192.168.1.254 (DNS server1)/ 192.

168.1.253 (DNS server2). 42 P-660HN-51 User's Guide Chapter 4 Tutorials Click Apply to save your settings. 6 7 You should see a summary of your new DSL connection setup in the Broadband screen as follows. P-660HN-51 User's Guide 43 Chapter 4 Tutorials Try to connect to a website, such as zyxel.com to see if you have correctly set up your Internet connection. Be sure to contact your service provider for any information you need to configure the WAN screens. 4.3 Setting Up a Secure Wireless Network This tutorial is an example of setting up a wireless network to have wireless Internet access.

In this wireless network, the ZyXEL Device serves as an access point (AP), and the notebook is the wireless client. The wireless client can access the Internet through the AP. You have to configure the wireless network settings on the ZyXEL Device. You can set up a wireless network using WPS (Section 4.3.2 on page 46) or manual configuration (Section 4.3.3 on page 51). 4.3.

1 Configuring the Wireless Network Settings This example uses the following parameters to set up a wireless network. SSID Security Mode Pre-Shared Key 802.11 Mode Example WPA-PSK DoNotStealMyWirelessNetwork 802.11b/g/n Mixed 1 2 3 Click Network Settings > Wireless to open the General screen. Select Enable to activate the wireless network.

Enter the SSID name in Wireless Network Name. 44 P-660HN-51 User's Guide Chapter 4 Tutorials Select More Secure as the security level and WPA-PSK as the security mode. Configure the screen using the provided parameters (see page 44). Click Apply. 4 5 Go to the Wireless > Others screen and select 802.11b/g/n Mixed in the 802.11 Mode field. Click Apply. You can now use the WPS feature to establish a wireless connection between your notebook and the ZyXEL Device (see Section 4.3.2 on page 46). You can also use P-660HN-51 User's Guide 45 Chapter 4 Tutorials the notebook's wireless client to search for the ZyXEL Device (see Section 4.3.3 on page 51). 4.

3.2 Using WPS This section shows you how to set up a wireless network using WPS. It uses the ZyXEL Device as the AP and ZyXEL NWD210N as the wireless client which connects to the notebook. If your wireless devices display the WPS logo, you can use Wi-Fi Protected Setup (WPS) to add wireless devices to your wireless network. The ZyXEL Device's WPS function must be enabled before using WPS. Log into ZyXEL Device's web configurator and go to the Network Settings > Wireless > WPS screen. Enable the WPS function and click Apply. There are three WPS methods to set up the wireless client settings: Method 1- Push Button Configuration (PBC) - simply press a button. This is the easier of the two methods. Method 2- Register Wireless Client's PIN Number - Both the ZyXEL Device and the wireless client has a Personal Identification Number (PIN).

Enter the wireless client's PIN number and register it on the ZyXEL Device to download the wireless network settings from the ZyXEL Device. Method 3- Enter AP's PIN Number in Wireless Client - Configure a PIN number on the ZyXEL Device. Enter the ZyXEL Device's PIN number and register it on the wireless client. 46 P-660HN-51 User's Guide Chapter 4 Tutorials Method 1: Push Button Configuration (PBC) 1 Make sure that your ZyXEL Device is turned on and your notebook is within the cover range of the wireless signal.



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Make sure that you have installed the wireless client driver and utility in your notebook.

In the wireless client utility, go to the WPS setting page. Enable WPS and press the WPS button (Start or WPS button). Push and hold the WPS button located on the ZyXEL Device's front panel for 5 to 10 seconds. The WLAN/WPS LED starts blinking orange. Alternatively, you can log into ZyXEL Device's web configurator and go to the Network Settings > Wireless > WPS screen.

Click the Connect button. 2 3 4 Note: Your ZyXEL Device has a WLAN/WPS button located on its front panel as well as a Connect button in its configuration utility. Both buttons have exactly the same function: you can use one or the other. Note: It doesn't matter which button is pressed first. You must press the second button within two minutes of pressing the first one. The ZyXEL Device sends the proper configuration settings to the wireless client. This may take up to two minutes. The wireless client is then able to communicate with the ZyXEL Device securely. P-660HN-51 User's Guide 47 Chapter 4 Tutorials The following figure shows you an example of how to set up a wireless network and its security by pressing a button on both ZyXEL Device and wireless client. Example WPS Process: PBC Method Wireless Client ZyXEL Device WLAN WPS WITHIN 2 MINUTES Press and hold for 5 -10 seconds SECURITY INFO COMMUNICATION 48 P-660HN-51 User's Guide Chapter 4 Tutorials Method 2: Register Wireless Client's PIN Number When you use the PIN configuration method, you need to use both the ZyXEL Device's web configurator and the wireless client's utility.

