A Network Systems Solution
UNICOM™

908 Canada Court
City of Industry, CA 91748 U.S.A.
Phone: 626.964.7873 or 800.346.6668 **Fax:** 626.964.7880
www.unicomlink.com e-mail: info@unicomlink.com

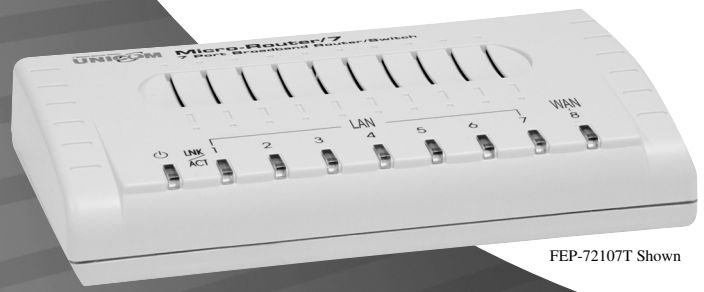
Rev: 07.01

A Network Systems Solution
UNICOM™

Micro-*Router*/4 & 7

Broadband Router / Ethernet Switch

4 Port FEP-72104T
7 Port FEP-72107T



FEP-72107T Shown

USER'S MANUAL

NAT (Network Address Translation)

An IETF standard that allows an organization to present itself to the Internet with far fewer IP addresses than there are nodes on its internal network. The NAT technology, which is typically implemented in a router, converts the private IP addresses (such as in the 10.0.0.0 range) of the node on the internal private network to one IP address or one of several IP addresses for the public Internet.

NAT not only conserves public IP addresses, but it also serves as a firewall by keeping internal addresses hidden from the outside world. Implementations also often include port address translation (PAT), which can alter the port numbers in the header, adding another level of differentiation.

PPPoE (Point-to-Point Protocol Over Ethernet)

A standard for incorporating the popular PPP protocol, widely used for dial-up Internet connections, into a cable modem connection that uses Ethernet as its transport to the carrier's facilities. Used by a large number of cable modem providers, PPPoE supports the protocol layers and authentication widely used in PPP and enables a point-to-point connection to be established in the normally multipoint architecture of Ethernet.

PPTP (Point-to-Point Tunneling Protocol)

A protocol from Microsoft that is used to create a virtual private network (VPN) over the Internet. It uses encryption based on RSA's RC4, known as Microsoft Point-to-Point Encryption (MPPE). Remote users can access their corporate networks via any ISP that supports PPTP on its servers.

SUA Single User Account (SUA)

Allows multiple workstations on your LAN to access the Internet for the price of an individual account. SUA accomplishes this through a mechanism called Network Address Translation (NAT) that makes your whole LAN appear as a single host to the Internet. You may hear other names such as “IP masquerading” or “IP sharing”, but basically they mean the same thing.

If your ISP assigns you no address at all or only one IP address, then you have a single user account, and so you must enable SUA.

You can designate one inside server machine on your LAN to be accessible to the outside world under SUA. Please note that this one machine can host multiple services, e.g., you can run a web server, an FTP server and a telnet server all on one machine. SUA offers the added benefit of firewalling if you do not define a server.

TFTP (Trivial File Transfer Protocol)

A version of the TCP/IP FTP protocol that has no directory or password capability.

UPnP (Universal Plug aNd Play)

A set of standards for interoperability of networking devices from Microsoft and the UPnP Forum. UPnP extends the Plug and Play concept to network devices so that they can be installed and set up without manual intervention. For example, the UPnP Internet Gateway specification enables residential Internet gateways to be automatically configured to handle multiple PCs in a home network.

Quick Find

➟ ***for the easiest setup, go to page 11***

➟ ***for Advanced setup, go to page 16***

➟ ***For NAT Server setup, go to page 25***

➟ ***for Current System Settings, go to page 33***

Table of Contents

Package Contents 3

INTRODUCTION 4

Hardware Features 4

Software Features 5

HARDWARE DESCRIPTION. 6

Upper View 6

Rear Panel 6

Default Button 6

LED Indicators. 7

Desktop Installation 7

Preparing your Network 7

Hardware Setup 8

WEB MANAGEMENT 9

Login to Web Management Interface 9

Browser Configuration 9

Logout the System. 10

Online Help 10

Wizard Setup 11

Changing the Password. 12

Default Settings 16

Advanced Configuration. 16

System Configuration 17

General Setting 17

DDNS Configuration 17

Password Setting 18

Time Zone Setting 19
LAN Configuration 20
Setup DHCP server 20
LAN Setting 21
WAN Configuration 21
ISP Setup 21
WAN Interface Configuration 24
MAC Address Configuration 25
NAT Configuration 25
Configure Static Route 26
Filter Configuration 28
Generic Filter 28
TCP/IP Filter 30
UPnP Configuration 32
Install UPnP on Windows XP 32
Checking the UPnP installation 32
Configure UPnP 32
System Maintenance 33
Status 33
DHCP Table 34
F/W Upload 34
Configuration 35
Reset to Default 35
Backup Configuration 35
Restore Previous Configuration 35
TROUBLESHOOTING 36
TECHNICAL SPECIFICATION 44
Specifications 44
GLOSSARY 45

For full coverage of your warranty, be sure to register your product using the enclosed registration card.

GLOSSARY

DNS (Domain Name System)

Name resolution software that lets users locate computers on a UNIX network or the Internet (TCP/IP network) by domain name. The DNS server maintains a database of domain names (host names) and their corresponding IP addresses. In this hypothetical example, if www.mycompany.com were presented to a DNS server, the IP address 204.0.8.51 would be returned.

DDNS (Dynamic DNS)

The ability to automatically update a DNS server when an IP address is automatically assigned (typically from DHCP) to a network device.

DHCP (Dynamic Host Configuration Protocol)

Software that automatically assigns IP addresses to client stations logging onto a TCP/IP network. It eliminates having to manually assign permanent IP addresses. DHCP software typically runs in servers and is also found in network devices such as ISDN routers and modem routers that allow multiple users access to the Internet. Newer DHCP servers dynamically update the DNS servers after making assignments.

IGMP (Internet Group Multicast Protocol)

The protocol that governs the management of multicast groups in a TCP/IP network. To sign up for a multicast group, a Host Membership Report is sent by a user's machine to its nearest routers, which forward that data to routers outside the local network. The routers are kept current by polling the users' machines with Host Membership Query messages.

ISP (Internet service provider)

An organization that provides access to the Internet. Small Internet service providers (ISPs) provide service via modem and ISDN while the larger ones also offer private line hookups (T1, fractional T1, etc.). Customers are generally billed a fixed rate per month, but other charges may apply. For a fee, a Web site can be created and maintained on the ISP's server, allowing the smaller organization to have a presence on the Web with its own domain name. America Online (AOL), Earthlink, and Microsoft Network (MSN), are all ISPs.

Multicast

In communications networks, to transmit a message to multiple recipients at the same time. Multicast is a one-to-many transmission similar to broadcasting, except that multicasting means sending to specific groups, whereas broadcasting implies sending to everybody. When sending large volumes of data, multicast saves considerable bandwidth, because the bulk of the data is transmitted once from its source through major backbones and are multiplied, or distributed out, at switching points closer to the end users.

Physical Specifications

Standards:	IEEE802.3 10Base-T IEEE802.3u 100Base-TX with Auto Negotiation IEEE802.3x Flow Control for full duplex and back pressure for half duplex
Connectors:	LAN: (4) or (7) RJ-45 Ports with N-way auto negotiation and Auto MDIX WAN: (1) RJ-45 Por with N-way auto negotiation and Auto MDI-X
CPU:	32 Bits RISC CPU
ROM:	2 Mb
RAM:	8 Mb
Default Button:	One-push button for factory default setting
LEDs:	LAN: Link/Activity WAN: Link/Activity,
System:	Power
Power:	External power adapter, DC: 9V / 700mA
Dimension:	145mm x 26mm x 85mm
Enclosure:	Plastic
EMI & Safety:	FCC Class B, CE

Package Contents

Package contents include the following:

- Micro-Router (Either 4 Port of 7 Port)
- Quick Start Guide
- Full User's Guide
- DC Power Adapter
- Warranty card

Micro-Router/4 & 7

Full User's Guide

Quick Guide

DC Power Adapter

Warranty Card

IMPORTANT: If any piece is missing or damaged, please contact your local dealer or reseller for service.

For Your Records

Product Name: _____

_____

Serial Number: _____

Date of Purchase: _____

Purchased from: _____

Notes: _____

_____

Introduction

Congratulations on your purchase of UNICOM's Micro-Router/4 or 7. These Broadband Routers/Fast Ethernet Switches are the perfect option to connect a group of PCs to one Internet connection in a home or small office environment. The Micro-Router Series is designed to be powerful yet easy to use.

