802.11n VPN Broadband Router

VRT-402N

User's Manual

Copyright

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio technician for help.

FCC Caution:

To assure Confirmed compliance, (example-use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the Following two conditions: (1) This device may not cause harmful interference, and (2) this Device must accept any interference received, including interference that may cause undesired operation.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

CE mark Warning

This is a class B device, in a domestic environment; this product may cause radio interference, in which case the user may be required to take adequate measures.

Energy Saving Note of the Device

This power required device does not support Stand by mode operation.

For energy saving, please remove the DC-plug or push the hardware Power Switch to OFF position to disconnect the device from the power circuit.

Without remove the DC-plug or switch off the device, the device will still consuming power from the power circuit. In the view of Saving the Energy and reduce the unnecessary power consuming, it is strongly suggested to switch off or remove the DC-plug for the device if this device is not intended to be active.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE).

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

WEEE regulation

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

User's Manual for PLANET 802.11n VPN Broadband Router
Model: VRT-402N
Rev: 1.0 (July 2010)

TABLE OF CONTENTS

Chapter 1 Introduction

Thank you for purchasing VRT-402N. This manual guides you on how to install and properly use the VRT-402N in order to take full advantage of its features.

1.1 Package Contents

- VRT-402N x 1
- Antenna
- Ethernet Cable x 1
- Power Adapter x 1
- CD-ROM (included user's manual) x 1
- Quick Installation Guide x 1

Note: If any of the above items are missing, please contact your supplier for support.

1.2 Features

Router / NAT Features

- Access Private LAN Servers from the Public Network
- Equipped with four LAN ports (10/100Mbps) and one WAN port (10/100Mbps), Auto-MDI/MDI-X supported
- Supports DHCP Server
- System status monitoring includes Active DHCP Client, Security Log and Device/Connection Status
- Web-based GUI for and Wizard setup for easily configuration
- Remote Management allows configuration and upgrades from a remote site
- Supported Internet types: Dynamic / Static IP / PPPoE / PPTP / L2TP
- Supports UPnP function

Firewall / Security Features

- MAC / IP filter access control, URL blocking ; SPI firewall + DoS prevention protection
- Built in NAT firewall
- Predefined/User-defined service database
- Enable/disable VPN pass-through

VPN Features

- Site-to-site/Client-to-VPN gateway connection capability
- IKE Keying Methods: Auto (Pre-shared Key), Manual Keying
- Authentication: MD5/SHA-1
- Encryption: DES/3DES/AES
- Adjustable IKE SA Life time
- PPTP VPN tunnels : 10
- IPsec VPN tunnels : 25

Wireless Features

- IEEE 802.11n wireless technology compliant with 802.11b/g standard
- Supports Wi-Fi Protected Setup (WPS)
- Advanced security: 64/128-bit WEP, WPA –TKIP(PSK), WPA2-AES(PSK), 802.1x
- Max WDS mode link cloud be set up to 4 sets.
- Multiple SSID (Two SSID)and hidden SSID broadcasting

1.3 Specification

Product	802.11n VPN Broadband Router
Model	VRT-402N
Hardware	
Standard	IEEE 802.11b/g, 802.11n Draft 2.0, IEEE802.3u
Signal Type	11b mode: DSSS 11g mode: OFDM 11n mode: OFDM, MIMO
Modulation	802.11b: DBPSK, DQPSK, CCK 802.11g: BPSK, QPSK, 16QAM, 64QAM 802.11n: BPSK, QPSK, 16QAM, 64QAM
WAN Port	1 x 10/100Base-TX, Auto-MDI/MDI-X
LAN Port	4 x 10/100Base-TX, Auto-MDI/MDI-X
Antenna connector	1 x Detachable dipole 2dBi Dipole Antenna
LED Indicators	PWR* 1, WLAN* 1, WAN * 1, LAN * 4
Data Encryption	64 bit / 128 bit WEP, WPA-PSK, WPA, WPA2, 802.1x encryption
Output Power	11b: 17 dBm 11g: 15 dBm 11n: 15dBm
Data Rate	IEEE 802.11b: 11/5.5/2/1Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6Mbps
N Data Rate	Please check Table (1)
Receiver Sensitivity	11n 20/40MHz MCS7 ,10% PER, -67±2dBm 54Mbps OFDM, 10% PER, -72±2dBm 11Mbps CCK, 8% PER, -88±2dBm
Software	
Router Feature	Access Private LAN Servers from the Public Network Equipped with four LAN ports (10/100Mbps) and one WAN port (10/100Mbps), Supported Internet types: Dynamic / Static IP / PPPoE / PPTP / L2TP 802.1D (Spanning Tree Protocol) DHCP Server / Client UPnP and DDNS DMZ and Virtual Server SNTP Static Routing
Wireless Feature	IEEE 802.11n wireless technology compliant with 802.11b/g standard Supports Wi-Fi Protected Setup (WPS) Advanced security: 64/128-bit WEP, WPA –TKIP(PSK), WPA2-AES(PSK), 802.1x Max WDS mode link cloud be set up to 4 sets. Multiple SSID (Two SSID)and hidden SSID broadcasting
VPN	Site-to-site / Client-to-VPN gateway connection capability IKE Keying Methods: Auto (Pre-shared Key), Manual Keying Authentication: MD5/SHA-1 Encryption: DES/3DES/AES Adjustable IKE SA Life time PPTP VPN tunnels : 10 IPsec VPN tunnels : 25
Session	15000
MPLANETum Clients	253
Virtual Host	32
Port forwarding rule	64

Security	Built-in NAT Firewall MAC / IP/ Port Filtering Content Filtering SPI Firewall support Password protection for system management
Management	Web-based configuration System status monitoring includes Active DHCP Client, Security Log and Device/Connection Status Web-based GUI for and Wizard setup for easily configuration Remote Management allows configuration and upgrades from a remote site

N Data Rate Table (1)

MCS Index	HT20	HT40
	Data rate (Mbps) @ 400ns GI	
0	7.2	15.0
1	14.4	30.0
2	21.7	45.0
3	28.9	60.0
4	43.3	90.0
5	57.8	120.0
6	65.0	135.0
7	72.2	150.0

Chapter 2 Hardware Installation / Network Setup

Please follow the below instruction to build the wireless network connection between VRT-402N and your computers.

2.1 Outlook

Front Panel

WLAN ON/OFF & WPS Button

Active	Time
WLAN On/Off	Press for less than 3 seconds for disable wireless configuration
WPS button	Press for less than 3 seconds for WPS configuration
Reset Default	Press the WPS and WLAN buttons for longer than 3 seconds to the factory default setting

Back Panel

Item Name	Description
Antenna	Attached 2dBi dipole antenna.
1 - 4	Local Area Network (LAN) ports 1 to 4.
WAN	Wide Area Network (WAN / Internet) port.
Power	Power connector, connects to power adapter.

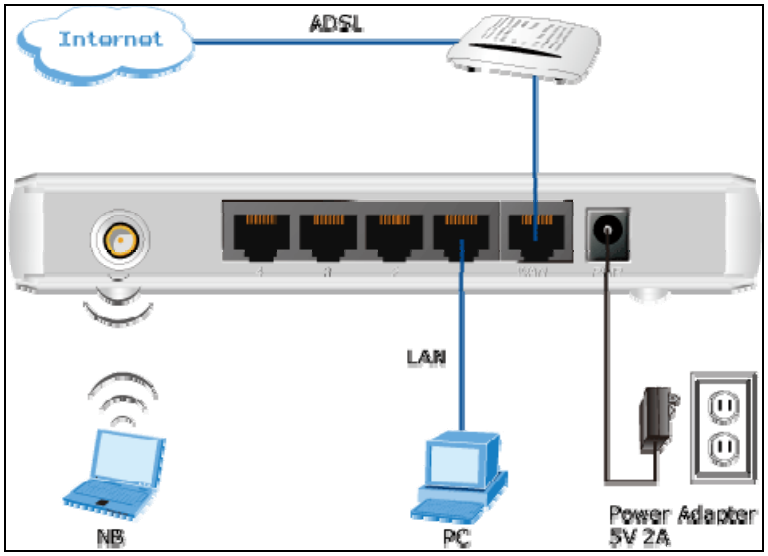
2.2 Hardware Installation

1. **Locate an optimum location for the VRT-402N.** The best place for your VRT-402N is usually at the center of your wireless network, with line of sight to all of your mobile stations.
2. **Adjust the antennas of VRT-402N.** Try to adjust them to a position that can best cover your wireless network. The antenna's position will enhance the receiving sensitivity.

3. **Connect all of your network devices to LAN port of VRT-402N.** Connect all your computers, network devices (network-enabled consumer devices other than computers, like game console, or switch / hub).Connect one of the LAN ports on VRT-402N to your LAN switch/hub or a computer with a RJ-45 cable.

4. **Plug in power adapter and connect to power source**. After power on, VRT-402N will start to operate.

5. **Please check all LEDs on the front panel. 'Status' LED should be steadily on.** WAN and LAN LEDs should be on if the computer / network device connected to the respective port of the router is powered on and correctly connected. If PWD LED is not on, or any LED you expected is not on, please recheck the cabling, or jump to 'Troubleshooting' for possible reasons and solution.



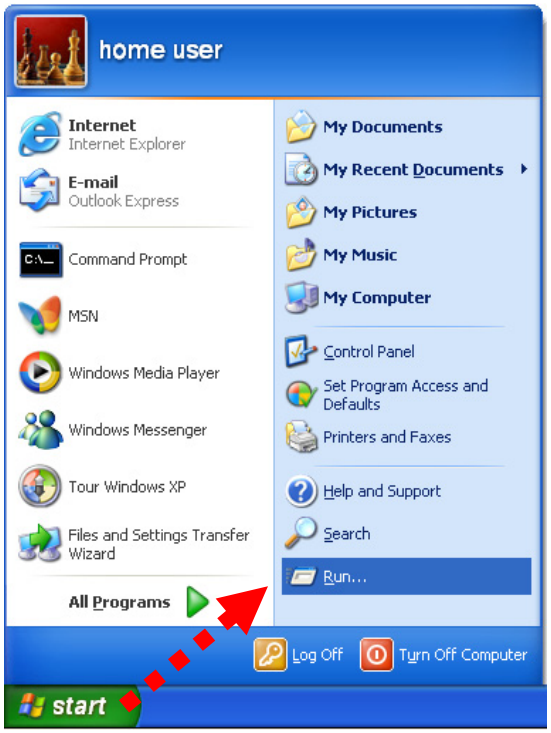
Note:

1. ONLY use the power adapter supplied with the VRT-402N. Otherwise, the product may be damaged.
2. If you want to reset VRT-402N to default settings, press and hold the **RST**(reset) button over 30 seconds and release. And then wait for VRT-402N restart.

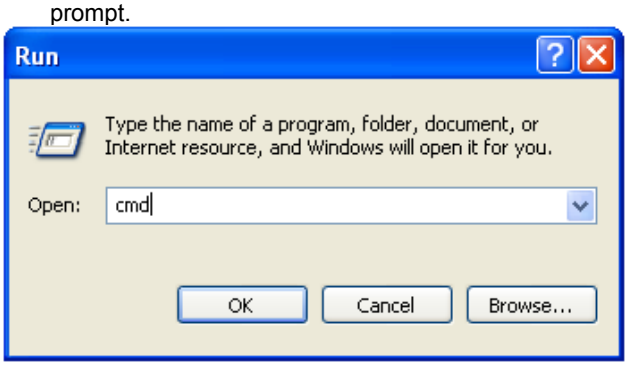
2.3 Network Setup

After you install your VRT-402N, the TCP/IP settings should be set to obtain an IP address from a DHCP server (VRT-402N) automatically. To verify your IP address, please follow the steps below:

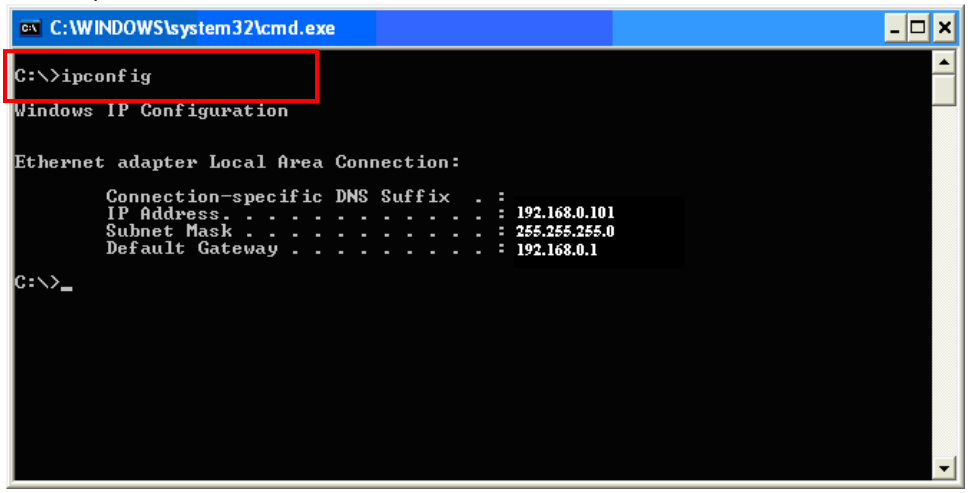
1. Click on **Start > Run**.



2. In the run box type "**cmd**" and click OK. (Windows Vista users type cmd in the Start .Search box.)At the prompt.



3. Type “**ipconfig**” and press **Enter**. It will display the IP address, subnet mask, and the default gateway of adapter.



4. If the address is **0.0.0.0**, check your adapter installation, security settings, and the settings on your router. Some firewall software programs may block a DHCP request on newly installed adapters.

Assign a static IP address

If you are not using a DHCP capable gateway/router, or you need to assign a static IP address, please follow the steps below:

1. **- Windows Vista® -** Click on Start > Control .Panel > Network .and .Internet >Network .and .Sharing .Center > Manage Network Connections.

   - Windows® XP - Click on Start > Control .Panel > Network Connections.

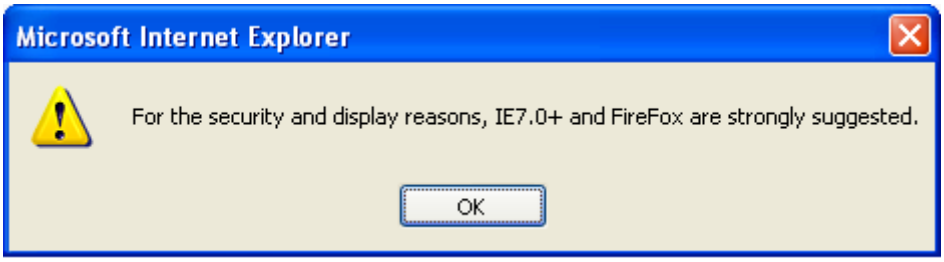
   - Windows® 2000 - From the desktop, right-click My Network Places > Properties.
2. Right-click on the Local Area Connection which represents your network adapter and select Properties.
3. Highlight Internet .Protocol. (TCP/IP) and click Properties.
4. Click Use .the .following .IP .address and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.

   Example: If LAN IP address of VRT-402N is 192.168.0.1, make your IP address 192.168.0.X where X is a number between 2 and 99. Make sure that the number you choose is not in use on the network. Set Default Gateway the same as the LAN IP address of your router (192.168.0.1).

   Set Primary DNS the same as the LAN IP address of your router (192.168.0.1). The Secondary DNS is not needed or you may enter a DNS server from your ISP.
5. Click OK twice to save your settings.

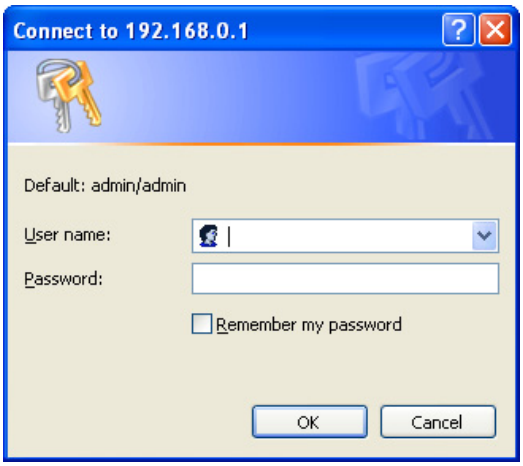
Chapter 3 Web Login

We suggest manage the VRT-402N. in the browser IE version 7 or more later version.

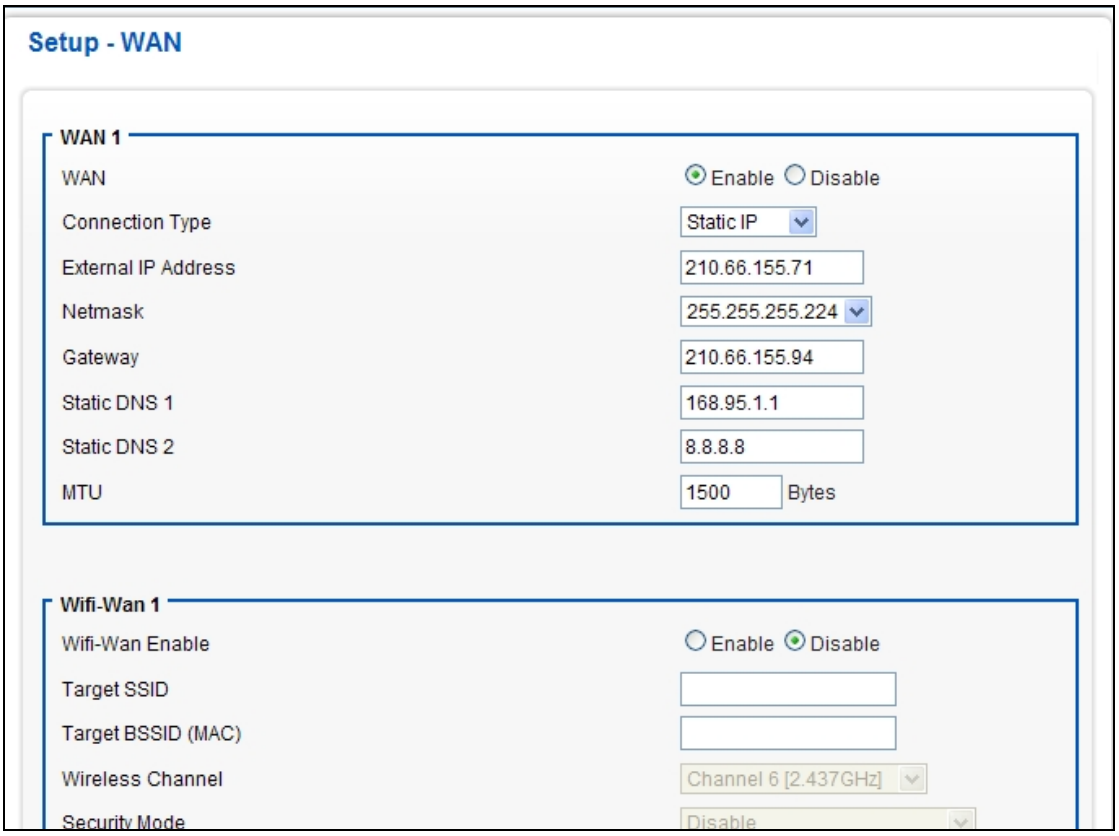


VRT-402N with an assigned IP address allows you to monitor and configure via web browser (e.g., MS Internet Explorer or Netscape).

1. Open your web browser.
2. Enter the IP address of your VRT-402N in the address field (default IP address is http://192.168.0.1).
3. Please enter your User Name and Password in the dialog box. Default User Name and Password are both "**admin**". Click OK.



4. Then you will see the VRT-402N HOME screen as below.


Setup - WAN
WAN 1
WAN
Enable
Disable
Connection Type
Static IP
External IP Address
210.66.155.71
Netmask
255.255.255.224
Gateway
210.66.155.94
Static DNS 1
168.95.1.1
Static DNS 2
8.8.8.8
MTU
1500
Bytes
Wifi-Wan 1
Wifi-Wan Enable
Enable
Disable
Target SSID
Target BSSID (MAC)
Wireless Channel
Channel 6 [2.437GHz]
Security Mode
Disable

Chapter 4 Setup

This section describes the basic configuration of the VRT-402N and allows you to connect to Internet easily.

