



H108N V2.1

Configuration Manual



Contents

1	Accessing the Device	3
2	Setup section.....	4
2.1	Wizard.....	4
2.2	Internet Setup.....	9
2.2.1	Configuration for multi-device with dynamic IP.....	9
2.2.2	Configuration for multi-device with static IP.....	11
2.2.3	Configuration for standalone device with dynamic IP	13
2.2.4	Configuration for standalone device with static IP	14
2.2.5	Configuration for standalone device (generic).....	16
2.2.6	Generic Configuration.....	17
2.3	Wireless	21
2.3.1	Wireless Basics	22
2.3.2	Wireless Security.....	24
2.4	Local Network	28
2.5	Local IPv6 Network	32
2.6	Time and Date.....	35
2.7	Logout.....	36
3	Advanced section	37
3.1	Advanced Wireless.....	37
3.1.1	Advanced Settings.....	38
3.1.2	MAC Filtering.....	40
3.1.3	Security Settings	41
3.1.4	WPS Settings	42
3.2	SAMBA file share	45
3.3	Port opening.....	47
3.3.1	Automatic uPnP.....	47
3.3.2	Port forwarding.....	48
3.3.3	Port filtering.....	50
3.4	Other options.....	51

4	Management section	52
4.1	Global IPv6	52
4.2	System Management	53
4.3	Firmware Update	54
5	Hardware notice	56
5.1	Safety Precautions	56
5.2	System Requirements	57
5.3	Features	57

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1 Accessing the Device

The following is the detailed description of accessing the device for the first time.

Step 1 Open your browser and enter this address:

<http://192.168.1.1:8000>.

Step 2 The **Login** page shown in the following figure appears. Enter the password and click **Login**. The user name and password of the super user are **1234** and **1234**.



Input username and password

Language :

UserName

Password

2 Setup section

In the main interface, click **Setup** tab to enter the **Setup** menu as follow. In the following pages we will discuss about the use of each function.



2.1 Wizard

The H108N V2.1 is customized with the configuration for your internet provider (check the operator logo printed on the case of the router). In this way you don't have to worry because it should work automatically.

May you wish to configure it by yourself, the **Wizard** enables fast and easy configuration of Internet connection and other important parameters. The following sections describe the configuration of those parameters.

When subscribing to a broadband service, you should be aware of the method, by which you are connected to the Internet. Technical information about the

properties of your Internet connection is provided by your Internet service provider (ISP). For example, your ISP should inform you whether you are connected to the Internet using a static or dynamic IP address, or the protocol, such as PPPoA or PPPoE, that you use to communicate over the Internet.

Note:

The next chapter “Internet Setup” describes the scenarios for Movistar Internet Provider in Spain, including the configuration values itself. If this is your case we recommend you jump ahead to the chapter.

Choose **Setup** > **Wizard**. The page shown in the following figure appears.

The screenshot displays the ZTE configuration web interface. At the top, there is a blue header with the ZTE logo and navigation tabs: Setup, Advanced, Management, Status, and Help. A left sidebar contains a menu with options: Setup, Wizard (highlighted), Internet Setup, Wireless, Local Network, Local IPv6 Network, Time and Date, and Logout. The main content area is titled 'SETTING UP YOUR INTERNET' and contains the following text:

You can set up the Internet connection through either of the two ways: Web-based InternetConnection Setup Wizard; Manual setup

For manual setup, you need to have the connection settings provided by your ISP.

INTERNET CONNECTION WIZARD

This wizard assists you to quickly connect the new router to the Internet, through step-by-step instructions. Click the button below to begin.

Note: Before launching the wizard, please ensure that you have correctly followed the steps outlined in the Quick Installation Guide corresponds to the router.

Click **Setup Wizard**. The page shown in the following figure appears.

The screenshot shows the 'Setup Wizard' interface. On the left is a vertical navigation menu with the following items: Setup, Wizard, Internet Setup, Wireless, Local Network, Local IPv6 Network, Time and Date, and Logout. The 'Setup' item is highlighted. The main content area is titled 'WELCOME TO SETUP WIZARD' and contains the following text: 'This wizard guides you to configure your new router and connect to the Internet step by step.' Below this text is a list of four steps: Step 1: Set Time and Date, Step 2: Setup Internet Connection, Step 3: Configure Wireless Network, and Step 4: Completed and Quit. At the bottom of the main area are two buttons: 'Next' and 'Cancel'.

There are 4 steps to configure the device. Click **Next** to continue.

Step 1 Set the time and date in this page. After setting, click **Next**.

The screenshot shows the 'STEP 1: SET TIME AND DATE' configuration page. The left navigation menu is identical to the previous screen, with 'Time and Date' highlighted. The main content area is titled 'STEP 1: SET TIME AND DATE' and contains the following text: 'With the time configuration function, you can configure, update, and maintain the correct time on the internal system clock. In this page, you can set the time zone that you are in and set the network time protocol (NTP) server. You can also configure daylight saving to automatically adjust the time if necessary.' Below this text is a section titled 'TIME SETTING' with a checkbox labeled 'Automatically synchronize with Internet time servers' which is checked. Underneath are two input fields: '1st NTP time server' with the value 'hora.ngn.rima-ldc.net' and '2nd NTP time server' with the value '192.168.2.100'. Below this is a section titled 'TIME CONFIGURATION' with a 'Time Zone' dropdown menu set to '(GMT+01:00) Amsterdam, Berlin, Rome, Stockholm, Vienna, Paris' and a checkbox labeled 'Automatically adjust clock for daylight saving changes' which is checked. At the bottom are three buttons: 'Back', 'Next', and 'Cancel'.

Step 2 Configure the Internet connection in this page.

(A) If the internet service you subscribed is **PPPoE** or **PPPoA**, choose the **Protocol** as following figure appears. Set the VPI and VCI. Enter the user name and password provided by your ISP.

STEP 2: SETUP INTERNET CONNECTION

Please select your ISP (Internet Service Provider) from the list below.

Protocol:

Encapsulation Mode:

VPI: (0-255)

VCI: (32-65535)

Search Available PVC:

PPPOE/PPPOA

Please enter the user name and password provided by your Internet service provider (ISP). Note that the information is case-sensitive. Click "Next" to continue.

Username:

Password:

Confirm Password:

(B) If the internet service you subscribed is **Static IP** or **Dynamic IP**, choose the **Protocol** as following figure appears (this will match to the MER+LLC protocol). The page shown in the following figure appears. For Static IP enter the **IP Address**, **Subnet Mask**, **Default Gateway** and **Primary DNS Server** provided by your ISP.

STEP 2: SETUP INTERNET CONNECTION

Please select your ISP (Internet Service Provider) from the list below.

Protocol:

Encapsulation Mode:

VPI: (0-255)

VCI: (32-65535)

Search Available PVC:

(C) If the protocol is set to be **Bridge**, the page shown in the following figure appears.

STEP 2: SETUP INTERNET CONNECTION

Please select your ISP (Internet Service Provider) from the list below.

Protocol:

Encapsulation Mode:

VPI: (0-255)

VCI: (32-65535)

Search Available PVC:

Click **Next**. The page shown in the following page appears.

Step 3 Configure the wireless network. Enter the information and click **Next**.

Setup

- Wizard
- Internet Setup
- Wireless
- Local Network
- Local IPv6 Network
- Time and Date
- Logout

STEP 3: CONFIGURE WIRELESS NETWORK

The wireless network is enabled by default. You can deselect it to disable it and click "Next" to skip the configuration of wireless network.

Enable Your Wireless Network:

For security concerns, it is highly recommended to change the pre-configured network name. Please set a name for your wireless network that can be easily recognized by wireless clients.

Wireless Network Name (SSID):

If you select "Visible", the SSID of your wireless network can be found by wireless clients. If you select "Invisible", your wireless network is hidden and users need to manually enter the SSID in order to connect to your wireless network.

Visibility Status: Visible Invisible

In order to protect your network from hackers and unauthorized users, you are highly recommended to select one of the following wireless network security settings.

None	Security Level	Best
<input type="radio"/> None	<input type="radio"/> WEP	<input checked="" type="radio"/> WPA-PSK
		<input type="radio"/> WPA2-PSK

Security Mode: WPA-PSK
Select this option if your wireless adapters support WPA-PSK.

Please enter your wireless security key:

WPA Pre-Shared Key:
(8-63 characters, such as a-z, A-Z, 0-9, i.e. "Mfortress123K")

Note: Please enter the same key on your wireless clients to enable proper wireless connection.

Setup

Wizard

Internet Setup

Wireless

Local Network

Local IPv6 Network

Time and Date

Logout

STEP 4: COMPLETED AND RESTART

The setup is complete. Click "Back" to review or modify the settings.

If the Internet connection does not work, try the Setup Wizard again with alternative settings, or use manual setup instead if you have the Internet connection details provided by your ISP.

SETUP SUMMARY

The following shows a detailed summary of your settings. Please print this page out or write the information on a piece of paper, and save it, so you can correctly configure the settings on your wireless client adapters later based on the information in this page.

Time Settings :	1
NTP Server 1 :	hora.ngn.rma-tde.net
NTP Server 2 :	192.168.2.100
Time Zone :	CET
Daylight Saving Time :	1
VPI / VCI :	8/35
Protocol :	PPPoE
Connection Type :	LLC
Username :	test
Password :	****
Wireless Network Name (SSID) :	MOVISTAR_985E
Visibility Status :	1
Encryption :	WPA
Pre-Shared Key :	*****
WEP Key :	

Step 4 Click **Apply** to save the settings.