They include either four or seven 10/100Mbps auto sensing ports with Auto MDIX which lets you connect multiple computers directly to the Router. The Web Management feature provides quick, feature-filled access to the Router via most web browsers and the inclusion of the NAT (Network Address Translation) feature allows multiple users to access the Web for the cost of only one Internet account.

Features

- Conforms to IEEE 802.3, IEEE802.3u, and IEEE802.3x standards
- Four or Seven 10/100Mbps Fast Ethernet LAN ports
- One 10/100Mbps WAN port
- Auto MDIX and N-way Auto Negotiation
- Dynamic and Static DNS Routing
- Advanced NAT features
- Virtual Server
- Supports IGMP v1/ v2
- DHCP Client/Server
- Upgradeable TFTP Firmware
- One-Touch™ default setting
- Web-based Management.
- LED Indicators: LAN: Link/Activity
  WAN: Link/Activity,
  System: Power

Unable to access the internet	1) Ensure all connections are snug. 2) Ensure your Ethernet cables are working properly. 3) Click Advanced, → WAN, → verify your settings (Service type, User name, and Password) 4) Reboot computer and router 5) If error persists, please contact Unicom Tech Support

Troubleshooting

This section is intended to help you solve the most common problems encountered with the **Micro-Router Series** Router/Switches.

Problem	Corrective Action
No LEDs light when router is powered on	1) Make sure that you have the correct 9V DC power adapter connected to the Router and that it is plugged into an appropriate power source. 2) If the error persists, you may have a hardware problem. Please contact your local dealer or reseller.
Cannot access the Router from the LAN	1) Verify that the browser and the browser's URL are correct (192.168.1.1) 2) Verify that your TCP/IP is set to "DHCP Server". 3) Check your Ethernet cable type and connections. Ensure your NIC is functioning properly.
Cannot get a WAN IP address from the ISP	1) The WAN IP is provided after the ISP verifies the MAC address, host name and user ID. 2) Find out the verification method used by your ISP and configure the corresponding fields. 3) If the ISP authenticates the WAN MAC address, click MAINTENANCE → DHCP table to display the router's WAN MAC address. Send it to ISP. 4) If the ISP does not allow you to use a new MAC address, then you may need to spoof (*or clone*) the MAC address from your PC. Click ADVANCED → WAN → MAC table. Spoof the MAC from the LAN as the WAN. We recommend that you configure this menu even if your ISP does not currently require MAC address authentication. 5) If the ISP checks the host name, enter your computer's name in the System Name field in the Wizard Setup

Software Features

Management	Web based management. Configuration file backup and restore. Firmware upload. Back to factory default
NAT Technology	Support 256 connection Multimedia applications support. SUA Server Address Mapping Trigger Port
Internet Multimedia Application Support	Netmeeting, CuSeeMe, IP TV, Quick Time, Real Player, ICQ, and also Internet games, e.g. Quake, Quake II, Quake III, DOOM, Star Craft, etc.
IP Management	DHCP Server
Internet setup	DHCP Client PPPoE, PPTP MAC Clone RoadRunner login
Application	DNS Proxy Dynamic DNS support Internet time calibration
Routing	IP Routing support: UPD, TCP, ICMP, ARP, RIPv1 & RIPv2 Programmable Static Routes, up to 8 route rules. IP Multicast, supports IGMP v1 and v2
Security	IP Protocol Filter RAW Ethernet Packet Filter
Power on Self Test	FLASH SDRAM LAN and WAN
UPnP	Windows XP Compatible

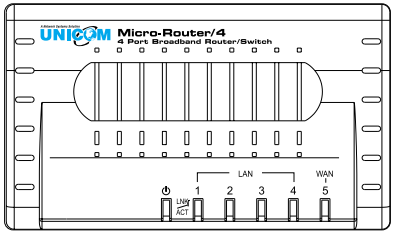
Hardware Description

This Section describes the Router hardware and provides a physical and functional overview.

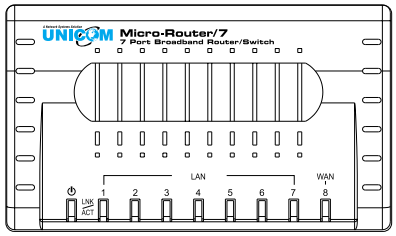
The physical dimensions of both routers are:
145mm x 26mm x 85mm (L x W x H)

Top View

The upper view of the Micro-Routers consists of one 10/100Mbps WAN port, four or seven 10/100Base-TX RJ-45 (Auto MDI/MDIX) Ethernet ports, and a Power LED indicator.

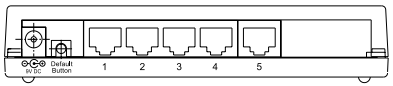


Micro-Router/4

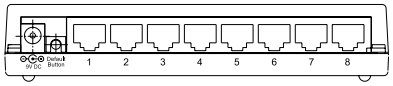


Micro-Router/7

Rear Panel



Micro-Router/4



Micro-Router/7

Connect the female end of the power adapter to the port labeled 9VDC on the rear panel of your Micro-Router.

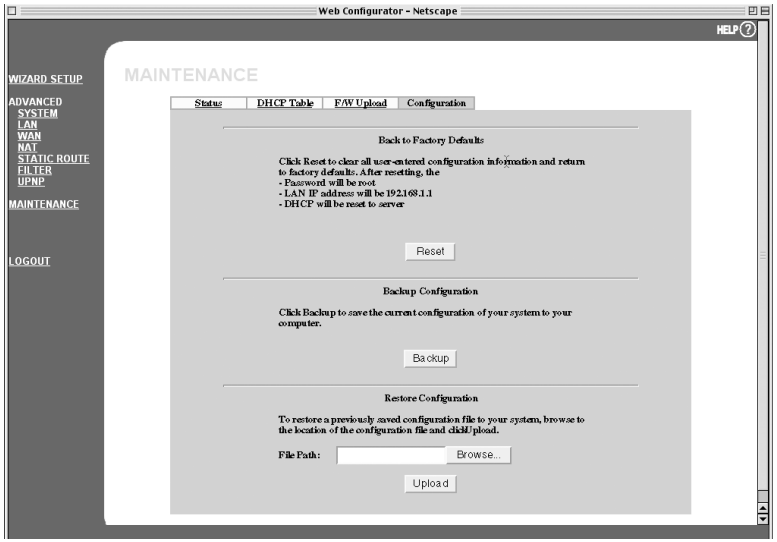
Note: *Use only the included power adapter. Using the wrong adapter may cause damage or injury.*

Default Button

If you forget your password or cannot access the Micro-Router, press the Default button on the rear panel of the Router. This button re-installs the factory configuration file, replacing the current configuration with the Router's default settings. **WARNING:** *All user settings will be deleted.*

Configuration

In the Configuration window, users can reset the Router to its default setting, backup the Router configuration, and restore the previously saved configuration.



Reset to Default

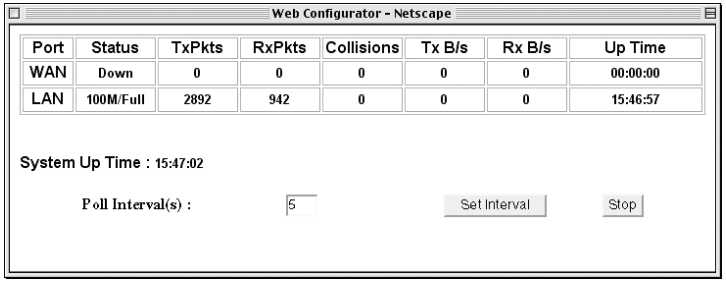
1. Click Reset button.
2. The Router will reboot.

Backup Configuration

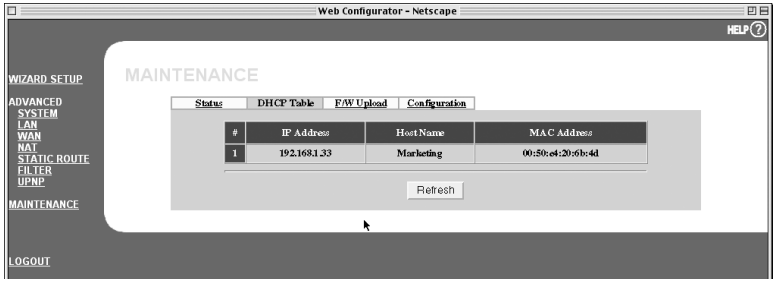
1. Click Backup button.
2. Save the backup file onto your computer hard disk or other storage device.