1 Launch your wireless client's configuration utility. Go to the WPS settings and select the PIN method to get the wireless client's PIN number. Log into the web configurator and go to the Network Settings > Wireless > WPS screen. Enter the PIN number of the wireless client and click the Register button. Activate WPS function on the wireless client utility screen within two minutes. 2 3 The ZyXEL Device authenticates the wireless client and sends the proper configuration settings to the wireless client. This may take up to two minutes. The wireless client is then able to communicate with the ZyXEL Device securely. P-660HN-51 User's Guide 49 Chapter 4 Tutorials The following figure shows you how to set up a wireless network and its security on a ZyXEL Device and a wireless client by using PIN method. Example WPS Process: PIN Method Wireless Client ZyXEL Device WITHIN 2 MINUTES Authentication by PIN SECURITY INFO COMMUNICATION Method 3- Enter AP's PIN Number in Wireless Client 1 Log into the web configurator and go to the Network Settings > Wireless > WPS screen.

Click the Release Configuration button to release all wireless settings on the ZyXEL Device. 2 50 P-660HN-51 User's Guide Chapter 4 Tutorials Copy the PIN number of the ZyXEL Device shown in step 2 of Method 3 . You can click on the Generate New PIN Number button if you want the ZyXEL Device to auto-generate a new PIN number. Enter the PIN number and register it on the wireless client's WPS setting. Activate WPS function on the wireless client utility screen within two minutes.

3 4 5 The wireless client authenticates the ZyXEL Device and sends the proper configuration settings to the ZyXEL Device. This may take up to two minutes. The ZyXEL Device is then able to communicate with the wireless client securely. 4.3.

3 Without WPS Use the wireless adapter's utility installed on the notebook to search for the "Example" SSID. Then enter the "DoNotStealMyWirelessNetwork" pre-shared key to establish an wireless Internet connection. Note: The ZyXEL Device supports IEEE 802.11b and IEEE 802.11g wireless clients. Make sure that your notebook or computer's wireless adapter supports one of these standards. P-660HN-51 User's Guide 51 Chapter 4 Tutorials 4.4 Setting Up Multiple Wireless Groups You want to create different wireless network groups for different types of users in your company as shown in the following figure. Each group has its own SSID and security mode. Company VIP Guest · Employees in the company will use a general Company wireless network group.

· Higher management level and important visitors will use the VIP group. · Visiting guests will use the Guest group, which has a lower security mode. Follow the parameters below to set up the wireless network groups. COMPANY SSID Security Level Security Mode Pre-Shared Key Company More Secure WPA2-PSK ForCompanyOnly VIP VIP More Secure WPA2-PSK ForVIPOnly GUEST Guest Basic Static WEP Guest 52 P-660HN-51 User's Guide Chapter 4 Tutorials Click Network Settings > Wireless to open the General screen. Use this screen to set up the company's general wireless network group. Configure the screen using the provided parameters and click Apply. 1 2 Click Network Settings > Wireless > More AP to open the following screen. Click the Edit icon to configure the second wireless network group. P-660HN-51 User's Guide 53 Chapter 4 Tutorials Configure the screen using the provided parameters and click Apply. 3 4 In the More AP screen, click the Edit icon to configure the third wireless network group.

54 P-660HN-51 User's Guide Chapter 4 Tutorials Configure the screen using the provided parameters and click Apply. 5 6 Check the status of VIP and Guest in the More AP screen. The yellow bulbs signify that the SSIDs are active and ready for wireless access. 4.5 Configuring Static Route for Routing to Another Network In order to extend your Intranet and control traffic flowing directions, you may connect a router to the ZyXEL Device's LAN.

The router may be used to separate two department networks. This tutorial shows how to configure a static routing rule for two network routings. P-660HN-51 User's Guide 55 Chapter 4 Tutorials In the following figure, router R is connected to the ZyXEL Device's LAN. R connects to two networks, N1 (192.168.

