ZXHN H108L

Wireless ADSL Router

Maintenance Manual

Version 1.0

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Contents

About this Manual

Purpose of this Manual

This manual provides the basic information of installing, configuring and maintaining the ZXHN H108L wireless ADSL router. It is a reference book for the maintenance personnel of ZXHN H108L.

Typographical Conventions

ZTE documents employ the following typographical conventions.

TABLE 1 TYPOGRAPHICAL CONVENTIONS

Typeface	Meaning
Italics	References to other guides and documents; parameter values
"Quotes"	Links on screens
Bold	Menus, menu options, input fields, radio button names, check boxes, drop-down lists, dialog box names, window names
CAPS	Keys on the keyboard and buttons on screens and company name
`Constant width`	Text that you type, program code, files and directory names, and function names
[ ]	Optional parameters
{ }	Mandatory parameters
|	Select one of the parameters that are delimited by it
	Note: Provides additional information about a certain topic
	Checkpoint: Indicates that a particular step needs to be checked before proceeding further
	Tip: Indicates a suggestion or hint to make things easier or more productive for the reader

Mouse Operation Conventions

TABLE 2 MOUSE OPERATION CONVENTIONS

Typeface	Meaning
Click	Refers to clicking the primary mouse button (usually the left mouse button) once.
Double-click	Refers to quickly clicking the primary mouse button (usually the left mouse button) twice.
Right-click	Refers to clicking the secondary mouse button (usually the right mouse button) once.
Drag	Refers to pressing and holding a mouse button and moving the mouse.

Safety Signs

TABLE 3 SAFETY SIGNS

Safety Signs	Meaning
	Danger: Indicates an imminently hazardous situation, which if not avoided, will result in death or serious injury. This signal word should be limited to only extreme situations.
	Warning: Indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.
	Caution: Indicates a potentially hazardous situation, which if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.
	Erosion: Beware of erosion.
	Electric shock: There is a risk of electric shock.
	Electrostatic: The device may be sensitive to static electricity.
	Microwave: Beware of strong electromagnetic field.

Safety Signs	Meaning
	Laser: Beware of strong laser beam.
	No flammables: No flammables can be stored.
	No touching: Do not touch.
	No smoking: Smoking is forbidden.

How to Get in Touch

The following sections provide information on how to obtain support for the documentation and the software.

Customer Support

If you have problems, questions, comments, or suggestions regarding your product, contact us by e-mail at support@zte.com.cn. You can also call our customer support center at (86) 755 26771900 and (86) 800-9830-9830.

Documentation Support

ZTE welcomes your comments and suggestions on the quality and usefulness of this document. For further questions, comments, or suggestions on the documentation, you can contact us by e-mail at doc@zte.com.cn; or you can fax your comments and suggestions to (86) 755 26772236. You can also explore our website at http://support.zte.com.cn, which contains various interesting subjects like documentation, knowledge base, forum and service request.

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Safety Instructions

During Installation and Application

- Use the power adapter included in this package. Another power adaptor may make the device unable to work normally or even damage the device.
- Note the power load of the power socket and power cable. The overloading power socket or broken power cable may cause an electric shock or fire. It is recommended to check the cables periodically and replace the broken one immediately.
- Appropriate space for heat dissipation is required to prevent the product from overheating.
- Keep the product away from heat sources. Avoid the product working in high-temperature or direct sunshine environment.
- Keep the product away from moisture or vapor. Do not splash any fluid on the product.
- Do not place the product on any unstable surface.
- Power off and unplug this product carefully when it is not in use or before cleaning. Pay attention to the high temperature on the transformer's surface.
- Wait for at least 15 seconds between powering off and re-powering on of the device.
- Do not block the heat dissipation opening of the product.
- When the product is not used for a long period of time, unplug the power cord.

For Service

Do not attempt to disassemble, repair, or open this product, which will lose the warranty services. Contact qualified service personnel in case of problems, especially under the following conditions:

- The power socket or cable is damaged.
- Liquid is splashed into the product.
- The product is exposed to rain or water.
- The product does not work normally when the operating instructions are followed.
- The product is dropped or struck, causing the product damaged.

Chapter 1

Introduction

This chapter gives an overview of the ZXHN H108L router, presents the packing list, introduces the front and rear panels and system requirements.

Overview

ZXHN H108L is a home and SOHO oriented wireless broadband router integrating ADSL, AP and LAN Switch. It provides triple-play services such as Internet data, voice access, and video access. ZXHN H108L provides priority access for different services with sophisticated ATM-based and IP-based QoS to meet different requirements for high-speed Internet access, IPTV Video on Demand (VoD), live-broadcast access and voice access. Wireless encryption and built-in firewall prevent unauthorized users from accessing the network, ensuring the security of legal users accessing the wired and wireless networks. ZXHN H108L supports TR-069 protocols for allowing overall remote network management.

Note: ZTE CORPORATION reserves the right to modify technical specifications in this manual without any notification in advance.

Packing List

The package box for a ZXHN H108L includes the following components, as shown in Table 4.

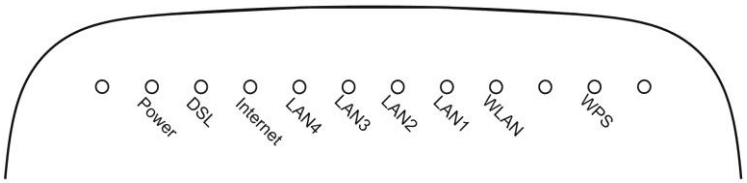
TABLE 4 PACKING LIST

Component	Quantity
ZXV10 ZXHN H108L Wireless ADSL Router	1
External splitter	1
Power adapter	1
Telephone line	2
Straight-through Ethernet cable	1
ZXHN H108L Wireless ADSL Router User Manual	1

Note: Components actually delivered depend on the service provider. If any component is missing or damaged, immediately contact the service provider. Please keep the packing box and components well in case of replacement.

Front Panel

FIGURE 1 FRONT PANEL



There are 9 indicators on the front panel of a ZXHN H108L indicating the running status of the device, as shown in Figure 1. These indicators are described in Table 5.

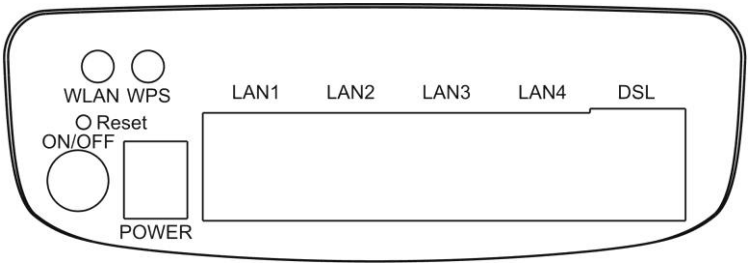
TABLE 5 DESCRIPTIONS FOR THE INDICATORS

Indicator	Color	Description
Power	Red/Green	▪ Red:Indicates the power is just connected or it fails to function. ▪ Green Steady on: Indicates switched on. ▪ Off: Indicates the power has not been connected
DSL	Green	▪ Steady on: Indicates a DSL link is established. ▪ Slow flashing: Indicates no signal is detected. ▪ Fast flashing: Indicates the MODEM is activating.
Internet	Green	▪ Steady on: Indicates operating in Route mode and the ADSL link is established. The IP data packet of the MODEM can be transmitted and received normally (For example, the embedded PPPOE link is established and a dynamic IP address is allocated.). ▪ Flashing: Indicates operating in Route mode and there is data packet passing the MODEM. ▪ Off: Indicates operating in Bridge mode or ADSL link is not established.
	Red	▪ Red on: Device attempted to become IP connected and failed (no DHCP response, no PPPoE response, PPPoE authentication failed, no IP address from IPCP, etc.)
LAN1 LAN2 LAN3 LAN4	Green	▪ Steady on: Indicates a LAN connection is established. ▪ Flashing: Indicates data is transmitting. ▪ Off: Indicates the LAN connection has not been established
WLAN	Green	▪ Steady on: Indicates the wireless module is on. ▪ Flashing: Indicates wireless data is transmitting. ▪ Off: Indicates the wireless module is off.

Indicator	Color	Description
WPS	Green	▪ Steady on: The wireless terminal device is connected through WPS successfully. The indicator turns off five minutes later. ▪ Slowly Flashing: The wireless terminal device is connecting with H108L through WPS. ▪ Fast Flashing: There is error when the wireless terminal is connecting to H108L through WPS ▪ Off: There is no wireless terminal device connected to H108L through WPS or the wireless terminal device has been connected to H108L through WPS for more than five minutes.

Rear Panel

FIGURE 2 REAR PANEL



There are 10 ports and buttons on the rear panel of a ZXHN H108L, as shown in Figure 2. These ports and buttons are described in Table 6.

TABLE 6 DESCRIPTIONS FOR THE PORTS AND BUTTONS

Identification	Description
DSL	RJ-11 connection interface: The equipment is connected to the ADSL line or splitter via the telephone line.
LAN1-LAN4	RJ-45 connection interface: Connect it to the PC computer or other network devices using the network cable.
WPS	WPS switch

Identification	Description
WLAN	To turn on / off the Wi-Fi.
Reset	This button is on the bottom of modem. In the power-on state, you can restore the system to the default configuration by using a thin needle to press this slot for three seconds or for three executive times.
ON/OFF	To turn on / off the power.
POWER	Power interface. Connect it to the power adapter.

System Requirements

System requirements for the ZXHN H108L router are as follows:

- The user has already subscribed the ADSL or Ethernet service. The service provider shall provide at least one legal IP address (allocated either statically or dynamically).
- One or more PCs with 10/100M Ethernet Network Interface Card (NIC).
- For wireless access, an external or built-in 802.11b/g/n wireless adapter is required.
- To configure the system via the web page based interface, you need a web browser such as Internet Explorer (version6.0 or above), Netscape (version4.7 or above).

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Chapter 2

Product Installation

This chapter shows hardware connections for installing ZXHN H108L, presents factory default settings, and describes how to configure a computer for using ZXHN H108L.

Hardware Connections

1. Place the ZXHN H108L router on the plane surface. Minimize obstacles and the distance between the ZXHN H108L router and the wireless terminal.

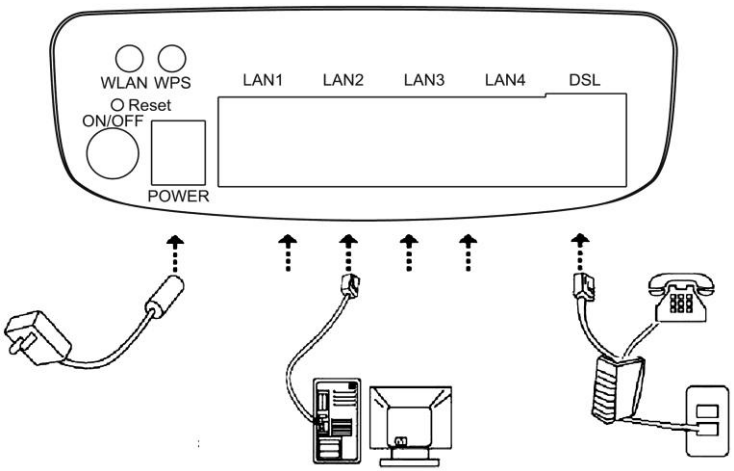
2. ADSL/Ethernet uplink connection

   A ZXHN H108L router can access the ISP's network in ADSL uplink mode.

- ADSL uplink

  The user is suggested to adopt the following connection method for ADSL uplink mode, as shown in Figure 3.

FIGURE 3 ADSL UPLINK CONNECTIONS



If a telephone needs to be installed in front of the splitter, the user must connect a voice filter in the Line port of the splitter; then connect the phone to the splitter's Phone port. The other port connections can be referred to Figure 3.

A splitter consists of three ports:

- Line: The port connected to the ADSL subscriber line.
- Modem: The port connected to the ZXHN H108L's LINE port.
- Phone: The port connected to a phone.

Default Settings

The factory default settings for a ZXHN H108L router are listed as follows:

- IP address: 192.168.1.1; subnet mask: 255.255.255.0.
- Use the DHCP server by default (i.e., the IP address can be obtained from the ZXHN H108L automatically via DHCP).
- Line coding: Auto negotiation (T1.413/G.DMT/G.LITE/ADSL2 /ADSL2+).

- Default network name (SSID) for WLAN, wireless encryption mode, and encryption key are also marked on the label shown on the cover of the ZXHN H108L router.

