# RT 710
# Broadband Sharing Router

# User's Manual

Jly. 2001

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## Appendix

# Chapter 1 Introduction

## 1.1 Product Overview

The RT710 Broadband Sharing Router is an easy installation Router to share a single xDSL or Cable Modem broadband connection with your family members or colleagues. With the minimum hardware investment, you can easily sharing your broadband connection direct to 4 computers with build-in 10/100Base-T stackable switching HUB. More local connections (253) can be expanded with dumb or switching HUB distribution.

The RT710 Broadband Sharing Router is also a LAN-to-LAN Router and can easily divide your local networks into a separated and secured section. With IP filtering and password protection, you can remain your network in private and safe.

## 1.2 Features and Compatibility

The RT710 Broadband Sharing Router provides the following features:

**Protocol**

- DHCP: RFC1541 (Client and Server Function)
- IP: RFC791
- ARP: RFC826
- UDP: RFC768
- TCP: RFC793
- RIP: RFC 1058
- PPP: PPPoE support for ADSL
- NAT/IP Masqurade

**Networking Management**

- Web based configuration through Ethernet interfaces
- Syslog for recording connection log
- Telnet and TFTP for firmware update and configuration file backup and restore

**Firewall**

- Packet Filtering and Port Filtering for controlled access to and from your network

## 1.3 What's in the package?

- One RT710 Broadband Sharing Router
- One 9VAC Adaptor
- One 10Base-T Ethernet straight-through Cable
- One User Guide

All packages have been checked carefully for their completeness and functionality before shipped. Please contact the place of purchase if any of the above listed items is missing or damaged.

If you encountered any difficulty in using this product while all the above items are complete, please refer to **Appendix C** for Troubleshooting information before making the decision to return your Broadband Sharing Router to your dealer.

## 1.4 Important Rules for Safe Operation

In addition to the careful attention devoted to quality standards on the manufacture of your Router, safety is a major factor in the design of every product. However, safety is your responsibility, too. This section lists important information that will help assure your enjoyment and proper use of the Router and accessory equipment. Please read them carefully before operation and using your Modem.

- **Read and Follow Instructions** – you should read all the safety and operating instructions before operating the Router.
- **Retain Instructions** – You should save all the safety and operating instructions, for your future reference.
- **Heed Warning** – Comply with all warnings on the products and in the operating instructions.
- **Check Power Sources** – Operate this product only from the type of power source indicated on the product's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
- **Be Careful of Overloading** – Do not overload wall outlets or extension cords, as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation, and broken plugs are dangerous. They may result in a shock or fire hazard. Periodically examine the cord, and if its appearance indicates damage or deteriorated insulation, have it replaced by your service technician.
- **Protect Power Cords** – Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords where they are attached to plugs and convenience receptacles, and examine the point where they exit from the product.
- **Check Ventilation** – Slots and openings in the enclosure are provided for ventilation to ensure reliable operation of the product and to protect it from overheating. Do not block or cover these openings. Never block these openings by placing the product on a bed, sofa, rug, or other similar surface. Never place this product near or over a radiator or heat register, or any other heat source (including amplifiers). Do not place this product in a

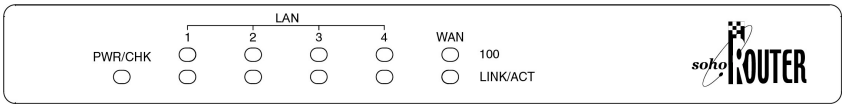
built-in installation, such as a bookcase or equipment rack, unless you provide proper ventilation.

- **Do Not Use Accessories** – Do not use attachments, unless they are recommended by your vendor, as they may cause electrical or fire hazards.
- **Use the Recommended Power Adaptor** – You must use the Power Adaptor that comes with your product.
- **Do Not Use Near Water** – Do not use this product near water. For example, near a swimming pool, bathtub, washbowl, and the like.
- **Do Not place Near High Temperature Source** – For example near a steamer, kitchen range fire, and the like.
- **Use Caution in Mounting This Product** – Do not place this product on an unstable surface or support. The product may fall, causing serious injury to a child or adult, as well as serious damage to the product.
- **Use Care in Moving Product-and-Cart Combinations** – Quick stops, excessive, force and uneven surfaces may cause the product-and-cart combination to overturn.
- **Unplug Power Before Cleaning** – Do not use liquid cleaner or aerosol cleaner. Use a damp cloth for cleaning.
- **Keep Objects Out of Openings** – Never push objects of any kind into this product through openings, as they may touch dangerous voltage or "short-out" parts, which could result in a fire or electric shock. Never spill liquid on the product.
- **Protect From Lightning** – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet, and disconnect the cable system. This will prevent damage to the product due to lightning and power line surges.
- **Turn Off the Power Switch Between DC Plug Off and On.**
- **Do Not Remove Covers** – Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage or other hazards.
- **Unplug this Product From Wall Outlet Carefully, as the Power Adaptor May Be Hot.**

