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| F7B3X Series User Manual | Documentation No. | Product Version | Page |
| | | 1.0.0 | |
| | Product Name: F7B3X | | Total:81 |

F7B3X Series User Manual

The user manual is suitable for the following model:

| Model | Product Type |
|-------|------------------------------|
| F7B30 | GPS+TD-SCDMA/TD-SCDMA ROUTER |
| F7B31 | GPS+EVDO/EVDO ROUTER |
| F7B32 | GPS+WCDMA/WCDMA ROUTER |
| F7B33 | GPS+WCDMA/EVDO ROUTER |
| F7B34 | GPS+EVDO/TD-SCDMA ROUTER |



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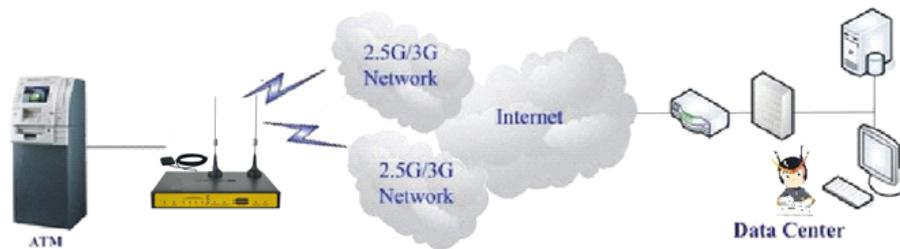
Chapter 1 Brief Introduction of Product

1.1 General

F7B3X series ROUTER is a kind of cellular terminal device that provides data transfer function by public cellular network. Also, it supports double link backup, Load Balancer, Load Shunt and GPS function

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

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/UIIM port: 15KV ESD protection
- ◆ Power port: reverse-voltage and overvoltage protection

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- ◆ Antenna port: lightning protection(optional)

Standard and Convenience

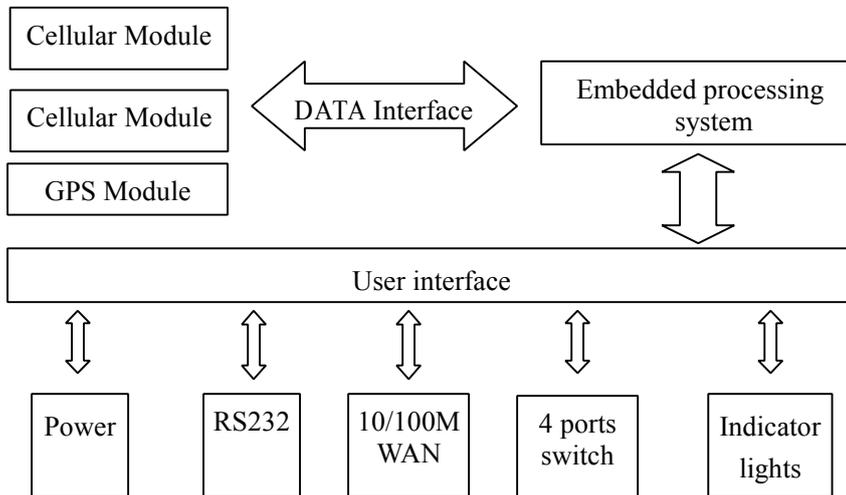
- ◆ Support standard RS232(or RS485/RS422), Ethernet port that can connect to serial, Ethernet devices directly
- ◆ Support standard WAN port and PPPOE protocol that can connect to ADSL directly
- ◆ Support intellectual mode, enter into communication state automatically when powered
- ◆ Provide management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

High-performance

- ◆ Support multiple WAN access methods, including static ip, DHCP, L2TP, PPTP,PPPOE,3G/HSPA/4G
- ◆ Support double link backup between 3G/4G and WAN(PPPOE, ADSL) (optional)
- ◆ Support Load Balancer and Load Shunt
- ◆ 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 multiple DDNS provider service
- ◆ Support VLANs, 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
- ◆ Support GPS function

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 |
|---|---|----------|----------------|
| F7B30 GPS+TD-SCDMA/TD-SCDMA ROUTER | | | |
| TD-SCDMA/HSDPA/HSUPA 1880-1920/2010-2025MHz GSM850/900/1800/1900MHz GPRS/EDGE CLASS 12 | Download speed:2.8Mbps, upload speed:2.2Mbps; | <24dBm | <-108dBm |
| F7B31 GPS+EVDO/EVDO ROUTER | | | |
| 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 |
| F7B32 GPS+WCDMA/WCDMA ROUTER | | | |
| UMTS/WCDMA/HSDPA/HSUPA /HSPA+ 850/1900/2100MHz 850/900/1900/2100MHz(optional) GSM850/900/1800/1900MHz | HSUPA:5.76Mbps (Upload speed) HSDPA:7.2Mbps (Download speed) | <24dBm | <-109 dBm |

| | | | |
|---|---|--------|-----------|
| GPRS/EDGE CLASS 12 | UMTS:384Kbps (DL/UL) HSPA+:21 Mbps(Download speed) 5.76Mbps (Upload speed) | | |
| F7B33 GPS+WCDMA/EVDO ROUTER | | | |
| WCDMA: UMTS/WCDMA/HSDPA/HSUPA /HSPA+ 850/1900/2100MHz 850/900/1900/2100MHz(optional) GSM850/900/1800/1900MHz GPRS/EDGE CLASS 12 | HSUPA:5.76Mbps (Upload speed) HSDPA:7.2Mbps (Download speed) UMTS:384Kbps (DL/UL) HSPA+:21 Mbps(Download speed) 5.76Mbps (Upload speed) | <24dBm | <-109 dBm |
| EVDO: 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 |
| F7B34 GPS+EVDO/TD-SCDMA ROUTER | | | |
| EVDO: 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 |
| TD-SCDMA: TD-SCDMA/HSDPA/HSUPA 1880-1920/2010-2025MHz GSM850/900/1800/1900MHz GPRS/EDGE CLASS 12 | Download speed:2.8Mbps, upload speed:2.2Mbps; | <24dBm | <-108dBm |

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 |
|-----------|--|
| WAN | 1 10/100 Mbps WAN port(RJ45), auto MDI/MDIX, 1.5KV magnetic isolation protection |
| LAN | 4 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: 2400~115200 bps |
| Indicator | "Power", "System", "Online-1", "Online-2", " Local Network ", "WAN", "GPS", "Signal Strength" |
| Antenna | Cellular: 2 standard SMA female interfaces, 50 ohm, lightning protection(optional) GPS: standard SMA female interfaces, 50 ohm, lightning protection(optional) |
| SIM/UIIM | 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 | <650mA (12V) |
|-------------|--------------|

Physical Characteristics

| Item | Content |
|------------|---------------------------------|
| Housing | Iron, providing IP30 protection |
| Dimensions | 206x135x28 mm |
| Weight | 805g |

Environmental Limits

| Item | Content |
|-----------------------|------------------------|
| Operating Temperature | -35~+75°C (-31~+167°F) |
| Storage Temperature | -40~+85°C (-40~+185°F) |
| Operating Humidity | 95% (Non-condensing) |

Chapter 2 Installation Introduction

2.1 General

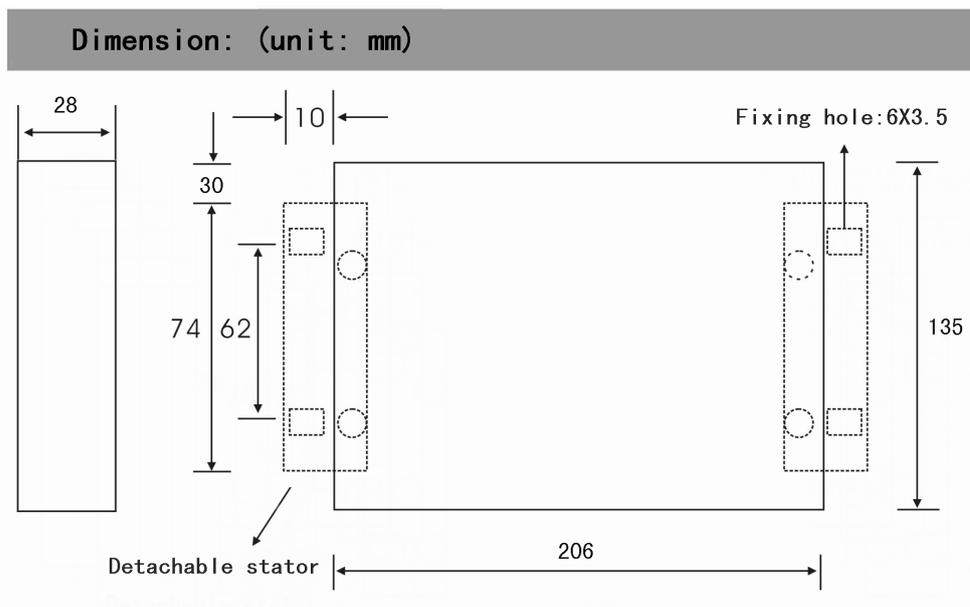
The router must be installed correctly to make it work properly.

Warning: Forbid to install the router when powered!

2.2 Encasement List

| Name | Quantity | Remark |
|-----------------------------|----------|----------|
| Router host | 1 | |
| Cellular antenna (Male SMA) | 2 | |
| 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:

SIM/UIM-1: For the main link

SIM/UIM-2: For the backup link

| Model | SIM/UIM Type |
|------------------------------------|--|
| F7B30 GPS+TD-SCDMA/TD-SCDMA ROUTER | SIM/UIM-1: TD-SCDMA (main link) SIM/UIM-2: TD-SCDMA (backup link) |
| F7B31 GPS+EVDO/EVDO ROUTER | SIM/UIM-1: EVDO(main link)) SIM/UIM-2: EVDO(backup link) |
| F7B32 GPS+WCDMA/WCDMA ROUTER | SIM/UIM-1: WCDMA(main link) SIM/UIM-2: WCDMA(backup link) |
| F7B33 GPS+WCDMA/EVDO ROUTER | SIM/UIM-1: EVDO(main link)) SIM/UIM-2: WCDMA(backup link)) |
| F7B34 GPS+EVDO/TD-SCDMA ROUTER | SIM/UIM-1: EVDO (main link) SIM/UIM-2: TD-SCDMA (backup link) |

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:

ANT-1: For the main link

ANT-2: For the backup link

Screw the SMA male pins of the two cellular antennas to the female SMA interfaces of the router with sign “ANT-1” and “ANT-2”.