Note: If the ZXHN H108L router fails to work due to error configuration or if the user forgets the login password, insert a needle into the device's **Reset** hole when the device is running and hold **Reset** down for more than 10 seconds to restore the settings to the default ones, then the system restarts automatically.

Computer Configuration

This section shows how to check computer configuration and configure TCP/IP for a ZXHN H108L.

Checking Computer Configuration

If the computer uses a proxy server to access the Internet, it is suggested to disable this proxy service before performing the configurations. It is recommended to close the VPN software and the firewalls running on the computer. For example, in Microsoft Internet Explorer, the user may check the proxy service configuration as follows:

1. In the browser, select **Tools > Internet Options**.
2. Click the **Connections** tab and then click the **LAN Settings** button.
3. Uncheck the **Use a proxy server for your LAN** box if it is checked.
4. Click the **OK** button.

Configuring TCP/IP

If the operating system of the computer is one of the following ones: Windows95, Windows98, WindowsME, Windows2000, and WindowsXP, there are two ways for configuring the computer (the first one is recommended). The following instruction uses

WindowsXP as an example (the method under another operation system is similar).

- To obtain an address from the ZXHN H108L via DHCP, perform the following procedure in the computer:

1. In Windows taskbar, select **Start** > **Control Panel**.
2. Double-click the **Network Connection** icon.
3. Right click **Local Area Connection**,and select **Properties**.
4. Select **Internet Protocol (TCP/IP)**, and then click the **Properties** button.
5. In the **Internet Protocol (TCP/IP) Properties** dialog box, check **Obtain an IP address automatically** and check **Obtain DNS server address automatically**.
6. Click **OK** to confirm and save the settings.

- To configure a static address, perform the following procedure in the computer:

1. In Windows taskbar, select **Start** > **Control Panel**.
2. Double-click the **Network Connection** icon.
3. Right click **Local Area Connection**,and select **Properties**.
4. Select **Internet Protocol (TCP/IP)**, and then click the **Properties** button.
5. In **Internet Protocol (TCP/IP) Properties** dialog box, check **Use the following IP address** to specify this computer's IP address. This IP address shall be in the same network segment as the LAN port address of the ZXHN H108L and shall be in the form 192.168.1.x (x is a decimal integer between 2~254, for example, 192.168.1.2). Subnet mask is set to 255.255.255.0. Default gateway is set to 192.168.1.1.
6. Check **Use the following DNS server addresses**. To set the IP address of the DNS server, contact local service provider or set it to 192.168.1.1.

Click **OK** to confirm and save the settings.

Chapter 3

Configuration Page Login

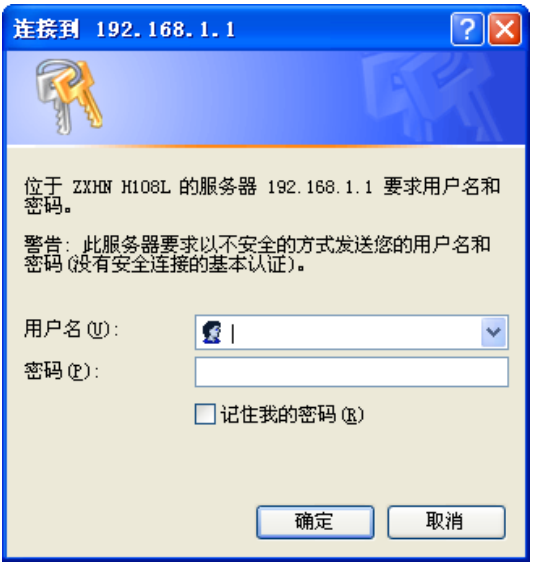
This chapter introduces how to log into the configuration page and presents the default main page after login.

Follow the precedures below to log into the web configuration page.

To log into configuration page:

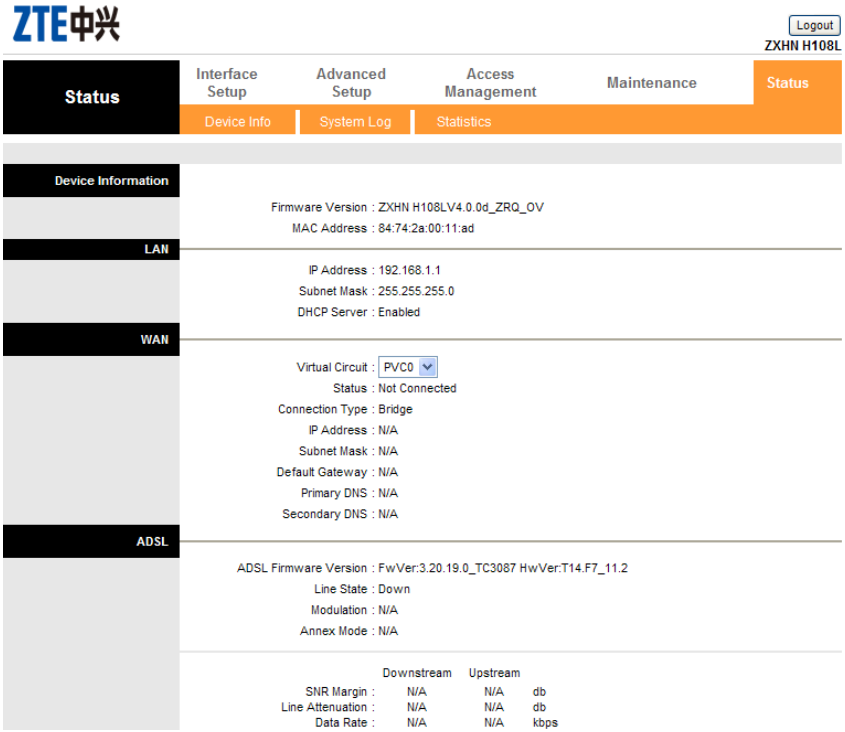
1. Open a browser (e.g, IE) and type **http://192.168.1.1** (i.e., default IP address of the ZXHN H108L's LAN port) in the address bar.
2. Press the **Enter** key of the keyboard to display the login dialog box, as shown in Figure 4.

FIGURE 4 THE LOGIN DIALOG BOX



3. Enter the default user name **admin** and password **admin**, and then click the **OK** button to enter the main page for configuration, as shown in Figure 5.

FIGURE 5 MAIN PAGE FOR CONFIGURATION



The main page shows the device information of the ZXHN H108L ADSL router.

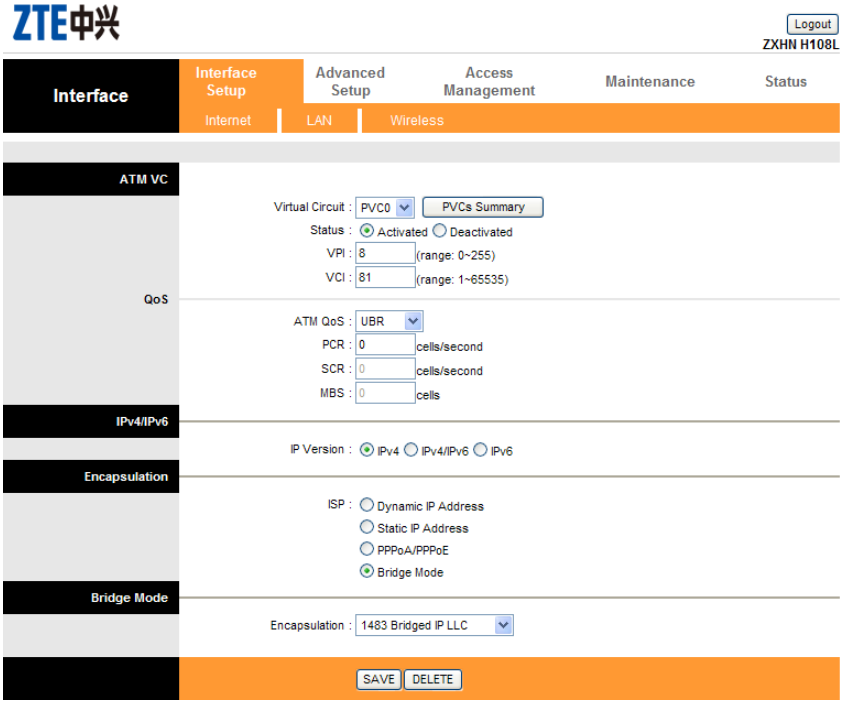
Chapter 4

Interface Setup

This chapter describes the Internet and local network configuration of the ZXHN H108L Router.

After logging into the configuration main page, click **Interface Setup** to open the page shown in Figure 6.

FIGURE 6 THE INTERFACE SETUP PAGE



Three sub-pages are under the **Interface Setup** page, which are **Internet**, **LAN** and **Wireless**.

Internet Configuration

By default the **Interface Setup** page displays the **Internet** configuration page as shown in Figure 6.

ATM VC and ATM Qos

Asynchronous transfer mode (ATM) is a protocol that arranges data into small, uniform-sized cells with VCI data, as opposed to variable-sized data packets. ATM settings are used to connect to ISP. ISP provides the VPI and VCI setting information. The users of ZXHN H108L can configure up to 8 virtual circuits (VC), each using

different encapsulation. Each VC must be activated to take effect. For permanent virtual circuit (PVC) management, users can use ATM Quality of Service (Qos) to set up each PVC traffic line's priority.

Table 7 presents the ATM VC and Qos parameters descriptions.

TABLE 7 THE DESCRIPTIONS OF ATM VC & QOS PARAMETERS

Parameter	Description
Virtual Circuit	Select the PVC to be modified
Status	Each PVC can be toggled **Activated** or **Deactivated**
VPI	Enter the VPI number
VCI	Enter the VCI number
ATM Qos	Select the Qos type for the PVC from the dropdown list
PCR	Enter the PCR. For all Qos types
SCR	Enter the SCR. Only for rtVBR and nrtVBR
MBS	Enter the MBS. Only for rtVBR and nrtVBR

Definitions

- PCR: Peak Cell Rate, is the maximum rate at which the sender can send cells. This parameter may be lower (but not higher) than the maximum line speed. One ATM cell is 53 bytes (424 bits), so a maximum speed of 832 Kbps gives a maximum PCR of 1962 cells/sec. This rate not guaranteed because it is dependent on the line speed.
- SCR: Sustained Cell Rate is the mean cell rate of a bursting, on-off traffic source that can be sent at the peak rate, and a parameter for burst-type traffic. SCR may not be greater than the PCR; the system default is 0 cells/sec.
- MBS: Maximum Burst Size is the maximum number of cells that can be sent at the PCR. After MBS is reached, cell rates fall below SCR until cell rate averages to the SCR again. At this time, more cells (up to the MBS) can be sent at the PCR again.
- CBR: It is for connections that support constant rates of data transfer.

- UBR: It is for connections that have variable traffic.
- rtVBR: It is for connections that, while having variable traffic, require precise timing between traffic source and destination. PCR, SCR and MBS must all be set for rtVBR.
- nrtVBR: It is for connections that have variable traffic, do not require precise timing, but still require a set bandwidth availability. PCR, SCR and MBS must all be set for nrtVBR.

The **PVCs Summary** button opens a new window that displays the current PVC settings, as shown in Figure 7.

FIGURE 7 THE PVC SUMMARY TABLE

Service Information Summary

#	Active	VPI	VCI	ENCAP	Mux	IP Address	Status
PVC0	Yes	8	81	RFC 1483	LLC	-	N/A
PVC1	Yes	0	35	RFC 1483	LLC	-	N/A
PVC2	Yes	8	35	RFC 1483	LLC	-	N/A
PVC3	Yes	0	32	RFC 1483	LLC	-	N/A
PVC4	Yes	0	100	RFC 1483	LLC	-	N/A
PVC5	Yes	8	36	RFC 1483	LLC	-	N/A
PVC6	Yes	0	33	RFC 1483	LLC	-	N/A
PVC7	-	-	-	-	-	-	-

Encapsulation

Four ISP connection modes can be selected according to requirement.

- Dynamic IP Address: Choose this option to obtain an IP address automatically from the ISP.
- Static IP Address: Choose this option to set static IP information provided by the ISP.
- PPPoE/PPPoA: Choose this option if the ISP uses PPPoE/PPPoA.
- Bridge Mode: Choose this option if the ISP uses bridge mode.

Dynamic IP address

Figure 8 shows the dynamic IP address parameters on the web configuration page and **Error! Reference source not found.** gives the descriptions of the parameters.