1.x/24) and N2 (192.168.10.x/24). If you want to send traffic from computer A (in N1 network) to computer B (in N2 network), the traffic is sent to the ZyXEL Device's WAN default gateway by default. In this case, B will never receive the traffic. N1 A R N2 B You need to specify a static routing rule on the ZyXEL Device to specify R as the router in charge of forwarding traffic to N2. In this case, the ZyXEL Device routes traffic from A to R and then R routes the traffic to B. N1 A R N2 B 56 P-660HN-51 User's Guide Chapter 4 Tutorials This tutorial uses the following example IP settings: Table 4 IP Settings in this Tutorial DEVICE / COMPUTER The ZyXEL Device's WAN The ZyXEL Device's LAN A R's N1 R's N2 B IP ADDRESS 172.



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16.1.1 192.168.1.1 192.168.1.34 192.168.1.253 192.168.10.2 192.

168.10.33 To configure a static route to route traffic from N1 to N2: 1 2 3 Log into the ZyXEL Device's Web Configurator in advanced mode. Click Advanced > Routing. Click Add New Static Route Entry in the Static Route screen.

4 Configure the Static Route Setup screen using the following settings: 4a 4b Select the Active check box. Enter the Route Name as R. Type 192.168.10.0 and subnet mask 255.255.255.0 for the destination, N2. Type 192.

168.1.253 (R's N1 address) in the Gateway IP Address field. 4c 4a Click Apply. P-660HN-51 User's Guide 57 Chapter 4 Tutorials Now B should be able to receive traffic from A. You may need to additionally configure B's firewall settings to allow specific traffic to pass through. 4.6 Access the ZyXEL Device Using DDNS If you connect your ZyXEL Device to the Internet and it uses a dynamic WAN IP address, it is inconvenient for you to manage the device from the Internet. The ZyXEL Device's WAN IP address changes dynamically. Dynamic DNS (DDNS) allows you to access the ZyXEL Device using a domain name.

<http://zyxelrouter.dyndns.org> A w.x.y.

z a.b.c.d To use this feature, you have to apply for DDNS service at [www.dyndns.org](http://www.dyndns.org).

org. This tutorial shows you how to: · Registering a DDNS Account on [www.dyndns.org](http://www.dyndns.org) · Configuring DDNS on Your ZyXEL Device · Testing the DDNS Setting Note: If you have a private WAN IP address, then you cannot use DDNS. 4.6.1 Registering a DDNS Account on [www.dyndns.org](http://www.dyndns.org) 1 2 Open a browser and type <http://www.dyndns.org>.

org. Apply for a user account. This tutorial uses UserName1 and 12345 as the username and password. Log into [www.dyndns.org](http://www.dyndns.org) using your account. Add a new DDNS host name. This tutorial uses the following settings as an example. · Hostname: [zyxelrouter.dyndns.org](http://zyxelrouter.dyndns.org).

org · Service Type: Host with IP address 3 4 58 P-660HN-51 User's Guide Chapter 4 Tutorials · IP Address: Enter the WAN IP address that your ZyXEL Device is currently using. You can find the IP address on the ZyXEL Device's Web Configurator Status page. Then you will need to configure the same account and host name on the ZyXEL Device later. 4.6.

2 Configuring DDNS on Your ZyXEL Device Configure the following settings in the Advanced > DNS Setting > Dynamic DNS screen. · Select Enable Dynamic DNS. · Select DynDNS.org as the service provider. · Type [zyxelrouter.dyndns.org](http://zyxelrouter.dyndns.org) in the Host Name field. · Enter the user name (UserName1) and password (12345). Click Apply. 4.6.3 Testing the DDNS Setting Now you should be able to access the ZyXEL Device from the Internet. To test this: 1 Open a web browser on the computer (using the IP address a.b.c.

d) that is connected to the Internet. Type <http://zyxelrouter.dyndns.org> and press [Enter]. The ZyXEL Device's login page should appear. You can then log into the ZyXEL Device and manage it. 2 3 P-660HN-51 User's Guide 59 Chapter 4 Tutorials 60 P-660HN-51 User's Guide PART II Technical Reference 61 62 CHAPTER 5.1 Overview 5 Broadband This chapter describes how to configure WAN settings from the Broadband screen. Use this screen to configure your ZyXEL Device for Internet access. A WAN (Wide Area Network) connection is an outside connection to another network or the Internet.

It connects your private networks (such as a LAN (Local Area Network) and other networks, so that a computer in one location can communicate with computers in other locations. Figure 11 LAN and WAN LAN WAN 5.1.1 What You Need to Know Encapsulation Method Encapsulation is used to include data from an upper layer protocol into a lower layer protocol. To set up a WAN connection to the Internet, you need to use the same encapsulation method used by your ISP (Internet Service Provider).