Note:

In each step of the Wizard page, you can click **Back** to review or modify the previous settings. Click **Cancel** to exit the wizard page.

2.2 Internet Setup

2.2.1 Configuration for multi-device with dynamic IP

Multiuser configuration allows you to create a network of multiple computers, mobile phones, or tablets, with access to the Internet from all of them.

With dynamic addressing, the router will get the IP address required to access Internet dynamically, each time you connect, during the time that the connection remains active. The next time you log in, you will be assigned a different IP address.

The advantage of this configuration is the security as to make use of NAT (Network Address Translation) the private addresses of the computers on your LAN are not visible from the outside internet, but translated into a single public IP and valid from the Internet.

In management GUI, it can be set on **Setup->Internet Setup**:

ATM PVC CONFIGURATION

VPI :	<input type="text" value="8"/>	(0-255)
VCI :	<input type="text" value="32"/>	(32-65535)
Service Category :	UBR Without PCR <input type="button" value="v"/>	
Peak Cell Rate :	<input type="text" value="0"/>	(cells/s)
Sustainable Cell Rate :	<input type="text" value="0"/>	(cells/s)
Maximum Burst Size :	<input type="text" value="0"/>	(cells)

CONNECTION TYPE

Protocol :	<input type="button" value="v"/> PPP over Ethernet (PPI)	
Encapsulation Mode :	<input type="button" value="v"/> PPP over ATM (PPPoA)	
802.1Q VLAN ID :	<input type="button" value="v"/> PPP over Ethernet (PPPoE)	
Priority :	MAC Encapsulation Routines (0 = disable, 1 - 4094)	
	IP over ATM (IPoA)	
	Bridging (0 - 7)	
Enable QinQ :	<input type="checkbox"/>	

NETWORK ADDRESS TRANSLATION SETTINGS

Enable NAT :	<input checked="" type="checkbox"/>
NAT Type :	Full Cone Nat <input type="button" value="v"/>
Enable WAN Service :	<input checked="" type="checkbox"/>
Service Name :	pppoe_8_32_0_1_Internet_

Here is the WAN configuration to set in **Setup->Internet Setup** for the WAN1 connection ("connectivity default"):

- VPI and VCI each: 8/32
- Service Category (QoS): UBR without PCR
- Connection Type: PPPoE
- Encapsulation mode: LLC
- PPPoE Username: adslppp@telefonicanetpa
- PPPoE Password: adslppp
- NAT enabled.

Then refer to the **Advanced** section:

- **Advanced -> QoS Configuration**: these rules are already configured from factory named as UP_Q_3 and traffic priority is given in the order of this list:
 - Traffic to the ACS: 80.58.63.192/255.255.255.192.
 - Traffic for public NGN: 81.47.224.0/255.255.252.0.
- **Advanced -> Routing -> RIP**: rules for 8/32 are turned off.

Finally refer to the **Management -> Access Controls -> Services**, find the WAN connection 8/32, and configure the following protection in the table:

- Allow ICMP traffic from WAN for all IP address (zero).
- Allow FTP, TELNET, HTTP (23, 21, 8000) traffic from WAN for these IP:
 - IP add = 193.152.37.192,80.58.63.128
 - Masks = 255.255.255.240,255.255.255.128
- Deny all other WAN traffic

2.2.2 Configuration for multi-device with static IP

This configuration mode differs from the previous in that your router is assigned a fixed IP address through which you will always access Internet.

In management GUI, it can be set on **Setup->Internet Setup**:

ATM PVC CONFIGURATION

VPI :	<input type="text" value="8"/>	(0-255)
VCI :	<input type="text" value="32"/>	(32-65535)
Service Category :	UBR Without PCR ▾	
Peak Cell Rate :	<input type="text" value="0"/>	(cells/s)
Sustainable Cell Rate :	<input type="text" value="0"/>	(cells/s)
Maximum Burst Size :	<input type="text" value="0"/>	(cells)

CONNECTION TYPE

Protocol :	IP over ATM (IPoA) ▾	
Encapsulation Mode :	PPP over ATM (PPPoA) PPP over Ethernet (PPPoE) MAC Encapsulation Routing (MER) IP over ATM (IPoA) 1 - 4094	
802.1Q VLAN ID :	<input type="text"/>	
Priority :	Bridging	
Enable QinQ :	<input type="checkbox"/>	
Firewall Enable :	<input checked="" type="checkbox"/>	
IPv4 Enable :	<input checked="" type="checkbox"/>	
IPv6 Enable :	<input type="checkbox"/>	

WAN IP SETTINGS

WAN IP Address :	<input type="text" value="your_ip_address"/>
WAN Subnet Mask :	<input type="text" value="255.255.254.0"/>
Default gateway :	<input type="text" value="your_gateway_address"/>
Preferred DNS server :	<input type="text" value="80.58.61.250"/>
Alternate DNS server :	<input type="text" value="80.58.61.254"/>

NETWORK ADDRESS TRANSLATION SETTINGS

Enable NAT :	<input checked="" type="checkbox"/>
NAT Type :	Full Cone Nat ▾
Enable WAN Service :	<input checked="" type="checkbox"/>
Service Name :	<input type="text" value="ipoa_8_32_0_0_Internet_T"/>

Here is the WAN configuration to set in **Setup->Internet Setup** for the WAN1 connection ("connectivity default"):

- VPI and VCI each: 8/32
- Service Category (QoS): UBR without PCR

- Connection Type: IPoA (also called static, RFC 2684, formerly 1483)
- Encapsulation mode: LLC
- WAN IP address: provided by your operator
- WAN subnet mask: provided by your operator
- Default gateway: provided by your operator
- Preferred DNS server: by your operator (Movistar is 80.58.61.250)
- Alternate DNS server: by your operator (Movistar is 80.58.61.254)
- NAT enabled.

Then refer to the **Advanced** section (same config as last chapter):

- **Advanced -> QoS Configuration**: these rules are already configured from factory named as UP_Q_3 and traffic priority is given in the order of this list:
 - Traffic to the ACS: 80.58.63.192/255.255.255.192.
 - Traffic for public NGN: 81.47.224.0/255.255.252.0.
- **Advanced -> Routing -> RIP**: rules for 8/32 are turned off.

Finally refer to the **Management -> Access Controls -> Services**, find the WAN connection 8/32, and configure the following protection in the table (same config as last chapter):

- Allow ICMP traffic from WAN for all IP address (zero).
- Allow FTP, TELNET, HTTP (23, 21, 8000) traffic from WAN for these IP:
 - IP add = 193.152.37.192,80.58.63.128
 - Masks = 255.255.255.240,255.255.255.128
- Deny all other WAN traffic

2.2.3 Configuration for standalone device with dynamic IP

With standalone setup only one PC can be directly connected to the Internet, as it does not use NAT. It is strongly recommended to use some kind of protection on the computer: firewall and antivirus.

In this scenario, the router will transparently work in bridge mode, so your PC will need to establish manually the PPPoE connection with your Internet Provider (ISP). In management GUI, it can be set on **Setup->Internet Setup**:

ATM PVC CONFIGURATION

VPI :	<input type="text" value="8"/>	(0-255)
VCI :	<input type="text" value="32"/>	(32-65535)
Service Category :	<input type="text" value="UBR Without PCR"/>	
Peak Cell Rate :	<input type="text" value="0"/>	(cells/s)
Sustainable Cell Rate :	<input type="text" value="0"/>	(cells/s)
Maximum Burst Size :	<input type="text" value="0"/>	(cells)

CONNECTION TYPE

Protocol :	<input type="text" value="Bridging"/>	
Encapsulation Mode :	<input type="text" value="LLC"/>	
802.1Q VLAN ID :	<input type="text" value="0"/>	(0 = disable, 1 - 4094)
Priority :	<input type="text" value="0"/>	(0 - 7)
Enable QinQ :	<input type="checkbox"/>	
Firewall Enable :	<input checked="" type="checkbox"/>	
	<input type="checkbox"/> Enable Proxy Arp	

Here is the WAN configuration to set in **Setup->Internet Setup** for the WAN1 connection ("connectivity default"):

- VPI and VCI each: 8/32
- Service Category (QoS): UBR without PCR
- Connection Type: bridging
- Encapsulation mode: LLC
- NAT disabled.

2.2.4 Configuration for standalone device with static IP

With standalone setup only one PC can be directly connected to the Internet, as it does not use NAT. It is strongly recommended to use some kind of protection on the computer: firewall and antivirus.

In the WAN side, the router will get a public IP for management. In the LAN side, the router's DHCP will provide to your PC a unique IP configured in the pool, that will be the public line.