FIGURE 8 DYNAMIC IP ADDRESS PARAMETERS (IPV4)

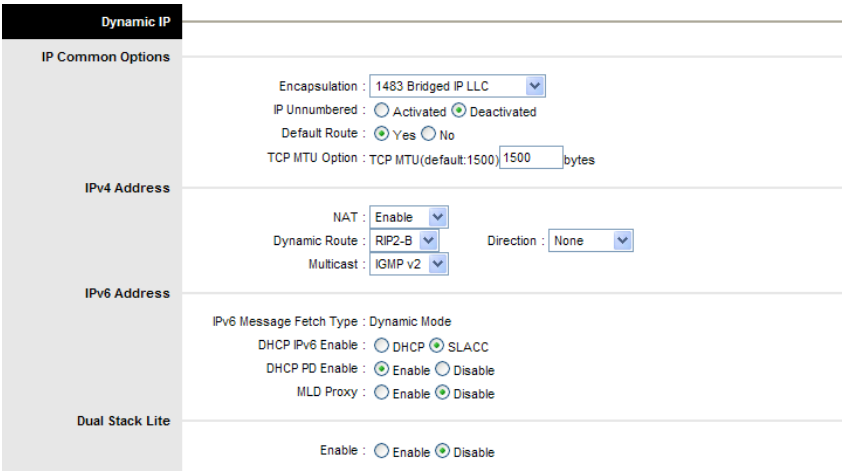


TABLE 8 THE DESCRIPTIONS OF THE DYNAMIC IP ADDRESS PARAMETERS

Parameter	Description
Encapsulation	Select the encapsulation type from the dropdown list
IP Unnumbered	Deactivated usually, select Activated to enable Bridge interface
NAT	Select whether NAT is enabled or disabled
Default Route	Select whether this PVC will be the default route for the Internet data
Dynamic Route	Select the RIP type and direction from the dropdown lists
Multicast	Select the multicast protocol to be used from the dropdown list
DHCP IPv6 Enable	Select the way of Modem to get IPv6 address
DHCP PD Enable	Usually select Enable, or modem can't access internet

Parameter	Description
MLD Proxy	Select whether MLD Proxy is enabled or disabled
Dual Stack Lite	Select whether enable DS Lite

Static IP Address

Figure 9 shows the static IP address parameters on the web configuration page and Table 9 gives the parameter descriptions.

FIGURE 9 STATIC IP ADDRESS PARAMETERS

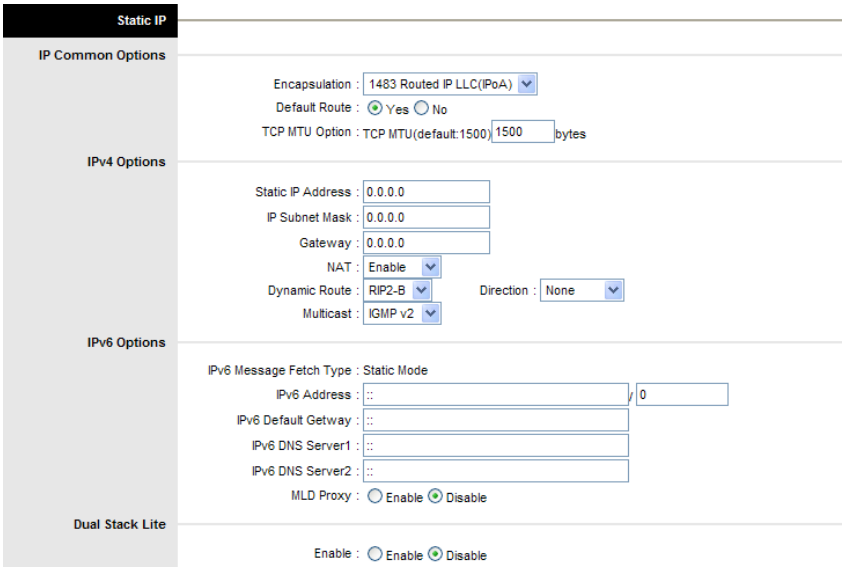


TABLE 9 THE DESCRIPTIONS OF THE STATIC IP ADDRESS PARAMETERS

Parameter	Description
Encapsulation	Select the encapsulation type from the dropdown list
Static IP Address	Enter the static IP address
IP Subnet Mask	Enter the IP subnet mask

Parameter	Description
Gateway	Enter the gateway address
NAT	Select whether NAT is enabled or disabled
Default Route	Select whether this PVC will be the default route for the Internet data
Dynamic Route	Select the RIP type and direction form the dropdown lists
Multicast	Select the multicast protocol to be used from the dropdown list
IPv6 Address	Enter the static IP address
IPv6 Default Gateway	Enter the gateway address
IPv6 DNS Server	Enter the IPv6 DNS address
MLD Proxy	Select whether MLD Proxy is enabled or disabled

Note: The parameters listed in Table 9 should be provided by the ISP.

PPPoE/PPPoA

Figure 10 shows the PPPoE/PPPA parameters on the web configuration page and Table 10 gives the parameter descriptions.

FIGURE 10 PPPOA/PPPOE PARAMETERS

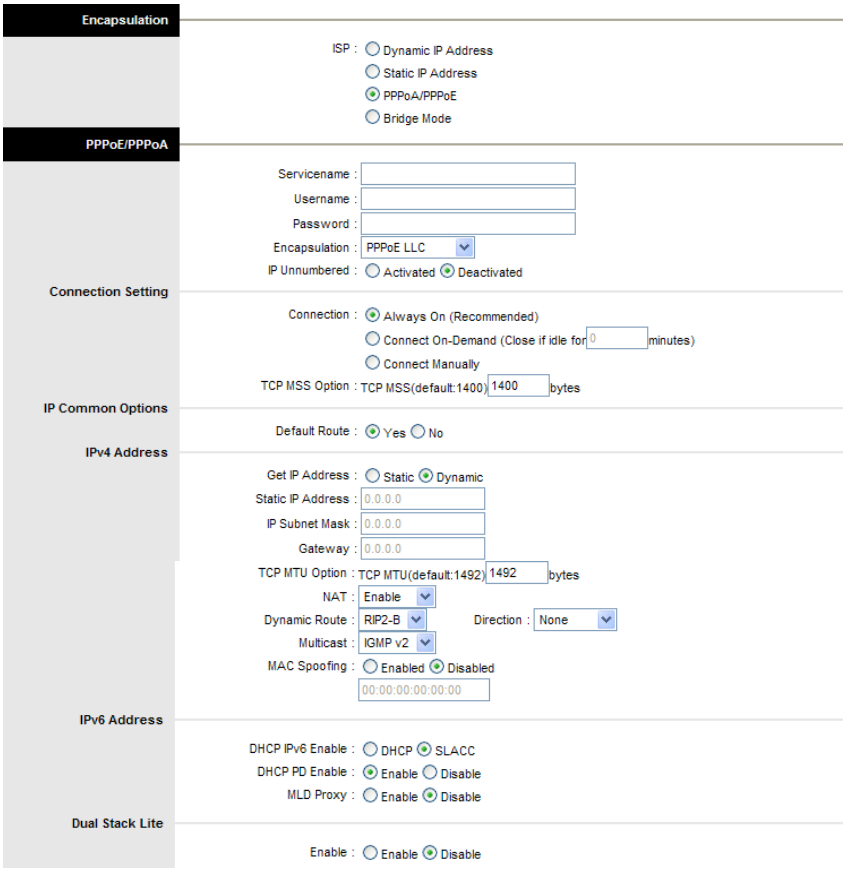


TABLE 10 THE DESCRIPTIONS OF THE PPPOE/PPPOA PARAMETERS

Parameter	Description
Servicename	Enter the Servicename
Username	Enter the username
Password	Enter the password
Encapsulation	Select the encapsulation type from the dropdown list

Parameter	Description
Connection	Select whether your connection is always on or if it connects on demand. If on demand specify how many minutes the connection may be idle before it disconnects
TCP MSS Option	Enter the TCP MSS to be used
Get IP Address	Choose whether the ZXHN H108L obtains the IP address statically or dynamically
Static IP Address	Enter the static IP address. Only if static IP is selected.
IP Subnet Mask	Enter the IP subnet mask. Only if static IP is selected.
Gateway	Enter the gateway address. Only if static IP is selected.
NAT	Select whether NAT is enabled or disabled
Default Route	Select whether this PVC will be the default route for the Internet data
Dynamic Route	Select the RIP type and direction form the dropdown lists
Multicast	Select the multicast protocol to be used from the dropdown list
MAC Spoofing	Disabled in default, Select Enabled to set a fake MAC of modem
DHCP IPv6 Enable	Select the way of Modem to get IPv6 address
DHCP PD Enable	Usually select Enable, or modem can't access internet
MLD Proxy	Select whether MLD Proxy is enabled or disabled
Dual Stack Lite	Select whether enable DS Lite

Note: The parameters listed in Table 10 should be provided by the ISP. The user name must be asigned by the ISP.

Bridge Mode

Figure 11 shows the bridge mode parameters on the web configuration page and Table 11 gives the parameter descriptions.

FIGURE 11 BRIDGE MODE PARAMETERS

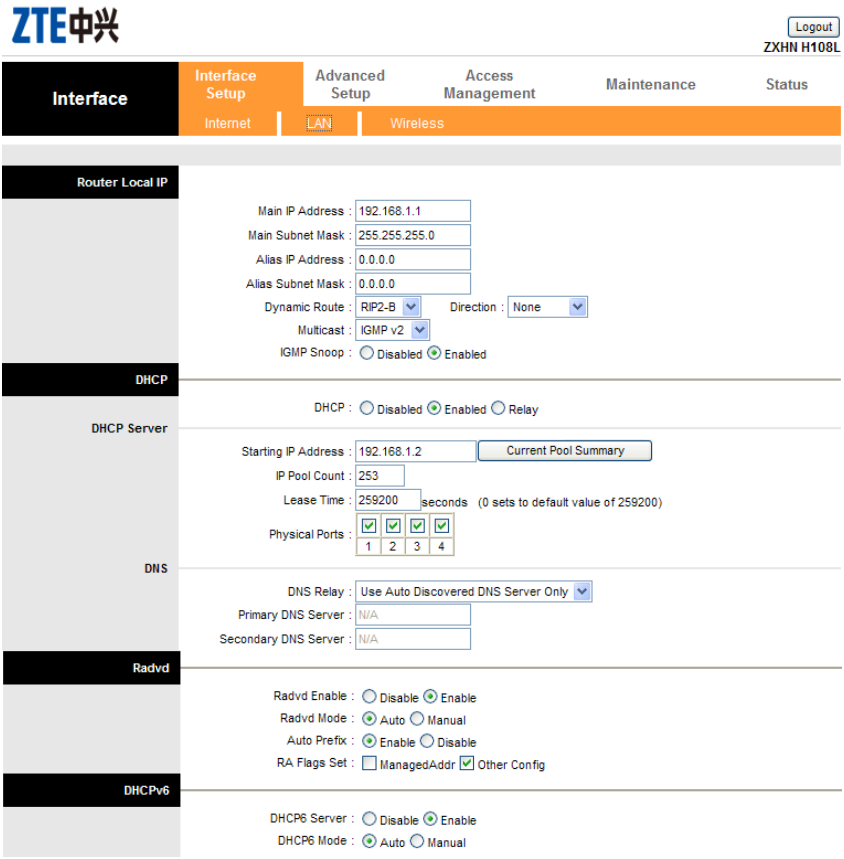
TABLE 11 THE DESCRIPTIONS OF THE BRIDGE MODE PARAMETERS

Parameter	Description
Encapsulation	Select the encapsulation type from the dropdown list

LAN Configuration

Click **Interface Setup>LAN** to show the **LAN** configuration page, as shown in Figure 12.

FIGURE 12 THE LAN CONFIGURATION PAGE



Router Local IP

Table 12 gives the description of the local IP parameters.

TABLE 12 THE DESCRIPTIONS OF THE LOCAL IP PARAMETERS

Parameter	Description

Parameter	Description
Main IP Address	Enter the ZXHN H108L local IP address. By default, it is 192.168.1.1.
Main IP Subnet Mask	Enter the ZXHN H108L IP subnet mask. By default, it is 255.255.255.0.
Alias IP Address	Enter the ZXHN H108L Second local IP address. By default ,it is blank
Alias Main IP Subnet Mask	Subnet mask of Second local IP address
Dynamic Route	Select the Routing Information Protocol (RIP) to be used from the dropdown list. And select the direction from the dropdown list
Multicast	Select the multicast protocol to be used from the dropdown list

DHCP

DHCP function can be disabled, enabled or in relay mode. Figure 12 shows the parameters when DHCP is enabled. And Table 13 gives the parameter descriptions.