Restore Previous Configuration

1. Click Browse button to find the previously saved configuration file.
2. Click Upload button.



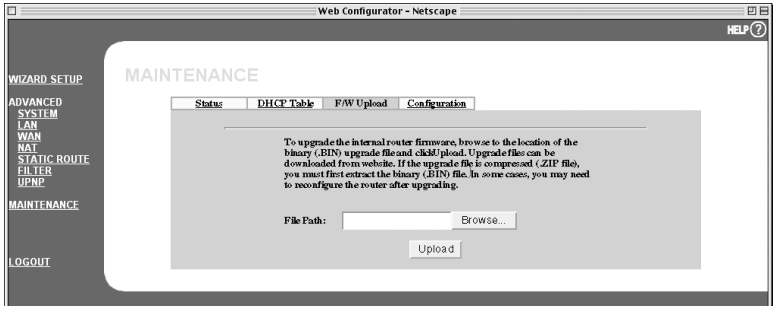
Statistic display Window



DHCP Table

This window displays DHCP table information. Click Refresh button to get newest DHCP table information.

F/W Upload



This window allows users to upgrade the router's firmware via an upload.

1. Download the most current firmware upgrade from Unicom's website. **Go to www.unicomlink.com/download.asp.**
2. Click Browse button to locate the firmware on the Hard drive and then Upload button to upgrade the Router.

LED Indicators

The LED Indicators give real-time information of systematic operation status. The following table provides descriptions of LED status and meaning.

LEDs	Status	Color	Description
Power	On	Green	The router is supplied with suitable power.
LK/ACT LAN and WAN	On	Green	The port is connecting with device.
	Blinks	Green	The port is receiving or transmitting data.
	Off		The port is *not* linked successfully with the device.

Desktop Installation

Place the switch on a sufficiently large flat space with a power outlet nearby. The surface should be clean, smooth, level and sturdy. Make sure there is enough clearance around the switch, cables, and power cord to allow adequate air circulation.

Power On

Connect the power cord to the power socket on the rear panel of the Router. The other side of power cord connects to the power outlet. The external power supply of the Router works in an AC range of 120VAC and a frequency of 60Hz.
Check the power indicator on the upper panel to see if power is properly supplied.

Preparing Your Network

The Micro-Router interfaces with the Internet through TCP/IP, a standard network protocol. In order to use the router, your computer must have TCP/IP software. Virtually all computers using a Windows, Macintosh, Linux, or Unix operating system have the necessary software. Check to make sure it is installed. Refer to your computer's User's Guide for information about TCP/IP.

1. Once you confirm the proper software is installed, set the TCP/IP setting to "**Using DHCP Server**" or something similar. *Proceed to Hardware Setup*.

Hardware Setup

1. Plug the Micro-Router into a standard 110V wall outlet. The Power LED will turn on. Allow Router 10 seconds to start up.
2. Connect the Router to your primary computer via one of the router's LAN ports with a Category 5 or higher Ethernet patch cord.
3. Next connect the Router to your Broadband Modem via the router's WAN port with another Category 5 or higher Ethernet patch cord.

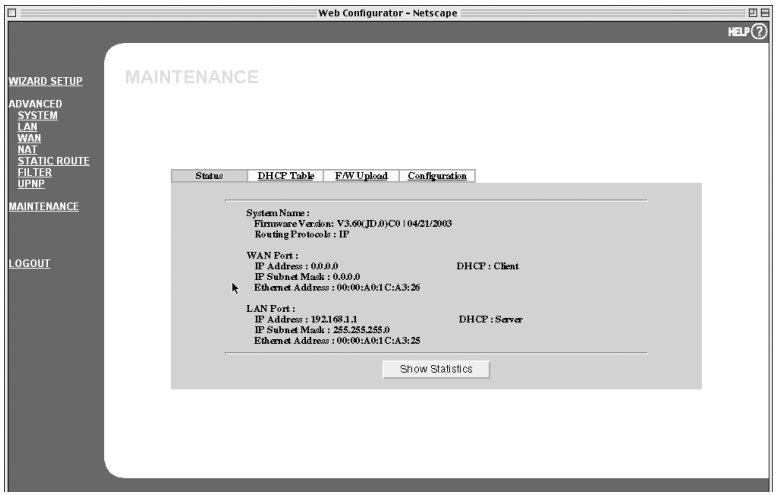
Note: It is important to configure your Micro-Router with the computer originally attached to your Broadband device. Trying to configure the router from a different computer on a network is not recommended. If your Broadband system is new, configure your Broadband device before configuring your Micro-Router.

turn, a device can leave a network smoothly and automatically when it is no longer in use.

UPnP configuration interface

1. *Enable the Universal Plug and Play (UPnP) feature:* Activates UPnP.
2. *Allow users to make configuration changes through UPnP:* Allows users to configure UPnP-enabled applications.
3. Click Apply button.

System Maintenance



In Maintenance, there are four functions – **Status, DHCP Table, F/W Upload,** and **Configuration**. Each function is described below.

Status

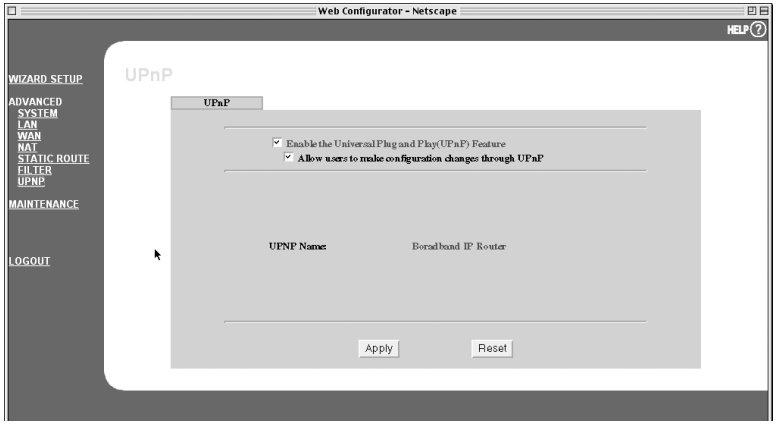
You can view the Router's current system parameter – *System name, Firmware version, Routing protocol, WAN interface configuration* and *LAN interface configuration.*

You can also view WAN and LAN interface statistics by clicking the Show Statistics button. In the Statistic display window, you can set the polling interval time. The default value is 5 seconds. To stop polling, click on Stop button. To start polling, set the Interval Time and click Set Interval button.

* Forward - Forwards the packets.
* Drop - Drops the packets.

24. Click Apply button.

UPnP Configuration (for Windows XP only)



Before you attempt to configure UPnP (Universal Plug and Play), please ensure your computer supports it.

Install UPnP on your computer

1. Go to Start → Control Panel → Add/Remove Programs.
2. Click Network Connections.
3. Click Advanced in menu bar.
4. Select Optional Networking Components.
5. Click Details.
6. Select Universal Plug and Play.
7. Click "OK" and then "Next".
8. Restart the computer after installation.

Checking the UPnP was installed

1. Go to Control Panel → Network Connection.
2. You will see the Internet Connection icon under the Internet Gateway section.

Configure UPnP

A UPnP device can dynamically join a network, obtain an IP address, convey its capabilities, and learn about other devices on the network. In

Web Management

Login to the Web Management Interface

The Micro-Router/4 and 7 both feature GUI Web Management programs. You can use a browser to connect to your Router for management and configuration. The following steps show the login to the Router.

Using a Web Browser to configure your Router

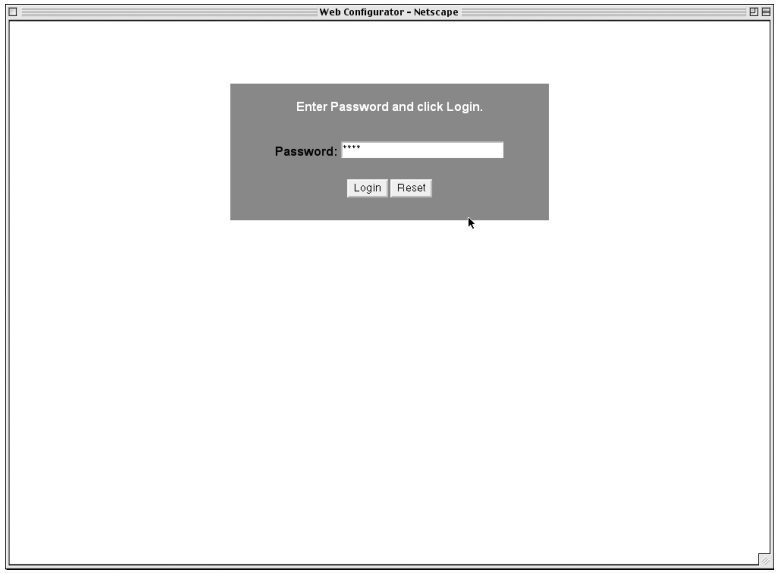
Unicom recommends the following browsers for best results.