This configuration can be set on **Setup->Internet Setup**:

ATM PVC CONFIGURATION

VPI :	<input type="text" value="8"/>	(0-255)
VCI :	<input type="text" value="32"/>	(32-65535)
Service Category :	UBR Without PCR ▾	
Peak Cell Rate :	<input type="text" value="0"/>	(cells/s)
Sustainable Cell Rate :	<input type="text" value="0"/>	(cells/s)
Maximum Burst Size :	<input type="text" value="0"/>	(cells)

CONNECTION TYPE

Protocol :	IP over ATM (IPoA) ▾	
Encapsulation Mode :	PPP over ATM (PPPoA) PPP over Ethernet (PPPoE) MAC Encapsulation Routing (MER)	
802.1Q VLAN ID :	<input type="text" value="IP over ATM (IPoA)"/>	1 - 4094
Priority :	Bridging	
Enable QinQ :	<input type="checkbox"/>	
Firewall Enable :	<input checked="" type="checkbox"/>	
IPv4 Enable :	<input checked="" type="checkbox"/>	
IPv6 Enable :	<input type="checkbox"/>	

WAN IP SETTINGS

WAN IP Address :	<input type="text" value="your_ip_address"/>
WAN Subnet Mask :	<input type="text" value="255.255.254.0"/>
Default gateway :	<input type="text" value="your_gateway_address"/>
Preferred DNS server :	<input type="text" value="80.58.61.250"/>
Alternate DNS server :	<input type="text" value="80.58.61.254"/>

NETWORK ADDRESS TRANSLATION SETTINGS

Enable NAT :	<input type="checkbox"/>
NAT Type :	Full Cone Nat ▾
Enable WAN Service :	<input checked="" type="checkbox"/>
Service Name :	<input type="text" value="ipoa_8_32_0_0_Internet_T"/>

Here is the WAN configuration to set in **Setup->Internet Setup** for the WAN1 connection ("connectivity default"):

- VPI and VCI each: 8/32
- Service Category (QoS): UBR without PCR
- Connection Type: IPoA (also called static, RFC 2684, formerly 1483)
- Encapsulation mode: LLC
- WAN IP address: provided by your operator (management IP)
- WAN subnet mask: provided by your operator
- Default gateway: provided by your operator
- Preferred DNS server: by your operator (Movistar is 80.58.61.250)
- Alternate DNS server: by your operator (Movistar is 80.58.61.254)
- NAT disabled.

In the **Setup->Local Network**, find the section “DHCP settings”:

- DHCP IP Address Range = [Start] = [End] = provided by your operator
- DHCP IP mask = 255.255.255.252
- DHCP gateway IP = first static address of the public WAN

Then refer to the **Advanced -> Routing -> RIP** and ensure rules for 8/32 are turned off.

2.2.5 Configuration for standalone device (generic)

Based on your default factory configuration you can emulate the “standalone” scenario with much easier configuration. Simply use the DMZ to expose your computer to internet.

Refer to section **Advanced > DMZ**:

The screenshot shows the configuration interface for the ZTE H108N V.2.1 router. The top navigation bar includes 'Setup', 'Advanced', 'Management', 'Status', and 'Help'. The left sidebar lists various configuration options, with 'DMZ' selected. The main content area is titled 'DMZ' and contains the following text: 'The DSL router forwards IP packets that do not belong to any application configured in the Port Forwarding list, from WAN to the DMZ host.' Below this, it says: 'Enter IP address of the computer and click "Apply" to enable the DMZ host.' and 'Clear the field of the IP address and click "Apply" to disable the DMZ host.' Underneath, there is a section for 'DMZ HOST' with a dropdown menu for 'WAN Connection' set to 'PVC 8/32', a checked 'Enable DMZ' checkbox, and a text input field for 'DMZ Host IP Address' containing '192.168.1.33'. At the bottom of this section are 'Apply' and 'Cancel' buttons.

- Select your connection VCI/VPI (probably 8/32). You can review the list of connections in Setup > Internet Setup. The list will display which one is connected.
- Select enable DMZ (de-militarized zone)
- Enter the IP of the computer or device that you want to expose to internet as standalone system.
- Click **Apply**.
- On your computer you don't need to take any action. It will have full bi-directional communication with Internet. It is recommended to install a firewall and antivirus software for basic protection.

2.2.6 Generic Configuration

The H108N V2.1 is customized with the configuration for your internet provider (check the operator logo printed on the case of the router). In this way you don't have to worry because it should work automatically.

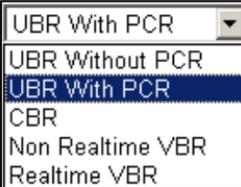
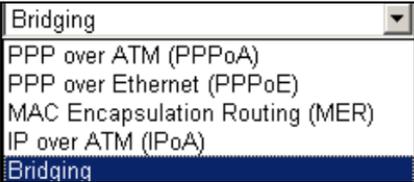
However, you can access and modify manually the configuration in the section **Setup > Internet Setup**. The page shown in the following figure appears. In this page, you can configure the WAN interface of the device.

Setup	INTERNET SETUP																														
Wizard	Choose "Add", "Edit", or "Delete" to configure WAN interfaces.																														
Internet Setup	<p style="text-align: center;">WAN SETUP</p> <table border="1"> <thead> <tr> <th></th> <th>VPI/VCI</th> <th>VLAN ID</th> <th>ENCAP</th> <th>Service Name</th> <th>Protocol</th> <th>State</th> <th>Status</th> <th>Backup3G</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>8/36</td> <td>0</td> <td>LLC</td> <td>PVC:8/36</td> <td>PPPoE</td> <td>1</td> <td>Disconnected</td> <td>1</td> <td>Connect</td> </tr> <tr> <td><input type="checkbox"/></td> <td>8/32</td> <td>0</td> <td>LLC</td> <td>PVC:8/32</td> <td>PPPoE</td> <td>1</td> <td>Disconnected</td> <td>1</td> <td>Connect</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Add"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> </p>		VPI/VCI	VLAN ID	ENCAP	Service Name	Protocol	State	Status	Backup3G	Action	<input type="checkbox"/>	8/36	0	LLC	PVC:8/36	PPPoE	1	Disconnected	1	Connect	<input type="checkbox"/>	8/32	0	LLC	PVC:8/32	PPPoE	1	Disconnected	1	Connect
	VPI/VCI	VLAN ID	ENCAP	Service Name	Protocol	State	Status	Backup3G	Action																						
<input type="checkbox"/>	8/36	0	LLC	PVC:8/36	PPPoE	1	Disconnected	1	Connect																						
<input type="checkbox"/>	8/32	0	LLC	PVC:8/32	PPPoE	1	Disconnected	1	Connect																						
Wireless																															
Local Network																															
Local IPv6 Network																															
Time and Date																															
Logout																															

Click **Add** and the page shown as the following figure appears.

Setup	INTERNET SETUP
Wizard	In this page, you can configure an ATM PVC identifier (VPI and VCI) and select a service category.
Internet Setup	<p style="text-align: center;">ATM PVC CONFIGURATION</p> <p>VPI : <input type="text" value="0"/> (0-255)</p> <p>VCI : <input type="text" value="35"/> (32-65535)</p> <p>Service Category : <input type="text" value="UBR With PCR"/></p> <p>Peak Cell Rate : <input type="text" value="0"/> (cells/s)</p> <p>Sustainable Cell Rate : <input type="text" value="0"/> (cells/s)</p> <p>Maximum Burst Size : <input type="text" value="0"/> (cells)</p> <p style="text-align: center;">CONNECTION TYPE</p> <p>Protocol : <input type="text" value="Bridging"/></p> <p>Encapsulation Mode : <input type="text" value="LLC"/></p> <p>802.1Q VLAN ID : <input type="text" value="0"/> (0 = disable, 1 - 4094)</p> <p>Priority : <input type="text" value="0"/> (0 - 7)</p> <p>Enable QinQ : <input type="checkbox"/></p> <p>Firewall Enable : <input checked="" type="checkbox"/></p> <p style="margin-left: 20px;"><input type="checkbox"/> Enable Proxy Arp</p> <p style="text-align: center;"> <input type="button" value="Apply"/> <input type="button" value="Cancel"/> </p>
Wireless	
Local Network	
Local IPv6 Network	
Time and Date	
Logout	

The following table describes the parameters in the previous page.

Field	Description
PVC Settings	<p>VPI: The virtual path between two points in an ATM network and its valid value is from 0 to 255.</p> <p>VCI: The virtual channel between two points in an ATM network, ranging from 32 to 65535 (0 to 31 is reserved for local management of ATM traffic).</p>
Service Category	<p>You can select from the drop-down list.</p> 
Protocol	<p>You can select from the drop-down list.</p>  <p>Please see the explanation note below this table for more advanced information.</p>
Encapsulation Mode	<p>Select the method of encapsulation provided by your ISP. You can select LLC or VCMUX.</p>

Regarding the “protocols” available:

Bridging: the device will become a simple switch/bridge with five ports (4 ETH + 1 DSL), and the traffic is repeated as-is to any port.

- Your PC(s) will need to have public address/es, and also require an external remote gateway. Your network will be public and externally routable.
- Most internet providers (but not all) can support this kind of traffic on their network (DSLAMs), or even allow you to have more than one public IP address.
- All routing functions of the H108N are turned off just for this “pure bridging mode”, so NAT is not possible here.
- If your internet provider requires a PPPoE session, but you want to configure the router in “bridging mode”, you will need to establish the connection from your PC(s) manually.

MER (MAC Encapsulated Routing): equivalent to the above, the device will also bridge the traffic “MAC packets” to the DSL port, but it will encapsulate it first for the VC. For this reason it often has other equivalent names:

- “Ethernet encapsulation” or “IPoEoATM”
- “RFC1483 or RFC2684”
- “RFC1483 or RFC2684 bridged” (no “IP” here)

IPoA (IP over ATM): the device will route the traffic (IP packets), and encapsulate it for sending over your DSL line (ATM). For this reason it has other equivalent names:

- “RFC1483 or RFC2684 bridged IP”
- “RFC1483 or RFC2684 routed”

For the two latter protocols, the RFC2684 allows your router to perform bridging on the WAN side while routing on the LAN side (thus NAT).

Finally, the **PPPoE** and **PPPoA** match the two latter protocols, but the router will establish a PPP session to deliver the traffic to the right gateway.

