



Internet Broadband Router

XRT-401F

User's Manual

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FCC Compliance Statement

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the instructions provided with the equipment, may cause interference to radio and TV communication. The equipment has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If you suspect this equipment is causing interference, turn your Ethernet Switch on and off while your radio or TV is showing interference, if the interference disappears when you turn your Ethernet Switch off and reappears when you turn it back on, there is interference being caused by the Ethernet Switch. You can try to correct the interference by one or more of the following measures:

1. Reorient the receiving radio or TV antenna where this may be done safely.
2. To the extent possible, relocate the radio, TV or other receiver away from the Switch.
3. Plug the Ethernet Switch into a different power outlet so that the Switch and the receiver are on different branch circuits.

If necessary, you should consult the place of purchase or an experienced radio/television technician for additional suggestions.

Energy Saving Note of the Device

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

For energy saving, please remove the DC-plug to disconnect the device from the power circuit.

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

CE mark Warning

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

WEEE

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

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Revision

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Chapter 1 Introduction

With the growth of the Internet activities, high-speed Internet access, on-line gaming and Triple-Play Internet application are often can be seen in our dailiy life. To respond this trends of Internet activities, the PLANET XRT-401F Broadband Router is an ideal solution to provide the high speed Internet access, easy-to-use, and worry-free for surfing on the internet.

With easy integration and full compatibility of existing network infrastructures, the PLANET XRT-401F comprises a 4-Port 10/100Mbps switch to allow the users quickly and easily transmitting the data through the single high-speed Internet connection.

The XRT-401F provides QoS and IGMP features to make the network services smooth. Traffic priority can be assigned by the router to guarantee some important and specific transmissions, especially for real-time streaming multimedia applications such as the on-line gaming, VoIP, and IPTV to keep the bandwidth usage smoothly.

Via the user-friendly management interface, users can setup and configure the router very easily, just follow the wizard to guide you the setup procedure step by step. Furthermore, the Router not only provides basic router functions such as DHCP server, Virtual Server, DMZ, and UPnP, but also provides full security functions including Firewall and NAT / NAPT (Network Address/Port Translation) features, to protect your network from internet intruders and attacks.

1.1 Features

■ Internet Access Features

- ◆ **Shared Internet Access:** All users on the LAN can access the Internet through the XRT-401F using only a single external IP Address. The local (invalid) IP Addresses are hidden from external sources. This process is called NAT (Network Address Translation).
- ◆ **Multiple WAN Connection:** On the Internet (WAN port) connection, the XRT-401F supports Dynamic IP Address (IP Address is allocated on connection), Fixed IP Address, PPPoE, PPTP and L2TP.
- ◆ **Bridge and Router Application:** The XRT-401F supports two application modes. Currently, it comes pre-configured with Router mode. Note that, Router mode and Bridge mode cannot be used simultaneously.

■ Advanced Internet Functions

- ◆ **Quick Setup:** Built-In configuration wizard helps users to complete network installation in a very short time via standard Internet browsers such as Microsoft Internet Explorer, Netscape Communicator...etc.
- ◆ **QoS:** Quality of service can classify the network packet based on the port base and DSCP; it can provide the best effect for real-time streaming multimedia applications such as the on-line gaming, VoIP, and IPTV.
- ◆ **Virtual Servers:** This feature allows Internet users to access Internet servers on your LAN. The required setup is quick and easy.

- ◆ **Universal Plug and Play (UPnP):** UPnP allows automatic discovery and configuration of the Broadband Router. UPnP is supported by Windows ME, XP, or later.
 - ◆ **User Friendly Interface:** The XRT-401F can be managed and controlled through Web UI.
 - ◆ **DMZ Support:** The XRT-401F can translate public IP addresses to private IP address to allow unlimited 2-Way communication with the servers or individual users on the Internet. It provides the most flexibility to run programs smoothly for programs that might be restricted in NAT environment.
 - ◆ **Client / URL / MAC Filtering:** The Filtering function can block the unallowable LAN users accessing to Internet. Or you can use the keyword based URL Filter to block access to undesirable Web sites by LAN users.
 - ◆ **RIP1/2 Routing:** It supports RIPv1/2 routing protocol for routing capability.
 - ◆ **VPN Pass through Support:** PCs with VPN (Virtual Private Networking) software are transparently supported - no configuration is required.
- **LAN Features**
- ◆ **4-Port Switch:** The XRT-401F incorporates a 4-port 10/100Base-TX switching hub, making it easy to create or extend your LAN.
 - ◆ **DHCP Server Support:** Dynamic Host Configuration Protocol provides a dynamic IP address to PCs and other devices upon request. The XRT-401F can act as a DHCP Server for devices on your local LAN.

1.2 Minimum Requirements

- One External xDSL (ADSL) or Cable modem with an Ethernet port (RJ-45)
- Network Interface Card (NIC) for each Personal Computer (PC)
- PCs with a Web-Browser (Internet Explorer 7.0 or higher, or Firefox 3.6 or higher)

1.3 Product Specification

FUNCTIONAL SPECIFICATIONS

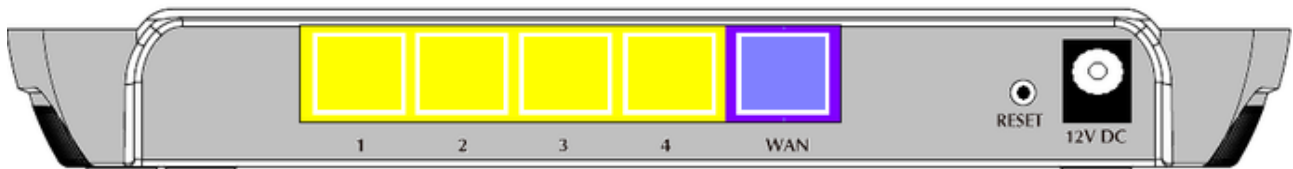
Product		Internet Broadband Router
Model		XRT-401F
Hardware		
Standard		IEEE 802.3, IEEE 802.3u 10/100Base-TX standard
Ports	WAN	1 x 10/100Base-TX, Auto-Negotiation, Auto MDI/MDI-X
	LAN	4 x 10/100Base-TX, Auto-Negotiation, Auto MDI/MDI-X
LED Indicators		PWR, WAN, LAN1-4
Button		1 x RESET button
Software		
Protocol and Features		Router and Bridge mode Static Routing and RIPv1/2 DMZ and Virtual Server QoS IGMP v1/v2 VLAN SNTP DHCP Server / Client UPnP and DDNS
VPN		IPSec / PPTP / L2TP VPN Pass-Through
Security		Built-in NAT Firewall Client / URL / MAC Filtering Password protection for system management
Management		Web-based configuration Quick Setup Wizard Local and Remote Log
Environment Specification		
Dimension (W x D x H)		176 x 104 x 29 mm
Power		12V DC, 0.5A
Temperature / Humidity		Operating: 0~50 degree C, 5%~ 90% (non-condensing), Storage: -10~70 degree C, 0~95% (non-condensing)

Top Panel LED definition



LED		Description
PWR	ON	When the router is powered on, and in ready state.
	OFF	When the router is powered off.
WAN	Flashing	Data is being transmitted or received via the corresponding WAN port.
	ON	The port is up.
LAN1-4	Flashing	Data is being transmitted or received via the corresponding LAN port.
	ON	The port is up.

Rear Panel Port and Button Definition

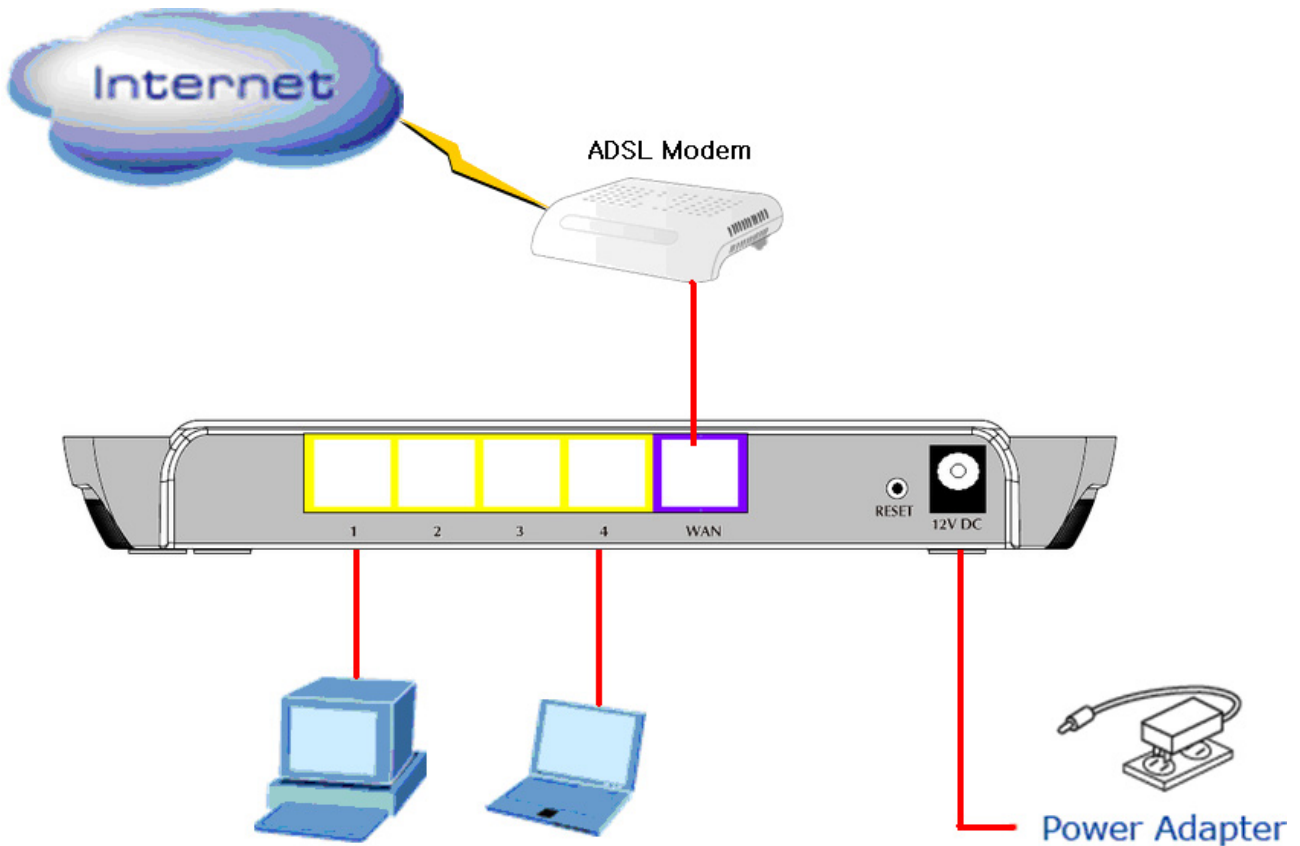


Port	Description
LAN (1-4)	Connect your LAN's PCs, printer servers, hubs and switches etc.
WAN	Connect your xDSL or Cable modem and is linked to the Internet.
RESET	One push and release, the Router will reboot At power on status, press more than 10 seconds and release for reset to factory default setting.
12V DC	DC Power in.

1.4 Getting Started

This is a step-by-step instruction on how to start using the router and get connected to the Internet.

1) Setup your network as shown in the setup diagram below.



2) Then, you need to setup your LAN PC clients so that it can obtain an IP address automatically. By default the XRT-401F's DHCP server is enabled so that you can obtain an IP address automatically.


Note

Please make sure that the XRT-401F's DHCP server is the only DHCP server available on your LAN. If there is another DHCP on your network, then you'll need to switch one of the DHCP servers off.

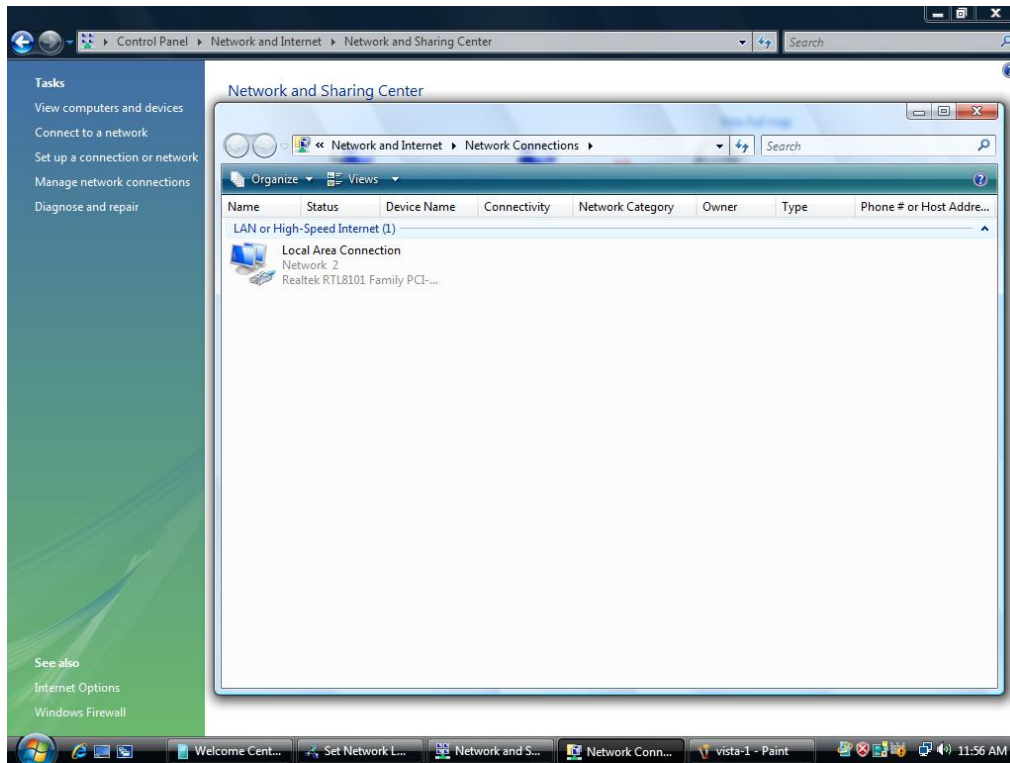
Step1 → Configure your PC to obtain an IP address automatically

This section will show you how to configure your PC's so that it can obtain an IP address automatically for either Windows 98/Me, 2000 or later operating systems. For other operating systems (Macintosh, Sun, etc.), please follow the manufacturer's instructions.