- **Refer Servicing to Qualified Service Personnel Under the Conditions Listed Below.**
  - When the power supply cord or plug is damaged.
  - If liquid has been spilled or objects have fallen into the product.
  - If the product has been exposed to rain or water.
  - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions.
  - If the product has been dropped or the cabinet has been damaged.
  - When the product exhibits a distinct change in performance, such as the inability to perform basic functions – this indicates a need for service.
- **Require Safety Check** – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks recommended by service point to determine that the products is in safe operating condition.

## 1.5 Front Panel

The RT710 Broadband Sharing Router has 11 status LEDs for diagnostics. You can monitor the LEDs during operation. Following table shows the Router status LEDs and identifies what each LED light means.

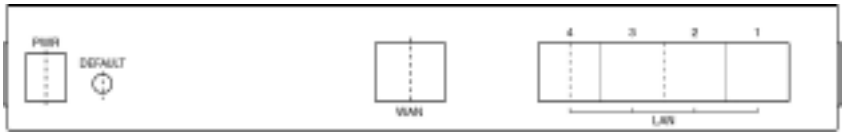



| Function | Behavior | Definition |
|---|---|---|
| PWR/CHK | Dark | Power off |
| | Flash (Green) | System boot-up |
| | Light (Green) | System Ready |
| | Flashing slowly (Red) | Firmware uploading |
| | Flashing quickly (Red) | Firmware writing |
| L1~L4, WAN | Dark | Ethernet link absent or power off |
| | Light | Ethernet link present |
| | Flashing | Data transmission |

* Upper row of L1~L4 and WAN LEDs represent 100Base-T connections and lower row of L1~L4 and WAN LEDs represent 10Base-T connections.

## 1.6 Rear Panel

The rear panel of the RT710 Broadband Sharing Router consists of power jack, WAN Port connector, 4 LAN port connectors and factory **DEFAULT** switch as shown below:




The WAN port is presented as a MDIX RJ45 connector. You can connect it to your cable modem/ ADSL with a straight-through Ethernet cable, or to another HUB with a crossover Ethernet cable.

L1~L4 LAN ports are auto-MDIX ports which are not limited to a single uplink port as other dumb HUB. You can use a straight-through or crossover cable to connect any device creating a greater increase in flexibility.

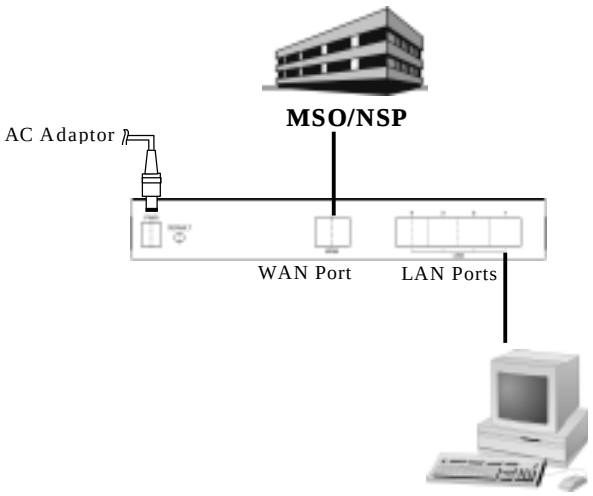
# Chapter 2 Network Set-Up

The RT710 Broadband Sharing Router is a featured network device and will be one of the network members. Please make sure you configure your Router properly before you put it on network. Inadequate network configuration may cause problms to other network device or even paralyze the whole network.

## 2.1 Preparation for network installation

Before start the network installation. Please prepare all the materials listed below regarding to your application.