Click **Apply** to make the settings take effect and the page is shown as the following figure appears.

INTERNET SETUP

Choose "Add", "Edit", or "Delete" to configure WAN interfaces.

WAN SETUP

	VPI/VCI	VLAN ID	ENCAP	Service Name	Protocol	State	Status	Backup3G	Action
<input type="checkbox"/>	0/35	0	LLC	PVC:0/35	Bridge	1	Disconnected	-	-
<input type="checkbox"/>	8/36	0	LLC	PVC:8/36	PPPoE	1	Disconnected	1	Connect
<input type="checkbox"/>	8/32	0	LLC	PVC:8/32	PPPoE	1	Disconnected	1	Connect

Add Edit Delete

2.3 Wireless

This section describes the wireless LAN and basic configuration. A wireless LAN can be as simple as two computers with wireless LAN cards communicating in a peer-to-peer network or as complex as a number of computers with wireless LAN cards communicating through access points which bridge network traffic to wired LAN.

Choose **Setup > Wireless**. The **Wireless** page shown in the following figure appears.

WIRELESS SETTINGS -- WIRELESS BASIC

Configure your wireless basic settings.

Wireless Basic

WIRELESS SETTINGS -- WIRELESS SECURITY

Configure your wireless security settings.

Wireless Security

2.3.1 Wireless Basics

In the **Wireless** page, click **Wireless Basic**. The page shown in the following figure appears. In this page, you can configure the parameters of wireless LAN clients that may connect to the device.

The screenshot shows the configuration interface for the Wireless Basic settings. On the left is a navigation menu with options: Setup, Wizard, Internet Setup, Wireless, **Wireless Basic** (highlighted), Wireless Security, Local Network, Local IPv6 Network, Time and Date, and Logout. The main content area is titled 'WIRELESS BASIC' and includes a sub-section 'WIRELESS NETWORK SETTINGS'. The settings are as follows:

- Enable Wireless:
- Enable MultiAP Isolation:
- Wireless Network Name (SSID): MOVISTAR_985E
- Visibility Status: Visible Invisible
- Country/Region: Spain
- Control Sideband: Upper
- Wireless Channel: Auto Scan
- 802.11 Mode: 802.11b/g/n
- Band Width: 20 M

A QR code is displayed on the right side of the settings area. Below the settings, a red note states: "Remember your SSID as you will need to configure the same settings on your wireless devices and PC." At the bottom right, there are 'Apply' and 'Cancel' buttons.

The following table describes the parameters in this page.

Field	Description
Enable Wireless	Select this to turn Wi-Fi on.
Enable MultiAP Isolation	Select this to turn MultiAP isolation on. In this way, the computers in separate wireless networks will not be able to see each other.
Wireless Network Name (SSID)	The Wireless Network Name is a unique name that identifies a network. All devices on a network must share the same wireless network name in order to communicate on the network. If you decide to change the wireless network name from the default setting, enter your new wireless network name in this field.

Field	Description
Visibility Status	Select Visible to allow your network to be detected by your computer or any other computer. Select Invisible and it will be harder to connect to your network because the SSID name is not broadcasted.
Country	Select the country from the drop-down list. This may change the number of wireless channels available for WiFi (Spanish law allows up to 13).
Control Sideband	This setting applies only for WiFi N of 40M. Choose the main channel location as Upper or Lower . For example main channel 6 “lower”, will be occupying also channel 10 as secondary (thus 20+20). Select this to avoid interference with neighbors' WiFi.
Wireless Channel	Select the wireless channel from the pull-down menu. Automatic mode will try to avoid interference with neighbors' WiFi. Otherwise to make a smart manual selection you can view the free available channels with scanning programs as inSSIDer.
802.11 Mode	Select the appropriate 802.11 mode based on the wireless clients in your network. It is recommended to keep it as default.
Band Width	Select the appropriate band of 20M , 40M or 20M/40M according to your subscribed broadband service. If you are in a dense neighborhood, selecting 40M may not be appropriate because your network it will occupy 9 channels bandwidth (in 2.4G), thus you will experience mutual interference and reduced speed.

Click **Apply** to save the settings.

Note:

By default, there are only 16 allowed computers for each WiFi which are enough for home or small office. Refer to further section titled “advanced wireless” to increase this number.

There is a **QRcode** square on the right of the page. This QRcode can help your cell phone connect to the wireless network of **H108V** automatically. It can also help you to note down / recover your Wi-Fi's password if you forgot it.

Note:

Just taking photo of QRcode will not work. Instead you need to have a reading application, for example: QR barcode scanner (Android), Bidi (iPhone), BeeTagg (WP7), etc.

2.3.2 Wireless Security

In the **Wireless** page, click **Wireless Security**. The page shown in the following figure appears. The defaulted **Security Mode** is **WPA only** in this page. Wireless security is vital to your network to protect the wireless communication among wireless stations, access points and wired network.

Note:

Enable Wireless before configuring the wireless security settings in this page. Refer to **2.3.1** ¡Error! No se encuentra el origen de la referencia. to enable Wireless.

If the Security Mode is set to be **Auto (WPA or WPA2)**, **WPA2 only**, or **WPA only**, the following page appears.

Setup	WIRELESS SECURITY
Wizard	In this page, you can configure the wireless security settings for the router. Please note that changes made in this page must also be duplicated to your wireless clients and PC.
Internet Setup	WIRELESS SECURITY MODE
Wireless	To protect your privacy, you can configure wireless security features. The device supports 3 wireless security modes including: WEP, WPA, and WPA2. WEP is the original wireless encryption standard. WPA and WPA2 provide higher levels of security.
Wireless Basic	Security Mode : <input type="text" value="WPA only"/> WPA Encryption : <input type="text" value="TKIP+AES"/>
Wireless Security	WPA Select WPA or WPA2 to achieve a balance of strong security and best compatibility. This mode uses WPA for legacy clients while maintaining higher security with stations that are WPA2 capable. The strongest cipher that the client supports is used. For the highest security, select WPA2 Only . This mode uses AES (CCMP) cipher and legacy stations are not allowed to access with WPA security. For maximum compatibility, select WPA Only . This mode uses TKIP cipher. Some gaming and legacy devices work only in this mode. To achieve better wireless performance, select WPA2 Only (which uses AES cipher). WPA-PSK does not require an authentication server. The WPA option requires an external RADIUS server. WPA Mode : <input type="text" value="WPA-PSK"/> Group Key Update Interval : <input type="text" value="0"/>
Local Network	PRE-SHARED KEY
Local IPv6 Network	Pre-Shared Key : <input type="text" value="*****"/>
Time and Date	Remember your SSID and the security key as you will need to configure the same settings on your wireless devices and PC.
Logout	<input type="button" value="Apply"/> <input type="button" value="Cancel"/>

The following table describes the parameters in this page.

Field	Description
Security Mode	Configure the wireless encryption mode. You can choose None , WEP , Auto (WPA or WPA2) , WPA 2 Only or WPA Only . <ul style="list-style-type: none"> ● Wired equivalent privacy (WEP) encrypts data frames before transmitting over the wireless network. ● Wi-Fi protected access (WPA) is a subset of the IEEE802.11i security specification draft.

Field	Description
	<ul style="list-style-type: none"> WPA2 Mixed is the collection of WPA and WPA2 encryption modes. The wireless client establishes the connection between the modem through WPA or WPA2. <p>Key differences between WPA and WEP are user authentication and improved data encryption. Currently WEP is considered easily vulnerable.</p>
WPA Encryption	When WPA or WPA2 is selected, you can select WPA encryption as AES or TKIP+AES .
WPA Mode	<ul style="list-style-type: none"> Select PSK (Pre-Shared Key); enter the pre-shared key in the Pre-Shared Key field. Select Enterprise (RADIUS) if you have an external accounts' server. Enter the port, IP address, and password of the Radius server. You need to enter the username and password provided by the Radius server when the wireless client connects the modem.
Group Key Update Interval	When WPA encryption is applied, messages sent are encrypted with a password. For higher security, WPA password is updated periodically. This value is the update interval of the WPA password.

Click **Apply** to save the settings.

If the Security Mode is set to be **WEP**, the following page appears.

Setup

Wizard

Internet Setup

Wireless

Wireless Basic

Wireless Security

Local Network

Local IPv6 Network

Time and Date

Logout

WIRELESS SECURITY

In this page, you can configure the wireless security settings for the router. Please note that changes made in this page must also be duplicated to your wireless clients and PC.

WIRELESS SECURITY MODE

To protect your privacy, you can configure wireless security features. The device supports 3 wireless security modes including: WEP, WPA, and WPA2. WEP is the original wireless encryption standard. WPA and WPA2 provide higher levels of security.

Security Mode :

WEP

If you select WEP, the device operates **ONLY** in Legacy Wireless mode (802.11B/G).

WEP is the wireless encryption standard. To use it, you must enter the same key(s) on the router and the wireless stations. A 64-bit key consists of 10 hexadecimal digits and a 128-bit key consists of 26 hexadecimal digits. A hexadecimal digit is a number from 0 to 9 or a letter from A to F. For the most secure use of WEP, set the authentication type to "Shared Key".

You may also enter any text string into a WEP key box, in which case it will be converted into a hexadecimal key using the ASCII values of the characters. A maximum of 5 text characters can be entered for 64 bit keys, and a maximum of 13 characters for 128 bit keys.