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

Warning: The cellular antenna and 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", "Online-1", "Online-2", "Local Network", "WAN", "GPS", “Signal Strength”.

| Indicator | State | Introduction |
|-----------|-------|--------------|
|-----------|-------|--------------|

| | | |
|-----------------|-----------------|---|
| Light | | |
| Power | ON | Router is powered on |
| | OFF | Router is powered off |
| System | BLINK | System works properly |
| | OFF | System does not work |
| Online-1 | ON | The main link has logged on network |
| | OFF | The main link hasn't logged on network |
| Online-2 | ON | The backup link has logged on network |
| | OFF | The backup link hasn't logged on network |
| Local Network | OFF | The corresponding interface of switch is not connected |
| | ON / BLINK | The corresponding interface of switch is connected /Communicating |
| WAN | OFF | The interface of WAN is not connected |
| | ON / BLINK | The interface of WAN is connected /Communicating |
| GPS | ON | GPS is active |
| | OFF | GPS is not 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

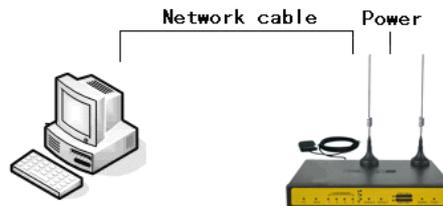
The router has a “Reset” button to restore it to its original factory default settings. When user press the “Reset” button for up to 15s, the router will restore to its original factory default settings and restart automatically.

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 (192.168.1.1).

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 192.168.1.1 on address bar, then press the bottom 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.

Router Management

Your Router is currently not protected and uses an unsafe default username and password combination, please change it using the following dialog!

Router Password

Router Username:

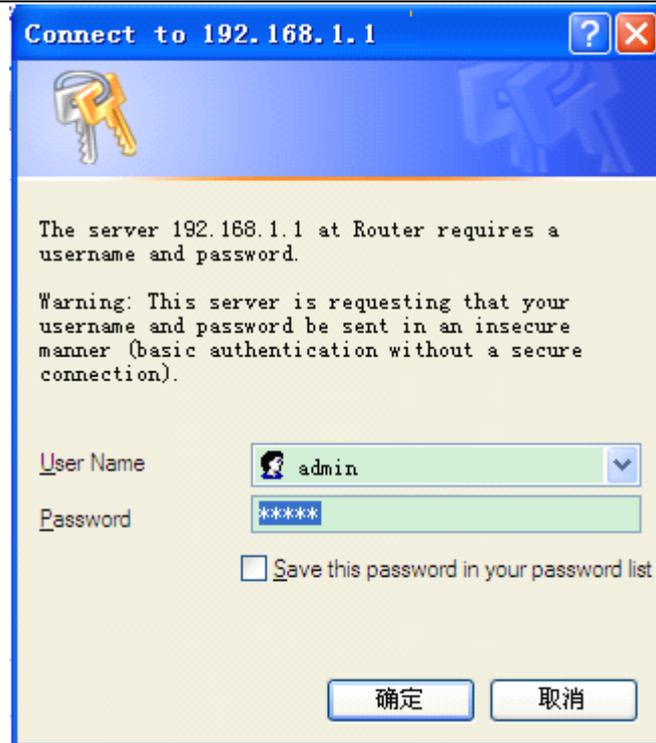
Router Password:

Re-enter to confirm:

After access to the information main page

| Menu | System Information | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------------|-----------------------------|---------|-----------------|-------------------|------------------|-------------------|-------------|-------------------|----------|-------------------|--------------|-------------------|----------|------------------|-------------|------------------|--------|----------------|----------|--|--|--|--|--|--|--|--|
| Setup Wireless Services VPN Security Access Restrictions NAT QoS Setting Applications Administration Status | <table border="1"> <tr><td colspan="2">Router</td></tr> <tr><td>Router Name</td><td>Four-Faith</td></tr> <tr><td>Router Model</td><td>Four-Faith Router</td></tr> <tr><td>LAN MAC</td><td>00:0C:43:30:52:77</td></tr> <tr><td>WAN MAC</td><td>00:0C:43:30:52:78</td></tr> <tr><td>Wireless MAC</td><td>00:0C:43:30:52:79</td></tr> <tr><td>WAN IP</td><td>0.0.0.0</td></tr> <tr><td>BKUP WAN IP</td><td>0.0.0.0</td></tr> <tr><td>LAN IP</td><td>192.168.1.1</td></tr> </table> | | Router | | Router Name | Four-Faith | Router Model | Four-Faith Router | LAN MAC | 00:0C:43:30:52:77 | WAN MAC | 00:0C:43:30:52:78 | Wireless MAC | 00:0C:43:30:52:79 | WAN IP | 0.0.0.0 | BKUP WAN IP | 0.0.0.0 | LAN IP | 192.168.1.1 | | | | | | | | | |
| Router | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Router Name | Four-Faith | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Router Model | Four-Faith Router | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LAN MAC | 00:0C:43:30:52:77 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WAN MAC | 00:0C:43:30:52:78 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wireless MAC | 00:0C:43:30:52:79 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WAN IP | 0.0.0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BKUP WAN IP | 0.0.0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LAN IP | 192.168.1.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr><td colspan="2">Services</td></tr> <tr><td>DHCP Server</td><td>Enabled</td></tr> <tr><td>ff-radauth</td><td>Disabled</td></tr> <tr><td>USB Support</td><td>Enabled</td></tr> </table> | | Services | | DHCP Server | Enabled | ff-radauth | Disabled | USB Support | Enabled | | | | | | | | | | | | | | | | | | | |
| Services | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DHCP Server | Enabled | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ff-radauth | Disabled | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| USB Support | Enabled | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr><td colspan="2">Memory</td></tr> <tr><td>Total Available</td><td>59.7 MB / 64.0 MB</td></tr> <tr><td>Free</td><td>36.1 MB / 59.7 MB</td></tr> <tr><td>Used</td><td>23.7 MB / 59.7 MB</td></tr> <tr><td>Buffers</td><td>2.6 MB / 23.7 MB</td></tr> <tr><td>Cached</td><td>8.6 MB / 23.7 MB</td></tr> <tr><td>Active</td><td>1.3 MB / 23.7 MB</td></tr> <tr><td>Inactive</td><td>2.0 MB / 23.7 MB</td></tr> </table> | | Memory | | Total Available | 59.7 MB / 64.0 MB | Free | 36.1 MB / 59.7 MB | Used | 23.7 MB / 59.7 MB | Buffers | 2.6 MB / 23.7 MB | Cached | 8.6 MB / 23.7 MB | Active | 1.3 MB / 23.7 MB | Inactive | 2.0 MB / 23.7 MB | | | | | | | | | | | |
| Memory | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Available | 59.7 MB / 64.0 MB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Free | 36.1 MB / 59.7 MB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Used | 23.7 MB / 59.7 MB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Buffers | 2.6 MB / 23.7 MB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cached | 8.6 MB / 23.7 MB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Active | 1.3 MB / 23.7 MB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inactive | 2.0 MB / 23.7 MB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr><td colspan="2">Wireless</td></tr> <tr><td>Radio</td><td>Radio is On</td></tr> <tr><td>Mode</td><td>AP</td></tr> <tr><td>Network</td><td>Mixed</td></tr> <tr><td>SSID</td><td>four-faith</td></tr> <tr><td>Channel</td><td>6 (2437 MHz)</td></tr> <tr><td>TX Power</td><td>71 mW</td></tr> <tr><td>Rate</td><td>72 Mb/s</td></tr> </table> | | Wireless | | Radio | Radio is On | Mode | AP | Network | Mixed | SSID | four-faith | Channel | 6 (2437 MHz) | TX Power | 71 mW | Rate | 72 Mb/s | | | | | | | | | | | |
| Wireless | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radio | Radio is On | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mode | AP | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Network | Mixed | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SSID | four-faith | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel | 6 (2437 MHz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TX Power | 71 mW | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rate | 72 Mb/s | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr><td colspan="2">Wireless Packet Info</td></tr> <tr><td>Received (RX)</td><td>51 OK, no error</td></tr> <tr><td>Transmitted (TX)</td><td>0 OK, no error</td></tr> </table> | | Wireless Packet Info | | Received (RX) | 51 OK, no error | Transmitted (TX) | 0 OK, no error | | | | | | | | | | | | | | | | | | | | | |
| Wireless Packet Info | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Received (RX) | 51 OK, no error | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transmitted (TX) | 0 OK, no error | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Wireless | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr><td colspan="9">Clients</td></tr> <tr> <th>MAC Address</th> <th>Interface</th> <th>Uptime</th> <th>TX Rate</th> <th>RX Rate</th> <th>Signal</th> <th>Noise</th> <th>SNR</th> <th>Signal Quality</th> </tr> <tr><td colspan="9" style="text-align: center;">- None -</td></tr> </table> | | Clients | | | | | | | | | MAC Address | Interface | Uptime | TX Rate | RX Rate | Signal | Noise | SNR | Signal Quality | - None - | | | | | | | | |
| Clients | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MAC Address | Interface | Uptime | TX Rate | RX Rate | Signal | Noise | SNR | Signal Quality | | | | | | | | | | | | | | | | | | | | | |
| - None - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DHCP | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr><td colspan="4">DHCP Clients</td></tr> <tr> <th>Host Name</th> <th>IP Address</th> <th>MAC Address</th> <th>Client Lease Time</th> </tr> <tr><td colspan="4" style="text-align: center;">- None -</td></tr> </table> | | DHCP Clients | | | | Host Name | IP Address | MAC Address | Client Lease Time | - None - | | | | | | | | | | | | | | | | | | |
| DHCP Clients | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Host Name | IP Address | MAC Address | Client Lease Time | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - None - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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 root, 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

DUAL LINK OPTION

DUAL LINK OPTION

Enable WAN Failover Enable Disable

Dual Both Online Enable Disable

[Load Balancer](#)

Enable dual link option to enable dual both online router. Click disable means to enable only

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single link (main link), and backup link does not enable to work. If clink enable, then there are configure options for dual both online:

Enable: All default data will be sent via main link to Internet when main link is online. If main link is offline and backup link is online, then it will switch to backup link, and default data will send via backup link to Internet network. Meanwhile, main link is trying to reconnect, the transfer will turn back to main link if it reconnect successful. In general, working mode come first, backup link is to backup.

Note: If both sim are online and enable load balancer and load shunt, detailed data movement please refer to the menu of load Arrange

Disable: only one link can work between main link and backup link. If main link is online, it uses main link. If main link is offline, it switches to backup link. If main link is online again, it will not switch to main link. Only backup link is offline can it switch to main link.