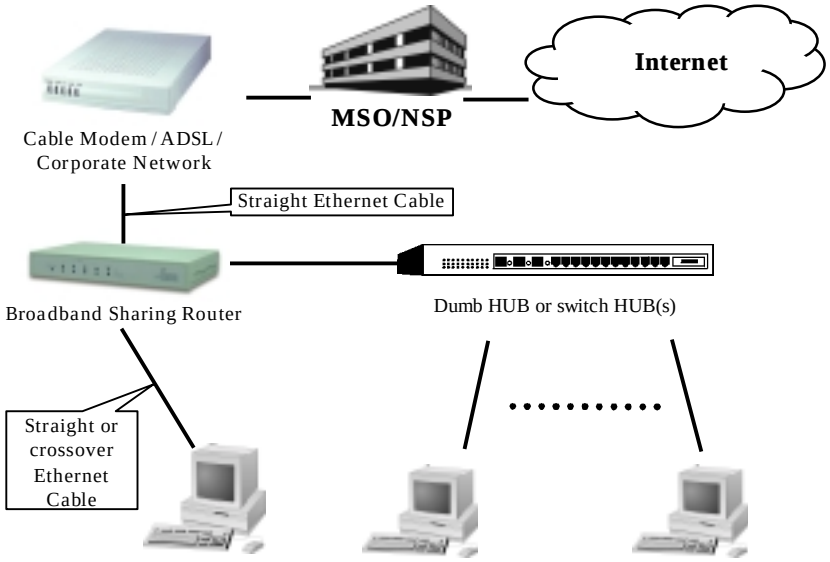
1. Connect to a computer directly
   - Network service provider service contract or permit from corporate network administrator. Please sign an appropriate Internet connection contract with a reliable ISP / NSP and get necessary connection information.
   - Personal computer with OS that support Ethernet interface
   - TCP / IP protocol installed in your personal computer
   - 10 or 100Base-T Ethernet card
   - 10or 100Base-T Ethernet cable (a straight-through cable is included in this package)
   - Power adaptor (include in this package)




Basic connection to configure your Broadband Sharing Router

## 2.2 Network installation

1. Connect the power adaptor to the power jack that marked **Power** at the rear panel of the Router, then plug in the AC power adaptor to the wall electrical outlet.
2. Connect the LAN cable.
   Connect one end of 10Base-T Ethernet cable (straight through or crossover) to the LAN ports on the rear panel, and then connect the other end of 10Base-T Ethernet cable to PCs, HUB or other network device.
3. Connect the WAN cable.
   Connect one end of 10Base-T Ethernet straight through cable to the WAN port on the rear panel, and then connect the other end of 10Base-T Ethernet cable to Cable Modem, ADSL or corporate network.




**Network configurating diagram**

# Chapter 3 System Configuration

The RT710 Broadband Sharing Router built-in a web based system configuration server. You can easily access the server with any popular browser (i.e. Microsoft Internet Explorer or Netscape Navigator) through LAN port of the Router. However, you should make sure your TCP/IP and browser are ready to access the Router before configuration.

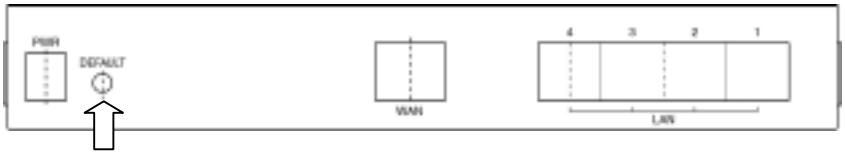
If your network and PC are properly setted up and need no further help on these subjects, you can directly go **3.4 Basic Configuration** or **3.5 Advancedd Configuration**.

## 3.1 Get your Broadband Sharing Router ready

Before start your system configuration, it is better to reset all system configurations to factory default.

To reset the system configuration

1. Power off the Router
2. Press the DEFAULT button on the back of Router steadly.
3. Plug in the power plug while DEFAULT button is pressed.
4. Let go the DEFAULT button after the Router entering system boot-up process (PWR / CHK LED flash quickly on green.)
5. Wait for the boot-up until system ready (PWR / CHK LED lit steadly on green.) and go for further operations.




Press the DEFAULT button steadly

## 3.2 Windows 95/98 setting for Ethernet LAN connection

The RT710 Broadband Sharing Router is working on TCP / IP protocol. You have to make sure your LAN card is properly installed and TCP / IP protocol is binded with this accessing LAN card.