WEP Key Length :
 Choose WEP Key :
 WEP Key1 :
 WEP Key2 :
 WEP Key3 :
 WEP Key4 :
 Authentication :

Remember your SSID and the security key as you will need to configure the same settings on your wireless devices and PC.

The following table describes the parameters of this page.

Field	Description
WEP Key Length	Choose the WEP key length. You can Choose 64-bit or 128-bit .
Choose WEP Key	Choose the index of WEP Key. You can choose Key 1, 2, 3 or 4 .
WEP Key 1/2/3/4	The Encryption keys are used to encrypt the data. Both the modem and wireless stations must use the same encryption key for data transmission. The default key 1 is 1234567890 .

Field	Description
Authentication	There are 2 authentications in WEP encryption. Open and Share key . Both authentications support WEP encryption. But the message header is different in wireless broadcast.

2.4 Local Network

You can configure the LAN IP address according to the actual application. The preset IP address is 192.168.1.1. You can use the default settings and DHCP service to manage the IP settings for the private network.

You can also enable the secondary LAN IP address. The two LAN IP addresses must be in different networks. Usually the second network is used for STB devices providing IPTV service.

Choose **Setup > Local Network**. The **Local Network** page shown in the following figure appears.

The screenshot shows the 'LOCAL NETWORK' configuration page. On the left is a navigation menu with options: Setup, Wizard, Internet Setup, Wireless, Local Network (highlighted), Local IPv6 Network, Time and Date, and Logout. The main content area is titled 'LOCAL NETWORK' and contains the following text: 'In this page, you can configure the local network settings of your router. Please note that settings in this page are optional and you need not change any of the settings in this page to get your network up and running.'

Below this is the 'ROUTER SETTINGS' section, which includes:

- Router IP Address: 192.168.1.1
- Subnet Mask: 255.255.255.0
- Domain Name: homestation
- Enable Proxy Arp
- Configure the second IP Address and Subnet Mask for LAN
- IP Address: 192.168.249.1
- Subnet Mask: 255.255.255.252

The following table describes the parameters in this page

Field	Description
Router IP Address	Enter the IP address of LAN interface. It is recommended to use an address from a block that is reserved for private use (192.168.1.1-192.168.255.254). The IP address available in the DHCP IP address pool changes automatically if you change the IP address of the device.
Subnet Mask	Enter the subnet mask of LAN interface. The range of subnet mask is from 255.255.0.0-255.255.255.254. The default mask 255.255.255.0 allow up to 253 computers in the private network.
Domain Name	Enter the domain name if you know. If you leave this blank, the domain name obtained by DHCP from the ISP is used. You must enter host name (system name) on each individual PC. The domain name can be assigned from the router through the DHCP server.
Configure the second IP Address and Subnet Mask for LAN	Select it to enable the secondary LAN IP address. The two LAN IP addresses must be in the different network.

By default, **Enable DHCP Server** is selected for all the Ethernet LAN interface of the device. DHCP service supplies IP settings to workstations configured to automatically obtain IP settings that are connected to the device through the Ethernet port. When the device is used for DHCP, it becomes the default gateway for DHCP client connected to it.

If you change the IP address of the home gateway, it will also change the range of IP addresses in the pool used for DHCP on the LAN. The IP address pool can contain up to 253 IP addresses.

DHCP SETTINGS (OPTIONAL)

Use this section to configure the DHCP Relay for your network.

Enable DHCP Relay

Relay IP Address :

In this page, you can configure the built-in DHCP server to assign IP addresses to the computers on your network.

Enable DHCP Server

DHCP IP Address Range : to

DHCP IP Mask :

DHCP Router IP :

DHCP Lease Time : (seconds)

Use the following DNS server addresses:

Enable static DNS

Preferred DNS server :

Alternate DNS server :

Enable DNS Relay

Use this section to configure the DHCP Server in lan port individual:

LAN Port1

LAN Port2

LAN Port3

LAN Port4

WLAN Port1

WLAN Port2

WLAN Port3

WLAN Port4

Click **Apply** to save the settings.

The **DHCP Client Class List** section shown in the following figure appears.

DHCP CLIENT CLASS LIST

Client Class	Min Address	Max Address	DNS Address
--------------	-------------	-------------	-------------

Click **Add** to add DHCP client class (optional). The page shown in the following figure appears.

ADD DHCP CLIENT CLASS(OPTIONAL)

Client Class Name :
Min IP Address :
Max IP Address :
DNS Address :

Apply Cancel

You can assign IP addresses on the LAN to specific individual computers based on their MAC addresses. The following page shows the **DHCP RESERVATIONS LIST**.

This is commonly used to assign a "fixed permanent IP" to videogames (Xbox, PS, Nintendo, etc), or sometimes to computers, that need opening ports for playing network games or downloading files.

Click **Add** to add static DHCP (optional). The page shown in the following figure appears.

DHCP RESERVATIONS LIST

Status	Computer Name	MAC Address	IP Address
--------	---------------	-------------	------------

Add Edit Delete

ADD DHCP RESERVATION (OPTIONAL)

Enable :
Computer Name :
IP Address :
MAC Address :

Apply Cancel

Select **Enable** to reserve the IP address for the designated PC with the configured MAC address. The **Computer Name** helps you to recognize the PC

with the MAC address, for example, Father's Laptop. Click **Apply** to save the settings.

After the DHCP reservation is saved, the DHCP reservations list displays the configuration.

The **NUMBER OF DYNAMIC DHCP CLIENTS** page shows the current DHCP clients (PC or Laptop) connected to the device and the detailed information of the connected computer(s).

You can query from here easily the MAC address of your videogame or computer, if you want to reserve it a "fixed IP" (DHCP Reservation) as explained before.

NUMBER OF DYNAMIC DHCP CLIENTS : 0

Computer Name	MAC Address	IP Address	Expire Time
---------------	-------------	------------	-------------

2.5 Local IPv6 Network

The IPv6 is the new standard for networking. It allows new functionality and much more addresses than the previous one which was running short - so many address that it can be considered unlimited. It had its premiere on 6th June 2012 by some important Internet companies like Google®, Facebook®, Microsoft®, Movistar®, etc.

For the above reason, the "Local IPv6 network" is normally used together with "Internet Setup" checking IPv6 too. This way you enable IPv6 on both sides and you are able to browse "pure-IPv6" web sites in a standard way. All these IPv6 options are enabled by default in the router ZTE H108N V2.1.

Note:

Windows has a built-in feature called "Teredo". To ensure compatibility it will always send the IPv6 through the "old network" (encapsulated). In this way even you are still using the old network, the new IPv6 web sites will work for you. This is okay while the older networks still exist.

Note:

Starting at Windows 8 the network is automatically tested so that if IPv6 works correctly then Windows will choose “pure-IPv6” network. Otherwise when it detects some problems, it will fall back to the old Teredo for your convenience.

Choose **Setup > LAN IPv6**. The page shown in the following figure appears. This page allows you to config IPv6 LAN.

Setup

- Wizard
- Internet Setup
- Wireless
- Local Network
- Local IPv6 Network**
- Time and Date
- Logout

IPv6 LAN SETTINGS

Note: Stateless DHCPv6 is supported after the 16 bits of IPv6 address. For example: Interface ID ranges from 1 to ffff, and IPv6 address ranges from 2111:123:123::1 to 2111:123:123::ffff.

STATIC LAN IPV6 ADDRESS CONFIGURATION

IPv6 Interface Address

DHCPV6 CONFIGURATION

Enable DHCPv6 Server

LAN address config mode Stateless Stateful

Start Interface ID

End Interface ID

DHCPv6 Lease Time

Use the following DNS server addresses.

Get DNS Servers from WAN

Static DNS Servers

Static IPv6 DNS Servers

UNIQUE LOCAL ADDRESSES CONFIGURATION

Enable RADVD

ULA mode Propagate WAN Statically Configure BOTH

Address (e.g: fe80::1/64)

Prefix (e.g: fe80::/64)

Preferred Life Time

Valid Life Time

The following table describes the parameters of this page.

Field	Description
IPv6 Interface Address	The address through which your PCs access the router (equivalent to 192.168.1.1). Here it's default fe80::1 which is standard local link gateway.
Enable DHCPv6 Server	Choose to enable or disable DHCPv6 service.
LAN address config mode	Set the mode for obtaining IP from LAN PCs. You may choose Stateless or Statefull . Stateless is default, where all hosts get always the same IP of type "fe80::MAC". This is more convenient for port redirection.
Start/End Interface ID	The address pool using DHCPv6 for address assignment under statefull mode.
DHCPv6 Lease Time	The address lease time using DHCPv6 for address assignment under statefull mode.
Enable RADVD	Choose to enable or disable router advertisement service (RADVD). Necessary for routing to work.
Propagate WAN	Use the site prefix obtained at the WAN side as the prefix to issue (from your Internet Provider). This is the default and recommended configuration. Your PCs will get a public IPv6.
Static	Manually add a site prefix. This will create an internal network.

Note:

Even when your PCs get a public IPv6, they are still protected by the "port filtering" function. Please refer to the section regarding port opening.

2.6 Time and Date

The router will automatically sync with Movistar time server.

To change this choose **Setup > Time and Date**. The page shown in the following figure appears.

TIME AND DATE

With the time configuration function, you can configure, update, and maintain the correct time of the internal system clock. In this page, you can set the time zone that you are in and set the network time protocol (NTP) server. You can also configure daylight saving to automatically adjust the time if necessary.