4.1 Setup

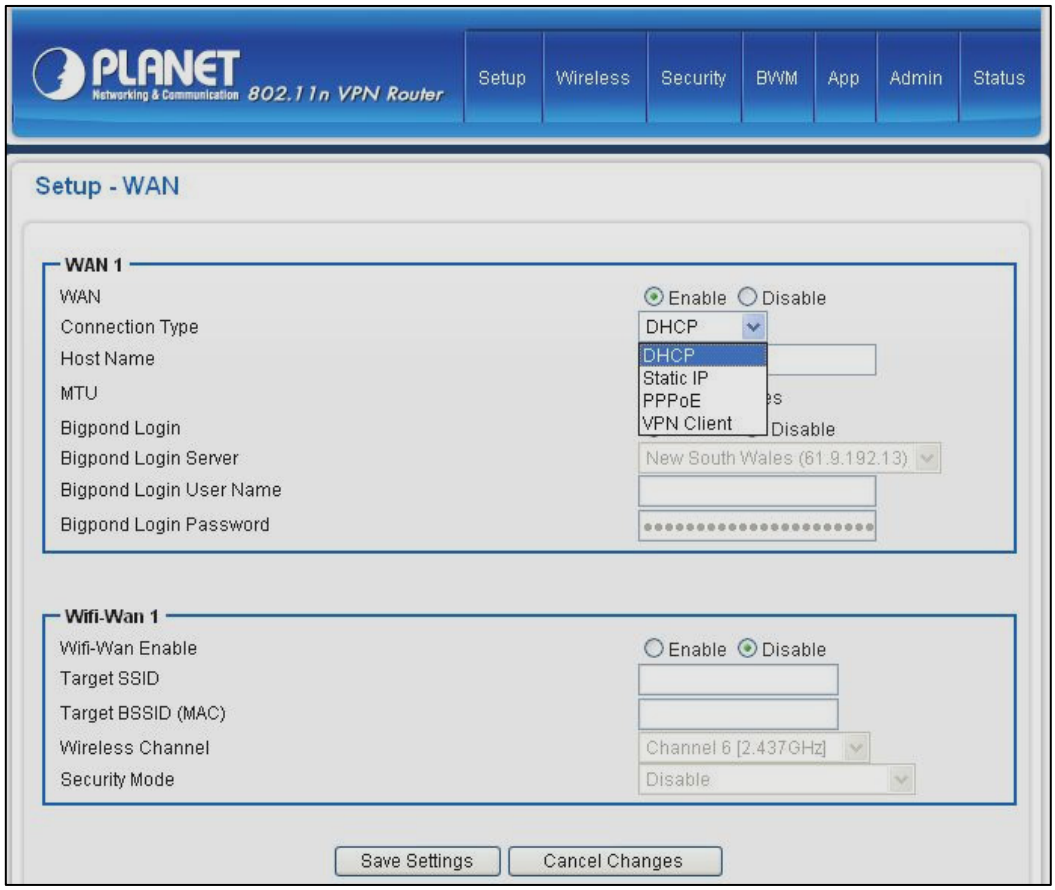
4.1.1 WAN

The WAN Settings screen allows you to specify the type of Internet connection. The WAN settings offer the following selections for the router's WAN port, Dynamic IP, Static IP, PPPoE, PPTP, and L2TP. Please select one of the connection types and click "More Configuration" button or select the option on the left window for configuration.

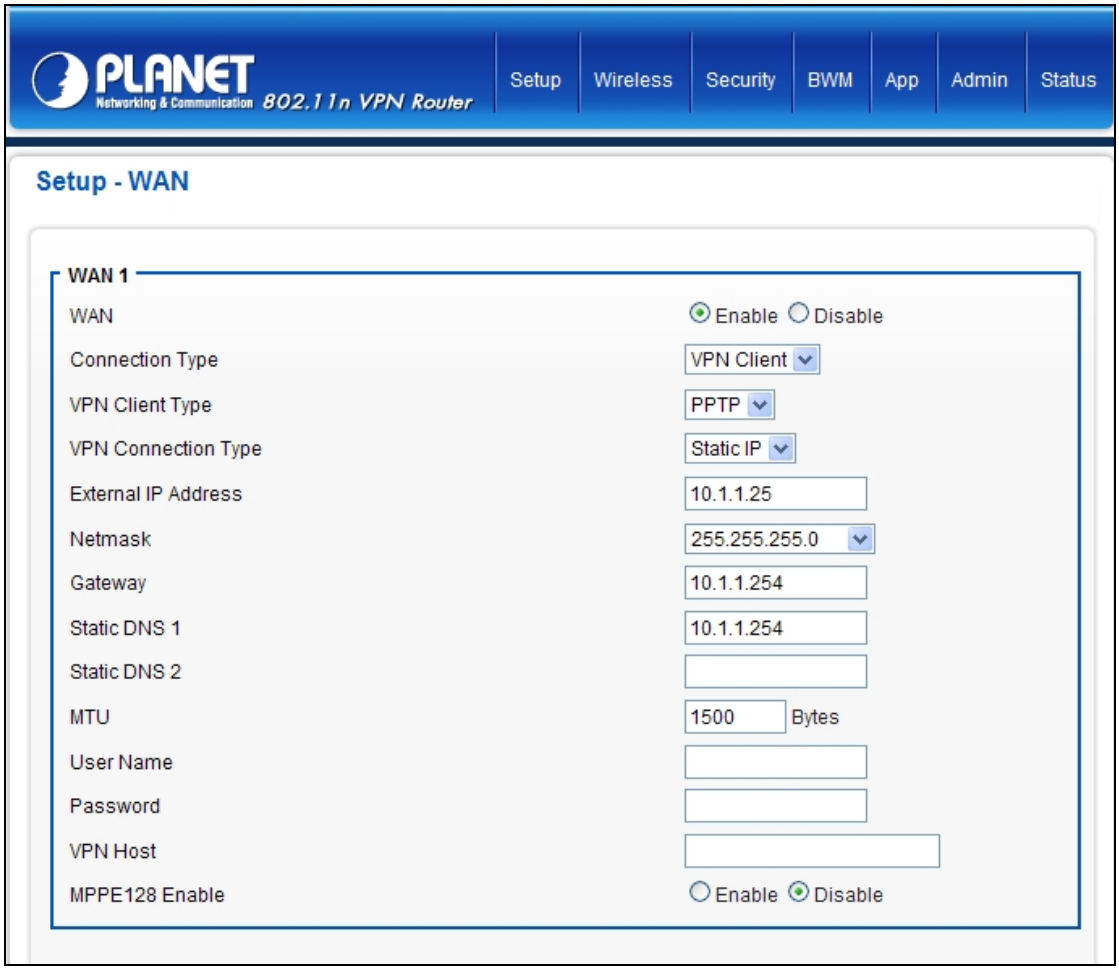
If Dynamic IP is selected, your ISP will automatically give you an IP address. Some ISP's may also require that you fill in additional information such as Host Name, Domain Name and MAC address.

If Static IP is selected, your ISP should provide all the information required in this screen.

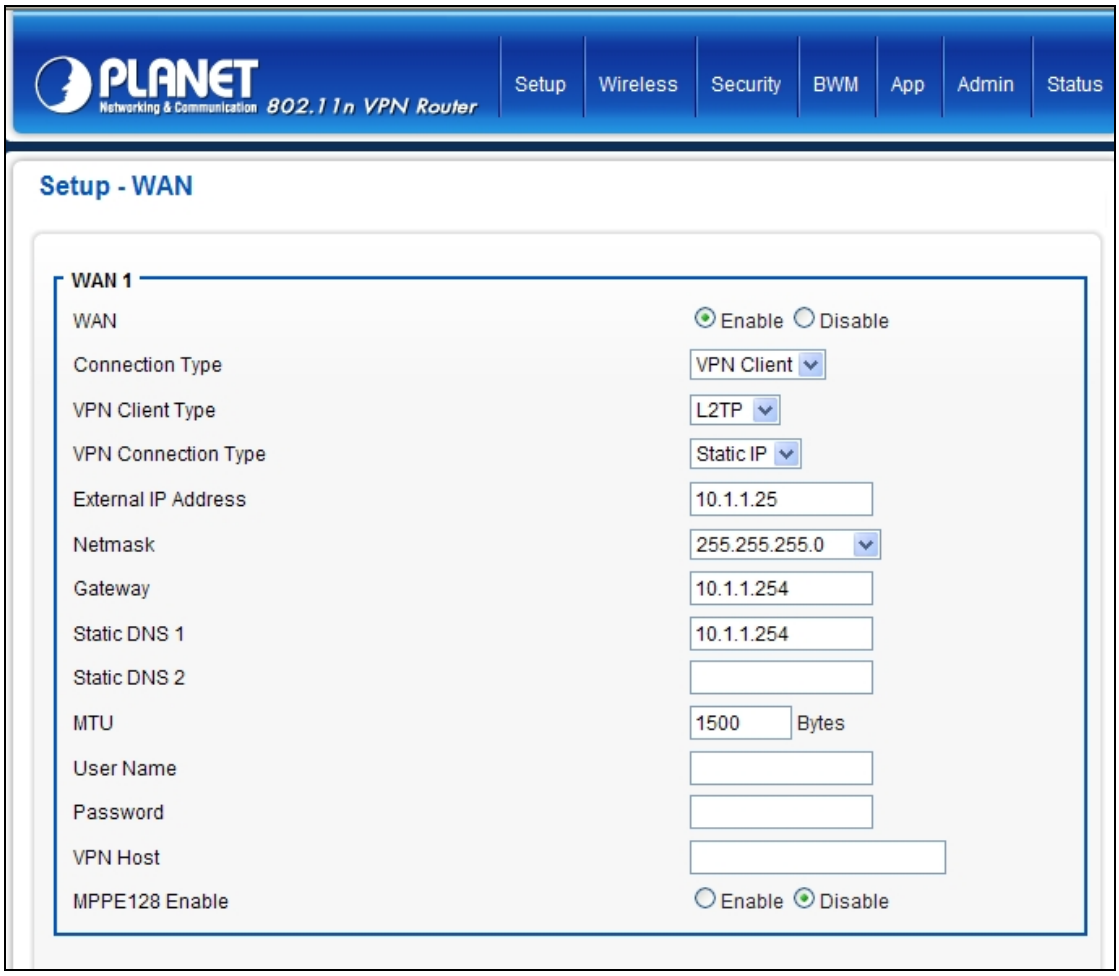
If your ISP requires PPPoE protocol to connect to the Internet. Your ISP should provide all the information required in this section.



If you choose the VPN Client option, you will see the following PPTP and L2TP settings information.

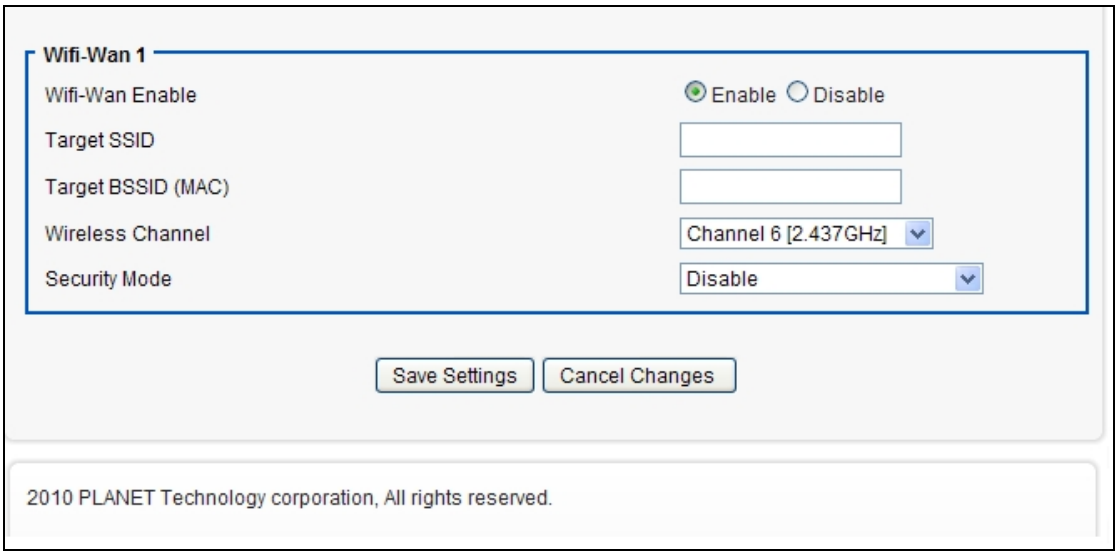


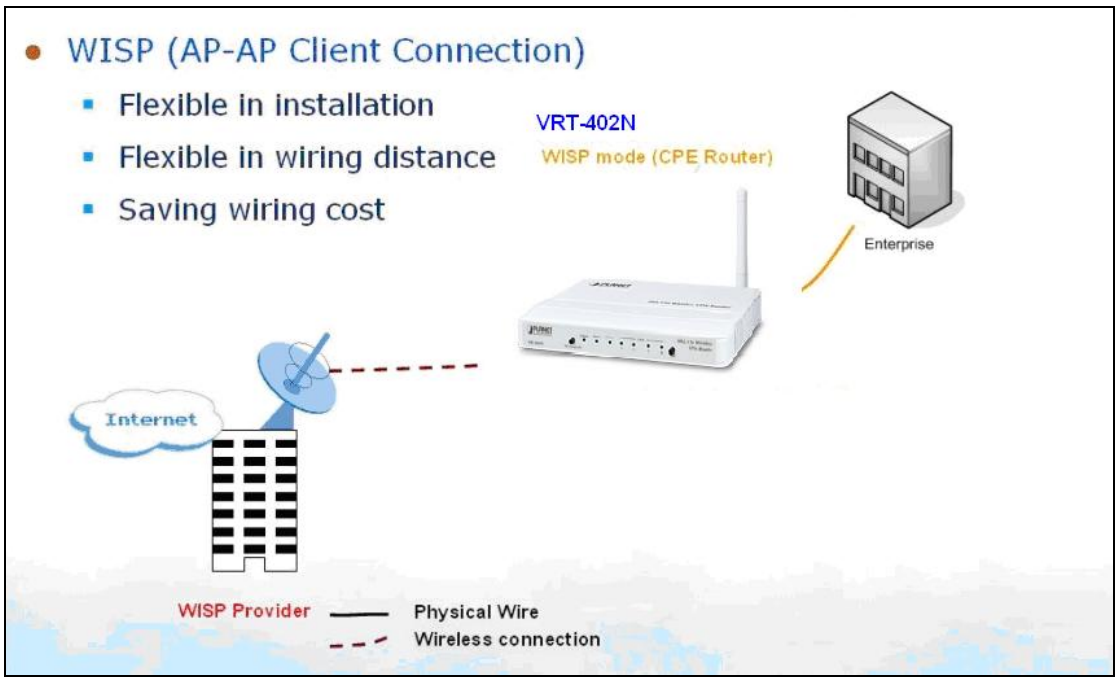
Select PPTP if your ISP requires the PPTP protocol to connect to the Internet. Your ISP should provide all the information required in this section.



Select L2TP if your ISP requires the L2TP protocol to connect to the Internet. Your ISP should provide all the information required in this section.

In this **Wifi-Wan1 (WISP) mode**, the wireless client will connect to ISP access point. The NAT is enabled and PCs in Ethernet ports share the same IP to ISP through wireless LAN. You must set the WAN port to WISP mode first and connect to the ISP AP in Site-Survey page. The connection type can be setup in WAN page by using PPPOE, DHCP client, PPTP client or static IP.

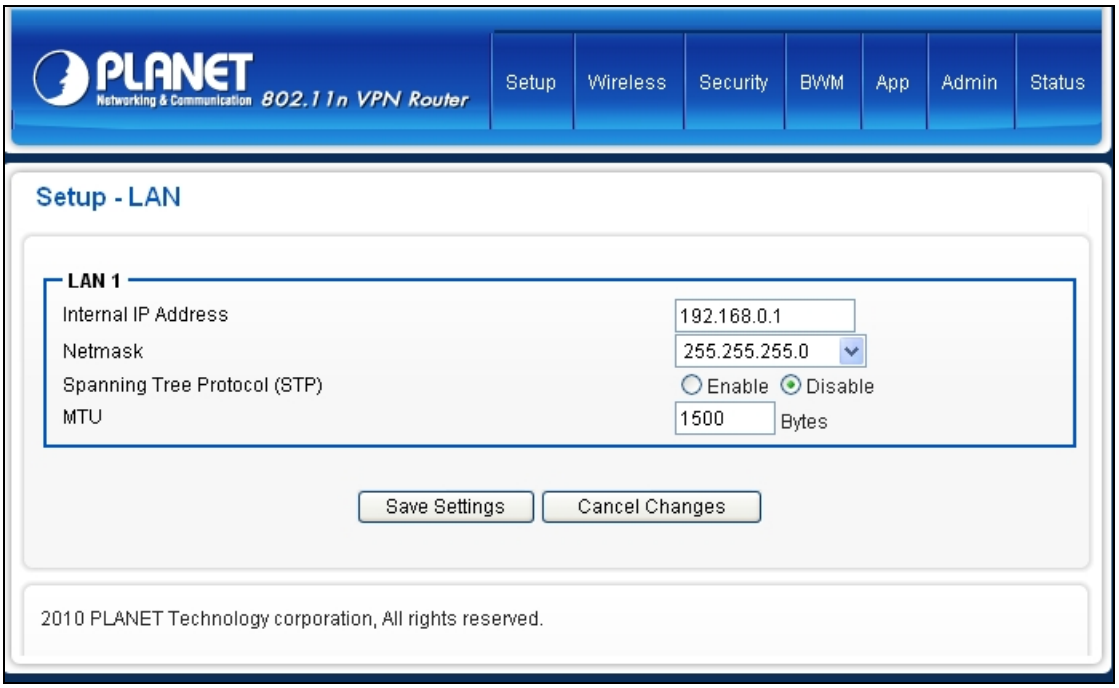




Please the Click “Next” button to proceed to the next step.

4.1.2 LAN

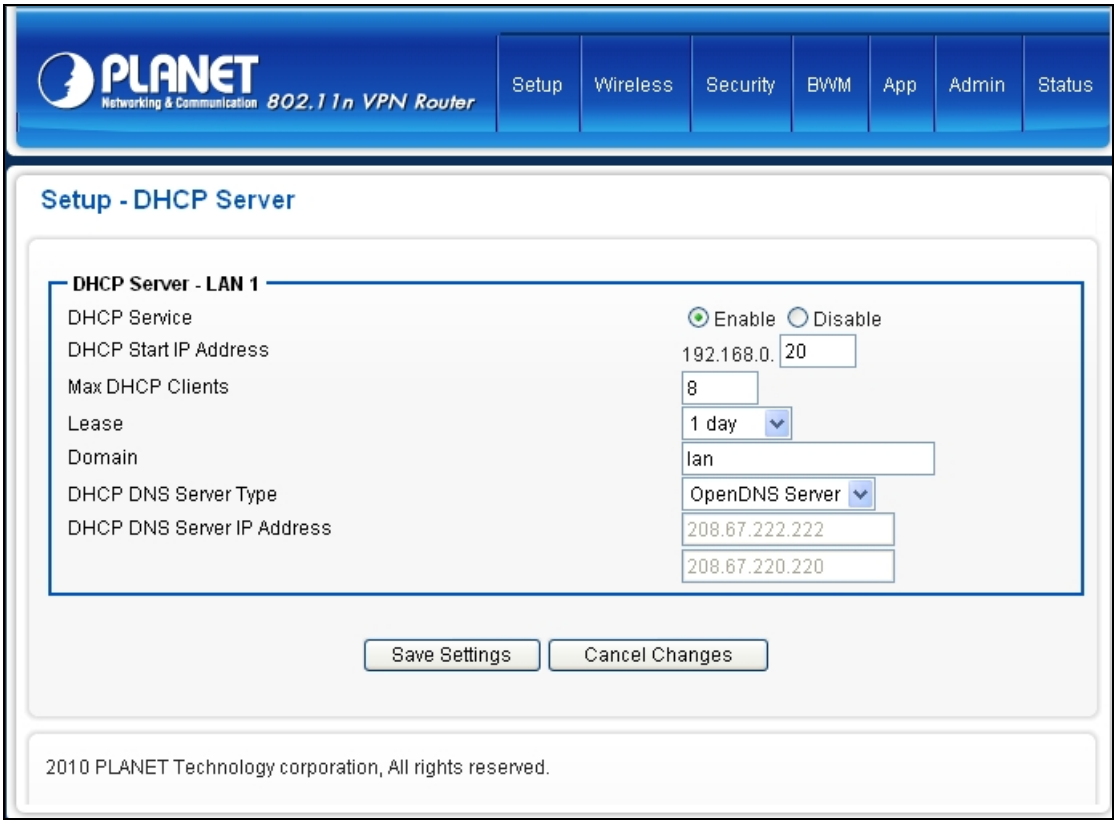
The LAN Port screen below allows you to specify a private IP address for your router’s LAN interface.



Parameters	Description
Internal IP address	Please input the IP address of this router.
IP Address	Designate the Access Point's IP Address. This IP Address should be unique in your network. The default IP Address is **192.168.0.1**.
Subnet Mask	Specify a Subnet Mask for your LAN segment. The Subnet Mask of the Access Point is fixed and the value is **255.255.255.0**.
Spanning Tree Protocol	If it is enabled, this router will use the spanning tree protocol to prevent from network loop happened in the LAN ports.
MTU	MPLANETum Transmission Unit

4.1.3 DHCP Server

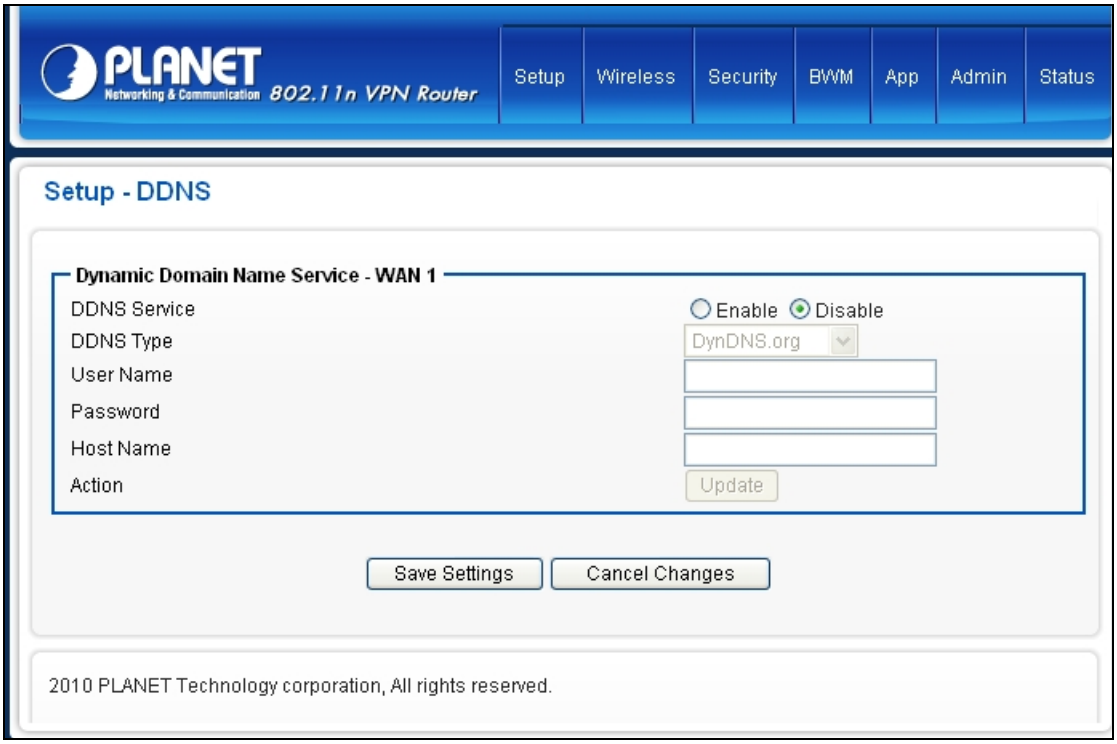
Parameters	Description
DHCP Server	Enable or disable the DHCP Server.
DHCP Start IP Address	The DHCP starting IP addresses offered by the DHCP Server.
Max DHCP Clients	The mPLANETum number of the IP addresses supported by the DHCP server
Lease	Please choose lease time from the selection list. You can choose 1 Hour, 3 Hours, 6 Hours, 1 Day, 3 Days, or 7 Days.
Domain	Please enter the domain name.



