F7X25 Series Router User Manual

The user manual is suitable for the following model:

Model	Product Type
F7125	GPS+GPRS ROUTER
F7225	GPS+CDMA ROUTER
F7325	GPS+EDGE ROUTER
F7425	GPS+WCDMA ROUTER
F7525	GPS+TD-SCDMA ROUTER
F7625	GPS+EVDO ROUTER
F7725	GPS+LTE/TD-SCDMA ROUTER
F7825	GPS+LTE/WCDMA ROUTER
F7A25	GPS+LTE/EVDO ROUTER

Four-Faith

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Date	Version	Remark	Author
2012-09-16	V1.00	Initial Draft	ZYL
2012-11-1	V1.01	Add Packet Filter	PF

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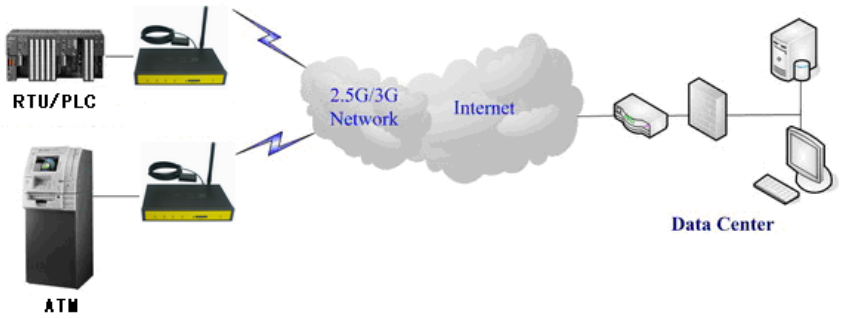
Chapter 1 Brief Introduction of Product

1.1 General

F7X25 series ROUTER is a kind of cellular terminal device that provides data transfer function by public cellular network. and GPS function.

It adopts high-powered industrial 32-bits CPU and embedded real time operating system. It supports RS232 (or RS485/RS422) and Ethernet port that can conveniently and transparently connect one device to a cellular network, allowing you to connect to your existing serial and Ethernet devices with only basic configuration. Also, it supports GPS function.

It has been widely used on M2M fields, such as intelligent transportation, smart grid, industrial automation, telemetry, finance, POS, water supply, environment protection, post, weather, and so on.



1.2 Features and Benefits

Design for Industrial Application

- High-powered industrial cellular module
- High-powered industrial 32bits CPU
- High-powered industrial GPS module
- Support low-consumption mode, including sleep mode, scheduled online/offline mode, scheduled power-on/power-off mode(optional)
- Housing: iron, providing IP30 protection.
- Power range: DC 5~35V

Stability and Reliability

- Support hardware and software WDT
- Support auto recovery mechanism, including online detect, auto redial when offline to make router always online
- Ethernet port: 1.5KV magnetic isolation protection

- RS232/RS485/RS422 port: 15KV ESD protection
- SIM/UIM port: 15KV ESD protection
- Power port: reverse-voltage and overvoltage protection
- Antenna port: lightning protection(optional)

Standard and Convenience

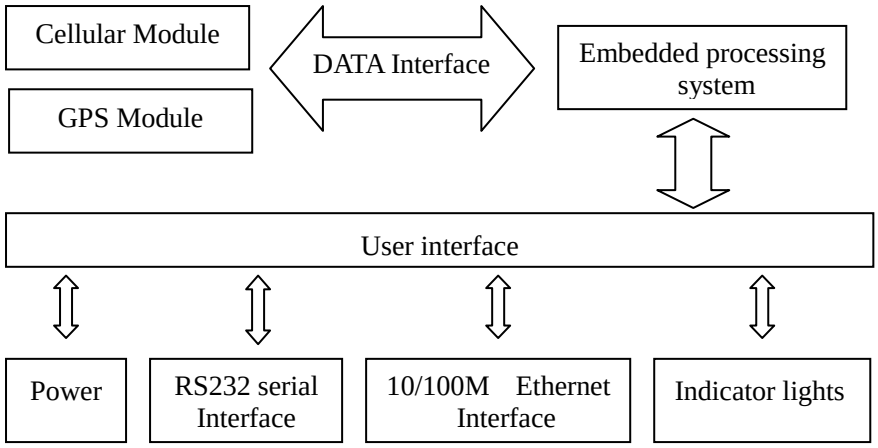
- Support standard RS232(or RS485/RS422), Ethernet that can connect to serial, Ethernet devices directly
- Support intellectual mode, enter into communication state automatically when powered
- Provide management software for remote management
- Support several work modes
- Convenient configuration and maintenance interface（WEB or CLI）

High-performance

- Support 3G/HSPA/4G WAN access methods.
- Support GPS function
- Support VPN client(PPTP, L2TP, OPENVPN, IPSEC and GRE)(only for VPN version)
- Support VPN server(PPTP, L2TP, OPENVPN, IPSEC and GRE)(only for VPN version)
- Support local and remote firmware upgrade,import and export configure file.
- Support NTP, RTC embedded.
- Support mulitiple DDNS provider service.
- Support MAC Address clone, PPPoE Server
- Support multi online trigger ways, including SMS, ring and data. Support link disconnection when timeout
- Support APN/VPDN
- Support DHCP server and client, firewall, NAT, DMZ host , URL block, QoS, ttraff,statistics, real time link speed statistics etc.
- Full protocol support , such as TCP/IP, UDP, ICMP, SMTP, HTTP, POP3, OICQ, TELNET, FTP, SNMP, SSHD, etc.
- Schedule Reboot, Schedule Online and Offline,etc.

1.3 Working Principle

The principle chart of the router is as following:



1.4 Specifications

Cellular Specification

Standard and Band	**Bandwidth**	**TX power**	**RX sensitivity**
F7125 GPS+GPRS ROUTER			
EGSM900/GSM1800MHz, GSM850/900/1800/1900MHz (optional) Compliant to GSM phase 2/2+ GPRS class 10, class 12(optional)	85.6Kbps	GSM850/900： <33dBm GSM1800/1900： <30dBm	<-107 dBm
F7225 GPS+CDMA ROUTER			
CDMA2000 1xRTT 800MHz 800/1900MHz(optional) 450MHz(optional)	153.6Kbps	<30dBm	<-104 dBm
F7325 GPS+EDGE ROUTER			
GSM850/900/1800/1900MHz GPRS/EDGE Class 12	236.8Kbps	GSM850/900： <33dBm GSM1800/1900： <30dBm	<-106 dBm
F7425 GPS+WCDMA&HSDPA&HSUPA ROUTER			
UMTS/WCDMA/HSDPA/HSUPA	HSUPA:5.76Mbps	<25dBm	<-109

/HSPA+ 850/1900/2100MHz 850/900/1900/2100MHz(optional) GSM850/900/1800/1900MHz GPRS/EDGE CLASS 12	(Upload speed) HSDPA:7.2Mbps (Download speed) UMTS:384Kbps (DL/UL) HSPA+: 21 Mbps (Download speed) 5.76Mbps（Upload speed）		dBm
F7525 GPS+TD-SCDMA ROUTER			
TD-SCDMA/HSDPA/HSUPA /LTE 1880-1920/2010-2025MHz GSM850/900/1800/1900MHz GPRS/EDGE CLASS 12	Download speed:2.8Mbps upload speed:2.2Mbps	<25dBm	<-108 dBm
F7625 GPS+CDMA2000 1X EVDO			
CDMA2000 1X EVDO Rev A 800MHz,800/1900MHz(optional) 450MHz (optional) EVDO Rev B 800/1900MHz(optional) CDMA2000 1X RTT, IS-95 A/B	Download speed:3.1Mbps upload speed:1.8Mbps EVDO Rev B(optional) Download speed:14.7Mbps upload speed:5.4Mbps	<23dBm	<-104 dBm
F7725 GPS+LTE/TD-SCDMA ROUTER			
LTE TDD 2600/2300MHz. DC-HSPA+/HSPA+/HSUPA/HSDPA/UMTS 2100/900MHz EDGE/GPRS/GSM 850/900/1800/1900MHz	LTE(Download speed:68Mbps, upload speed:17Mbps) HSUPA:5.76Mbps(upload speed) HSDPA:14.4Mbps(Download speed) HSPA+: 28Mbps(Download speed)	<24dBm	<-106dBm
F7825 GPS+LTE/WCDMA ROUTER			
LTE FDD 2600/2100/1800/900/800MHz, 700/1700/2100MHz(optional) HSPA+/HSDPA/HSUPA/WCDMA /UMTS900/2100MHz,	LTE(DL:100Mbps,UL:50Mbps) HSUPA:5.76Mbps(Upload speed) HSDPA:7.2Mbps(Download speed)	<32dBm	<-93.3dBm

800/850/1900/2100MHz(optional) EDGE/GPRS/GSM 900/1800/1900MHz GPRS CLASS 10 GPRS CLASS 12	UMTS:384Kbps (DL/UL) HSPA+: 21Mbps(Download speed) 5.76Mbps(Upload speed)		
F7A25 GPS+LTE&EVDO ROUTER			
LTE 700MHz CDMA 1XRTT/EVDO 800/1900MHz	LTE(DL:100Mbps, UL:50Mbps)/ CDMA2000 1X EVDO Rev A (DL:3.1Mbps， UL:1.8Mbps	<24dBm	<-93.3dBm

GPS Specification

Item	Content
GPS Module	Industrial GPS module
Receiver Type	50-channle GPS L1（1575.42MHz）C/A code SBAS: WAAS,EGNOS,MSAS,GAGAN Support GALILEO
Max. update rate	4 Hz
Accuracy	Position: 2.5m CPE SBAS: 2.0m CPE
Acquisition	Cold starts: 29S Warm starts: 29S Aided starts: <1S Hot starts: <1S
Sensitivity	Tracking: -160dBm Reacquisition: -160dBm Cold starts: -144dBm
Timing accuracy	RMS: 30ns 99%: <60ns Granularity: 21ns
Time pulse	Configurable, 0.25 to 1000Hz

Hardware System

Item	Content

CPU	Industrial 32bits CPU
FLASH	8MB(Extendable to 64MB)
SDRAM	64MB

Interface Type

Item	Content
LAN	1 10/100 Mbps Ethernet ports(RJ45), auto MDI/MDIX, 1.5KV magnetic isolation protection
Serial	1 RS232(or RS485/RS422) port, 15KV ESD protection Data bits: 5, 6 ,7, 8 Stop bits: 1, 1.5(optional), 2 Parity: none, even, odd, space(optional), mark(optional) Baud rate: 2400~115200bits/s
Indicator	"Power", "System", "Online", " Link/ACT ","Alarm" ,"Signal Strength"
Antenna	Cellular: Standard SMA female interface, 50 ohm, lighting protection(optional) GPS: standard SMA female interfaces, 50 ohm, lighting protection(optional)
SIM/UIM	Standard 3V/1.8V user card interface, 15KV ESD protection
Power	Standard 3-PIN power jack, reverse-voltage and overvoltage protection
Reset	Restore the router to its original factory default settings

Power Input

Item	Content
Standard Power	DC 12V/1.5A
Power Range	DC 5~35V
Consumption	<450mA (12V)

Physical Characteristics

Item	Content
Housing	Iron, providing IP30 protection
Dimensions	157x97x25 mm
Weight	445g

Environmental Limits

Item	Content
Operating Temperature	-35~+75ºC（-31~+167℉）
Storage Temperature	-40~+85℃（-40~+185℉）
Operating Humidity	95% (unfreezing)

Chapter 2 Installation Introduction

2.1 General

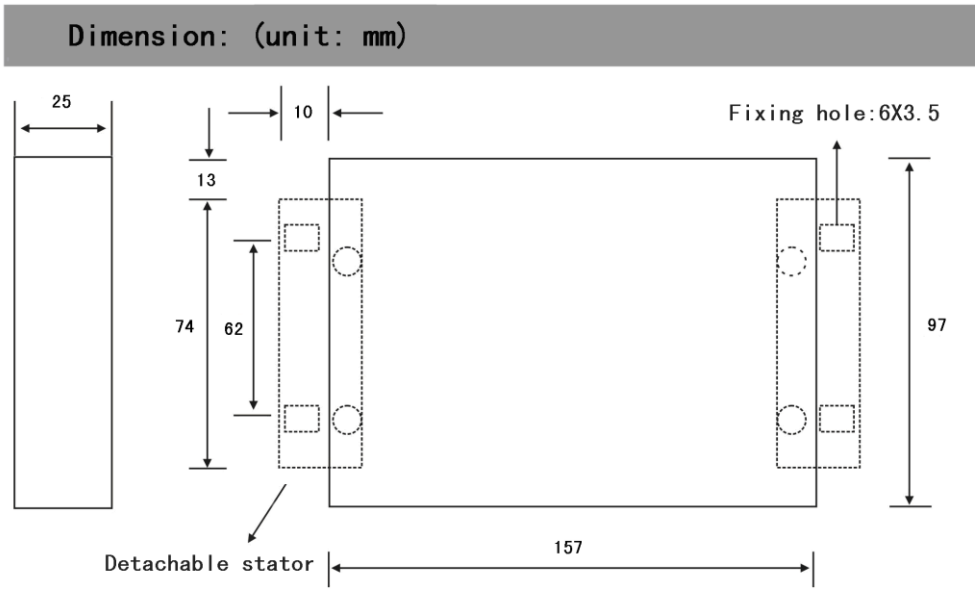
The router must be installed correctly to make it work properly.

Warning: Forbid to install the router when powered!

2.2 Encasement List

Name	Quantity	Remark
Router host	1	
Cellular antenna (Male SMA)	1	
GPS antenna (Male SMA)	1	
Network cable	1	
Console cable	1	optional
Power adapter	1	
Manual CD	1	
Certification card	1	
Maintenance card	1	

2.3 Installation and Cable Connection



Installation of SIM/UIM card:

Firstly power off the router, and press the out button of the SIM/UIM card outlet with a needle object. Then the SIM/UIM card sheath will flick out at once. Put SIM/UIM card into the card sheath (Pay attention to put the side which has metal point outside), and insert card sheath back to the SIM/UIM card outlet.

Warning: Forbid to install SIM/UIM card when powered!

Installation of antenna:

Screw the SMA male pin of the cellular antenna to the female SMA interface of the router with sign "Antenna".

Screw the SMA male pin of the GPS antenna to the female SMA interface of the router with sign "GPS".

Warning: The cellular antenna, the GPS antenna can not be connected wrongly. And the antennas must be screwed tightly, or the signal quality of antenna will be influenced!

Installation of cable:

Insert one end of the network cable into the switch interface with sign "Local Network", and insert the other end into the Ethernet interface of user's device. The signal connection of network direct cable is as follows:

RJ45-1	RJ45-2
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

Insert the RJ45 end of the console cable into the RJ45 outlet with sign "console", and insert the DB9F end of the console cable into the RS232 serial interface of user's device.

The signal connection of the console cable is as follows:

RJ45	DB9F
1	8
2	6
3	2
4	1
5	5
6	3
7	4
8	7

The signal definition of the DB9F serial communication interface is as follows:

Pin	RS232 signal name	The direction for Router
1	DCD	output
2	RXD	output
3	TXD	input
4	DTR	input
5	GND	
6	DSR	output
7	RTS	input
8	CTS	output

2.4 Power

The power range of the router is DC 5~35V.

Warning: When we use other power, we should make sure that the power can supply power above 7W.

We recommend user to use the standard DC 12V/1.5A power.

2.5 Indicator Lights Introduction

The router provides following indicator lights: “Power”, “System”, “GPS”, “Online”, “Link/ACT”, “Signal Strength”.

Indicator Light	State	Introduction
Power	ON	Router is powered on
	OFF	Router is powered off
System	BLINK	System works properly
	OFF	System does not work
Online	ON	Router has logged on network
	OFF	Router hasn’t logged on network
Alarm	OFF	Router has no alarm
	ON	SIM/UIM card does not work or the signal of the antenna is week
Link/ACT	OFF	The corresponding interface of switch is not connected
	ON / BLINK	The corresponding interface of switch is connected /Communicating
GPS	OFF	GPS is not active

	ON	GPS is active
Signal Strength	One Light ON	Signal strength is weak
	Two Lights ON	Signal strength is medium
	Three Lights ON	Signal strength is good

2.6 Reset Button Introduction

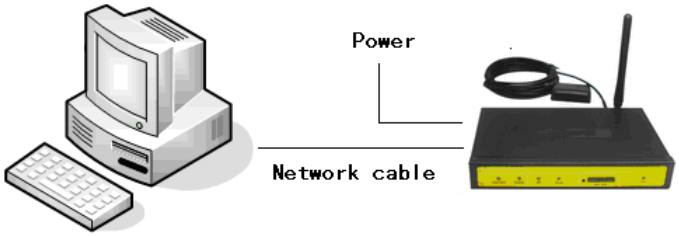
The router has a “Reset” button to restore it to its original factory default settings. When user press the “Reset” button for up to 15s, the router will restore to its original factory default settings and restart automatically.

Chapter 3 Configuration and Management

This chapter describes how to configure and manage the router.

3.1 Configuration Connection

Before configuration, you should connect the router and your configuration PC with the supplied network cable. Plug the cable's one end into the Local Network port of the router, and another end into your configure PC's Ethernet port. The connection diagram is as following:

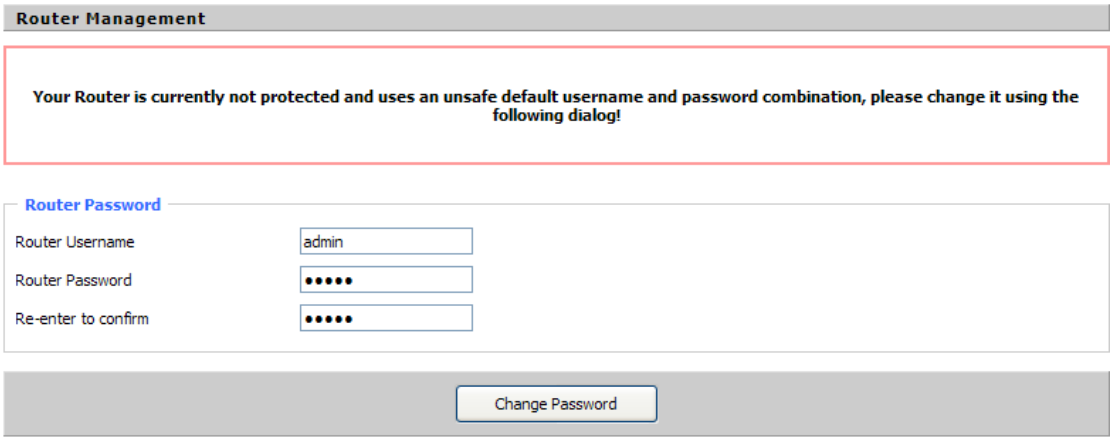


Please modify the IP address of PC as the same network segment address of the router, for instance, 192.168.1.9. Modify the mask code of PC as 255.255.255.0 and set the default gateway of PC as the router's IP address (192.168.1.2).

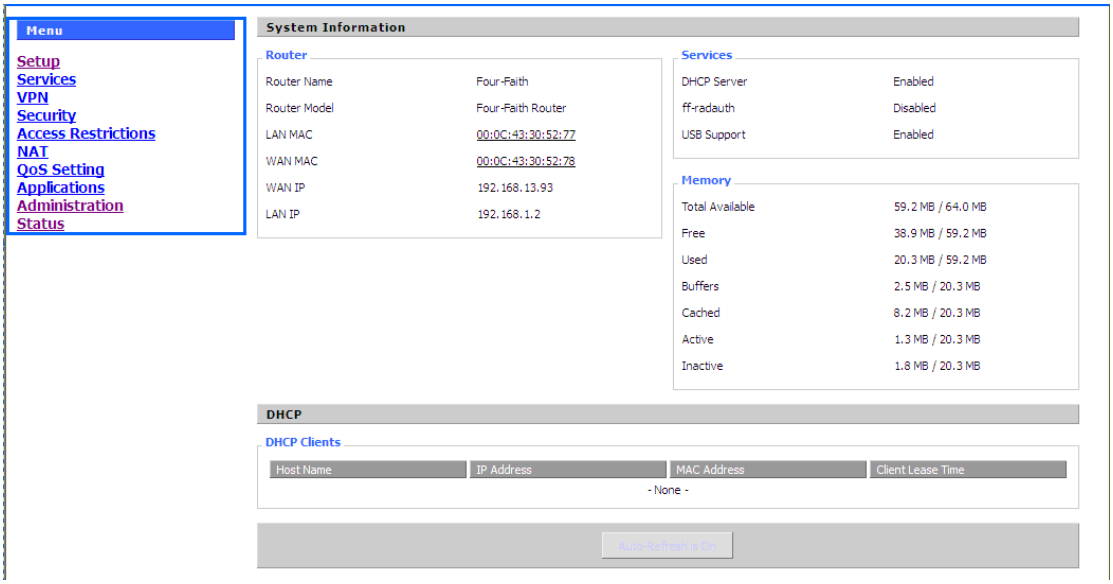
3.2 Access the Configuration Web Page

The chapter is to present main functions of each page. Users visit page tool via web browser after connect users' PC to the router. There are eleven main pages: Setting, Wireless, Service, VPN, Security, Access Restrictions, NAT, QoS Setting, Applications, Management and Status. Users enable to browse slave pages by click one main page.

Users can open IE or other explorers and enter the router's default IP address of 192.168.1.2 on address bar, then press the botton of Enter to visit page Web management tool of the router. The users login in the web page at the first name, there will display a page shows as blow to tip users to modify the default user name and password of the router. Users have to click "change password" to make it work if they modify user name and password.



After access to the information main page



Users need to input user name and password if it is their first time to login.

Input correct user name and password to visit relevant menu page. Default user name is admin, password is admin. (available to modify user name and password on management page, then click submit)

3.3 Management and configuration

3.3.1 Setting

The Setup screen is the first screen users will see when accessing the router. Most users will be able to configure the router and get it work properly using only the settings on this screen. Some Internet Service Providers (ISPs) will require users to enter specific information, such as User Name, Password, IP Address, Default Gateway Address, or DNS IP Address. These information can be obtained from your ISP, if required.