TIME SETTING

Automatically synchronize with Internet time server

Primary NTP time server: hora.ngn.rima-tde.net

Secondary NTP time server:

TIME CONFIGURATION

Current Local Time: 2012-05-23 01:44:23

Time Zone: (GMT+01:00) Amsterdam, Berlin, Rome

Automatically adjust clock for daylight saving changes

Apply Cancel

In the **Time and Date** page, you can configure, update, and maintain the correct time on the internal system clock. You can set the time zone that you are in and the network time protocol (NTP) server. You can also configure daylight saving to automatically adjust the time when needed.

Select **Automatically synchronize with Internet time servers**. Enter the specific time server and select the time zone from the corresponding drop-down lists.

Select **Automatically adjust clock for daylight saving changes** if necessary. Set the daylight as you want.

Click **Apply** to save the settings.

2.7 Logout

Choose **Setup > Logout**. The page shown in the following figure appears. In this page, you can log out of the configuration page. Please close your browser window or tab for increased security.

LOGOUT

Logging out will return to the login page.

Logout

3 Advanced section

This section includes advanced features for network management, security and administrative tools to manage the device. You can view status and other information used to examine performance and troubleshoot.

3.1 Advanced Wireless

This function is used to modify the standard 802.11g wireless radio settings. It is suggested not to change the defaults, as incorrect settings may reduce the performance of your wireless radio. The default settings provide the best wireless radio performance in most environments.

Choose **ADVANCED > Advanced Wireless**. The page shown in the following figure appears.

The screenshot displays the configuration interface for the ZTE H108N device. On the left is a vertical navigation menu with the following items: Advanced, Advanced Wireless, Advanced Settings, MAC Filtering, Security Settings, WPS Settings, Port Forwarding, DMZ, SAMBA, 3G WAN configuration, Parental Control, Filtering Options, QoS Configuration, Firewall Settings, DNS, Dynamic DNS, Network Tools, Routing, and Schedules. The 'Advanced' menu item is highlighted in blue. The main content area on the right is titled 'ADVANCED WIRELESS -- ADVANCED SETTINGS' and contains the text: 'You can configure advanced features of the wireless LAN interface.' Below this text is a button labeled 'Advanced Settings'. The next section is titled 'ADVANCED WIRELESS -- MAC FILTERING' and contains the text: 'You can configure wireless firewall by denying or allowing designated MAC addresses.' Below this text is a button labeled 'MAC Filtering'. The third section is titled 'ADVANCED WIRELESS -- SECURITY SETTINGS' and contains the text: 'You can configure security features of the wireless LAN interface.' Below this text is a button labeled 'Security Settings'. The final section is titled 'ADVANCED WIRELESS -- WPS SETTING' and contains the text: 'You can configure the wireless WPS.' Below this text is a button labeled 'WPS Setting'.

3.1.1 Advanced Settings

Select **Advance Settings**. The page shown in the following figure appears.

ADVANCED WIRELESS SETTINGS

Transmission Rate :

Multicast Rate :

Transmit Power :

Beacon Period : (20 ~ 1000)

RTS Threshold : (256 ~ 2346)

Fragmentation Threshold : (256 ~ 2346)

DTIM Interval : (1 ~ 255)

Preamble Type :

SSID

Enable Wireless :

Wireless Network Name (SSID) :

Visibility Status : Visible Invisible

User Isolation :

WMM Advertise :

Max Clients : (1 ~ 32)

GUEST/VIRTUAL ACCESS POINT-1

Enable Wireless Guest Network :

Guest SSID :

Visibility Status : Visible Invisible

User Isolation :

WMM Advertise :

Max Clients : (1 ~ 32)

GUEST/VIRTUAL ACCESS POINT-2

Enable Wireless Guest Network :

Guest SSID :

Visibility Status : Visible Invisible

User Isolation :

WMM Advertise :

Max Clients : (1 ~ 32)

GUEST/VIRTUAL ACCESS POINT-3

Enable Wireless Guest Network :

Guest SSID :

Visibility Status : Visible Invisible

User Isolation :

WMM Advertise :

Max Clients : (1 ~ 32)

Wireless Network Name (SSID): The Wireless Network Name is a unique name that identifies a network. All devices on a network must share the same wireless network name in order to communicate on the network. If you decide to change the wireless network name from the default setting, enter your new wireless network name in this field.

Note:

By default, there are only 16 allowed computers for each WiFi which are enough for home or small office. You can change it in this screen, under your WiFi name, attribute “max clients”.

The other settings are only for more technically advanced users who have sufficient knowledge about wireless LAN. Do not change these settings unless you know the effect of changes on the device.

Here are some tips for troubleshooting advanced users:

- In a large environment, let's say multi-roomed offices or hotel floors (>300m²), where you have many devices (>7) with traffic collision at the same time causing the performance speed is very low, you can avoid this problem by reducing “RTS threshold” down to 500.
- In a high interference environment, let's say near microwaves, electric motors, Bluetooth devices, wireless phones at home (DECT), etc, where many packets are lost due to errors and performance speed is low, you can avoid this problem by reducing “fragmentation threshold” down to 820 normally or even 500. Lower values can also be used, but it can start to affect the performance for the added overhead.
- In reduced home environment, without multicast voice-video or network gaming (none of these take place) you can increase the DTIM interval to 2 or even 4. This will save battery on your mobile equipment (phone, tablet and laptop) with a imperceptible delay at message reception.

Click **Apply** to save the settings.

3.1.2 MAC Filtering

Select **MAC Filtering**. The page shown in the following figure appears.

Advanced

Advanced Wireless

Advanced Settings

MAC Filtering

Security Settings

WPS Settings

Port Forwarding

DMZ

SAMBA

3G WAN configuration

Parental Control

MAC ADDRESS

If you enable the MAC Address Access Control mode, if enabled, hosts with MAC addresses contained in the access control list are allowed to access to the router.

Enter the MAC address of the management station allowed to access the router, and click "Apply".

ACCESS CONTROL -- MAC ADDRESSES

Enable Access Control Mode

MAC Address

Add Delete

Choose **Enable Access Control Mode**, and then click **Add** to add a MAC Address as shown in the following figure. You can get the MAC address of your connected devices in the "local network" chapter former in this document.

MAC ADDRESS

MAC Address :

Apply Cancel

This will help you to restrict who can connect to your WiFi network. Click **Apply** to finish.

Note:

Before enabling this option please add your own address to the list first. Otherwise you won't be allowed into your own WIFI. If this happens somehow you will need to connect to the router by cable to fix or disable this protection.

3.1.3 Security Settings

Select **Security Settings**. The page shown in the following figure appears.

Advanced	WIRELESS SECURITY
Advanced Wireless	
Advanced Settings	In this page, you can configure the wireless security settings for the router. Please note that changes made in this page must also be duplicated to your wireless clients and PC.
MAC Filtering	
Security Settings	WIRELESS SSID
WPS Settings	Select SSID : MOVISTAR_985E
Port Forwarding	
DMZ	WIRELESS SECURITY MODE
SAMBA	To protect your privacy, you can configure wireless security features. The device supports 3 wireless security modes including: WEP, WPA, and WPA2. WEP is the original wireless encryption standard. WPA and WPA2 provide higher levels of security.
3G WAN configuration	Security Mode : WPA only
Parental Control	WPA Encryption : TKIP+AES
Filtering Options	
QoS Configuration	WPA
Firewall Settings	Select WPA or WPA2 to achieve a balance of strong security and best compatibility. This mode uses WPA for legacy clients while maintaining higher security with stations that are WPA2 capable. The strongest cipher that the client supports is used. For the highest security, select WPA2 Only . This mode uses AES (CCMP) cipher and legacy stations are not allowed to access with WPA security. For maximum compatibility, select WPA Only . This mode uses TKIP cipher. Some gaming and legacy devices work only in this mode.
DNS	To achieve better wireless performance, select WPA2 Only (which uses AES cipher).
Dynamic DNS	WPA-PSK does not require an authentication server. The WPA option requires an external RADIUS server.
Network Tools	WPA Mode : WPA-PSK
Routing	Group Key Update Interval : 0
Schedules	
NAT	PRE-SHARED KEY
DLNA	Pre-Shared Key :
IP Tunnel	Remember your SSID and the security key as you will need to configure the same settings on your wireless devices and PC.
Logout	Apply Cancel

Select the SSID that you want to configure from the drop-down list. Select the encryption type from the **Security Mode** drop-down list. You can select **None**, **WEP**, **AUTO (WPA or WPA2)**, **WPA Only** or **WPA2 Only**. The defaulted security mode is **WPA only**. For detailed configuration, you may refer to 2.3.2 Wireless Security.

3.1.4 WPS Settings

The WPS helps your computer PC to connect easily to the WIFI network using a small PIN number or without password at all with the push of a button.

By default, the router brings WPS in “enrollee mode” and the WPS led turned on. When your computer wants to connect to a WiFi network for the first time (Windows Vista or above), it will display a window to ask for a password or alternatively “push the button on the router”.

Note:

Press for 5 seconds the small black button labeled “Wifi/WPS” on the back of the router, and the WPS led will blink green. This will allow just ONE device (your PC) to register into the WiFi network without password during the next 150 seconds. Once done correctly your PC will remember and login automatically in the future.

Note:

Pressing less than 1 second the button “Wifi/WPS” will disable the WiFi network. Press again to enable it back. This functionality is used by many people that want to turn off the WiFi at night time for security reasons, or even to save electric power consumption.

Select **WPS Settings**. This page is used to config WPS settings.