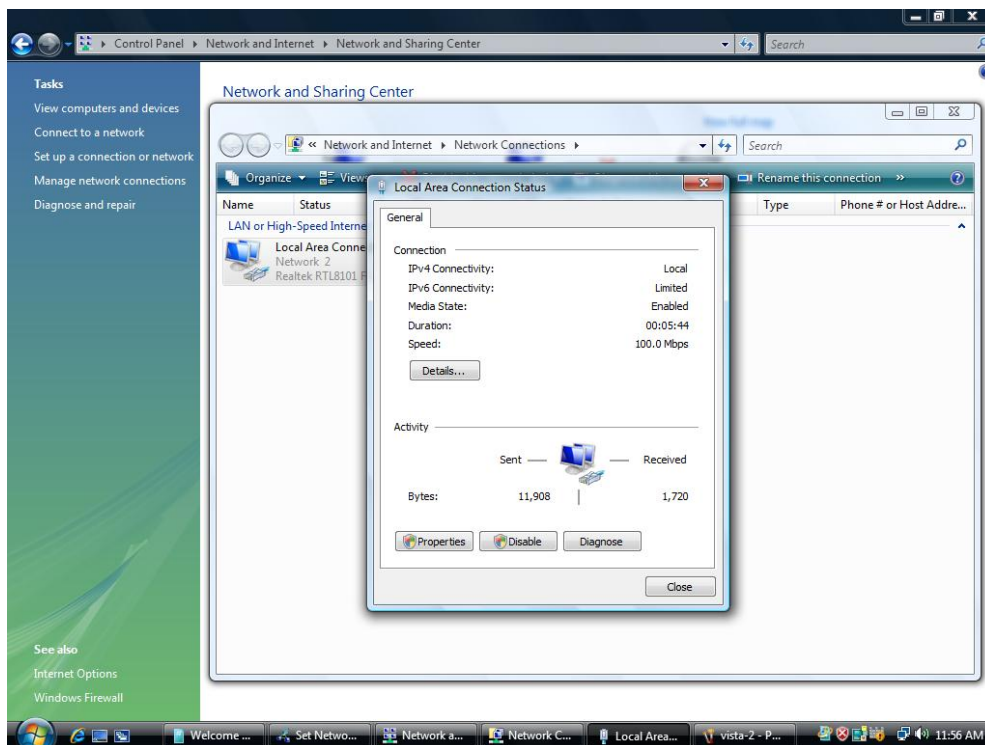
The following is a step-by-step illustration on how to configure your PC to obtain an IP address automatically for **a) Windows Vista, b) Windows XP, c) Windows 2000**

a) Configuring PC in Windows Vista

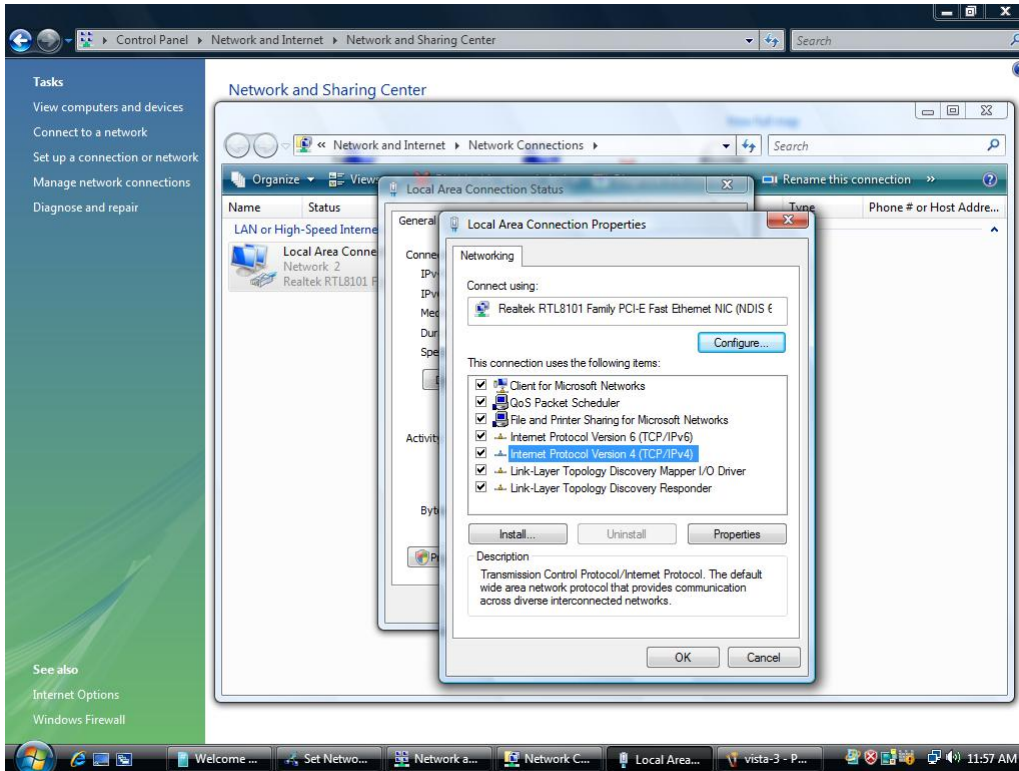
1. Go to **Start / Control Panel / Network and Internet / Network and Sharing Center**. Double-click on **Network Connections**.
2. Double-click **Local Area Connection**.



3. In the **Local Area Connection Status** window, click **Properties**.

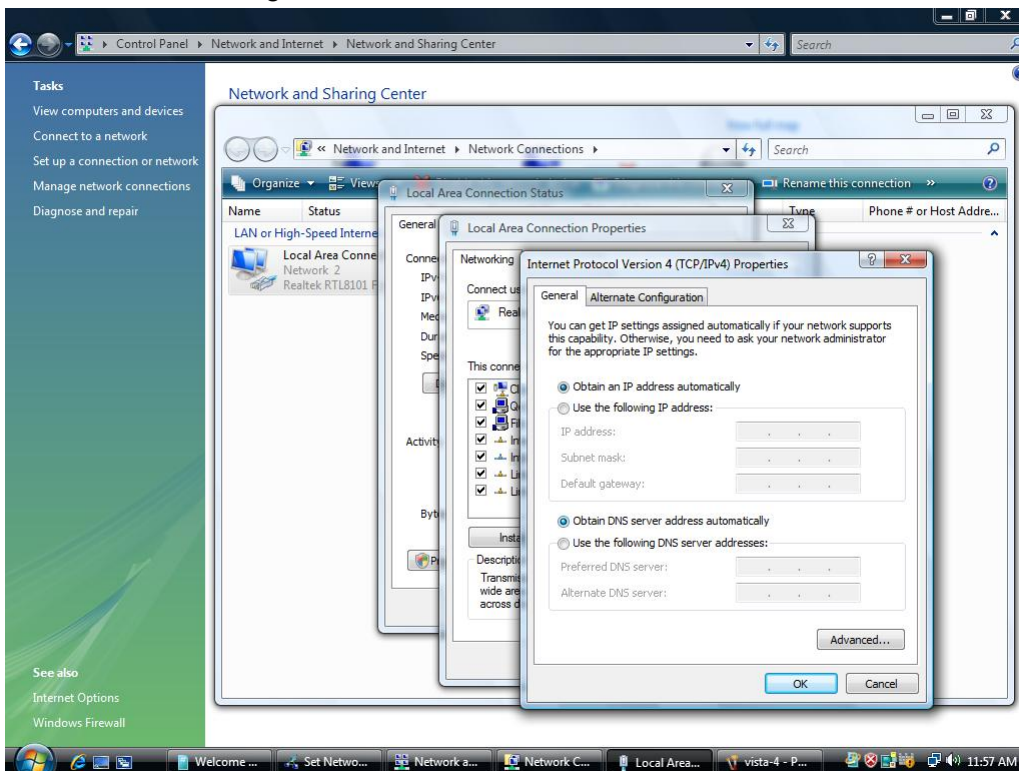


4. Select Internet Protocol Version 4 (TCP/IPv4) and click Properties.



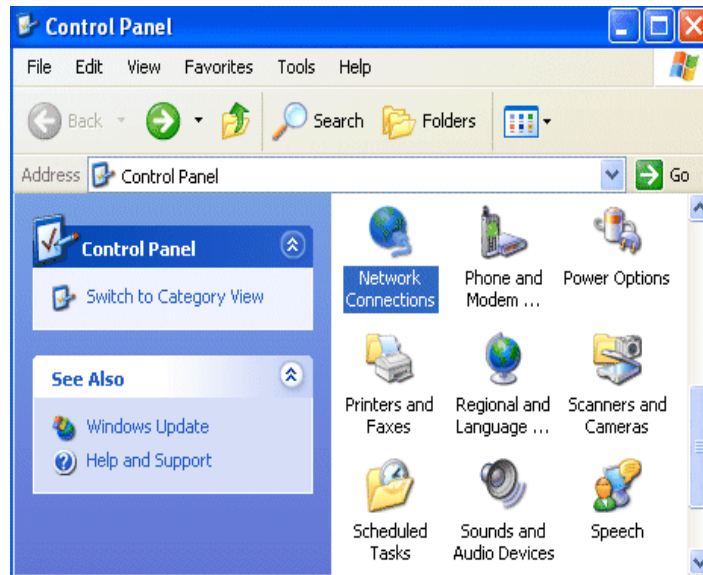
5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.

6. Click OK to finish the configuration.

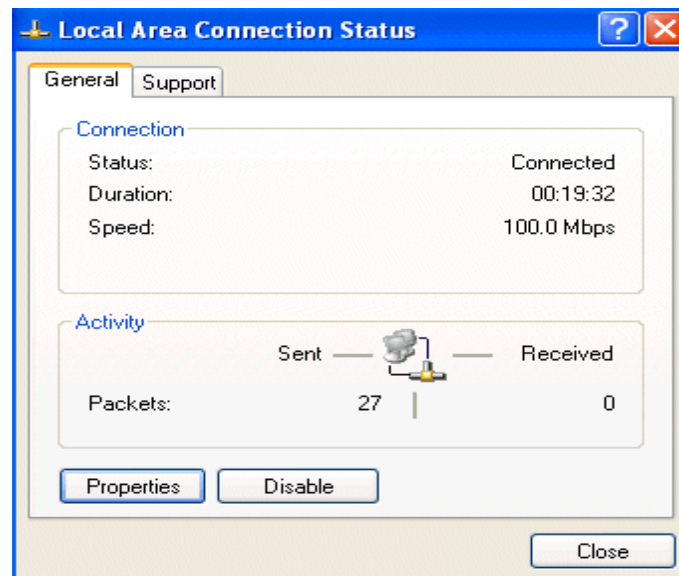


b) Configuring PC in Windows XP

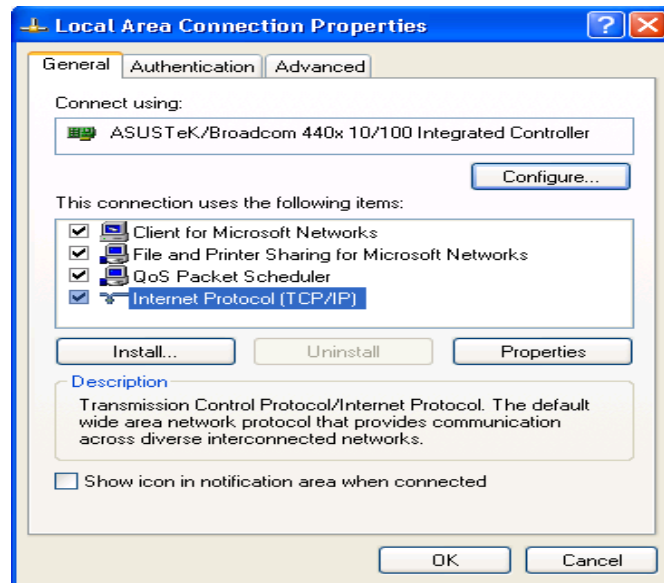
1. Go to **Start / Control Panel (in Classic View)**. In the Control Panel, double-click on **Network Connections**
2. Double-click **Local Area Connection**.