Windows (Internet Explorer 5.0 or higher)
(Netscape 6.0 or higher)

Macintosh OS 9 and OS X (Netscape 7.0 or higher)

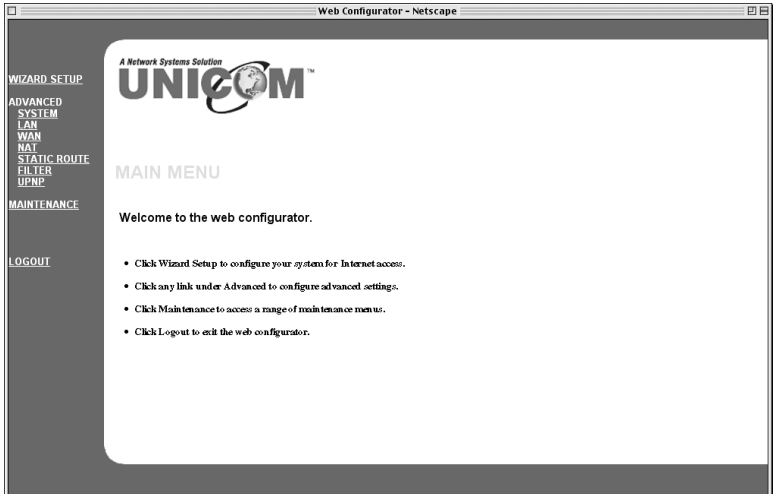
Linux & Unix (Assorted browsers)

1. Launch your web browser and enter the **Router's Default IP (192.168.1.1)** address in the URL field.
2. You will see the Router's Login Screen. *(see below)*
3. Type "**root**" into the Password field and click the Login button.
4. This will bring you to the Router's MAIN MENU screen. (see below)



Now you will see the **Change the Password** screen. At this time Unicom recommends you change the password. The password can be numbers or letters in any combination. If you choose to change the password, type in the new password in both boxes and click Apply. Choose Ignore if you wish to bypass this operation. *The password can be changed at anytime.*

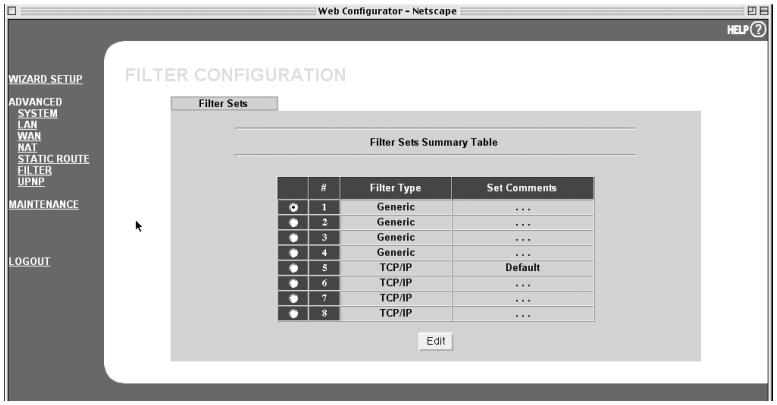
You are now in the WEB CONFIGURATION software. Follow the instructions in the MAIN MENU to navigate screens or use the Help HELP icon in the upper right hand corner of the screen.



Click **WIZARD SETUP** for initial configuration.

Click **LOGOUT** at any time to exit the WEB CONFIGURATION.

18. **Active:** Enables this Filter Rule.
19. **IP Protocol:** Refers to the upper layer protocol, ex: TCP is 6, UDP is 7.
20. **IP Source Route:** Enables or disables the rule to follow the IP source route. “Yes” means enable. “No” means disable.
21. **Destination:**
    - *IP Addr:* The destination IP Address of the packet you wish to filter. This field will be disregarded if it is 0.0.0.0
    - I*P Mask:* The destination IP address mask.
    - *Port #:* The destination port of the packets you wish to filter. The range is 0 to 65535. This field will be disregarded if is 0.
    - *Port # Comp:* Select the destination port of the packet that you wish to compare against the value given in the Port # field. “None” means don’t compare.
22. **Source:**
    - *IP Addr:* The source IP address of the packet you wish to filter. This field will be disregarded if it is 0.0.0.0
    - *IP Mask:* The source IP address mask
    - *Port #:* The source port of the packets that you wish to filter. The range is 0 to 65535. This field will be disregarded if it is 0.
    - *Port # Comp:* Select the destination port of the packet that you wish to compare against the value given in the Port # field. “None” means don’t compare.
23. **More:** “Yes” means that a matching packet is passed to the next Filter Rule before an action is taken. “No” specifies that the packet is disposed of according to the action fields. If "Yes" is selected, then Action Matched and Action Not Matched will default to "Check Next Rule".
    - When the More field is marked "No" the Action Matched field offers three selections
      * Check Next Rule - Checks next available Filter Rule.
      * Forward - Forwards the packets.
      * Drop - Drops the packets.
    - When the More field is marked "No" the Action Not Matched field offers three selections
      * Check Next Rule - Checks next available Filter Rule.

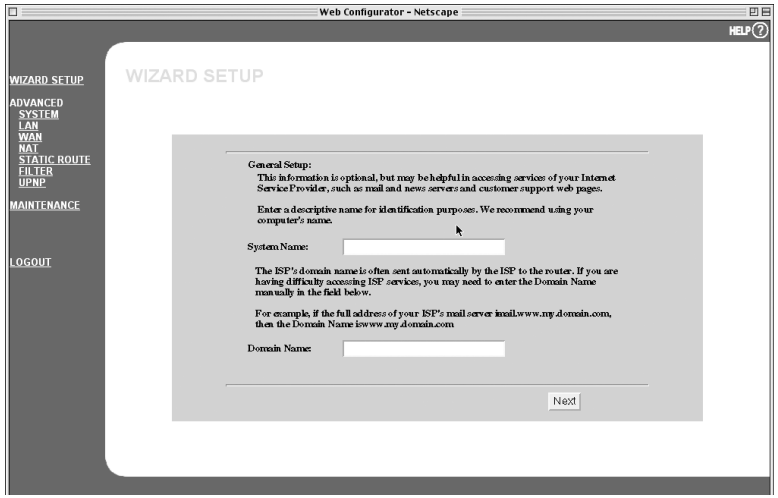


12. Click Apply button.

TCP/IP Filter

The TCP/IP filter allows you to base the rule on the fields in the IP and the upper layer protocol. TCP/IP filter has a default filter rule.

13. Click on radio button of the number
14. Click Edit button to enter File rule selection interface. Each Filter can configure up to six filter rules.
15. **Filter Set Comments:** Give a name to this Filter Rule. If the File Set Comments column is left blank, the Filter Rule will be deleted.
16. Select the Filter Rule number by clicking on radio button.
17. Click Edit button for detail Filter Rule configuration.



Wizard Setup

The Wizard Setup provides the fastest way to configure the Micro-Router. The Wizard will take you through the configuration process step by step. When you have finished the Wizard setup, you can go to Advanced Configuration for more detailed configuration. (see next page)

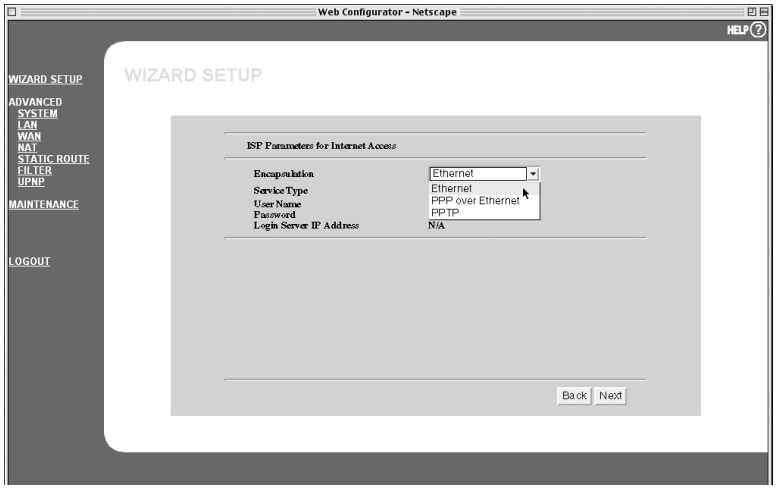
1. **System Name:** give a name to your Router
2. **Domain Name:** type in your domain name (e.g. www.myisp.com)

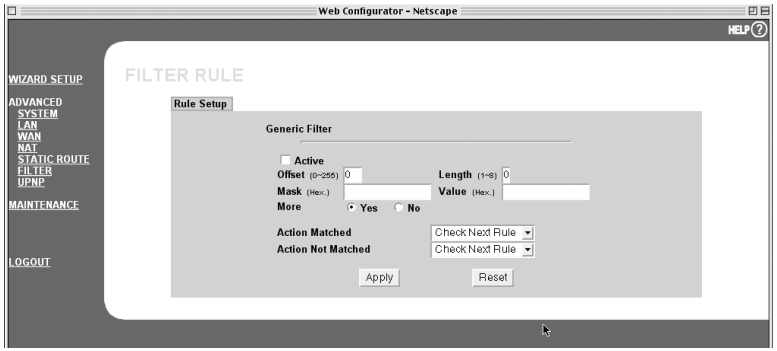
Click Next button to go to next step.