After configuration complete, please click “Save Settings” button to save the configuration. Then you will see a screen to prompt you the settings are saving successfully. You may press “Confirm” for configure other settings or “Save Settings” to restart VRT-402N with new configuration.

4.1.4 DDNS

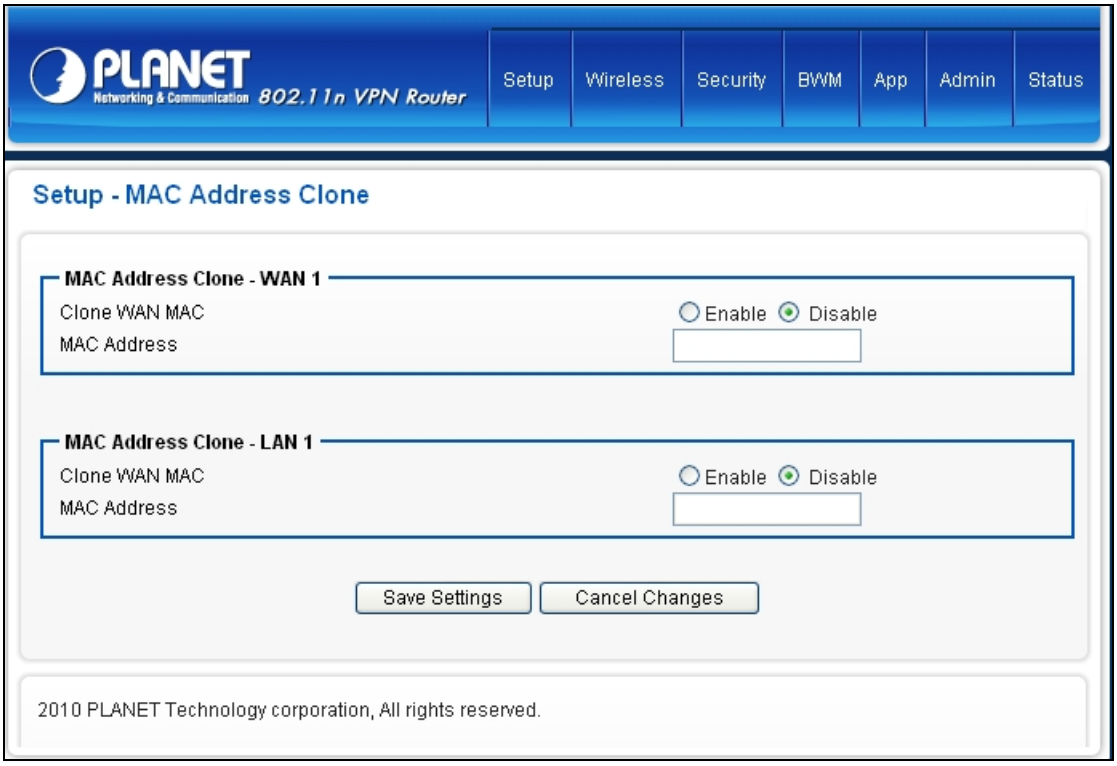
DDNS allows you to map the static domain name to a dynamic IP address. You must get an account, password and your static domain name from the DDNS service providers. This router supports DynDNS and TZO.



Parameters	Description
DDNS Service	Enable/Disable the DDNS function of this router.
DDNS Type	Select a DDNS service provider. The default setting is “DynDNS”.
User name	Your static domain name that use DDNS.
Password	The password you set for the DDNS service account above.
Host Name	The account that your DDNS service provider assigned to you.

4.1.5 MAC Address Clone

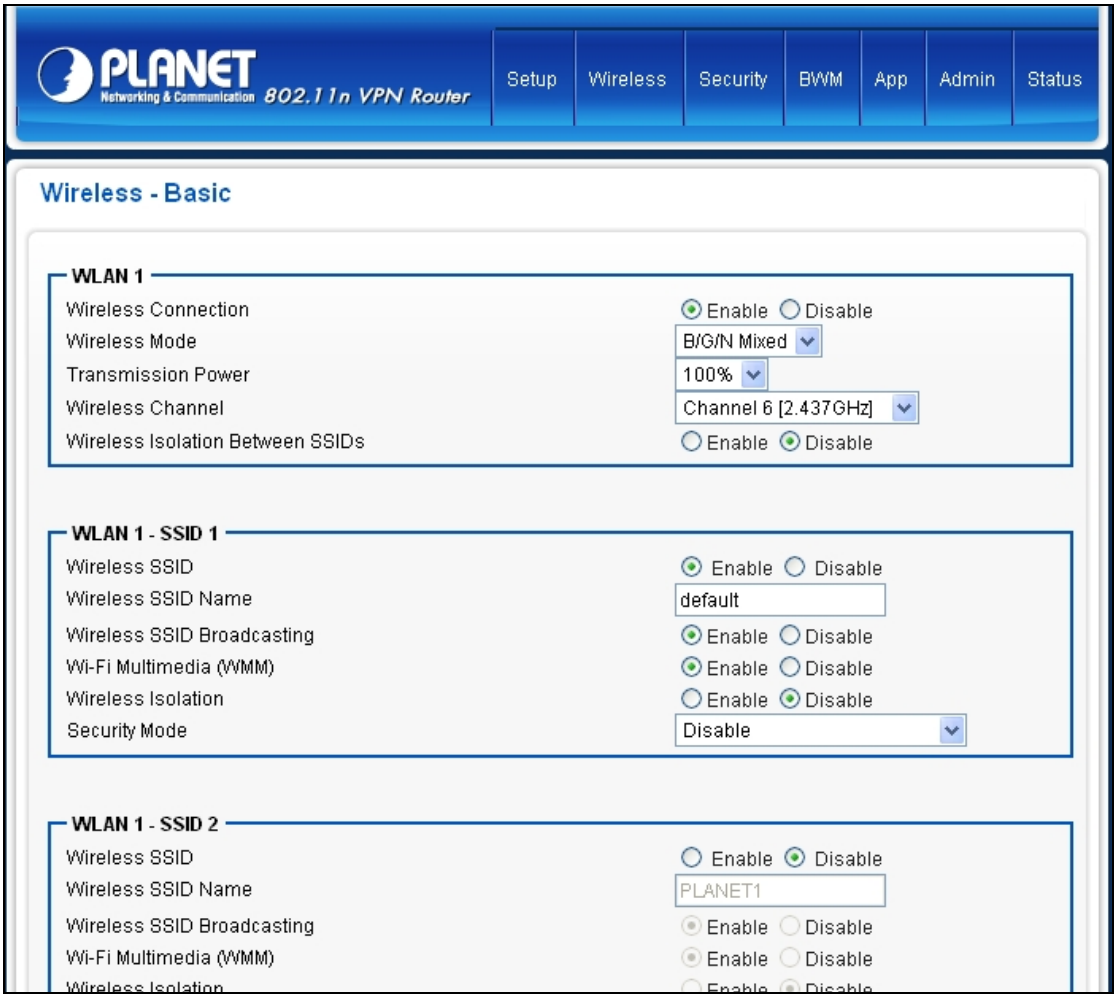
To connect to Internet, your ISP will require a MAC address from your PC. Type in this MAC address in this section or use the “Clone MAC Address” button to replace the WAN port MAC address with the your PC’s. To find out the PC’s MAC address, see Appendix A. (also see Glossary for an explanation on MAC address).



4.2 Wireless

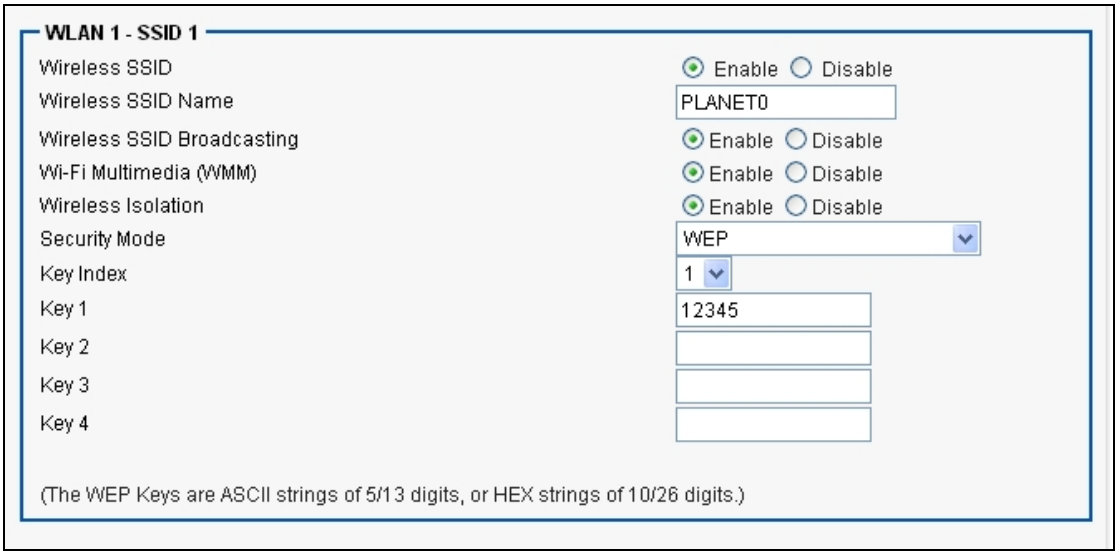
4.2.1 Basic

Multiple SSIDs (VRT-402N Max support the five SSID) allow the ability for separate security mode and key settings to be set by users for both convenience and increased protection. Users are able to configure their network devices to access the first SSID with the WPA2 PSK (Pre-Shared Key) and secret key, whilst share the second SSID with WEP and the periodically changed key for visitors. In addition, users are able to isolate these SSIDs to avoid malicious attacks and prevent certain access for visitors using the second SSID. This then provides users an extremely convenient approach to share the wireless access, provide access internet access for visitors, while possessing a strong security protection system at all times.



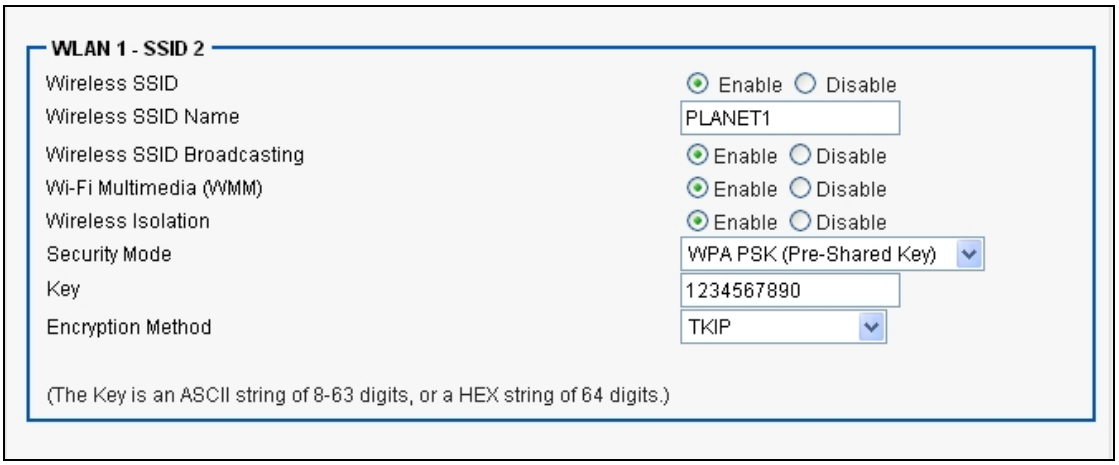
4.2.2 Wireless security mode WEP

When you select 64-bit or 128-bit WEP key, you have to enter WEP keys to encrypt data. You can generate the key by yourself. You can enter four WEP keys and select one of them as default key. Then the access point will just allow the clients that with the same encryption keys connected.



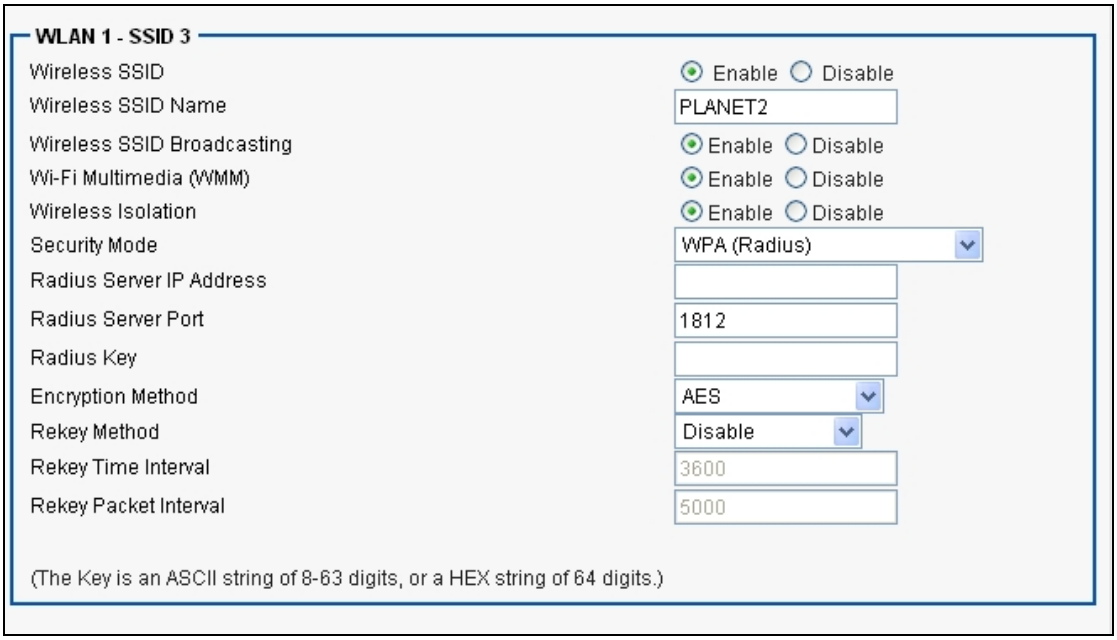
4.2.3 Wireless security mode WPA PSK/WPA2 PSK

Wi-Fi Protected Access (WPA) is an advanced security standard. You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. It uses TKIP or CCMP (AES) or Mixed mode (TKIP+AES) to change the encryption key frequently. So the encryption key is not easy to be broken by hackers. This can improve security very much.

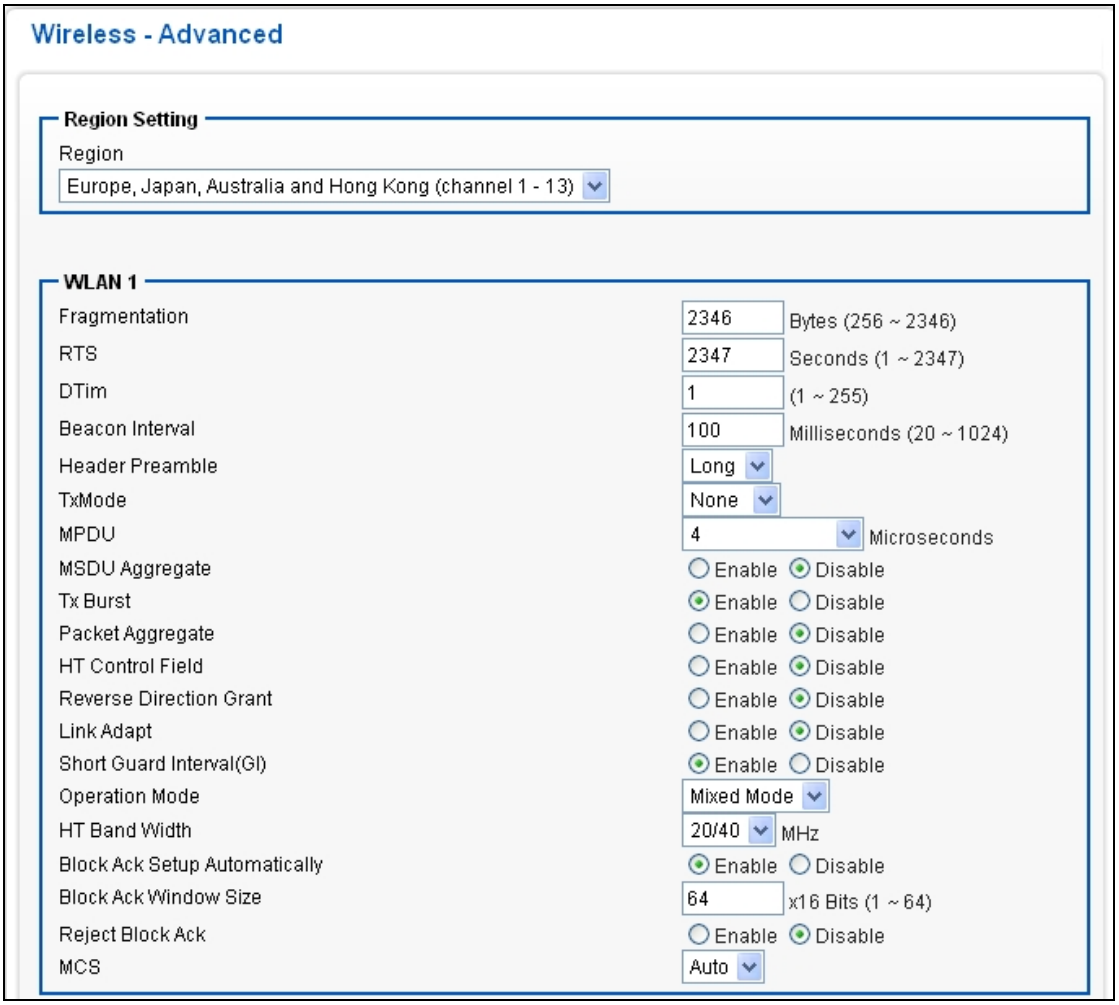


4.2.4 Wireless security mode WPA Radius/WPA2 Radius

You can use a RADIUS server to authenticate wireless stations and provide the session key to encrypt data during communication. It uses TKIP or CCMP (AES) to change the encryption key frequently.