If your ISP offers a dial-up Internet connection using PPPoE (PPP over Ethernet) or PPPoA, they should also provide a username and password (and service name) for user authentication. P-660HN-51 User's Guide 63 Chapter 5 Broadband WAN IP Address The WAN IP address is an IP address for the ZyXEL Device, which makes it accessible from an outside network. It is used by the ZyXEL Device to communicate with other devices in other networks. It can be static (fixed) or dynamically assigned by the ISP each time the ZyXEL Device tries to access the Internet. If your ISP assigns you a static WAN IP address, they should also assign you the subnet mask and DNS server IP address(es) (and a gateway IP address if you use the Ethernet encapsulation method). Multicast Traditionally, IP packets are transmitted in one of either two ways - Unicast (1 sender - 1 recipient) or Broadcast (1 sender - everybody on the network). Multicast delivers IP packets to a group of hosts on the network - not everybody and not just one. IGMP IGMP (Internet Group Multicast Protocol) is a network-layer protocol used to establish membership in a Multicast group - it is not used to carry user data. There are three versions of IGMP. IGMP version 2 and 3 are improvements over version 1, but IGMP version 1 is still in wide use. Finding Out More See Section 5.3 on page 73 for technical background information on WAN. 5.1.2 Before You Begin You need to know your Internet access settings such as encapsulation and WAN IP address.

Get this information from your ISP. 64 P-660HN-51 User's Guide Chapter 5 Broadband 5.2 The Broadband Screen Use this screen to change your ZyXEL Device's Internet access settings. Click Network Settings> Broadband from the menu. The summary table shows you the configured WAN services (connections) on the ZyXEL Device. Figure 12 Network Settings > Broadband The following table describes the labels in this screen. Table 5 Network Settings > Broadband LABEL Add new WAN interface # Status Name Encapsulation VPI/VCI ATM QoS IGMP Proxy NAT Default Gateway Modify DESCRIPTION Click this button to create a new connection. This is the index number of the entry. This is the status of the connection. This is the service name of the connection.

This is the method of encapsulation used by this connection. This is the Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) numbers configured for this WAN connection. This is the type of ATM QoS of the connection. This shows whether the ZyXEL Device act as an IGMP proxy on this connection. This shows whether NAT is activated or not for this connection.

This shows whether the ZyXEL Device use the WAN interface of this connection as the system default gateway. Click the Edit icon to configure the WAN connection. Click the Delete icon to remove the WAN connection. P-660HN-51 User's Guide 65 Chapter 5 Broadband 5.2.

1 Add/Edit Broadband Click Add new WAN interface in the Broadband screen or the Edit icon next to an existing WAN interface to configure a WAN connection. The screen differs according to the mode and encapsulation you choose.



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This screen displays when you select the Routing mode and PPPoE encapsulation. The fields in the screen may differ depending on the type of encapsulation you use. 66 P-660HN-51 User's Guide Chapter 5 Broadband Figure 13 Broadband: Add/Edit: Routing Mode The following table describes the labels in this screen. Table 6 Broadband: Add/Edit: Routing Mode LABEL General Active Name Select this to activate the WAN configuration settings. Specify a descriptive name of up to 15 alphanumeric characters for this connection. DESCRIPTION P-660HN-51 User's Guide 67 Chapter 5 Broadband Table 6 Broadband: Add/Edit: Routing Mode (continued) LABEL Mode DESCRIPTION Select Routing (default) from the drop-down list box if your ISP give you one IP address only and you want multiple computers to share an Internet account. Select the method of encapsulation used by your ISP from the dropdown list box. This option is available only when you select Routing in the Mode field.

The choices are PPPoE, PPPoA, IPoE and IPoA. Encapsulation ATM PVC Configuration VPI VCI Encapsulation Mode The valid range for the VPI is 0 to 255. Enter the VPI assigned to you. The valid range for the VCI is 32 to 65535 (0 to 31 is reserved for local management of ATM traffic). Enter the VCI assigned to you. Select the method of multiplexing used by your ISP from the dropdown list box. Choices are: · LLC/SNAP-BRIDGING: In LCC encapsulation, bridged PDUs are encapsulated by identifying the type of the bridged media in the SNAP header. This is available only when you select IPoE or PPPoE in the Select DSL Link Type field. VC/MUX: In VC multiplexing, each protocol is carried on a single ATM virtual circuit (VC). To transport multiple protocols, the ZyXEL Device needs separate VCs.