Note: when users enable dual link option, they need to configure relevant keep online function if connection type of main link and backup link is 'Static IP' or 'DHCP'. Detailed configuration refer to Keep Online section. Connection type of main link and backup link forbid to be the same, and not under the same Ethernet port. For example, main link is 'Static IP', 'DHCP', or 'PPPOE', backup link must be 3G Link 1 or 3G Link 2, otherwise the page will appear corresponding hint.

Connection Type

Seven Ways: Disabled, Static IP, Automatic Configuration-DHCP, PPPOE, 3G Link 1, 3G Link 2

Disabled

Connection Type

Forbid the setting of WAN port connection type

Static IP

Connection Type

WAN IP Address

Subnet Mask

Gateway

Static DNS 1

Static DNS 2

Static DNS 3

WAN IP Address: Users set IP address by their own or ISP assigns

Subnet Mask: Users set subnet mask by their own or ISP assigns

Gateway: Users set gateway by their own or ISP assigns

Static DNS1/DNS2/DNS3: Users set static DNS by their own or ISP assigns

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Automatic Configuration-DHCP

Connection Type Automatic Configuration - DHCP ▾

IP address of WAN port gets automatic via DHCP

PPPOE

Connection Type PPPoE ▾

User Name

Password Unmask

Service Name

PPP Compression (MPPC) Enable Disable

T-Home VDSL VLAN 7/8 Tagging Enable Disable

MPPE Encryption

Single Line Multi Link

User Name: login the Internet

Password: login the Internet

Service Name: provided by ISP server, if not, keep it null

PPP Compression (MPPC): provides a method to negotiation and use of compressed in PPP encapsulation link protocol

T-Home VDSL VLAN 7/8 Tagging: enable to support the front of the modem is vdsl

MPPE Encryption: Microsoft point to point encryption. It is used to encrypt the point-to-point link connection agreement of the encrypted data packet

Single Line Multi Link: enable single line link or disable multi link

3G Link 1

Connection Type 3G/UMTS/4G/LTE ▾

User Name

Password Unmask

Dial String *99***1# (UMTS/3G/3.5G) ▾

APN

PIN Unmask

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

3G Link 2

| | | |
|-----------------|--|---------------------------------|
| Connection Type | <input type="text" value="3G/UMTS/4G/LTE"/> | |
| User Name | <input type="text"/> | |
| Password | <input type="text"/> | <input type="checkbox"/> Unmask |
| Dial String | <input type="text" value="*99***1# (UMTS/3G/3.5G)"/> | |
| APN | <input type="text"/> | |
| PIN | <input type="text"/> | <input type="checkbox"/> Unmask |

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

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

| | |
|-----------------------------|--|
| Keep Online Detection | <input type="text" value="Ping"/> |
| Detection Interval | <input type="text" value="60"/> Sec. |
| Primary Detection Server IP | <input type="text" value="166"/> . <input type="text" value="111"/> . <input type="text" value="8"/> . <input type="text" value="238"/> |
| Backup Detection Server IP | <input type="text" value="202"/> . <input type="text" value="119"/> . <input type="text" value="32"/> . <input type="text" value="102"/> |

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 Enable Disable

Time :

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

Time: needed time to reconnect

Enable Dial Failure to Restart Enable Disable (Default: 10 minutes)

Enable Dial Failure to Restart: If the dial failure will be in the default time to restart

STP

STP Enable Disable

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

Host Name

Domain Name

MTU

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

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modes)

Router Internal Network Settings

Router IP

| | | | | |
|------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|
| Local IP Address | <input type="text" value="192"/> | <input type="text" value="168"/> | <input type="text" value="1"/> | <input type="text" value="1"/> |
| Subnet Mask | <input type="text" value="255"/> | <input type="text" value="255"/> | <input type="text" value="255"/> | <input type="text" value="0"/> |
| Gateway | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |
| Local DNS | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |

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 | <input type="text" value="DHCP Server"/> |
| DHCP Server | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Start IP Address | 192.168.1. <input type="text" value="100"/> |
| Maximum DHCP Users | <input type="text" value="50"/> |
| Client Lease Time | <input type="text" value="1440"/> minutes |
| Static DNS 1 | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> |
| Static DNS 2 | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> |
| Static DNS 3 | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> |
| WINS | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> |
| Use DNSMasq for DHCP | <input checked="" type="checkbox"/> |
| Use DNSMasq for DNS | <input checked="" type="checkbox"/> |
| DHCP-Authoritative | <input checked="" type="checkbox"/> |

DHCP Type: DHCP Server and DHCP Forwarder

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

DHCP Type

DHCP Server ...

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 Enable Disable

Time Zone

Summer Time (DST)

Server IP/Name

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

Adjust Time

Auto

Adjust Time: Auto and Manual way. Manual way needs to enter the time. Auto way is to get the time from PC web, click the bottom of setting to modify system time, has system adjust time service. They can change to adjust time by manual to achieve adjust time by the system if the system fails to get NTP server

After modify, click '**Save**' is to change but not take effect, click '**Apply Setting**' to take effect the change or click '**Cancel Changes**' to cancel it. Help information is on the right side of the page.

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.

DDNS Service

User Name

Password Unmask

Host Name

Type

Wildcard

Do not use external ip check Yes No

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

10

(Default: 10 Days, Range: 1 - 60)

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

Status

DDNS Status

```
Fri Nov 25 13:58:32 2011: INADYN: Started 'INADYN Advanced version 1.96-ADV' - dynamic DNS updater.
Fri Nov 25 13:58:32 2011: INADYN: IP read from cache file is '192.168.8.222'. No update required.
Fri Nov 25 13:58:32 2011: I:INADYN: IP address for alias 'testsixin.3322.org' needs update to '192.168.8.38'
Fri Nov 25 13:58:33 2011: I:INADYN: Alias 'testsixin.3322.org' to IP '192.168.8.38' updated successfully.
```

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

MAC Clone

Enable Disable

Clone LAN(VLAN) MAC

Clone WAN MAC

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

Operating Mode

Operating Mode

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

Interface

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

Static Routing

Select set number

Route Name

Metric

Destination LAN NET

Subnet Mask

Gateway

Interface

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

| Routing Table Entry List | | | |
|--------------------------|-----------------|-------------|------------|
| Destination LAN NET | Subnet Mask | Gateway | Interface |
| 192.168.1.1 | 255.255.255.255 | 0.0.0.0 | WAN |
| 192.168.1.0 | 255.255.255.0 | 0.0.0.0 | LAN & WLAN |
| 192.168.1.0 | 255.255.255.0 | 0.0.0.0 | WAN |
| 169.254.0.0 | 255.255.0.0 | 0.0.0.0 | WAN |
| 0.0.0.0 | 0.0.0.0 | 192.168.1.1 | LAN & WLAN |

3.3.1.5 VLANs

VLAN

| VLAN | Port | | | | | Assigned To Bridge |
|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------------------------------------|
| | W | 1 | 2 | 3 | 4 | |
| 0 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | LAN <input type="button" value="v"/> |
| 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 2 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 3 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 4 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 5 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 6 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 7 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 8 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 9 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 10 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 11 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 12 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 13 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 14 | <input type="checkbox"/> | None <input type="button" value="v"/> |
| 15 | <input type="checkbox"/> | None <input type="button" value="v"/> |

VLANs function is to divide different VLAN ports by users' will. The system supports 16 VLAN port from VLAN0-VLAN15. However there is only 5 time ports (1 WAN port and 4 LAN port) divided by users themselves, and LAN port and WAN port disable to divide into one VLAN port meanwhile.

3.3.1.6 Networking

Bridging

Create Bridge

Bridge 0 STP Prio MTU

Assign to Bridge

Current Bridging Table

| Bridge Name | STP enabled | Interfaces |
|-------------|-------------|-------------|
| br0 | no | vlan0 v1an1 |

Bridging-Create Bridge: creates a new empty network bridge for later use. STP means Spanning Tree Protocol and with PRIO users are able to set the bridge priority order. The lowest number has the highest priority.

Bridging - Assign to Bridge: allows users to assign any valid interface to a network bridge. Consider setting the Wireless Interface options to Bridged if they want to assign any Wireless Interface here. Any system specific bridge setting can be overridden here in this field.

Current Bridging Table: shows current bridging table

Create steps as below:

Click 'Add' to create a new bridge, configuration is as below:

Create Bridge

Bridge 0 STP Prio MTU

Bridge 1 STP Prio MTU

Create bridge option: the first br0 means bridge name. STP means to on/off spanning tree protocol. Prio means priority level of STP, the smaller the number, the higher the level. MTU means maximum transfer unit, default is 1500, delete if it is not need. And then click 'Save' or 'Add'. Bride properties is as below:

Create Bridge

Bridge 0 STP Prio MTU

Bridge 1 STP Prio MTU

IP Address ...

Subnet Mask ...

Enter relewant bridge IP address and subnet mask, click 'Add' to create a bridge.

Note: Only create a bridge can apply it.

Assign to Bridge

Assignment 0 Interface Prio

- none
- br0
- br1

Assign to Bridge option: to assign different ports to created bridge. For example: assign port (wireless port) is vlan1 in br1 bridge as below:

Prio means priority level: work if multiple ports are within the same bridge. The smaller the number, the higher the level. Click 'Add' to take it effect.