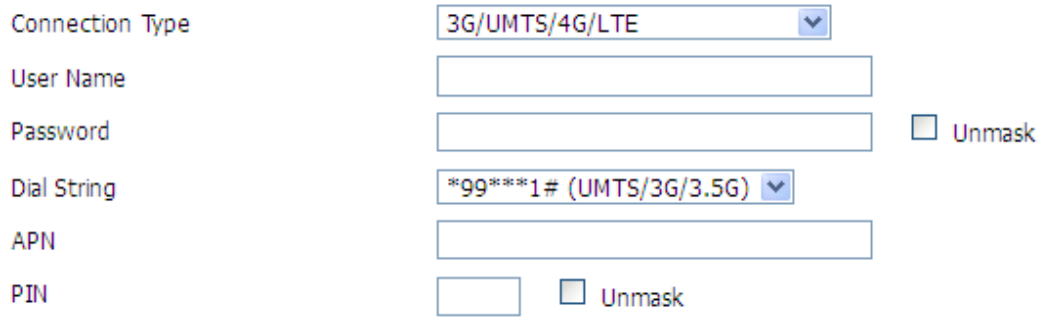
3.3.1.1 Basic Setting

WAN Connection Type
Seven Ways: Disabled, 3G/UNMTS/4G/LTE

Disabled

Forbid the setting of WAN port connection type

3G/UMTS/4G/LTE

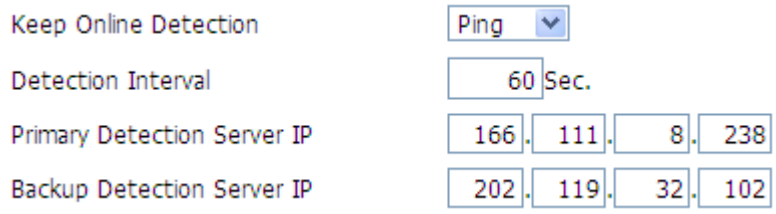


User Name: login users' ISP(Internet Service Provider)
Password: login users' ISP
Dial String: dial number of users' ISP
APN: access point name of users' ISP
PIN: PIN code of users' SIM card

Connection type

Connection type: Auto, Force 3G, Force 2G, Prefer 3G, Prefer 2G options. If using 4G module, there has 4G network option. Users select different mode depending on their need

Keep Online



This function is used to detect whether the Internet connection is active, if users set it and when the router detect the connection is inactive, it will redial to users' ISP immediately to make the connection active.

Detection Method:

None: do not set this function

Ping: Send ping packet to detect the connection, when choose this method, users should also configure "Detection Interval", "Primary Detection Server IP" and "Backup Detection Server IP" items.

Route: Detect connection with route method, when choose this method, users should also configure "Detection Interval", "Primary Detection Server IP" and "Backup Detection Server IP" items.

PPP: Detect connection with PPP method, when choose this method, users should also configure "Detection Interval" item.

Detection Interval: time interval between two detections, unit is second
Primary Detection Server IP: the server used to response the router's detection packet. This item is only valid for method "Ping" and "Route".
Backup Detection Server IP: the server used to response the router's detection packet. This item is valid for method "Ping" and "Route".

Note: When users choose the "Route" or "Ping" method, it's quite important to make sure that the "Primary Detection Server IP" and "Backup Detection Server IP" are usable and stable, because they have to response the detection packet frequently.

Force reconnect: this option schedules the pppoe or 3G reconnection by killing the pppd daemon and restart it.
Time: needed time to reconnect

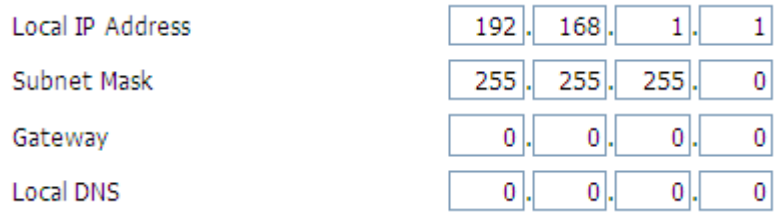
STP

STP (Spaning Tree Protocol) can be applied to loop network. Through certain algorithm achieves path redundancy, and loop network cuts to tree-based network without loop in the meantime, thus to avoid the hyperplasia and infinite circulation of a message in the loop network

Optional Configuration

Router Name: set router name
Host Name: ISP provides
Domain Name: ISP provides
MTU: auto (1500) and manual (1200-1492 in PPPOE/PPTP/L2TP mode, 576-16320 in other modes)

Router Internal Network Settings
Router IP



Local IP Address: IP address of the router

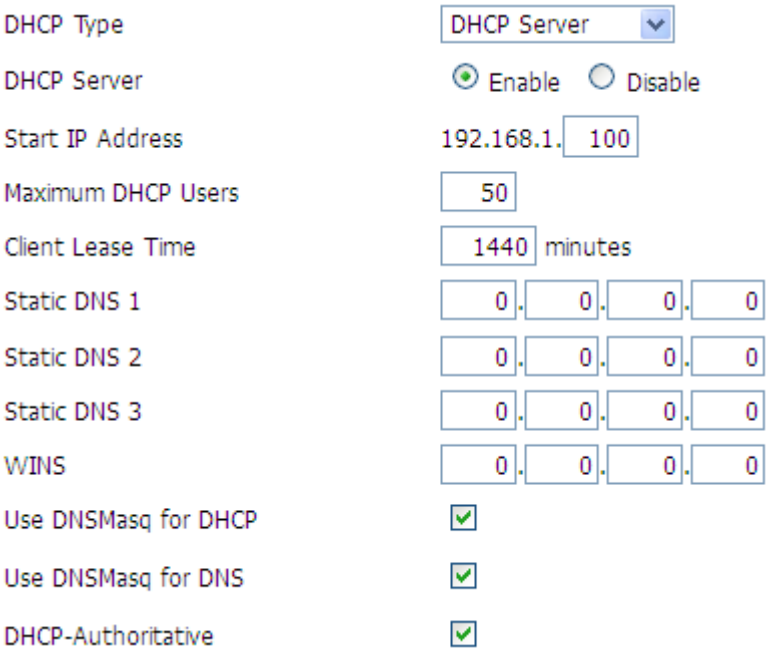
Subnet Mask: the subnet mask of the router

Gateway: set internal gateway of the router. If default, internal gateway is the address of the router

Local DNS: DNS server is auto assigned by network operator server. Users enable to use their own DNS server or other stable DNS servers, if not, keep it default

Network Address Server Settings (DHCP)

These settings for the router's Dynamic Host Configuration Protocol (DHCP) server functionality configuration. The Router can serve as a network DHCP server. DHCP server automatically assigns an IP address for each computer in the network. If they choose to enable the router's DHCP server option, users can set all the computers on the LAN to automatically obtain an IP address and DNS, and make sure no other DHCP server in the network.



DHCP Type: DHCP Server and DHCP Forwarder

Enter DHCP Server if set DHCP Type to DHCP Forwarder as blow:

DHCP Server: keep the default Enable to enable the router's DHCP server option. If users have already have a DHCP server on their network or users do not want a DHCP server, then select Disable

Start IP Address: enter a numerical value for the DHCP server to start with when issuing IP addresses. Do not start with 192.168.1.1 (the router's own IP address).

Maximum DHCP Users: enter the maximum number of PCs that users want the DHCP server to assign IP addresses to. The absolute maximum is 253 if 192.168.1.2 is users' starting IP address.

Client Lease Time: the Client Lease Time is the amount of time a network user will be allowed connection to the router with their current dynamic IP address. Enter the amount of time, in minutes, that the user will be "leased" this dynamic IP address.

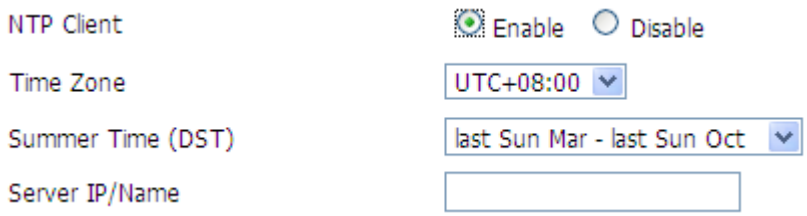
Static DNS (1-3): the Domain Name System (DNS) is how the Internet translates domain or website names into Internet addresses or URLs. Users' ISP will provide them with at least one DNS Server IP address. If users wish to utilize another, enter that IP address in one of these fields. Users can enter up to three DNS Server IP addresses here. The router will utilize them for quicker access to functioning DNS servers.

WINS: the Windows Internet Naming Service (WINS) manages each PC's interaction with the Internet. If users use a WINS server, enter that server's IP address here. Otherwise, leave it blank.

DNSMasq: users' domain name in the field of local search, increase the expansion of the host option, to adopt DNSMasq can assign IP addresses and DNS for the subnet, if select DNSMasq, dhcpd service is used for the subnet IP address and DNS.

Time Settings

Select time zone of your location. To use local time, leave the checkmark in the box next to Use local time.



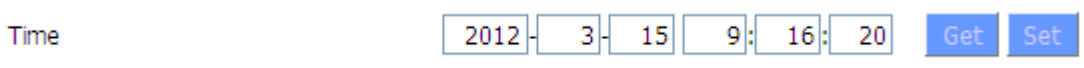
NTP Client: Get the system time from NTP server

Time Zone: Time zone options

Summer Time (DST): set it depends on users' location

Server IP/Name: IP address of NTP server, up to 32 characters. If blank, the system will find a server by default

Adjust Time

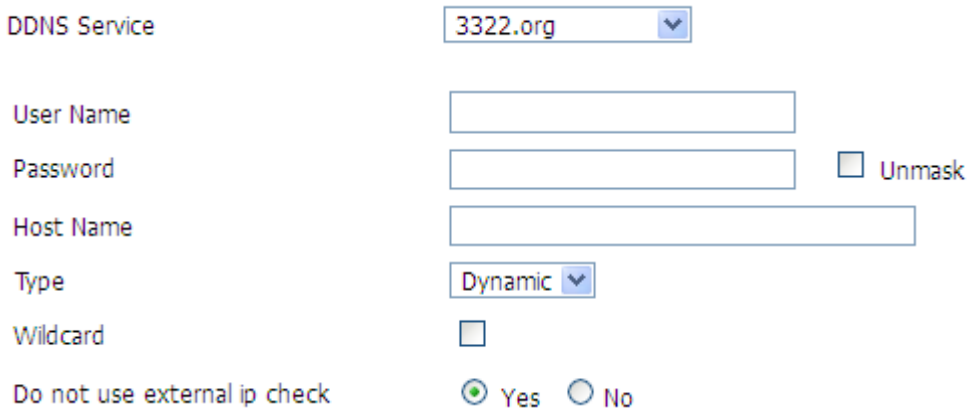


To adjust time by the system and refresh to get the time of the web, user can set to modify the time of the system. They can change to adjust time by manual to achieve adjust time by the system if the system fails to get NTP server

3.3.1.2 Dynamic DNS

If user's network has a permanently assigned IP address, users can register a domain name and have that name linked with their IP address by public Domain Name Servers (DNS). However, if their Internet account uses a dynamically assigned IP address, users will not know in advance what their IP address will be, and the address can change frequently. In this case, users can use a commercial dynamic DNS service, which allows them to register their domain to their IP address, and will forward traffic directed at their domain to their frequently-changing IP address.

DDNS Service: Four-Faith router currently support DynDNS, freedns, Zoneedit, NO-IP, 3322, easyDNS, TZO, DynSIP and Custom based on the user.



User Name: users register in DDNS server, up to 64 characteristic

Password: password for the user name that users register in DDNS server, up to 32 characteristic

Host Name: users register in DDNS server, no limited for input characteristic for now

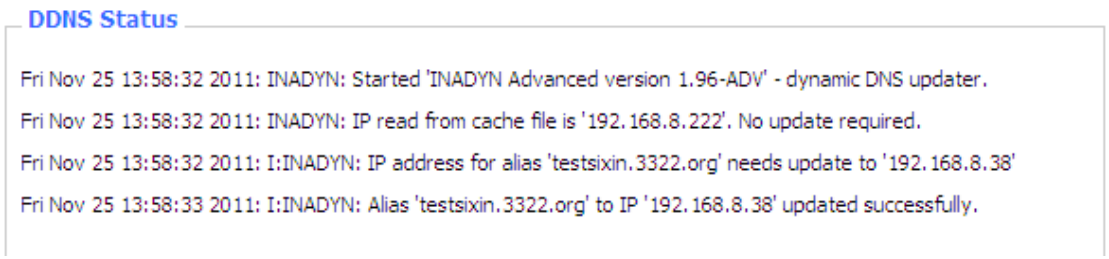
Type: depends on the server

Wildcard: support wildcard or not, the default is OFF. ON means *.host.3322.org is equal to host.3322.org

Do not use external ip check: enable or disable the function of 'do not use external ip check'

Force Update Interval: unit is day, try forcing the update dynamic DNS to the server by setted days

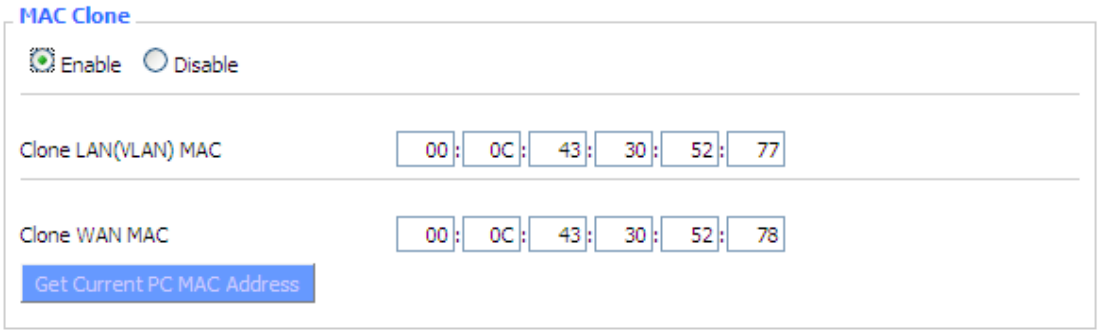
Status



DDNS Status shows connection log information

3.3.1.3 Clone MAC Address

Some ISP need the users to register their MAC address. The users can clone the router MAC address to their MAC address registered in ISP if they do not want to re-register their MAC address

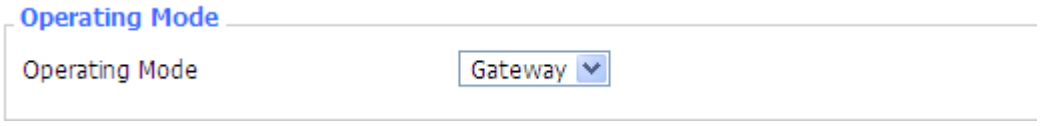


Clone MAC address can clone three parts: Clone LAN MAC, Clone WAN MAC, Clone Wireless MAC.

Noted that one MAC address is 48 characteristic, can not be set to the multicast address, the first byte must be even.

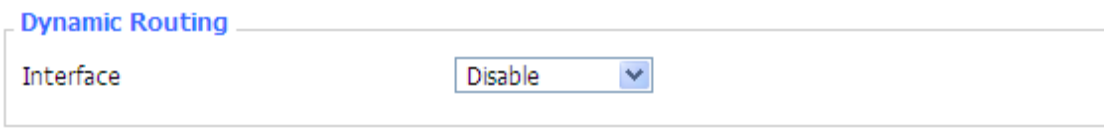
3.3.1.4 Advanced Router

Operating Mode: Gateway and Router



If the router is hosting users' Internet connection, select Gateway mode. If another router exists on their network, select Router mode.

Dynamic Routing

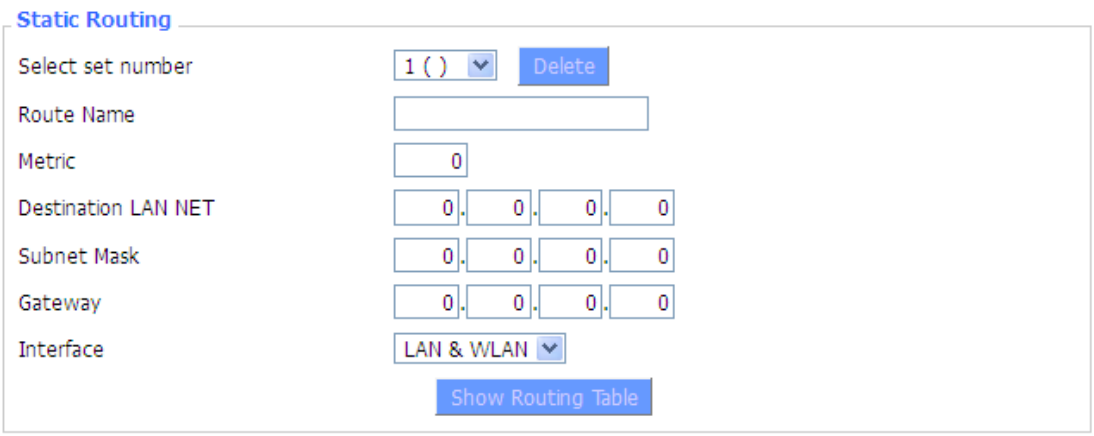


Dynamic Routing enables the router to automatically adjust to physical changes in the network's layout and exchange routing tables with other routers. The router determines the network packets' route based on the fewest number of hops between the source and destination.

To enable the Dynamic Routing feature for the WAN side, select WAN. To enable this feature for the LAN and wireless side, select LAN&WLAN. To enable the feature for both the WAN and LAN, select Both. To disable the Dynamic Routing feature for all data transmissions, keep the default setting, Disable.

Note： Dynamic Routing is not available in Gateway mode

Static Routing



Select set number: 1-50

Route Name: defined routing name by users, up to 25 characters

Metric: 0-9999

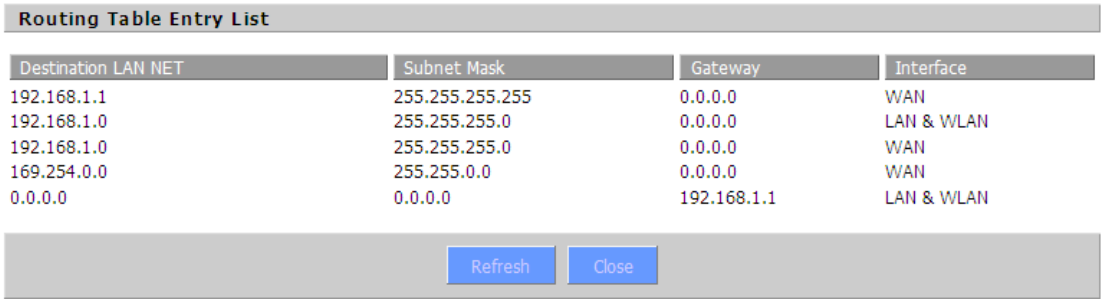
Destination LAN NET: the Destination IP Address is the address of the network or host to which users want to assign a static route

Subnet Mask: the Subnet Mask determines which portion of an IP address is the network portion, and which portion is the host portion

Gateway: IP address of the gateway device that allows for contact between the router and the network or host.

Interface: indicate users whether the Destination IP Address is on the LAN & WLAN (internal wired and wireless networks), the WAN (Internet), or Loopback (a dummy network in which one PC acts like a network, necessary for certain software programs)

Show Routing Table



3.3.2 Services

3.3.2.1 Services

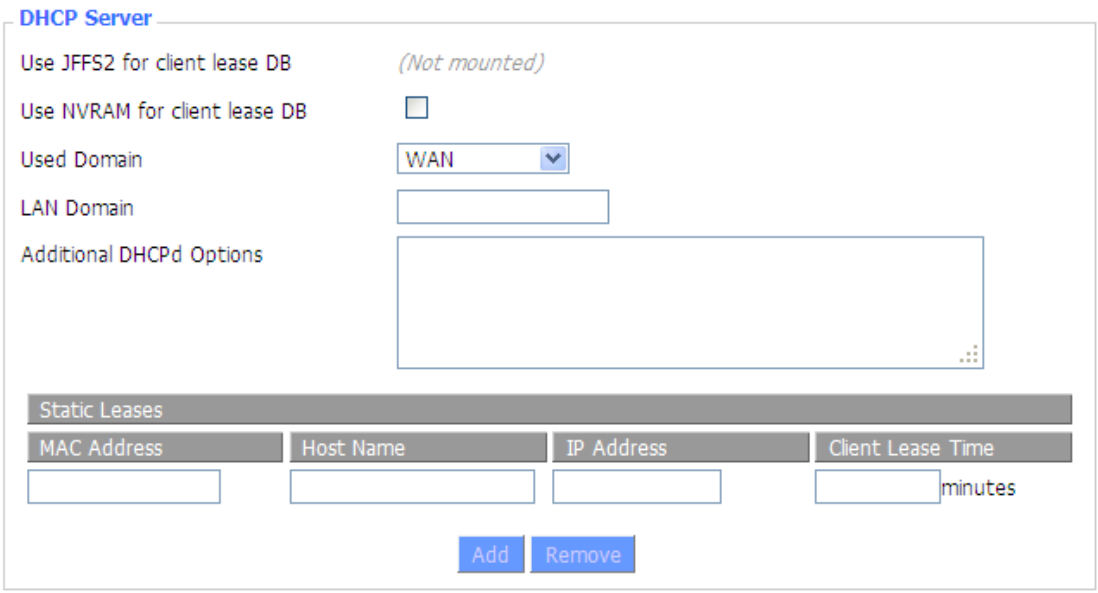
DHCP Client

Set Vendorclass: the DHCP server can automatically identify the specific identifier of the computer running certain operating systems to send, such as the DHCP server can identify the DHCP client running the operating systerm is Windows 2000 or Windows 98. Identification identifier DHCP option can be assigned to DHCP clients based on specific operating system.

Request IP: IP address of the request

DHCP Server

DHCPd assigns IP addresses to users local devices. While the main configuration is on the setup page users can program some nifty special functions here.



Use NVRAM for client lease DB: users can store data to the system NVRAM area is enabled

Used domain: users can select here which domain the DHCP clients should get as their local domain. This can be the WAN domain set on the Setup screen or the LAN domain which can be set here.