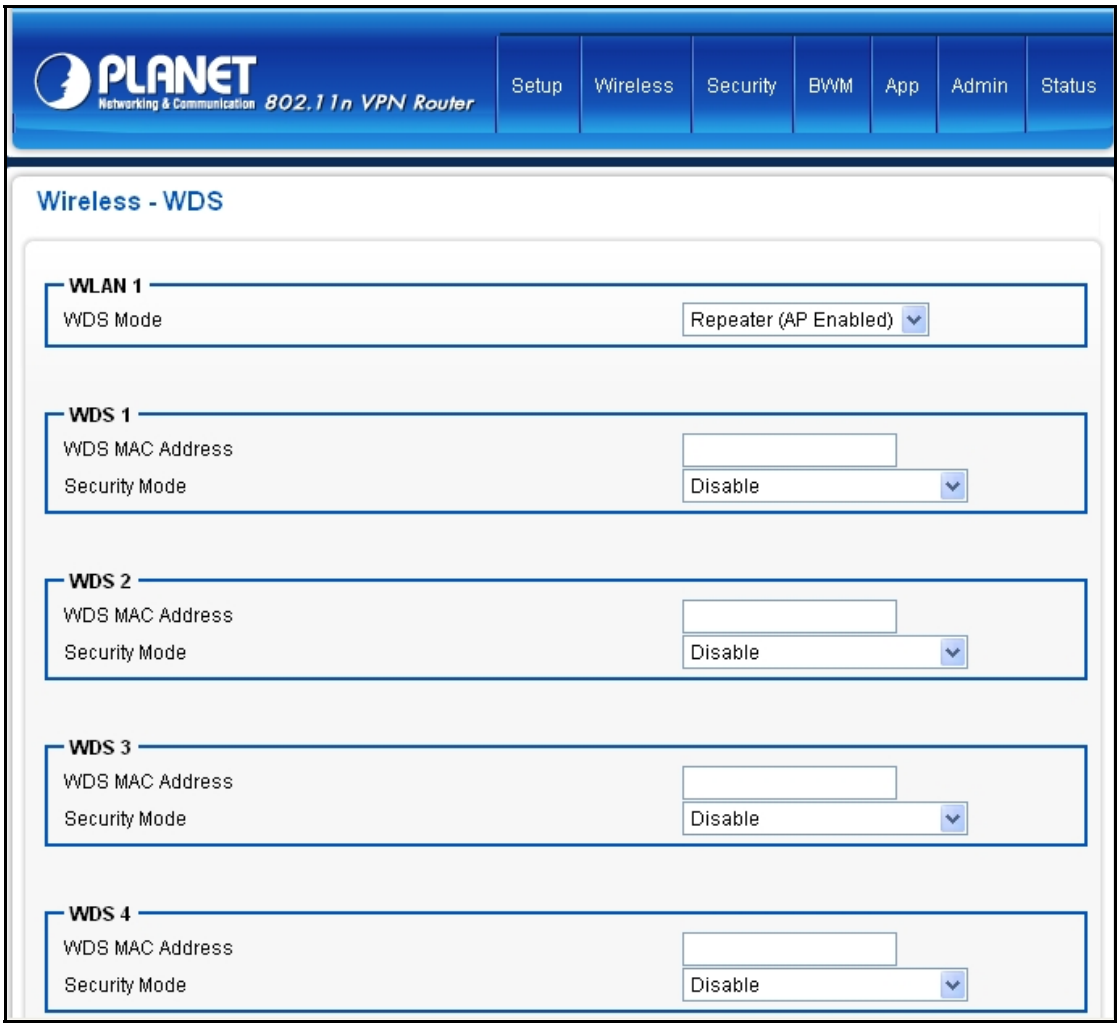
4.2.5 Advance


Wireless - Advanced
Region Setting
Region
Europe, Japan, Australia and Hong Kong (channel 1 - 13)
WLAN 1
Fragmentation
2346
Bytes (256 ~ 2346)
RTS
2347
Seconds (1 ~ 2347)
DTim
1
(1 ~ 255)
Beacon Interval
100
Milliseconds (20 ~ 1024)
Header Preamble
Long
TxMode
None
MPDU
4
Microseconds
MSDU Aggregate
Enable
Disable
Tx Burst
Enable
Disable
Packet Aggregate
Enable
Disable
HT Control Field
Enable
Disable
Reverse Direction Grant
Enable
Disable
Link Adapt
Enable
Disable
Short Guard Interval(GI)
Enable
Disable
Operation Mode
Mixed Mode
HT Band Width
20/40
MHz
Block Ack Setup Automatically
Enable
Disable
Block Ack Window Size
64
x16 Bits (1 ~ 64)
Reject Block Ack
Enable
Disable
MCS
Auto

Region	Choose the region you are currently located.
Fragmentation	Enter the fragmentation bytes. The default value is 2346 bytes.
RTS	Enter the RTS seconds. The default value is 2347 seconds.
DTim	Enter the DTim seconds. The default value is 1.
Beacon Interval	Enter the interval to send a beacon. The default value is 100 milliseconds.
Header Preamble	Choose Long or Short header preamble.
TxMode	Choose different transmission mode.
MPDU	MPDU data length. The transmission rate is increase when you choose a larger number, but usually the max value will be 4 in the wireless card
MSDU Aggregate	A kind of packet aggregation method, it can improve the transmission efficiency. Please make sure you Wireless card has this function supported.
Tx Burst	Some 802.11g wireless card can supported this mode, and the transmission rate can be increased when enable this function.
Packet Aggregate	An aggregation method like A-MSDU, it can improve the transmission efficiency. Please make sure you Wireless card has this function supported.
HT Control Field	Choose Enable/Disable. It is useful when you need to debug the wireless network
Reverse Direction Grant	Choose Enable/Disable. The response time can be shorter when enable this function.
Link Adapt	Choose Enable/Disable. The function is use to dynamically change the modulation and encode mechanism between wireless devices.
Short Guard Interval (SGI)	Choose Enable/Disable. Short GI can improve some transmission rate, but with less immunity when interference exist.
Operation Mode	Choose Mixed mode or Greenfield. You may choose Greenfield mode to increase the transmission rate when you using 802.11n wireless network only.
HT Band Width	Using HT20MHz or HT20/40MHz
Block Ack Setup Automatically	Choose Enable/Disable. If your Wifi Card supported Block Ack mechanism, it can improve the data transmission efficiency when enable this function.
Block Ack Window Size	Specify a Block Ack window size
Reject Block Ack	Choose Enable to reject the request of BA from other Wireless device
MCS	Select transmission (connection) speed.

4.2.6 WDS

WDS (Wireless Distributed System) enables the wireless bridging amongst several wireless devices. The bridged devices are identified by the WDS MAC addresses.



*Please make sure of the following settings in order to allow WDS to work effectively:

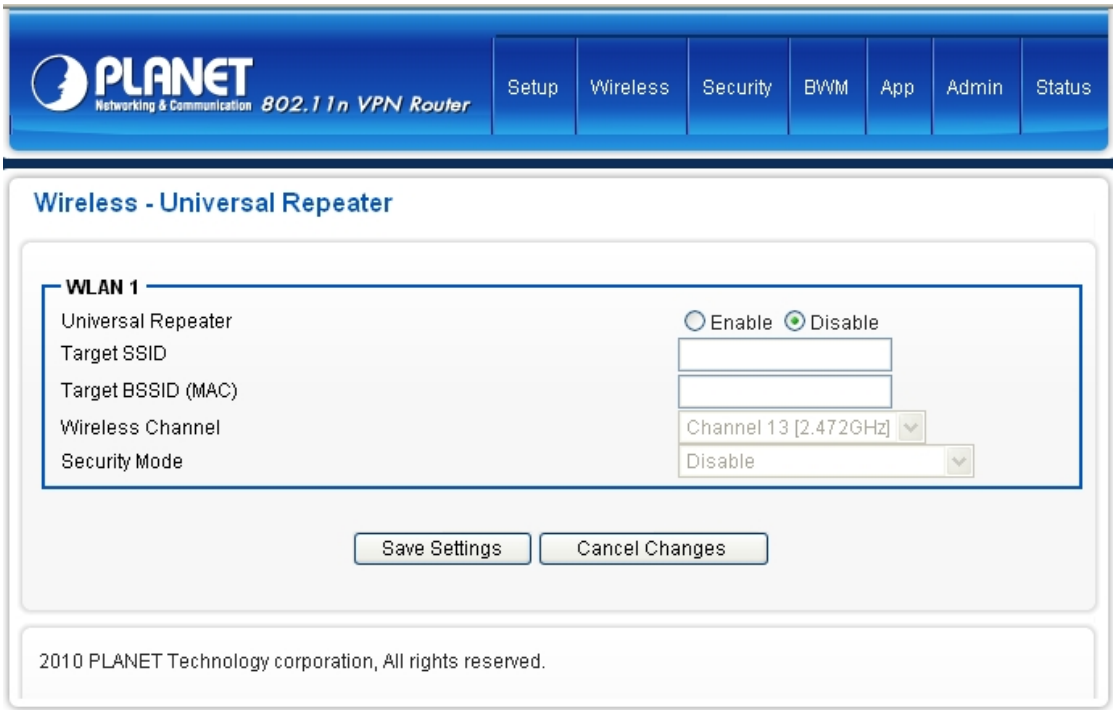
(1) WDS bridged devices must use the same radio channel.

(2) WDS bridged devices must use the same encryption mode and encryption keys.

Please Note: If one of the above fails, WDS devices cannot communication with each other.

4.2.7 Universal Repeater

Universal Repeater enables the wireless bridging amongst several wireless devices. The bridged devices are identified by the Target SSID and MAC addresses.

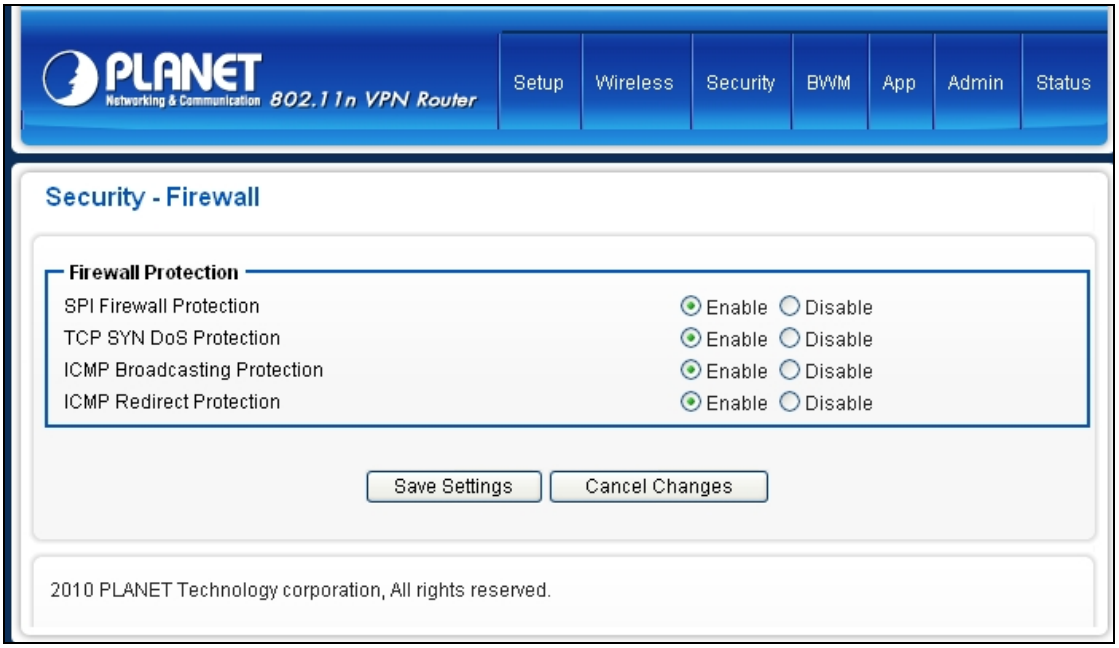


Parameter	Description
Universal Repeater Mode	Enable/Disable the Universal Repeater Mode function of this router.
Target SSID	In “Universal Repeater mode”, this device can act as a station to connect to a Root AP. You should enter the SSID of the Root AP here.
Target BSSID (MAC)	Please assign the root AP MAC address.
Security Mode	Please choose the WEP, WPA PSK, or WPA2 PSK mode option.

Chapter 5 Security

5.1 Firewall

VRT-402N provides extensive firewall protection by restricting connection parameters, thus limiting the risk of hacker attack, and defending against a wide array of common Internet attacks.



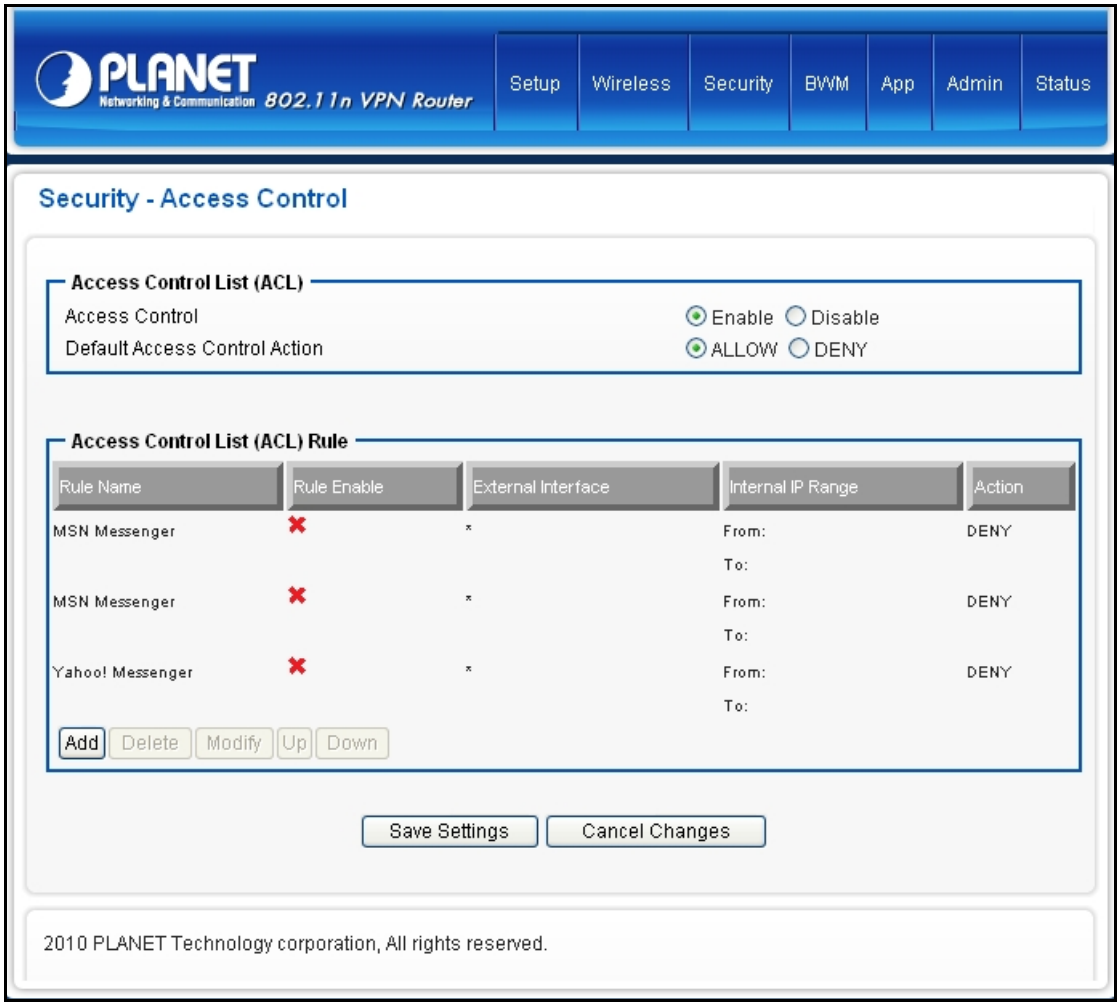
Configure Security Settings following the instructions below.

SPI Firewall Protection	Select Enable to enable SPI Firewall Protection. Select Disable to disable SPI Firewall Protection.
TCP SYN DoS Protection	Check to enable TCP SYN DoS Protection. Uncheck to disable TCP SYN DoS Protection. TCP SYN DoS attack sends a flood of TCP/SYN packets. Each of these packets are like a connection request, causing the server to consume computing resources (e.g. memory, CPU) to reply and to continuously wait for the incoming packets. Without TCP SYN Dos Protection, the resources in the server will be easily consumed completely. This will then consequently result in the dysfunction of the server. PLANETCom Mobile Router is able to detect TCP SYN DoS attacks and limits the resource consumption by lowering the incoming request rate by fast recycling the resource. Therefore, PLANETCom Mobile Router is still able to serve normal traffic while it is under such an attack.

ICMP Broadcasting Protection	Check to enable ICMP Broadcasting Protection. Uncheck to disable ICMP Broadcasting Protection. ICMP broadcasting attack is a type of DoS attacks. A flood of ICMP broadcasting packets is generated and sent to a server (like PLANETCom Mobile Router). Consequently, this server will suffer from a huge amount of interruptions and consumption of computing resources. PLANETCom Mobile Router is able to stop responding to ICMP broadcasting echo packets in order to avoid a potential ICMP broadcasting DoS attack.
ICMP Redirect Protection	Check to enable ICMP Redirect Protection. Uncheck to disable ICMP Redirect Protection. An ICMP redirect message is a way to change the existing routing path. Generally, ICMP redirect packets should not be sent, and so when there is the occurrence that ICMP redirect packets are sent, it is important to note that it is very likely to be used as a means for a network attack.

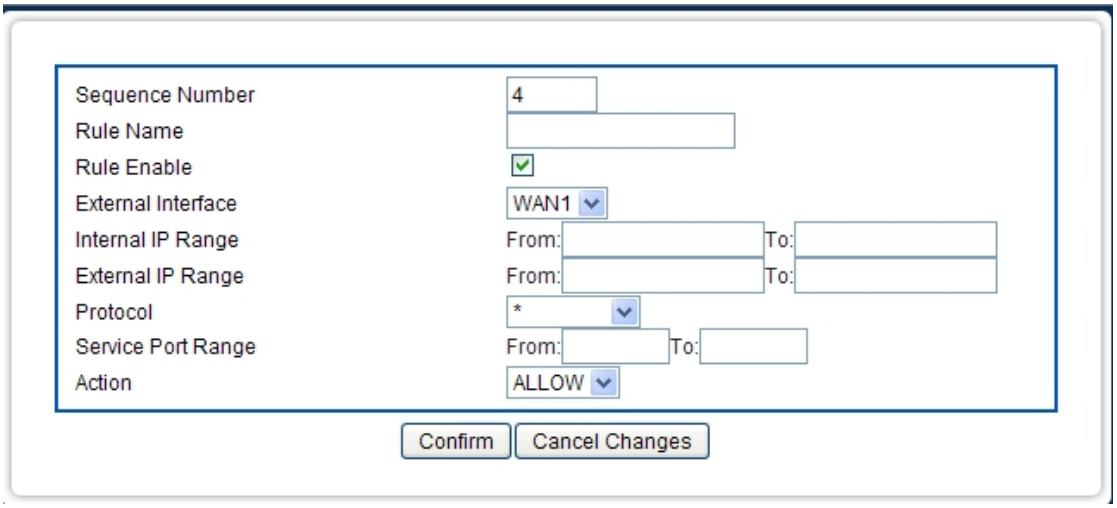
5.2 Access Control

This section shows how to setup the Broadband router's system Time Zone, Password and Remote Management Administrator.



Click on [Security] – [ACL] tab. You will see the following screen.

Please do not change the parameters unless you wish to customize it by yourself.



Example: Filter and block MSN usage.

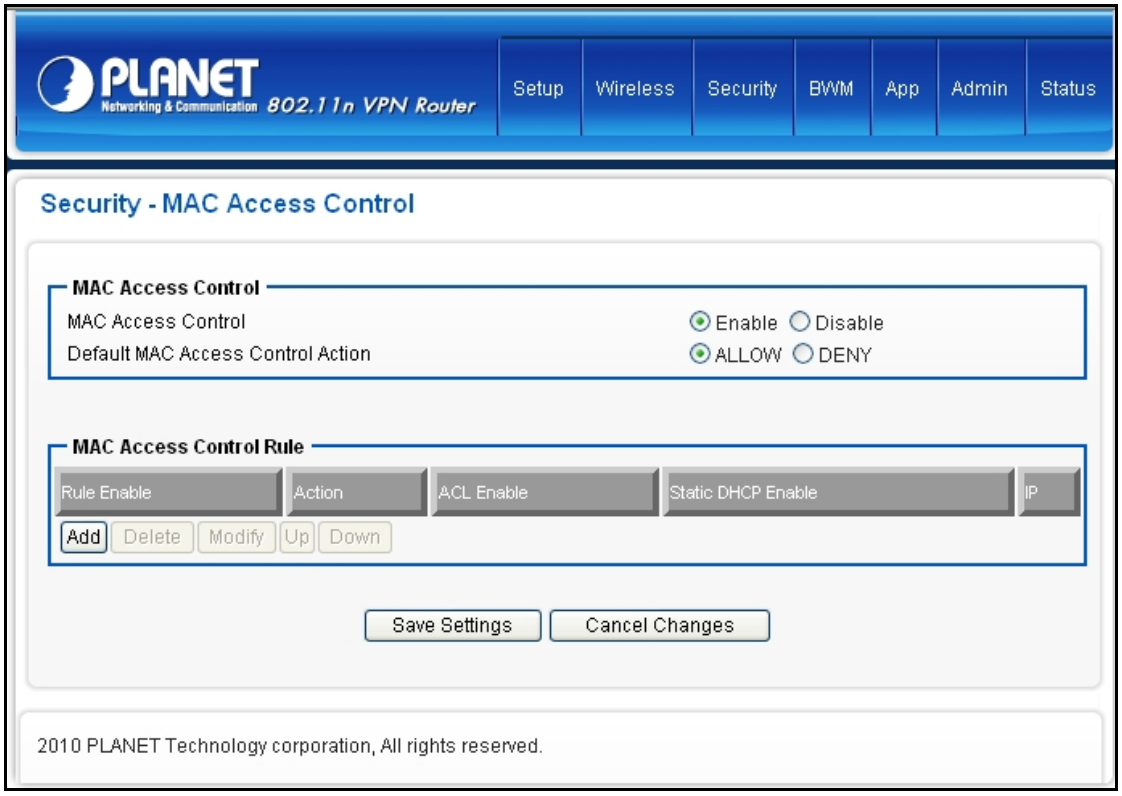
For example, a company does not wish to allow employees to use MSN. The system administrator can

set up an ACL action: rejecting the traffic going out to External IP Range at 207.46.110.*/24.

Rule Name	MSN Blocking
Rule Enable	Enable
External Interface	* (All complies)
Internal IP Range	Keep it blank (All complies)
External IP Range	207.46.110.1:207.46.110.1.254 (IP address range for MSN server)
Protocol	TCP
Service Port Range	Keep it blank (All complies)
Action	DENY

5.3 MAC Access Control

The Time Zone allows VRT-402N to allocate its time on the settings configured here; it will affect log display functions such as Security Log and Firewall settings.