Note: corresponding interface of WAN ports interface should not be binding, this bridge function is basically used for LAN port, and should not be binding with WAN port

If bind success, bridge binding list in the list of current bridging table is as below:

Current Bridging Table

| Bridge Name | STP enabled | Interfaces |
|-------------|-------------|------------|
| br0 | no | vlan0 |
| br1 | yes | vlan1 |

To make br1 bridge has the same function with DHCP assigned address, users need to set multiple DHCP function, see the introduction of multi-channel DHCPD:

Port Setup

Network Configuration eth2 Unbridged Default

Network Configuration vlan0 Unbridged Default

Network Configuration vlan1 Unbridged Default

Network Configuration apcl0 Unbridged Default

Network Configuration wds0 Unbridged Default

Network Configuration wds1 Unbridged Default

Network Configuration wds2 Unbridged Default

Network Configuration wds3 Unbridged Default

Network Configuration br0 Unbridged Default

Port Setup: Set the port property, the default is not set

| | | | |
|-----------------------|---|--|-------------------------------|
| Network Configuration | vlan1 | <input checked="" type="radio"/> Unbridged | <input type="radio"/> Default |
| MTU | <input type="text" value="1500"/> | | |
| Multicast forwarding | <input type="radio"/> Enable <input checked="" type="radio"/> Disable | | |
| Masquerade / NAT | <input checked="" type="radio"/> Enable <input type="radio"/> Disable | | |
| IP Address | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> | | |
| Subnet Mask | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> | | |

Choose not bridge to set the port's own properties, detailed properties are as below:

MTU: maximum transfer unit

Multicast forwarding: enable or disable multicast forwarding

Masquerade/NAT: enable or disable Masquerade/NAT

IP Address: set vlan1's IP address, and do not conflict with other ports or bridge

Subnet Mask: set the port's subnet mask

Multiple DHCP Server

| | | | | | | | | |
|---------------------------------------|------------------------------------|---------------------------------|-------|----------------------------------|-----|---------------------------------|-----------|-----------------------------------|
| DHCP 0 | <input type="text" value="vlan1"/> | <input type="text" value="On"/> | Start | <input type="text" value="100"/> | Max | <input type="text" value="50"/> | Leasetime | <input type="text" value="3600"/> |
| <input type="button" value="Delete"/> | | | | | | | | |
| <input type="button" value="Add"/> | | | | | | | | |

Multiple DHCPD: using multiple DHCP service. Click 'Add' in multiple DHCP server to appear relevant configuration. The first means the name of port or bridge (do not be configured as eth0), the second means whether to on DHCP. Start means start address, Max means maximum assigned DHCP clients, Leasetime means the client lease time, the unit is second, click 'Save' or 'Apply' to put it into effect after setting.

Note: Only configure and click 'Save' can configure the next, can not configure multiple DHCP at the same time.

3.3.2 Services

3.3.2.1 Services

DHCP Client

DHCP Client

| | |
|-----------------|----------------------|
| Set Vendorclass | <input type="text"/> |
| Request IP | <input type="text"/> |

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 **Xiamen Four-Faith Communication Technology Co.,Ltd.**

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Add: J1-J3,3rdFloor,No.44,GuanRiRoad,SoftWare Park,XiaMen .361008.China

http: //www.fourfaith.com Tel: +86 592-6300326 6300325 6300324 Fax: +86 592-5912735

DHCP client running the operating system 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.

DHCP Server

Use JFFS2 for client lease DB (Not mounted)

Use NVRAM for client lease DB

Used Domain WAN ▾

LAN Domain

Additional DHCPd Options

Static Leases

| MAC Address | Host Name | IP Address | Client Lease Time |
|----------------------|----------------------|----------------------|------------------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> minutes |

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.

DNSMasq

DNSMasq Enable Disable

Local DNS Enable Disable

No DNS Rebind Enable Disable

Additional DNSMasq Options

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

SNMP

SNMP Enable Disable

Location

Contact

Name

RO Community

RW Community

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

Secure Shell

| | | |
|--------------------|---|--|
| SShd | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| SSH TCP Forwarding | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable |
| Password Login | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| Port | <input type="text" value="22"/> | (Default: 22) |
| Authorized Keys | <input type="text"/> | |

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

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

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.

System Log

| | | |
|-----------------|---|-------------------------------|
| Syslogd | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| Syslog Out Mode | <input checked="" type="radio"/> Net | <input type="radio"/> ConSOLE |
| Remote Server | <input type="text"/> | |

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

| | | |
|--------|---|-------------------------------|
| Telnet | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
|--------|---|-------------------------------|

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

WAN Traffic Counter

ttraff Daemon Enable Disable

Ttraff Daemon: enable or disable wan traffic counter function

3.3.2.2 PPPoE Server

PPPoE Server

PPPoE Server

RP-PPPoE Server Daemon Enable Disable

RP-PPPoEServer Daemon: enable or disable PPPoE server

RP-PPPoEServer Options

RP-PPPoE Server Options

| | | |
|---------------------------|--|---------------------------|
| RP-PPPoE Server Interface | LAN | |
| Client IP(s) | 192.168.1.10-100 | |
| Deflate Compression | <input type="checkbox"/> | |
| BSD Compression | <input type="checkbox"/> | |
| LZS Stac Compression | <input type="checkbox"/> | |
| MPPC Compression | <input type="checkbox"/> | |
| MPPE PPPoE Encryption | <input type="checkbox"/> | |
| Session Limit per MAC | 10 | (Default: 10) |
| LCP Echo Interval | 5 | (Default: 5) |
| LCP Echo Failure | 12 | (Default: 12) |
| Idle Time | 0 | (Default: 0 = Deactivate) |
| Authentication | <input type="radio"/> Radius <input checked="" type="radio"/> Local User Management (CHAP Secrets) | |

PPPOE Server Interface: 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)

Local User Management (CHAP Secrets)

| User | Password | IP Address | Enable |
|----------------------|----------------------|------------|--------------------------|
| <input type="text"/> | <input type="text"/> | 0.0.0.0 | <input type="checkbox"/> |

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 Authentication

| | | |
|----------------------------|--|-----------------|
| Radius Server IP | <input type="text" value="192.168.1.1"/> | |
| Radius Authentication Port | <input type="text" value="1812"/> | (Default: 1812) |
| Radius Accounting Port | <input type="text" value="1813"/> | (Default: 1813) |
| Radius Shared Key | <input type="password" value="....."/> | |

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

PPTP Server

PPTP Server Enable Disable

Broadcast support Enable Disable

Force MPPE Encryption Enable Disable

DNS1

DNS2

WINS1

WINS2

Server IP

Client IP(s)

CHAP-Secrets

Broadcast support: enable or disable broadcast support of PPTP server

Force MPPE Encryption: enable or 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

PPTP Client

| | |
|-----------------------|---|
| PPTP Client Options | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Server IP or DNS Name | <input type="text"/> |
| Remote Subnet | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> |
| Remote Subnet Mask | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> |
| MPPE Encryption | <input type="text" value="mppe required"/> |
| MTU | <input type="text" value="1450"/> (Default: 1450) |
| MRU | <input type="text" value="1450"/> (Default: 1450) |
| NAT | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Fixed IP | <input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable |
| Fixed IP Address | <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> |
| User Name | <input type="text" value="DOMAIN\\Username"/> |
| Password | <input type="password"/> <input type="checkbox"/> Unmask |

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

Fixed IP: Enable or Disable Fixed IP

Fixed IP Address: Fixed IP Address

User Name: user name to login PPTP Server.

Password: password to log into PPTP Server.

3.3.3.2 L2TP

L2TP Server

| | |
|-----------------------|---|
| L2TP Server Options | <input checked="" type="checkbox"/> Enable <input type="checkbox"/> Disable |
| Force MPPE Encryption | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Server IP | <input type="text"/> |
| Client IP(s) | <input type="text"/> |
| CHAP-Secrets | <input type="text"/> |

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

L2TP Client

L2TP Client Options Enable Disable

User Name

Password Unmask

Gateway (L2TP Server)

Remote Subnet

Remote Subnet Mask

MPPE Encryption

MTU (Default: 1450)

MRU (Default: 1450)

NAT Enable Disable

Fixed IP Enable Disable

Fixed IP Address

Require CHAP Yes No

Refuse PAP Yes No

Require Authentication Yes No

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

Fixed IP: Enable or Disable Fixed IP

Fixed IP Address: Fixed IP Address

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 System

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

Config via GUI Config File

Server mode Router (TUN) Bridge (TAP)

Config via: GUI----Page configuration, Config File----config File configuration

Server mode: Router (TUN)-route mode, Bridge (TAP)----bridge mode

Router (TUN):

Network
 Netmask

Network: network address allowed by OPENVPN server

Netmask: netmask allowed by OPENVPN server

Bridge (TAP):

DHCP-Proxy mode Enable Disable
 Pool start IP
 Pool end IP
 Gateway
 Netmask

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 (Default: 1194)
 Tunnel Protocol
 Encryption Cipher
 Hash Algorithm

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

| | | |
|------------------------------------|---|--|
| Advanced Options | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| Use LZO Compression | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable |
| Redirect default Gateway | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable |
| Allow Client to Client | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| Allow duplicate cn | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable |
| TUN MTU Setting | <input type="text" value="1500"/> | (Default: 1500) |
| MSS-Fix/Fragment across the tunnel | <input type="text"/> | (Default: Disable) |
| TLS Cipher | <input type="text" value="Disable"/> | |
| Client connect script | <input type="text"/> | |

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 Cert: CA certificate

Public Server Cert

Public Server Cert: server certificate

Private Server Key

DH PEM

Private Server Key: the key seted by the server

DH PEM: PEM of the server

| | |
|-------------------------|---|
| Additional Config | <div style="border: 1px solid #ccc; height: 130px; width: 100%;"></div> |
| CCD-Dir DEFAULT file | <div style="border: 1px solid #ccc; height: 30px; width: 100%;"></div> |
| TLS Auth Key | <div style="border: 1px solid #ccc; height: 30px; width: 100%;"></div> |
| Certificate Revoke List | <div style="border: 1px solid #ccc; height: 30px; width: 100%;"></div> |

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 | <input type="text" value="0.0.0.0"/> | |
| Port | <input type="text" value="1194"/> | (Default: 1194) |
| Tunnel Device | <input type="text" value="TUN"/> | |
| Tunnel Protocol | <input type="text" value="UDP"/> | |
| Encryption Cipher | <input type="text" value="Blowfish CBC"/> | |
| Hash Algorithm | <input type="text" value="SHA1"/> | |
| nsCertType verification | <input type="checkbox"/> | |

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

| | | |
|------------------------------------|---|--|
| Advanced Options | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| Use LZO Compression | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable |
| NAT | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable |
| Bridge TAP to br0 | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable |
| Local IP Address | <input type="text"/> | |
| TUN MTU Setting | <input type="text" value="1500"/> | (Default: 1500) |
| MSS-Fix/Fragment across the tunnel | <input type="text"/> | (Default: Disable) |
| TLS Cipher | <input type="text" value="Disable"/> | |
| TLS Auth Key | <input type="text"/> | |
| Additional Config | <input type="text"/> | |
| Policy based Routing | <input type="text"/> | |

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 | <input type="text"/> |
| Public Client Cert | <input type="text"/> |
| Private Client Key | <input type="text"/> |

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.