TABLE 13 THE DESCRIPTIONS OF THE DHCP PARAMETERS

Parameter	Description
Starting IP Address	Enter the starting IP address to be used by the DHCP server's IP assignment. By default, the starting IP address is 192.168.1.2 and the ending IP address is 192.168.1.254.
IP Pool Count	Enter the maximum user pool size to be assigned.
Lease Time	Enter the amount of time to lease out a given IP address.
DNS Relay	Select the DNS relay option to be used from the dropdown list. If the users do not want to use the DNS relay option, set the DNS relay to "Use User Discovered DNS Server Only" and set both Primary and Secondary DNS servers to 0.0.0.0.
Primary DNS Server	Enter the primary DNS server IP address to be used. For user discovered DNS only.
Secondary DNS Server	Enter the secondary DNS server IP address to be used. For user discovered DNS only.

Parameter	Description
Radvd Enable	modem allocate prefix of IPv6 address to PC. Usually, it select Enable. or the PC connected to this Modem can't access internet
Radvd Mode	Usually enable, if disabled, modem can't get correct IPv6 address; So Disabled it if user doesn't want to use IPv6 function
Auto Prefix	The way of modem to get IPv6 address prefix
DHCP6 Server	PC get complete IPv6 address from internet, not combine to modem.
DHCP6 Mode	DHCPv6 Server allocate IPv6 address to modem auto, or user config one

A DHCP relay is a computer that forwards DHCP data between computers that request IP address and the DHCP server that assigns the IP address. If the DHCP Relay option is enabled, DHCP requests from local PCs will be forwarded to the DHCP server that runs on WAN side. For this function working properly, ZXHN H108L must run on the router mode, disable the DHCP server on the LAN port and make sure the routing table has the correct routing entry.

If relay DHCP is selected, Figure 13 will be display on the web configuration page. Table 14 describes the parameter.

FIGURE 13 THE RELAY DHCP WEB CONFIGURATION PAGE

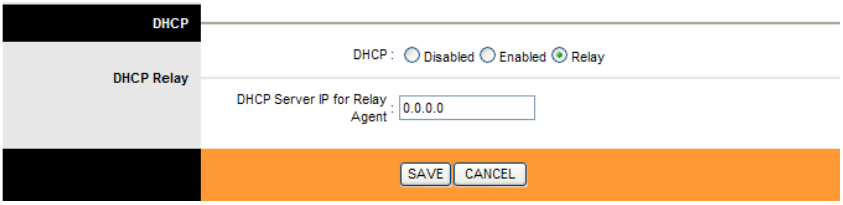


TABLE 14 THE RELAY DHCP PARAMETER

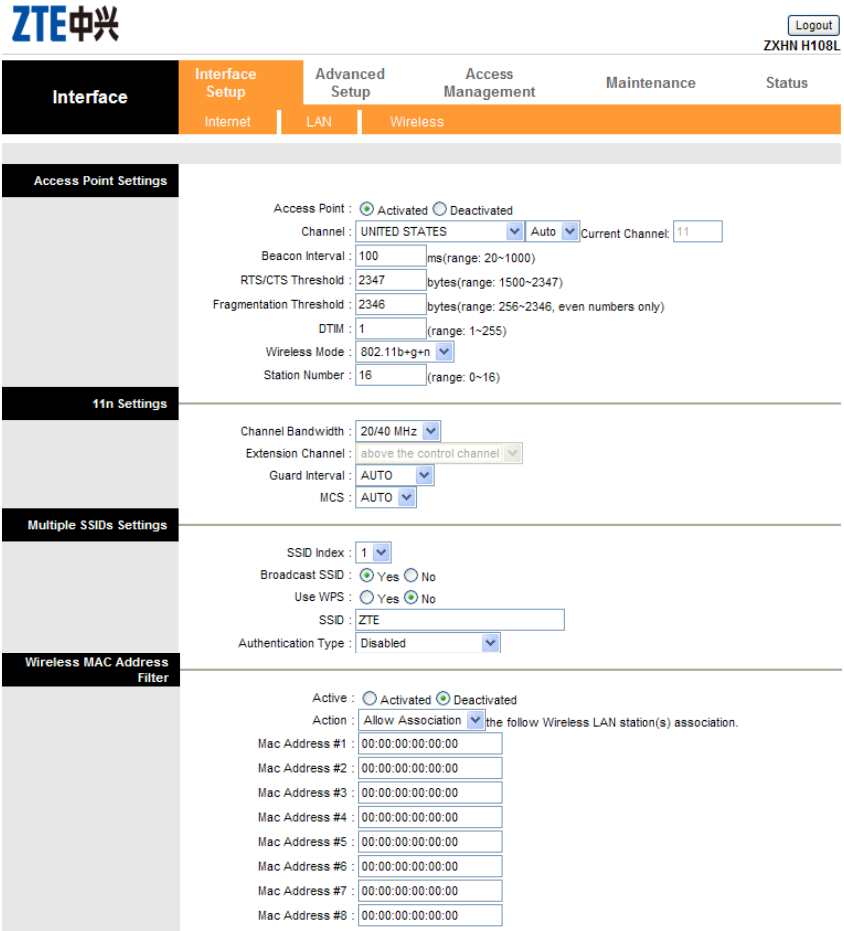
Parameter	Description

Parameter	Description
DHCP Server IP for Relay Agent	Enter the IP address for the DHCP relay agent.

Wireless Configuration

Click **Interface Setup>Wireless** to show the **Wireless** configuration page, as shown in Figure 14.

FIGURE 14 THE WIRELESS CONFIGURATION PAGE



Access Point Settings

Table 15 describes the access point setting parameters.

TABLE 15 THE ACCESS POINT PARAMETERS

Parameter	Description

Parameter	Description
Access Point	By default, it is activated. If there is no wireless device in the network, select **Deactivated**.
Channel	Select a channel from the dropdown list.
Beacon Interval	A beacon is a packet broadcasted by the router to synchronize the wireless network. Enter a value between 20 and 1000.
RTS/CTS Threshold	The RTS (Request To Send) threshold for enabling RTS/CTS handshake. Enter a value between 1500 and 2347.
Fragmentation Threshold	The maximum fragment size that can be sent. Enter a value between 256 and 2346.
DTIM	Enter a value between 1 and 255. It indicates the interval of eh Delivery Traffic Indication Message (DTIM).
802.11 b/g/n	The default setting is 802.11 b+g+n. other modes can be selected from the dropdown list.
Station Number	Enter a value between 0 and 16

Multiple SSIDs Settings

The SSID is the name of a wireless access point to be distinguished from another. It is case sensitive and must not exceed 32 characters. User can set multiple SSIDs for ZXHN H108L. Table 16 describes the parameters.

TABLE 16 THE MULTIPLE SSIDS PARAMETERS

Parameter	Description
SSID Index	Select an index number from the dropdown list.
SSID	Enter the SSID name.
Broadcast SSID	Select **No** to hide the SSID in so that a station cannot obtain the SSID through passive scanning; select **Yes** to make the SSID visible so that a station can obtain the SSID through passive scanning.
Authentication Type	Select the authentication type from the dropdown list.
Use WPS	Select yes, wireless client can connect Router by WPS

Wireless MAC Address Filter

The MAC filter function allows the user to configure the ZXHN H108L to give access or deny access to specified devices. 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:AA:BB:00:00:02.

Table 17 describes the parameters.

TABLE 17 THE MAC FILTER PARAMETERS

Parameter	Description
Active	Select **Activated** to enable MAC address filtering.
Action	Select **Deny Association** to block access to ZXHN H108L or select **Allow Association t**o permit access to ZXHN H108L
MAC Address #1 ~ #8	Enter the MAC address of the devices that are allowed or denied access to the router in these address fields.

Click the **SAVE** button to save the changes, for configurations mentioned in this chapter.

Chapter 5

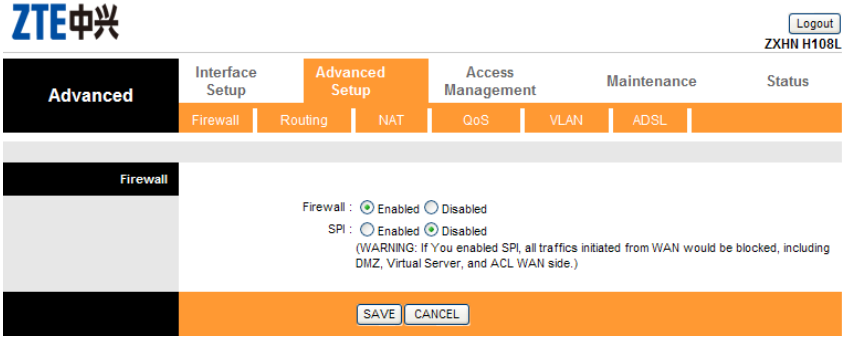
Advanced Setup

The **Advanced Setup** configuration page determines how data enters and exits the ZXHN H108L router.

Firewall Configuration

By default the **Advanced Setup** page displays the **Firewall** configuration page as shown in Figure 6. Enable or disable the firewall and SPI according to requirements.

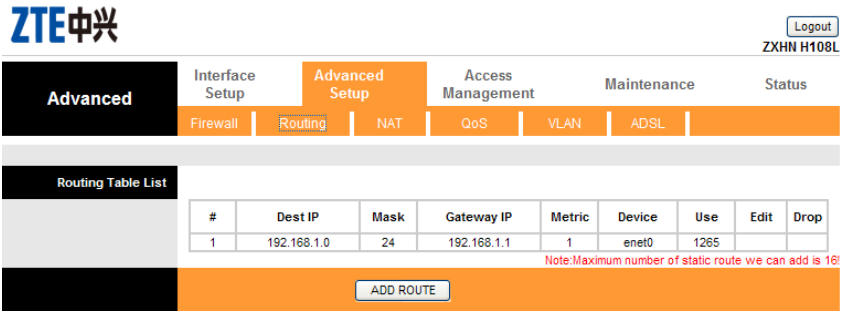
FIGURE 15 THE FIREWALL CONFIGURATION PAGE



Routing Configuration

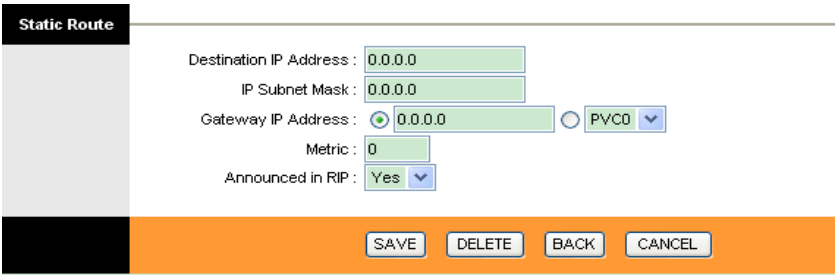
Routing directs the ZXHN H108L router to forward data to specific IP address. Figure 16 shows the routing configuration page. It shows the routing rules which have been set.

FIGURE 16 THE ROUTING CONFIGURATION PAGE



To add a route, click the **Add Route** button and Figure 17 displays. Set the parameters according to Table 18.

FIGURE 17 ADDING ROUTE



Click **SAVE** to save the changes; click **DELETE** to delete the parameters; click **BACK** to return to the previous screen or **CANCEL** to exit without saving.

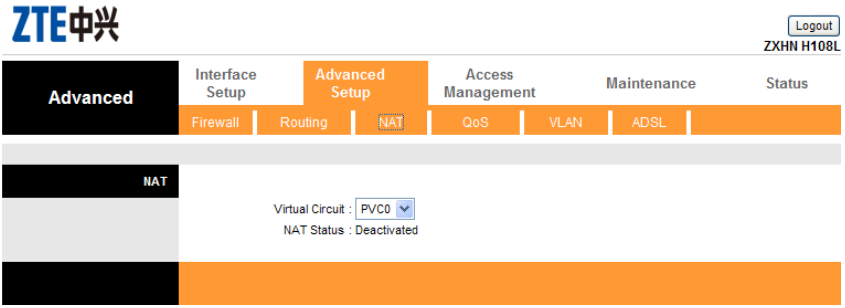
TABLE 18 THE STATIC ROUTE PARAMETERS

Parameter	Description
Destination IP Address	Enter the destination IP address for this routing rule
IP Subnet Mask	Enter the destination IP subnet mask for this routing rule
Gateway IP address	Enter the gateway IP address for this routing rule or select which PVC will be affected by this routing rule.
Metric	Enter the metric for this routing rule.
Announced in RIP	Choose whether this route is included in RIP broadcasts.