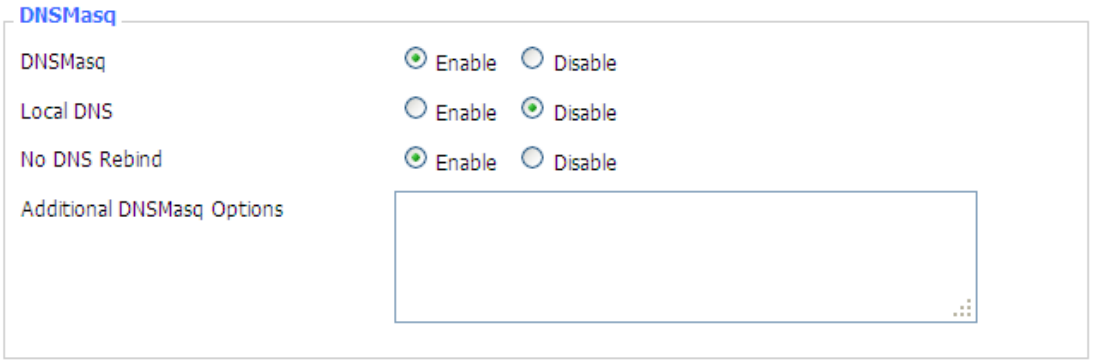
LAN Domain: users can define here their local LAN domain which is used as local domain for DNSmasq and DHCP service if chose above.

Static Leases: if users want to assign certain hosts a specific address then they can define them here. This is also the way to add hosts with a fixed address to the router's local DNS service (DNSmasq).

Additional DHCPd Options: some extra options users can set by entering them

DNSMasq

DNSmasq is a local DNS server. It will resolve all host names known to the router from dhcp (dynamic and static) as well as forwarding and caching DNS entries from remote DNS servers. Local DNS enables DHCP clients on the LAN to resolve static and dynamic DHCP hostnames.



Local DNS: enables DHCP clients on the LAN to resolve static and dynamic DHCP hostnames

No DNS Rebind: when enabled, it can prevent an external attacker to access the router's internal Web interface. It is a security measure

Additional DNSMasq Options: some extra options users can set by entering them in Additional DNS Options.

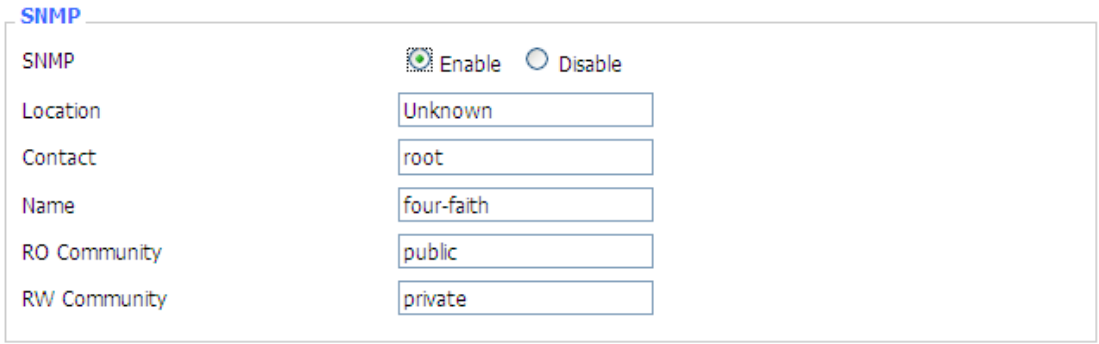
For example:

static allocation: dhcp-host=AB:CD:EF:11:22:33,192.168.0.10,myhost,myhost.domain,12h

max lease number: dhcp-lease-max=2

DHCP server IP range: dhcp-range=192.168.0.110,192.168.0.111,12h

SNMP



Location: equipment location

Contact: contact this equipment management

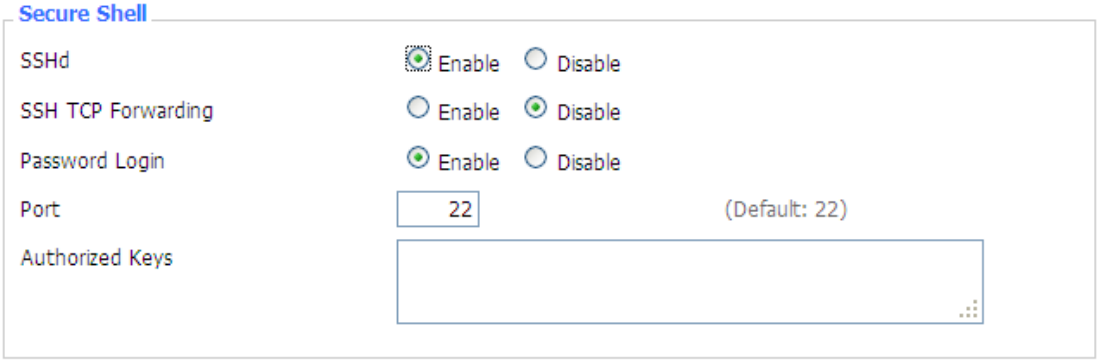
Name: device name

RO Community: SNMP RO community name, the default is public, Only to read.

RW Community: SNMP RW community name, the default is private, Read-write permissions

SSHD

Enabling SSHd allows users to access the Linux OS of their router with an SSH client



SSH TCP Forwarding: enable or disable to support the TCP forwarding

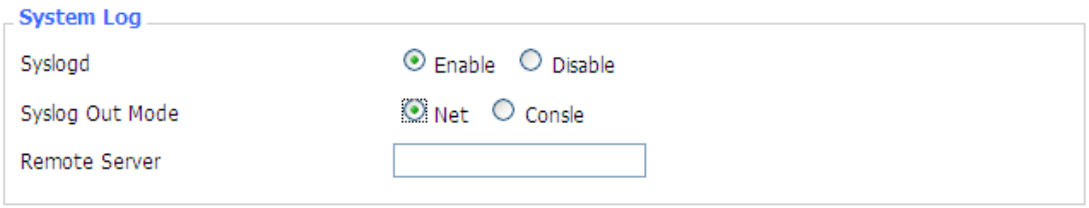
Password Login: allows login with the router password (username is admin)

Port: port number for SSHd (default is 22)

Authorized Keys: here users paste their public keys to enable key-based login (more secure than a simple password)

System log

Enable Syslogd to capture system messages. By default they will be collected in the local file /var/log/messages. To send them to another system, enter the IP address of a remote syslog server.



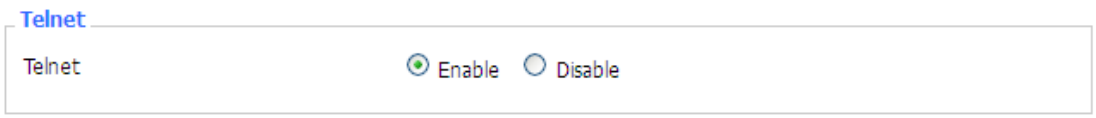
Syslog Out Mode: two log mode

Net: the log information output to a syslog server

Console: the log information output to console port

Remote Server: if choose net mode, users should input a syslog server's IP Address and run a syslog server program on it.

Telnet

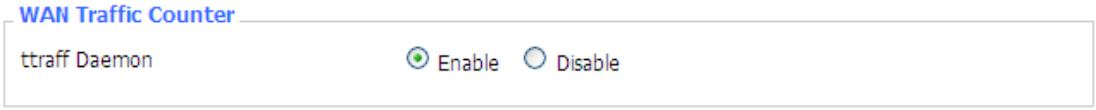


Telnet: enable a telnet server to connect to the router with telnet. The username is admin and the

password is the router's password.

Note: If users use the router in an untrusted environment (for example as a public hotspot), it is strongly recommended to use SSHd and deactivate telnet.

WAN Traffic Counter



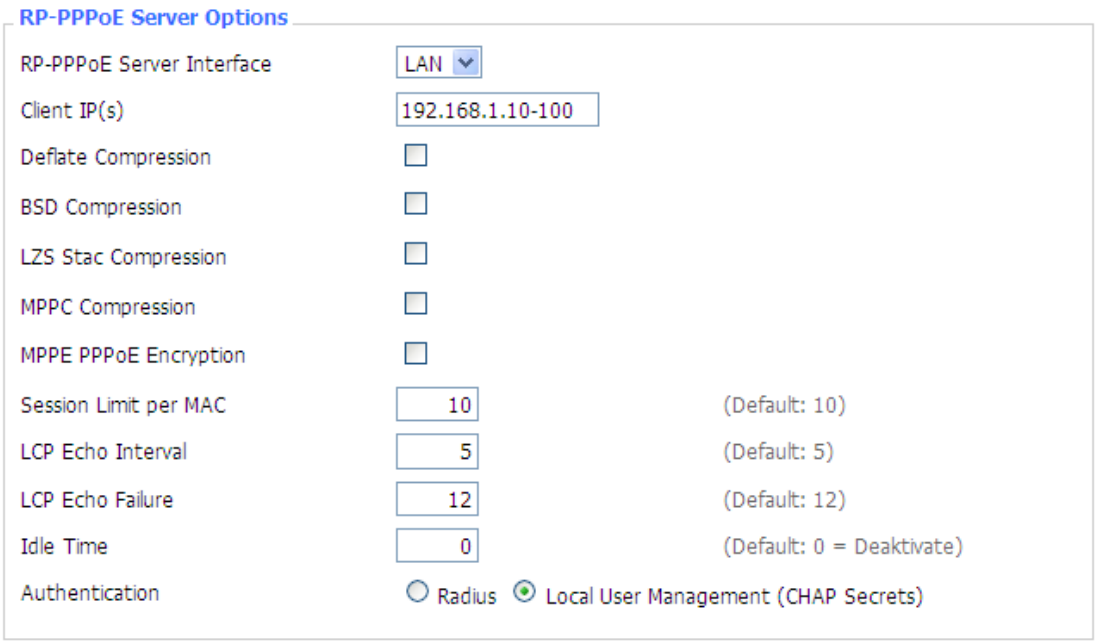
Ttraff Daemon: enable or disable wan traffic counter function

3.3.2.2 PPPoE Server

PPPoE Server

RP-PPPoEServer Daemon: enable or disable PPPoE server

RP-PPPoEServer Options



PPPOE Server Inferface: PPPoE server interface to the outside, only to support the LAN port

Client IP(s): IP range assigns to the PPPoE client in the format: xxx.xxx.xxx.xxx-xxx

Deflate Compression: enable or disable Deflate Compression

BSD Compression: enable or disable BSD Compression

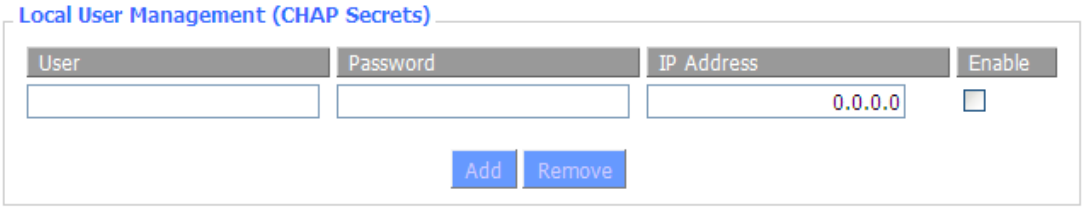
LZS Stac Compression: enable or disable LZS Stac Compression

MPPC Compression: enable or disable MPPC Compression

MPPE PPPoE Encryption: enable or disable MPPE PPPoE Encryption

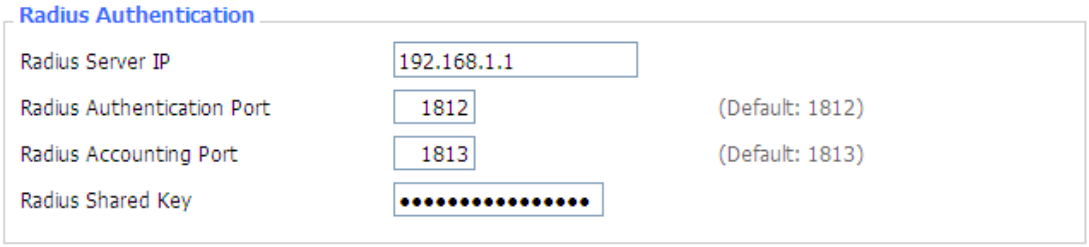
Session Limit per MAC: default is 10
LCP Echo Interval: time interval to set the the LCP calibration phase response
LCP Echo Failure: release PPPoE over failure times, the PPPoE client will need to reconnect
Idle Time: set idle time, idle time at the appropriate time to release the PPPoE
Authentication: including local and Radius (Remote Authentication Dial In User)

Local User Management（CHAP Secrets）



User: set PPPOE client's user name
Password: set PPPOE client's user password
IP Address: set PPPOE client's user IP address
Enable: enable or disable this setting

Radius

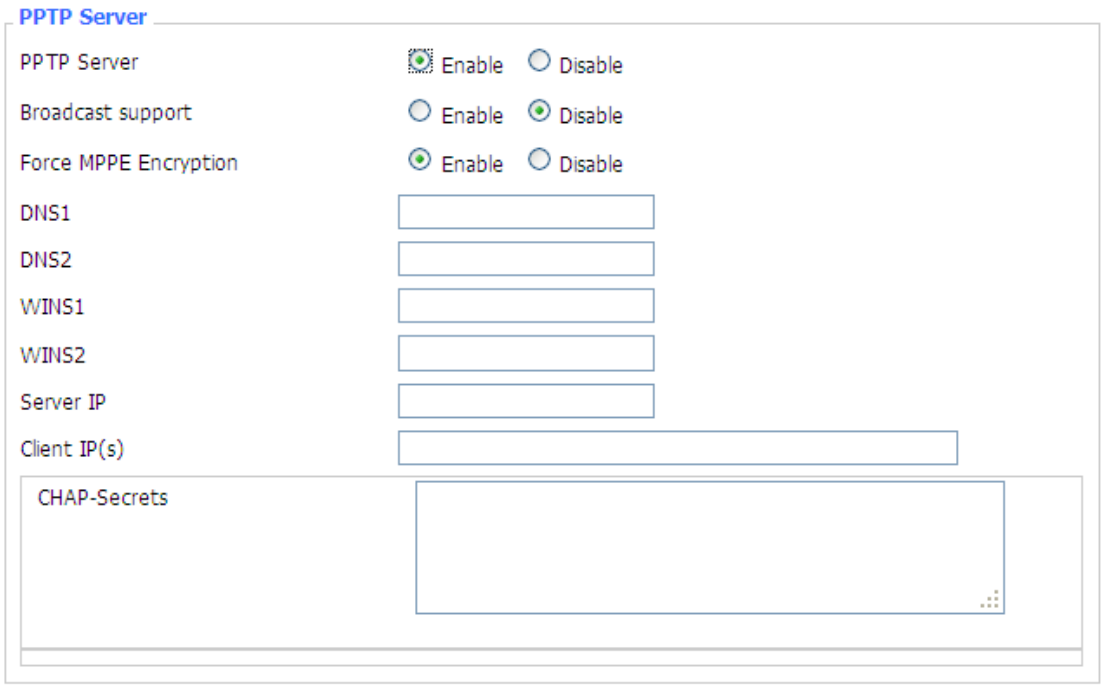


Radius Server IP: set the Remote Authentication Dial In User-Server IP
Radius Authentication Port: set the Remote Authentication Dial in User-Authentication Port
Radius Accounting Port: set the Remote Authentication Dial in User-Accounting Port
Radius Shared Key: transactions between the client and RADIUS accounting server are authenticated through the use of a shared secret, which is never sent over the network.

3.3.3 VPN

3.3.3.1 PPTP

PPTP Server



Broadcast support: enable or disable broadcast support of PPTP server

Force MPPE Encryption: enable of disable force MPPE encryption of PPTP data

DNS1/DNS2/WINS1/WINS2: set DNS1/DNS2/WINS1/WINS2

Server IP: input IP address of the router as PPTP server, differ from LAN address

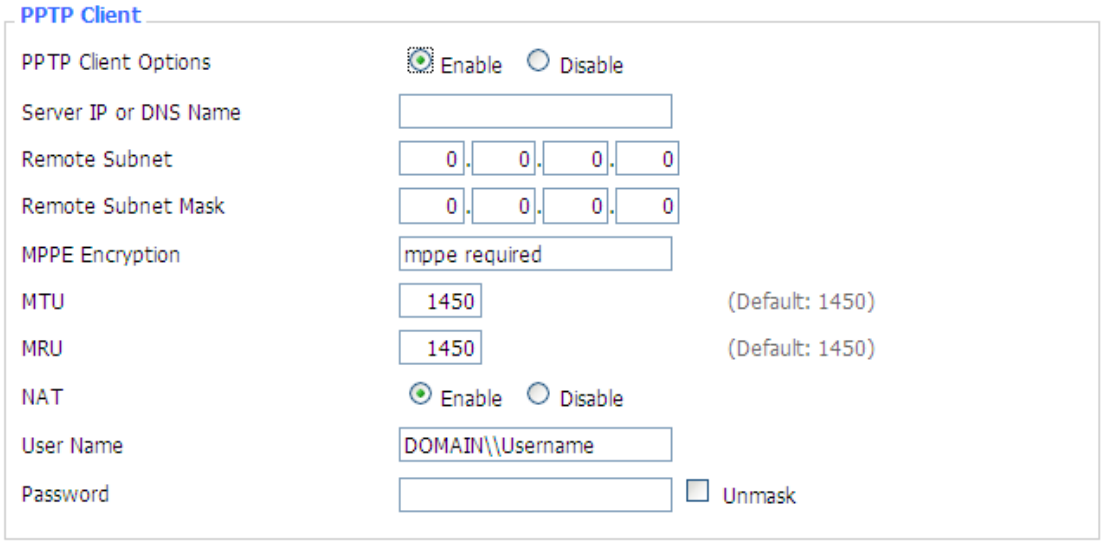
Client IP(s): IP address assigns to the client, the format is xxx.xxx.xxx.xxx-xxx

CHAP Secrets: user name and password of the client using PPTP service

Note: client IP must be different with IP assigned by router DHCP.

The format of CHAP Secrets is user * password *.

PPTP Client



Server IP or DNS Name: PPTP server's IP Address or DNS Name

Remote Subnet: the network of the remote PPTP server

Remote Subnet Mask: subnet mask of remote PPTP server

MPPE Encryption: enable or disable Microsoft Point-to-Point Encryption。

MTU: maximum Transmission Unit

MRU: maximum Receive Unit

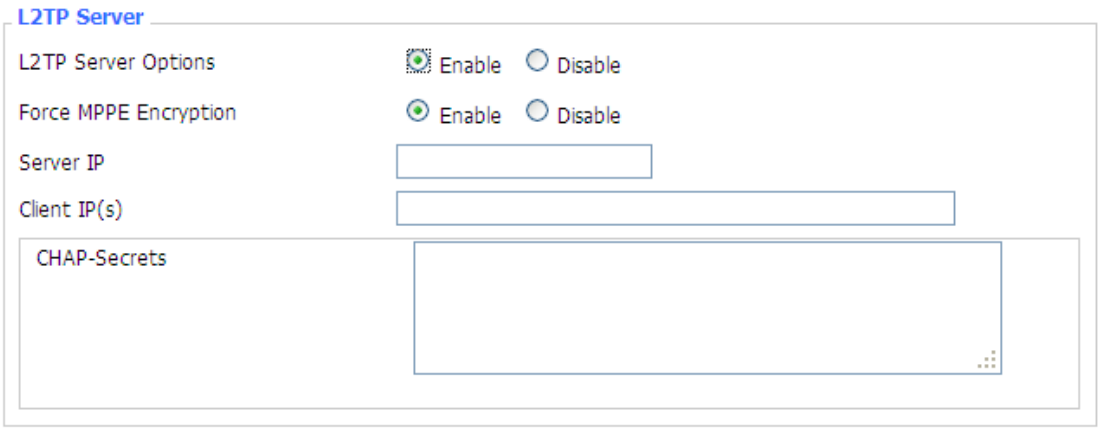
NAT: network Address Translation

User Name: user name to login PPTP Server.

Password: password to log into PPTP Server.

3.3.3.2 L2TP

L2TP Server



Force MPPE Encryption: enable or disable force MPPE encryption of L2TP data

Server IP: input IP address of the router as PPTP server, differ from LAN address

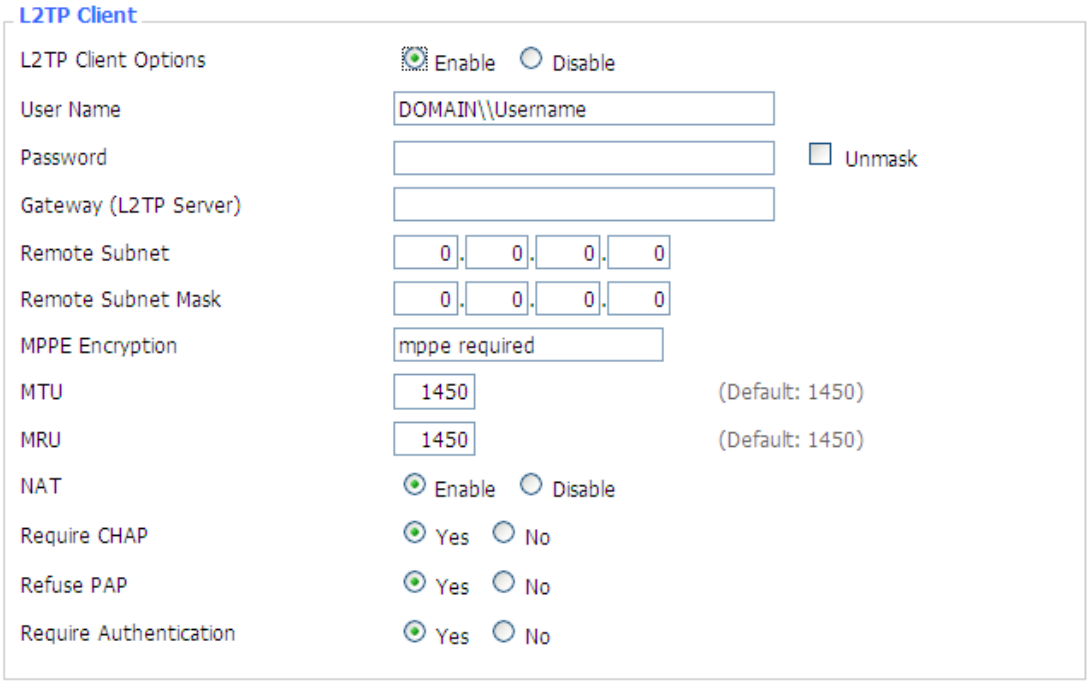
Client IP(s): IP address assigns to the client, the format is xxx.xxx.xxx.xxx-xxx.xxx.xxx.xxx

CHAP Secrets: user name and password of the client using L2TP service

Note: client IP must be different with IP assigned by router DHCP.