Connection status and control

| Name | Type | Common Name | status | Action |
|------------------------------------|------|-------------|--------|--------|
| <input type="button" value="Add"/> | | | | |

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

Type

Type

IPSEC role Client Server

Connection: this part contains basic address information of the tunnel

Connection

| | | | |
|---------------------|--|---------------------|-------------------------------------|
| Name | <input type="text"/> | Enabled | <input checked="" type="checkbox"/> |
| Local WAN Interface | vlan1 <input type="button" value="v"/> | Remote Host address | <input type="text"/> |
| Local Subnet | <input type="text"/> | Remote subnet | <input type="text"/> |
| Local Id | <input type="text"/> | Remote ID | <input type="text"/> |

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. 192.168.1.0/24; this option can not fill in if using transfer mode

Remote Subnet: IPsec opposite end protects subnet and subnet mask, i.e.192.168.7.0/24; 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

Detection

Enable DPD Detection

Time Interval (S) Timeout (S) Action

Enable 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.

Advanced Settings

Enable advanced settings

IKE Encryption IKE Integrity IKE Groupype

IKE Lifetime hours

ESP Encryption ESP Integrity

ESP Keylife hours

IKE+ESP: Use only proposed settings.

IKE aggressive mode allowed. Avoid if possible (preshared key is transmitted in clear text)!

Perfect Forward Secrecy (PFS)

Negotiate payload compression

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

IKE Encryption: IKE phased encryption mode

IKE Integrity: IKE phased integrity solution

IKE Groupype: 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.

Authentication

Use a Pre-Shared Key:

Generate and use the X.509 certificate

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

GRE Tunnel Enable Disable

GRE Tunnel: enable or disable GRE function

| | |
|------------------|--|
| Number | <input type="text" value="1 (fff)"/> <input type="button" value="Delete"/> |
| Status | <input type="text" value="Enable"/> |
| Name | <input type="text" value="fff"/> |
| Through | <input type="text" value="PPP"/> |
| Peer Wan IP Addr | <input type="text" value="120.42.46.98"/> |
| Peer Subnet | <input type="text" value="192.168.5.0/24"/> (eg:192.168.1.0/24) |
| Peer Tunnel IP | <input type="text" value="200.200.200.1"/> |
| Local Tunnel IP | <input type="text" value="200.200.200.5"/> |
| Local Netmask | <input type="text" value="255.255.255.0"/> |

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: 192.168.1.0/24

Peer Tunnel IP: The remote tunnel ip address

Local Tunnel IP: The local tunnel ip address

Local Netmask: Netmask of local network

| | |
|-------------|---|
| Keepalive | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Retry times | <input type="text"/> |
| Interval | <input type="text"/> |
| Fail Action | <input type="text" value="Hold"/> |

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

GRE Tunnels list

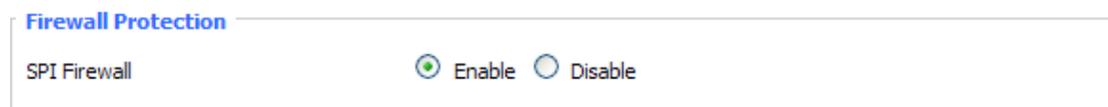
| Number | Name | Enable | Through | Peer Wan IP Addr | Peer Subnet | Peer Tunnel IP | Local Tunnel IP | Local Netmask | Keepalive | Retry times | Interval | Fail Action |
|--------|------|--------|---------|------------------|----------------|----------------|-----------------|---------------|-----------|-------------|----------|-------------|
| 1 | fff | Yes | PPP | 120.42.46.98 | 192.168.5.0/24 | 200.200.200.1 | 200.200.200.5 | 255.255.255.0 | No | 0 | 0 | Hold |

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.

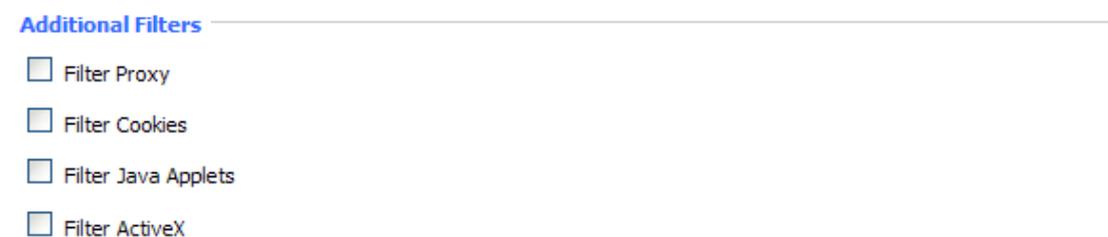
Firewall Protection



The screenshot shows the 'Firewall Protection' section of a web interface. It features a sub-section titled 'SPI Firewall' with two radio buttons: 'Enable' (which is selected) and 'Disable'.

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



The screenshot shows the 'Additional Filters' section with four unchecked checkboxes: 'Filter Proxy', 'Filter Cookies', 'Filter Java Applets', and 'Filter ActiveX'.

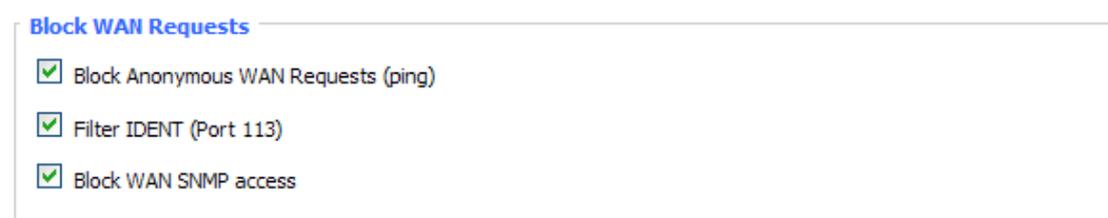
Filter Proxy: Wan proxy server may reduce the security of the gateway, Filtering Proxy will refuse any access to any wan proxy server. Click the check box to enable the function otherwise disabled.

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



The screenshot shows the 'Block WAN Requests' section with three checked checkboxes: 'Block Anonymous WAN Requests (ping)', 'Filter IDENT (Port 113)', and 'Block WAN SNMP access'.

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 scanned 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

Impede WAN DoS/Bruteforce

Limit SSH Access

Limit Telnet Access

Limit PPTP Server Access

Limit L2TP Server Access

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

Log Enable Disable

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

Log

Log Enable Disable

Log Level

Options

Dropped

Rejected

Accepted

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.

Incoming Log Table

| Source IP | Protocol | Destination Port Number | Rule |
|---|----------|-------------------------|------|
| <input type="button" value="Refresh"/> <input type="button" value="Close"/> | | | |

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 |
| 192.168.1.164 | 183.60.49.20 | 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.

Virtual Private Network (VPN)

VPN Passthrough

| | | |
|-------------------|---|-------------------------------|
| IPSec Passthrough | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| PPTP Passthrough | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |
| L2TP Passthrough | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable |

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.

Access Policy

| | | | |
|---|---|--|---------|
| Policy | 1 () | Delete | Summary |
| Status | <input type="radio"/> Enable | <input checked="" type="radio"/> Disable | |
| Policy Name | <input type="text"/> | | |
| PCs | Edit List of clients | | |
| <input type="radio"/> Deny | Internet access during selected days and hours. | | |
| <input checked="" type="radio"/> Filter | | | |

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

| | | | | | | | |
|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Everyday | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Times

24 Hours

From 00:00 To 00:00

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

| | | |
|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |

Website Blocking by Keyword

| | | | |
|----------------------|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

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

List of clients

Enter MAC Address of the clients in this format: xx:xx:xx:xx:xx:xx

| | |
|--------|-------------------|
| MAC 01 | 00:AA:BB:CC:DD:EE |
| MAC 02 | 00:00:00:00:00:00 |
| MAC 03 | 00:00:00:00:00:00 |
| MAC 04 | 00:00:00:00:00:00 |
| MAC 05 | 00:00:00:00:00:00 |
| MAC 06 | 00:00:00:00:00:00 |
| MAC 07 | 00:00:00:00:00:00 |
| MAC 08 | 00:00:00:00:00:00 |

Enter the IP Address of the clients

| | | |
|-------|------------|----|
| IP 01 | 192.168.1. | 15 |
| IP 02 | 192.168.1. | 0 |
| IP 03 | 192.168.1. | 0 |
| IP 04 | 192.168.1. | 0 |
| IP 05 | 192.168.1. | 0 |
| IP 06 | 192.168.1. | 0 |

Enter the IP Range of the clients

| | | | | | | | | |
|-------------|------|------|----|-----|-----|-----|---|----|
| IP Range 01 | 192. | 168. | 1. | 19~ | 192 | 168 | 1 | 30 |
| IP Range 02 | 0. | 0. | 0. | 0~ | 0 | 0 | 0 | 0 |

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 24 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 Disable

Policy

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

Add Filter Rule

Direction

Protocol

Source Ports -

Destination Ports -

Source IP . . . /

Destination IP . . . /

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](#).

Forwards

| Application | Protocol | Source Net | Port from | IP Address | Port to | Enable |
|-------------|----------|--------------|-----------|--------------|---------|-------------------------------------|
| web | TCP | 192.168.8.11 | 8000 | 192.168.1.12 | 80 | <input checked="" type="checkbox"/> |
| ftp | Both | 192.168.8.12 | 24 | 192.168.1.12 | 21 | <input checked="" type="checkbox"/> |

- 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 192.168.1.0/24).
- 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](#).

Port Range Forward

Forwards

| Application | Start | End | Protocol | IP Address | Enable |
|-------------|-------|-------|----------|--------------|-------------------------------------|
| web-tftp | 800 | 8100 | Both ▼ | 192.168.1.16 | <input checked="" type="checkbox"/> |
| game | 9000 | 10000 | Both ▼ | 192.168.1.16 | <input checked="" type="checkbox"/> |

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 see by users on the Internet and forwarded to your PC.

End: Enter the number of the last port of the range you want to see 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.

Port Triggering

Forwards

| Application | Triggered Port Range | | Protocol | Forwarded Port Range | | Enable |
|-------------|----------------------|-------|----------|----------------------|-----|-------------------------------------|
| | Start | End | | Start | End | |
| web | 8000 | 10000 | Both ▼ | 20 | 800 | <input checked="" type="checkbox"/> |

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.