NAT Configuration

Network Address Translation (NAT) translates the host IP address in a packet used within on network to a different IP address known within another network. The NAT configuration page is shown in Figure 18.

FIGURE 18 THE NAT CONFIGURATION PAGE

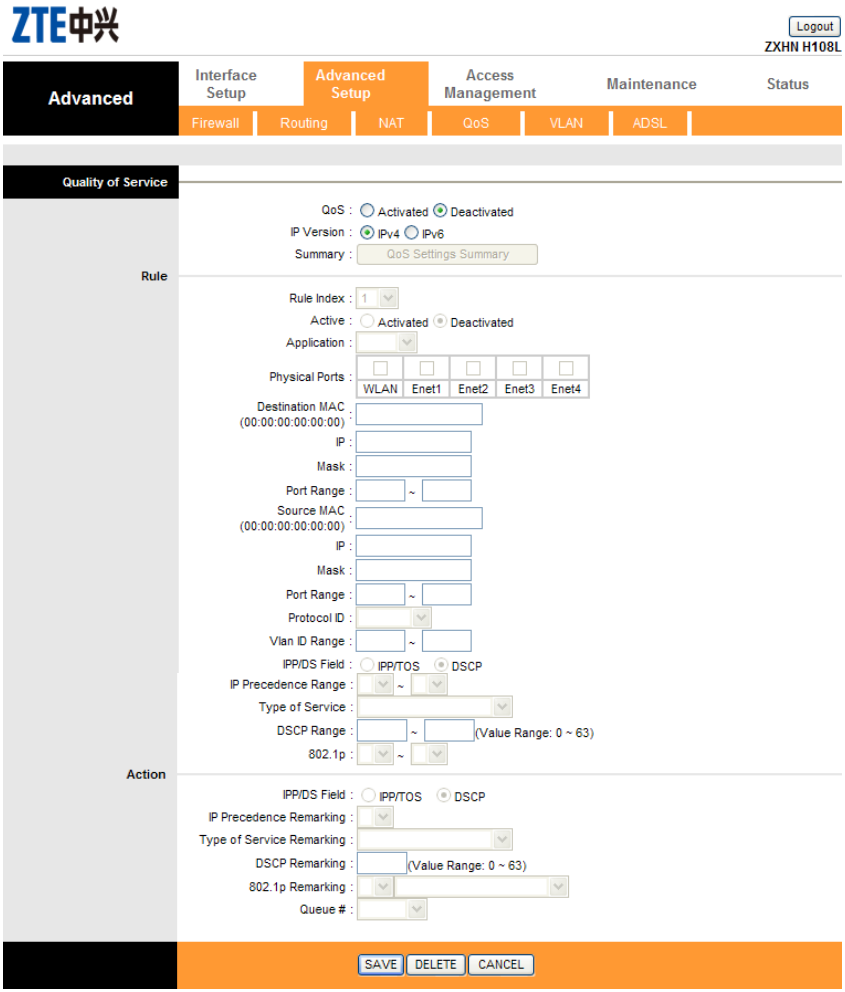


Select a virtual circuit (PV0 ~ PV7) and the related NAT status is displayed.

QoS Configuration

Quality of Service (Qos) helps to prioritize the data entering the ZXHN H108L router. By attaching special identification marks or headers to incoming packets, Qos determines which queue the packets enter, based on priority. Figure 19 shows the Qos configuration page.

FIGURE 19 THE QOS CONFIGURATION PAGE



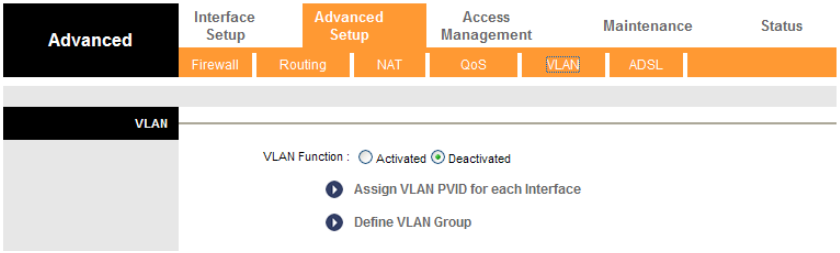
The main goal of Qos is prioritizing incoming data, preventing data loss due to factors such as jitter, delay and dropping. Another important aspect of Qos is ensuring that prioritizing one data flow doesn't interfere with other data flows. Qos can be toggled **Activated** or **Deactivated**. Activate Qos to edit the parameters listed in Figure 19. Click the **SAVE** button to submit the changes.

VLAN Configuration

A virtual LAN (VLAN) is a switched network logically segmented by functions, project teams, or applications. The physical location of VLAN members is unimportant. VLANs allow ports on the same or different switches to be grouped so that traffic is confined to members of only that group. In high-traffic networks, VLAN can reduce the amount of data sent to unnecessary destinations.

VLAN must be activated before the use can assign VLAN PVID and define VLAN group.

FIGURE 20 THE VLAN CONFIGURATION PAGE



Click the link **Assign VLAN PVID for each interface** to display Figure 21. Table 19 describes the parameters.

FIGURE 21 ASSIGNING PVID

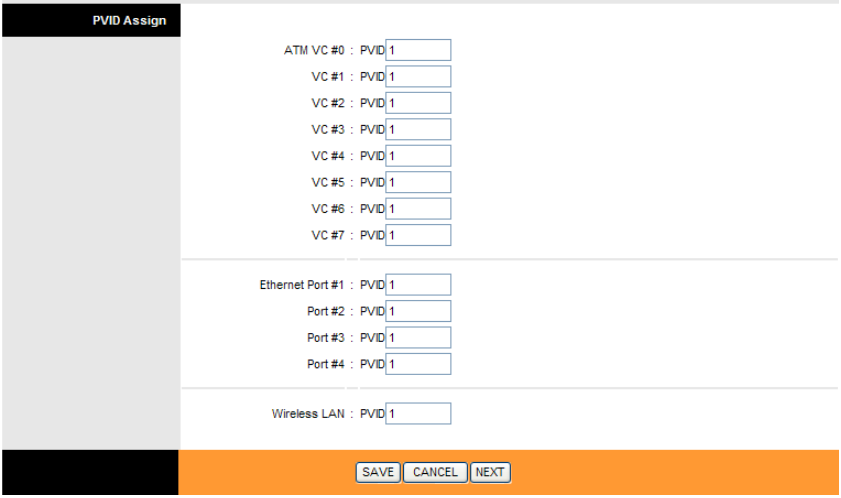


TABLE 19 THE PVID PARAMETERS

Parameter	Description
ATM VC #0 ~ #7	Enter the PVID assigned to eight ATM VCs.
Ethernet Port #1 ~ #4	Enter the PVID assigned to four Ethernet ports.
Wireless LAN BSSID #1 ~ #4	Enter the PVID assigned to four wireless LAN BSSIDs.

Click the link **Define VLAN Group** to display Figure 22. Table 20 describes the parameters.

FIGURE 22 DEFINING VLAN GROUP

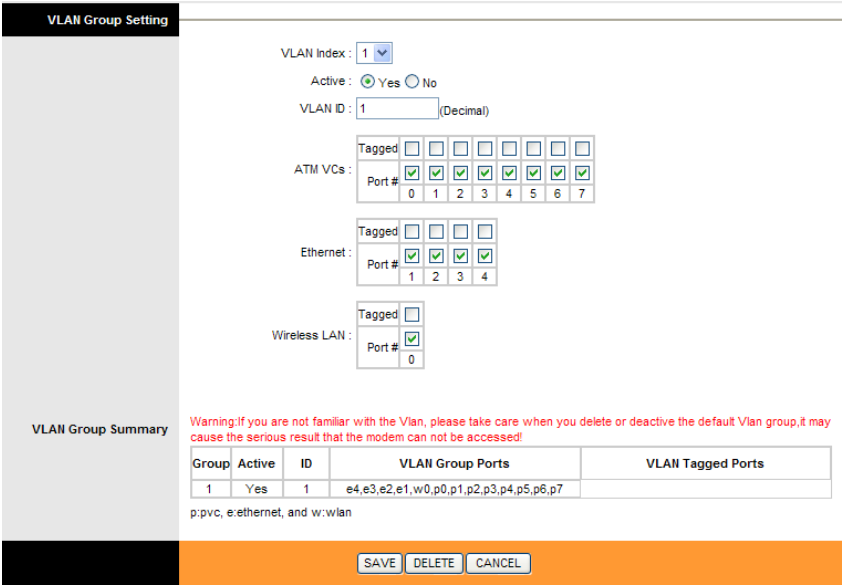


TABLE 20 VLAN GROUP SETTING PARAMETERS

Parameter	Description
VLAN Index	The number of the index is determined by the model or IC.
Active	Toggle this index on or off with **Yes** and **No**.
VLAN ID	Enter the VLAN ID number.
ATM VCs	Checking the **Tagged** and **Port#** box for each port number will add a tag to let other devices know if they need to check the packet and allow the packet through to the port in question.
Ethernet	Checking the **Tagged** and **Port#** box for each port number will add a tag to let other devices know if they need to check the packet and allow the packet through to the port in question.
Wireless LAN	Checking the **Tagged** and **Port#** box for each port number will add a tag to let other devices know if they need to check the packet and allow the packet through to the port in question.

Click **SAVE** to submit the changes, or **DELETE** to delete the rule with the parameters, or **CANCEL** to exit without saving.

ADSL Configuration

Figure 23 shows the ADSL configuration page and Table 21 describes the parameters.

FIGURE 23 THE ADSL CONFIGURATION PAGE

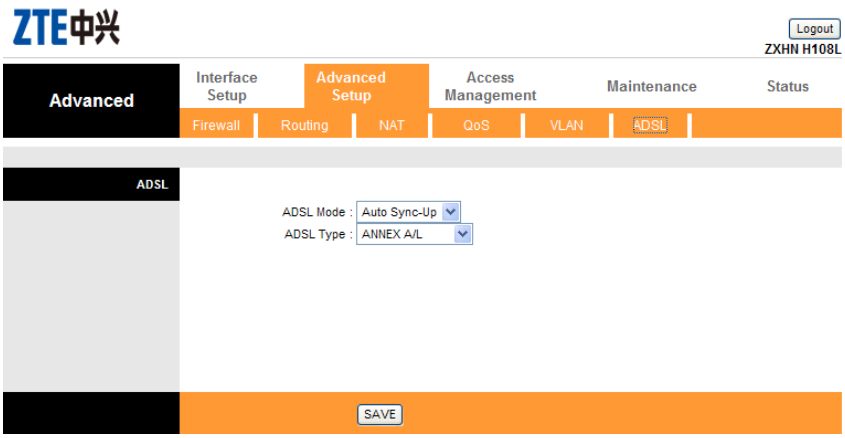


TABLE 21 THE ADSL PARAMETERS

Parameter	Description
ADSL Mode	Select the ADSL connection mode uses from the dropdown list.
ADSL Type	Select the ADSL type from the dropdown list.

Click the **SAVE** button to submit the changes.

Chapter 6

Access Management

The **Access Management** configuration page determines which device and application can access the network.

ACL Management

Access Control Listing (ACL) acts as a filter for incoming or outgoing packets, based on application.

FIGURE 24 THE ACL MANAGEMENT PAGE

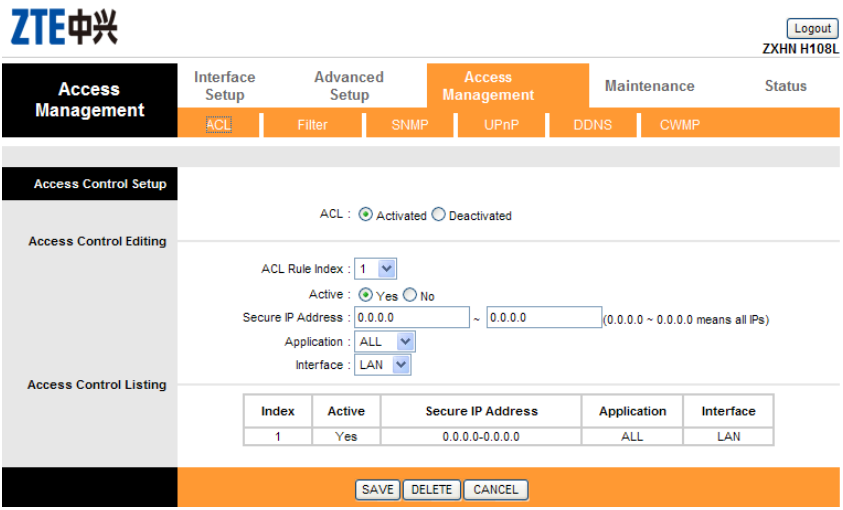


Figure 24 shows the configuration page and Table 22 describes the parameters.