3. In the **Local Area Connection Status** window, click **Properties**.

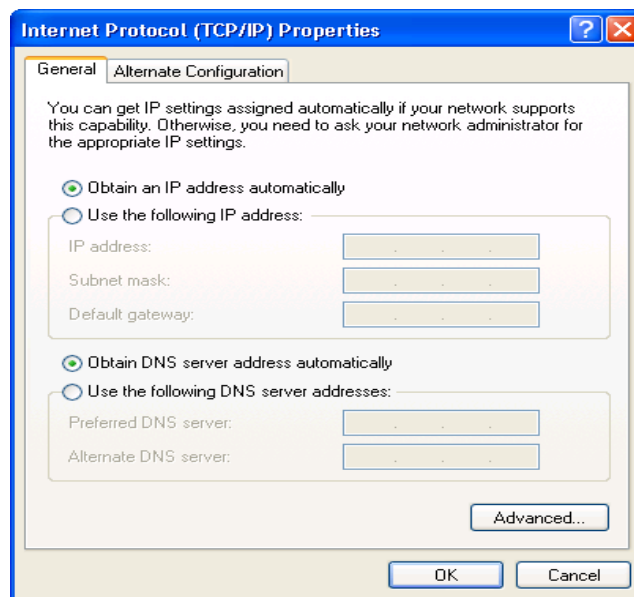


4. Select **Internet Protocol (TCP/IP)** and click **Properties**.



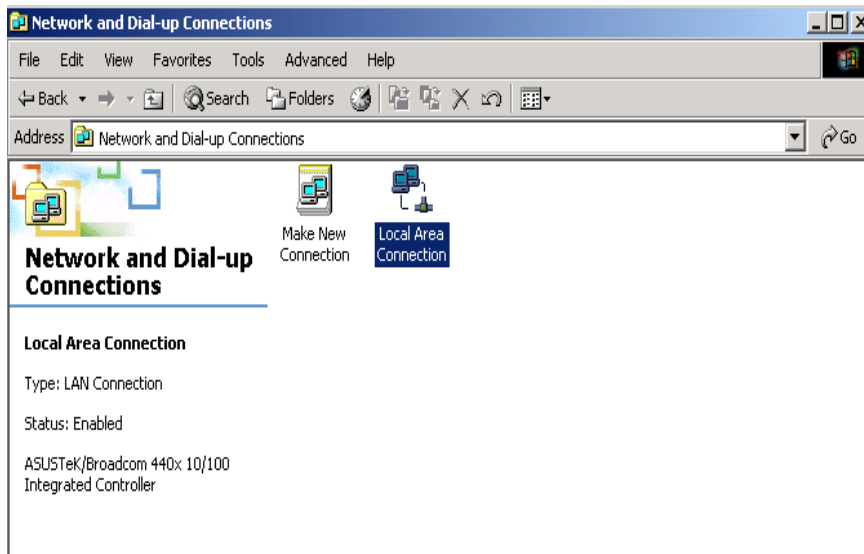
5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.

6. Click **OK** to finish the configuration.

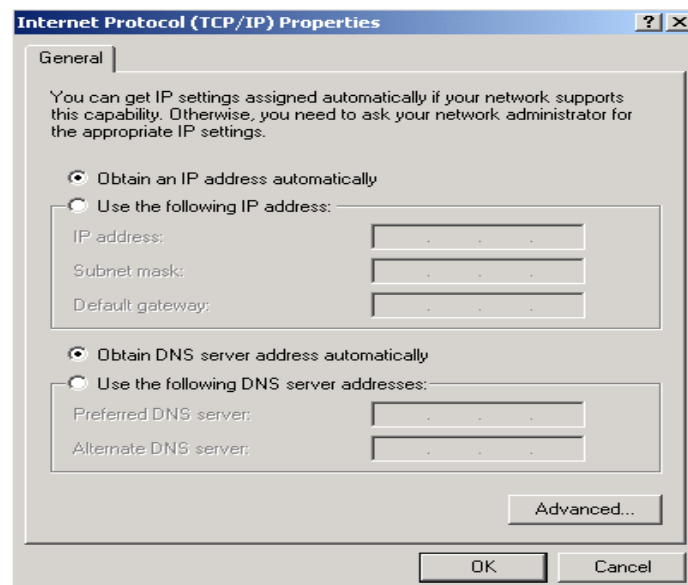


c) Configuring PC in Windows 2000

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network and Dial-up Connections**.
2. Double-click **Local Area Connection**.



3. In the **Local Area Connection Status** window click **Properties**.
4. Select **Internet Protocol (TCP/IP)** and click **Properties**.
5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.
6. Click **OK** to finish the configuration.



Step2→ Configuring with Web Browser

Once your PC has obtained an IP address from your router, enter the default IP address “**http: //192.168.0.1**” (XRT-401F’s LAN IP address) into your PC’s web browser and press <enter>



Save this address in your Favorites for future reference.

A screenshot of a login dialog box titled "Connect to 192.168.0.1". The dialog box has a blue header with a question mark and a close button. Below the header is a blue banner with a key icon. The main area is light beige and contains the text "Planet Broadband Router". There are two input fields: "User name:" with a dropdown menu showing "admin" and a blue arrow, and "Password:" with a text box containing seven dots. Below the password field is a checkbox labeled "Remember my password" which is unchecked. At the bottom are "OK" and "Cancel" buttons.

At the User name prompt, type “**admin**”.

And the Password prompt, type “**admin**”. You can change these later if you wish.

Click “**OK**”.


Chapter 2 Quick Setup

The Wizard section is designed to get you using XRT-401F as quick as possible. In the Wizard, you are required to fill in only the information necessary to access the Internet. Once you click on the **Wizard** in the web page, you should see the screen below.

Step 1) Host Settings

The Host Settings allows your router to set up Host name and Domain name, it also can set up its Time Zone and Daylight Saving Time, these will affect functions such as Log entries and Firewall settings.


Parameter	Description
Host Name	This is optional. You can specify a Host name for XRT401F.
Time Zone	Select the time zone of the country where you currently are. The router will set its time based on your selection.
Daylight Savings	The XRT-401F can also take Daylight savings into account. If you wish to use this function, you must select the enable box to enable your daylight saving configuration.
Function Mode	By default, XRT-401F is set as Router mode. If set to Bridge mode will turn the Router into 5-port Ethernet Switch where WAN port comes to Port # 5.

 Note	In this setup wizard, we set it as Router mode
--	--

Click on **NEXT** to proceed to the next page (step 2) WAN Settings.

Step 2) WAN Settings

In this section you have to select one of these types of connections that you will be using to connect your XRT-401F's WAN port to your ISP (see screen below).


 Note	Different ISP's require different methods of connecting to the Internet, please check with your ISP as to the type of connection it requires.
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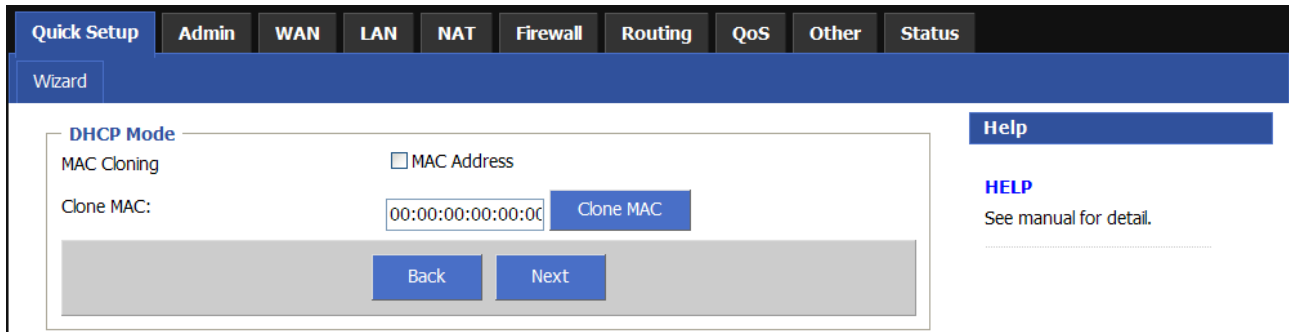
Parameter	Description
Dynamic IP	Your ISP will automatically give you an IP address.
Static IP	Your ISP has given you an IP address already
PPPoE	Your ISP requires you to use a Point-to-Point Protocol over Ethernet (PPPoE) connection.
PPTP	Your ISP requires you to use a Point-to-Point Tunneling Protocol (PPTP) connection.
L2TP	Layer 2 Tunneling Protocol is a common connection method used in xDSL connections.
Dual Acces	This mode only active for Russia ISP that support dual layer Access to the Internet.

Click on one of the WAN types and then proceed to the manual's relevant sub-section (**2.1, 2.2, 2.3, 2.4 or 2.5**). Click on **Back** to return to the previous screen.

2.1 Dynamic IP

Choose Dynamic IP if your ISP will automatically give you an IP address. Some ISP's may also require that you fill in additional information such as MAC address (see screen below).

 Note	<p>The MAC address section is <i>optional</i> and you can skip this section if your ISP does not require these settings for you to connect to the Internet.</p>
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Parameter	Description
MAC Cloning	If you want to clone your PC's MAC address to XRT-401F, you must enable it first.
MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this MAC address in this section or use the Clone MAC Address button to replace the WAN MAC address with the MAC address of that PC (you have to be using that PC for the Clone MAC Address button to work).

2.2 Static IP

Select Static IP if your ISP has given you a specific IP address to use. Your ISP should provide all the information required in this section.

The screenshot shows a configuration wizard for WAN Static IP. At the top, there is a navigation bar with tabs for 'Quick Setup', 'Admin', 'WAN', 'LAN', 'NAT', 'Firewall', 'Routing', 'QoS', 'Other', and 'Status'. Below this is a 'Wizard' section. The main configuration area is titled 'WAN Static IP' and contains three input fields: 'IP Address' with the value '61.62.27.185', 'Subnet Mask' with '255.255.255.0', and 'Gateway IP' with '61.62.27.254'. At the bottom of this section are 'Back' and 'Next' buttons. To the right, there is a 'Help' section with a 'HELP' link and the text 'See manual for detail.'.

Parameter	Description
IP address assigned by your ISP	This is the IP address that your ISP has given you.
Subnet Mask	Enter the Subnet Mask provided by your ISP. (e.g. 255.255.255.0)
ISP Gateway Address	This is the ISP's IP address gateway.

2.3 PPPoE

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

The screenshot shows the 'PPPOE Mode' configuration page. At the top, there is a navigation bar with tabs for 'Quick Setup', 'Admin', 'WAN', 'LAN', 'NAT', 'Firewall', 'Routing', 'QoS', 'Other', and 'Status'. Below this is a 'Wizard' section. The main content area is titled 'PPPOE Mode' and contains the following fields:

- User Name:
- Password:
- Retype password:
- Service Name:
- MTU (546-1492):
- Maximum Idle Time (60-3600): seconds (0: No timeout)

At the bottom of the form are two buttons: 'Back' and 'Next'. To the right of the form is a 'Help' section with a 'HELP' link and the text 'See manual for detail.' Below the form is a grey bar containing the 'Back' and 'Next' buttons.

Parameter	Description
User Name	Enter the User Name provided by your ISP for the PPPoE connection.
Password	Enter the Password provided by your ISP for the PPPoE connection.
Retype Password	Re-enter the Password for confirmation.
Service Name	This is optional. Enter the Service name should your ISP requires it, otherwise leave it blank.
MTU	This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (The default settings is 1492)
Maximum Idle Time	You can specify an idle time threshold (seconds) for the WAN port. This means if no packets have been sent (no one using the Internet) during this specified period, the router will automatically disconnect the connection with your ISP. (The default settings is 300 seconds)

2.4 PPTP

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

Parameter	Description
PPTP Account	Enter the PPTP Account provided by your ISP for the PPTP connection.
PPTP Password	Enter the Password provided by your ISP for the PPTP connection.
Retype Password	Re-enter the Password for confirmation.
Service IP Address	Specify PPTP Server IP address that you want to connect to.
My IP Address	This is the IP address that your ISP has given you to establish a PPTP connection.
My Subnet Mask	Enter the Subnet Mask provided by your ISP. (e.g. 255.255.255.0)
Gateway Address	This is the ISP's IP address gateway.
MTU	This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (The default setting is 1460)
Maximum Idle Time	You can specify an idle time threshold (seconds) for the WAN port. This means if no packets have been sent (no one using the Internet) during this specified period, the router will automatically disconnect the connection with your ISP. (The default settings is 300 seconds)

2.5 L2TP

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

Parameter	Description
L2TP Account	Enter the L2TP Account provided by your ISP for the PPTP connection.
L2TP Password	Enter the Password provided by your ISP for the L2TP connection.
Retype Password	Re-enter the Password for confirmation.
Service IP Address	Specify L2TP Server IP address that you want to connect to.
My IP Address	This is the IP address that your ISP has given you to establish a L2TP connection.
My Subnet Mask	Enter the Subnet Mask provided by your ISP. (e.g. 255.255.255.0)
Gateway Address	This is the ISP's IP address gateway.
MTU	This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (Default setting is 1460)
Maximum Idle Time	You can specify an idle time threshold (seconds) for the WAN port. This means if no packets have been sent (no one using the Internet) during this specified period, the router will automatically disconnect the connection with your ISP. (The default settings is 300 seconds)

Step 3) DNS

A Domain Name System (DNS) server is like an index of IP addresses and Web addresses. If you type a Web address into your browser, such as www.router.com, a DNS server will find that name in its index and the matching IP address. Most ISPs provide a DNS server for speed and convenience. If your Service Provider connects you to the Internet with dynamic IP settings, it is likely that the DNS server IP address is provided automatically. However, if there is a DNS server that you would rather use, you need to specify the IP address of that DNS server here.

Parameter	Description
Static DNS Server	Select "Enabled" to allow configuring DNS manually.
Primary DNS Address	This is the ISP's DNS server IP address that they gave you; or you can specify your own preferred DNS server IP address
Secondary DNS Address	This is optional. You can enter another DNS server's IP address as a backup. The secondary DNS will be used if the above DNS fail.

Click on <**Finish**> when you have finished the configuration above.

Now! You have completed the connection configuration. You can start using the router now.

Chapter 3 Advance Features

If you have already configured the Wizard, you do NOT need to configure anything for you to start using the Internet.

Advance features that allow you to configure the router to meet your network's needs such as: Firewall setup, Port Mapping, DMZ, Virtual Servers, QoS, and VLAN option.

Below is a general description of what advance functions are available for this broadband router.

Parameter	Description
3.1 Admin	This section allows you to set XRT-401F's system settings, password and Remote Management Administrator, it also allows you to check system status and log, and provide you the configuration tools.
3.2 WAN	This section allows you to select the connection method in order to establish a connection with your ISP (same as the Wizard section)
3.3 LAN	You can specify the LAN segment's IP address, subnet Mask, enable/disable DHCP and select an IP range for your LAN, you also can check DHCP client list in here.
3.4 NAT	You can configure the Virtual Server, Special Applications, Port Mapping, ALG and DMZ functions in this section. This allows you to specify what user/packet can pass your router's NAT.
3.5 Firewall	The Firewall section allows you to configure Firewall, Client Filtering, URL Filtering and MAC Control.
3.6 Routing	You can configure Static Routing in this section, and check the concurrent Routing Table.
3.7 QoS	You can assign the bandwidth for specific LAN / WAN port. Each LAN Port will follow the bandwidth you assigned.
3.8 Other	You can configure UPnP and DDNS service in this section.
3.9 Status	You can check system information in here, including system status and concurrent hardware information.