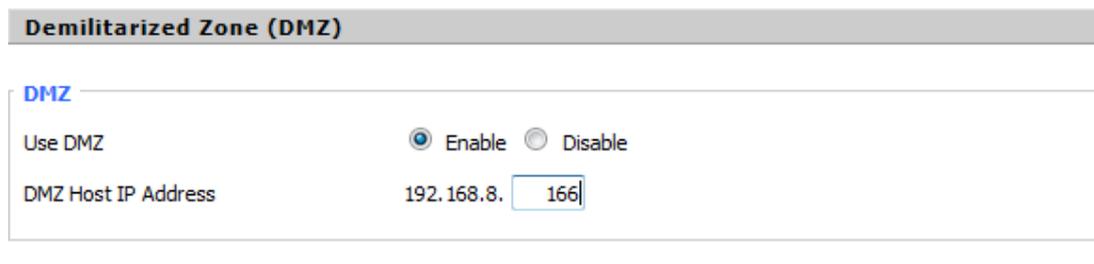
Forwarded Port Range: Enter the number of the first and the last port of the range, which should be forwarded from the Internet to the PC, which has triggered the Triggered Range.

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.

Main WAN QoS Settings

Start QoS Enable Disable

Port

Packet Scheduler

Uplink (kbps)

Downlink (kbps)

Bkup WAN QoS Settings

Start QoS Enable Disable

Port

Packet Scheduler

Uplink (kbps)

Downlink (kbps)

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

Netmask Priority

| Delete | IP/Mask | Priority |
|--------------------------|---|----------|
| <input type="checkbox"/> | 192.168.1.1/24 | Exempt |
| <input type="checkbox"/> | 192.168.2.3/24 | Standard |
| <input type="checkbox"/> | 192.168.3.4/32 | Express |
| <input type="checkbox"/> | 192.168.4.5/32 | Bulk |
| | <input type="button" value="Add"/> <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> / <input type="text" value="0"/> | |

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

3.3.7.3 Load Arrange

Load Shunt

Load Shunt

Load Shunt

| Delete | Source Net | Destintaion Net | Protocol | Source Ports | Destination Ports | WAN |
|--------|------------|-----------------|----------|--------------|-------------------|--------|
| Add | 0.0.0.0/0 | 0.0.0.0/0 | tcp | 1- 65535 | 1- 65535 | Main ▼ |

This part is for limit data stream to access the Internet via the link (main link or backup link). When data stream is compliance with the rules in the list, it will access the Internet by setted link, if the link does not exist, data stream will be accessed by another link

When a data stream conforms to the rule, it will use specified link of last rule.

When you enable load balancer function, data streams that corresponding to shunt list rules still access the Internet according to the links of the list rules, regardless of the proportion of data stream.

Load Balancer

Load Balancer

Load Balancer

Enable
 Disable

Relative : WAN1:WAN2 weighted ratio :

Relative
 Absolute

Assuming that the bandwidth of main and backup links were Akbps with Bkps.

When load balancer is disabled, and data streams do not comply with shunt list, then it will only use main link to access the Internet. Only when main link is down, will it use backup link.

When enable load balancer, data streams that do not meet the shunt list will use main and backup link. If the ratio is A: B (recommended ratio), then total bandwidth is (A + B) kbps. If it is A: 0, the data will only use main link, total bandwidth remains A kbp; if it is 0: B, the data will only use backup link, total bandwidth is B kbp.

When you select 'Relative' way, the unit of load balancer is socket connection, a socket connection fixed using a link.

When selecting "absolute" mode, the unit of load balancer is data packet, the device receives 1st data, main link will be used, 2nd data using backup link, 3rd data using main link, 4th data using backup link, cycle in this order.

Note: fill in the proportion of two co-prime integers, and the smaller for both value, the better. Assume that main link was 390kbp, backup link was 130kbp, then recommended ratio is 3:1, instead of 390:130 or 39:13 and others. If main and backup link is 400kbps and 130kbps, best ratio is 40:13. You had better further divide it to achieve the best result, rough ratio is 3.07:1, can get the ratio as 3:1.

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.

Serial Applications

Serial Applications Enable Disable

Baudrate

Databit

Stopbit

Parity

Flow Control

Protocol

Server Address

Server Port

Device Number

Device Id

Heartbeat Interval

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 | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| GPS Output Interface | <input checked="" type="checkbox"/> Net <input checked="" type="checkbox"/> Console |
| Protocol | TCP <input type="button" value="v"/> |
| GPS Center Address | <input type="text" value="0.0.0.0"/> |
| GPS Center Listening Port | <input type="text" value="5001"/> |
| GPS Information Update Interval | <input type="text" value="60"/> |
| GPS Speed Threshold | <input type="text" value="0"/> |
| Device ID | <input type="text" value="12345678"/> <input checked="" type="checkbox"/> Append the device ID to the tail of gps information |
| GPS Information Contents | <input checked="" type="checkbox"/> GPRMC <input checked="" type="checkbox"/> GPGBA <input checked="" type="checkbox"/> GPVTG <input checked="" type="checkbox"/> GPGSA <input checked="" type="checkbox"/> GPGSV <input checked="" type="checkbox"/> GPGLL |

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 Threshold: The GPS speed threshold 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:

| | |
|--------------|----------|
| Baudrate | 115200 ▼ |
| Databit | 8 ▼ |
| Stopbit | 1 ▼ |
| Parity | None ▼ |
| Flow Control | None ▼ |

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.

Router Password

| | |
|---------------------|-------|
| Router Username | |
| Router Password | |
| Re-enter to confirm | |

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 root.

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).

Web Access

| | |
|-------------------------------|---|
| Protocol | <input checked="" type="checkbox"/> HTTP <input type="checkbox"/> HTTPS |
| Auto-Refresh (in seconds) | 3 |
| Enable Info Site | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Info Site Password Protection | <input type="checkbox"/> Enabled |

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

| | | |
|--------------------|---|-----------------------------------|
| Web GUI Management | <input checked="" type="radio"/> Enable <input type="radio"/> Disable | |
| Use HTTPS | <input type="checkbox"/> | |
| Web GUI Port | <input type="text" value="8088"/> | (Default: 8088, Range: 1 - 65535) |
| SSH Management | <input checked="" type="radio"/> Enable <input type="radio"/> Disable | |
| SSH Remote Port | <input type="text" value="22"/> | (Default: 22, Range: 1 - 65535) |
| Telnet Management | <input type="radio"/> Enable <input checked="" type="radio"/> Disable | |

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

| | |
|----------------------|---|
| Cron | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Additional Cron Jobs | <input type="text"/> |

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

Language Selection

| | |
|----------|--------------------------------------|
| Language | <input type="text" value="English"/> |
|----------|--------------------------------------|

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

3.3.9.2 Keep Alive

Schedule Boot&Shutdown

Schedule Boot&Shutdown

Schedule Boot&Shutdown Enable Disable

Match Day Weekday Days Weekdays

Shutdown Time 00 : 00

Shutdown Date * - 01 Sunday - Sunday

Boot Time 00 : 00

Boot Date * - 01 Everyday - Sunday

User can set schedule boot & shutdown the router

Set shutdown time, shutdown date, boot time and boot date in relevant match settings.

Schedule Reboot

Schedule Reboot

Schedule Reboot Enable Disable

Interval (in seconds) 3600

At a set Time 00 : 00 Sunday

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.

Command Shell

Commands

Run Commands
Save Startup
Save Shutdown
Save Firewall

Save Custom Script

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

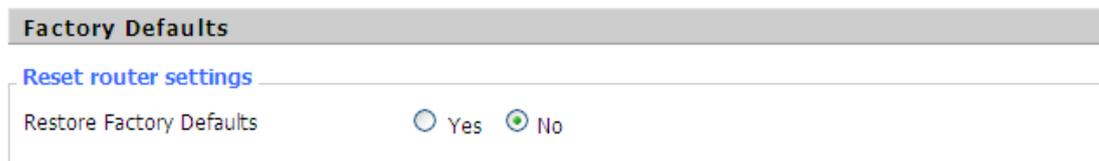
Startup: You can save some command lines to be executed at startup's router. Fill the text area with commands (only one command by row) and click Save Startup.

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

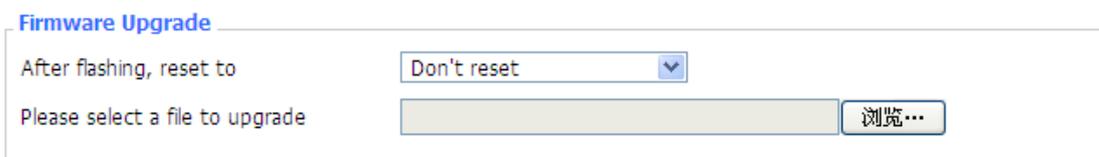


Reset router settings: Click the Yes button to reset all configuration settings to their default values. Then click the Apply Settings button.

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.

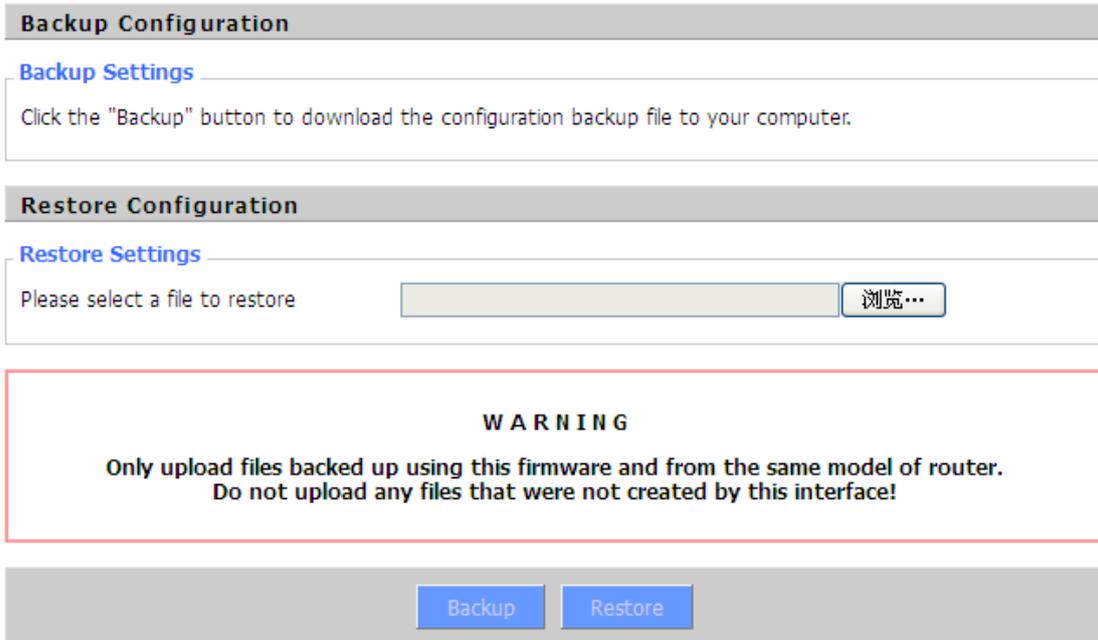
Note:

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 Configuration

Backup Settings

Click the "Backup" button to download the configuration backup file to your computer.