Encapsulation: Select the proper encapsulation type. The three choices are **Ethernet**, **PPP over Ethernet,** and **PPTP**. Following are the terms and descriptions.

Ethernet - *encapsulation choice 1*

- **Ethernet:** Also called Dynamic TCP/IP. If you are connected to an ISP that automatically assigns a DNS address, use this choice. Most newer ISPs use this type of system.
- **Service Type:** Select the service type.

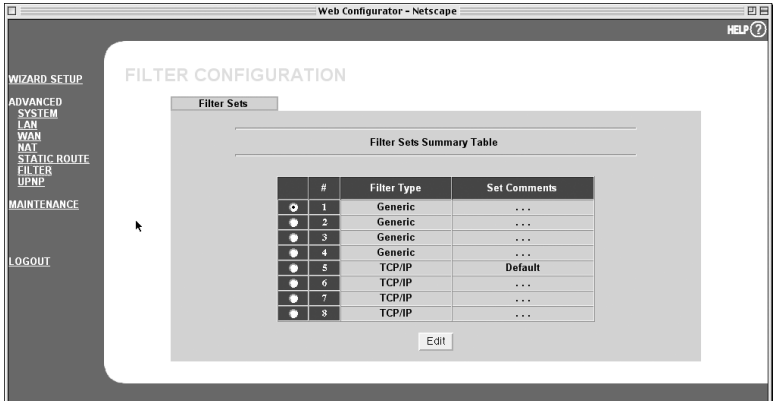




4. Select the Filter Rule number by clicking on radio button.
5. Click Apply button for detail Filter Rule configuration.
6. **Active:** Enables this filter rule.
7. **Offset:** The starting byte of the data portion in the packet that you wish to compare.
8. **Length:** The byte count of the data portion in the packet that you wish to compare. The range is 0 to 8.
9. **Mask:** The Mask (in Hexadecimal) to apply to the data portion before comparison.
10. **Value:** The value (in Hexadecimal) to compare with the data portion.
11. **More:** "Yes" means that a matching packet is passed to the next Filter Rule before an action is taken. "No" specifies that the packet is disposed of according to the action fields. If "Yes" is selected, then Action Matched and Action Not Matched will default to "Check Next Rule".

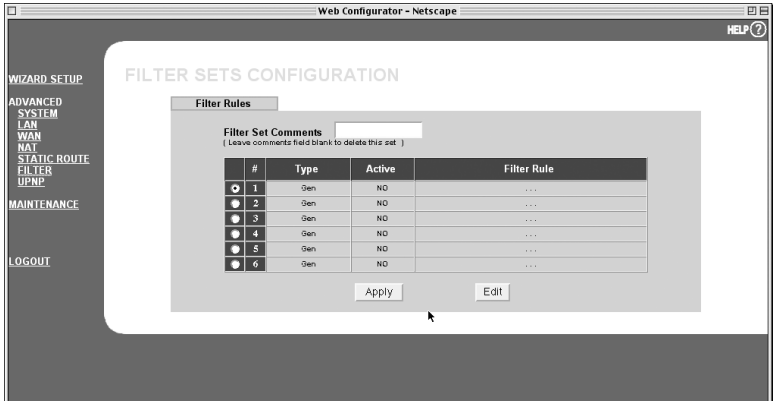
- When the More field is marked "No" the Action Matched field offers three selections
  - * *Check Next Rule* - Checks next available Filter Rule.
  - * F*orward* - Forwards the packets.
  - * *Drop* - Drops the packets.
- When the More field is marked "No" the Action Not Matched field offers three selections
  - * *Check Next Rule* - Checks next available Filter Rule.
  - * F*orward* - Forwards the packets.
  - * *Drop* - Drops the packets.

Filter Configuration



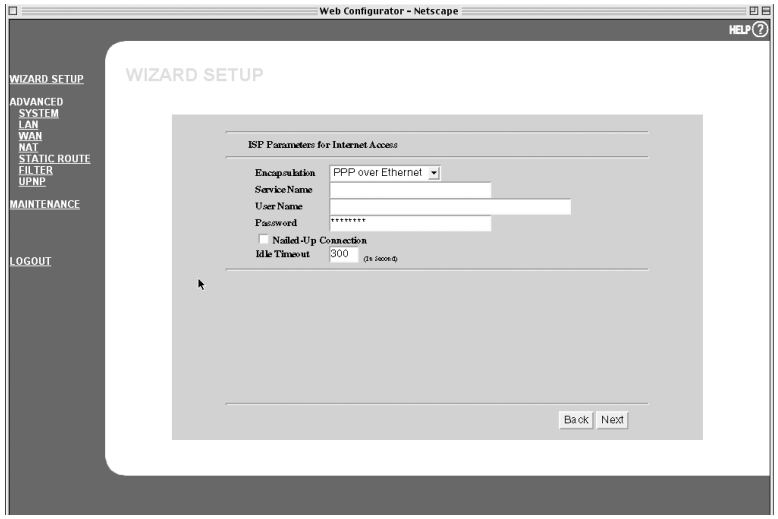
This configuration allows users to filter the incoming data packets. There are two types of filters – a Generic filter and a TCP/IP filter. You can configure up to eight different filter sets (four Generic and four TCP/IP) with up to six filter rules in each set.

Generic Filter



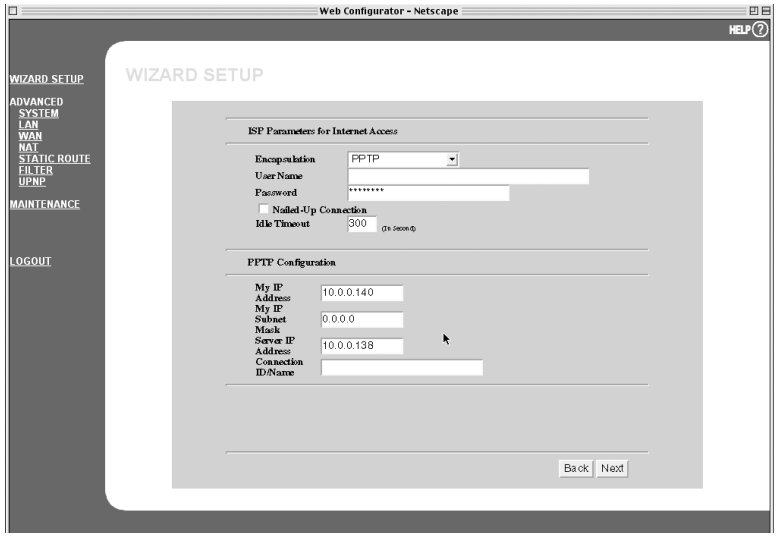
The Generic filter allows you to filter non-IP packets.

1. Click on radio button of the number
2. Click Edit button to enter Filter Rule selection interface. Each Filter can configure up to six filter rules.
3. **Filter Set Comments:** Give a name to this Filter Rule. If the File Set Comments column is left blank, the Filter Rule will be deleted.



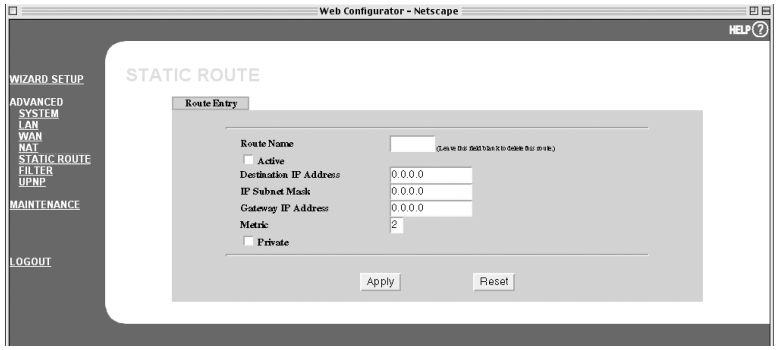
PPP over Ethernet *- encapsulation choice 2*

- **PPP over Ethernet:** A connection using PPPoE. Many ISPs utilizing dial-up modems use this type of connection.
- **Service Name (optional):** Fill in the PPPoE service name that your PPPoE service provider has given to you. PPPoE uses a service name to identify and reach the PPPoE server. If your PPPoE service provider doesn't supply a service name, then you don't need to fill this space.
- **Username:** User ID for login to the PPPoE server.
- **Password:** Password for login to the PPPoE server.
- **Dial-Up Connection:** Keeps the connection with the PPPoE server from disconnecting.
- **Idle Timeout:** The time before disconnect. The default value is 300 seconds (5 min).