Advanced	WIRELESS WPS <hr/> <p>WPS: You can select different authentication modes in the "Security Setting" page, and broadcast the SSID. The PINH code is saved when you click the PINH button.</p> <hr/> <p>WPS</p> <p>Enabled : <input checked="" type="checkbox"/></p> <p>SSID : <input type="text" value="MOVISTAR_985E"/></p> <p>WPS Version : <input type="text" value="1.0"/></p> <p>Select Mode : <input type="text" value="Enrollee"/></p> <p>Configuration State : <input type="text" value="Configured"/></p> <p>Push Button : <input type="text" value="PBC"/></p> <p>Input Station PINH : <input type="text"/> <input type="text" value="PINH"/></p> <p>WPS Session Status :</p> <p style="text-align: right;"><input type="button" value="Apply"/> <input type="button" value="Cancel"/></p>
Advanced Wireless	
Advanced Settings	
MAC Filtering	
Security Settings	
WPS Settings	
Port Forwarding	
DMZ	
SAMBA	
3G WAN configuration	
Parental Control	
Filtering Options	
QoS Configuration	
Firewall Settings	
DNS	
Dynamic DNS	
Network Tools	
Routing	
Schedules	
NAT	
DLNA	
IP Tunnel	
Logout	

The following table describes the parameters of this page.

Field	Description
Enabled	To enable WPS function and be able to set the following settings.
SSID	The name of your wireless network.
Select Mode	Select the mode either Registrar or Enrollee . <ul style="list-style-type: none"> – Registrar: the router will act as a credentials server and will permanently accept incoming connections with a PIN introduced at the client PC side. – Enrollee (default): when PC tries to connect, you need to enter the PIN (or press button) on the router side. This avoids hacking attempts.

Field	Description
	When a router is in Registrar mode, the client should be in Enrollee mode, and vice versa. Keep reading for more info on “Registrar” mode.
Configuration State	When Configured state is selected, wireless parameters (for example, the encryption password) are provided by the CPE in WPS negotiation. When Unconfigured state is selected, wireless parameters are provided by the connecting user end (for example, PC).
Push Button	Press the button, the CPE will connect the station automatically without password.
Input Station PIN	You need to enter the PIN of the enrollee. If the router is in “enrollee mode”, you can press the “PIN” button and the router will generate one valid PIN for you. Not all PIN numbers are valid.

When **Registrar** mode is chosen, the following page appears. In this condition, only PIN button can be used.

WPS

Enabled :

SSID : MOVISTAR_985E

WPS Version : 1.0

Select Mode : Registrar

Configuration State : Configured

Generate PIN : 12345670

Pin Station :

WPS Session Status :

The following table describes the parameters of this page.

Field	Description
Generate PIN	Press the button to generate a PIN number that the client PC must know. Because PIN testing can be attacked, only 10 attempts are allowed.
PIN Station	Press the button to connect the station with the pin.
WPS Session Status	Display the session status.

3.2 SAMBA file share

SMB or SAMBA is a well known protocol for sharing files over your private network. You can plug one or more USB hard drives/pen drives into the router and share it with all your devices (Smart TV, computers, etc). If necessary you can use a USB hub.

Select **Advanced** > **SAMBA**. The page shown in the following figure appears.

The screenshot shows the SAMBA configuration page. On the left is a navigation menu with 'SAMBA' selected. The main area is titled 'SAMBA' and contains the following text and settings:

SAMBA

You can plug USB drive into the router, and share all files with your other computers in the network.

SAMBA SERVER

Enable SAMBA :

Workgroup :

Netbios Name :

SMB User Name :

New SMB password :

Retype new SMB password :

Enable USB Storage :

Enable Anonymous Access :

Apply Cancel

The following table describes the parameters.

Field	Description
Enable SAMBA	Select the check box to enable this service
Workgroup	Enter the name of your home network (LAN). Default by windows is "Workgroup" and all computers are placed inside.
NetBIOS Name	Enter your NetBIOS name. The router will be listed in the above "workgroup" with this name.
New SMB password	Enter your password to access the files.
Retype new SMB password	Reconfirm your above password.
Enable USB Storage	Select the check box to enable USB storage.
Enable Anonymous Access	Select the check box to allow anonymous users access. The password will NOT be required. This is the default option.

Click **Apply** to save the settings.

Plug your USB memory drive firstly into the router, so that your computer can detect it after one minute.

Note:

There are three ways to access the shared files on the USB port:

- 1) Open the "start menu" and select "run". Paste the following address and press OK: \\192.168.1.1\
 - 2) On your keyboard, hold down the "Windows Logo Key" and press letter "R" (Win+R). Paste the address and press OK: \\192.168.1.1\
 - 3) Find the network icon on your desktop. On the left click view workgroup computers, and find the "dsl_router".
-

3.3 Port opening

The following section explains the difference between “uPnP”, port forwarding and port filtering. The first two are used mainly for a NAT scenario, while the latter is used normally when NO-NAT takes place.

3.3.1 Automatic uPnP

If you enable the *Universal Plug and Play* function in the router, any compatible application that requires opening any port will work automatically. With this option enabled, you don't need to worry about port opening.

For example modern videogames (Xbox, PlayStation, Nintendo, etc) and downloading software (torrent, emule, etc) currently support from factory this way of working.

This option comes disabled in your router, and it is secure to enable it because it will only attend internal LAN queries.

When enabling the uPnP, please make sure you select the proper WAN connection that is active at home. If you have multiple items, you can check which one is working for you in the upper menu “**Setup > Internet Setup**”. The list will display status as “connected” (most probable it's 8/32).

To enable the uPnP, refer to the menu **Advanced > Network Tools > UPnP**:

The screenshot displays the ZTE configuration web interface. At the top, there are navigation tabs: Setup, **Advanced** (highlighted with a black box and labeled (1)), Management, Status, and Help. On the left is a vertical sidebar menu with various configuration options. The 'UPnP' option at the bottom of the sidebar is highlighted with a black box and labeled (2). The main content area is titled 'UPnP' and contains the following text: 'Universal Plug and Play (UPnP) supports peer-to-peer Plug and Play functionality for network devices.' Below this is the 'UPnP SETUP' section, which includes a checkbox for 'Enable UPnP' (checked, labeled (3)), a 'WAN Connection' dropdown menu set to 'PVC:8/32', and a 'LAN Connection' dropdown menu set to 'br0'. There are 'Apply' and 'Cancel' buttons below these settings, with a label (4) positioned between them. At the bottom of the page is a table titled 'UPnP PORT LIST' with three columns: 'Protocol', 'Port', and 'To'. The table is currently empty.

Advanced

Advanced Wireless

Port Forwarding

DMZ

SAMBA

3G WAN configuration

Parental Control

Filtering Options

QoS Configuration

Firewall Settings

DNS

Dynamic DNS

Network Tools

Port Mapping

IGMP Proxy

IGMP Snooping

MLD Configuration

UPnP (2)

Setup **Advanced** (1) Management Status Help

UPnP

Universal Plug and Play (UPnP) supports peer-to-peer Plug and Play functionality for network devices.

UPnP SETUP

(3) Enable UPnP

WAN Connection : PVC:8/32

LAN Connection : br0

Apply Cancel

(4)

UPnP PORT LIST

Protocol	Port	To
----------	------	----

3.3.2 Port forwarding

You can open manually the ports in the router. It is necessary that your device (computer, videogame, etc) has a static/fixed IP address.

Please note: the (possibly empty) list of forwarded ports that you will find is NOT synced with the “easy configuration user portal”. The ports that you open in one of the web portal cannot be seen on the other web portal.

(1)

PORT FORWARDING

Port Forwarding allows you to direct incoming traffic from the WAN side (identified by protocol and external port) to the internal server with a private IP address on the LAN side. The internal port is required only if the external port needs to be converted to a different port number used by the server on the LAN side. A maximum of 80 entries can be configured.

Select the service name, and enter the server IP address and click "Apply" to forward IP packets for this service to the specified server. Note: Modifying the **Internal Port Start** or **Internal Port End** is not recommended. If the **External Port Start** or the **External Port End** changes, the **Internal Port Start** or **Internal Port End** automatically changes accordingly.

(2)

PORT FORWARDING SETUP

Server Name	Wan Connection	External Port Start/End	Protocol	Internal Port Start/End	Server IP Address	Schedule Rule	Remote IP
(3) <input type="button" value="Add"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>							

There is a list of pre-selected services that you can select easily (Kazaa, Quake, MSN, Yahoo messenger, FTP, etc). Otherwise you can write your own service name and specify the desired ports.

Please make sure you select the proper WAN connection where the port will be open (probably 8/32). If you have multiple WAN connections, you can check which one is working for you in the upper menu "**Setup > Internet Setup**". The status will list as "connected" (8/32 or 8/36 or 8/35).

PORT FORWARDING SETUP

Remaining number of entries that can be configured: 80

WAN Connection(s) : PVC:8/32 ▾

Server Name :

Select a Service : (Click to Select) ▾

Custom Service : Emule

Schedule : always ▾ [View Available Schedules](#)

Server IP Address(Host Name) : 192.168.1.33

External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Remote Ip
466	662	TCP ▾	466	466	
466	662	UDP ▾	466	466	
		TCP ▾			
		TCP ▾			

3.3.3 Port filtering

When there is no private NAT in your network because all your computers have public IP, like it may happen with IPv6, then there is no need to “port forwarding”.

Instead you should allow the incoming traffic passing through the router, by the “port filtering” function. By default no traffic is allowed to come into your network for security reasons, but if you start creating rules this behavior may change.