Restore Configuration

Restore Settings

Please select a file to restore 浏览...

WARNING

Only upload files backed up using this firmware and from the same model of router.
Do not upload any files that were not created by this interface!

Backup Restore

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

System

| | |
|------------------|---|
| Router Name | Four-Faith |
| Router Model | Four-Faith Router |
| Firmware Version | F393x v2.0 (Jul 17 2012 19:40:10) std - build 235 |
| MAC Address | <u>00:0C:43:30:52:78</u> |
| Host Name | |
| WAN Domain Name | |
| LAN Domain Name | |
| Current Time | Wed, 18 Jul 2012 11:42:04 |
| Uptime | 28 min |

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

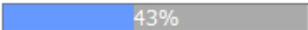
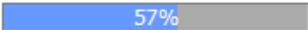
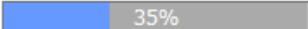
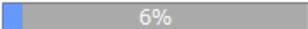
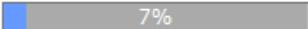
WAN Domain Name: domain name of WAN, setting→basic setting to modify

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

Memory

| | | |
|-----------------|---------------------|---|
| Total Available | 28880 kB / 32768 kB |  88% |
| Free | 12436 kB / 28880 kB |  43% |
| Used | 16444 kB / 28880 kB |  57% |
| Buffers | 1660 kB / 16444 kB |  10% |
| Cached | 5708 kB / 16444 kB |  35% |
| Active | 963 kB / 16444 kB |  6% |
| Inactive | 1118 kB / 16444 kB |  7% |

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

Network

| | | |
|-------------------------|------|---|
| IP Filter Maximum Ports | 4096 | |
| Active IP Connections | 43 | <div style="width: 1%; background-color: #ccc; border: 1px solid #ccc;"></div> 1% |

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 |
| 31 | TCP | 74 | 192.168.1.120 | 192.168.1.1 | | 80 TIME_WAIT |

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 | Automatic Configuration - DHCP |
| Connection Uptime | Not available |

Connection Type: disabled, static IP, automatic configuration-DHCP, 3G Link 1, 3G Link 2

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

Remaining Lease Time 0 days 23:38:43

[DHCP Release](#)

[DHCP Renew](#)

Remaining Lease Time: remaining lease time of IP address in DHCP way

DHCP Release: release DHCP address

DHCP Renew: renew IP address in DHCP way, default is 1 day

Login Status

Disconnected

[Connect](#)

Login Status: connection status of WAN

Disconnection: disconnect

Connection: connect

Module Type

ANYDATA-EVDO MODULE



Signal Status

-51 dBm

Network

CDMA/HDR

Module Type: module type in 3G/UMTS way

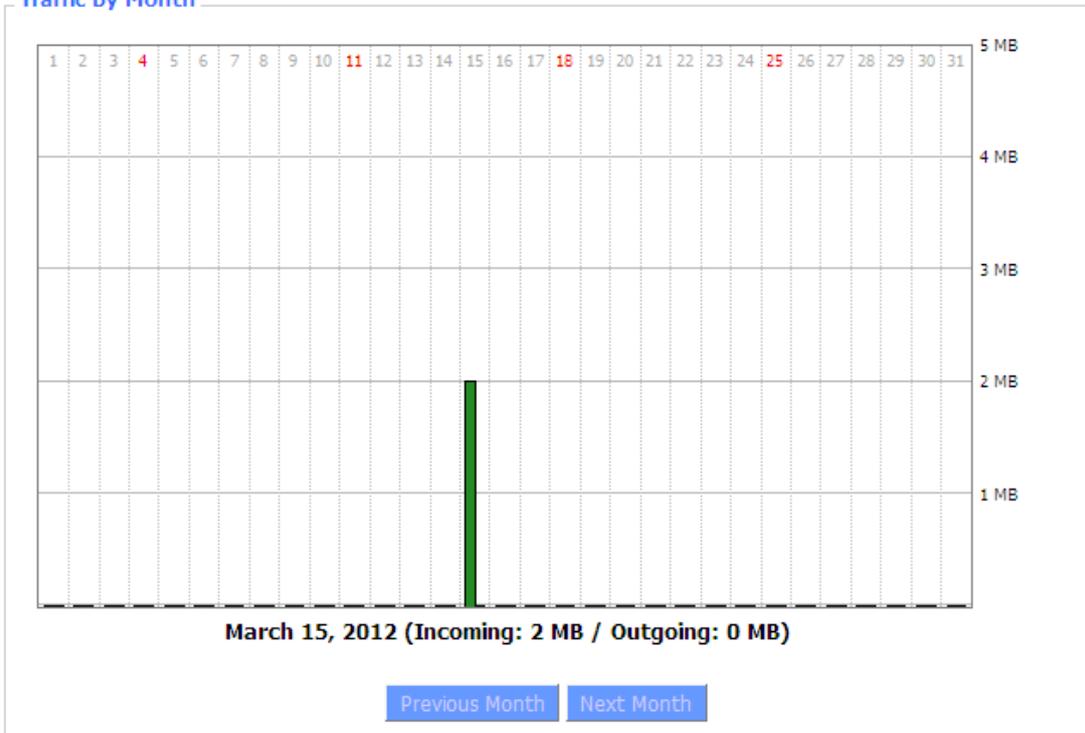
Signal Status: signal intensity of the module in 3G/UMTS way

Network: network type of the module in 3G/UMTS way

Total Traffic

| | |
|-------------------|---|
| Incoming (MBytes) | 0 |
| Outgoing (MBytes) | 0 |

Traffic by Month



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

Data Administration

Backup
Restore
Delete

Backup: backup data administration

Restore: restore data administration

Delete: delete data administration

3.3.10.3 BKUP WAN

| | |
|-------------------|--------------------------------|
| Connection Type | Automatic Configuration - DHCP |
| Connection Uptime | Not available |

Connection Type: disabled, static IP, automatic configuration-DHCP, 3G Link 1, 3G Link 2

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

Xiamen Four-Faith Communication Technology Co.,Ltd.

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

Remaining Lease Time 0 days 23:38:43

DHCP Release

DHCP Renew

Remaining Lease Time: remaining lease time of IP address in DHCP way

DHCP Release: release DHCP address

DHCP Renew: renew IP address in DHCP way, default is 1 day

Login Status

Disconnected

Connect

Login Status: connection status of WAN

Disconnection: disconnect

Connection: connect

Module Type

ANYDATA-EVDO MODULE



Signal Status

-51 dBm

Network

CDMA/HDR

Module Type: module type in 3G/UMTS way

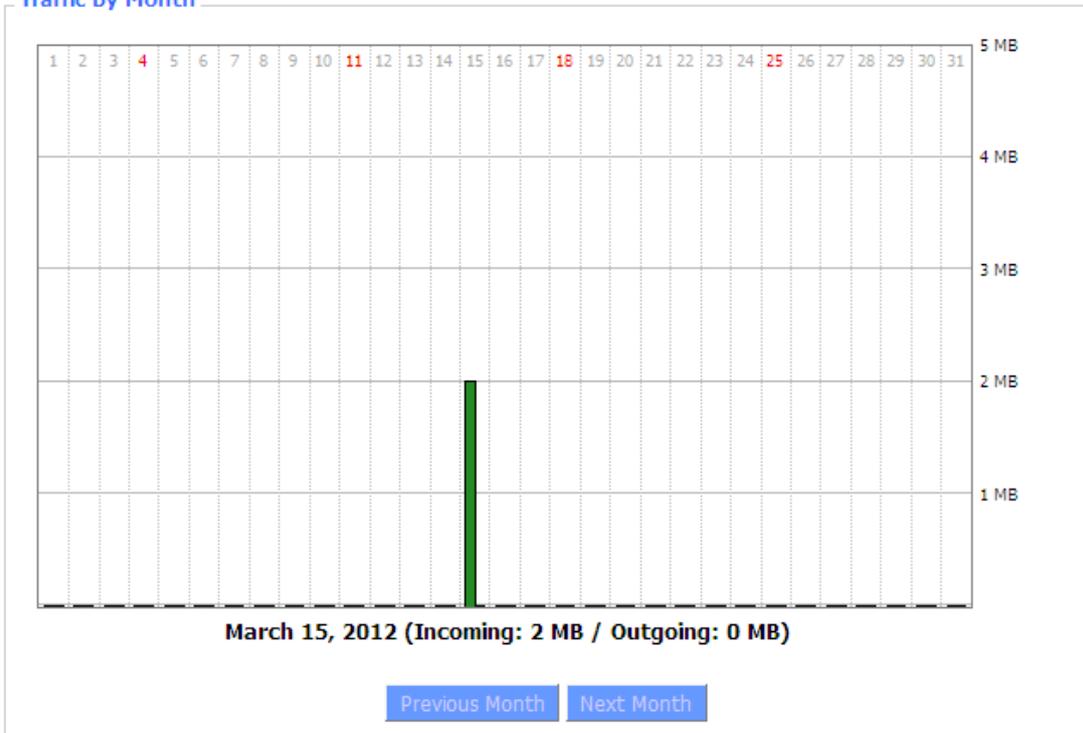
Signal Status: signal intensity of the module in 3G/UMTS way

Network: network type of the module in 3G/UMTS way

Total Traffic

| | |
|-------------------|---|
| Incoming (MBytes) | 0 |
| Outgoing (MBytes) | 0 |

Traffic by Month



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

Data Administration

Backup Restore Delete

Backup: backup data administration

Restore: restore data administration

Delete: delete data administration

3.3.10.4 LAN

LAN Status

| | |
|-------------|--------------------------|
| MAC Address | <u>00:0C:43:30:52:77</u> |
| IP Address | 192.168.1.1 |
| Subnet Mask | 255.255.255.0 |
| Gateway | 0.0.0.0 |
| Local DNS | 0.0.0.0 |

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

Active Clients

| Host Name | IP Address | MAC Address | Conn. Count | Ratio [4096] |
|-----------|---------------|--------------------------|-------------|--------------|
| * | 192.168.1.120 | <u>10:78:D2:98:C9:46</u> | 57 | 1% |

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

Dynamic Host Configuration Protocol

DHCP Status

| | |
|-------------------|---------------|
| DHCP Server | Enabled |
| DHCP Daemon | uDHCpD |
| Start IP Address | 192.168.1.100 |
| End IP Address | 192.168.1.149 |
| Client Lease Time | 1440 minutes |