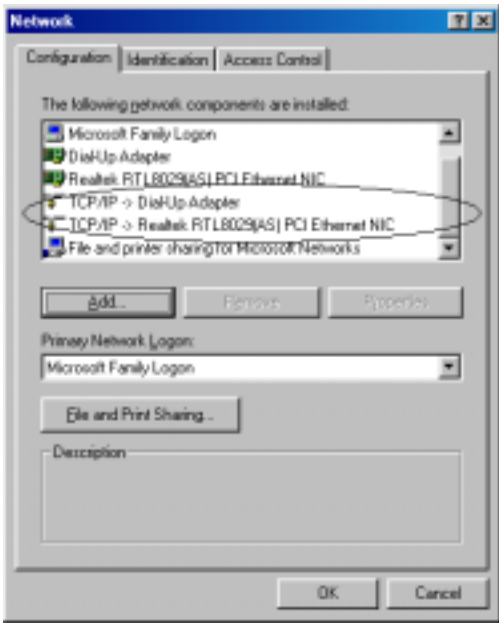
Since the Broadband Sharing Router build-in a **DHCP server**, you are recommanded to configure your computer to obtain an **IP address** automatically from Router's **DHCP server.** If you want to assign an IP for your LAN card, please make sure your **IP address** and **Subnet Mask** is in the same subnet as the Router. The default subnet is from 192.168.100.2 to 192.168.100.254. Following steps provides the instructions to setup your computer to obtain an IP address by using Windows 95 / 98 on a PC.

### 3.2.1 Check TCP/IP protocol

To check if TCP / IP is properly installed, please proceed to the following steps.

1. Double-click on **My computer**->**Control Panel**->**Network**

2. In **Network** window, check if **TCP/IP** is shown and properly setup for the Ethernet card that installed in your computer (for example, **TCP/IP->Realtek RTL8029(AS) PCI Ethernet NIC**).

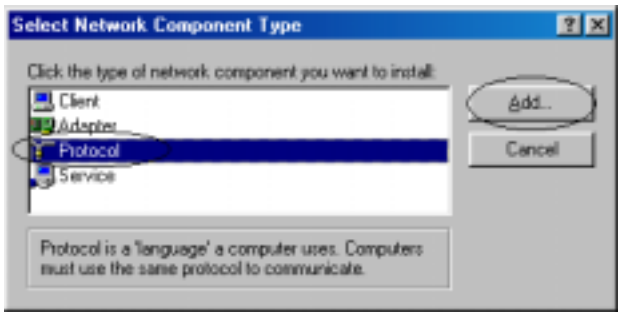



3. When TCP / IP has properly installed, please proceed to 3.2.3 TCP / IP Setting
4. When TCP / IP has not properly installed, go to next section to install the TCP / IP protocol.

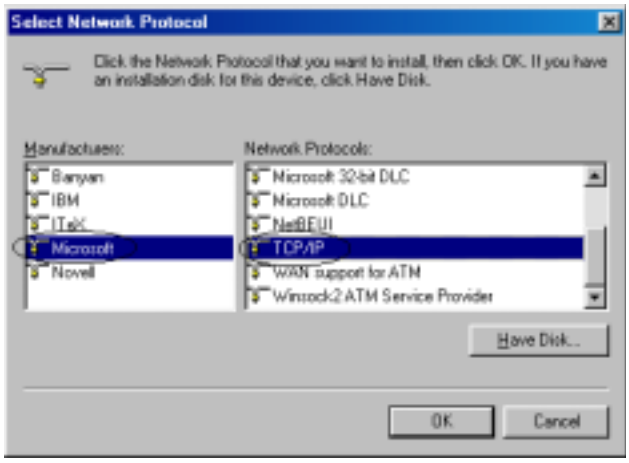
## 3.2.2 TCP/IP installation

***Attention: When install TCP/IP protocol, you need Windows CD-ROM***

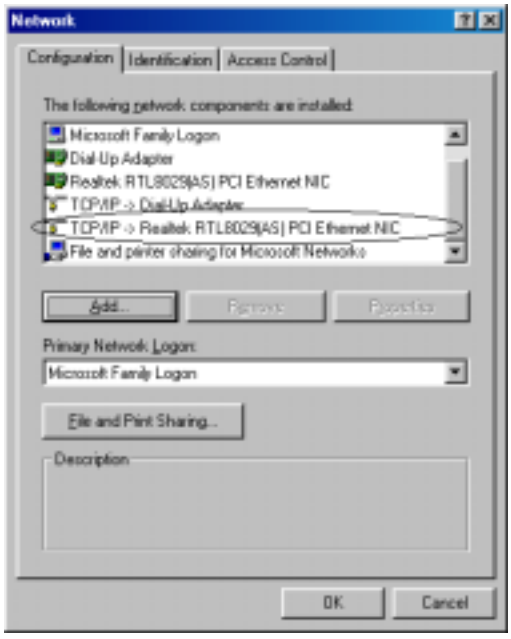
1. In **Network** window, click the **Add** button.
2. Choose the **Protocol** and click **Add**.