The format of CHAP Secrets is user * password *.

L2TP Client



Gateway(L2TP Server): L2TP server's IP Address or DNS Name
Remote Subnet: the network of remote PPTP server
Remote Subnet Mask: subnet mask of remote PPTP server
MPPE Encryption: enable or disable Microsoft Point-to-Point Encryption
MTU: maximum transmission unit
MRU: maximum receive unit
NAT: network address translation
User Name: user name to login L2TP Server
Password: password to login L2TP Server
Require CHAP: enable or disable support chap authentication protocol
Refuse PAP: enable or disable refuse to support the pap authentication
Require Authentication: enable or disable support authentication protocol

3.3.3.3 OPENVPN

OPENVPN Server

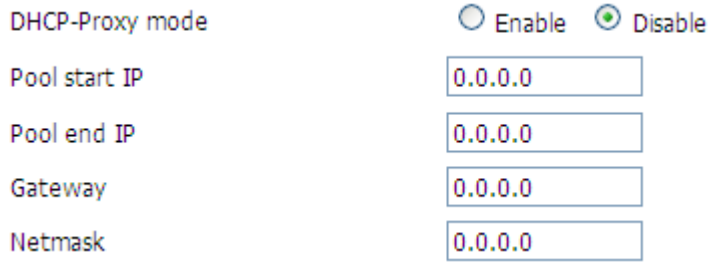
Start Type: WAN UP----start after on-line, System----start when boot up

Config via: GUI----Page configuration, Config File----config File configuration
Server mode: Router (TUN)-route mode, Bridge (TAP)----bridge mode
Router (TUN):

Network: network address allowed by OPENVPN server

Netmask: netmask allowed by OPENVPN server

Bridge (TAP):



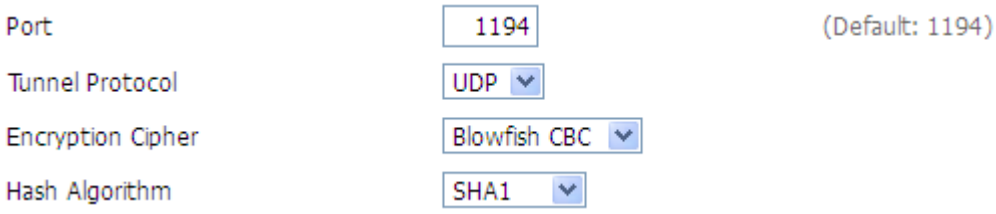
DHCP-Proxy mode: enable or disable DHCP-Proxy mode

Pool start IP: pool start IP of the client allowed by OPENVPN server

Pool end IP: pool end IP of the client allowed by OPENVPN server

Gateway: the gateway of the client allowed by OPENVPN server

Netmask: netmask of the client allowed by OPENVPN server



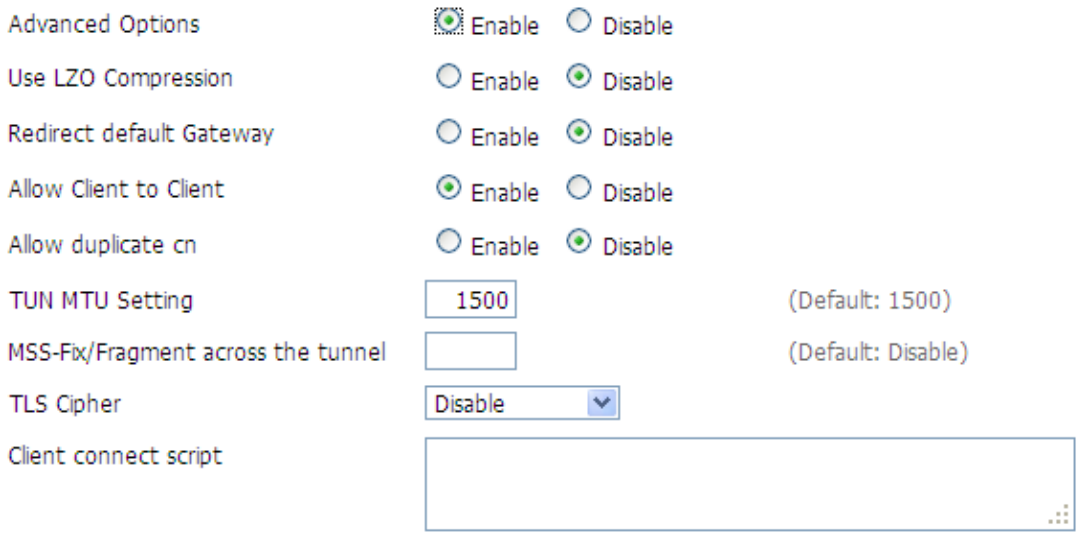
Port: listen port of OPENVPN server

Tunnel Protocol: UCP or TCP of OPENVPN tunnel protocol

Encryption Cipher: Blowfish CBC，AES-128 CBC，AES-192 CBC，AES-256 CBC，AES-512 CBC

Hash Algorithm: Hash algorithm provides a method of quick access to data, including SHA1，SHA256，SHA512，MD5

Advanced Options



Use LZO Compression: enable or disable use LZO compression for data transfer

Redirect default Gateway: enable or disable redirect default gateway

Allow Client to Client: enable or disable allow client to client

Allow duplicate cn: enable or disable allow duplicate cn

TUN MTU Setting: set the value of TUN MTU

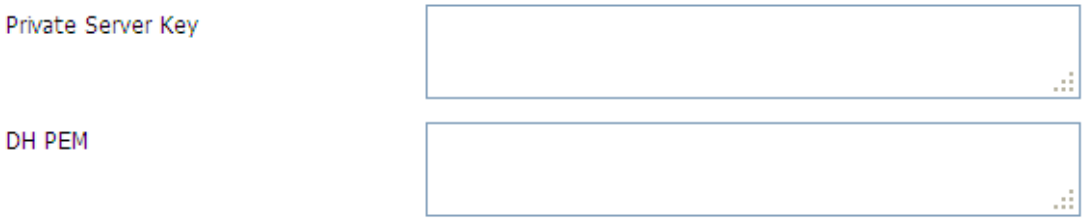
TCP MSS: MSS of TCP data

TLS Cipher: TLS (Transport Layer Security) encryption standard supports AES-128 SHA and AES-256 SHA

Client connect script: define some client script by user self

CA Cert: CA certificate

Public Server Cert: server certificate

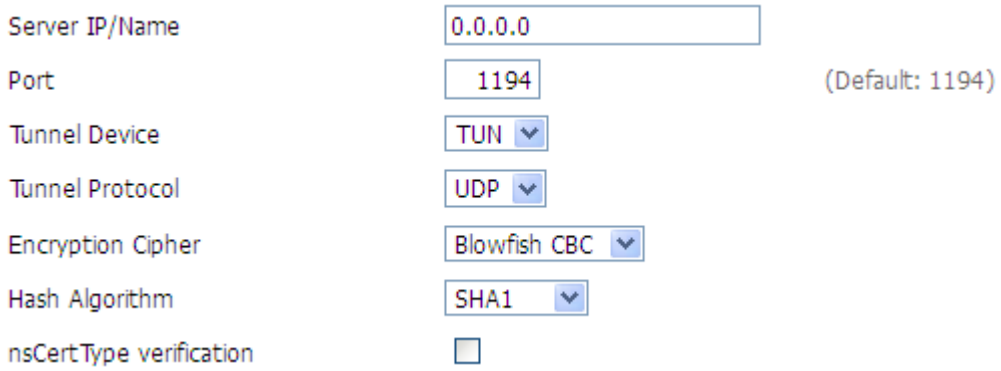


Private Server Key: the key seted by the server

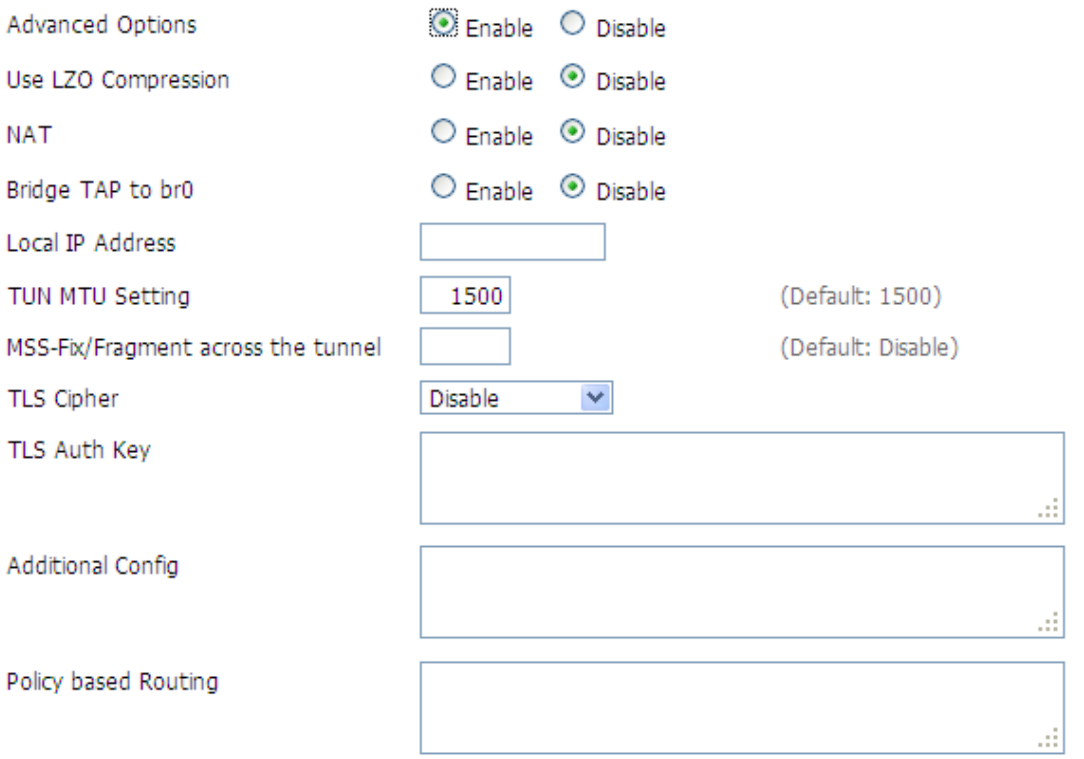
DH PEM: PEM of the server

Additional Config: additional configurations of the server
CCD-Dir DEFAULT file: other file approaches
TLS Auth Key: authority key of Transport Layer Security
Certificate Revoke List: configure some revoke certificates

OPENVPN Client



Server IP/Name: IP address or domain name of OPENVPN server
Port: listen port of OPENVPN client
Tunnel Device: TUN----Router mode, TAP----Bridge mode
Tunnel Protocol: UDP and TCP protocol
Encryption Cipher: Blowfish CBC，AES-128 CBC，AES-192 CBC，AES-256 CBC，AES-512 CBC
Hash Algorithm: Hash algorithm provides a method of quick access to data, including SHA1, SHA256, SHA512, MD5
nsCertType verification: support ns certificate type



Use LZO Compression: enable or disable use LZO compression for data transfer
NAT: enable or disable NAT through function
Bridge TAP to br0: enable or disable bridge TAP to br0
Local IP Address: set IP address of local OPENVPN client
TUN MTU Setting: set MTU value of the tunnel
TCP MSS: mss of TCP data
TLS Cipher: TLS (Transport Layer Security) encryption standard supports AES-128 SHA and AES-256 SHA
TLS Auth Key: authority key of Transport Layer Security
Additional Config: additional configurations of OPENVPN server
Policy based Routing: input some defined routing policy

CA Cert: CA certificate
Public Client Cert: client certificate
Private Client Key: client key

3.3.3.4 IPSEC

Connect Status and Control

Show IPSEC connection and status of current router on IPSEC page.

Name: the name of IPSEC connection

Type: The type and function of current IPSEC connection

Common name: local subnet, local address, opposite end address and opposite end subnet of current connection

Status: connection status: closed, negotiating, establish

Closed: this connection does not launch a connection request to opposite end

Negotiating: this connection launch a request to opposite end, is under negotiating, the connection has not been established yet

Establish: the connection has been established, enabled to use this tunnel

Action: the action of this connection, current is to delete, edit, reconnect and enable

Delete: to delete the connection, also will delete IPSEC if IPSEC has set up

Edit: to edit the configure information of this connection, reload this connection to make the configuration effect after edit

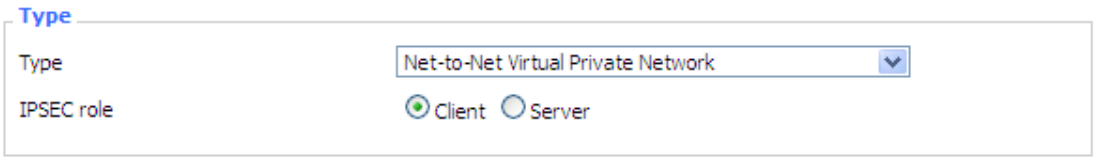
Reconnect: this action will remove current tunnel, and re-launch tunnel establish request

Enable: when the connection is enable, it will launch tunnel establish request when the system reboot or reconnect, otherwise the connection will not do it

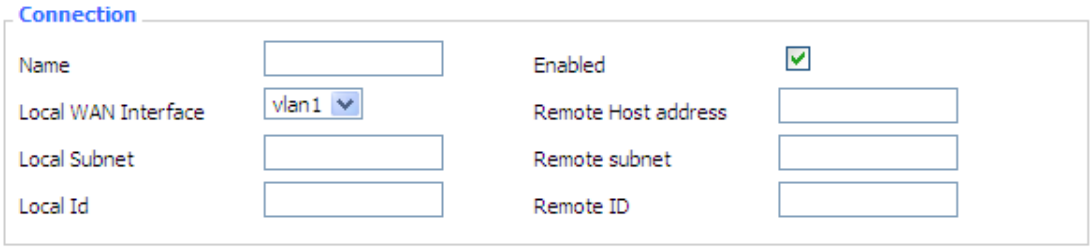
Add: to add a new IPSEC connection

Add IPSEC connection or edit IPSEC connection

Type: to choose IPSEC mode and relevant functions in this part, supports tunnel mode client, tunnel mode server and transfer mode currently



Connection: this part contains basic address information of the tunnel



Name: to indicate this connection name, must be unique

Enabled: If enable, the connection will send tunnel connection request when it is reboot or re-connection, otherwise it is no need if disable

Local WAN Interface: local addresss of the tunnel

Remote Host Address: IP/domain name of end opposite; this option can not fill in if using tunnel mode server

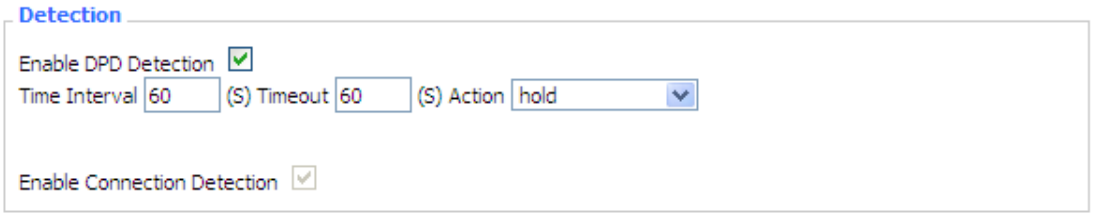
Local Subnet: IPSec local protects subnet and subnet mask, i.e. 192.168.1.0/25; this option can not fill in if using transfer mode

Remote Subnet: IPSec opposite end protects subnet and subnet mask, i.e.192.168.7.0/25; this option can not fill in if using transfer mode

Local ID: tunnel local end identification, IP and domain name are available

Remote ID: tunnel opposite end identification, IP and domain name are available

Detection: this part contains configure information of connection detection



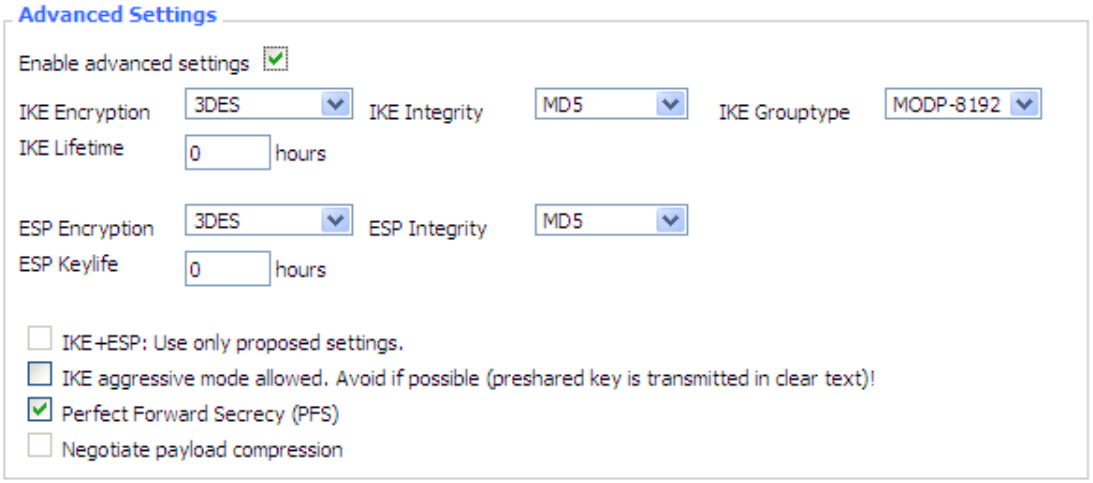
Enable DPD Detection: enable or disable this function, tick means enable

Time Interval: set time interval of connect detection (DPD)

Timeout: set the timeout of connect detection

Action: set the action of connect detection

Advanced Settings: this part contains relevant setting of IKE, ESP, negotiation mode, etc.



Enable Advanced Settings: enable to configure 1st and 2nd phase information, otherwise it will automic negotiation according to opposite end

IKE Encryption: IKE phased encryption mode

IKE Integrity: IKE phased integrity solution

IKE Grouptype: DH exchange algorithm

IKE Lifetime: set IKE lifetime, current unit is hour, the default is 0

ESP Encryption: ESP encryption type

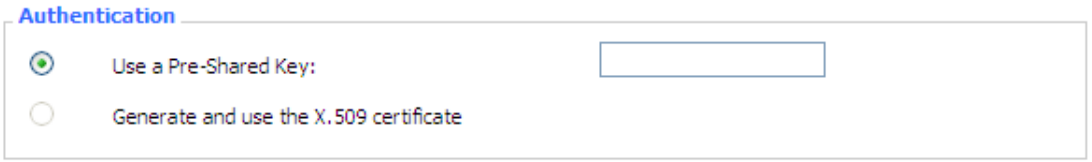
ESP Integrity: ESP integrity solution

ESP Keylife: set ESP keylife, current unit is hour, the default is 0

IKE aggressive mode allowed: negotiation mode adopt aggressive mode if tick; it is main mode if non-tick

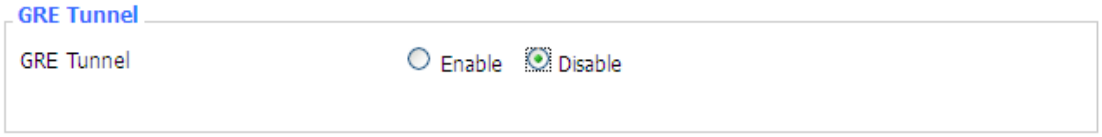
Negotiate payload compression: Tick to enable PFS, non-tick to diable PFS

Authentication: choose use share encryption option or certificate authentication option. Current is only to choose use share encryption option.

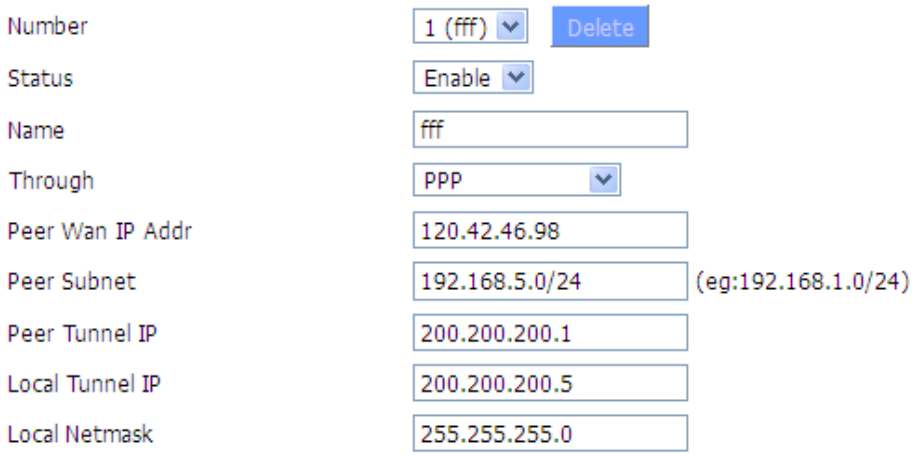


3.3.3.5 GRE

GRE (Generic Routing Encapsulation, Generic Routing Encapsulation) protocol is a network layer protocol (such as IP and IPX) data packets are encapsulated, so these encapsulated data packets to another network layer protocol (IP)transmission. GRE Tunnel (tunnel) technology, Layer Two Tunneling Protocol VPN (Virtual Private Network).