TABLE 22 THE ACL MANAGEMENT PARAMETERS

Parameter	Description
ACL	ACL must be activated before editing the settings.
ACL Rule Index	Select the rule index from the dropdown list.
Active	Toggle the rule ON or OFF with **Yes** or **No**.
Secure IP Address	Enter the IP address to allow access. If 0.0.0.0 is entered, all packets are allowed.
Application	Select the application to allow access. The web browser must be allowed first; otherwise the web configuration page cannot be accessed.
Interface	Select the interface the above rules to be applied for.

Click **SAVE** to submit the changes, or **DELETE** to delete the rule with the parameters, or **CANCEL** to exit without saving.

Filter Management

IP filter is a more complex filtering tool, based more on IP and custom rules. Each of the indices can hold six rules, and each interface can have four associated indices, allowing 24 rules per interface.

FIGURE 25 THE FILTER MANAGEMENT PAGE

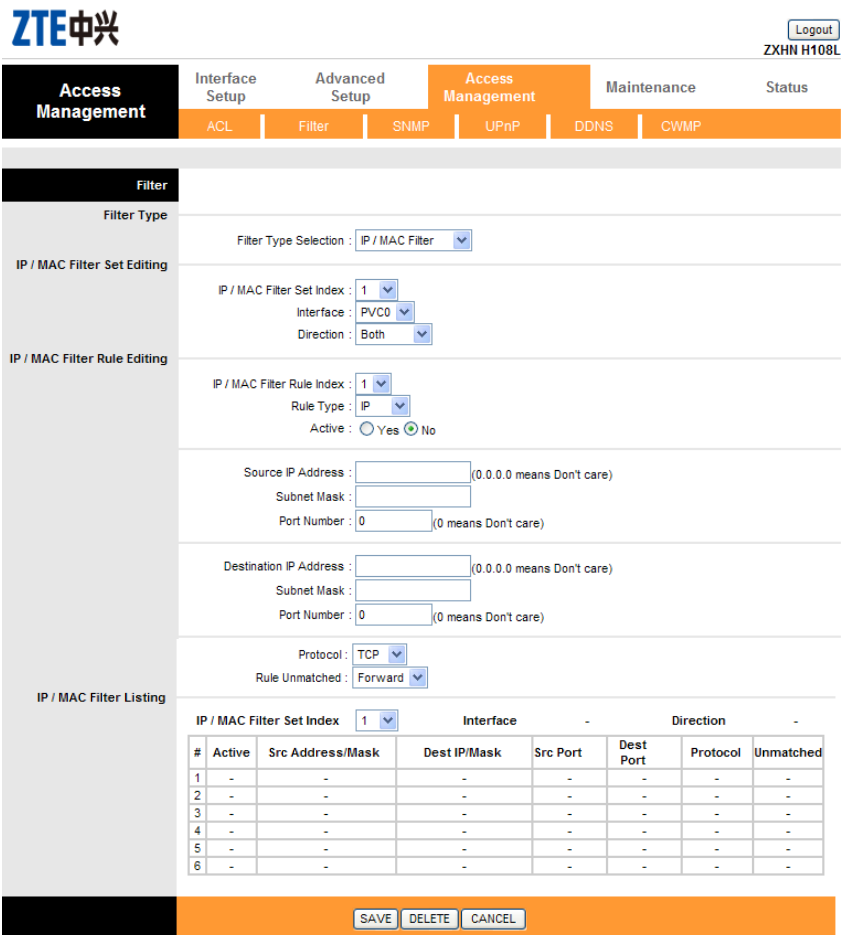


TABLE 23 THE FILTER MANAGEMENT PARAMETERS

Parameter	Description
Filter Type Selection	Select the IP filter to be viewed
IP Filter Set Index	Select the IP filter set to be modified

Parameter	Description
Interface	Select the interface to be modified. PV0~PV7 and WAN interfaces.
Direction	Select which direction of data flow to apply to the filters.
IP Filter Rule Index	Select IP filter rule index to be modified.
Active	Toggle this rule index ON or OF with **Yes** or **No**.
Source IP Address	Enter the source IP address to deny access to the ZXHN H108L router.
Subnet Mask	Enter the subnet mask of the source IP address.
Port Number	Enter the port number of the source IP address. **0** means that all ports are allowed.
Destination IP Address	Enter the destination IP address to deny access to the ZXHN H108L router.
Subnet Mask	Enter the subnet mask of the destination IP address.
Port Number	Enter the port number of the destination IP address. **0** means that all ports are allowed.
Protocol	Select the protocol to filter.
Rule Unmatched	Select what happens to the data in question if the rule currently editing is unmatched. **Next** means that the data is then compared to the next IP filter rule. **Forward** means that the data will be allowed into the user system.

Click **SAVE** to submit the changes, or **DELETE** to delete the rule with the parameters, or **CANCEL** to exit without saving.

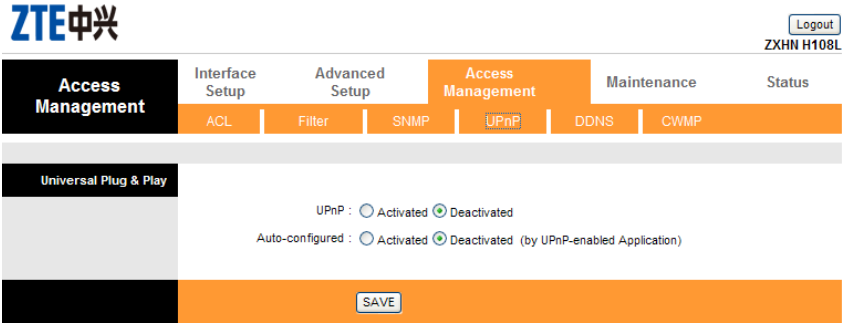
UPnP Management

Universal Plug and Play (UPnP) is an open networking standard that uses TCP/IP for simple peer-to-peer network connectivity between devices. An UPnP device can dynamically join a network, obtain an IP address, convey its capabilities and learn about other devices on the network. A device can leave a network smoothly and automatically when it is no longer in use.

UPnP hardware is identified as an icon in the **Network Connection** folder (in Windows XP). Each UPnP-compatible device that is installed on the ZXHN H108L network will appear as a separate icon.

Figure 26 shows the UPnP management page. Set the parameters according to requirement and click the **SAVE** button to save the changes.

FIGURE 26 THE UPNP MANAGEMENT PAGE



DDNS Management

Dynamic DNS (DDNS) allows the user to update the current dynamic IP address with one or many dynamic DNS services so that anyone can contact the user through various applications.

The user needs to have registered a dynamic DNS account with www.dyndns.org. It is for people with a dynamic IP from their ISP or DHCP server that would still like to have a DNS name. The dynamic DNS service provider will give the user a password or key.

Figure 27 shows the DDNS management page. Table 24 describes the parameters.

FIGURE 27 THE DDNS MANAGEMENT PAGE

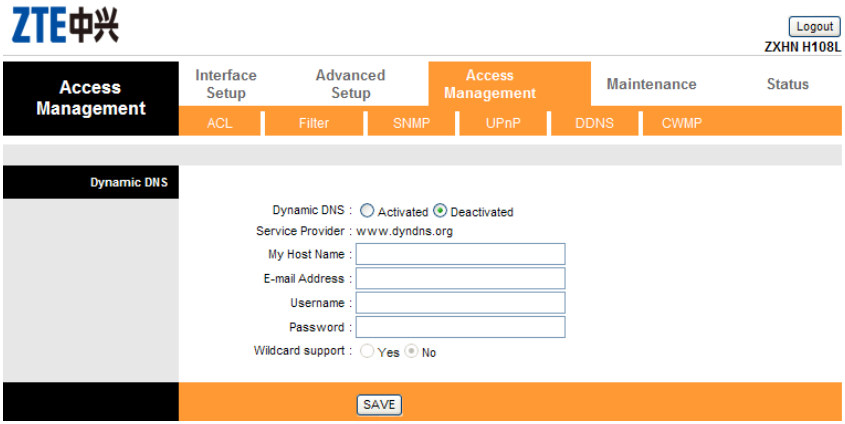


TABLE 24 THE DDNS PARAMETERS

Parameter	Description
Active	Dynamic DNS can be toggled **Activated** or **Deactivated**.
Service Provider	The name of the dynamic DNS service provider.
My Host Name	Enter the domain name assigned to the ZXHN H108L router by the dynamic DNS provider.
E-mail Address	Enter the user's e-mail address.
Username	Enter the username provided by ISP.
Password	Enter the password.
Wildcard support	Choose whether or not to have DYNDNS Wildcard.

Click the **SAVE** button to save the changes.

CWMP Management

Figure 28 shows the **CWMP management** configuration page. By default, the CWMP service is deactivated. Users can activate the service and set the parameters according to Table 25.

FIGURE 28 THE CWMP MANAGEMENT PAGE

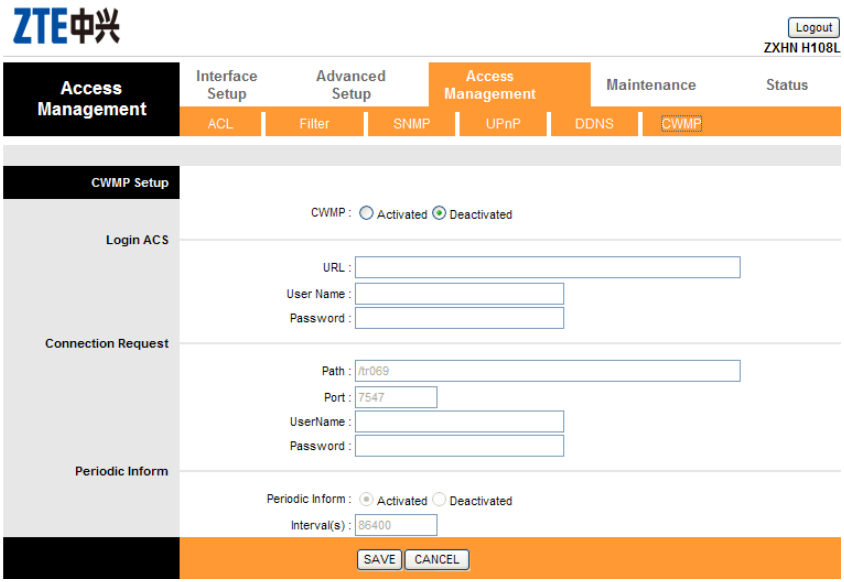


TABLE 25 THE CWMP PARAMETERS

Parameter	Description
CWPM	CWMP can be toggled **Activated** and **Deactivated**.
URL	Enter the URL address of the ACS server
User Name	Enter the user name of ZXHN H108L to login the ACS server.
Password	Enter the password of ZXHN H108L to login the ACS server.
Path	Enter the path for the packet exchange between the ZXHN H108L router and the ACS server. By default, the path is tr069.
Port	Enter the port for the packet exchange between the ZXHN H108L router and the ACS server. By default, the port is 80.
UserName	Enter the user name for the ACS server to access the ZXHN H108L router.
Password	Enter the password for the ACS server to access the ZXHN H108L router.

Parameter	Description
Periodic inform	To configure whether the ZXHN H108L router sends the **Inform** packet periodically.
Interval(s)	Enter the interval to send the Inform packet: 1 ~ 86400 s (24 hours)

Click the **SAVE** button to save the changes or CANCEL to discard the changes.

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Chapter 7

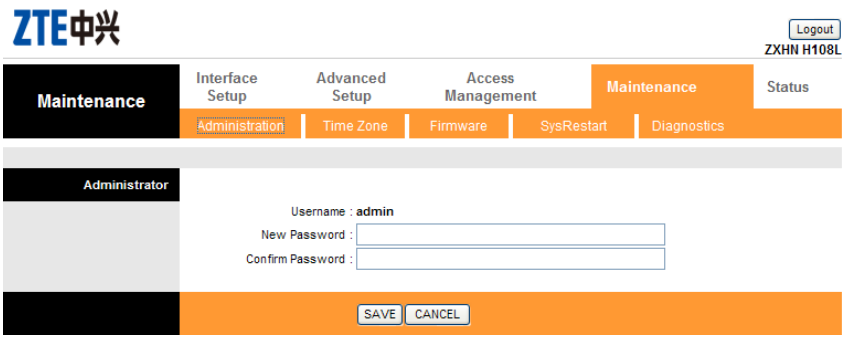
Maintenance

The **Maintenance** page helps the user to manage the ZXHN H108L router.