PPTP - *encapsulation choice 3*

- **PPTP:** A network protocol that enables secure transfer of data from a remote client to a private server, creating a Virtual Private Network (VPN) using TCP/IP-based networks
- **Username:** Username for login PPTP server
- **Password:** Password for login PPTP server
- **Dial-Up Connection:** Keeps the connection with PPPoE server from disconnecting.
- **Idle Timeout:** The time before disconnect. The default value is 300 seconds (5 min).
- **My IP Address:** IP address assigned by your ISP. It usually will be a WAN interface IP address.
- **My IP Subnet Mask:** IP subnet mask.
- **Server IP Address:** IP address of the PPTP server.
- **Connection ID/Name:** Your identification name for the PPTP server.
- Click Next button to go next step.



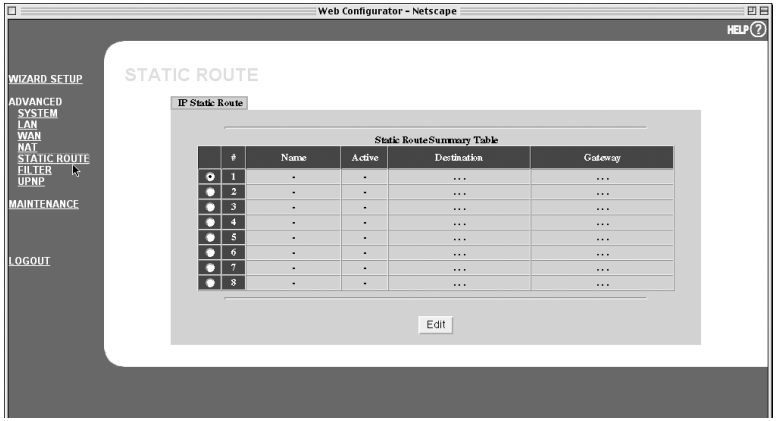
3. **Route Name:** Assign a name to this routing path that describes or identifies the route. If the route name is left blank, the route will be deleted.
4. **Active:** Enables the routing. You can unmark the active checkbox to disable the routing but the routing rule will still remain in the system route table.
5. **Destination IP Address:** Assign the routing destination IP address.
6. **IP Subnet Mask:** Assign destination IP subnet mask.
7. **Gateway IP Address:** Assign gateway IP address.
8. **Metric:** Maximum route hop number
9. **Private:** When this option is selected; the route is kept private and not included in the RIP broadcast. If it is not selected, the route to this remote node will be propagated to other hosts through RIP broadcasts.
10. Click Apply button.
11. You will now see the routing rule in the Static route summary table.
12. Repeat the previous steps to add more routes.

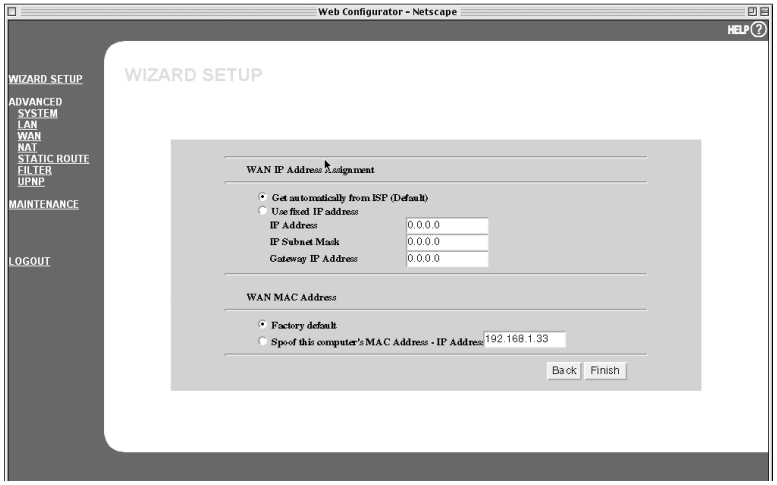
2. **Active:** Enable this mapping rule by marking the check box.
3. **Name:** Give a name to this mapping.
4. **Start Port:** The start of mapping port, ex: 20.
5. **End Port:** The end of mapping port, ex: 25. End port can be same as start port.
6. **Server IP Address:** The server IP address.
7. Click Edit button.
8. You will see the complete setup information at bottom of screen.
9. Repeat the previous steps to setup another NAT mapping rule.

Configure Static Route

Users must configure routing for network PCs to access the Internet.

1. Click on radio button of index number.
2. Click Edit button to enter Route Entry configuration interface.





WAN IP Assignment: configure WAN interface.

- **Get automatically from ISP (Default):** Select this option if you do not need to assign a specific IP for this router. The Router will automatically get the IP from your ISP. This is common with ADSL.
- **Use fixed IP address:** User can assign a specific IP address to the Router WAN interface. Fill in the IP, Subnet Mask, and Gateway IP. This is common when a Static IP is used.

WAN MAC Address: configure WAN MAC address.

- **Factory default:** use the factory default.
- **Spoof this computer's MAC address-IP address:** Detects this router's WAN MAC address.

8. Click Finish button to complete the setup.

Your Router is now configured for Internet use. If you have problems accessing the internet, please consult the Troubleshooting Section.

Default Settings

The default Router configuration is as follows:

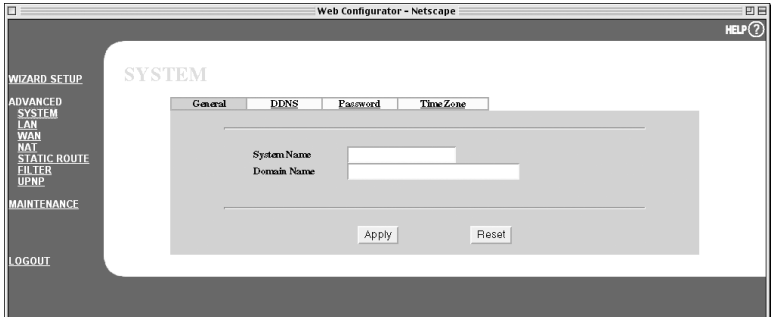
- IP address: 192.168.1.1
- Password: root
- Subnet mask: 255.255.255.0
- DHCP Server (LAN): Enable
- DHCP Client (WAN): Enable
- Filter (WAN): Web service

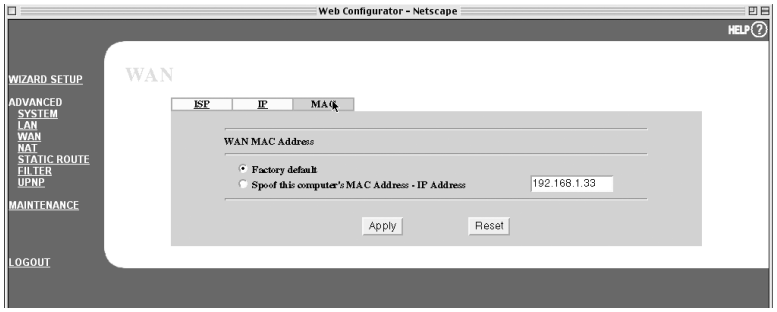
If you want to reset to the default configuration, press the "Default Button" on the rear panel of the Router. Follow the steps below to reset the Router to default configuration.

1. Use a pointed object to depress the Default Button until the LAN LEDs turn off and then release it.
2. Wait about 10 seconds for the router to finish restarting.
3. When the Router restarts, proceed to step 6. If the router does not restart, go to step 4.
4. Cycle power off and on.
5. Repeat steps 1 and 2.
6. Login to Web Management to ensure the router is working properly.

Advanced Configuration

Advanced configuration provides a more detailed configuration of the Router. User can configure the functions to specific needs.

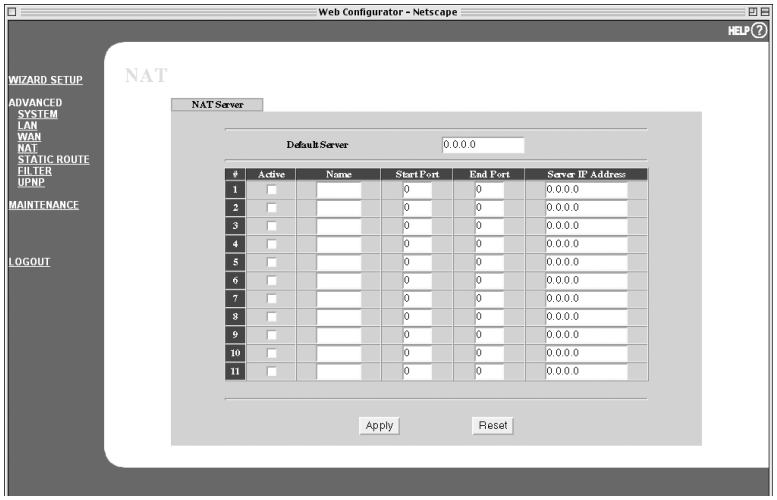




Configure system MAC address.