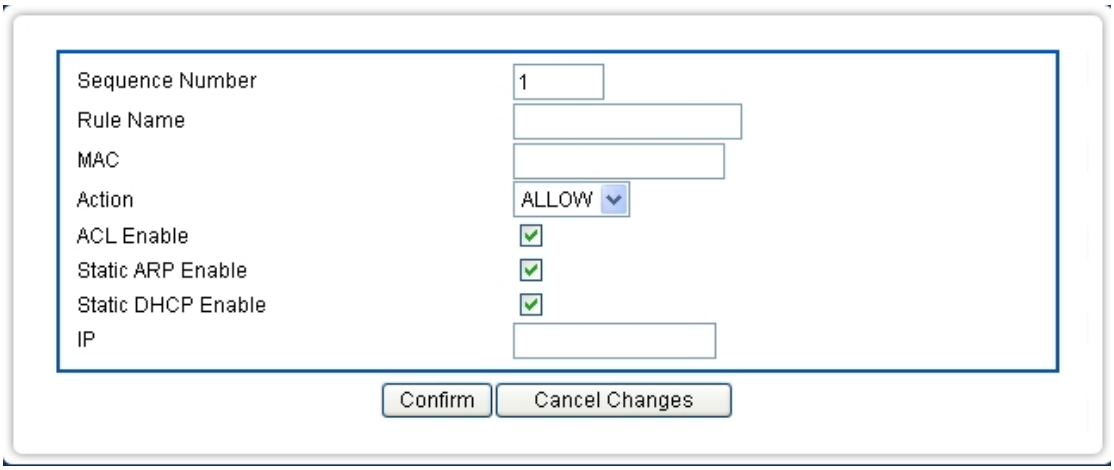
1. Click on [Security] – [Access Control] tab. You will see the following screen.

2. Configure ACL Settings following the instructions below.

Sequence Number	This defines the sequence (priority) of all the MAC ACL actions.
Rule Name	Name of the MAC access rule.
MAC	Set up the MAC Address to which you would like to enable the MAC ACL action.
Action	Choose ALLOW/DENY to ALLOW/DENY
ACL Enable	Enable/Disable this MAC access rule
Static ARP Enable	Enable/Disable this Static ARP rule
Static DHCP Enable	Enable/Disable this Static DHCP rule
IP	The IP address corresponds to static ARP or static DHCP.

MAC Access Control	Choose Enable/Disable to enable/disable MAC access Control
Default MAC Access Control Action	The default ACL action of the ACL rules. When you add the individual rules, it can be viewed as exceptions and take effects relating to the default action. If the action of the adding rule is the same as the default action, then this rule will not work.

3. Click on [Add] tab. You will see the following screen.

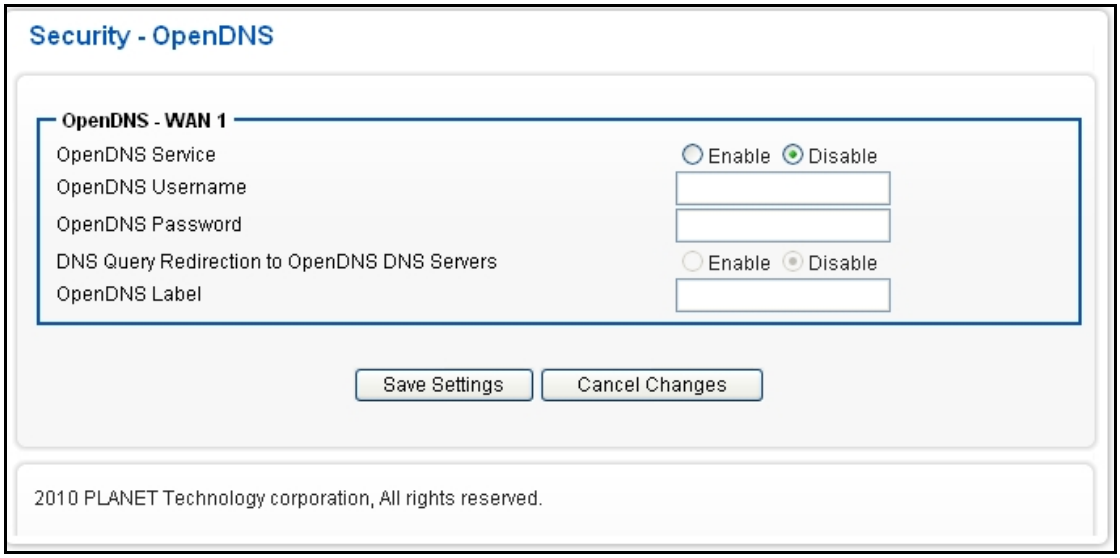


4. Example: Bind IP to a MAC

If users need to bind an IP to a specified MAC (network device), one can follow the settings as below.

Sequence Number	User1
Rule Name	Enable
MAC	00:30:4F:55:66:77
Action	Allow Access
ACL Enable	Enable
Static ARP Enable	Enable
Static DHCP Enable	Enable
IP	192.168.0.100

5.4 OpenDNS

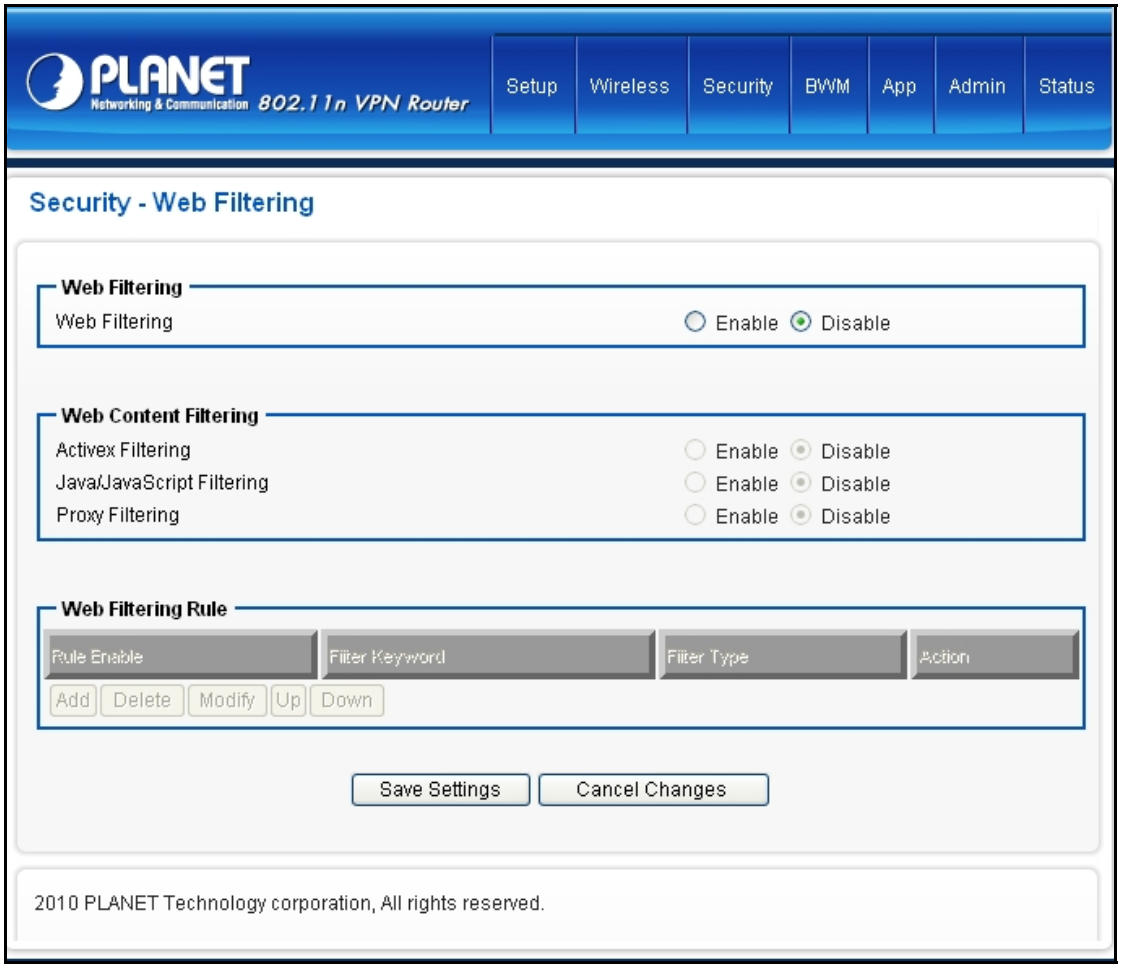


1. Click on [Security] – [OpenDNS] tab. You will see the following screen.

2. Configure OpenDNS Settings following the instructions below.

OpenDNS Service	Choose Enable/Disable to enable/disable OpenDNS
OpenDNS Username	Enter OpenDNS user name.
OpenDNS Password	Enter OpenDNS password.
DNS Query Redirection to OpenDNS DNS Servers	Choose Enable/Disable to enable/disable the data flow redirect to the OpenDNS Server. Users can get advanced content filtering function through the setting
OpenDNS Label	Enter the OpenDNS Label

5.5 WEB Filter



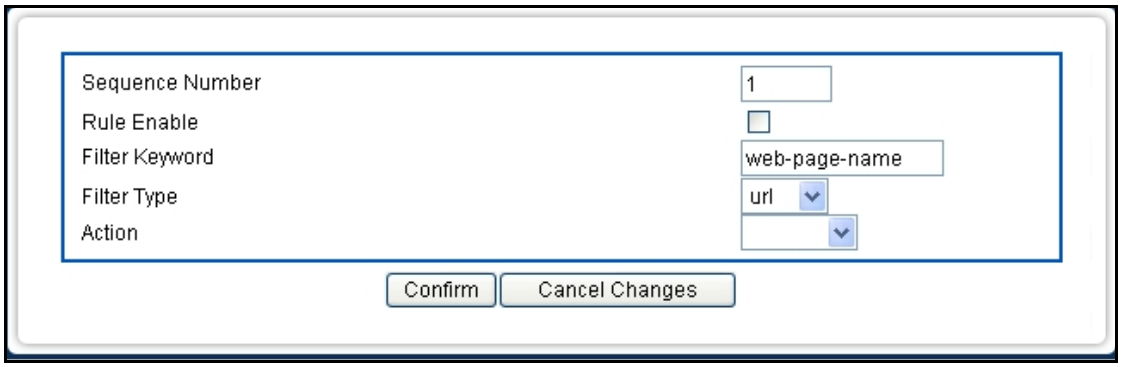
1. Click on [Security] – [Web Filtering] tab. You will see the following screen.

2. Configure Web Filtering Settings following the instructions below.

Web Filtering	Choose Enable/Disable to enable/disable Web Filtering
ActiveX Filtering	Choose Enable/Disable to enable/disable ActiveX Filtering
Java/JavaScript Filtering	Choose Enable/Disable to enable/disable Java/JavaScript Filtering
Proxy Filtering	Choose Enable/Disable to enable/disable Proxy Filtering

Added Web Filtering Rules

3. Click on [Add] tab. You will see the following screen.

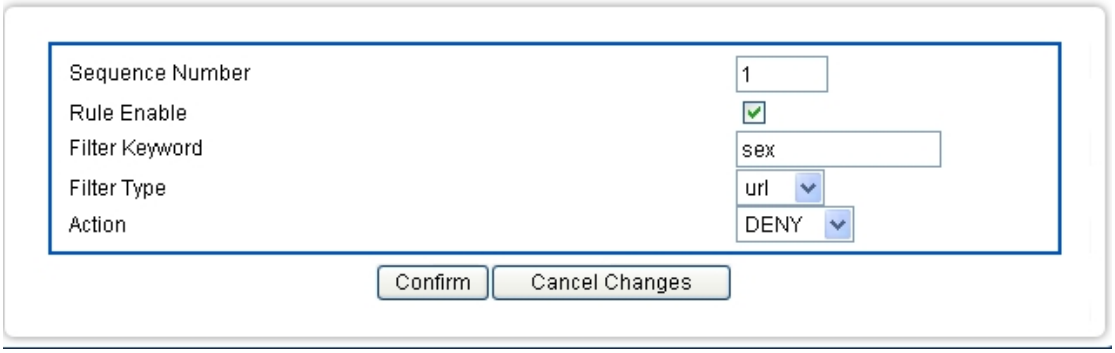


4. Configure Web Filtering Settings following the instructions below

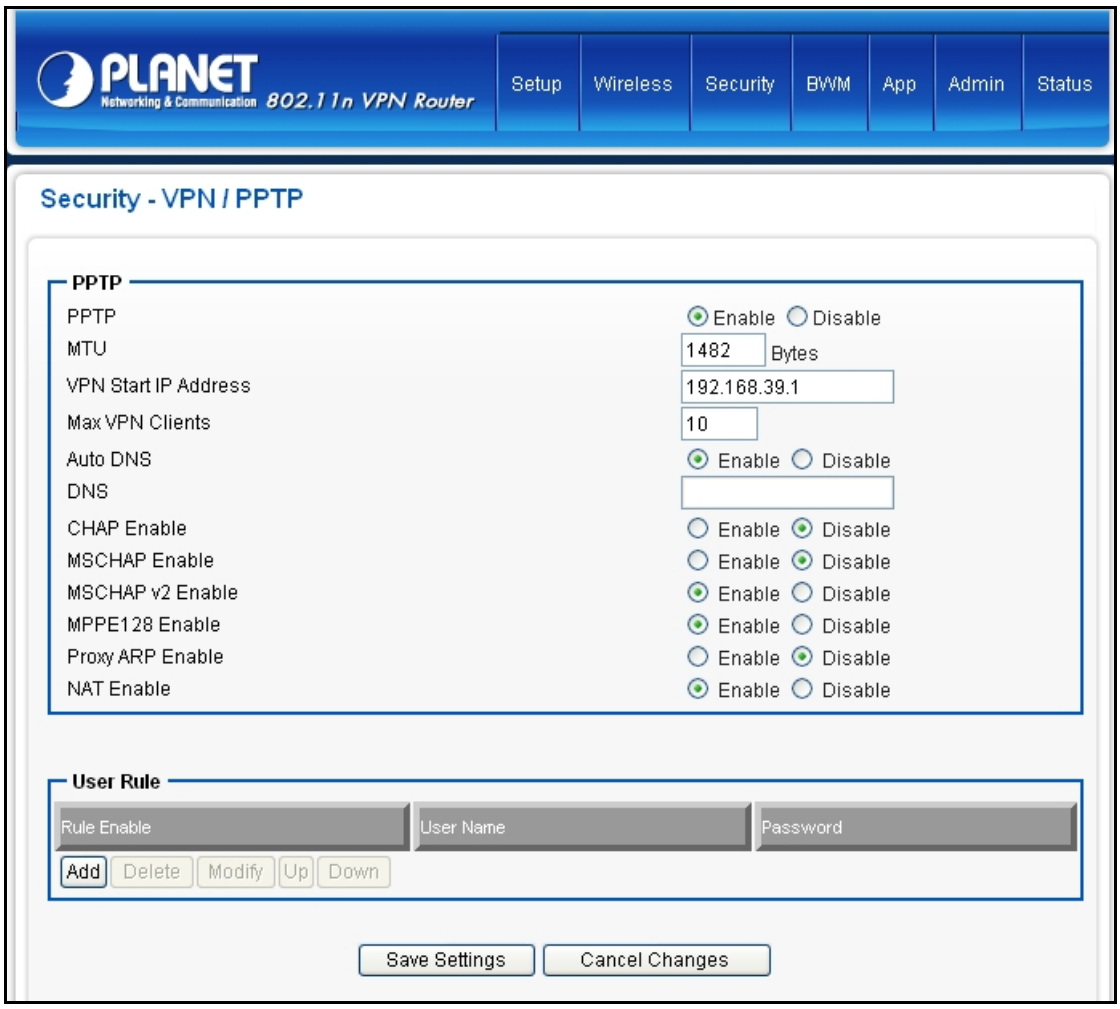
Sequence Number	This defines the sequence (priority) of all the Web Filtering rules.
Rule Enable	Choose Enable/Disable to enable/disable Web Filtering rule
Filter Keyword	Enter the Keyword
Filter Type	Choose URL or Sever
Action	Select ALLOW / DENY。

5. Example: Block a URL with Keyword

If one need to block sex related web page, can follow the settings as below



5.6 VPN PPTP

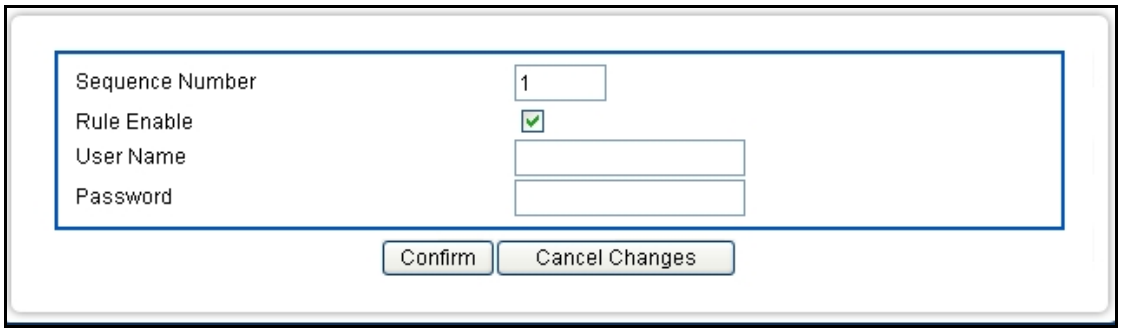


VPN / PPTP Settings

1. Click on [Security] – [VPN / PPTP] tab. You will see the following screen.

2. Configure PPTP Settings following the instructions below.

PPTP	Choose Enable/Disable to enable/disable L2TP.
MTU	Enter MTU value. The default value is 1482 bytes.
VPN Start IP Address	Enter the VPN start IP address. The default value is 192.168.39.1.
Max VPN Clients	Enter the max VPN clients.
Auto DNS	Choose Enable/Disable to enable/disable Auto DNS.
DNS	Enter DNS server if you choose Disable for Auto DNS.
CHAP Enable	Choose Enable/Disable to enable/disable CHAP for VPN authentication.
MSCHAP Enable	Choose Enable/Disable to enable/disable MSCHAP for VPN authentication.
MSCHAP2 Enable	Choose Enable/Disable to enable/disable MSCHAP2 for VPN authentication.
MPP128 Enable	Choose Enable/Disable to enable/disable MPP128 encryption.
Proxy ARP Enable	Choose Enable/Disable to enable/disable Proxy ARP.
NAT Enable	Choose Enable/Disable to enable/disable NAT.



Add VPN / PPTP Rule

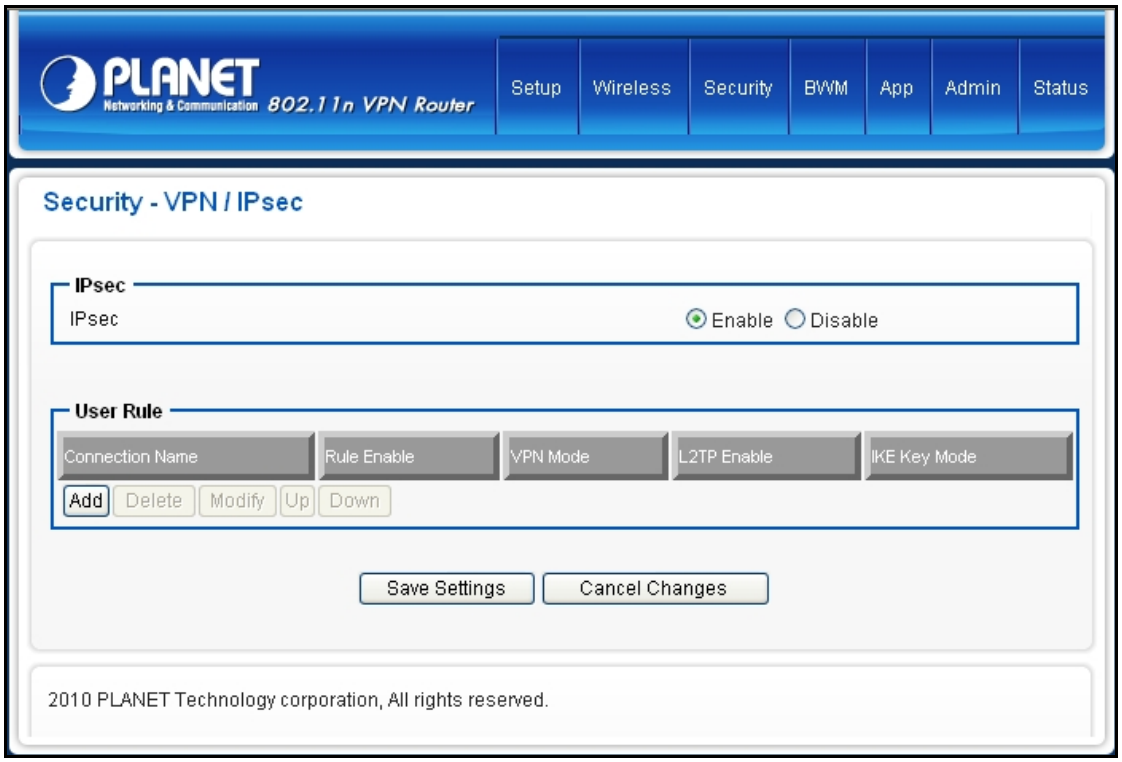
Click on [Add] tab. You will see the following screen.

Configure [Add PPTP] Settings following the instructions below.