Administration Configuration

The **Administration** page, as shown in Figure 29 is used to change the ZXHN H108L router login password. Click the **SAVE** button to save the new password or **CANCEL** to discard the changes.

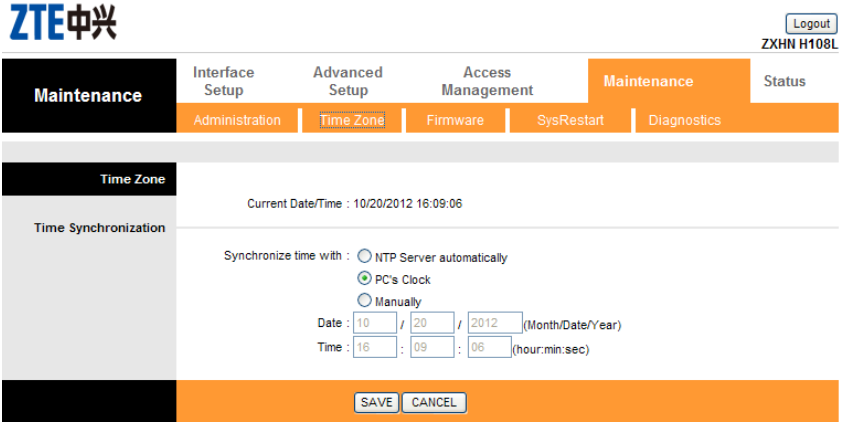
FIGURE 29 THE ADMINISTRATION CONFIGURATION PAGE



Time Zone Configuration

The **Time Zone** configuration page is used to change the ZXHN H108L router's date and time, as shown in Figure 30. Click the **SAVE** button to save the new password or **CANCEL** to discard the changes.

FIGURE 30 THE TIME ZONE CONFIGURATION PAGE

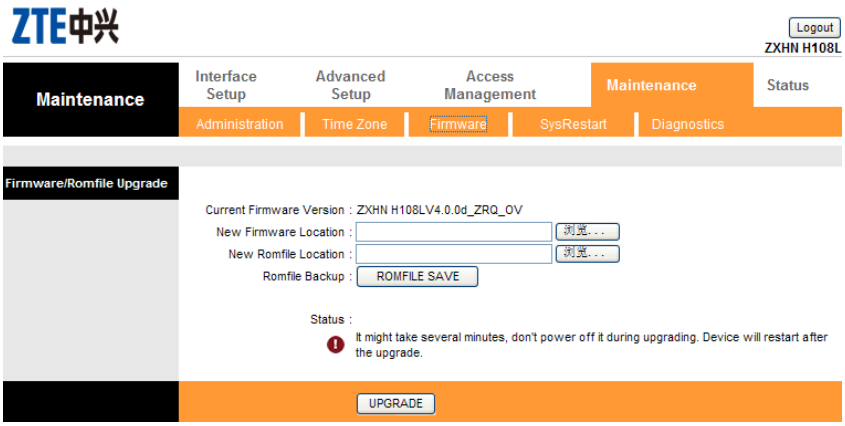


Firmware Configuration

The **Firmware** configuration page shown in Figure 31 is used to view and update the ZXHN H108L router firmware.

Click the **Browse** button to upload the firmware. And then click the **UPGRADE** button to perform the update.

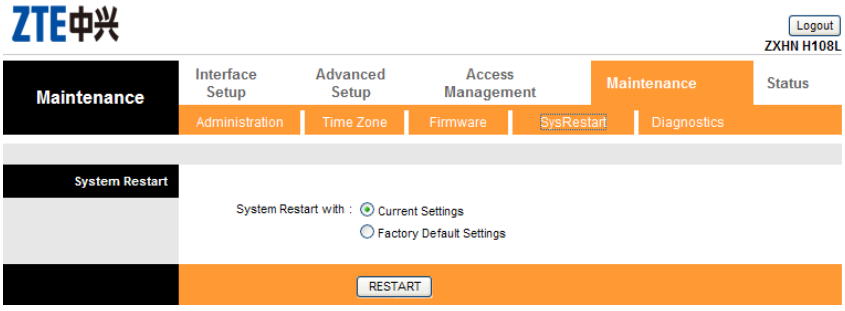
FIGURE 31 THE FIRMWARE CONFIGURATION PAGE



SysRestart Configuration

The **SysRestart** configuration page is used to determine whether the current setting or the factory default setting to be loaded after the ZXHN H108L router restarting. Click the **RESTART** button to restart the ZXHN H108L router.

FIGURE 32 THE SYSTEM RESTART CONFIGURATION PAGE

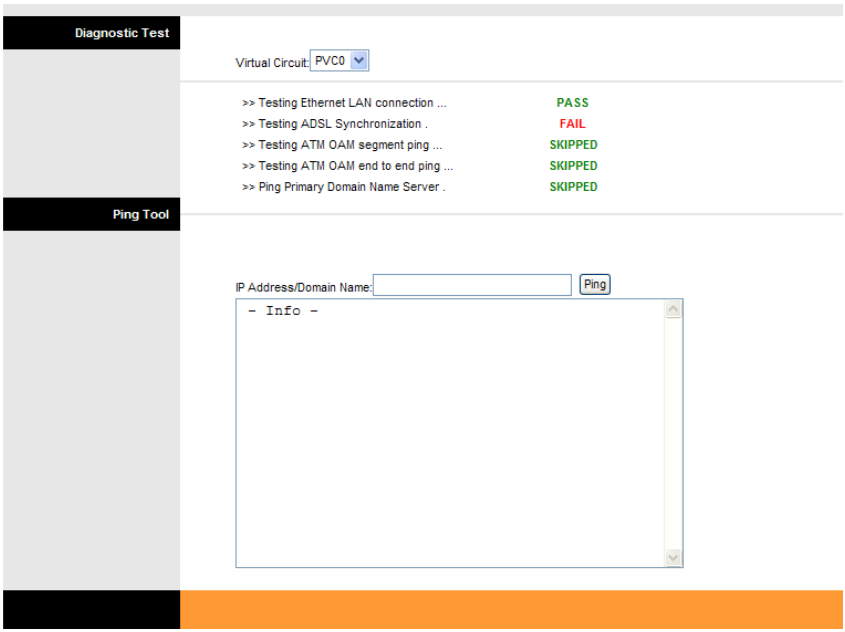


Diagnostics

The performance of the virtual circuits can be tested through the Diagnostics page, as shown in Figure 33. Select a PVC from the dropdown list and the corresponding testing result will be displayed.

PASS means the test is passed; **FAIL** means the test is failed; **SKIPPED** means the test is skipped.

FIGURE 33 THE DIAGNOSTICS PAGE



Chapter 8

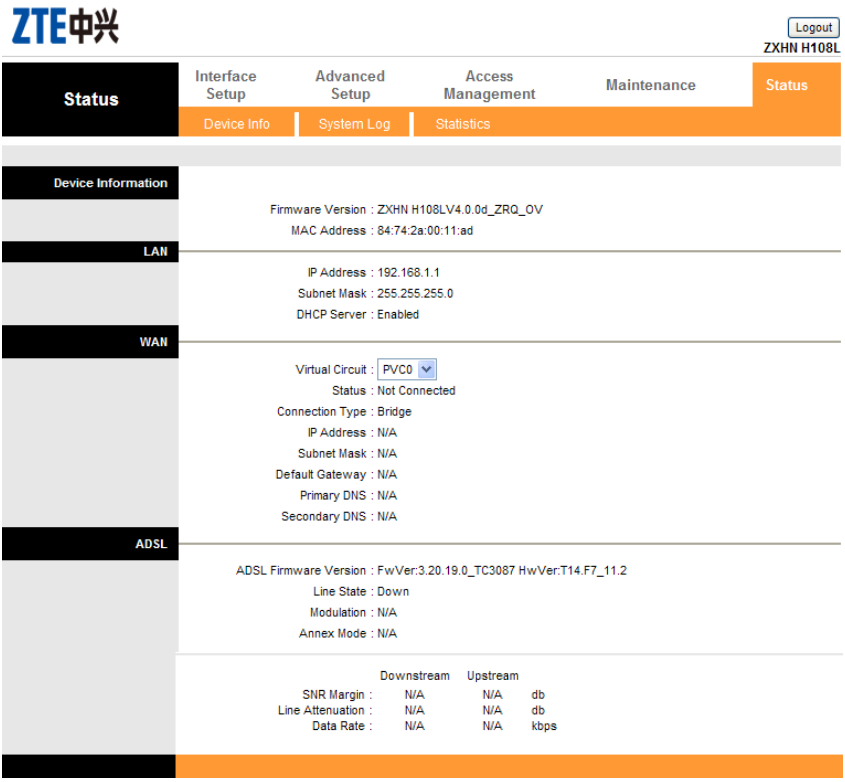
Status

The **Status** page provides the information about the ZXHN H108L router.

Device Information

Figure 34 is the **Device Information** page. It presents the Internet related settings of the ZXHN H108L router.

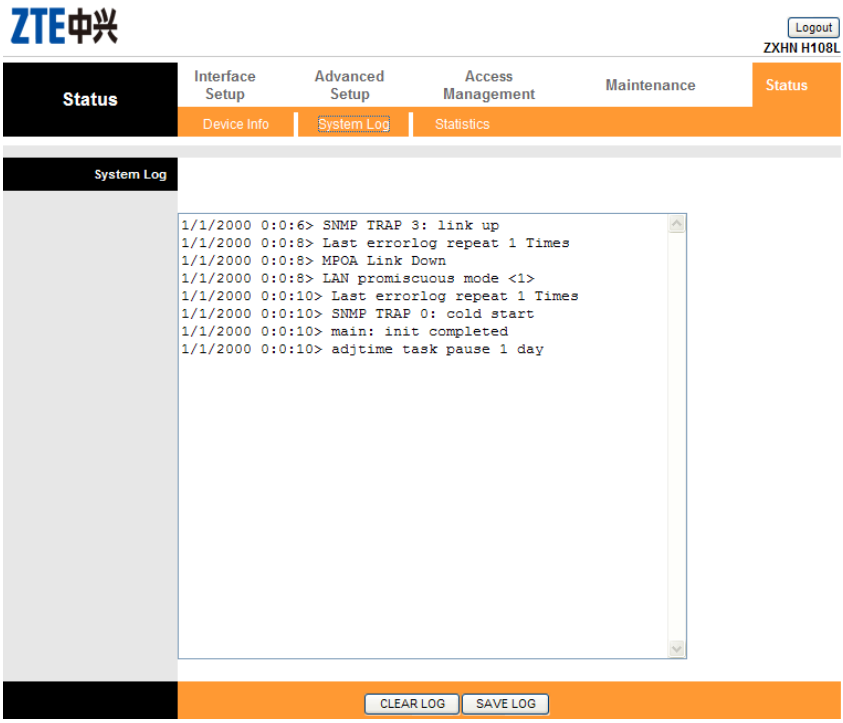
FIGURE 34 THE DEVICE INFORMATION PAGE



System Log

The **System Log** page displays a log of the ZXHN H108L router operating, as shown in Figure 35. Click the **CLEAR LOG** button to clear the log or **SAVE LOG** to save the log to a file.

FIGURE 35 THE SYSTEM LOG PAGE



Statistics

The Statistics page shown in Figure 36 presents the information on how much data the ZXHN H108L router has processed. Choose **Ethernet**, **ADSL** or **WLAN** option to view the corresponding statistics information. Click the **REFRESH** button to update the data.

FIGURE 36 THE STATISTICS PAGE

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Chapter 9

Troubleshooting

This chapter describes how to troubleshoot problems when installing and using a ZXHN H108L. For any problems not addressed here; contact the service provider for help.

TABLE 26 TROUBLESHOOTING

Problem	Troubleshooting
Power indicator is OFF when the device is powered on.	Make sure to use the power adapter included in the package. Make sure that the adapter is connected properly to the device and power outlet.
DSL indicator is OFF when the telephone line is connected.	Make sure to use standard telephone lines (e.g., the companion telephone line). Make sure that the lines are connected properly. Check all the port connections. Wait for 60 seconds for the device to establish an ADSL connection.
When the telephone line is connected, DSL indicator alternates between slow and fast flashing.	It indicates the connection failure between the device and the office-end DSLAM. Please make sure that the lines are connected properly. If a telephone is required to be installed in front of the splitter, make sure to install a voice filter properly.
LAN indicator is OFF when the Ethernet cable is connected.	Make sure that the Ethernet cable is connected properly to the computer and the ZXHN H108L. Make sure that the device and computer are all powered on.
WLAN unable to be connected	Make sure that the WLAN indicator is ON. Make sure that the wireless NIC is set properly. Check the network name, encryption mode, and encryption key to see whether they match the settings of the ZXHN H108L.