GRE Tunnel: enable or disable GRE function



Number： Switch on/off GRE tunnel app

Status： Switch on/off someone GRE tunnel app

Name： GRE tunnel name

Through： The GRE packet transmit interface

Peer Wan IP Addr： The remote WAN address

Peer Subnet： The remote gateway local subnet, eg: 192.168.1.0/25

Peer Tunnel IP： The remote tunnel ip address

Local Tunnel IP： The local tunnel ip address

Local Netmask： Netmask of local network

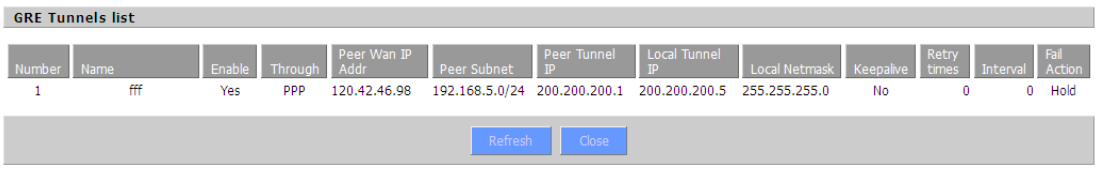
Keepalive： Enable or disable GRE Keepalive function

Retry times： GRE keepalive detect fail retries

Interval： The time interval of GRE keepalive packet sent

Fail Action： The action would be exec after keeping alive failed

Click on "**View GRE tunnels**" keys can view the information of GRE

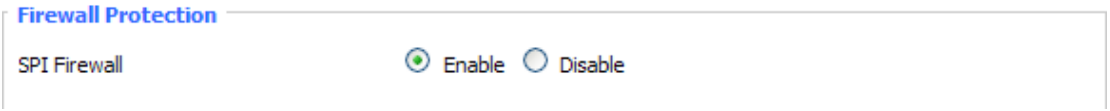


3.3.4 Security

3.3.4.1 Firewall

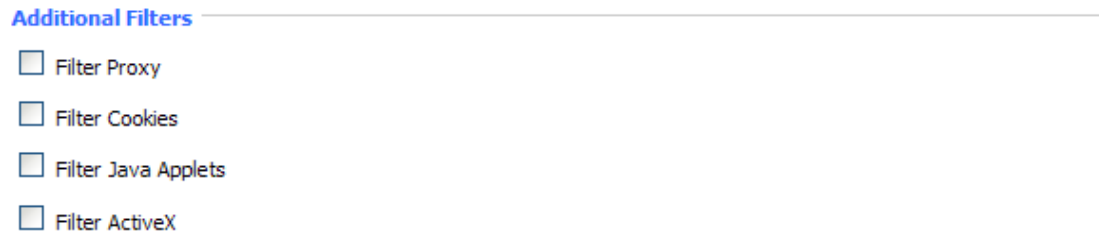
You can enable or disable the firewall, filter specific Internet data types,and prevent anonymous Internet requests,ultimately enhance network security.

Firewall Protection



Firewall enhance network security and use SPI to check the packets into the network.To use firewall protection, choose to enable otherwise disabled. Only enable the SPI firewall, you can use other firewall functions: filtering proxy, block WAN requests, etc.

Additional Filters



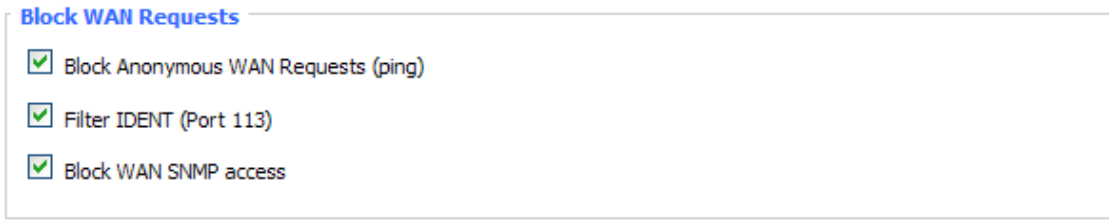
Filter Proxy: Wan proxy server may reduce the security of the gateway, Filtering Proxy will refuse any access to any wan proxy server. Click the check box to enable the function otherwise disabled.

Filter Cookies: Cookies are the website of data the data stored on your computer.When you interact with the site ,the cookies will be used. Click the check box to enable the function otherwise disabled.

Filter Java Applets: If refuse to Java, you may not be able to open web pages using the Java programming.. Click the check box to enable the function otherwise disabled.

Filter ActiveX: If refuse to ActiveX, you may not be able to open web pages using the ActiveX programming. Click the check box to enable the function otherwise disabled.

Prevent WAN Request



Block Anonymous WAN Requests (ping): By selecting "Block Anonymous WAN Requests

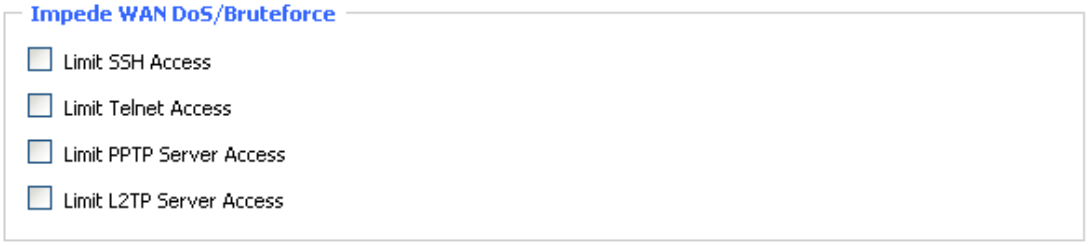
(ping)" box to enable this feature, you can prevent your network from the Ping or detection of other Internet users. so that make More difficult to break into your network. The default state of this feature is enabled ,choose to disable allow anonymous Internet requests.

Filter IDENT (Port 113): Enable this feature can prevent port 113 from being scaned from outside. Click the check box to enable the function otherwise disabled.

Block WAN SNMP access: This feature prevents the SNMP connection requests from the WAN.

After Complete the changes, click the **Save Settings** button to save your changes. Click the **Cancel Changes** button to cancel unsaved changes.

Impede WAN DoS/Bruteforce



Limit ssh Access: This feature limits the access request from the WAN by ssh, and per minute up to accept two connection requests on the same IP. Any new access request will be automatically dropped.

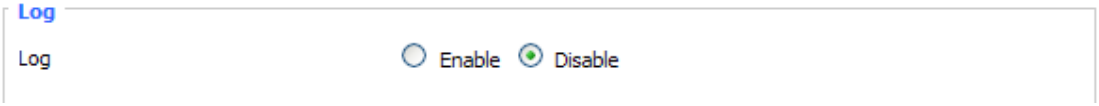
Limit Telnet Access: This feature limits the access request from the WAN by Telnet, and per minute up to accept two connection requests on the same IP. Any new access request will be automatically dropped.

Limit PPTP Server Access: When build a PPTP Server in the router,this feature limits the access request from the WAN by ssh, and per minute up to accept two connection requests on the same IP . Any new access request will be automatically dropped.

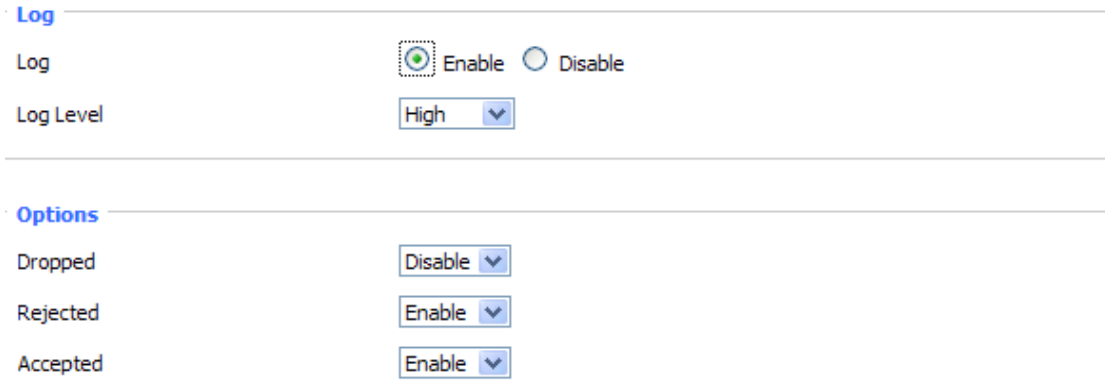
Limit L2TP Server Access: When build a L2TP Server in the router, this feature limits the access request from the WAN by ssh, and per minute up to accept two connection requests on the same IP. Any new access request will be automatically dropped.

Log Management

The router can keep logs of all incoming or outgoing traffic for your Internet connection.



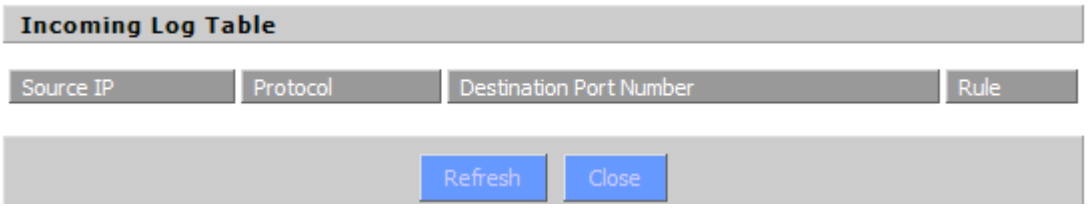
Log: To keep activity logs, select Enable. To stop logging, select Disable. When select enable, the following page will appear.



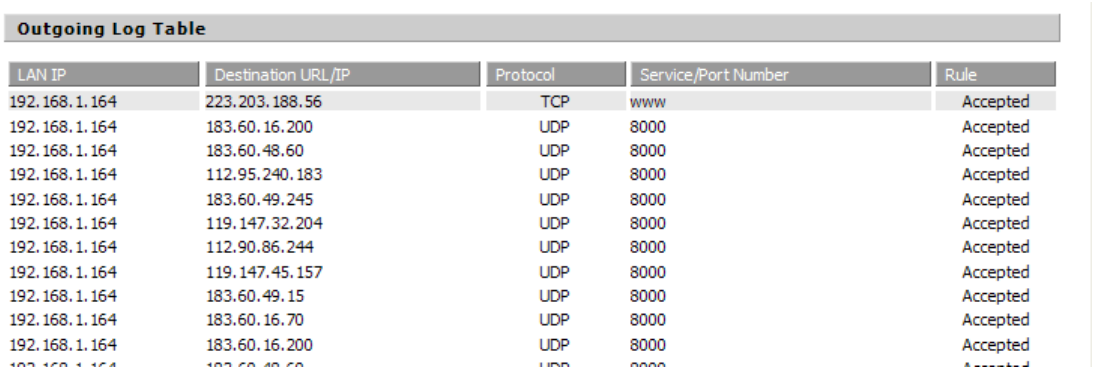
Log Level: Set this to the required log level. Set Log Level higher to log more actions.

Options: When select Enable, the corresponding connection will be recorded in the journal, the disabled are not recorded.

Incoming Log: To see a temporary log of the Router's most recent incoming traffic, click the Incoming Log button.



Outgoing Log: To see a temporary log of the Router's most recent outgoing traffic, click the Outgoing Log button.



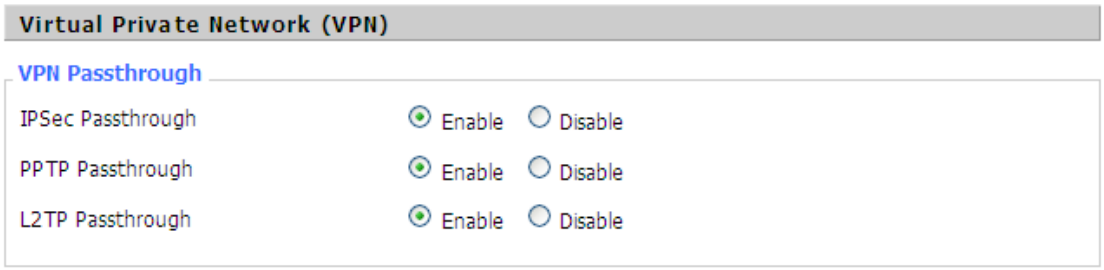
Outgoing Log Table

LAN IP	Destination URL/IP	Protocol	Service/Port Number	Rule
192.168.1.164	223.203.188.56	TCP	www	Accepted
192.168.1.164	183.60.16.200	UDP	8000	Accepted
192.168.1.164	183.60.48.60	UDP	8000	Accepted
192.168.1.164	112.95.240.183	UDP	8000	Accepted
192.168.1.164	183.60.49.245	UDP	8000	Accepted
192.168.1.164	119.147.32.204	UDP	8000	Accepted
192.168.1.164	112.90.86.244	UDP	8000	Accepted
192.168.1.164	119.147.45.157	UDP	8000	Accepted
192.168.1.164	183.60.49.15	UDP	8000	Accepted
192.168.1.164	183.60.16.70	UDP	8000	Accepted
192.168.1.164	183.60.16.200	UDP	8000	Accepted

Click the **Save Settings** button to save your changes. Click the **Cancel Changes** button to cancel unsaved changes.

3.3.4.2 VPN Passthrough

Virtual Private Networking (VPN) is typically used for work-related networking. For VPN tunnels, the router supports OPENVPN Passthrough, PPTP Passthrough and L2TP Passthrough.



IPSec Passthrough： Internet Protocol Security (IPSec) is a suite of protocols used to implement secure exchange of packets at the IP layer. To allow IPSec tunnels to pass through the router, IPSec Passthrough is enabled by default. To disable IPSec Passthrough, select Disable.

PPTP Passthrough： Point-to-Point Tunneling Protocol is the method used to enable VPN sessions to a Windows NT 4.0 or 2000 server. To allow PPTP tunnels to pass through the router, PPTP Passthrough is enabled by default. To disable PPTP Passthrough, select Disable.

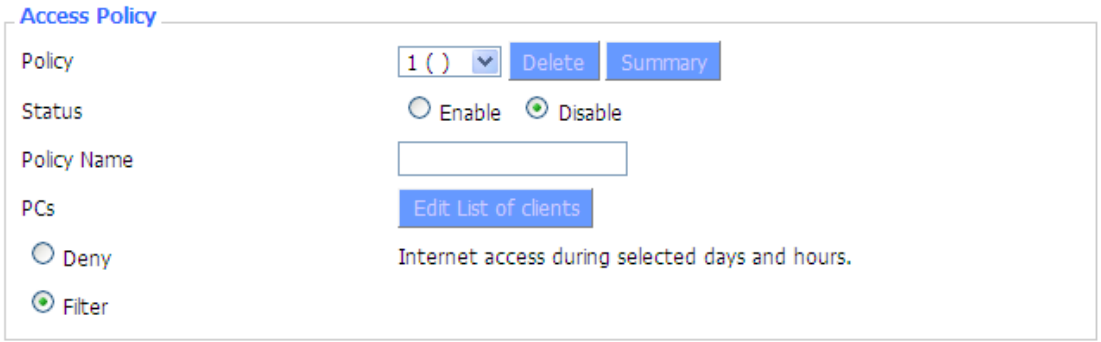
L2TP Passthrough： Layer Two (2) Tunneling Protocol, an extension to the PPP protocol that enables ISPs to operate Virtual Private Networks (VPNs). L2TP merges the best features of two other tunneling protocols: PPTP from Microsoft and L2F from Cisco Systems. To allow L2TP tunnels to pass through the router, L2TP Passthrough is enabled by default. To disable L2TP Passthrough, select Disable.

Click the **Save Settings** button to save your changes. Click the **Cancel Changes** button to cancel unsaved changes.

3.3.5 Access Restrictions

3.3.5.1 WAN Access

Use access restrictions, you can block or allow specific types of Internet applications. You can set specific PC-based Internet access policies. This feature allows you to customize up to ten different Internet Access Policies for particular PCs, which are identified by their IP or MAC addresses.



Two options in the default policy rules: "Filter" and "reject". If select "Deny", you will deny specific computers to access any Internet service at a particular time period. If you choose to

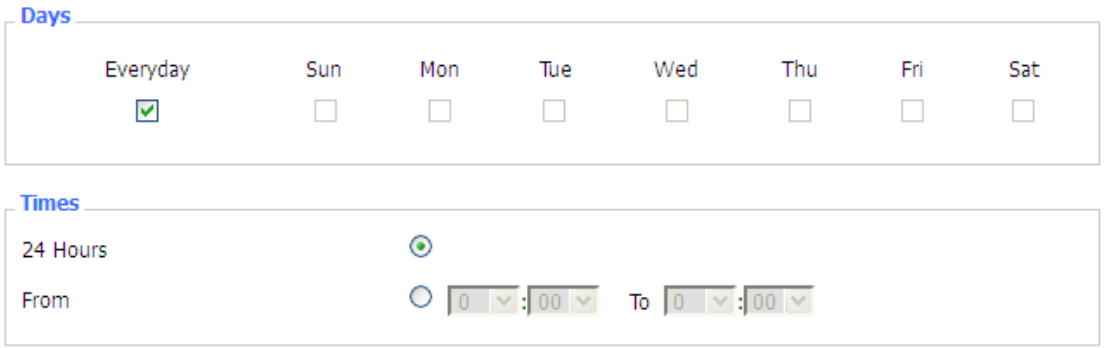
"filter"，It will block specific computers to access the specific sites at a specific time period. You can set up 10 Internet access policies filtering specific PCs access Internet services at a particular time period.

Access Policy: You may define up to 10 access policies. Click Delete to delete a policy or Summary to see a summary of the policy.

Status: Enable or disable a policy.

Policy Name: You may assign a name to your policy.

PCs: The part is used to edit client list, the strategy is only effective for the PC in the list.

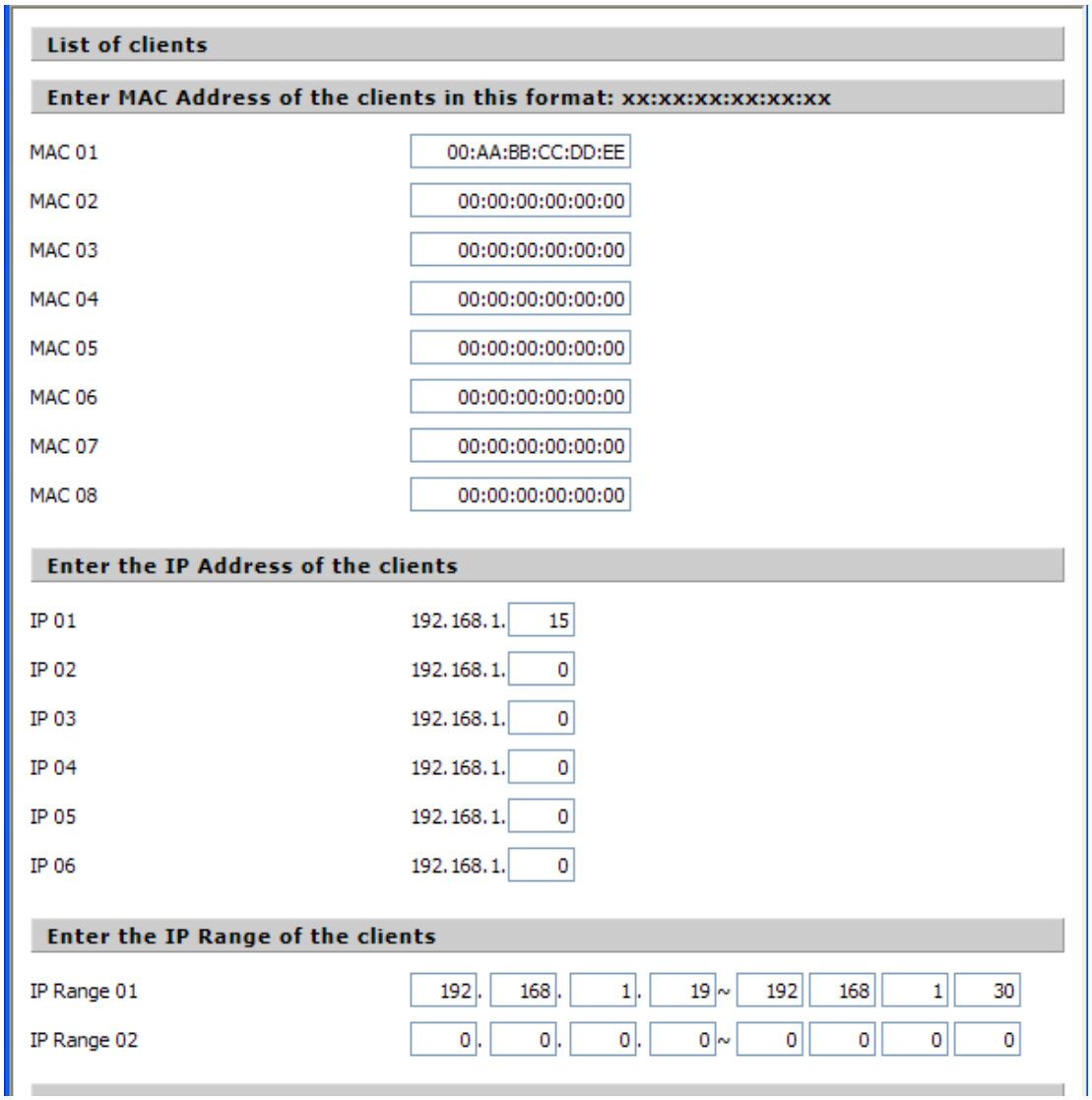


Days: Choose the day of the week you would like your policy to be applied.

Times: Enter the time of the day you would like your policy to be applied.

Website Blocking by URL Address: You can block access to certain websites by entering their URL.

Website Blocking by Keyword: You can block access to certain website by the keywords contained in their webpage



set up Internet access policy

1. Select the policy number (1-10) in the drop-down menu.
2. For this policy is enabled, click the radio button next to "Enable"
3. Enter a name in the Policy Name field.
4. Click the Edit List of PCs button.
5. On the List of PCs screen, specify PCs by IP address or MAC address. Enter the appropriate IP addresses into the IP fields. If you have a range of IP addresses to filter, complete the appropriate IP Range fields. Enter the appropriate MAC addresses into the MAC fields.
6. Click the Apply button to save your changes. Click the Cancel button to cancel your unsaved changes. Click the Close button to return to the Filters screen.
7. If you want to block the listed PCs from Internet access during the designated days and time, then keep the default setting, Deny. If you want the listed PCs to have Internet filtered during the designated days and time, then click the radio button next to Filter.
8. Set the days when access will be filtered. Select Everyday or the appropriate days of the week.
9. Set the time when access will be filtered. Select 25 Hours, or check the box next to From and

use the drop-down boxes to designate a specific time period.