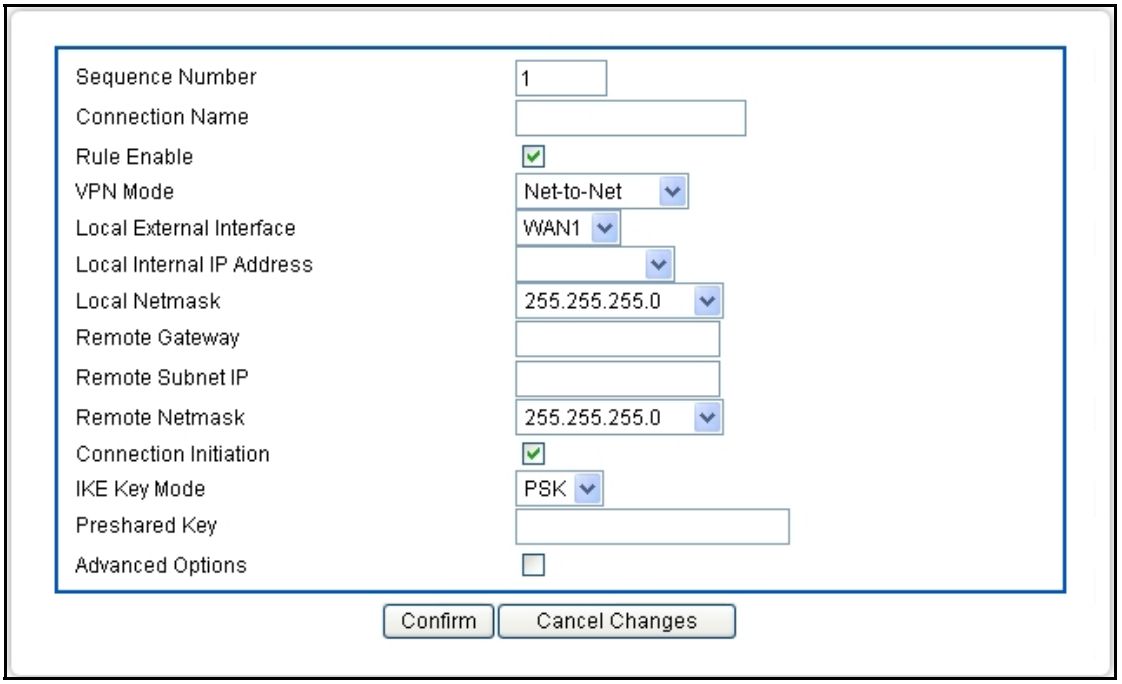
Sequence Number	This defines the sequence of the PPTP rules.
Rule Enable	Enable/Disable this PPTP rule
User Name	Enter PPTP user name.
Password	Enter PPTP password.

5.7 VPN IPSec

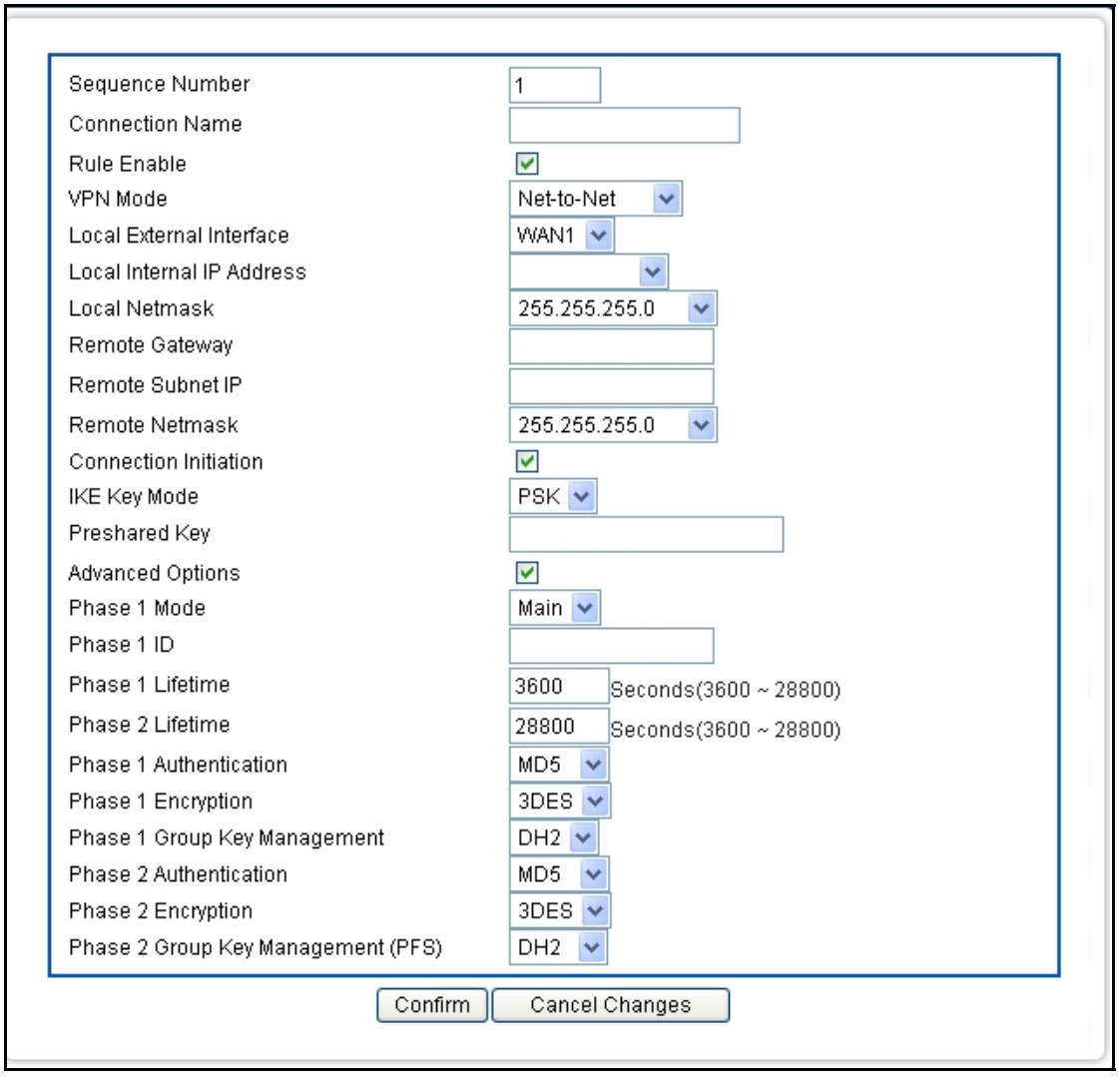
WAN failure detection works by detecting the presence of traffic on the 3G modem link. If the link is idle for too long the router will attempt to ping a target IP address. If the ping does not reply, the router assumes the link is down and attempts to fail over to Ethernet WAN link.



After add the option, you will see the following settings.



After enable the Advance option, you will see the following settings.



Click on [Security] – [VPN / IPsec] tab. You will see the following screen.

Configure IPsec Settings following the instructions below.

IPsec	Select Enable/Disable to enable/disable IPsec.

Configure [Add - IPsec] Settings following the instructions below.

Sequence Number	This defines the sequence of the IPsec rules.
Connection Name	Name of the IPsec rule.
Rule Enable	Enable/Disable this IPsec rule
VPN Mode	Net-to-Net or Road Warrior
Local External Interface	Choose the external WAN for the local VPN gateway.
Local Internal IP Address	Choose the subnet IP address for the VPN gateway.
Local Netmask	Choose the netmask for the local VPN gateway.
Remote Gateway	Enter the IP address or domain name of the remote VPN gateway. This option is needed in Net-to-Net mode.
Remote Subnet IP	Enter the subnet IP address of the remote VPN gateway. This option is needed in Net-to-Net mode.
Remote Netmask	Enter the subnet netmask of the remote VPN gateway. This option is needed in Net-to-Net mode.
Connection Initiation	Check the local VPN gateway to initiate the connection. This option is needed in Net-to-Net mode.
IKE Key Mode	PSK.
Preshared Key	Enter the preshared key. The key should be at least 8-digit ASCII string.
L2TP Enable	Check the local VPN gateway to enable L2TP. This option is needed in Road Warrior mode.
Advanced Options	Check it if you need to configure the advanced options.
Phase 1 Mode	Main.
Phase 1 ID	Enter the phase 1 ID.
Phase 1 Lifetime	Enter the phase 1 lifetime. This value is between 3600 and 28800 seconds.
Phase 2 Lifetime	Enter the phase 2 lifetime. This value is between 3600 and 28800 seconds.
Phase 1 Authentication	Choose the phase 1 authentication as MD5 or SHA1.
Phase I Encryption	Choose the phase 1 encryption as DES, 3DES or AES.
Phase 1 Group Key Management	Choose the phase 1 group key management as DH1, DH2 or DH5.
Phase 2 Authentication	Choose the phase 2 authentication as MD5 or SHA1.
Phase 2 Encryption	Choose the phase 2 encryption as DES, 3DES or AES.
Phase 2 Group Key Management	Choose the phase 2 group key management as DH1, DH2 or DH5.

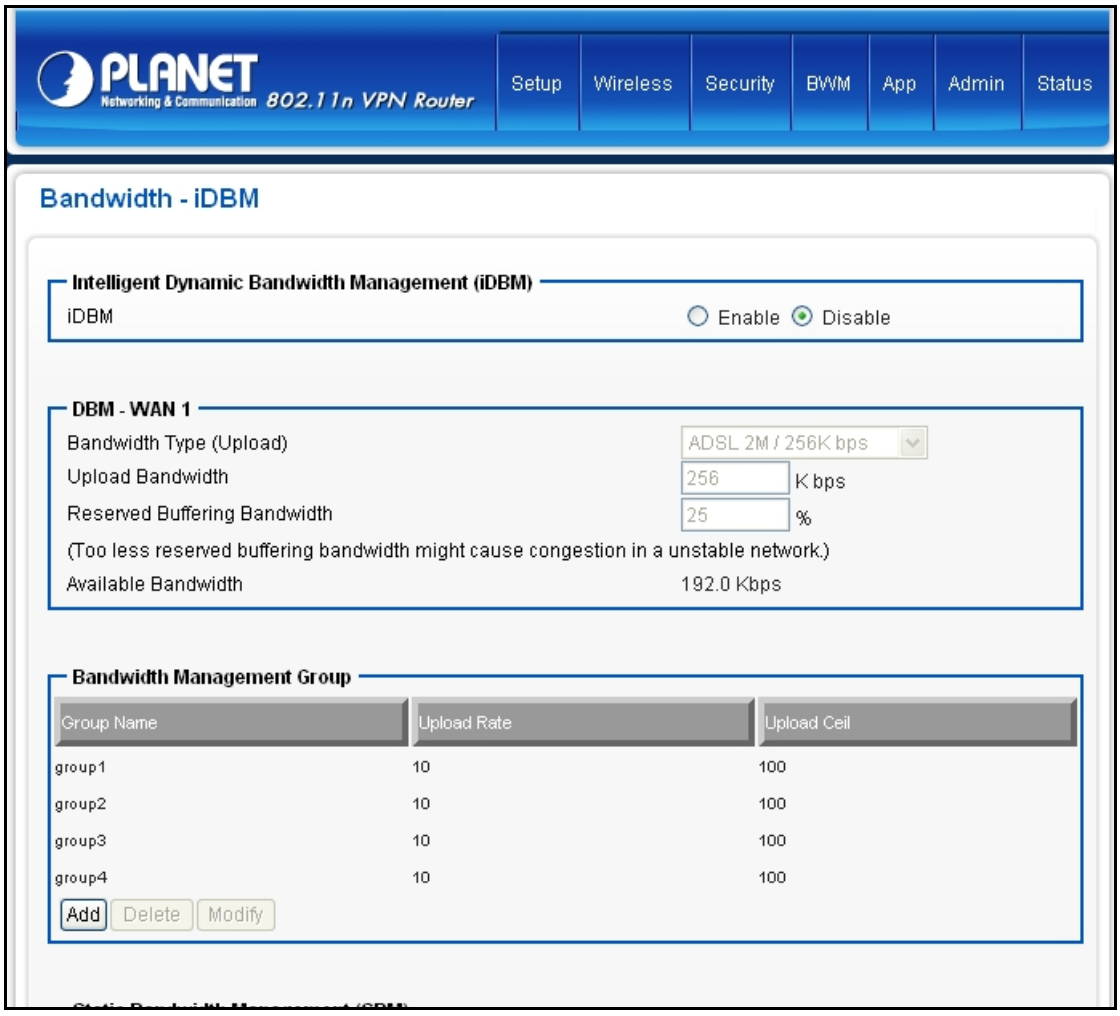
5.8 iDBM

iDBM SETUP

Intelligent Bandwidth Management (iDBM) provides two powerful and unique mechanisms to manage bandwidth: Static Bandwidth Management (SBM) and Dynamic Bandwidth Management (DBM). SBM provides users with the option to allocate a fixed amount of bandwidth for a specific computer or a particular application, while DBM intellectually manages the rest of the bandwidth while all the time satisfying the complicated bandwidth requirements/settings of SBM.

iDBM Settings

The essential configuration needed by iDBM is to specify accurately the bandwidth you have. iDBM would then dispatch bandwidth according to this information. Please Note: Improper bandwidth assignment may cause iDBM to work ineffectively.



Click on [Bandwidth] – [iDBM] tab. You will see the following screen.

Bandwidth Settings:

Please adjust your bandwidth type according to your bandwidth (download/upload) subscribed from your ISP. Due to the unstable nature of network bandwidth supported by ISP, users are recommended to reserve a portion of bandwidth for buffering usage, and iDBM would then arrange the reserved bandwidth under heavy traffic.

Bandwidth Type (Download/Upload)	Select the correct bandwidth type according to your Internet service subscription. If the bandwidth type is not available on the list, select Custom.
Download Bandwidth	Enter the value to customize download bandwidth.
Upload Bandwidth	Enter the value to customize upload bandwidth.
Reserved Buffering Bandwidth	Enter the value to provide bandwidth buffer.

5. Advanced Setting Example

A user subscribed 10M/2Mbps bandwidth from ISP. After performing some speed test, the user found that the actual bandwidth is about 1135KByte/sec downloading and 200KByte/s uploading. We change the dimension in Kbps as follows,

Download Speed: 1135KB/s x 8 = 9080Kbp/s

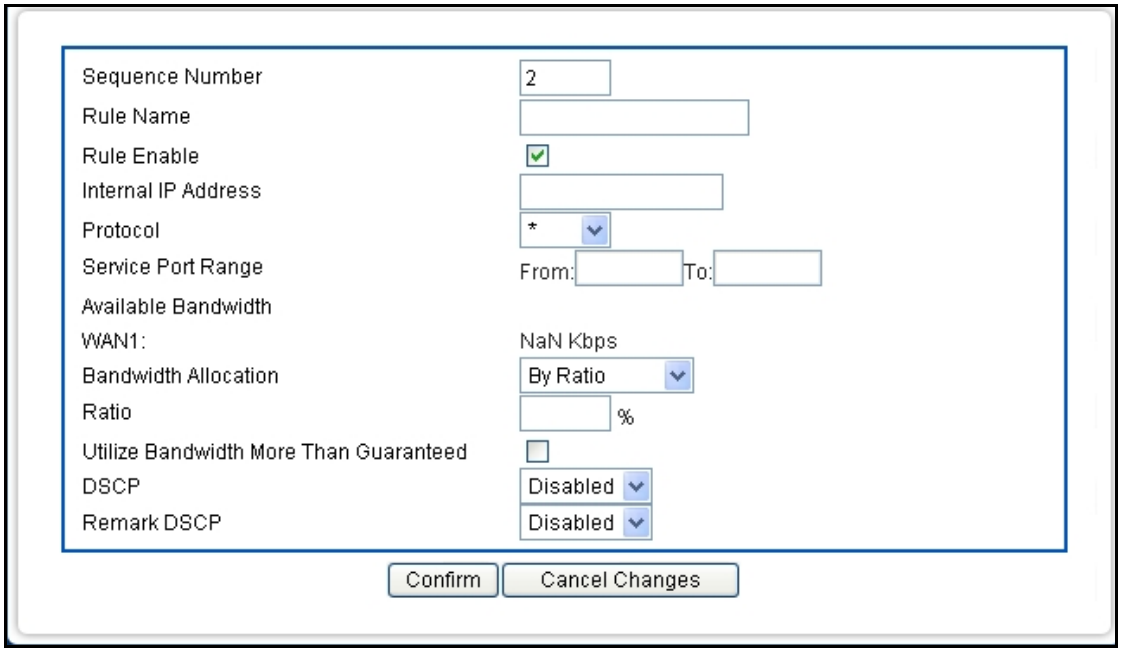
Upload Speed: 200KB/s x 8 = 1600Kbp/s

The settings can be done as below,

Bandwidth Type (Download/Upload)	Select custom。
Download Bandwidth	Enter the value to 9080。
Upload Bandwidth	Enter the value to 1600。
Reserved Buffering Bandwidth	User can firstly set the value about 10% and adjust this value later. If your network is very stable, you could lower this value.

Add SBM Rules

Click on [Add] tab. You will see the following screen.



Configure [Add SBM] Settings following the instructions below.

Sequence Number	This defines the sequence of the SBM rules. If a packet fits the conditions set by the SBM rules, the packet will then be sorted according to the first SBM rule from the top of the list.
Rule Name	Name of the SBM rule.
Rule Enable	Enable/Disable this SBM rule
Internal IP	Set up the internal IP for this SBM rule.
Protocol	Set up the protocol (TCP or UDP) for the ACL to be enabled.
External Interface	Please select which External Interface (WAN1 or WAN2) you want a packet to go through, IF the packet fits the condition of this SBM rule.
Service Port Range	Set up the Service Port Range (e.g., HTTP is TCP/80) for the SBM to be enabled.
Bandwidth Allocation	By Ratio or By Bandwidth
Ratio	The ratio of the whole bandwidth according to the External Interface.
Download	Enter the reserved download bandwidth.
Upload	Enter the reserved upload bandwidth.
Utilize Bandwidth More than Guaranteed	Check this box if you wish to allow the traffic confirming this SBM rule to be able to utilize the whole bandwidth when the bandwidth is idle.

Advanced Setting Example1

If a user needs to reverse some bandwidth for a specified application, such as VoIP, one can have the following configuration to reserve a 25Kbps/25Kbps bandwidth for VoIP application.

Rule Name	VoIP
Rule Enable	Check the box to enable this rule
Internal IP Address	Enter the IP address of the VoIP machine
Protocol	Select * will apply this rule for both TCP and UDP protocols
External Interface	Choose the WAN interface you want to use
Service Port Range	Enter the service port number that used by VoIP
Bandwidth Allocation	Allocating the bandwidth by fixed value assignment or ratio
Download	Enter the reserved download rate to 25 Kbps
Upload	Enter the reserved upload rate to 25 Kbps
Utilize Bandwidth More Than Guaranteed	Uncheck this box to reserve a fixed rate for this application; You may also check this box allowing this application use the rest (free) bandwidth when it consumes more bandwidth.

Advanced Setting Example 2

In the case users need to guarantee a PC or a network device for a specified bandwidth and allow the user to user rest bandwidth up to some values, one may follow the settings as below.

In this case, the PC with IP address-192.168.1.1 will be guaranteed for 100Kbps/20Kbps bandwidth. Additionally, this PC can use up to 150Kbps/30Kbps if there is still any free bandwidth existed.

Rule Name	IP1_Rate
Rule Enable	Check this box to enable this rule
Internal IP Address	Enter the IP address this rule to be applied to.
Protocol	* (Applied to both TCP and UDP)
External Interface	Select the external WAN Interface to be applied to.
Service Port Range	Applied to all port range if left this field blank
Bandwidth Allocation	Allocating the bandwidth by fixed value assignment or ratio
Download	Enter the download guaranteed value to 100 Kbps。
Upload	Enter the upload guaranteed value to 25 Kbps。
Utilize Bandwidth More Than Guaranteed	Check this box to allow the usage of free bandwidth
Use Maximal Download	Enter the limited download value to 150Kbps
Use Maximal Upload	Enter the limited upload value to 30Kbps

Add DBM Rule

It is very simple to set-up a DBM rule, users only need to set the IPs to be controlled in the DBM IP ranges.

After assignment of the DBM IPs, the Router will dynamically control the bandwidth by equality and priority methods

Click on [Add] tab. You will see the following screen.

Configure [Add DBM] Settings following the instructions below

Sequence Number	This defines the sequence of the DBM rules.
Rule Name	Name of the DBM rule.
Rule Enable	Enable/Disable this DBM rule
Internal IP Range	Set up the internal IP range for this DBM rule.

DBMSetting Example

The maximum DBM IPs is 16 in the VRT-402N. The user may set the DHCP releasing range from 192.168.2.30 to 192.168.1.45 and set those IP as DBM IP accordingly. In this manner, all user access through this router will be controlled by DBM system without any other complicated settings.