Select one of the above advance features selections and proceed to the manual's relevant subsection.

3.1 Admin

This section allows you to set XRT-401F's system settings, password and Remote Management Administrator, it also allows you to check system status and log, and provide you the configuration tools.

Parameter	Description
3.1.1 System Status	You can check system information in here, including system status and concurrent hardware information.
3.1.2 System Settings	This section Includes Host Name, Domain Name, Time Zone, Daylight Saving and NAT enable/disable.
3.1.3 Administrator Settings	Allows you to set user name, password and the idle time out, you can specify a Host IP address that can perform remote management functions.
3.1.4 Firmware Upgrade	This section allows you to upgrade the router's firmware and display the concurrent firmware version.
3.1.5 Configuration Tools	This section allows you to backup or restore the router's configuration. It also allows you to restart router or reset it to factory default setting.
3.1.6 System Log	This section shows the current system and security log of XRT-401F, you also can specify a syslog server to save the log remotely.

3.1.1 Management

The Management Settings function allows you to design user name, password and the idle time, it also can allow you to configure Remote Management function.

Parameter	Description
Password Settings	
User Name	To specify a login name, the default is admin.
Current assword	Enter the current password for verification. Max. length is 12 characters.
New Password	Type a new password in order to access the web-based management website.
Re-type Password	Re-type the password for confirmation.
Remote Management	
Enable	To enable Remote Management function.
IP Address	This is the IP address of the host in the Internet that will have management / configuration access to XRT-401F from a remote site. If the IP Address is 0.0.0.0 , this means anyone can access the router's web console from a remote location
Port	The port number of remote management web interface. For example, port 8080 means, from the Internet, you are required to use the URL: <u>http://XRT401's WAN IP:8080/</u> to have the access / remote mangement to this Router.

3.1.2 System Settings

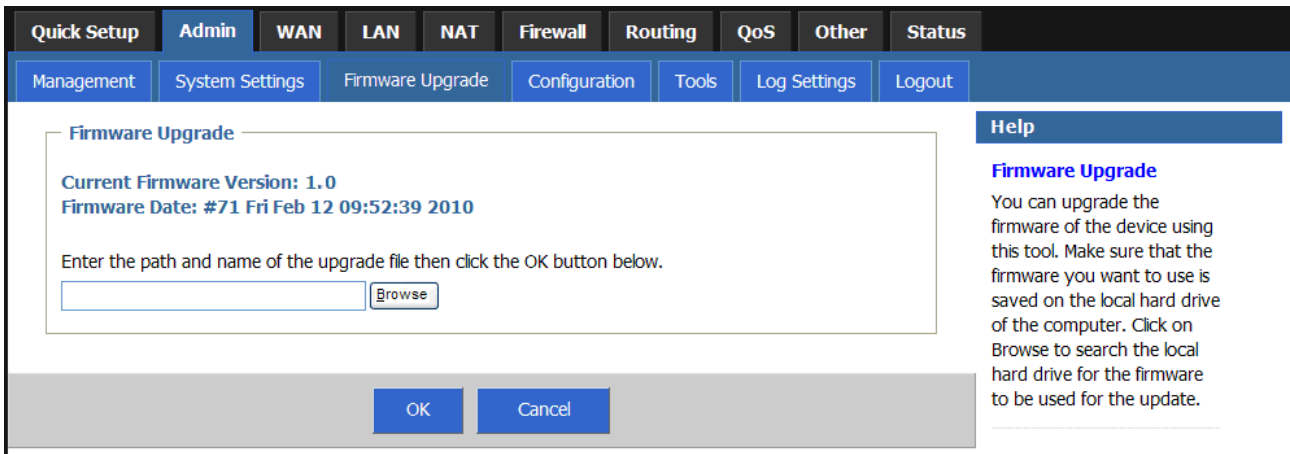
The system screen allows you to specify a time zone, Host Name, Function mode, and enable or disable NAT function of XRT-401F.

The screenshot shows the 'System Settings' page for the XRT-401F. The 'Time' section includes an optional NTP Server field, a Time Zone dropdown menu set to '(GMT+08:00) Hong Kong, Perth, Singapore, Taipei', and a Daylight Saving checkbox which is currently unchecked. The 'Name' section has a Host Name field containing 'XRT-401F'. The 'Operating Mode' section has a NAPT checkbox which is checked and labeled 'Enabled'. The 'Function Mode' section has a dropdown menu set to 'Router'. A 'Help' sidebar on the right provides instructions for the Time Zone selection. At the bottom of the page are 'OK' and 'Cancel' buttons.

Parameter	Description
Host Name	Optional. You can specify a Host name for XRT-401F.
Set Time Zone	Select the time zone of the country where you are currently are. The router will set its time based on your selection.
Daylight Saving	The XRT-401F can also take Daylight savings into account. If you wish to use this function, you must select the enable box to enable your daylight saving configuration.
Host Name	Optional. You can specify a Host name for XRT-401F.
NAPT	Select to enable or disable NAT / NAPT function.
Function Mode	The XRT-401F supports two mode for your application, select the Router mode to act as a Router / Gateway which provides the firewall function to protect your private network. To select the Bridge mode, the XRT-401F will act as a pure 5-Port Ethernet Switch. The default mode is Router.

3.1.3 Firmware Upgrade

This page allows you to upgrade the router's firmware.



Quick Setup **Admin** **WAN** **LAN** **NAT** **Firewall** **Routing** **QoS** **Other** **Status**

Management **System Settings** **Firmware Upgrade** **Configuration** **Tools** **Log Settings** **Logout**

Firmware Upgrade

Current Firmware Version: 1.0
Firmware Date: #71 Fri Feb 12 09:52:39 2010

Enter the path and name of the upgrade file then click the OK button below.

Help

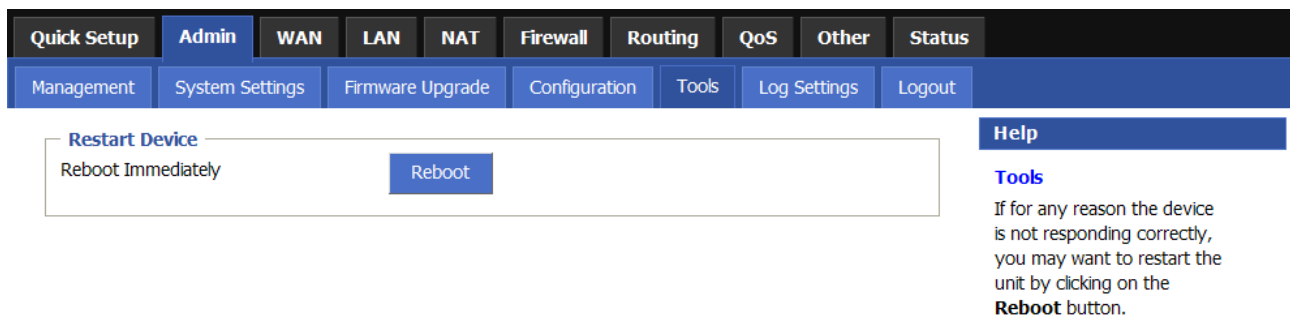
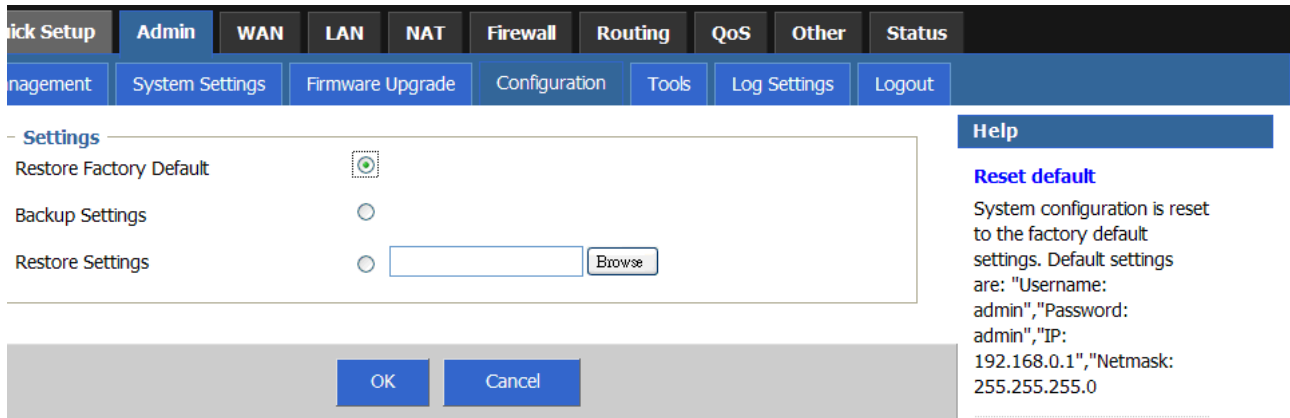
Firmware Upgrade

You can upgrade the firmware of the device using this tool. Make sure that the firmware you want to use is saved on the local hard drive of the computer. Click on Browse to search the local hard drive for the firmware to be used for the update.

Parameter	Description
Firmware Upgrade	<p>This tool allows you to upgrade XRT-401F's system firmware. To upgrade the firmware of your Broadband router, you need to download the firmware file to your local hard disk, and enter that file name and path in the appropriate field on this page. You can also use the Browse button to find the firmware file on your PC.</p>

3.1.4 Configuration and Tool

The Configuration Tools screen allows you to save (**Backup**) the router's current configuration setting. Saving the configuration settings provides an added protection and convenience, if the problems occur with the router and you have to reset to factory default. When you save the configuration setting (**Backup**) you can re-load the saved configuration into the router through the **Restore** selection. If extreme problems occur, you can use the **Restore to Factory Defaults** selection, this will set all configurations to its original default settings (e.g. when you first purchased the router). You also can **Restart** the router's system if any problems exist.



Parameter	Description
Restore Factory Default	If extreme problems occur, you can use the Restore Factory Default selection, this will set all configurations to its original default settings (e.g. when you first purchased the Router).
Backup Settings	Backup the configuration settings provide an added protection and convenience, if the problems occur with the router and you have to reset to factory default.
Restore Settings	When you save the configuration setting (Backup) you can reload the saved configuration into the router through the Restore Settings selection.
Reboot	In the event that the system stops responding correctly or in some way stops functioning, you can perform a reset. Your settings will not be changed.

3.1.5 Log Setting

The Logs record various types of activity on XRT-401F. This data is useful for troubleshooting, but enabling all logs will generate a large amount of data and adversely affect performance. Since only a limited amount of log data can be stored in XRT-401F, log data can also be e-mailed to your PC or sent to a Syslog Server.

Parameter	Description
Remote Log	Select <Enabled> to allow saving the log to Syslog Server.
Log Server	Enter the IP address of your Syslog Server.
Email Log	Select <Enabled> to allow mailing the log to specific user. By default, it is Disabled.
Send Email to	Enter the mail address that your want to mail log to.
SMTP Server	Enter the address or IP address of the SMTP (Simple Mail Transport Protocol) Server you use for outgoing E-mail.

3.2 WAN

Use the WAN Settings screen if you have already configured the Wizard section and you would like to change your Internet connection type. The WAN Settings screen allows you to specify the type of WAN port connect you want to establish with your ISP. The WAN settings offer the following selections for the router's WAN port, **Dynamic IP**, **Static IP Address**, **PPPoE**, **PPTP**, and **L2TP**.

The screenshot shows the WAN Settings page with the following content:

- WAN Connection Mode**
 - Dynamic IP Address: Obtain an IP address automatically from your service provider.
 - Static IP: Use a static IP address. Your service provider gives a static IP address to access Internet services.
 - PPPoE: PPP over Ethernet is a common connection method used for xDSL.
 - PPTP: PPP Tunneling Protocol can support multi-protocol Virtual Private Networks (VPN).
 - L2TP: Layer 2 Tunneling Protocol can support multi-protocol Virtual Private Networks (VPN).
 - BigPond: Australia ISP service.
 - Russia PPPOE(Dual Access): Russia PPP over Ethernet(Dual Access) is a common connection method used for xDSL.
 - Russia PPTP(Dual Access): Russia PPP Tunneling Protocol(Dual Access) can support multi-protocol Virtual Private Networks (VPN).
- Help**
 - Static IP Mode**: The router's IP Address and Subnet Mask as seen by external users on the Internet (including your ISP). If your Internet connection requires a static IP address, then your ISP will provide you with a Static IP Address and Subnet Mask.
 - Default Gateway**: Your ISP will provide you with the Gateway IP Address.
 - MTU (Maximum Transmission Unit)**: Configure the largest packet...

Parameter	Description
3.2.1 Dynamic IP	Your ISP will automatically give you an IP address
3.2.2 Static IP	Your ISP has given you an IP address already
3.2.3 PPPoE	Your ISP requires PPPoE connection
3.2.4 PPTP	Your ISP requires you to use a Point-to-Point Tunneling Protocol (PPTP) connection.
3.2.5 L2TP	Your ISP requires L2TP connection.

3.2.1 Dynamic IP

Choose the Dynamic IP selection if your ISP will automatically give you an IP address. Some ISP's may also require that you fill in additional information such as MAC address (see chapter 2 "Dynamic IP" for more detail).