For this reason we recommend you create a firewall filter to “drop” everything, and then add any exception rule that you wish (like allow incoming traffic to some public IP or to port 21). Currently only some operating systems fully support IPv6, starting at Windows Vista.

Normally this scenario (“no-NAT / port filtering”) does not happen at home internet users yet, and you should not worry about this configuration.

If you cannot configure this function due to with an “invalid value!” error, please use Internet Explorer in its latest version and repeat the operation.

The screenshot shows the configuration interface for ZTE H108N. The 'Advanced' tab is selected. The left sidebar contains a menu with 'Filtering Options' (2) and 'IP Filtering' (3) highlighted. The main content area is divided into two sections: 'IP FILTER' and 'FIREWALL'.

(1) IP FILTER

In this page, you can specify a filter name and at least one condition to create a filter for identify incoming IP traffic. All the specified conditions take effect simultaneously. Click "Apply" to save the filter and enable it.

Normally, you will create one 'Firewall filter' to drop all incoming traffic in WAN interface that requires to be forwarded inside (e.g.IPv6).This will protect your internal network computers, and it is the default behaviour when no rules are specified.

FIREWALL

	Name	Interface	In/Out	Default action	Bytes	Pkts	Local/Forward
<input checked="" type="radio"/>	Drop	WAN	In	Drop	0	0	Forward

(4)

RULE

	Enabled	Protocol	IP Version Type	Action	RejectType	IcmpType	OrigIP/ Mask	OrigPort	DestIP/ Mask	DestPort	Bytes	Pkts
<input checked="" type="radio"/>	1	TCP	IPv6	Permit			/	:	2001...	21:2...	0	0

(5)

3.4 Other options

This guide describes the most used functions in a user-friendly way. Please refer to the full guide for all available options.

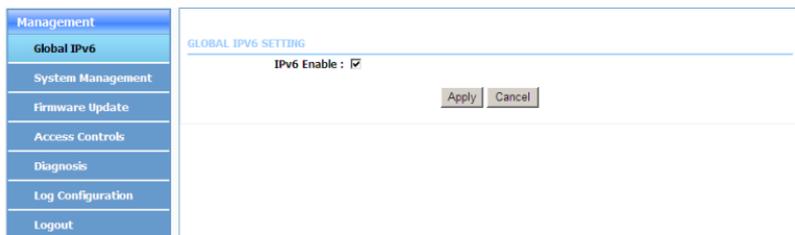
4 Management section

In the main interface, click **Management** tab to enter the **Management** menu as shown in the following figure.



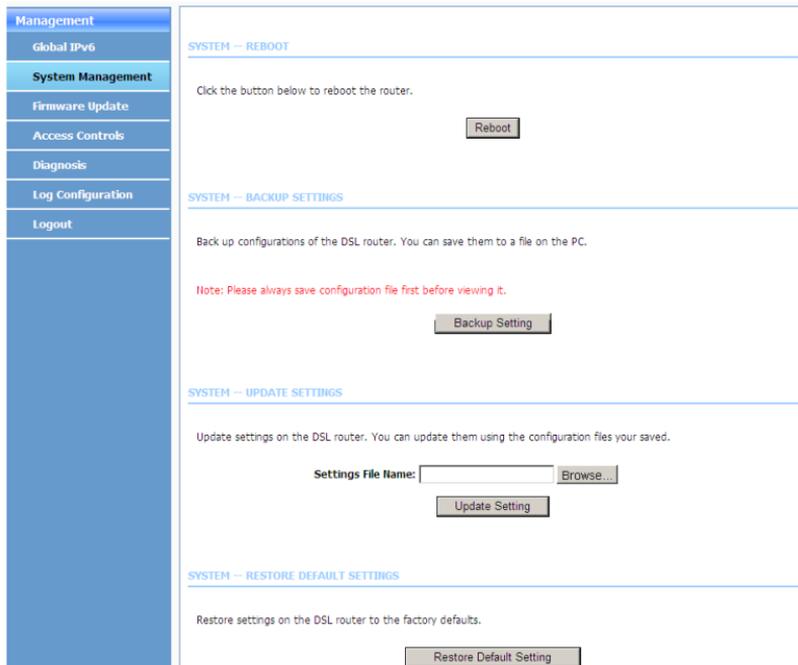
4.1 Global IPv6

Choose **MANAGEMENT** > **Global IPv6**. The page shown in the following figure appears. In this page you can enable or disable IPv6 function.



4.2 System Management

Choose **MANAGEMENT** > **System Management**. The page shown in the following figure appears.



In this page, you can reboot device, back up the current settings to a file, update settings from the file saved previously and restore the factory defaults.

The buttons in this page are described as follows.

Field	Description
Reboot	Click this button to reboot the device.
Backup Setting	Click this button to save the settings to the local hard drive. Select a location on your computer to back up the file. You can name the configuration file.

Update setting	Click Browse to select the configuration file of device and then click Update Settings to begin updating the device configuration.
Restore Default Setting	Click this button to reset the device to default settings.

Note:

Do not turn off your device or press the Reset button while an operation in this page is in progress.

4.3 Firmware Update

Choose **MANAGEMENT > Firmware Update**. The page shown in the following figure appears. In this page, you can upgrade the firmware of the device.

Management

- Global IPv6
- System Management
- Firmware Update**
- Access Controls
- Diagnosis
- Log Configuration
- Logout

FIRMWARE UPDATE

Step 1: Obtain an updated firmware image file from your ISP.

Step 2: Enter the directory of the image file in the following field or click "Browse" to select the image file.

Step 3: Click "Update Firmware" to upload the new image file.

Note: The update process takes about 2 minutes. The DSL router automatically reboots after the update. Please DO NOT power off the router during the update. After click "Update Firmware", page Jump before, do not click on page options.

FIRMWARE UPDATE

Current Firmware Version: 2.1.1
 Current Software Version: ZXHN_H108NV2.1.0k_ERU_ES2_PVC_test
 Current Version Date: 03/13/2013-17:50:56

Select File:

Clear Config:

To update the firmware, take the following steps.

- Step 1** Click **Browse...** to find the file.
- Step 2** Select **Click Config**.
- Step 3** Click **Update Firmware** to copy the file.

The device loads the file and reboots automatically. If you checked the “clear config” option, the router will revert to factory settings, which is the proper configuration for your Internet Provider (printed on the case of the router).

Note:

Do not turn off your device or press the reset button while an operation in this page is in progress.

Note:

The H108N V.2.1 has built-in a dual bank memory. After the reboot the “Internet LED” will blink green/red for some minutes while it upgrades the secondary bank. It is recommended to wait until finished.

This secondary bank helps boot when the main memory is corrupted somehow or wrong upgrade (detected by wrong CRC).

5 Hardware notice

The H108N V2.1 supports multiple line modes. With four 10/100 base-T Ethernet interfaces at the user end, the device provides high-speed ADSL broadband connection to the Internet or Intranet for high-end users like net bars and office users. It provides high performance access to the Internet with a downstream rate of 24 Mbps and an upstream rate of 1 Mbps. It supports 3G WAN, 3G backup, Samba for USB storage and IPV6.

The device supports WLAN access, such as WLAN AP or WLAN device, to the Internet. It complies with specifications of IEEE 802.11, 802.11b/g/n, WEP, WPA, and WPA2 security. The WLAN of the device supports 2T2R.

5.1 Safety Precautions

Take the following instructions to prevent the device from risks and damage caused by fire or electric power:

- Use the type of power marked in the volume label.
- Use the power adapter in the product package.
- Pay attention to the power load of the outlet or prolonged lines. An overburden power outlet or damaged lines or plugs may cause electric shock or fire accidents. Check the power cords regularly. If you find any damage, replace it at once.
- Proper space left for heat dissipation is necessary to avoid damage caused by overheating to the device. The long and thin holes on the device are designed for heat dissipation to ensure that the device works normally. Do not cover these heat dissipation holes.
- Do not put this device close to a heat source or under a high temperature occurs. Keep the device away from direct sunshine.
- Do not put this device close to an overdamp or watery place. Do not spill fluid on this device.

- Do not connect this device to a PC or electronic product unless instructed by our customer engineer or your broadband provider. Wrong connection may cause power or fire risk.
- Do not place this device on an unstable surface or support.

5.2 System Requirements

- A 10 baseT/100BaseT Ethernet card is installed on your PC.
- A hub or switch when several PCs attached through one of Ethernet interfaces on the device
- Internet Explorer 7 or higher, Chrome 1.0, Firefox 1.5 or higher.

5.3 Features

- Various line modes
- External PPPoE dial-up access
- Internal PPPoE and PPPoA dial-up access
- Leased line mode
- 1483B, 1483R, and MER access
- Multiple PVCs (eight at most) and these PVCs can be isolated from each other
- A single PVC with multiple sessions
- Multiple PVCs with multiple sessions
- Binding of ports with PVCs
- 802.1Q and 802.1P protocol
- DHCP server
- NAT and NAPT
- Static route
- Firmware upgrade: Web, TFTP, FTP
- Reset to the factory defaults
- DNS relay
- Virtual server
- DMZ
- Two-level passwords and user names
- Web user interface

- Telnet CLI
- System status display
- PPP session PAP and CHAP
- IP filter
- IP QoS
- Remote access control
- Line connection status test
- Remote management (telnet and HTTP)
- Backup and restoration of configuration file
- Ethernet interface supports crossover detection, auto-correction and polarity correction
- UPnP
- IPV6
- 3G WAN and 3G Backup
- Samba sharing for USB storage