There is a binding between a VC and the type of the network protocol carried on the VC. This reduces payload overhead since there is no need to carry protocol information in each Protocol Data Unit (PDU) payload. LLC/ENCAPSULATION: More than one protocol can be carried over the same VC. This is available only when you select PPPoA in the Encapsulation field. LLC/SNAP-ROUTING: In LCC encapsulation, an IEEE 802.

2 Logical Link Control (LLC) header is prefixed to each routed PDU to identify the PDUs. The LCC header can be followed by an IEEE 802.1a SubNetwork Attachment Point (SNAP) header. This is available only when you select IPoA in the Encapsulation field. · · · Service Category Select UBR Without PCR or UBR With PCR for applications that are non-time sensitive, such as e-mail.

Select CBR (Continuous Bit Rate) to specify fixed (always-on) bandwidth for voice or data traffic. Select Non Realtime VBR (non real-time Variable Bit Rate) for connections that do not require closely controlled delay and delay variation. Select Realtime VBR (real-time Variable Bit Rate) for applications with bursty connections that require closely controlled delay and delay variation. Peak Cell Rate Divide the DSL line rate (bps) by 424 (the size of an ATM cell) to find the Peak Cell Rate (PCR). This is the maximum rate at which the sender can send cells. Type the PCR here. This field is not available when you select UBR Without PCR. 68 P-660HN-51 User's Guide Chapter 5 Broadband Table 6 Broadband: Add/Edit: Routing Mode (continued) LABEL Sustain Cell Rate DESCRIPTION The Sustain Cell Rate (SCR) sets the average cell rate (long-term) that can be transmitted. Type the SCR, which must be less than the PCR. Note that system default is 0 cells/sec.

This field is available only when you select Non Realtime VBR or Realtime VBR. Maximum Burst Size Maximum Burst Size (MBS) refers to the maximum number of cells that can be sent at the peak rate. Type the MBS, which is less than 65535. This field is available only when you select Non Realtime VBR or Realtime VBR. PPP Information PPP Username This is available only when you select PPPoE or PPPoA in the Mode field. Enter the user name exactly as your ISP assigned. If assigned a name in the form user@domain where domain identifies a service name, then enter both components exactly as given. Enter the password associated with the user name above. Select this option if you do not want the connection to time out. This value specifies the time in minutes that elapses before the router automatically disconnects from the PPPoE server.

This field is not configurable if you select PPP Auto Connect. PPP Password PPP Auto Connect IDLE Timeout PPPoE Service Name PPPoE Passthrough Enter the name of your PPPoE service here. This field is available when you select PPPoE encapsulation. In addition to the ZyXEL Device's built-in PPPoE client, you can enable PPPoE pass through to allow up to ten hosts on the LAN to use PPPoE client software on their computers to connect to the ISP via the ZyXEL Device. Each host can have a separate account and a public WAN IP address.

PPPoE pass through is an alternative to NAT for application where NAT is not appropriate. Disable PPPoE pass through if you do not need to allow hosts on the LAN to use PPPoE client software on their computers to connect to the ISP. IP Address Obtain an IP Address Automatically Static IP Address IP Address IP Subnet Mask Gateway IP Address This is available only when you select IPoE or IPoA in the Mode field. A static IP address is a fixed IP that your ISP gives you. A dynamic IP address is not fixed; the ISP assigns you a different one each time you connect to the Internet.

Select this if you have a dynamic IP address. Select this option If the ISP assigned a fixed IP address. Enter the static IP address provided by your ISP. Enter the subnet mask provided by your ISP. Enter the gateway IP address provided by your ISP. P-660HN-51 User's Guide 69 Chapter 5 Broadband Table 6 Broadband: Add/Edit: Routing Mode (continued) LABEL Routing Feature NAT Enable IGMP Proxy Enable Select this option to activate NAT on this connection. Internet Group Multicast Protocol (IGMP) is a network-layer protocol used to establish membership in a Multicast group - it is not used to carry user data. Select this option to have the ZyXEL Device act as an IGMP proxy on this connection. This allows the ZyXEL Device to get subscribing information and maintain a joined member list for each multicast group. It can reduce multicast traffic significantly.

Apply as Default Gateway DNS Server DNS Select this option to have the ZyXEL Device use the WAN interface of this connection as the system default gateway. This is available only when you select Apply as Default Gateway in the Routing Feature field. Select Dynamic if you want the ZyXEL Device use the DNS server addresses assigned by your ISP. Select Static if you want the ZyXEL Device use the DNS server addresses you configure manually. DNS Server 1 DNS Server 2 Apply Cancel Enter the first DNS server address assigned by the ISP. Enter the second DNS server address assigned by the ISP.



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