Dynamic IP Address

Request IP address

MTU(576-1500)

Static DNS Server

Primary DNS

Secondary DNS (Optional)

MAC Cloning Enabled

MAC Address (XX:XX:XX:XX:XX:XX)

Parameter	Description
MTU	This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (The default settings is 1500)
Static DNS Server	Select "Enabled" to allow configuring DNS manually.
Primary DNS Address	This is the ISP's DNS server IP address that they gave you; or you can specify your own preferred DNS server IP address
Secondary DNS Address	This is optional. You can enter another DNS server's IP address as a backup. The secondary DNS will be used if the above DNS fail.
MAC Cloning	If you want to clone your PC's MAC address to XRT-401F, you must enable it first.
MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this MAC address in this section or use the Clone MAC Address button to replace the WAN MAC address with the MAC address of that PC (you have to be using

that PC for the Clone MAC Address button to work).

3.2.2 Static IP

Select Static IP address if your ISP has given you one or more IP address for you to use. Your ISP should provide all the information required in this section. (See chapter 2 “**Static IP**” for more detail)

WAN Static IP

Static IP Address

IP Address

Subnet Mask

Gateway IP

MTU (576-1500)

Static DNS Server

Primary DNS

Secondary DNS (Optional)

MAC Cloning Enabled

MAC Address (XX:XX:XX:XX:XX:XX)

More IP addresses

Does ISP provide more IP addresses?

Parameters	Description
Static IP	Your ISP has given you an IP address already, and you must type in the related IP address such as IP Address , Subnet Mask and Gateway .
Does ISP provide more IP addresses?	Select <Yes> if your ISP provide more than one IP address.
More IP address	Type the other IP address that ISP provide to you, This IP address will be useful in DMZ function. Max IP address allowed is 6 separated IP address.

3.2.3 PPPoE (PPP over Ethernet)

Select PPPoE if your ISP requires the PPPoE protocol to connect you to the Internet. Your ISP should provide all the information required in this section. (See chapter 2 “PPPoE” for more detail)

PPPOE

Address Mode Dynamic PPPoE Static PPPoE

IP Address

PPPOE Account

PPPOE Password

Please retype your password

Service Name

MTU (546-1492)

Maximum Idle Time (60-3600) seconds (0: No timeout)

Connection Mode

Primary DNS

Secondary DNS (Optional)

MAC Cloning Enabled

MAC Address (XX:XX:XX:XX:XX:XX)

Parameter	Description
PPPoE	Your ISP requires PPPoE connection, and you must type in the User Name, Password that your ISP provide.
MTU	This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (The default settings is 1492)
Connection Mode	Select the desired option: Keep-alive (maintain connection) The connection will never be disconnected by this device. If disconnected by your ISP, the connection will be re-established immediately. (However, this does not ensure that your Internet IP address will remain unchanged.) Auto-Connect An Internet connection is automatically made when required, and disconnected when idle for the time period specified by the

	<p>"Maximum Idle Time (60~3600)".</p> <p>Manual-on</p> <p>You must manually establish and terminate the connection.</p>
Static DNS Server	Select "Enabled" to allow configuring DNS manually.
Primary DNS Address	This is the ISP's DNS server IP address that they gave you; or you can specify your own preferred DNS server IP address
Secondary DNS Address	This is optional. You can enter another DNS server's IP address as a backup. The secondary DNS will be used if the above DNS fail.
MAC Cloning	If you want to clone your PC's MAC address to XRT-401F, you must enable it first.
MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this MAC address in this section or use the Clone MAC Address button to replace the WAN MAC address with the MAC address of that PC (you have to be using that PC for the Clone MAC Address button to work).

3.2.4 PPTP

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

WAN PPTP

WAN Interface Settings

WAN Interface IP	Static IP	▼
IP Address	<input type="text" value="0.0.0.0"/>	
Subnet Mask	<input type="text" value="255.255.255.0"/>	
Gateway	<input type="text" value="0.0.0.0"/>	
Primary DNS	<input type="text" value="61.64.127.1"/>	
Secondary DNS	<input type="text" value="61.64.127.2"/>	(Optional)
MAC Cloning	<input type="checkbox"/> Enabled	
MAC Address (XX:XX:XX:XX:XX:XX)	<input type="text" value="00:00:00:00:00:00"/>	<input type="button" value="Clone MAC"/>

PPTP Settings

PPTP Account	<input type="text" value="pptp"/>	
PPTP Password	<input type="password" value="••••••"/>	
Please retype your password	<input type="password" value="••••••"/>	
PPTP Server (IP or Domain name)	<input type="text" value="0.0.0.0"/>	
Connection ID	<input type="text"/>	(Optional)
MTU (546-1460)	<input type="text" value="1460"/>	
Maximum Idle Time (60-3600)	<input type="text" value="300"/>	seconds (0: No timeout)
Connection Mode	keep-alive ▼	
MPPE	<input type="checkbox"/>	

Parameter	Description
WAN Interface Settings	To configure WAN Interface IP
Dynamic IP	<p>The ISP requires you to obtain an IP address by DHCP before connecting to the PPTP server.</p> <p>Clone MAC Address Select <Enabled> to allow replacing the WAN MAC address with a specific MAC address.</p> <p>MAC Address Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this MAC address in this section or use the "Clone MAC Address" button to replace the WAN MAC address with the MAC address of that PC.</p>
Static IP	The ISP gives you a static IP to be used to connect to the PPTP server. You must type in the related IP address such as IP Address, Subnet Mask and Gateway .
PPTP Settings	
PPTP Account	Enter the PPTP Account provided by your ISP for the PPTP connection.
PPTP Password	Enter the Password provided by your ISP for the PPTP connection.
Retype Password	Re-enter the Password for confirmation.
PPTP Server	If your LAN has a PPTP gateway, then enter that PPTP gateway IP address or domain name here. If you do not have a PPTP gateway then enter the ISP's Gateway IP address above or domain name.
Connection ID	This is the ID given by ISP. This is optional.
MTU	This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (The default settings is 1460)
Maximum Idle Time	You can specify an idle time threshold (seconds) for the WAN port. This means if no packets have been sent (no one using the Internet) during this specified period, the router will automatically disconnect the connection with your ISP.
Connection Mode	Select the desired option: Keep-alive (maintain connection)

	<p>The connection will never be disconnected by this device. If disconnected by your ISP, the connection will be reestablished immediately. (However, this does not ensure that your Internet IP address will remain unchanged.)</p> <p>Auto-Connect An Internet connection is automatically made when required, and disconnected when idle for the time period specified by the "Maximum Idle Time (60~3600)".</p> <p>Manual-on You must manually establish and terminate the connection.</p>
MPPE	<p>Select <Enabled> to enable "Microsoft Point to Point Encryption" ability.</p>

3.2.5 L2TP

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

WAN L2TP

WAN Interface Settings

WAN Interface IP: (dropdown)

IP Address:

Subnet Mask:

Gateway:

Static DNS Server:

Primary DNS:

Secondary DNS: (Optional)

MAC Cloning: Enabled

MAC Address (XX:XX:XX:XX:XX:XX):

L2TP Settings

L2TP Account:

L2TP Password:

Please retype your password:

L2TP Server (IP or Domain name):

MTU (546-1460):

Maximum Idle Time (60-3600): seconds (0: No timeout)

Connection Mode: (dropdown)

Parameter	Description
WAN Interface Settings	To configure WAN Interface IP
Dynamic IP	The ISP requires you to obtain an IP address by DHCP before connecting to the L2TP server.
	<p>MAC Cloning</p> <p>Select <Enabled> to allow replacing the WAN MAC address with a specific MAC address.</p>

	<p>MAC Address</p> <p>Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this MAC address in this section or use the "Clone MAC Address" button to replace the WAN MAC address with the MAC address of that PC.</p>
Static IP	<p>The ISP gives you a static IP to be used to connect to the PPTP server. You must type in the related IP address such as IP Address, Subnet Mask and Gateway.</p>
L2TP Settings	
L2TP Account	<p>Enter the L2TP Account provided by your ISP for the L2TP connection.</p>
L2TP Password	<p>Enter the Password provided by your ISP for the L2TP connection.</p>
Retype Password	<p>Re-enter the Password for confirmation.</p>
L2TP Server	<p>gateway IP address or domain name here. If you do not have a L2TP gateway then enter the ISP's Gateway IP address above or domain name.</p>
MTU	<p>This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (The default settings is 1460)</p>
Maximum Idle Time	<p>You can specify an idle time threshold (seconds) for the WAN port. This means if no packets have been sent (no one using the Internet) during this specified period, the router will automatically disconnect the connection with your ISP.</p>
Connection Mode	<p>Select the desired option:</p> <p>Keep-alive (maintain connection)</p> <p>The connection will never be disconnected by this device. If disconnected by your ISP, the connection will be reestablished immediately. (However, this does not ensure that your Internet IP address will remain unchanged.)</p> <p>Auto-Connect</p> <p>An Internet connection is automatically made when required, and disconnected when idle for the time period specified by the "Maximum Idle Time (60~3600)".</p> <p>Manual-on</p> <p>You must manually establish and terminate the connection.</p>

3.2.6 BigPond (Australia)

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

BigPond

BigPond Account

BigPond Password

Please retype your password

BigPond Server (IP or Domain name)

Request IP address

MTU (576-1500)

Static DNS Server

Primary DNS

Secondary DNS (Optional)

MAC Cloning Enabled

MAC Address (XX:XX:XX:XX:XX:XX)

Parameter	Description
BigPond Account	Enter the L2TP Account provided by your ISP for the BigPond connection.
BigPond Password	Enter the Password provided by your ISP for the BigPond connection.
Retype Password	Re-enter the Password for confirmation.
BigPond Server	gateway IP address or domain name here. If you do not have a BigPond gateway then enter the ISP's Gateway IP address above or domain name.
MTU	This is optional. You can specify the maximum size of your transmission packet to the Internet. Leave it as it is if you do not wish to set a maximum packet size. (The default settings is 1500)

3.3 LAN

The LAN Port screen below allows you to specify a private IP address for your router's LAN ports as well as a subnet mask for your LAN segment.

3.3.1 LAN Settings

The screenshot shows the LAN Settings configuration page. The navigation tabs at the top include Quick Setup, Admin, WAN, LAN (selected), NAT, Firewall, Routing, QoS, Other, and Status. The sub-navigation tabs are LAN Settings (selected), DHCP Client List, and VLAN Port Settings. The main settings area includes:

- Settings**
 - IP Address: 192.168.0.1
 - Subnet Mask: 255.255.255.0
 - The Gateway acts as DHCP Server: Enabled
 - IP Pool Starting Address: 192.168.0.
 - IP Pool Ending Address: 192.168.0.
 - Lease Time: (dropdown)
 - DNS Proxy: Enabled

At the bottom, there are OK and Cancel buttons. On the right, a Help section titled "LAN Setting" explains that the router IP Address and Subnet Mask are as seen on the internal LAN, with default values of 192.168.1.1 for IP Address and 255.255.255.0 for Subnet Mask. Below that, a section titled "DHCP (Dynamic Host Configuration Protocol)" explains that DHCP is a protocol used to obtain information necessary for operation in an Internet Protocol network, reducing system administration workload.

Parameter	Default	Description
IP address	192.168.0.1	This is the router's LAN port IP address (Your LAN clients default gateway IP address)
IP Subnet Mask	255.255.255.0	Specify a Subnet Mask for your LAN segment
DHCP Server	Enabled	You can enable or disable the DHCP server. By enabling the DHCP server the router will automatically give your LAN clients an IP address. If the DHCP is not enabled then you'll have to manually set your LAN client's IP addresses; make sure the LAN Client is in the same subnet as this broadband router if you want the router to be your LAN client's default gateway.
IP Pool Starting/Ending Address	The IP range is from 192.168.0.2 to 192.168.0.100 .	You can select a particular IP address range for your DHCP server to issue IP addresses to your LAN Clients.
Lease Time	Eight Hours	The DHCP when enabled will temporarily give your LAN clients an IP address. In the Lease Time setting you can specify the time period that the DHCP lends an IP address to your LAN

		clients. The DHCP will change your LAN client's IP address when this time threshold period is reached
DNS Proxy	Enable	Select <Enabled> that all DNS requests to a specific Domain Name will be routed to the XRT-401F's IP address. If you want to use the DNS Proxy function of the device, the end user's main DNS server IP address should be the same IP Address as the device.

3.3.2 DHCP Client List

You can check your current status of the DHCP client here, it also allow you to add the client IP address with specific MAC address manually.

Parameter	Description
DHCP Client List	
Host Name	The DHCP client list allows you to see which clients are connected to the Router via IP address, host name, remaining time and MAC address. You can select static to fix it
IP Address	
MAC Address	
Remaining Time	
Static	You can specify the current client to be a static client.
Static Client	
Host Name	This is optional, you can specify a host name for your static client.
IP Address	Fill in the IP address which you wish to be a static client.
MAC Address	Fill in the MAC address which you wish to be a static client.

3.3.3 VLAN Settings

By default, the VLAN setting is disabled, however, you can turn it on for purpose, or setup the port based priority base on the VLN setting here.

The default setting is that, All the ports, say port 1 to port 4 is bound to WAN interface.

And WAN interface is bound to port 5 of the Router (where now, it is physically with printing **WAN**)

So, all the network traffic that is going to go Internet, all with going out through the WAN port. Unless VLAN is enabled yet the port's VLAN is being disabled.

And once turn it on, you can base on PVID to separate the LAN. For example as the figure below, port 1 is connected with IP Phone, port 2 is connected with Video device, and port 3, port 4 is normal data ports. You can just change the PVID of port #1 to 4, port #2 to 5. Then, port #1, #2, are being separated from port 3 and port 4.


At the same time, you can also set the priority for port #1 to 7, port #2 to 4, and then for port #3, port #4 to 0, then, the Router will schedule the network packets base on the priority for packet out from that dedicated LAN port.