10. Click the Add to Policy button to save your changes and active it.
11. To create or edit additional policies, repeat steps 1-9.
12. To delete an Internet Access Policy, select the policy number, and click the Delete button.

Note:

1） The default factory value of policy rules is "filtered". If the user chooses the default policy rules for "refuse", and editing strategies to save or directly to save the settings. If the strategy edited is the first, it will be automatically saved into the second, if not the first, keep the original number.

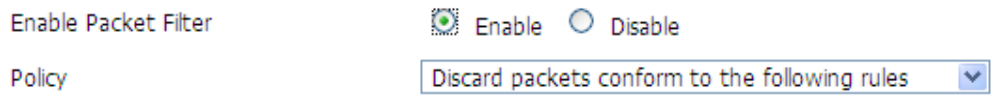
2） Turn off the power of the router or reboot the router can cause a temporary failure。After the failure of the router, if can not automatically synchronized NTP time server, you need to recalibrate to ensure the correct implementation of the relevant period control function.

3.3.5.2 Packet Filter

To block some packets getting Internet access or block some Internet packets getting local network access, you can configure filter items to block these packets.

Packet Filter

Packet filter function is realized based on IP address or port of packets.

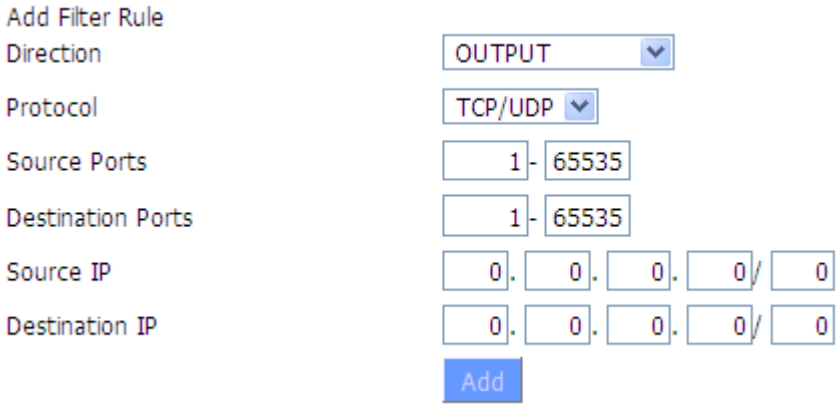


Enable Packet Filter: Enable or disable “packet filter” function

Policy: The filter rule’s policy, you can choose the following options

Discard The Following--Discard packets conform to the following rules, Accept all other packets

Only Accept The Following-- Accept only the data packets conform to the following rules, Discard all other packets



Direction

input: packet from WAN to LAN

output: packet from LAN to WAN

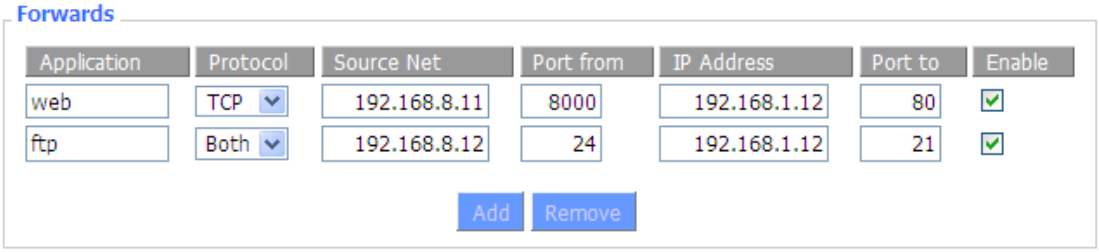
Protocol: packet protocol type
Source Ports: packet's source port
Destination Ports: packet's destination port
Source IP: packet's source IP address
Destination IP: packet's destination IP address

Note: "Source Port" ,"Destination Port" ,"Source IP" ,"Destination IP" could not be all empty ,you have to input at least one of these four parameters.

3.3.6 NAT

3.3.6.1 Port Forwarding

Port Forwarding allows you to set up public services on your network, such as web servers, ftp servers, e-mail servers, or other specialized Internet applications. Specialized Internet applications are any applications that use Internet access to perform functions such as videoconferencing or online gaming. When users send this type of request to your network via the Internet, the router will forward those requests to the appropriate PC. If you want to forward a whole range of ports, see Port Range Forwarding.



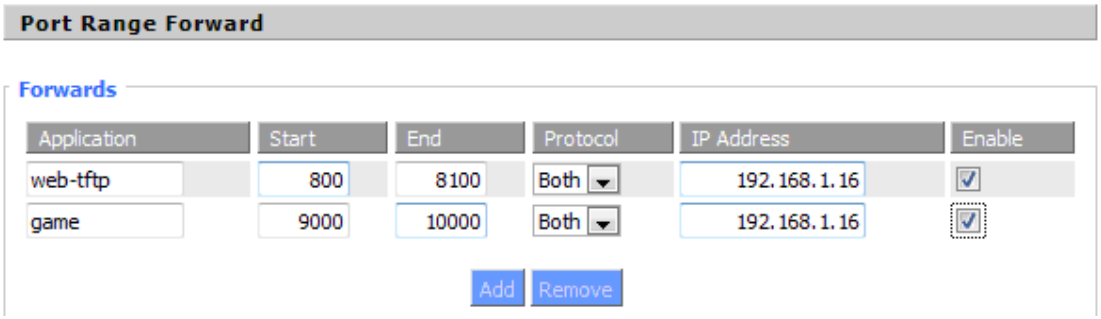
Application: Enter the name of the application in the field provided.
Protocol: Chose the right protocol TCP,UDP or Both. Set this to what the application requires.
Source Net: Forward only if sender matches this ip/net (example 192.168.1.0/25).
Port from: Enter the number of the external port (the port number seen by users on the Internet).
IP Address: Enter the IP Address of the PC running the application.
Port to: Enter the number of the internal port (the port number used by the application).
Enable: Click the Enable checkbox to enable port forwarding for the application.

Check all values and click **Save Settings** to save your settings. Click the **Cancel changes** button to cancel your unsaved changes.

3.3.6.2 Port Range Forward

Port Range Forwarding allows you to set up public services on your network, such as web

servers, ftp servers, e-mail servers, or other specialized Internet applications. Specialized Internet applications are any applications that use Internet access to perform functions such as videoconferencing or online gaming. When users send this type of request to your network via the Internet, the router will forward those requests to the appropriate PC. If you only want to forward a single port, see Port Forwarding.



Application: Enter the name of the application in the field provided.

Start: Enter the number of the first port of the range you want to seen by users on the Internet and forwarded to your PC.

End: Enter the number of the last port of the range you want to seen by users on the Internet and forwarded to your PC.

Protocol: Chose the right protocol TCP,UDP or Both. Set this to what the application requires.

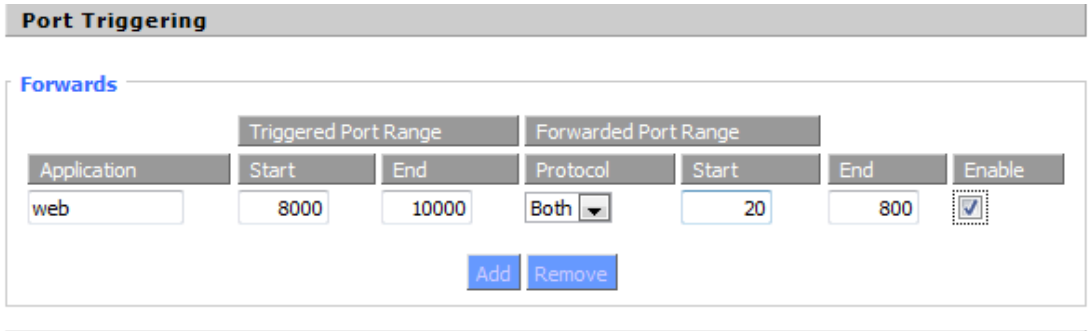
IP Address: Enter the IP Address of the PC running the application.

Enable: Click the Enable checkbox to enable port forwarding for the application.

Check all values and click **Save Settings** to save your settings. Click the **Cancel changes** button to cancel your unsaved changes.

3.3.6.3 Port Triggering

Port Triggering allows you to do port forwarding without setting a fixed PC. By setting Port Triggering rules, you can allow inbound traffic to arrive at a specific LAN host, using ports different than those used for the outbound traffic. This is called port triggering since the outbound traffic triggers to which ports inbound traffic is directed.



If you want to forward ports to a PC with a static IP address, see Port Forwarding or Port Range Forwarding.

Application: Enter the name of the application in the field provided.

Triggered Port Range: Enter the number of the first and the last port of the range, which should

be triggered. If a PC sends outbound traffic from those ports, incoming traffic on the Forwarded Range will be forwarded to that PC.

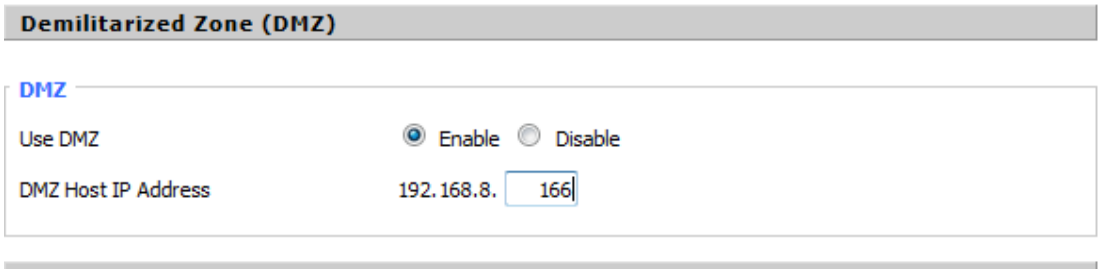
Forwarded Port Range: Enter the number of the first and the last port of the range, which should be forwarded from the Internet to the PC, which has triggered the Triggered Range.

Enable : Click the Enable checkbox to enable port triggering for the application.

Check all values and click Save Settings to save your settings. Click the Cancel changes button to cancel your unsaved changes.

3.3.6.4 DMZ

The DMZ (DeMilitarized Zone) hosting feature allows one local user to be exposed to the Internet for use of a special-purpose service such as Internet gaming or videoconferencing. DMZ hosting forwards all the ports at the same time to one PC. The Port Forwarding feature is more secure because it only opens the ports you want to have opened, while DMZ hosting opens all the ports of one computer, exposing the computer so the Internet can see it.



Any PC whose port is being forwarded must should have a new static IP address assigned to it because its IP address may change when using the DHCP function.

DMZ Host IP Address: To expose one PC to the Internet, select Enable and enter the computer's IP address in the DMZ Host IP Address field. To disable the DMZ, keep the default setting：Disable

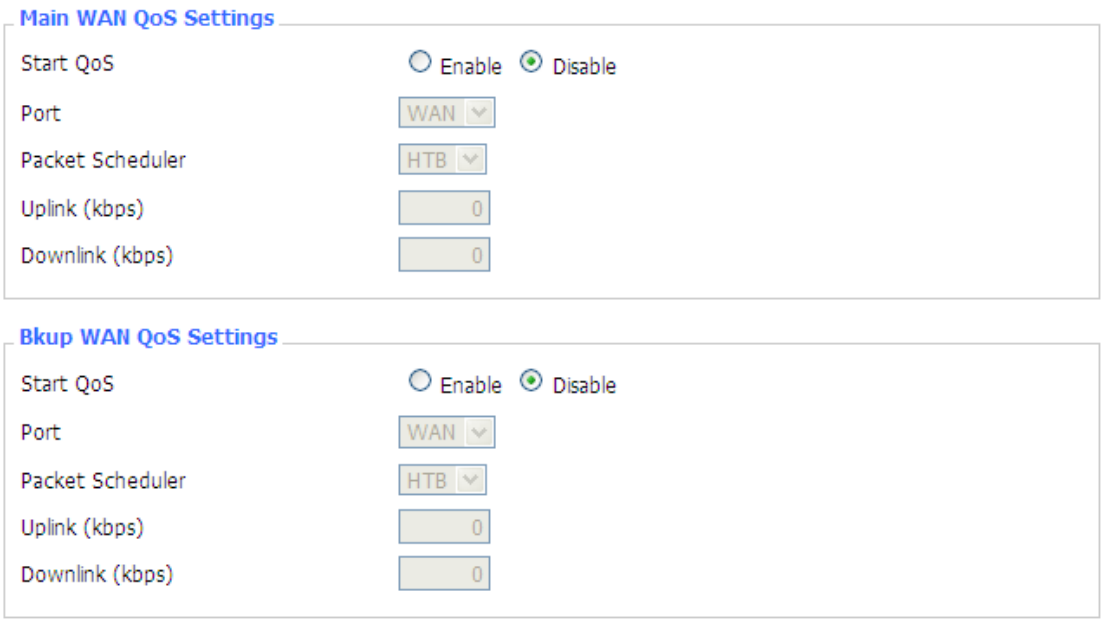
Check all values and click **Save Settings** to save your settings. Click the **Cancel changes** button to cancel your unsaved changes.

3.3.7 QoS Setting

3.3.7.1 Basic

Bandwidth management prioritizes the traffic on your router. Interactive traffic (telephony, browsing, telnet, etc.) gets priority and bulk traffic (file transfer, P2P) gets low priority. The main goal is to allow both types to live side-by side without unimportant traffic disturbing more critical things. All of this is more or less automatic.

QoS allows control of the bandwidth allocation to different services, netmasks, MAC addresses and the four LAN ports.

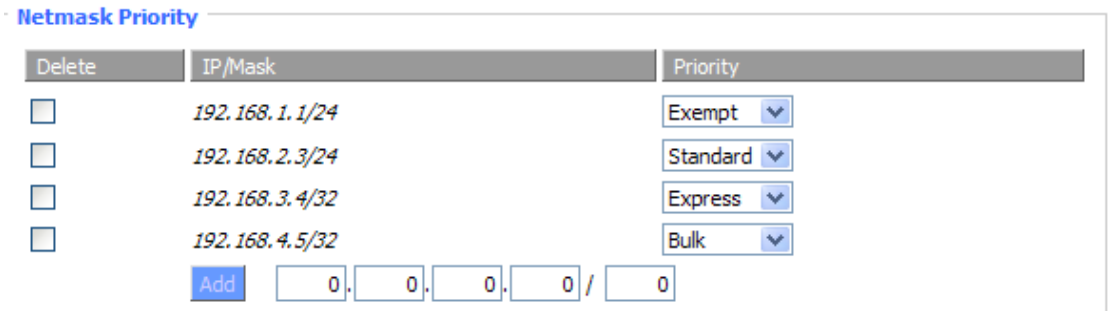


Uplink (kbps)： In order to use bandwidth management (QoS) you must enter bandwidth values for your uplink. These are generally 80% to 90% of your maximum bandwidth.

Downlink (kbps)： In order to use bandwidth management (QoS) you must enter bandwidth values for your downlink. These are generally 80% to 90% of your maximum bandwidth.

3.3.7.2 Classify

Netmask Priority



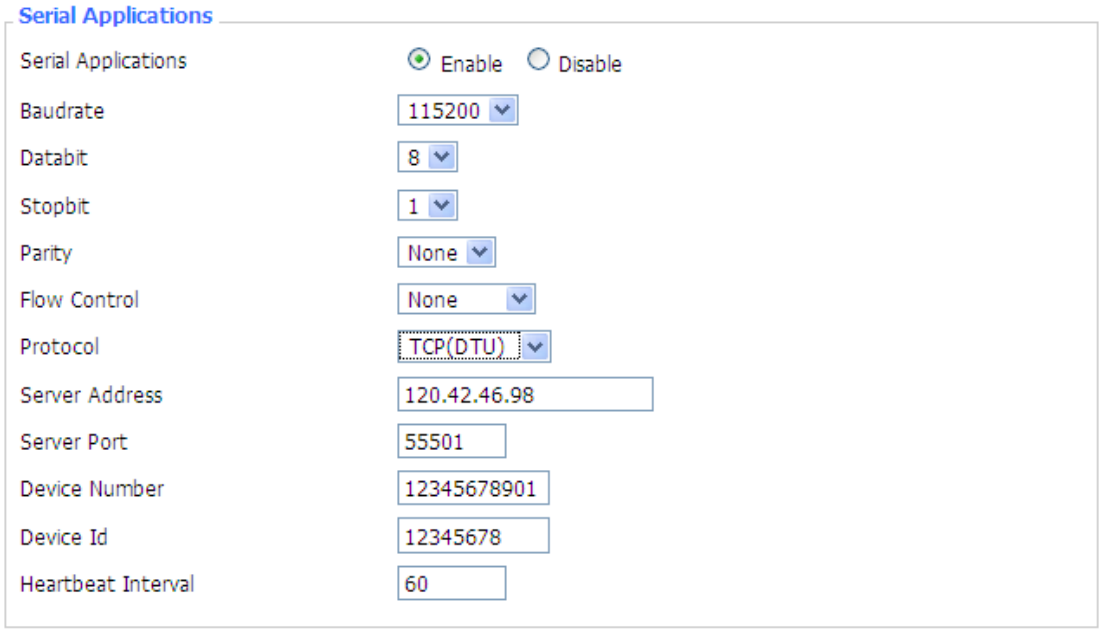
You may specify priority for all traffic from a given IP address or IP Range.

Check all values and click **Save Settings** to save your settings. Click the **Cancel changes** button to cancel your unsaved changes.

3.3.8 Applications

3.3.8.1 Serial Applications

There is a console port on Four-Faith router. Normally, this port is used to debug the router. This port can also be used as a serial port. The router has embedded a serial to TCP program. The data sent to the serial port is encapsulated by TCP/IP protocol stack and then is sent to the destination server. This function can work as a Four-Faith DTU (Data Terminal Unit). Please refer www.four-faith.com for more information about this product.



Baudrate: The serial port's baudrate

Databit: The serial port's databit

Parity: The serial port's parity

Stopbit: The serial port's stopbit

Flow Control: The serial port's flow control type.

Enable Serial TCP Function: Enable the serial to TCP function

Protocol Type: The protocol type to transmit data.

UDP(DTU) – Data transmit with UDP protocol , work as a Four-Faith DTU which has application protocol and hear beat mechanism.

Pure UDP – Data transmit with standard UDP protocol.

TCP(DTU) -- Data transmit with TCP protocol , work as a Four-Faith DTU which has application protocol and hear beat mechanism.

Pure TCP -- Data transmit with standard TCP protocol, router is the client.

TCP Server -- Data transmit with standard TCP protocol, router is the server.

TCST -- Data transmit with TCP protocol, Using a custom data

Server Address: The data service center's IP Address or domain name.

Server Port: The data service center's listening port.

Device ID: The router's identity ID.

Device Number: The router's phone number.

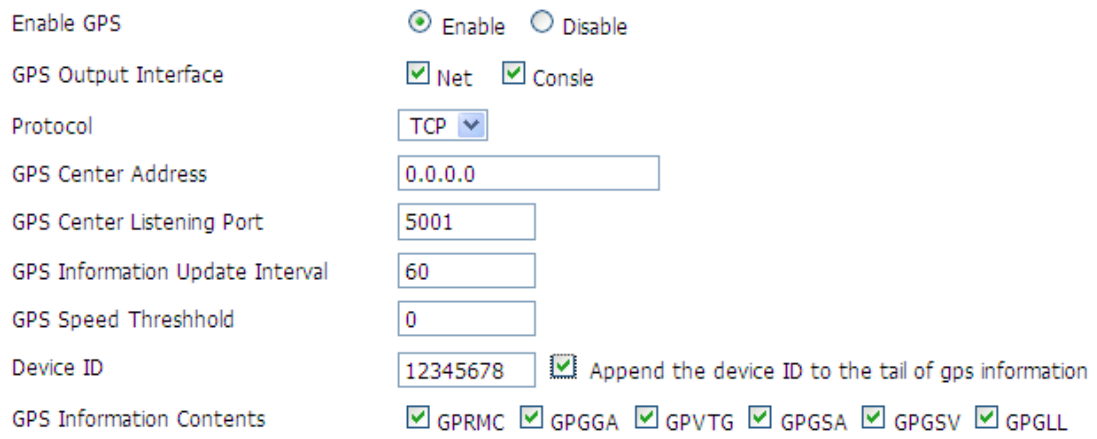
Heartbeat Interval: The time interval to send heart beat packet. This item is valid only when you choose UDP(DTU) or TCP(DTU) protocol type.

TCP Server Listen Port: This item is valid when Protocol Type is "TCP Server"

Custom Heartbeat Packet : This item is valid when Protocol Type is "TCST"

Custom Registration Packets: This item is valid when Protocol Type is "TCST"

3.3.8.2 GPS Settings



Enable GPS: Enable or disable GPS function

GPS Output Interface: This item selects the GPS output interface including network and serial port

Protocol: TCP mode or UDP mode

GPS Center Address: The GPS center's IP Address or domain name

GPS Center Listening Port: The GPS center's listening port.

GPS Information Update Interval: The time interval between two GPS information update, unit is second

GPS Speed Threshhold: The GPS speed threshhold of update gps information

Device ID: The ID of this device

Append the device ID to the tail of gps information: Whether append the ID to the GPS information

GPS Information Contents: GPS contents selection

When GPS output interface is serial port, we should set the following serial port settings:

3.3.9 Administration

3.3.9.1 Management

The Management screen allows you to change the router's settings. On this page you will find most of the configurable items of the router code.

The new password must not exceed 32 characters in length and must not include any spaces. Enter the new password a second time to confirm it.