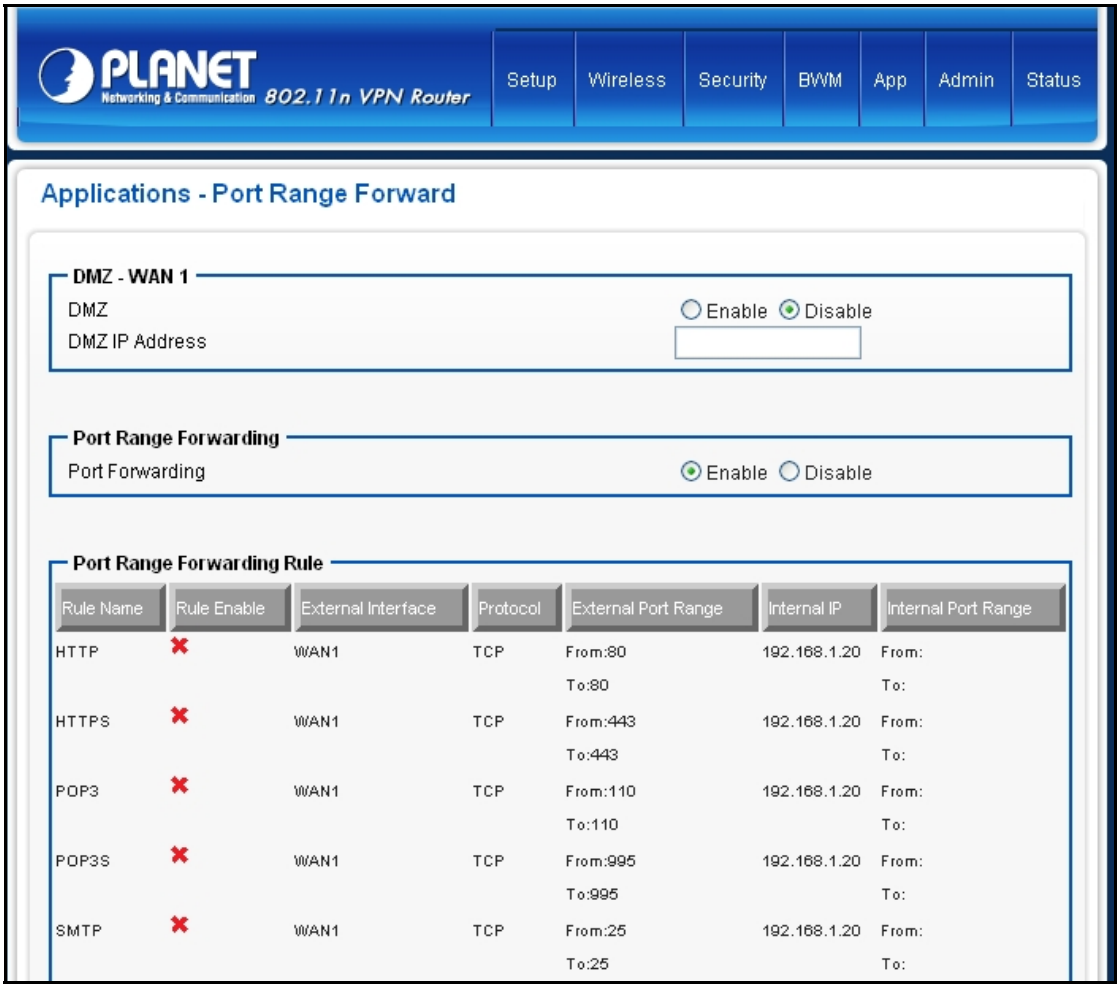
Chapter 6 Application Settings

6.1 Application Settings

The Status screen allows you to monitor the current status of your router. You can use the Status page to monitor the connection status of Applications Settings,

By activating the port range forwarding function, remote users can access the local network via the public IP address. Users can assign a specific external port range to a local server. Furthermore, users can specify an internal port range associated in a port range forwarding rule. When VRT-402N receives an external request to access any one of the configured external ports, it will redirect the request to the corresponding internal server and change its destination port to one of the internal ports specified. Therefore, if users do not wish for destination port to be changed for a request, the internal port range should be left empty.

By enabling DMZ Host Function, you can set up a DMZ host at a particular computer exposed to the Internet. In this way, some applications, especially online games (if the traffic port numbers of the applications are always changing), can be easily accessed.



Click on [Applications] – [Port Range Forward] tab. You will see the following screen.

Configure [DMZ] Settings following the instructions below

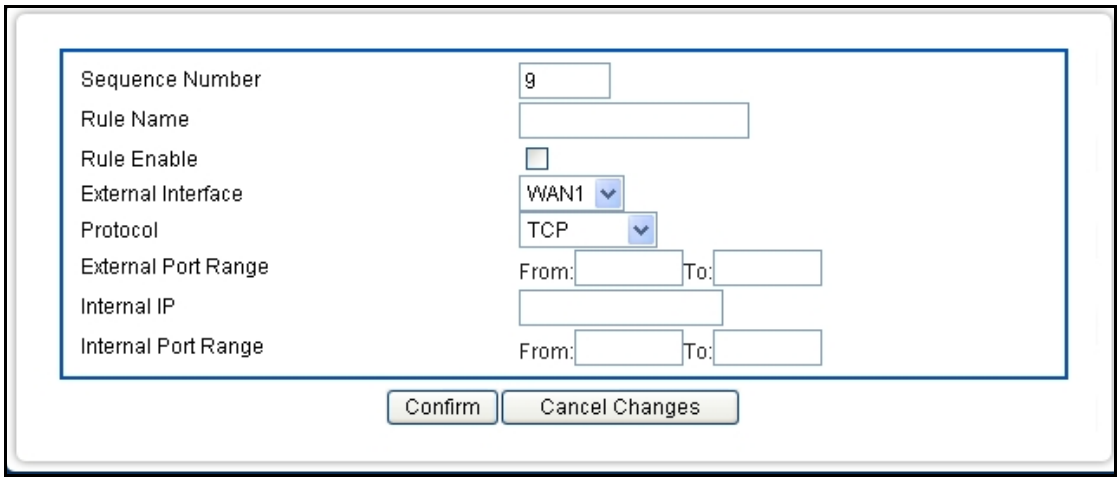
DMZ	Select Enable to enable DMZ function. Select Disable to disable DMZ function.
DMZ IP Address	Enter the IP address of a particular host in your LAN which will receive all the packets originally going to the WAN port / Public IP address above.

Configure [Port Range Forwarding] Settings following the instructions below

Port Forwarding	Select Enable / Disable to enable/disable Port Forwarding

Add Port Range Forwarding Rule

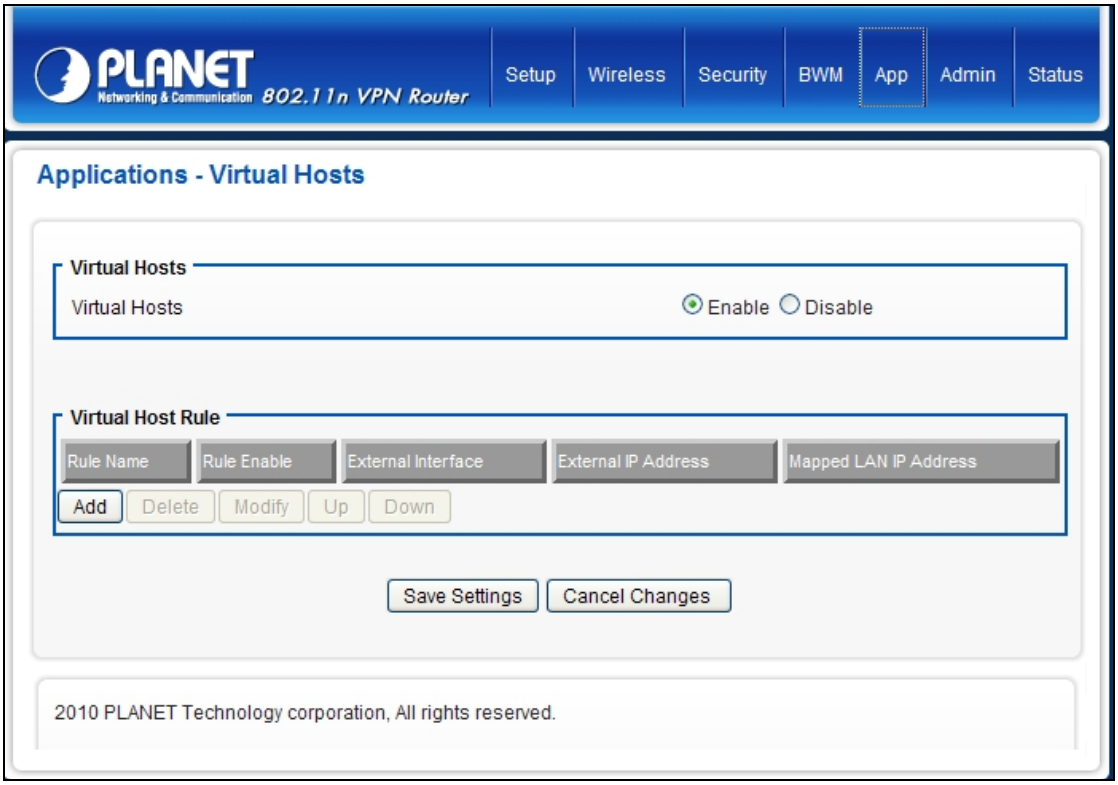
Click on [Add] tab. You will see the following screen.



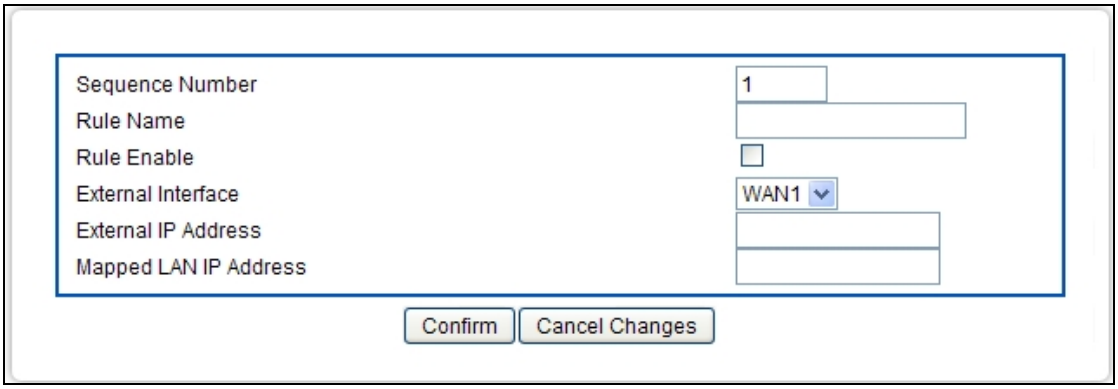
Configure [Add Port Range Forwarding Rule] Settings following the instructions below

Sequence Number	This defines the sequences (priorities) of the port forwarding rules. If a packet fits the conditions setup by the port forwarding rules, the packet will then be forwarded according to the 1st rule from the top of the list.
Rule Name	Enter the name of the port forwarding rule.
Action	Check/Uncheck to enable/disable this port forwarding rule.
External Interface	Choose WAN1 or WAN2 as the External port forwarding interface.
Protocol	Choose TCP, UDP or TCP/UDP for the rule to be applied.
External Port Range	Set up the External Port Range for the rule to be applied.
Internal IP	Set up the Internal IP for the rule to be applied.
Internal Port Range	Set up the Internal Port Range for the rule to be applied.

6.2 Virtual Host

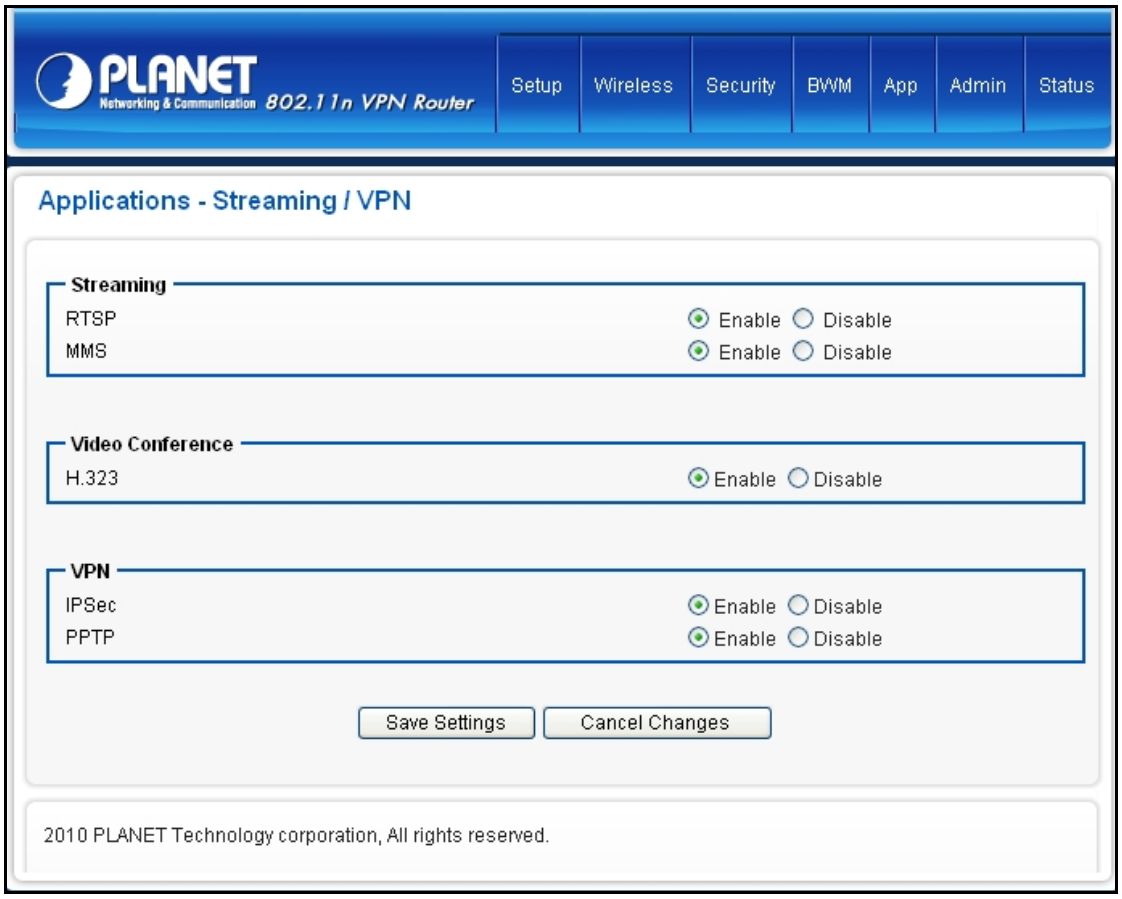


After enable the “add and modify” the function, WEB UI will show the following information.



Sequence Number	Please key the number
Rule Name	Please key the Name
Rule Enable	Enable/Disable the Rule
External IP Address	Please key the WAN Port IP address
Mapped LAN IP Address	Please key the LAN Port IP address

6.3 Stream VPN



You can enhance your media streaming quality by enabling RTSP, MSS, and H.323 protocols. Moreover, VPN Pass-through functionality can also be enabled.

Click on [Applications] – [Streaming / VPN] tab. You will see the following screen.

Configure [Streaming] Settings following the instructions below.

RTSP	Select Enable/Disable to enable/disable RTSP
MMS	Select Enable/Disable to enable/disable MMS

Configure [Video Conference] Settings following the instructions below

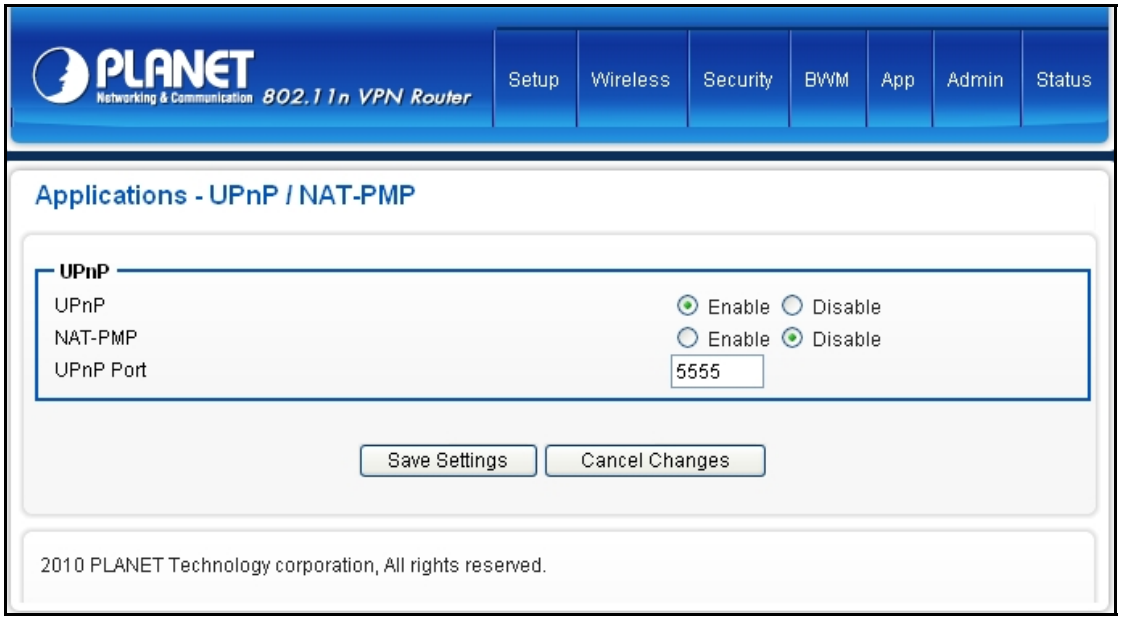
H.323	Select Enable/Disable to enable/disable H.323

Configure [VPN] Settings following the instructions below

IPSec Pass-through	Select Enable/Disable to enable/disable IPSec Pass-through
PPTP Pass-through	Select Enable/Disable to enable/disable PPTP Pass-through

6.4 UPnP / NAT PMP

Click on [Applications] – [UPnP / NAT-PMP] tab. You will see the following screen.

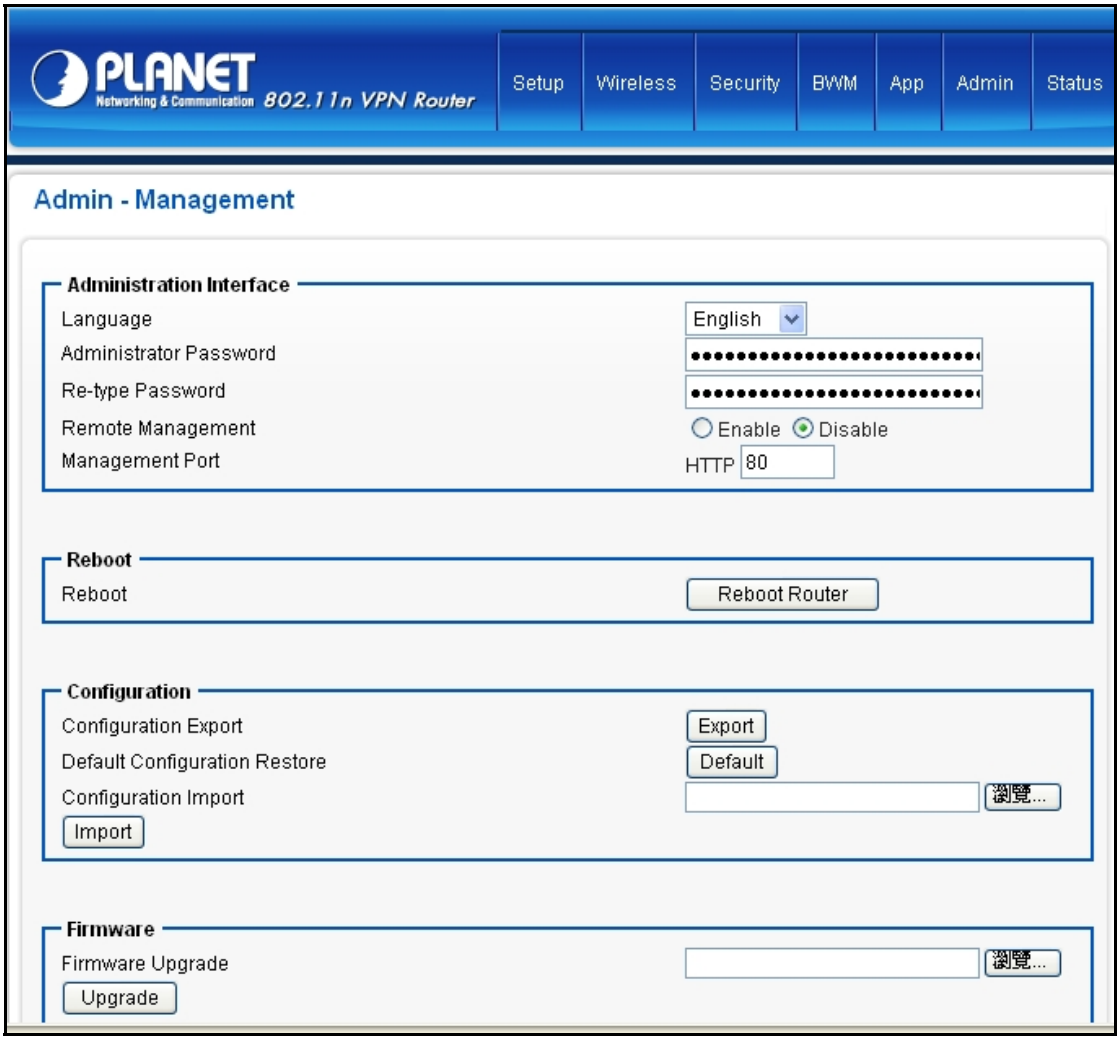


Configure [UPnP] Settings following the instructions below

UPnP	Select Enable/Disable to enable/disable UPnP
NAT-PMP	Select Enable/Disable to enable/disable NAT-PMP
UPnP Port	Enter the number for UPnP port.

Chapter 7 Administrator

7.1 Management



Click on [Admin] – [Management] tab. You will see the following screen.

Configure [Administration Interface] Settings based on the instructions listed below.