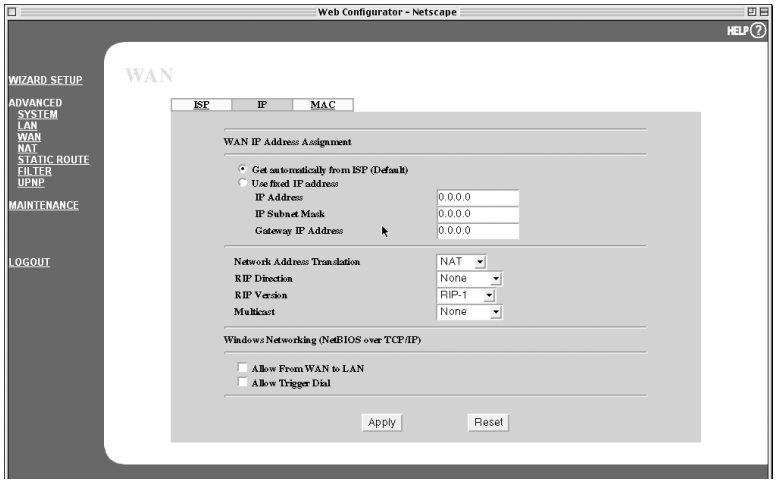
1. WAN MAC Address: configure WAN MAC address.
   - **Factory default:** Use the factory default.
   - **Spoof this computer's MAC address-IP address:** Automatically detects the router's WAN MAC address.
2. Click Apply button.

NAT Configuration



Configure the internal mapping port for external accessing.

1. **Default Server:** A default server receives packets from ports that are not specified in the mapping rule list. If you do not assign a default server, then all packets received for ports not specified in mapping rule table will be dropped.



WAN Interface Configuration

User must configure WAN interface for accessing Internet connection.

1. **WAN IP Address Assignment:**
   - **Get automatically from ISP (Default):** When you select this option you don't need to assign an IP for this router. The Router will automatically get the IP from the service provider
   - **Use fixed IP address**: Users can assign a specific IP address to the WAN interface. Fill in the IP, Subnet Mask, and Gateway IP.
2. **Network Address Translation (NAT):** Enables NAT function. When an internal network uses a private IP to access the Internet, the NAT will automatically translate the private IP to a public IP.
3. **RIP Direction:** controls the sending and receiving of RIP packets.
   - *None:* The router will not send any RIP packets and will ignore any RIP packets received.
   - *Both*: The router will broadcast its routing table periodically and incorporate the RIP information that it receives.
   - *InOnly*: The router will incorporate the RIP information that it receives and drop or ignore the rest of RIP packets.
   - *OutOnly*: The router will broadcast its routing table periodically and drop or ignore the rest of RIP packets.
4. **RIP Version:** select the RIP version – RIPv-1, RIP-2B, and RIP –2M.
5. **Multicast:** select the multicast type – IGMP-v1 and IGMP-v2. The default value is no multicast.

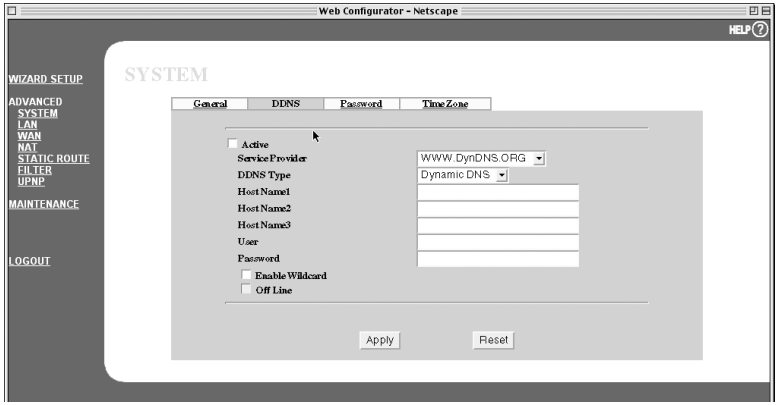
6. Click Apply button.

System Configuration

In the System configuration, users can configure general system information, DDNS, change the password, and configure system date and time.

General Settings

In the General settings, users can configure System Name and Domain Name. Click the Reset button to clear the fields.



1. **System Name:** give a name to this Router.
2. **Domain Name:** key in your domain name.
3. Click Reset button to go next step.

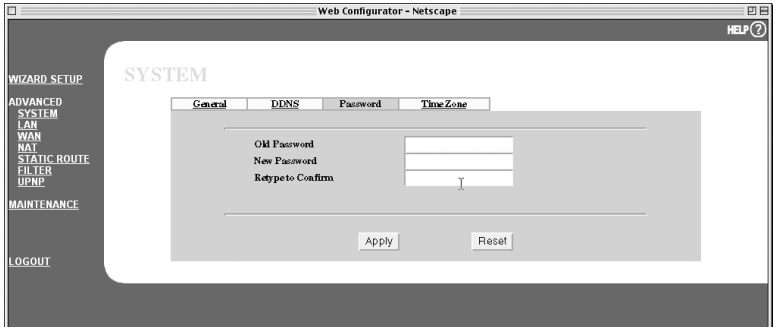
DDNS Configuration

The **DDNS** (Dynamic Domain Name System) allows you to use Static Host Name mapping with a dynamic IP address. When you change the domain name, the Router will automatically update your new domain name to your ISP DNS.

1. **Active:** Click the checkbox to activate the DDNS function.
2. S**ervice Provider:** Select your ISP.
3. **DDNS Type:** Select the DDNS type. *Dynamic DNS:* use dynamic DNS. *Static DNS:* DNS is static. *Custom DNS:* a special DNS that provided by ISP.
4. H**ost name:** You can type in the host name that will match your web server IP address. You can fill in up to three different host names for mapping.

5. **User:** When updating the information to an ISP DNS, the ISP needs a User ID to verify the account.
6. **Password:** When updating the information to an ISP DNS, the ISP needs a password to verify the account.
7. **Enable Wildcard:** This option provides domain name mapping to reach your web domain without keying in a specific domain address. *For example*: the domain name is www.bbb.com. User can browse *aaa.www.bbb.com* which will automatically redirect to *www.bbb.com* instead of displaying an error message.
8. **Off line:** This option is only available when Custom DNS is selected in the DDNS Type field. Contact your Dynamic DNS service provider to have traffic redirected to an URL (that you specify) while you are off line.
9. Click Apply button.

Password Setting

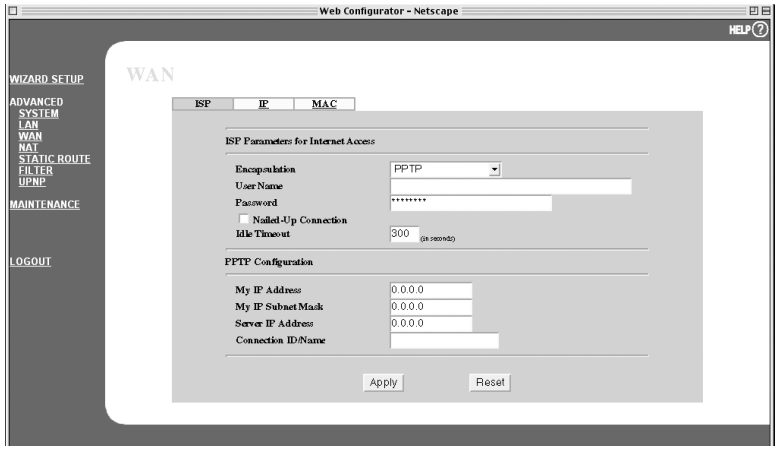


User can change the default password. We strongly suggest changing the password to enhance network security.

1. **Old Password:** Type in the default password or the password you would like to change.
2. **New Password:** Type in the new password. Password can be numbers and/or characters in any combination.
3. **Retype to Confirm:** Re-enter the new password.
4. Click Apply button.