Problem	Troubleshooting
PC unable to access the network	▪ Use the ping command to check if the IP address of the network port of the ZXHN H108L (192.168.1.1 by default) can be pinged from the computer. If it cannot be pinged successfully, check the Ethernet connection and see if the indicator status is normal. ▪ It is recommended that the local IP address and DNS server address are set to be obtained automatically. ▪ It is recommended to close all the running firewall and VPN software. ▪ Disable the proxy server setting of the web browser (e.g., IE). ▪ The failure reason may be that the office-end devices of the ADSL service provider are being upgraded or in maintenance.

Appendix A

Technical Specifications

Items	Parameter Description
ADSL interface	▪ Compatible standards: ANSI T1.413 Issue 2, ITU G.992.1 (G.dmt), ITU G.992.2 (G.lite), ITU G.992.3 (ADSL2), ITU G.992.5 (ADSL2+), Annex A,, I, J, L,M ▪ Line impedance: 100 Ω ▪ Connection line: A pair of ordinary telephone wires ▪ Connector: RJ-11
LAN interface	▪ Interface: 10/100 Base-T, IEEE 802.3/802.3u ▪ Connector: RJ-45 ▪ Automatic recognition of crossover cable and straight-through cable
WAN interface	▪ Working frequency band: 2.4GHz~2.4835GHz ▪ Compatible standards: IEEE 802.11b, IEEE 802.11g, IEEE 802.11n ▪ Rates: 1/2/5.5/11/6/9/12/18/24/36/48/54/150Mbps
Physical size	▪ 120mm(L) x 110mm(W) x 50mm(H)
Weight	▪ 450g(including the package and kits)
Power adapter	▪ Input: 100 ~ 240 VAC, 50/60Hz, 250m A(max) ▪ Output: 12V±5%, 500 mA
Environmental requirement	▪ Operating temperature: -5 °C ~ 45 °C ▪ Operating humidity: 5%~95%
Security	▪ CE

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Appendix B

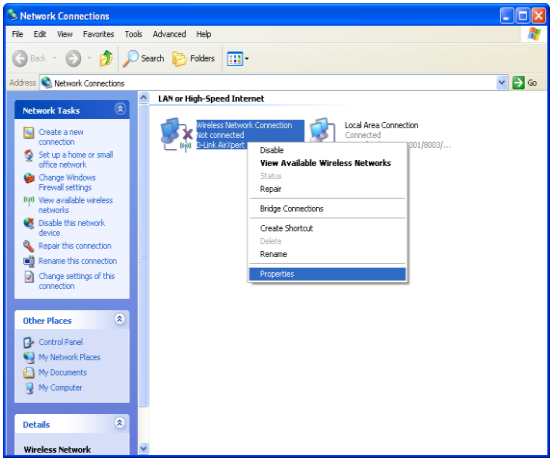
Computer WLAN Configuration

To access the ZXHN H108L in the wireless way from the computer, the user needs to configure WLAN settings of the computer as follows (the following example assumes that the user adopts a laptop computer with a built-in wireless NIC and the operating system is Windows XP):

1. From the Windows taskbar, select **Start > Control Panel**.

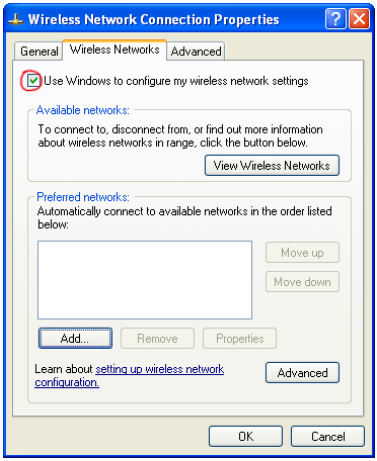
2. Double click the **Network Connections** icon. Right-click **Wireless Network Connection** and then select **Properties**. In the **Wireless Network Connection Properties** page, click the **General** tab, and set the wireless NIC to obtain the IP address and DNS server address from the ZXHN H108L automatically via DHCP. Refer to section **"**Configuring TCP/IP**"** in Chapter 2 for the detailed procedure.

FIGURE 37 NETWORK CONNECTIONS



3. In the **Wireless Network Connection Properties** page, click the **Wireless Networks** tab, and check **Use Windows to configure my wireless network settings**. Check if the desired WLAN SSID is included in the **Preferred networks** area. If there is no desired SSID, click the **Add** button.

FIGURE 38 WIRELESS NETWORKS

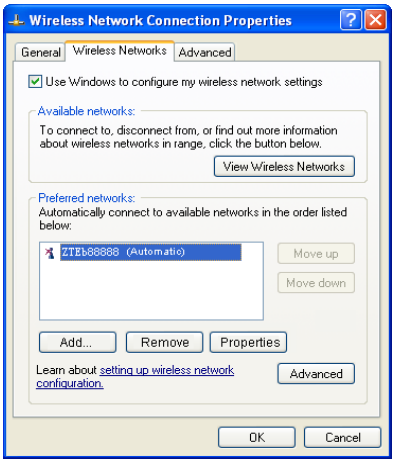


4. In the **Network name (SSID)** field, type in an SSID (the same as the one set for the ZXHN H108L; case sensitive). If the ZXHN H108L enables wireless security (see section **Wireless Security** in **Chapter 6** for security setup), supposing that the user adopts **WEP** with **Both** as **Authentication Type** and **Ee68o** as **Encryption key**, select **Open** for **Network Authentication** and **WEP** for **Data encryption**. Uncheck **The key is provided for me automatically**. In the **Network key** fields, type in **Ee68o** (the same as the encryption key for the ZXHN H108L), and then click **OK**.

FIGURE 39 ASSOCIATION TAB (WIRELESS NETWORK PROPERTIES)

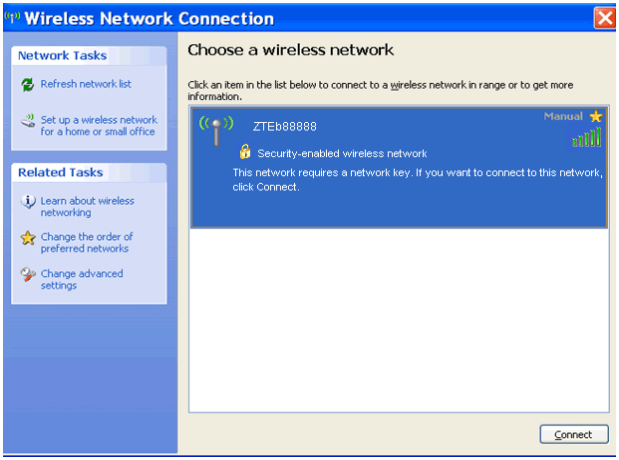
5. Click the **View Wireless Networks** button to view the wireless network list.

FIGURE 40 VIEW WIRELESS NETWORKS



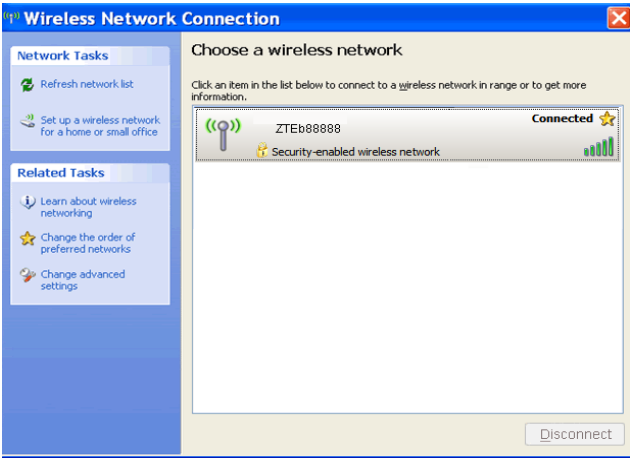
6. Check the wireless network list to see if the newly added wireless network connection exists. If not, click **Refresh network list** in the left pane of the page. If the wireless network is found, select it and then click the **Connect** button on the bottom of the page.

FIGURE 41 CHOOSE A WIRELESS NETWORK



7. Now the computer shall be suceessfully connected to the wireless network.

FIGURE 42 SUCCESSFUL WIRELESS CONNECTION



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Appendix C

PPPoE Dial-up Configuration

This appendix presents the procedures to set up a PPPoE dial-up connection in a Window XP operation system.

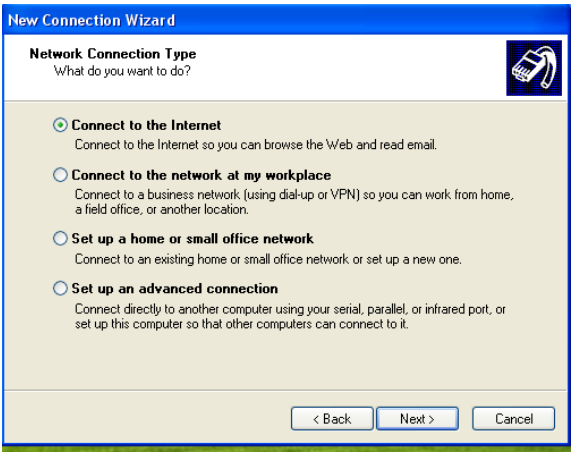
To set up a PPPoE dial-up connection:

1. Click **Start > All Programs > Accessories > Communications > New Connection Wizard** to open the page as shown in Figure 43.

FIGURE 43 PPPOE DIAL-UP CONFIGURATION 1

2. Click **Next** and choose the option of **Connect to the Internet**.

FIGURE 44 PPPOE DIAL-UP CONFIGURATION 2

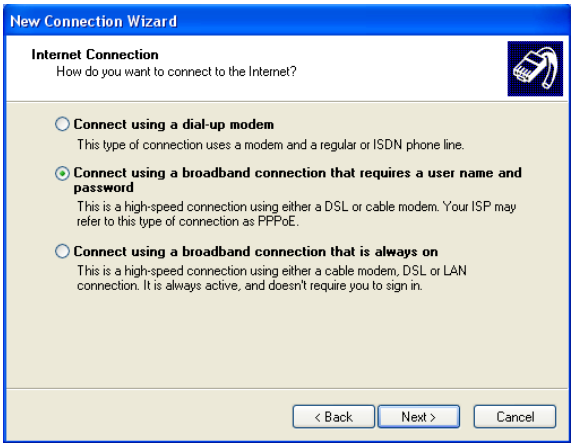


3. Click **Next** and choose the option of **Set up my conneciton manually**.

FIGURE 45 PPPOE DIAL-UP CONFIGURATION 3

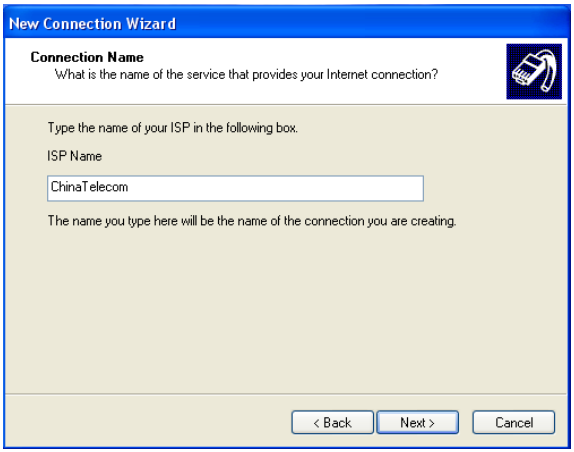
4. Click **Next** and choose the option of **Connect using a broadband that requires a user name and password**.

FIGURE 46 PPPOE DIAL-UP CONFIGURATION 4



5. Click **Next** and enter the connection name in the ISP name text box(According the ISP: ChinaTelecom,the following just for example).

FIGURE 47 PPPOE DIAL-UP CONFIGURATION 5



6. Click **Next** and enter the correct user name and password.(According ISP provided:)

FIGURE 48 PPPOE DIAL-UP CONFIGURATION 6

7. Click **Next** and check the box before **Add a shortcut to this connection to my desktop**.

FIGURE 49 PPPOE DIAL-UP CONFIGURATION 7

8. Click **Finish**. A PPPoE connection shortcut will be appeared on the desktop. And the connection is established.

Figures

Tables