Language	Select the language of administration Interface you wish to use.
Administrator Password	Maximum input is 36 alphanumeric characters (case sensitive) * Please change the administrator's password if the remote management is enabled. Otherwise, a malicious user can access the management interface. This user can then have the ability to change the settings and damage your network access.
Re-type Password	Enter the password again to confirm.
Remote Management	Select Enable to enable Remote Management. Select Disable to disable Remote Management
Management Port	HTTP port which users can connect to. (default port is 8080)

Configure [Configuration] Settings based on the instructions listed below

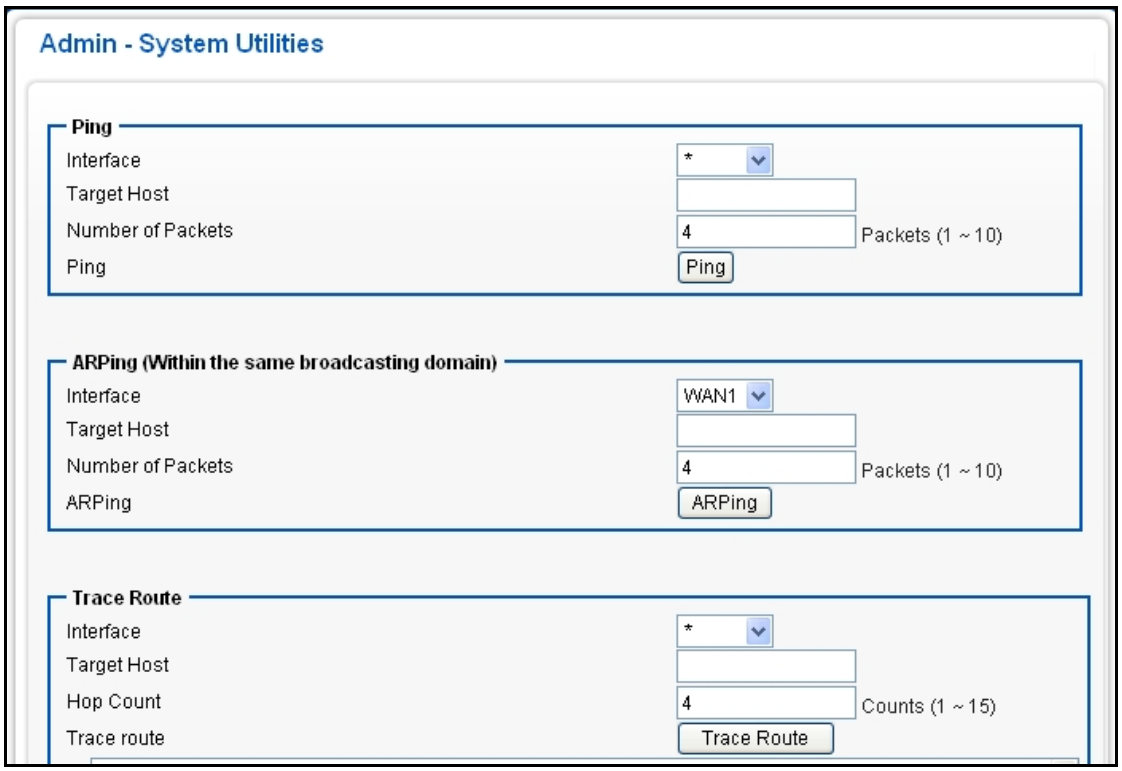
Configuration Export	Click Export to save your current configuration settings in a file.
Default Configuration Restore	Click Restore to recover the default system settings.
Configuration Import	Click Browse and Import to load previous configuration settings.

Configure [Firmware] Settings based on the instructions listed below

Firmware Upgrade	Click Browse and Upgrade to upgrade the firmware.

7.2 System Utility

Click on [Admin] – [System Utilities] tab. You will see the following screen.


Admin - System Utilities
Ping
Interface
*
Target Host
Number of Packets
4
Packets (1 ~ 10)
Ping
Ping
ARPing (Within the same broadcasting domain)
Interface
WAN1
Target Host
Number of Packets
4
Packets (1 ~ 10)
ARPing
ARPing
Trace Route
Interface
*
Target Host
Hop Count
4
Counts (1 ~ 15)
Trace route
Trace Route

Using the [ping] tool based on the instructions listed below

Interface	Select the interface that use to ping to, ie. LAN, WAN.
Target Host	Enter the IP address to ping to
Number of Packets	Specify the number of the ICMP packets to send out
Ping	Press the tab to start the “ping” actions

Using the [ARPing] tool based on the instructions listed below

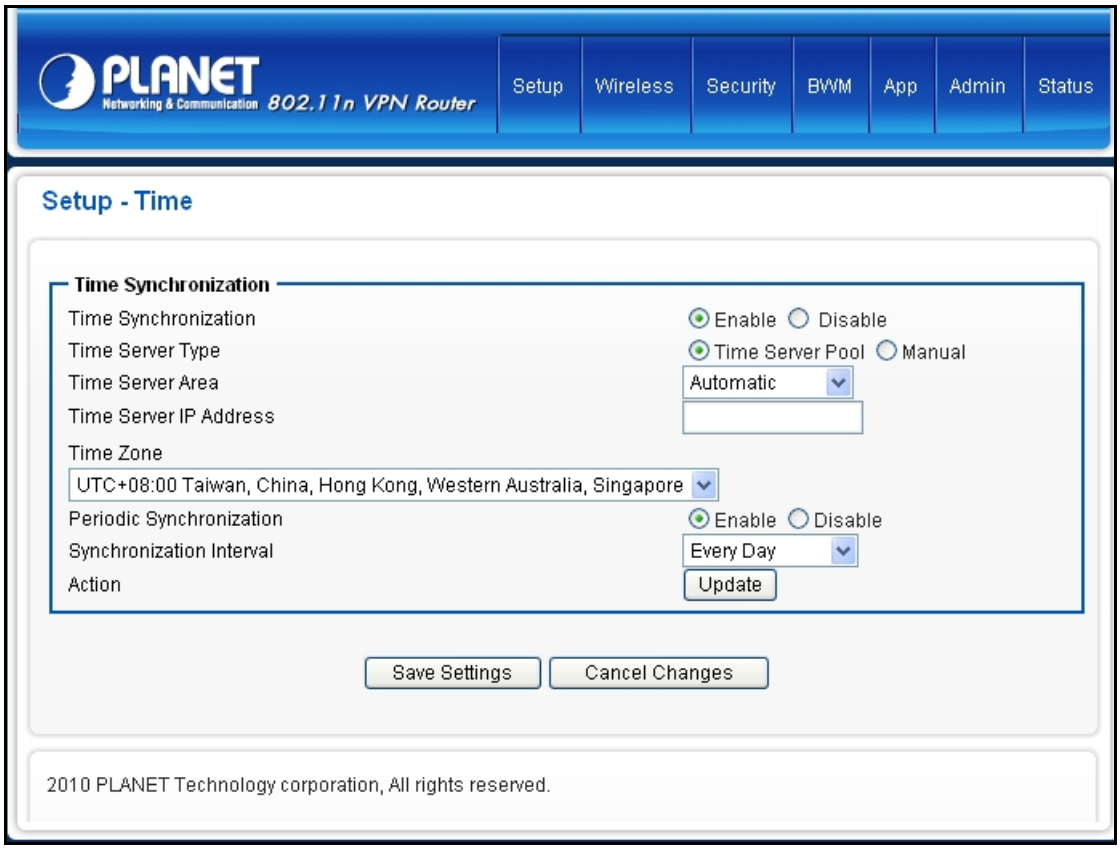
Interface	Select the interface that use to ARPing to, ie. LAN, WAN.
Target Host	Enter the MAC address to ARPing to
Number of Packets	Specify the number of the ARP request packets to send out
ARPing	Press the tab to start the “ARPing” actions

Using the [Trace Route] tool based on the instructions listed below

Interface	Select the interface that use to ARPing to, ie. WAN1, WAN2.
Target Host	Enter the destination IP address / domain name to trace
Hop Count	Specify the Hop number you need to trace
Trace route	Press the tab to start the “Trace Route” actions

7.3 Time

Click on [Setup] – [Time] tab. You will see the following screen.



Configure [Time] Settings based on the instructions listed below

Time Synchronization	Select Enable/Disable to enable/disable Time Synchronization
Time Server	Select Time Server according to your location. You can choose from Automatic, Asia, Europe, North America, South America, or Africa.
Time Zone	Select Time Zone according to your location. (Daylight Saving Time has been calculated and included in the selection).
Periodic Synchronization	Select Enable/Disable to enable/disable Periodic Synchronization
Synchronization interval	Select from Every Hour, Every 6 Hours, Every 12 Hours, Every Day, and Every Week.

Chapter 8 Status

8.1 Router

Click on [Status] – [Router] tab. You will see the following screen.

Router Information

Model Name	Product model name is shown.
Firmware Version	The firmware version this device is running.
Current Time	Current system time

LAN

MAC Address	MAC Address
IP Address	Internal IP Address
Subnet Mask	The number of subnet mask in the internal network
DHCP Service	DHCP service enabled or disabled
DHCP Start IP Address	DHCP Start IP address
DHCP End IP Address	DHCP End IP address
Max DHCP Clients	The maximum IP addressed which can be assigned to PCs connecting to the network

Wireless Network

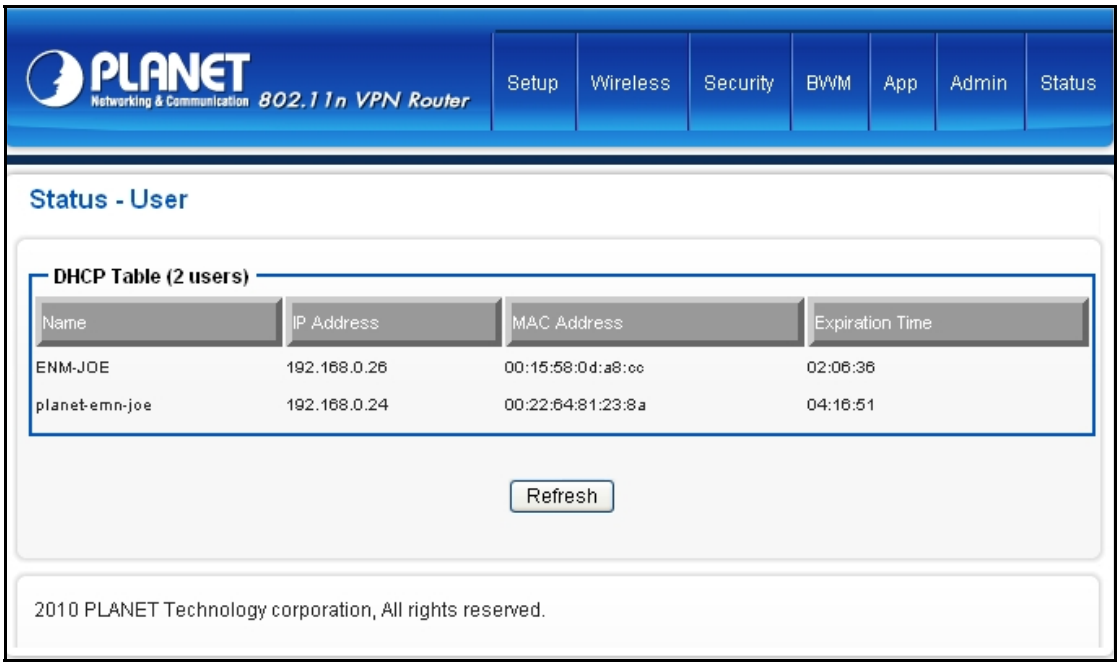
Wireless Mode	Access Point
Wireless SSID	SSID of this Wi-Fi station
Wireless Channel	Wireless Channel in use (default is 6)
MAC Address	MAC Address

WAN

MAC Address	MAC Address
Connection Type	The current connection type (PPPoE, Static IP, and DHCP)
IP Address	WAN IP Address
Subnet Mask	Number of subnet mask.
Gateway	IP address of the gateway

8.2 User/DHCP

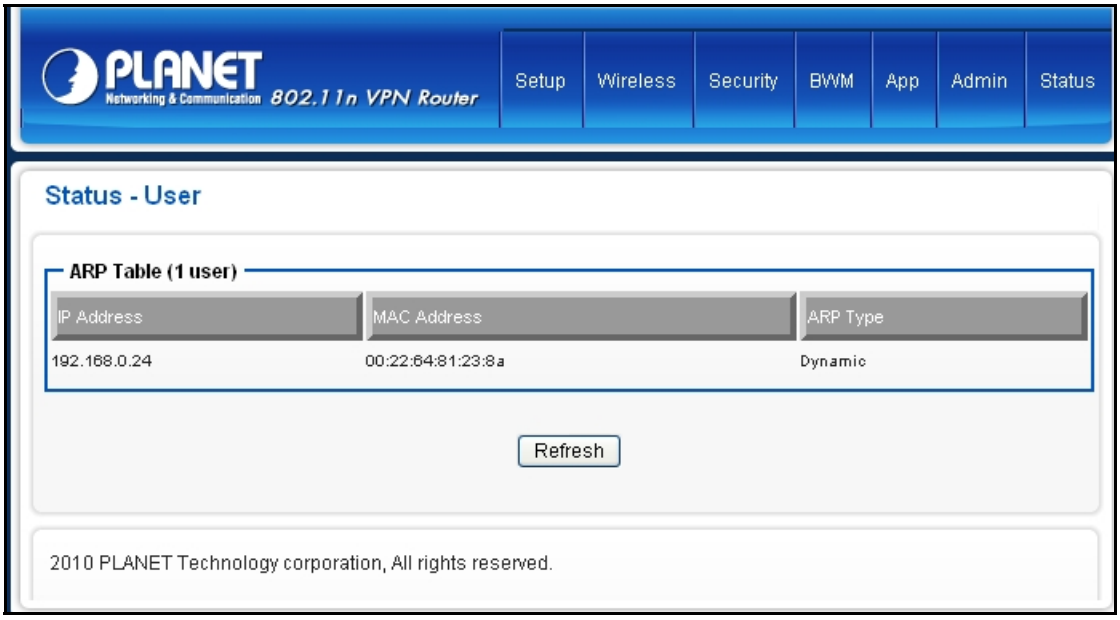
Click on [Status] – [DHCP] tab. You will see the following screen.



Name	DHCP client name
IP Address	IP address which is assigned to this client
MAC Address	MAC address of this client
Expiration Time	The remaining time of the IP assignment

8.3 User/ Current

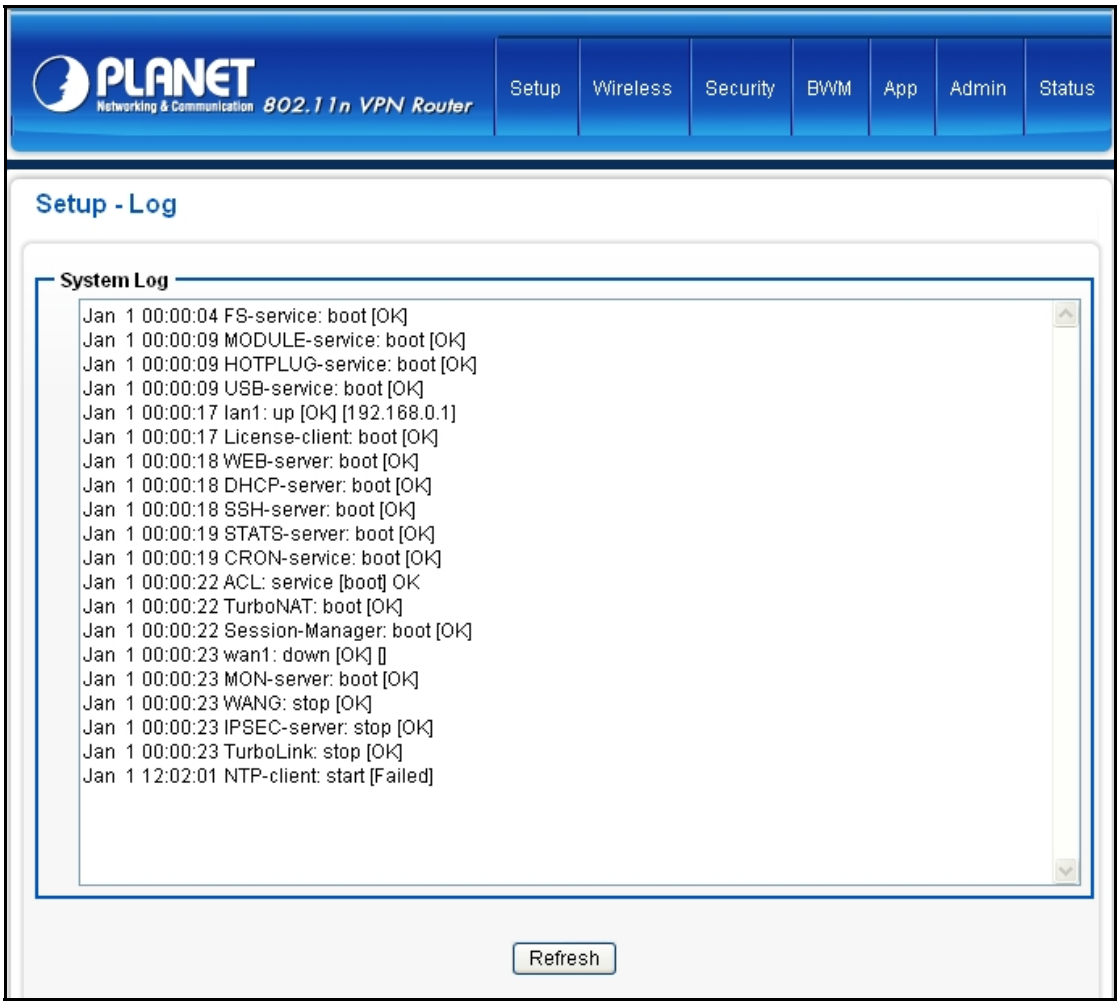
Click on [Status] – [Current] tab. You will see the following screen.



IP Address	IP address assigned by Static ARP matching
MAC Address	MAC address in the Static ARP matching
ARP Type	Static or dynamic

8.4 Log

Click on [Status] – [Log] tab. You will see the following screen.


PLANET
Networking & Communication
802.11n VPN Router
Setup
Wireless
Security
BWM
App
Admin
Status
Setup - Log
System Log
Jan 1 00:00:04 FS-service: boot [OK]
Jan 1 00:00:09 MODULE-service: boot [OK]
Jan 1 00:00:09 HOTPLUG-service: boot [OK]
Jan 1 00:00:09 USB-service: boot [OK]
Jan 1 00:00:17 lan1: up [OK] [192.168.0.1]
Jan 1 00:00:17 License-client: boot [OK]
Jan 1 00:00:18 WEB-server: boot [OK]
Jan 1 00:00:18 DHCP-server: boot [OK]
Jan 1 00:00:18 SSH-server: boot [OK]
Jan 1 00:00:19 STATS-server: boot [OK]
Jan 1 00:00:19 CRON-service: boot [OK]
Jan 1 00:00:22 ACL: service [boot] OK
Jan 1 00:00:22 TurboNAT: boot [OK]
Jan 1 00:00:22 Session-Manager: boot [OK]
Jan 1 00:00:23 wan1: down [OK] []
Jan 1 00:00:23 MON-server: boot [OK]
Jan 1 00:00:23 WANG: stop [OK]
Jan 1 00:00:23 IPSEC-server: stop [OK]
Jan 1 00:00:23 TurboLink: stop [OK]
Jan 1 12:02:01 NTP-client: start [Failed]
Refresh

Chapter 9 Troubleshooting

If you found VRT-402N is working improperly or stop responding to you, please kindly read this troubleshooting first. Some problems can be solved by you within very short time! Please contacts with your local dealer if below methods are failed.

- **Router is not responding to me when I want to access it by web browser.**
  1. Please check the connection of power cord and network cable of this router. All cords and cables should be correctly and firmly inserted to the router.
  2. If all LEDs on this router are off, please check the status of A/C power adapter, and make sure it's correctly powered.
  3. You must use the same IP address section which router uses.
  4. Are you using MAC or IP address filter? Try to connect the router by another computer and see if it works; if not, please restore your router to factory default settings (pressing 'reset' button for over 10 seconds).
  5. Set your computer to obtain an IP address automatically (DHCP), and see if your computer can get an IP address.
  6. If you did a firmware upgrade and this happens, contact your dealer of purchase for help.

- **Why I can't get connected to Internet?**
  1. Call your Internet service provide and check if there's something wrong with their service.
  2. If you just can't connect to one or more website, but you can still use other internet services, please check URL/Keyword filter.
  3. Try to reset the router and try again later.
  4. Reset the device provided by your Internet service provider too.
  5. Try to use IP address instead of hostname. If you can use IP address to communicate with a remote server, but can't use hostname, please check DNS setting.

- **Why I can't locate my router by my wireless client?**
  1. 'Broadcast ESSID' set to off?
  2. All two antennas are properly secured.
  3. Are you too far from your router? Try to get closer.
  4. Please remember that you have to input ESSID on your wireless client manually, if ESSID broadcast is disabled.

- **File download is very slow or breaks frequently**
  1. Are you using QoS function? Try to disable it and try again.
  2. Internet is slow sometimes, being patient.
  3. Try to reset the router and see if it's better after that.

4. Try to know what computers do on your local network. If someone's transferring big files, other people will think Internet is really slow.
5. If this never happens before, call you Internet service provider to know if there is something wrong with their network.

- **I can't log onto web management interface: password is wrong**

1. Make sure you're connecting to the correct IP address of the router!
2. Password is case-sensitive. Make sure the 'Caps Lock' light is not illuminated.
3. If you really forget the password, do a hard reset.

- **Router become hot**

1. This is not a malfunction if you can keep your hand on the router's case.
2. If you smell something wrong or see the smoke coming out from router or A/C power adapter, please disconnect the router and A/C power adapter from utility power (make sure it's safe before you're doing this!), and call your dealer of purchase for help.

- **The date and time of all event logs are wrong**

1. Adjust the internal clock of router.