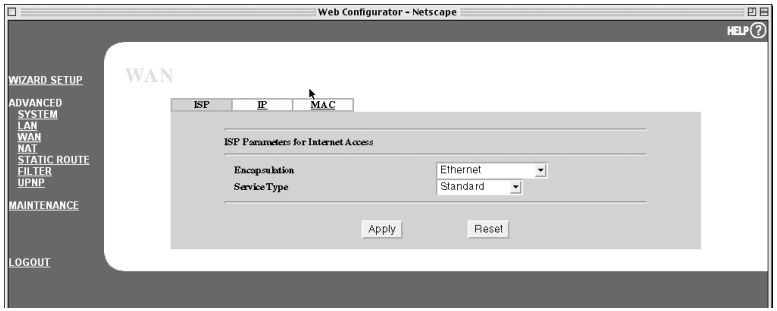
- **Idle Timeout:** The time before disconnect. The default value is 300 seconds (5 min).

PPTP - *encapsulation choice 3*



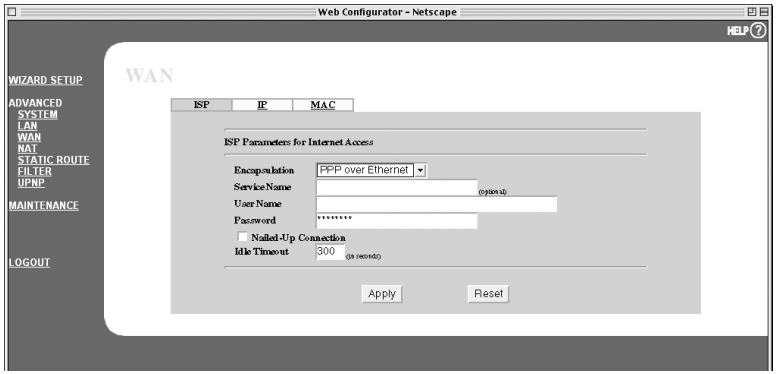
- **PPTP:** A network protocol that enables secure transfer of data from a remote client to a private server, creating a Virtual Private Network (VPN) using TCP/IP-based networks
- **Username:** Username for login PPTP server
- **Password:** Password for login PPTP server
- **Dial-Up Connection:** Keeps the connection with PPPoE server from disconnecting.
- **Idle Timeout:** The time before disconnect. The default value is 300 seconds (5 min).
- **My IP Address:** IP address assigned by your ISP. It usually will be a WAN interface IP address.
- **My IP Subnet Mask:** IP subnet mask.
- **Server IP Address:** IP address of the PPTP server.
- **Connection ID/Name:** Your identification name for the PPTP server.
- Click Apply button to go next step.

Ethernet - *encapsulation choice 1*



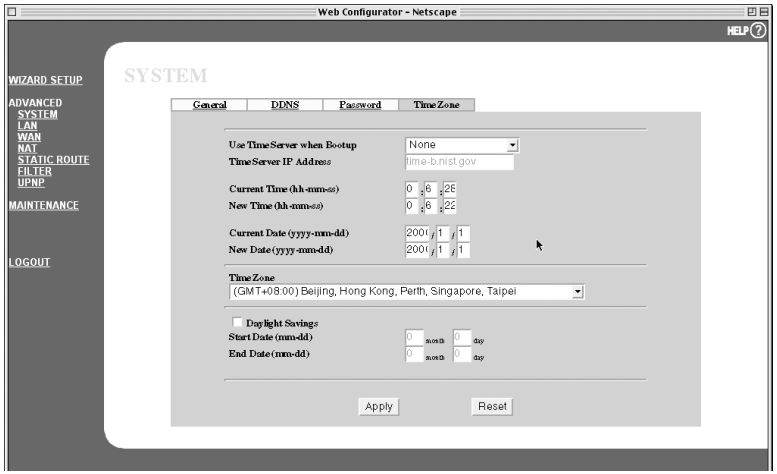
- **Ethernet:** Also called Dynamic TCP/IP. If you are connected to an ISP that automatically assigns a DNS address, use this choice. Most newer ISPs use this type of system.
- **Service Type:** Select the service type.

PPP over Ethernet - *encapsulation choice 2*



- **PPP over Ethernet:** A connection using PPPoE. Many ISPs utilizing dial-up modems use this type of connection.
- **Service Name (optional):** Fill in the PPPoE service name that your PPPoE service provider has given to you. PPPoE uses a service name to identify and reach the PPPoE server. If your PPPoE service provider doesn't supply a service name, then you don't need to fill this space.
- **Username:** User ID for login to the PPPoE server.
- **Password:** Password for login to the PPPoE server.
- **Dial-Up Connection:** Keeps the connection with the PPPoE server from disconnecting.

Time Zone Setting



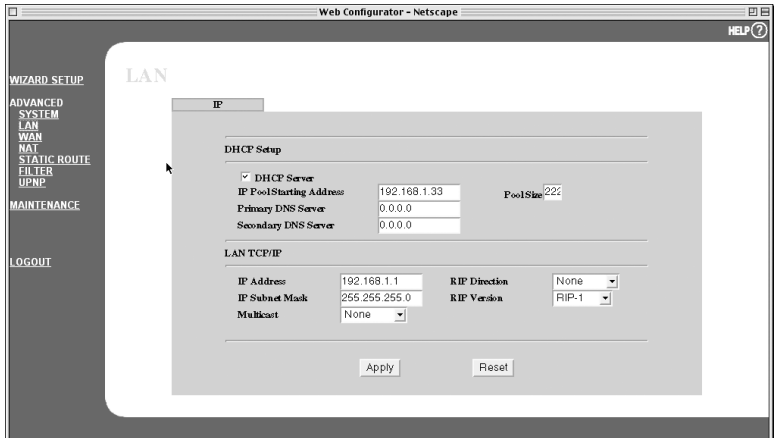
Users can configure the system time and date in this section.

1. **Use Time Server at Bootup:** Select this option to retrieve the current time from a time server. There are four time server selections: None, Daytime (RFC-867), Time (RFC-868), and NTP (RFC-1035). If you have no time server, select "None".
2. **Time Server IP Address:** If you select "None" for time server, then you don't have to fill in the time server IP. When you select one of the other options from the menu, you can fill in alternative IP addresses of time servers other than the default.
3. **Current Time (hh-mm-ss):** The system's current time
4. **New Time (hh-mm-ss):** Enter the correct time for system
5. **Current Date (yyyy-mm-dd**): the system's current date
6. **New Date (yyyy-mm-dd)**: Enter correct date for system
7. **Time Zone:** Select the country time zone where Router is located.
8. **Daylight Saving**: Enable daylight saving.
   - **Start Date:** Enter the daylight saving start date.
   - **End Date:** Enter the daylight saving end date.
9. Click Apply button to complete the time setting.

LAN Configuration

Users can configure the DHCP server and the LAN interface in this section. *LAN interface must be configured for network access.*

Setup DHCP server



1. **DHCP Server:** Click the checkbox to enable the DHCP server feature.
2. **IP Pool Starting Address:** Assigns the IP pool starting address. *For example:* starting from 192.168.1.33, the pool could extend from 192.168.1.33 to 192.168.1.254.
3. **Pool size:** The pool size or range depends on where the IP pool address starts and ends. *For example:* if the IP goes from 192.168.1.2 to 192.168.1.254, then the pool size is 253 (254 - 1). *Remember that the starting number is ALWAYS included in the pool size total.*
4. **Primary DNS Server:** Fill in the primary DNS server.
5. **Secondary DNS Server:** Fill in a secondary DNS server as a backup when the primary DNS server is out of service or offline.
6. Click Apply button to apply the setting.

LAN Setting

Users must configure the LAN interface for a network connection. The LAN interface has a default value but can be reconfigured if necessary.

1. **IP Address:** Assign the LAN interface IP address. The default IP address is 192.168.1.1.
2. I**P Subnet Mask:** Assign the LAN IP subnet mask. The default subnet mask is 255.255.255.0.
3. **Multicast:** Select the multicast type – IGMP-v1 and IGMP-v2. The default value is no multicast.
4. **RIP Direction:** Controls the sending and receiving of RIP packets.
   - *None:* The router will not send any RIP packets and will ignore any RIP packets received.
   - B*oth:* The router will broadcast its routing table periodically and incorporate the RIP information that it receives.
   - *InOnly:* The router will incorporate the RIP information that it receives and drop or ignore the rest of RIP packets.
   - *OutOnly:* The router will broadcast its routing table periodically and drop or ignore the rest of RIP packets.
5. **RIP Version:** Select the RIP version, RIPv–1, RIP–2B, or RIP–2M.
6. Click Apply button.

WAN Configuration

In WAN configuration, users can configure ISP information, the WAN interface, and the MAC address.

Configure ISP Information

Encapsulation: Select the proper encapsulation type. The three choices are **Ethernet**, **PPP over Ethernet,** and **PPTP**. Following are the terms and descriptions.