The screenshot shows the router's configuration interface. At the top, there are tabs for 'Quick Setup', 'Admin', 'WAN', 'LAN', 'NAT', 'Firewall', 'Routing', 'QoS', 'Other', and 'Status'. Under the 'LAN' tab, there are sub-tabs for 'LAN Settings', 'DHCP Client List', and 'VLAN Port Settings'. The 'VLAN Port Settings' sub-tab is active, showing a 'Settings' window for 'VLAN Control'. The 'Enabled VLAN function' dropdown is set to 'Enabled'. Below this, there are fields for 'Enabled' (checked), 'Port-' (1), 'PVID' (4), '802.1p Priority' (7), and 'Wan' (unchecked). A 'Modify' button is present. At the bottom of the settings window is a table with columns: 'Port-', 'PVID', '802.1p Priority', 'Wan', and 'Action'. The table contains five rows of data, with the first row highlighted in yellow.

	Port-	PVID	802.1p Priority	Wan	Action
<input checked="" type="checkbox"/>	1	4	7	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	2	5	4	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	3	1	0	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	4	1	0	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	5	2	7	<input checked="" type="checkbox"/>	

At the bottom of the interface, there are 'OK' and 'Cancel' buttons.

Parameter	Default	Description
VLAN Enable	Disable	Enable will turn on the port based VLAN. [After enabled, the options will show up.]
Port VLAN Enable	Enabled	The port join to the WAN VLAN group. To disable will make the port isolated from the WAN.
PVID	1	The VLAN ID of the selected port. 1 for LAN 1 -4 2 for WAN at port 5
Priority	4	The priority of the selected port.
WAN	Disabled	By default, the check box only enabled for port #5.

 Note	<ol style="list-style-type: none"> 1. Different VLAN will have different PVID. Those ports with the same PVID will still see each other. 2. WAN should use different VID to LAN VID. 3. Due to the Router is a single port WAN Router, ONLY ONE WAN check box is allowed. By default, it is set on port 5. 4. This Router support port based VLAN at Router mode, yet at Bridge mode there are two different VLAN types, port based and 802.1q tagged VLAN for choice
--	---

3.4 NAT

Network Address Translation (NAT) allows multiple users at your local site to access the Internet through a single Public IP Address or multiple Public IP Addresses. NAT provides Firewall protection from hacker attacks and has the flexibility to allow you to map Private IP Addresses to Public IP Addresses for key services such as Websites and FTP. To meet various field applications, XRT-401F NAT function can be disabled to as a regular router. If NAT is disabled, all LAN side workstations must have valid IP addresses for Internet access. If the router is used for routing application, not for Internet access, then the NAT function can be disabled.

Parameter	Description
3.4.1 Virtual Server	You can have different services (e.g. email, FTP, Web etc.) going to different service servers/clients in your LAN. The Virtual Server allows you to re-direct a particular service port number (from the Internet/WAN Port) to a particular LAN IP address and its service port number.
3.4.2 Port Triggering	Some applications require multiple connections, such as Internet games, video conferencing, Internet telephony and others. In this section you can configure the router to support these types of applications.
3.4.3 Port Mpping	You can have different services (e.g. email, FTP, Web etc.) going to different service servers/clients in your LAN. The Port Forwarding allows you to re-direct a particular range of service port numbers (from the Internet/WAN Ports) to a particular LAN IP address.
3.4.4 Passthrough	You can select special applications that need "Passthrough" to support here.
3.4.5 DMZ	The DMZ function allows you to re-direct all packets going to your WAN port IP address to a particular IP address in your LAN.

3.4.1 Virtual Server

Use the Virtual Server function when you want different servers/clients in your LAN to handle different service/Internet application type (e.g. Email, FTP, Web server etc.) from the Internet. Computers use numbers called port numbers to recognize a particular service/Internet application type. The Virtual Server allows you to re-direct a particular service port number (from the Internet/WAN Port) to a particular LAN private IP address and its service port number.

Parameter	Description
Enable	To enable the rule of Virtual Server.
Private IP	This is the LAN client/host IP address that the Public Port number packet will be sent to. Note: You need to give your LAN PC clients a fixed/static IP address for Virtual Server to work properly.
Private Port	This is the port number (of the above Private IP host) that the below Public Port number will be changed to when the packet enters your LAN (to the LAN Server/Client IP)
Type	Select the port number protocol type (TCP, UDP or both). If you are unsure, then leave it to the default both protocols.
Public Port	Enter the service (service/Internet application) port number from the Internet that will be re-directed to the above Private IP address host in your LAN
Comment	The description of this setting.

3.4.2 Port Triggering

Some applications require multiple connections, such as Internet games, video conferencing, Internet telephony and others. In this section you can configure the router to support multiple connections for these types of applications.

Parameter	Description
Enable	To enable the rule of Port Triggering.
Trigger Port	This is the out going (Outbound) range of port numbers for this particular application
Trigger Type	Select whether the outbound port protocol is "TCP", "UDP" or both.
Public Port	Enter the In-coming (Inbound) port or port range for this type of application (e.g. 2300-2400, 47624) Note: Individual port numbers are separated by a comma (e.g. 47624, 5775, 6541 etc.). To input a port range use a "dash" to separate the two port number range (e.g. 2300-2400)
Public Type	Select the Inbound port protocol type: "TCP", "UDP" or both
Comment	The description of this setting.

Example: Special Applications

If you need to run applications that require multiple connections, then specify the port (outbound) normally associated with that application in the "Trigger Port" field. Then select the protocol type (TCP or UDP) and enter the public ports associated with the trigger port to open them up for inbound traffic.

Example:

ID	Trigger Port	Trigger Type	Public Port	Public Type	Comment
1	28800	UDP	2300-2400,47624	TCP	MSN Game Zone
2	6112	UDP	6112	UDP	Battle.net

In the example above, when a user trigger's port 28800 (outbound) for MSN Game Zone then the router will allow incoming packets for ports 2300-2400 and 47624 to be directed to that user.

**Note**

Only one LAN client can use a particular special application at a time.

3.4.3 Port Mapping

The Port Mapping allows you to re-direct a particular range of service port numbers (from the Internet/WAN Ports) to a particular LAN IP address. It helps you to host some servers behind the router NAT firewall.

The screenshot shows the 'Port Mapping' configuration page. At the top, there are navigation tabs: Quick Setup, Admin, WAN, LAN, NAT (selected), Firewall, Routing, QoS, Other, and Status. Below these are sub-tabs: Virtual Server, Port Triggering, Port Mapping (selected), Passthrough, and DMZ. The main content area is divided into 'Settings' and 'Rules Listing'. The 'Settings' section includes:

- Enabled:** A checked checkbox.
- Comment:** An empty text input field.
- Server IP:** A text input field containing '192.168.0.' followed by a small empty box.
- Mapping Ports (port1, port2, port3-port4...):** A dropdown menu set to 'TCP' and an empty text input field.
- Buttons:** 'Add' and 'Modify' buttons.

 The 'Rules Listing' section shows a table with the following columns: Comment, Server IP, Mapping Ports, and Action. The table is currently empty, with a '0/10(using/max)' indicator. At the bottom of the settings area are 'OK' and 'Cancel' buttons. On the right side, there is a 'Help' section titled 'Port Mapping' which states: 'Allow 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.'

Parameter	Description
Enable	To enable the rule of Port Mapping
Comment	The description of this setting.
Server IP	This is the private IP of the server behind the NAT firewall. Note: You need to give your LAN PC clients a fixed/static IP address for Port Forwarding to work properly.
Type	This is the protocol type to be forwarded. You can choose to forward "TCP" or "UDP" packets only or select "both" to forward both "TCP" and "UDP" packets.
Mapping Ports	The range of ports to be forwarded to the private IP.

3.4.4 Passthrough

You can select applications such as PPTP/IPSec/L2TP VPN, FTP and H323 Netmeeting that need “Passthrough” to support. It can let these applications correctly pass through the NAT Router.

Parameter	Description
Enable	You can select to enable “Passthrough” of an application and then the router will let that application correctly pass through the NAT gateway.

3.4.5 DMZ

If you have a local client PC that cannot run an Internet application (e.g. Games) properly from behind the NAT firewall, then you can open the client up to unrestricted two-way Internet access by defining a DMZ Host. The DMZ function allows you to re-direct all packets going to your WAN port IP address to a particular IP address in your LAN. The difference between the virtual server and the DMZ function is that the virtual server re-directs a particular service/Internet application (e.g. FTP, websites) to a particular LAN client/server, whereas DMZ re-directs all packets (regardless of services) going to your WAN IP address to a particular LAN client/server.

The screenshot displays the DMZ configuration page. The 'Settings' section includes a checkbox for 'Enabled' which is checked. The 'Public IP Address' is selected as 61.62.27.185. The 'IP Address of Virtual DMZ Host' is entered as 192.168.0.2, with an option to 'Get current LAN IP automatically' which is unchecked. Below these fields are 'Add' and 'Modify' buttons. The 'Rules Listing' section shows 0/6 rules. A 'Help' section on the right provides a detailed explanation of the DMZ function. At the bottom of the configuration area are 'OK' and 'Cancel' buttons.

Parameter	Description
Enable	Enable/disable DMZ
Public IP Address	The IP address of the WAN port or any other Public IP addresses given to you by your ISP
IP Address of Virtual DMZ	Input the IP address of a particular host in your LAN that will receive all the packets originally going to the WAN port/Public IP address above.
Action	Press <Add> to add DMZ rule.

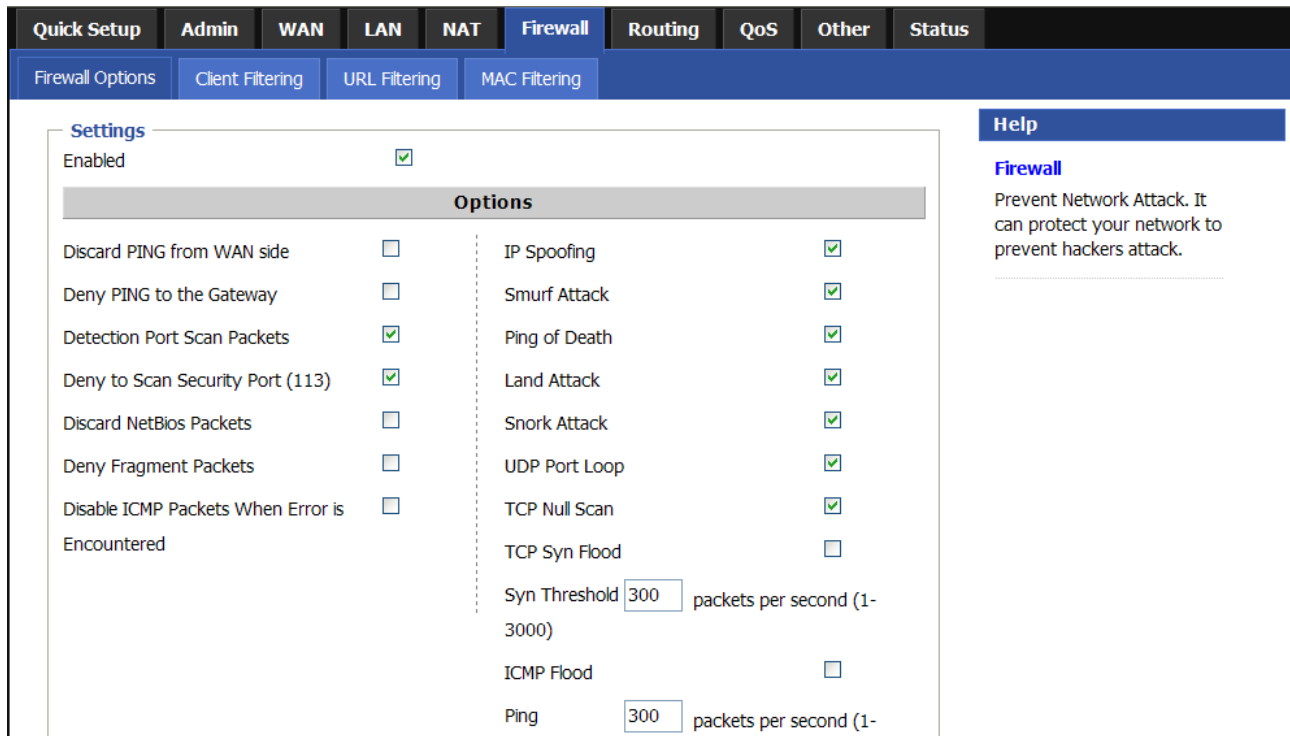
3.5 Firewall

XRT-401F provides extensive firewall protection by restricting connection parameters, thus limiting the risk of hacker attack, and defending against a wide array of common Internet attacks.

Parameter	Description
3.5.1 Firewall Options	XRT-401F's firewall can block common hacker attacks and can log the attack activities.
3.5.2 Client Filtering	Client Filtering allows you to specify which hosts users can or cannot access to certain Internet applications by IP address.
3.5.3 URL Filtering	URL Filtering allow you to specify which URLs can not be accessed by users.
3.5.4 MAC Filtering	MAC Filtering allows you to specify which hosts users can or cannot access to Internet by MAC address.

3.5.1 Firewall Options

XRT-401F's firewall can block common hacker attacks, including Denial of Service, Ping of Death, Port Scan and Sync Flood. If Internet attacks occur the router can log the events.



Firewall Options	
Parameter	Description
Enable	Select it to enable Firewall Options function.
Discard Ping From WAN	The router's WAN port will not respond to any Ping requests
Deny to Ping the Gateway	The router's LAN port will not respond to any Ping requests
Drop Port Scan Packets	Protection the router from Port Scan.
Allow to Scan Security Port (113)	Select to allow Identification Protocol (Port 113) to be scanned.
Discard NetBIOS Packets	Select to not allow NetBIOS protocol to pass through router
Deny Fragment Packets	Select to deny Fragment Packets passing through.
Send ICMP packets when error	Select to allow sending ICMP error packets to the node who send out the wrong packets..
IP Spoofing	Protection the router from IP Spoofing attack.
Smurf Attack	Protection the router from Smurf Attack attack.
Ping of Death	Protection the router from Ping of Death attack.
Land Attack	Protection the router from Land Attack attack.
Snork Attack	Protection the router from Snork Attack attack.
UDP Port Loop	Protection the router from UDP Port Loop attack.
TCP Sync Flood	Protection the router from Sync Flood attack.