3. In **Select Network Protocol** window, choose **Microsoft** in **Manufacturers** and **TCP/IP** in **Network Protocols**. Then click **OK**



4. Confirm if the TCP / IP protocol has been correctly setup with your Ethernet card.

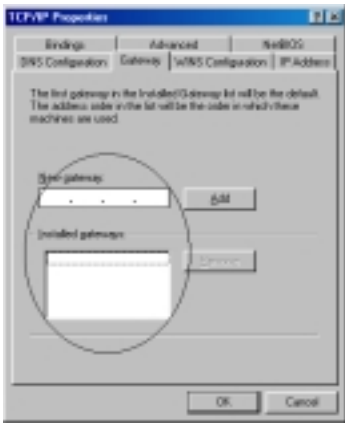


## 3.2.3 TCP/IP setting

***Attention: When connecting your Router with existing LAN, consult your network manager for correct configurations***

1. In **Network** window, double-click the TCP/IP service for the Ethernet card that installed in your computer(for example, **TCP/IP > Realtek RTL8029(AS) PCI Ethernet NIC**).

2. Click the **Gateway** tab, and remove any installed gateways.



3. Click the **DNS configuration** tab, and click the **disable DNS** button.

4. Click the **IP address** tab, and click the **Obtain an IP address automatically** button.

To assign an IP directly, Click the **IP address** tab, and click the **Specify an IP address** button. Then set **IP Address** and **Subnet**

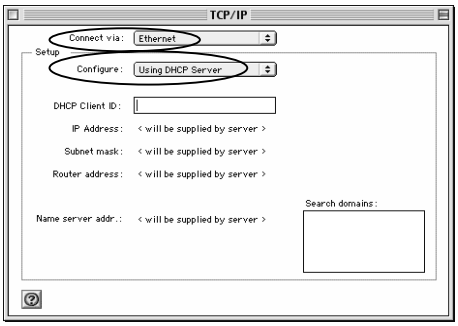
**Mask** to the same subnet. (Default: 192.168.100.2 ~192.168.100.254)

5. Click **OK** to save the new setting.
6. Click **Yes** when prompted for "**Do you want to restart your computer ?**". Your computer will restart to make the new setting in effects.
7. Now your computer is ready to access your Modem via Ethernet network.

## 3.3 MAC OS TCP/IP setting

Please follow the below mentioned procedure for TCP / IP Protocol Setup.

1. Choose **Apple Menus** -> **Control Panels** -> **TCP/IP**.
2. Set your displayed window by choosing **Ethernet** at **Connect via** and **Using DHCP Server** at **Configure** and close the window. (Remember to save the setup.)



## 3.4 Basic Configuration

There are four basic network connection types with this Router: 1) share a cable modem, 2) share a leased line ADSL, 3) share a dial-up ADSL and 4) compart your private network.

This section specifies how to configure all these four basic networks. For Advancedd network configuration, please go **3.5 Advanced Configuration**.

### 3.4.1 Sharing a Cable Modem connection (default)

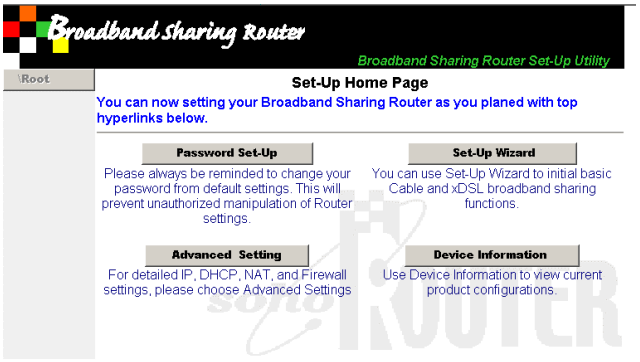
Cable Modem connection is widely accepted by home users. Most broadband service providers (**NSP** or **MSO**) offer an always-on connection without static IP assignings. In stead, they assign IP dynamically every time the subscriber log on to the system.

You should configure the RT710 Broadband Sharing Router WAN port to accept dynamic IP assigments. Factory default configuration was set for this type of network connection and need no further settings. However, in any circumstance you want to configure the Router to share a Cable Modem connection.