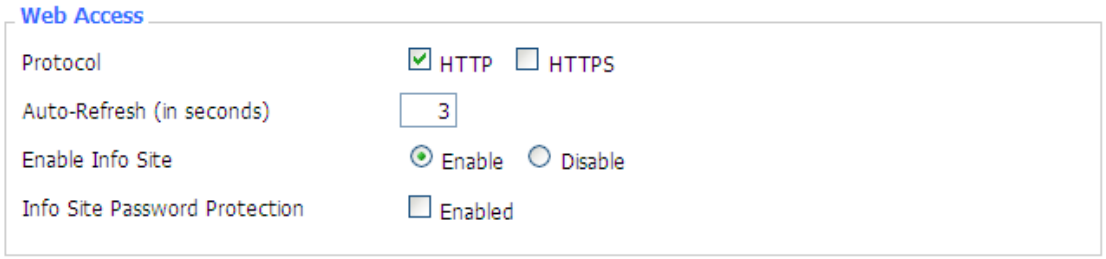
Note:

Default username is admin.

It is strongly recommended that you change the factory default password of the router, which is admin. All users who try to access the router's web-based utility or Setup Wizard will be prompted for the router's password.

Web Access

This feature allows you to manage the router using either HTTP protocol or the HTTPS protocol. If you choose to disable this feature, a manual reboot will be required.You can also activate or not the router information web page. It's now possible to password protect this page (same username and password than above).

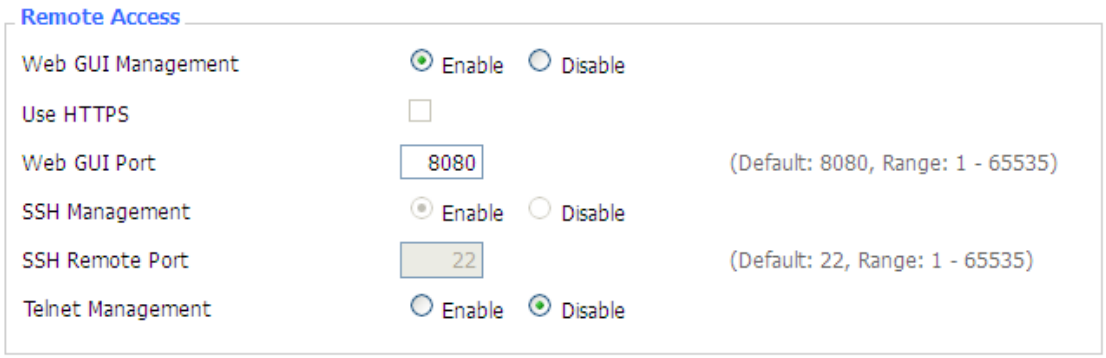


Protocol: This feature allows you to manage the router using either HTTP protocol or the HTTPS protocol

Auto-Refresh: Adjusts the Web GUI automatic refresh interval. 0 disables this feature completely

Enable Info Site: Enable or disable the login system information page

Info Site Password Protection: Enable or disable the password protection feature of the system information page



Remote Access： This feature allows you to manage the router from a remote location, via the Internet. To disable this feature, keep the default setting, Disable. To enable this feature, select Enable, and use the specified port (default is 8080) on your PC to remotely manage the router. You must also change the router's default password to one of your own, if you haven't already.

To remotely manage the router, enter http://xxx.xxx.xxx.xxx:8080 (the x's represent the router's Internet IP address, and 8080 represents the specified port) in your web browser's address field. You will be asked for the router's password.

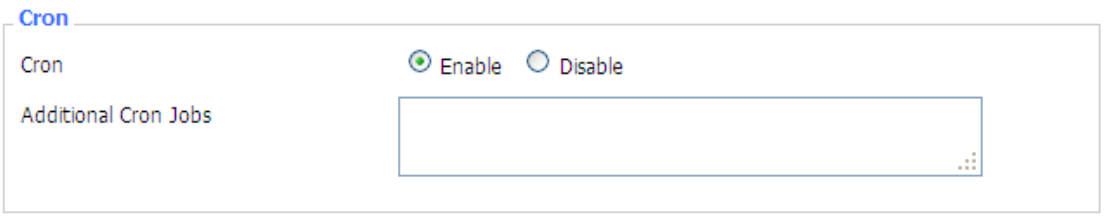
If you use https you need to specify the url as https://xxx.xxx.xxx.xxx:8080 (not all firmwares does support this without rebuilding with SSL support).

SSH Management： You can also enable SSH to remotely access the router by Secure Shell. Note that SSH daemon needs to be enable in Services page.

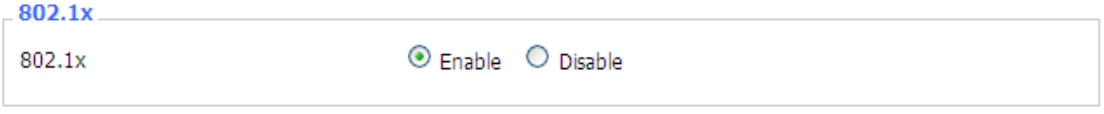
Note：

If the Remote Router Access feature is enabled, anyone who knows the router's Internet IP address and password will be able to alter the router's settings.

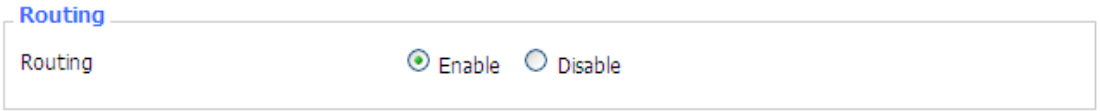
Telnet Management： Enable or disable remote Telnet function



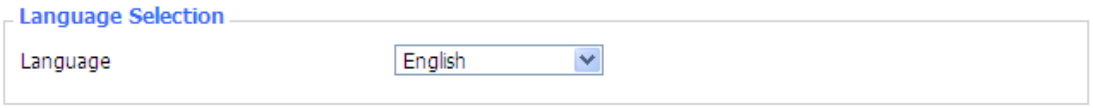
Cron： The cron subsystem schedules execution of Linux commands. You'll need to use the command line or startup scripts to actually use this.



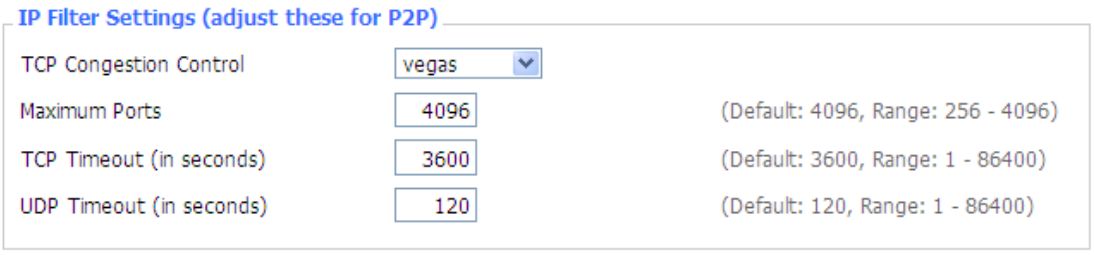
802.1x： A limited 802.1x server needed to fulfill WPA handshake requirements to allow Windows XP clients to work with WPA.



Routing： Routing enables the OSPF and RIP routing daemons if you have set up OSPF or RIP routing in the Advanced Routing page.。



Language： Set up the router page shows the type of language, including simplified Chinese and English.



IP Filter Settings (adjust these for P2P)： If you have any peer-to-peer (P2P) applications running on your network please increase the maximum ports and lower the TCP/UDP timeouts. This is necessary to maintain router stability because peer-to-peer applications open many connections and don't close them properly. Consider using these:

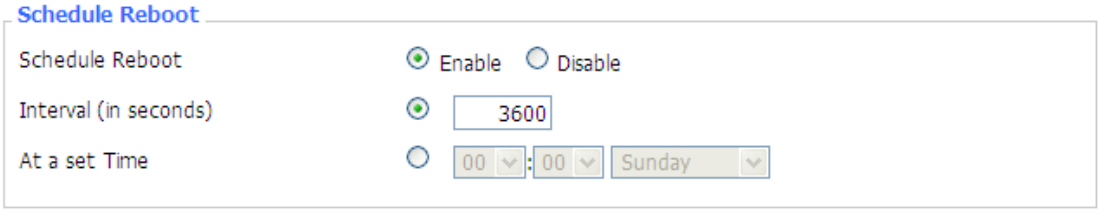
Maximum Ports: 4096

TCP Timeout: 3600 sec

UDP Timeout: 120 sec

3.3.9.2 Keep Alive

Schedule Reboot



You can schedule regular reboots for the router :

Regularly after xxx seconds.

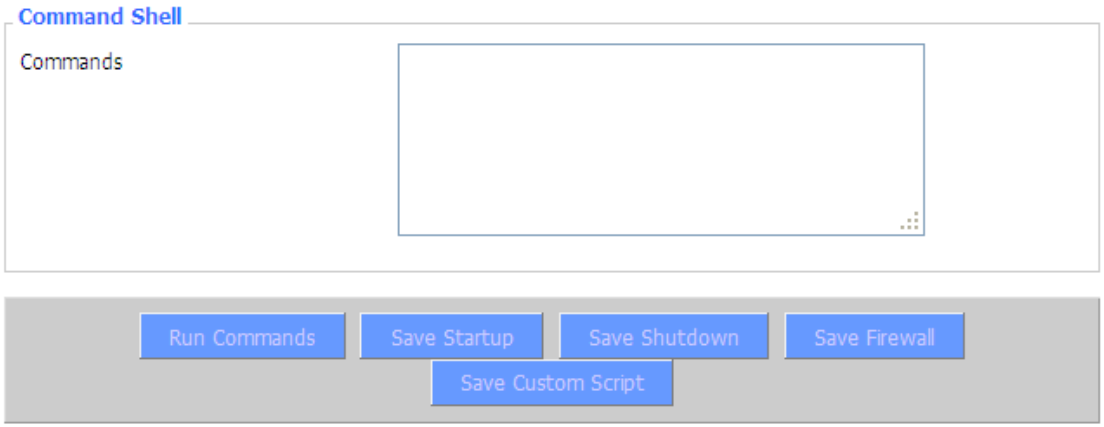
At a specific date time each week or everyday.

Note：

For date based reboots Cron must be activated. See Management for Cron activation.

3.3.9.3 Commands

Commands： You are able to run command lines directly via the Webinterface.



Run Command： You can run command lines via the web interface. Fill the text area with your command and click Run Commands to submit.

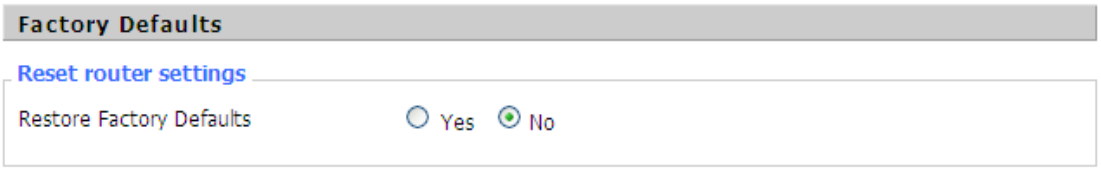
Startup： You can save some command lines to be executed at startup's router. Fill the text area with commands (only one command by row) and click Save Startup.

Shutdown： You can save some command lines to be executed at shutdown's router. Fill the text area with commands (only one command by row) and click Save Shutdown.

Firewall： Each time the firewall is started, it can run some custom iptables instructions. Fill the text area with firewall's instructions (only one command by row) and click Save Firewall.

Custom Script： Custom script is stored in /tmp/custom.sh file. You can run it manually or use cron to call it. Fill the text area with script's instructions (only one command by row) and click Save Custom Script.

3.3.9.4 Factory Defaults

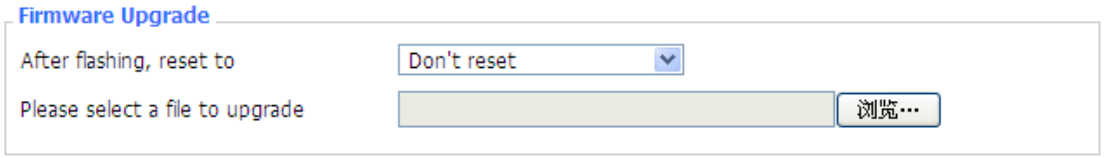


Reset router settings： Click the Yes button to reset all configuration settings to their default values. Then click the Apply Settings button.

Note：

Any settings you have saved will be lost when the default settings are restored. After restoring the router is accessible under the default IP address 192.168.1.1 and the default password admin.

3.3.9.5 Firmware Upgrade



Firmware Upgrade： New firmware versions are posted at www.four-faith.com and can be downloaded. If the Router is not experiencing difficulties, then there is no need to download a more recent firmware version, unless that version has a new feature that you want to use.

Note：

When you upgrade the Router's firmware, you lose its configuration settings, so make sure you write down the Router settings before you upgrade its firmware.

To upgrade the Router's firmware:

1. Download the firmware upgrade file from the website.
2. Click the Browse... button and chose the firmware upgrade file.
3. Click the Upgrade button and wait until the upgrade is finished.

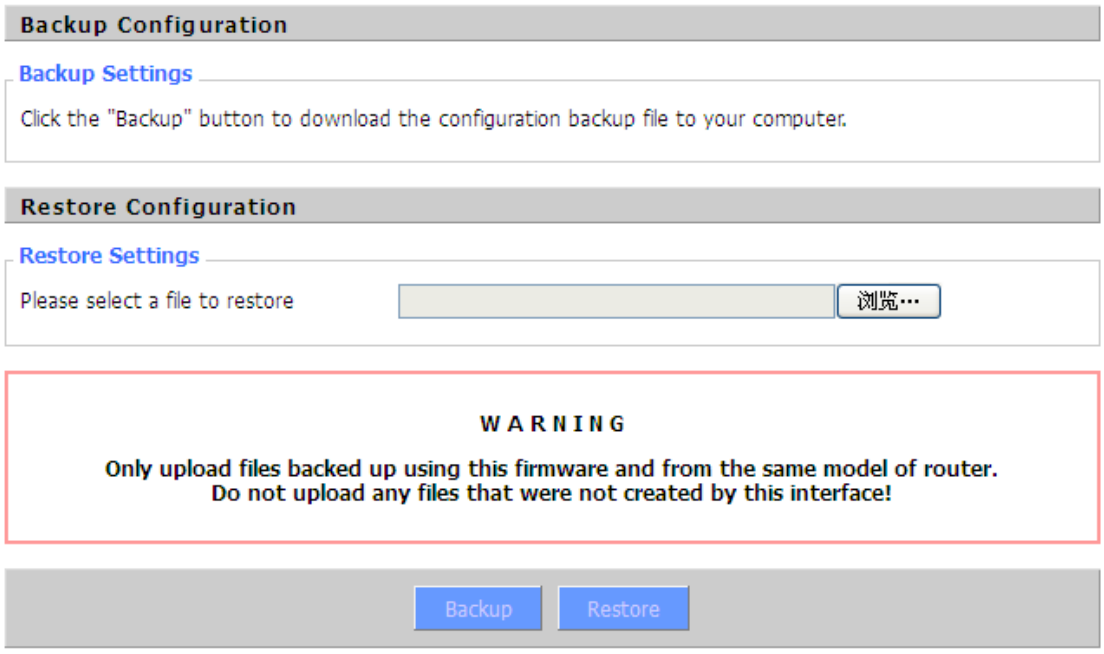
Note：

Upgrading firmware may take a few minutes.

Do not turn off the power or press the reset button!

After flashing, reset to： If you want to reset the router to the default settings for the firmware version you are upgrading to, click the Firmware Defaults option.

3.3.9.6 Backup



Backup Settings： You may backup your current configuration in case you need to reset the router back to its factory default settings.Click the Backup button to backup your current configuration.

Restore Settings： Click the Browse... button to browse for a configuration file that is currently saved on your PC.Click the Restore button to overwrite all current configurations with the ones in

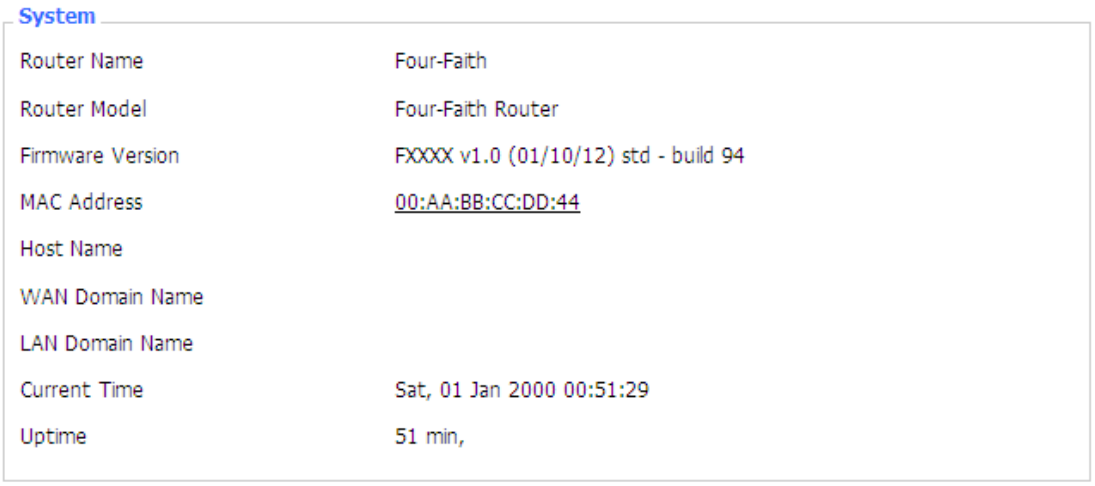
the configuration file.

Note:

Only restore configurations with files backed up using the same firmware and the same model of router.

3.3.10 Status

3.3.10.1 Router



Router Name: name of the router, setting→basic setting to modify

Router Model: model of the router, unavailable to modify

Firmware Version: software version information

MAC Address: MAC address of WAN, setting→Clone MAC Address to modify

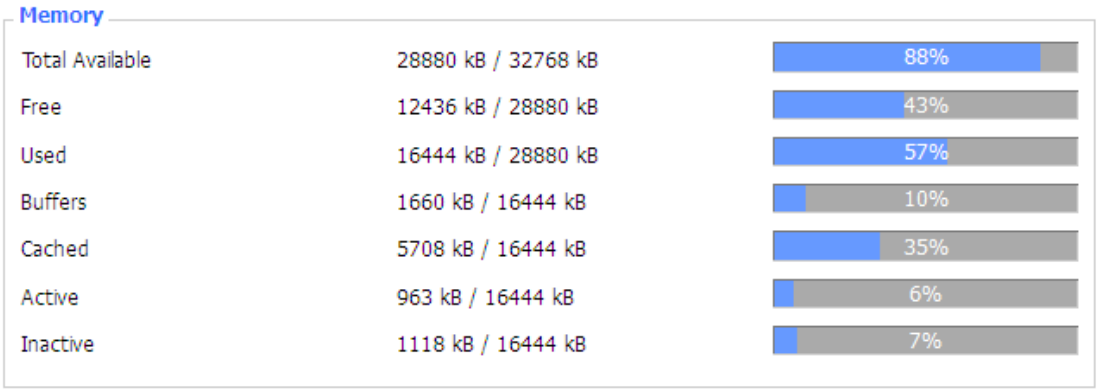
Host Name: host name of the router, setting→basic setting to modify

WAN Domain Name: domain name of WAN, setting→basic setting to modify

LAN Domain Name: domain name of LAN, unavailable to modify

Current Time: local time of the system

Uptime: operating uptime as long as the system is powered on



Total Available: the room for total available of RAM (that is physical memory minus some reserve and the kernel of binary code bytes)

Free: free memory, the router will reboot if the memory is less than 500kB

Used: used memory, total available memory minus free memory

Buffers: used memory for buffers,

Cached: the memory used by high-speed cache memory

Active: active use of buffer or cache memory page file size

Inactive: not often used in a buffer or cache memory page file size

IP Filter Maximum Ports: preset is 4096, available to re-management

Active IP Connections: real time monitor active IP connections of the system, click to see the table as blow:

Active IP Connections 53

No.	Protocol	Timeout (s)	Source Address	Remote Address	Service Name	State
1	TCP	60	192.168.1.120	192.168.1.1	80	TIME_WAIT
2	TCP	30	192.168.1.120	192.168.1.1	80	TIME_WAIT
3	TCP	65	192.168.1.120	192.168.1.1	80	TIME_WAIT
4	TCP	96	192.168.1.120	192.168.1.1	80	TIME_WAIT
5	TCP	99	192.168.1.120	192.168.1.1	80	TIME_WAIT
6	TCP	70	192.168.1.120	192.168.1.1	80	TIME_WAIT
7	TCP	74	192.168.1.120	192.168.1.1	80	TIME_WAIT
8	TCP	115	192.168.1.120	192.168.1.1	80	TIME_WAIT
9	TCP	84	192.168.1.120	192.168.1.1	80	TIME_WAIT
10	TCP	3599	192.168.1.120	192.168.1.1	80	ESTABLISHED
11	TCP	3599	192.168.1.120	192.168.1.1	80	ESTABLISHED
12	TCP	108	192.168.1.120	192.168.1.1	80	TIME_WAIT
13	TCP	3600	192.168.1.120	192.168.1.1	80	ESTABLISHED
14	TCP	93	192.168.1.120	192.168.1.1	80	TIME_WAIT
15	TCP	102	192.168.1.120	192.168.1.1	80	TIME_WAIT
16	TCP	74	192.168.1.120	192.168.1.1	80	TIME_WAIT
17	TCP	3599	192.168.1.120	192.168.1.1	80	ESTABLISHED
18	TCP	15	192.168.1.120	192.168.1.1	80	TIME_WAIT
19	TCP	25	192.168.1.120	192.168.1.1	80	TIME_WAIT
20	TCP	90	192.168.1.120	192.168.1.1	80	TIME_WAIT
21	UDP	26	192.168.8.119	255.255.255.255	1947	UNREPLIED
22	TCP	77	192.168.1.120	192.168.1.1	80	TIME_WAIT
23	TCP	35	192.168.1.120	192.168.1.1	80	TIME_WAIT
24	TCP	74	192.168.1.120	192.168.1.1	80	TIME_WAIT
25	TCP	40	192.168.1.120	192.168.1.1	80	TIME_WAIT
26	TCP	3599	192.168.1.120	192.168.1.1	80	ESTABLISHED
27	TCP	74	192.168.1.120	192.168.1.1	80	TIME_WAIT
28	TCP	74	192.168.1.120	192.168.1.1	80	TIME_WAIT
29	TCP	4	192.168.1.120	192.168.1.1	80	TIME_WAIT
30	UDP	31	192.168.8.160	224.0.0.1	9166	UNREPLIED