ICMP Flood	Protection the router from ICMP Flood Packet attack.
-------------------	--

3.5.2 Client Filtering

You can filter Internet access for local clients based on IP addresses, application types, (i.e., HTTP port), and time of day.

The screenshot shows the 'Client Filtering' configuration page. The 'Settings' section includes:

- Enable Client Filter:**
- Enable:**
- IP Address:** 192.168.0. [] ~ []
- Port:** [] ~ []
- Type:** TCP (dropdown)
- Block Time:** Always Block
- Day:** SUN MON TUE WED THU FRI SAT
- Time:** Always (dropdown) ~ Always (dropdown)
- Comment:** []

 A table at the bottom lists the columns: IP Address, PortType, Block Time, Comment, and Action. A 'Rules Listing' section shows 0/20 (using/max) rules. A 'Help' sidebar on the right states: 'Client Filter: Allow you to block Internet access for local clients based on IP addresses, application types, (i.e., HTTP port), and time of day.'

Parameter	Description
Enable Client Filter	Select to enable "Client Filtering" function.
IP	Enter the IP address range that you wish to apply this rule.
Port	You can assign the specific port ranges. The router will block clients from accessing Internet services that use these ports.
Type	This allows you to select UDP, TCP or both protocols that you want to block.
Block Time	Select <Always> router will block the access forever. Select <Block> router will block the access according to the time schedule.
Day	Select a certain days in the week to block the access.
Time	Select a certain time in a day that you want to block.
Comment	The description of this setting.
Enable	To enable the rule of Client Filtering

3.5.3 URL Filtering

You can deny or allow the access for some Web sites from particular PCs by entering a full URL address or just keyword of the Web site.

The screenshot shows the 'URL Filtering' configuration page. The 'URL Filter Control' dropdown is set to 'Allow Internet access for the following URL addresses'. The 'IP Address' field is '192.168.0.' followed by two empty input boxes and a tilde '~'. The 'URL filter string' field is empty. The 'Enable' checkbox is unchecked. There are 'Add' and 'Modify' buttons. The 'Rules Listing' table has columns for 'IP Address', 'URL filter string', and 'Action'. At the bottom are 'OK' and 'Cancel' buttons. A 'Help' section on the right explains the URL Filter.

Parameter	Description
URL Filter Control	Enable/disable URL Blocking Deny Internet access for the following URL address Allow Internet access for the following URL address
IP	Enter the IP address range that you wish to apply this rule.
URL filter string	You can enter the full URL address or the keyword of the web site you want to block.
Enable	To enable the rule of URL Filtering.

3.5.4 MAC Filtering

You can filter Internet access for local clients based on MAC Address. The MAC address filter enables you to allow or restrict specified nodes from communicating with other nodes.

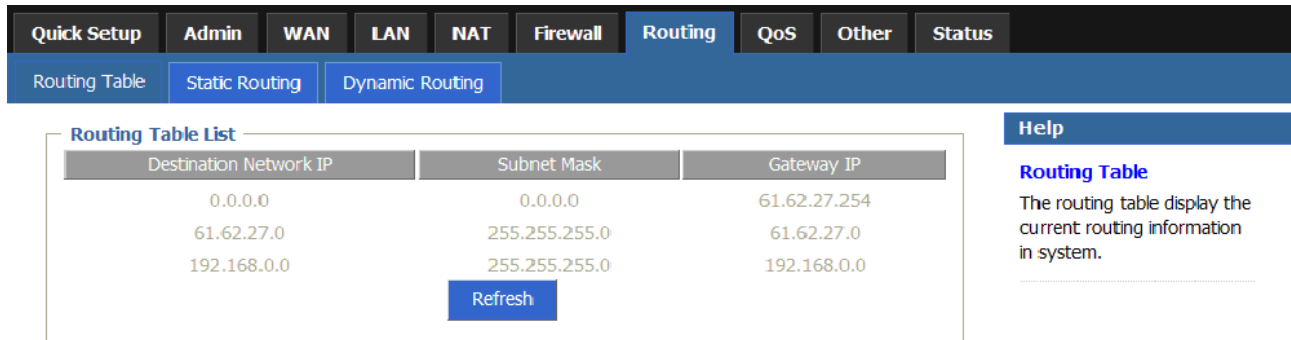
Parameters	Description
MAC Address Control	Check “Enabled” to enable MAC Filtering. Select Deny or Allow the Internet access for the following MAC address connects to Internet.
Configure MAC Address	Fill in or “MAC Address” and “Comment” of the PC, or select the MAC Address from “Action”, and then click “Add”.

3.6 Routing

This section allows you to configure XRT-401F's static route and check the current routing table. The routing is only for internal routing using, so you do not need to disable NAT function, and there are two ways to manage the device's routing information, it includes **RIP** and **Static**.

3.6.1 Routing Table

The routing table display the current routing information in system.



Destination Network IP	Subnet Mask	Gateway IP
0.0.0.0	0.0.0.0	61.62.27.254
61.62.27.0	255.255.255.0	61.62.27.0
192.168.0.0	255.255.255.0	192.168.0.0

[Refresh](#)

Help

Routing Table
The routing table display the current routing information in system.

Parameter	Description
Destination LAN IP	The IP address where packets will go to.
Subnet Mask	The subnet mask of the destination IP address.
Gateway	The gateway that the packets will pass by during transmission.

3.6.2 Static Routing

This page is used to configure the routing information. Here you can add / delete IP routes.

A static route is a pre-determined pathway that network information must travel to reach a specific host or network. (For example: Destination Network IP: 192.168.100.1, Subnet Mask: 255.255.255.0, Gateway IP: 192.168.0.2)

Parameter	Description
Destination LAN IP, Subnet Mask	Specify the destination LAN IP where the packets will be routing to packets will be routing to.
Gateway	Specify the other gateway IP that will route the packets to the destination.
Add	Click “Add” to add this routing information.

3.6.3 Dynamic Routing

Dynamic Routing can be used to cache routes learned by routing protocols, thus allowing the automation of static routing maintenance. The router, using the RIP (Routing Information Protocol) protocol, determines the network packet's route based on the fewest number of hops between the source and the destination. In this case, you could automatically adjust to physical changes in the network layout.

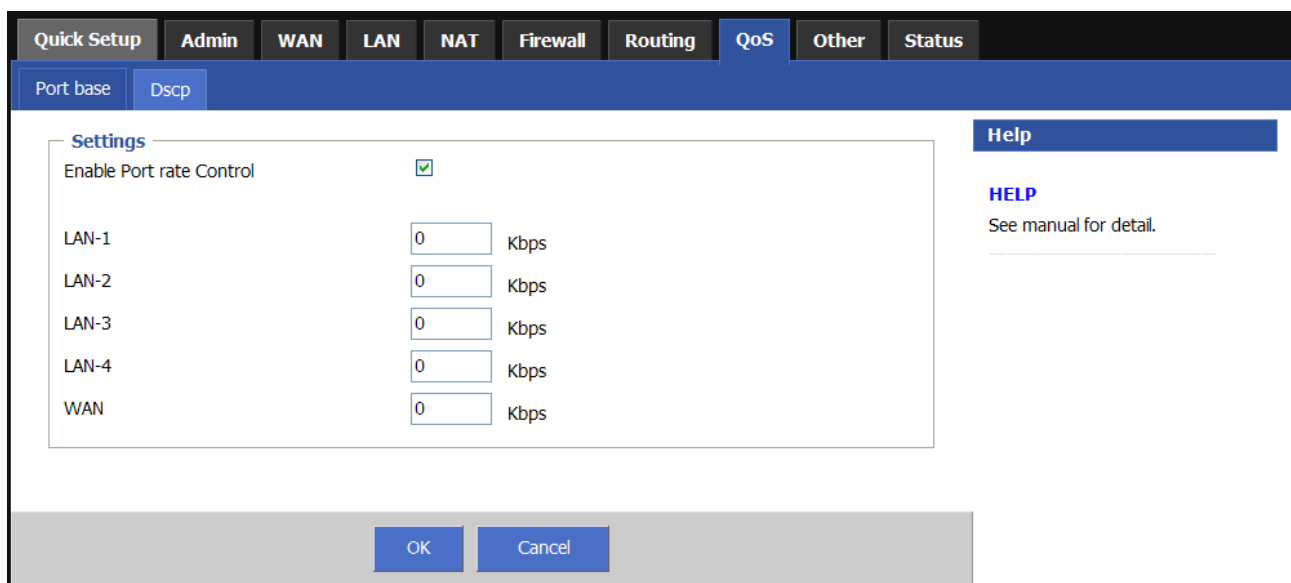
Parameter	Description
Working Mome	Specify your XRT-401F work as Router or Gateway.
Listen Mode	Select the RIP version , and to start or stop RIP based on the Global RIP mode selected.
Supply Mode	This parameter determines if the XRT-401F includes the router to this remote node in its RIP broadcasts or RIP Multicast. Select the Mode you want to use.

3.7 QoS

By configuring the QoS, you can assign the bandwidth for specific LAN / WAN port. Each LAN Port will follow the bandwidth you assigned. The QoS can smooth your network usage for Triple-Play applications such as the VoIP, IPTV and Internet.

3.7.1 Port based

When enabled, you can key in the max / gurantee transmit bandwidth in Kbps, for example, if the WAN **upload** bandwidth is 2Mbps, then, key in 2048, and if the LAN 1 is a PC that want to limit the **PC receiving rate** below 1Mbps, then, key in 1024. That is, key in a number that nubere will be the maximum bandwidth that the Router will give to the connected devices. And keep it in 0 for un-limits at the transmit rate.



The screenshot shows the QoS configuration page in a web interface. The top navigation bar includes tabs for Quick Setup, Admin, WAN, LAN, NAT, Firewall, Routing, QoS (selected), Other, and Status. Below this, there are sub-tabs for Port base and Dscp. The main content area is titled 'Settings' and contains the following elements:

- Enable Port rate Control:** A checkbox that is checked.
- LAN-1:** A text input field containing '0' followed by 'Kbps'.
- LAN-2:** A text input field containing '0' followed by 'Kbps'.
- LAN-3:** A text input field containing '0' followed by 'Kbps'.
- LAN-4:** A text input field containing '0' followed by 'Kbps'.
- WAN:** A text input field containing '0' followed by 'Kbps'.

At the bottom of the settings area, there are two buttons: 'OK' and 'Cancel'. To the right of the settings area, there is a 'Help' section with a 'HELP' link and the text 'See manual for detail.'.



This option can cowork with VLAN priority (refer to section 3.3.3) options to have a optimal network packet transmission.

3.7.2 DSCP

The XRT-401F also support DSCP (Differentiated Services Code Point) that can help to recognize and provide the QoS features to the network packts.

When turned on, the Rotuer will look up the DS (Differentiated Services) field for packt priority.

It will help to forward the packest that contain the priority information accordingly. The DSCP value can be from 0 (lowest priority) to 63 (highest priority). The Router can base on the priority to put the packest into three Weighted Queue, where each queue can have its buffer level from 1 to 15.

Quick Setup Admin WAN LAN NAT Firewall Routing **QoS** Other Status

Port base Dscp

Settings

Enable DSCP

High queue weight (1-15)

Medium queue weight (1-15)

Low queue weight (1-15)

Enable Rule

DSCP value (0-63)

Queue map

Description

Rules Listing 1/10(using/max)

<input type="checkbox"/>	DSCP value	Queue map	Description	Action
<input checked="" type="checkbox"/>	38	High Priority		

Help

HELP
See manual for detail.

Below is a reference table for the values. And also the reference about IP precedence level

DSCP Name	DS Field Value		IP Precedence
	Binary	Decimal	
CS0	000 000	0	0
CS1	001 000	8	1
AF11	001 010	10	1
AF12	001 100	12	1
AF13	001 110	14	1
CS2	010 000	16	2
AF21	010 010	18	2
AF22	010 100	20	2
AF23	010 110	22	2
CS3	011 000	24	3
AF31	011 010	26	3
AF32	011 100	28	3
AF33	011 110	30	3
CS4	100 000	32	4
AF41	100 010	34	4
AF42	100 100	36	4
AF43	100 110	38	4
CS5	101 000	40	5
EF	101 110	46	5

CS6	110 000	48	6
CS7	111 000	56	7

IP Precedence Level:

Priority Level	Traffic Type
0 (lowest)	Best Effort
1	Background
2	Standard (Spare)
3	Excellent Load (Business Critical)
4	Controlled Load (Streaming Multimedia)
5	Voice and Video (Interactive Media and Voice)
6	Layer 3 Network Control Reserved Traffic
7 (highest)	Layer 2 Network Control Reserved Traffic

3.8 Other

3.8.1 UPnP

With **UPnP (Universal Plug and Play)**, all PCs in your Intranet will discover this router automatically. So you do not have to do any configuration for your PC and can access the Internet through this router easily.

UPnP allows automatic discovery and configuration of equipment attached to your LAN. UPnP is supported by Windows ME, XP, or later. It provides compatibility with networking equipment, software and peripherals of the over 400 vendors that cooperate in the Universal Plug and Play forum.

The screenshot shows the router's configuration page for UPnP. The 'Settings' section includes:

- Enable UPnP:** Enabled
- Advertise Time (60-1800):** 1800
- Refresh Port Mapping:** Refresh button

Remote Host	External Port	Internal Client	Internal Port	Protocol	Description
0.0.0.0	36877	192.168.0.2	36877	tcp	uTorrent (TCP)
0.0.0.0	36877	192.168.0.2	36877	udp	uTorrent (UDP)

The 'Help' section on the right states: "UPnP (Universal Plug and Play) UPnP allows automatic discovery and configuration of equipment attached to your LAN. UPnP is supported by Windows ME, XP, or later. It provides compatibility with networking equipment, software and peripherals of the over 400 vendors that cooperate in the Universal Plug and Play forum."