DHCP 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

DHCP Clients

| Host Name | IP Address | MAC Address | Client Lease Time | Delete |
|-----------------|---------------|--------------------------|-------------------|---|
| PC-201011161332 | 192.168.1.142 | <u>00:21:5C:33:4D:29</u> | 1 day 00:00:00 |  |
| jack-lincw | 192.168.1.117 | <u>44:37:E6:3F:45:54</u> | 1 day 00:00:00 |  |
| * | 192.168.1.149 | <u>00:0C:E7:00:00:00</u> | 1 day 00:00:00 |  |

- 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
- Delete:** click to delete DHCP client

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

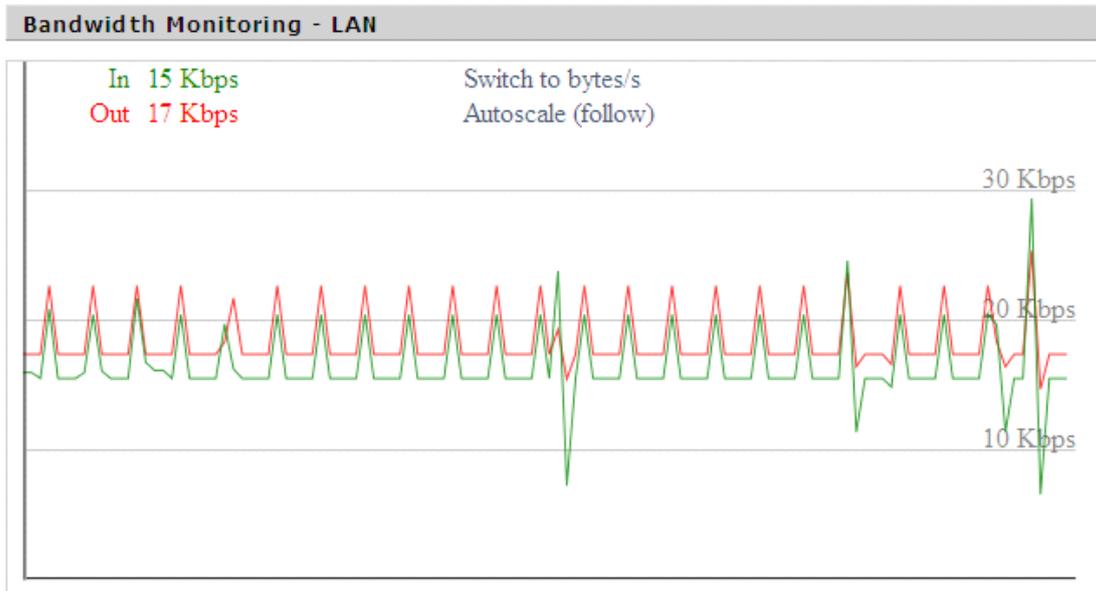
User Name: user name of the client

Local IP: tunnel IP address of PPTP client

Remote IP: IP address of PPTP client

Delete: click to delete PPTP client

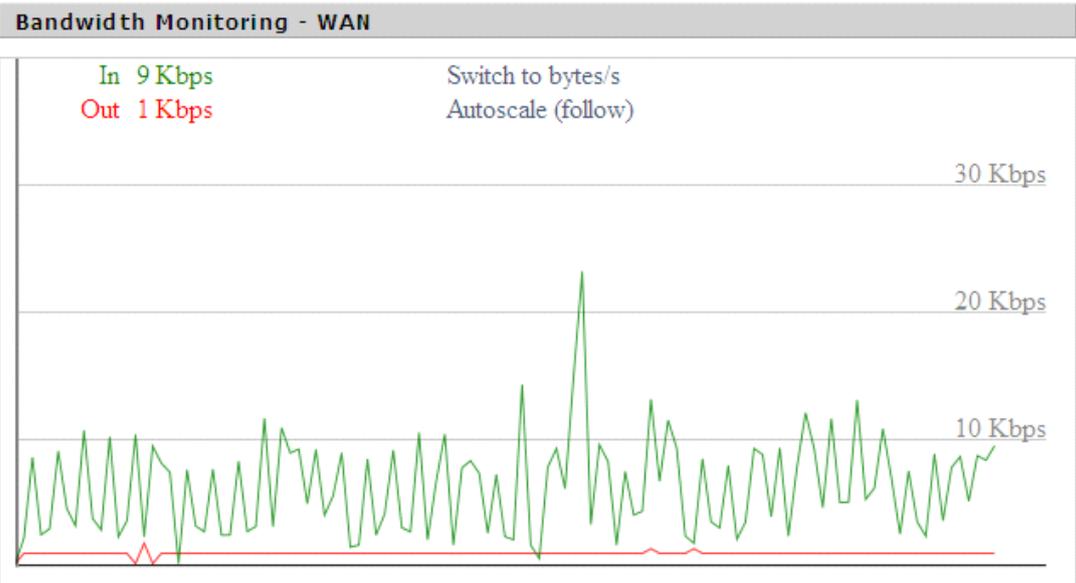
3.3.10.5 Bandwidth



Bandwidth Monitoring-LAN Graph

abscissa axis: time

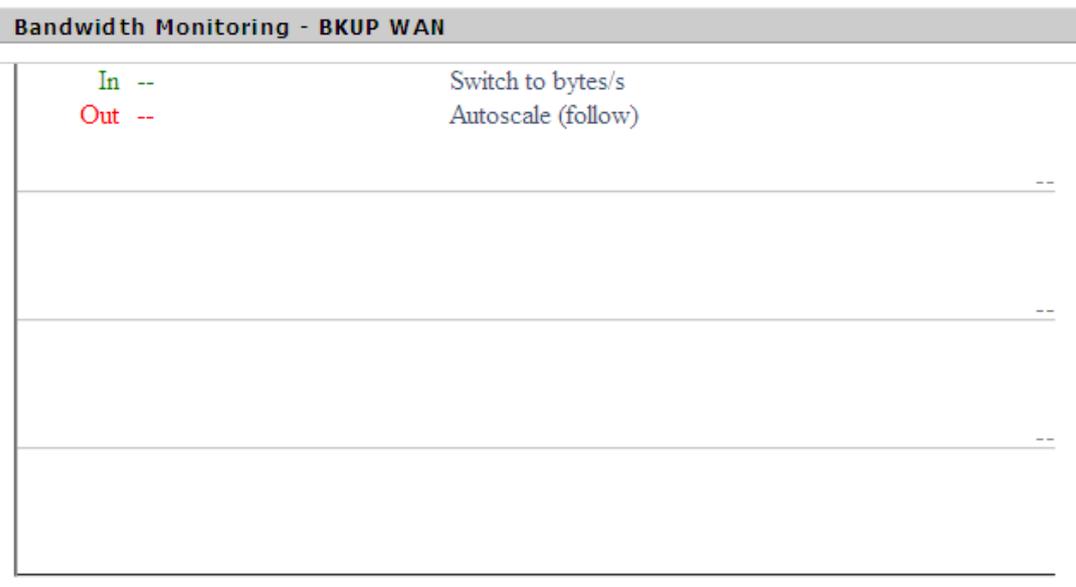
vertical axis: speed rate



Bandwidth Monitoring-WAN Graph

abscissa axis: time

vertical axis: speed rate



Bandwidth Monitoring-BKUP WAN Graph

abscissa axis: time

vertical axis: speed rate

3.3.10.6 Sys-Info

Router

| | |
|--------------|--------------------------|
| Router Name | Router |
| Router Model | Four-Faith Router |
| LAN MAC | <u>00:0C:43:72:54:02</u> |
| WAN MAC | <u>00:0C:43:72:54:03</u> |
| WAN IP | 10.37.53.74 |
| BKUP WAN IP | 0.0.0.0 |
| LAN IP | 192.168.1.1 |

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 Main WAN port

BKUP WAN IP: IP address of bkup WAN port

LAN IP: IP address of LAN port

Services

| | |
|-------------|----------|
| DHCP Server | Enabled |
| ff-radauth | Disabled |
| USB Support | Disabled |

DHCP Server: enabled or disabled

ff-radauth: enabled or disabled

USB Support: enabled or disabled

Memory

| | |
|-----------------|-------------------|
| Total Available | 28.2 MB / 32.0 MB |
| Free | 11.2 MB / 28.2 MB |
| Used | 17.0 MB / 28.2 MB |
| Buffers | 1.8 MB / 17.0 MB |
| Cached | 6.3 MB / 17.0 MB |
| Active | 1.5 MB / 17.0 MB |
| Inactive | 0.8 MB / 17.0 MB |

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

DHCP

DHCP Clients

| Host Name | IP Address | MAC Address | Expires |
|-----------------|---------------|-------------------|----------------|
| * | 192.168.1.143 | xx:xx:xx:xx:DD:45 | 1 day 00:00:00 |
| four-488e1df5fa | 192.168.1.125 | xx:xx:xx:xx:D8:F7 | 1 day 00:00:00 |
| Mycenae-PC | 192.168.1.116 | xx:xx:xx:xx:5E:30 | 1 day 00:00:00 |

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

Chapter 4 Appendix

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

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



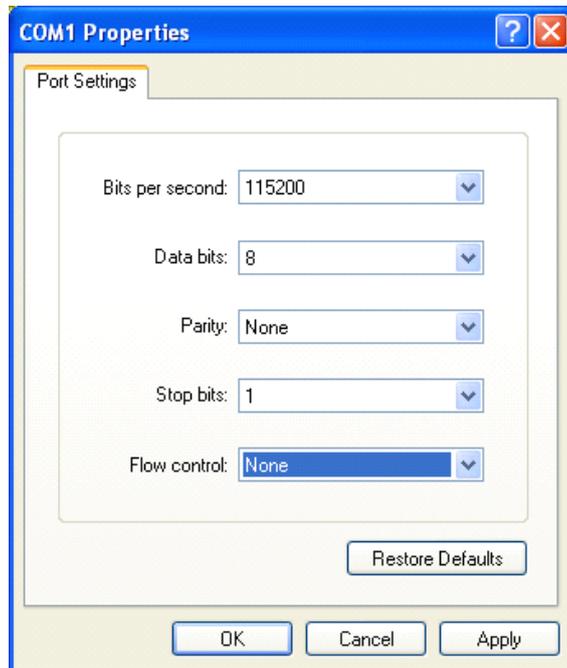
2. Input connection name, choose “OK”
3. Choose the correct COM port which connects to modem, choose “OK”



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