Active IP Connections: total active IP connections

Protocol: connection protocol

Timeouts: connection timeouts, unit is second

Source Address: source IP address

Remote Address: remote IP address

Service Name: connecting service port

Status: displayed status

3.3.10.2 WAN

Connection Type	3G/UMTS

Connection Type: disabled, 3G/UMTS

Connection Uptime	0:28:24

Connection Uptime: connecting uptime; If disconnect, display Not available

IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Gateway	0.0.0.0
DNS 1	
DNS 2	
DNS 3	

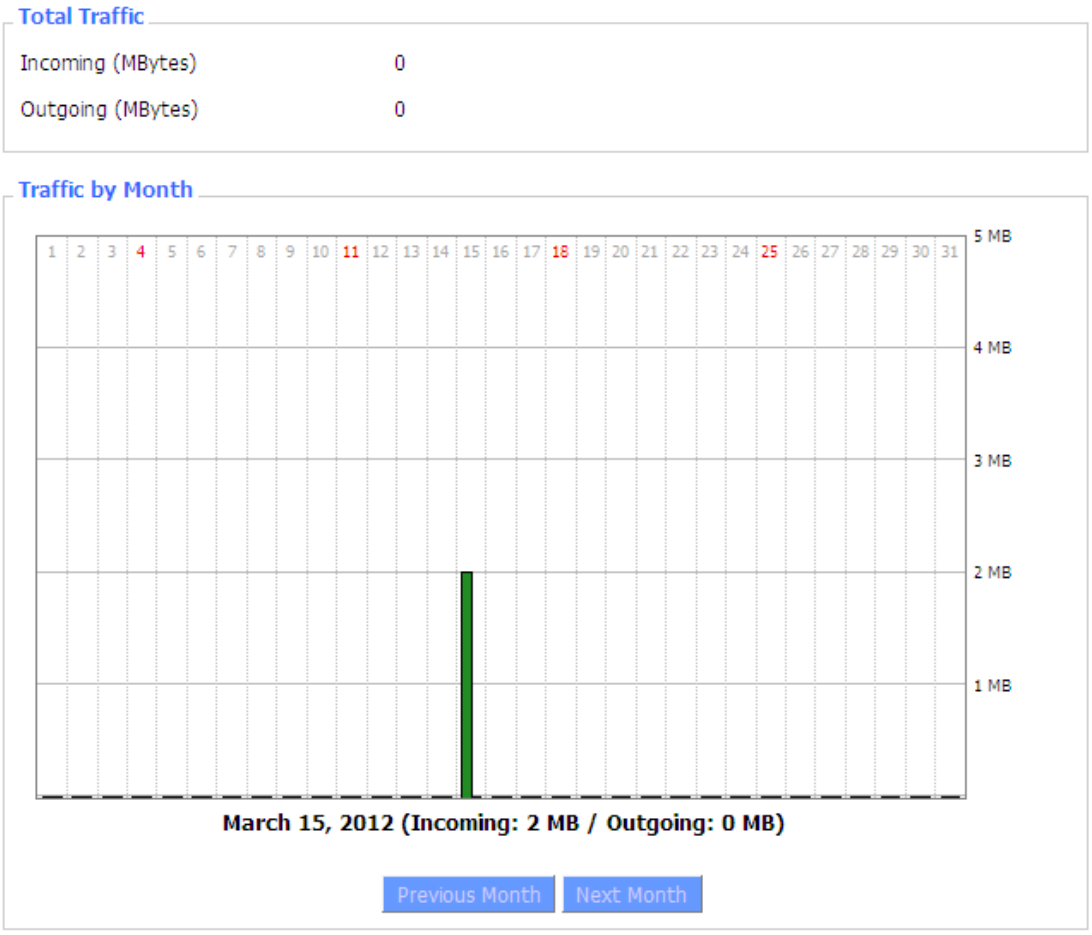
IP Address: IP address of router WAN
Subnet Mask: subnet mask of router WAN
Gateway: the gateway of router WAN
DNS1, DNS2, DNS3: DNS1/DNS2/DNS3 of router WAN

Login Status	Disconnected Connect

Login Status: connection status of WAN
Disconnection: disconnect
Connection: connect

Module Type	ZTE-EVDO MODULE
	
Signal Status	-79 dBm
Network	CDMA/HDR

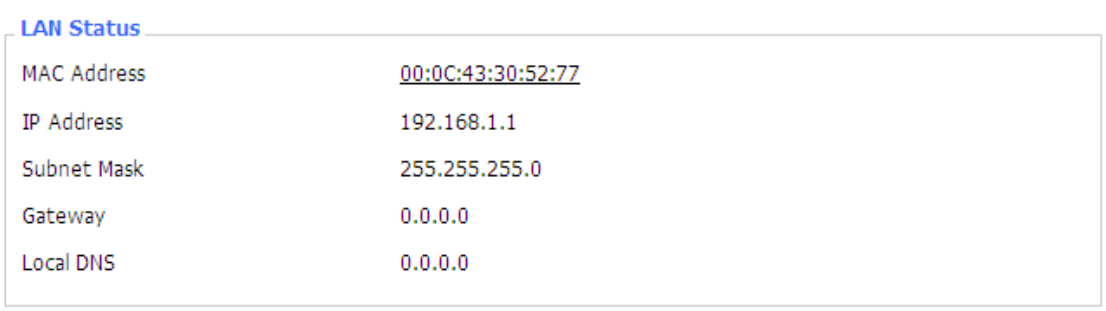
Module Type: module type in 3G/UMTS way
Signal Status: signal intensity of the module in 3G/UMTS way
Network: network type of the module in 3G/UMTS way



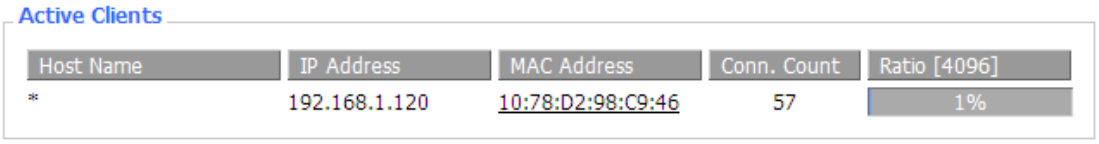
Total Flow: flow from power-off last time until now statistics, download and upload direction
Monthly Flow: the flow of a month, unit is MB
Last Month: the flow of last month
Next Month: the flow of next month

Backup: backup data administration
Restore: restore data administration
Delete: delete data administration

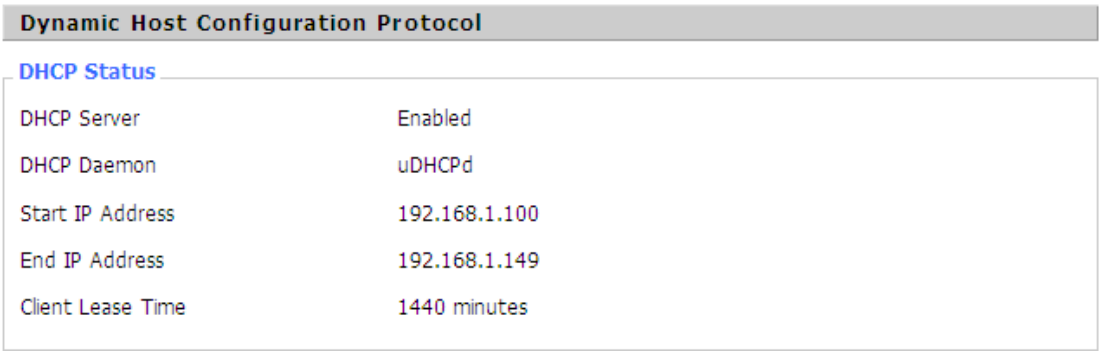
3.3.10.3 LAN



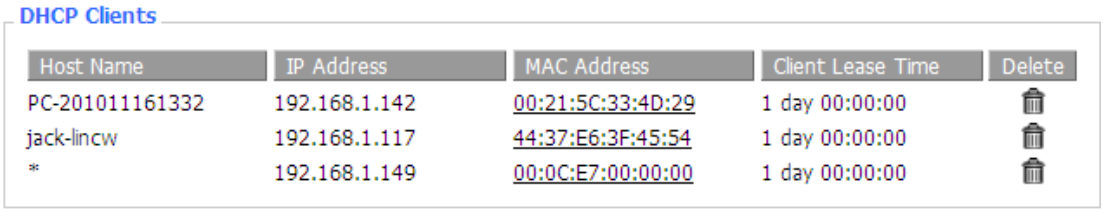
MAC Address: MAC Address of the LAN port ethernet
IP Address: IP Address of the LAN port
Subnet Mask: Subnet Mask of the LAN port
Gateway: Gateway of the LAN port
Local DNS: DNS of the LAN port



Host Name: host name of LAN client
IP Address: IP address of the client
MAC Address: MAC address of the client
Conn. Count: connection count caused by the client
Ratio: the ratio of 4096 connection



DNCP Server: enable or disable the router work as a DHCP server
DHCP Daemon: the agreement allocated using DHCP including DNSMasq and uDHCPd
Starting IP Address: the starting IP Address of the DHCP server's Address pool
Ending IP Address: the ending IP Address of the DHCP server's Address pool
Client Lease Time: the lease time of DHCP client



Host Name: host name of LAN client
IP Address: IP address of the client
MAC Address: MAC address of the client
Expires: the expiry the client rents the IP address

Connected PPPOE Clients

Interface	User Name	Local IP	Delete
ppp0	hometest	192.168.10.10	

Interface: the interface assigned by dial-up system
User Name: user name of PPPoE client
Local IP: IP address assigned by PPPoE client
Delete: click to delete PPPoE client

Connected L2TP Server

Interface	Local IP	Remote IP	Delete
ppp0	172.168.8.2	172.168.8.1	

Interface: the interface assigned by dial-up system
Local IP: tunnel IP address of local L2TP
Remote IP: tunnel IP address of L2TP server
Delete: click to disconnect L2TP

Connected L2TP Clients

Interface	User Name	Local IP	Remote IP	Delete
ppp1	hometest	192.168.50.2	120.42.46.98	

Interface: the interface assigned by dial-up system
User Name: user name of the client
Local IP: tunnel IP address of L2TP client
Remote IP: IP address of L2TP client
Delete: click to delete L2TP client

Connected PPTP Server

Interface	Local IP	Remote IP	Delete
ppp0	172.168.8.2	172.168.8.1	

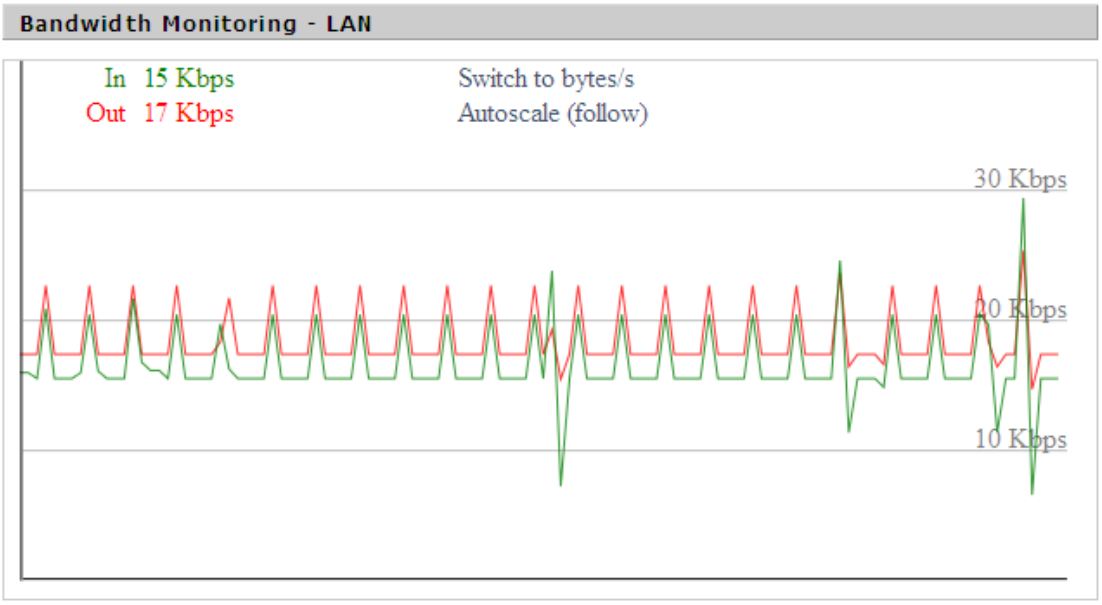
Interface: the interface assigned by dial-up system
Local IP: tunnel IP address of local PPTP
Remote IP: tunnel IP address of PPTP server
Delete: click to disconnect PPTP

Connected PPTP Clients

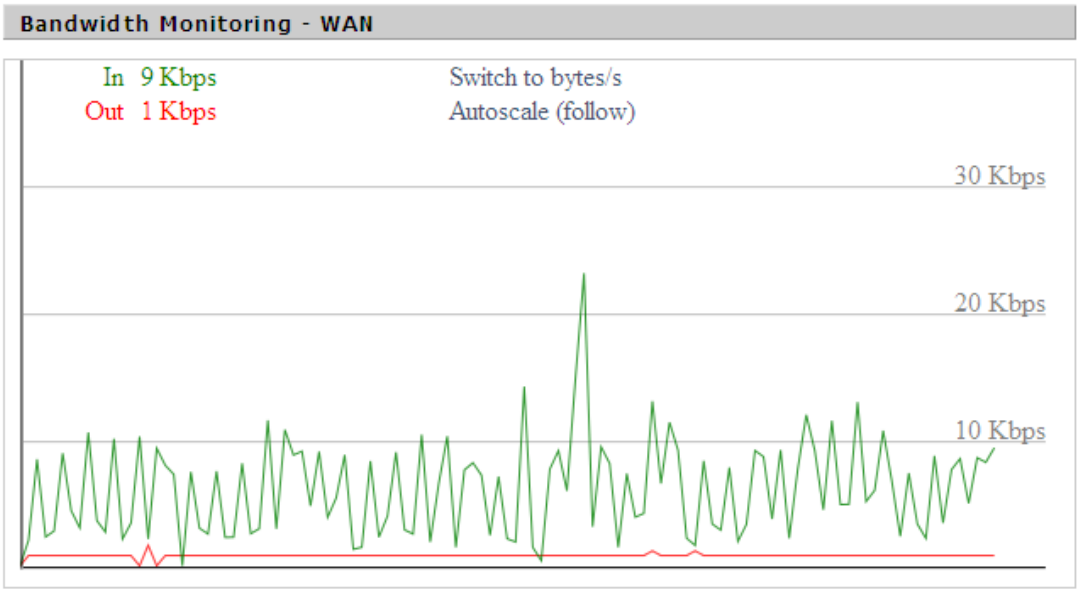
Interface	User Name	Local IP	Remote IP	Delete
ppp1	hometest	192.168.5.1	120.42.46.98	

Interface: the interface assigned by dial-up system
User Name: user name of the client
Local IP: tunnel IP address of PPTP client
Remote IP: IP address of PPTP client
Delete: click to delete PPTP client

3.3.10.4 Bandwidth



Bandwidth Monitoring-LAN Graph
abscissa axis: time
vertical axis: speed rate

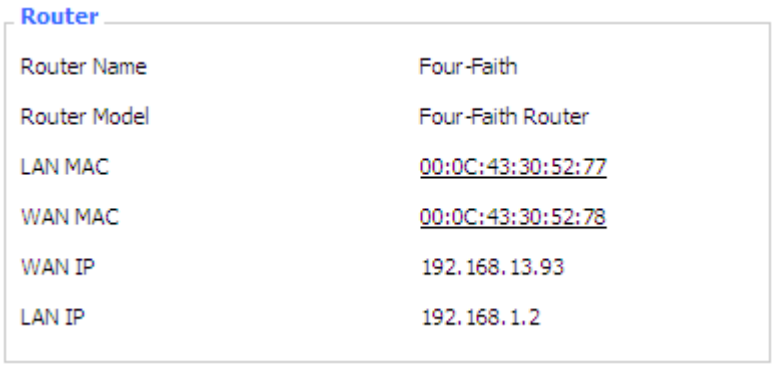


Bandwidth Monitoring-WAN Graph

abscissa axis: time

vertical axis: speed rate

3.3.10.5 Sys-Info



Router Name: the name of the router

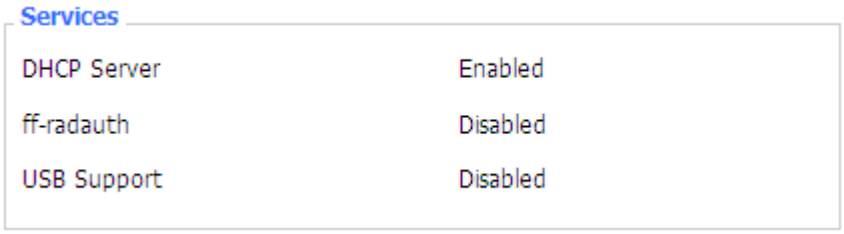
Router Model: the model of the router

LAN MAC: MAC address of LAN port

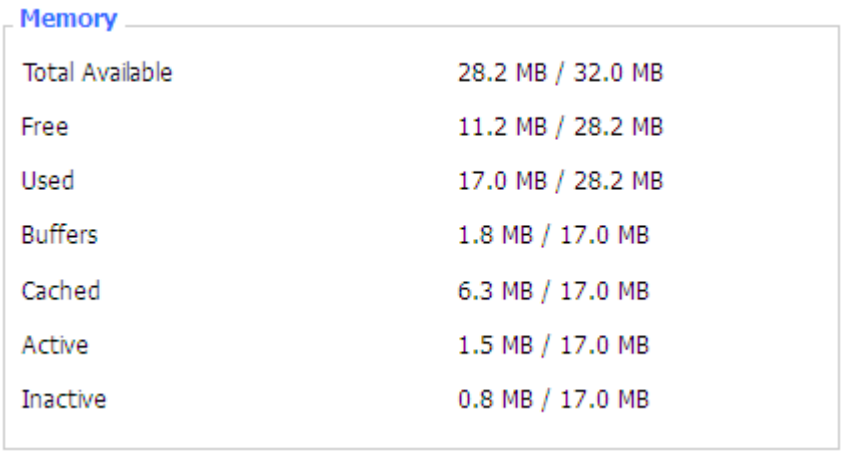
WAN MAC: MAC address of WAN port

WAN IP: IP address of WAN port

LAN IP: IP address of LAN port



DHCP Server: enabled or disabled
ff-radauth: enabled or disabled
USB Support: enabled or disabled



Total Available: the room for total available of RAM (that is physical memory minus some reserve and the kernel of binary code bytes)

Free: free memory, the router will reboot if the memory is less than 500kB

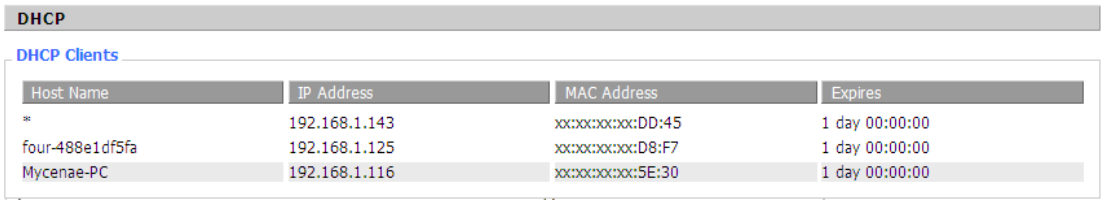
Used: used memory, total available memory minus free memory

Buffers: used memory for buffers, total available memory minus allocated memory

Cached: the memory used by high-speed cache memory

Active: Active use of buffer or cache memory page file size

Inactive: Not often used in a buffer or cache memory page file size



Host Name: host name of LAN client
IP Address: IP address of the client
MAC Address: MAC address of he client
Expires: the expiry the client rents the IP address

Chapter 4 Appendix

The following steps describe how to setup Windows XP Hyper Terminal.

1. Press “Start”→”Programs”→”Accessories”→”Communications”→”Hyper Terminal”

2. Input connection name, choose “OK”

3. Choose the correct COM port which connects to modem, choose “OK”

4. Configure the serial port parameters as following, choose “OK”

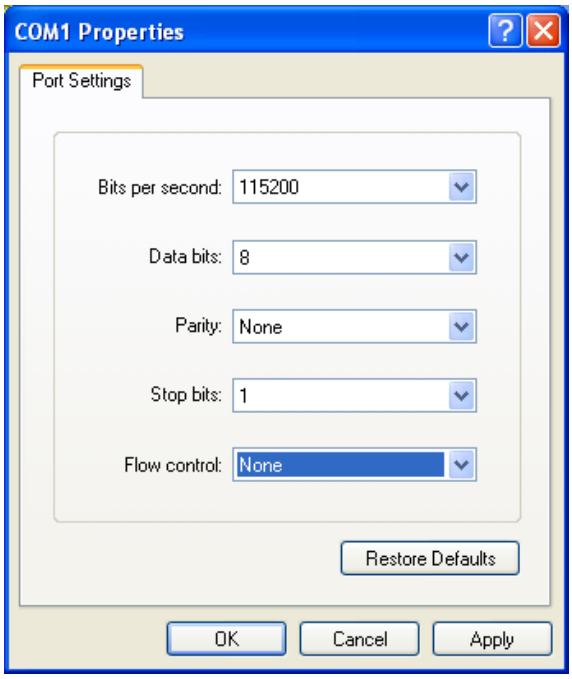
Bits per second: 115200

Data bits: 8

Parity: None

Stop bits: 1

Flow control: None



5. Complete Hyper Terminal operation, It runs as following