Parameter	Description
Enable UPnP	After you enable the UPnP feature, all client systems that support UPnP, like Windows XP can discover this router automatically and access the Internet through this router without any configuration.
Advertise Time (60 ~ 1800)	When UPnP service is working, router will broadcast a message to LAN that the specific port number has been used in a period of time. The maximum timing is up to 1800 seconds.

UPnP Table

The table display the current UPnP Port Mapping information in system.

Parameter	Description
Remote Host	It shows the IP address of the remote Host.
External Port	It shows the external port number
Internal Port, Internal Client	It shows the internal port number and client.

Protocol	It shows the protocol.
Description	It describes this setting.

3.8.2 DDNS

DDNS (Dynamic DNS) allows you to map the static domain name to a dynamic IP address. You must get an account, password and your static domain name from the DDNS service providers. DDNS provides you on the Internet with a method to tie their domain name to a computer or server. DDNS allows your domain name to follow your IP address automatically by having your DNS records changed when your IP address changes.

Parameters	Description
Enable / Disable	Enable/Disable the DDNS function of this router
Host Name	Your static domain name that use DDNS.
DDNS Server	Select a DDNS service provider.
User Name	The account that your DDNS service provider assigned to you.
Password	The password you set for the DDNS service account above.
DDNS Retry Time	To set up the time schedule to refresh DDNS setting.

3.9 Status

3.9.1 System Status

The section allows you to check XRT-401F system status and concurrent hardware information.

Quick Setup	Admin	WAN	LAN	NAT	Firewall	Routing	QoS	Other	Status
<div style="display: flex; justify-content: space-between;"> Status Log </div>									
Gateway IP Address: 192.168.0.1 Subnet Mask: 255.255.255.0 DHCP Server: Enabled NAT: Enabled Firewall: Enabled				Internet Cable/DSL: Connected IP Address: 61.62.27.185 Subnet Mask: 255.255.255.0 Gateway: 61.62.27.254 DNS: 61.64.127.1 Secondary DNS: 61.64.127.2 Domain Name: Connection Type: Static IP Connection Time: 00:07:31				Help Status This status page displays the router's current status and configuration. All information is read-only. <hr/> Firmware Version The version number of the firmware currently installed is displayed here. Visit the web site to find out if there is updated firmware. <hr/> Current Time The current date and time are displayed. <hr/> MAC Address	
Information System Up Time: 00:32:46 System Date: Sat Feb 13 09:22:59 2010 Connected Clients: 1 Firmware Version: 1.0 LAN MAC Address: 00:30:4F:00:AD:01 WAN MAC Address: 00:30:4F:00:AD:02									

Parameter	Description
INTERNET	This item shows XRT-401F's current device settings, including the current WAN IP Address, Subnet Mask, Gateway, DNS and Connection Type .
GATEWAY	This item displays XRT-401F's current device settings, including IP Address, Subnet Mask, DHCP Server, NAT and Firewall Status .
INFORMATION	This item displays XRT-401F hardware device Settings, including Connected Clients, Runtime Code Version and MAC Address .

3.9.2 System Log

The Logs record various types of activity on XRT-401F. This data is useful for troubleshooting, but enabling all logs will generate a large amount of data and adversely affect performance. Since only a limited amount of log data can be stored in XRT-401F, log data can also be e-mailed to your PC or sent to a Syslog Server.

The Log displays events occurring within the router by time and date, and also view the description of the event. The user can use the **First Page**, **Prev Page**, **Next Page** and **Last Page** buttons to change the log page listed in the window. The user can click **Setting** to configure your log settings, click **Clear** to clear the log events and click **download** to download the log file on your local PC.

No.	Time	Record
1	Sat Feb 13 09:17:19 2010	[FW]Detected Port Scan from 219.85.203.110, drop it
2	Sat Feb 13 09:17:19 2010	[FW]Detected Port Scan from 203.73.91.114, drop it
3	Sat Feb 13 09:17:19 2010	[FW]Detected Port Scan from 125.232.130.11, drop it
4	Sat Feb 13 09:17:24 2010	[FW]Message repeat 1 times
5	Sat Feb 13 09:17:24 2010	[FW]Detected Port Scan from 61.227.195.133, drop it
6	Sat Feb 13 09:17:25 2010	[FW]Detected Port Scan from 122.142.207.92, drop it
7	Sat Feb 13 09:17:28 2010	[FW]Detected Port Scan from 124.11.212.244, drop it
8	Sat Feb 13 09:17:28 2010	[FW]Detected Port Scan from 221.138.1.248, drop it
9	Sat Feb 13	[FW]Detected Port Scan from 125.232.130.11. drop it

Help

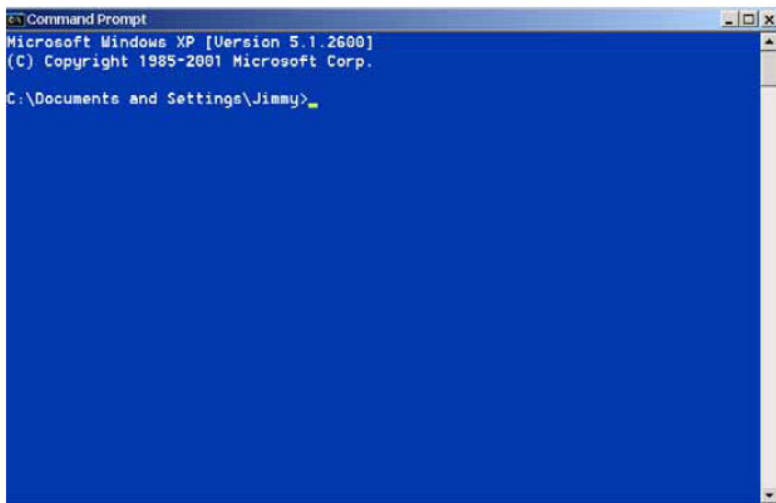
Log

The log file keeps a running log of events and activities occurring on the device. You may want to save the log files by clicking on Log Setting. When the device is rebooted, the logs are automatically cleared.

Appendix A

How to Manually find your PC's IP and MAC address

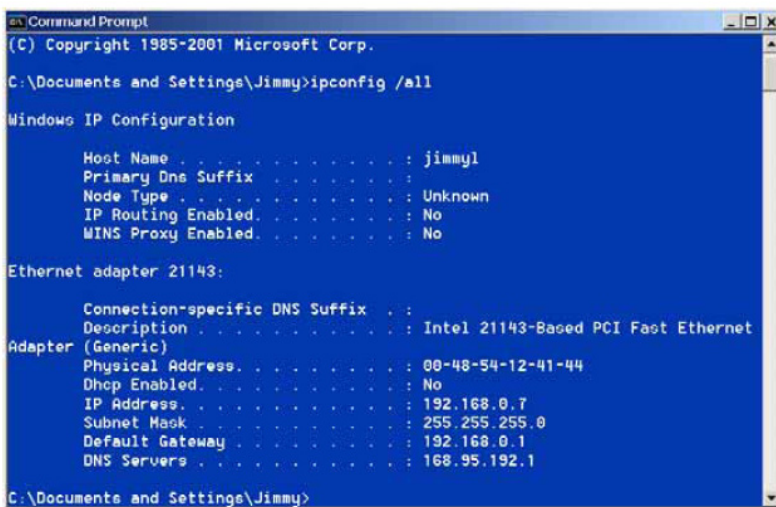
1) In Windows open the Command Prompt program



```
Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Jimmy>
```

2) Type **ipconfig /all** and <enter>



```
Command Prompt
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Jimmy>ipconfig /all

Windows IP Configuration

    Host Name . . . . . : jimmy1
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Unknown
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter 21143:

    Connection-specific DNS Suffix . :
    Description . . . . . : Intel 21143-Based PCI Fast Ethernet
Adapter (Generic)
    Physical Address. . . . . : 00-48-54-12-41-44
    Dhcp Enabled. . . . . : No
    IP Address. . . . . : 192.168.0.7
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.0.1
    DNS Servers . . . . . : 168.95.192.1

C:\Documents and Settings\Jimmy>
```

- Your PC's IP address is the one entitled **IP address** (192.168.0.7)
- The router's IP address is the one entitled **Default Gateway** (192.168.0.1)
- Your PC's MAC Address is the one entitled **Physical Address** (00-48-54-12-41-44)

Appendix B

About Bridge Mode

This Router supports Bridge mode and the difference between **Bridge mode** and **Router mode** is as following table.

Features \ Mode	Bridge	Router	Remark
Physical Ports	WAN port comes to port 5 of the Router	WAN port	
IP Subnet Operating	One IP Subnet The Router won't route any more	Two IP Subnets The Router route toward the two IP Subnets	
Router Features	Not support	WAN NAT Firewall Routing	
LAN Features	DHCP Serve Port Based VLAN 802.1q-based VLAN	DHCP Server Port Based VLAN	
Management Feature	Only LAN local management	LAN local management WAN remote mangemetn	

Glossary

Default Gateway (Router): Every non-router IP device needs to configure a default gateway's IP address. When the device sends out an IP packet, if the destination is not on the same network, the device has to send the packet to its default gateway, which will then send it out towards the destination.

DHCP: Dynamic Host Configuration Protocol. This protocol automatically gives every computer on your home network an IP address.

DNS Server IP Address: DNS stands for Domain Name System, which allows Internet servers to have a domain name (such as www.Broadbandrouter.com) and one or more IP addresses (such as 192.34.45.8). A DNS server keeps a database of Internet servers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "www.planet.com.tw" into your Internet browser), the user is sent to the proper IP address. The DNS server IP address used by the computers on your home network is the location of the DNS server your ISP has assigned to you.

DSL Modem: DSL stands for Digital Subscriber Line. A DSL modem uses your existing phone lines to transmit data at high speeds.

Ethernet: A standard for computer networks. Ethernet networks are connected by special cables and hubs, and move data around at up to 10/100 million bits per second (Mbps).

Idle Timeout: Idle Timeout is designed so that after there is no traffic to the Internet for a preconfigured amount of time, the connection will automatically be disconnected.

IP Address and Network (Subnet) Mask: IP stands for Internet Protocol. An IP address consists of a series of four numbers separated by periods, that identifies a single, unique Internet computer host in an IP network. Example: 192.168.0.1. It consists of 2 portions: the IP network address, and the host identifier.

The IP address is a 32-bit binary pattern, which can be represented as four cascaded decimal numbers separated by "aaa.aaa.aaa.aaa", where each "aaa" can be anything from 000 to 255, or as four cascaded binary numbers separated by "bbbbbbbb.bbbbbbbb.bbbbbbbb.bbbbbbbb", where each "b" can either be 0 or 1.

A network mask is also a 32-bit binary pattern, and consists of consecutive leading 1's followed by consecutive trailing 0's, such as 11111111.11111111.11111111.00000000.

Therefore sometimes a network mask can also be described simply as "x" number of leading 1's. When both are represented side by side in their binary forms, all bits in the IP address that correspond to 1's in the network mask become part of the IP network address, and the remaining bits correspond to the host ID.

For example, if the IP address for a device is, in its binary form, 11011001.10110000.10010000.00000111, and if its network mask is, 11111111.11111111.11110000.00000000. It means the device's network address is 11011001.10110000.10010000.00000000, and its host ID is, 00000000.00000000.00000000.00000111. This is a convenient and efficient method for routers to route IP packets to their destination.

ISP Gateway Address: (see ISP for definition). The ISP Gateway Address is an IP address for the Internet router located at the ISP's office.

ISP: Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

LAN: Local Area Network. A LAN is a group of computers and devices connected together in a relatively small area (such as a house or an office). Your home network is considered a LAN.

MAC Address: MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network. The MAC address is a unique identifier for a device with an Ethernet interface. It is comprised of two parts: 3 bytes of data that corresponds to the Manufacturer ID (unique for each manufacturer), plus 3 bytes that are often used as the product's serial number.

NAT: Network Address Translation. This process allows all of the computers on your home network to use one IP address. Using XRT-401F's NAT capability, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

Port: Network Clients (LAN PC) uses port numbers to distinguish one network application/protocol over another. Below is a list of common applications and protocol/port numbers:

Application	Protocol	Port Number
Telnet	TCP	23
FTP	TCP	21
SMTP	TCP	25
POP3	TCP	110
H.323	TCP	1720
SNMP	UCP	161
SNMP Trap	UDP	162
HTTP	TCP	80
PPTP	TCP	1723
PC Anywhere	TCP	5631
PC Anywhere	UDP	5632

PPPoE: Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a secure data transmission method originally created for dial-up connections; PPPoE is for Ethernet connections. PPPoE relies on two widely accepted standards, Ethernet and the Point-to-Point Protocol. It is a communications protocol for transmitting information over Ethernet between different manufacturers

Protocol: A protocol is a set of rules for interaction agreed upon between multiple parties so that when they interface with each other based on such a protocol, the interpretation of their behavior is well defined and can be made objectively, without confusion or misunderstanding.

Router: A router is an intelligent network device that forwards packets between different networks based on network layer address information such as IP addresses.

Subnet Mask: A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers (e.g. 255.255.255.0) configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).

TCP/IP, UDP: Transmission Control Protocol/Internet Protocol (TCP/IP) and Unreliable Datagram Protocol (UDP). TCP/IP is the standard protocol for data transmission over the Internet. Both TCP and UDP are transport layer protocol. TCP performs proper error detection and error recovery, and thus is reliable. UDP on the other hand is not reliable. They both run on top of the IP (Internet Protocol), a network layer protocol.

WAN: Wide Area Network. A network that connects computers located in geographically separate areas (e.g. different buildings, cities, countries). The Internet is a wide area network.

Web-based management Graphical User Interface (GUI): Many devices support a graphical user interface that is based on the web browser. This means the user can use the familiar Netscape or Microsoft Internet Explorer to Control/configure or monitor the device being managed.