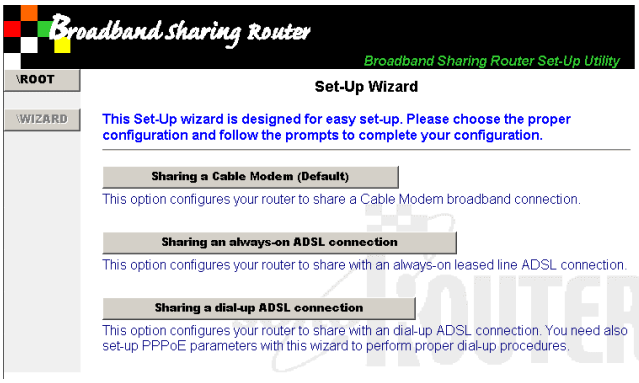
1. Running your browser and go URL: **"http://192.168.100.1"** to access the system configuration server. (If you changed the LAN port IP, please use the new IP.)

2. Enter system configuration password. (The default password is “admin” case sensitive. For security reason, please do change the password from factory default immediately to prevent unauthorized change of Router settings.)


3. Click on **Set-Up Wizard**



4. Click on **Sharing a Cable Modem**



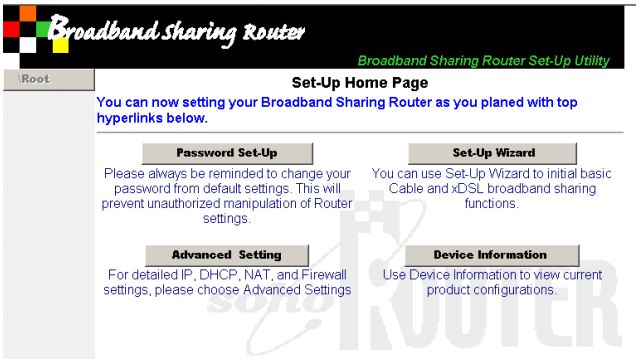

5. Double confirm the configuration. Click **YES** to accept this configuration, **NO** to cancel this setup.

## 3.4.2 Sharing an always-on ADSL connection

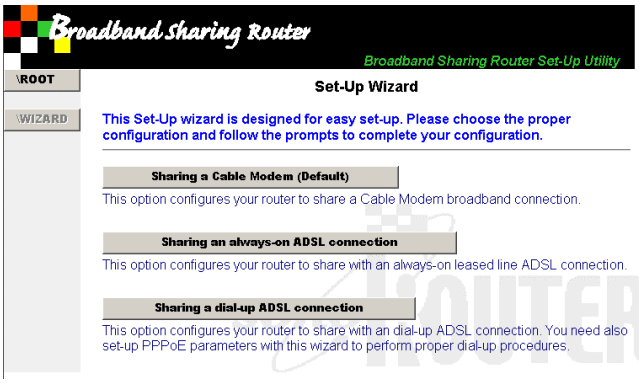
Always-on ADSL connection, also called leased line ADSL connection, is widely accepted by SOHO (Small Office and Home Office) and enterprise users. If you apply a leased line ADSL connection, like other subscribe lines, a fixed or "real world" IP is ususlly included in the package. Sometimes your network service provider (**NSP**) will offer more than one IP address with this ADSL line.

To adopt with this ADSL always-on network, the Broadband Sharing Router should configure its WAN port to the fixed IP provided by NSP.

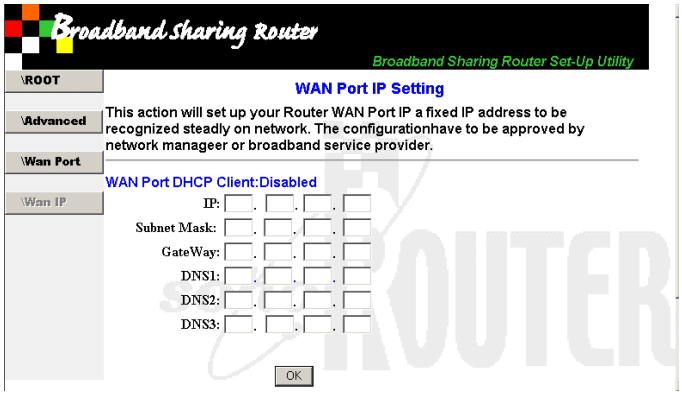
1. Running your browser and go URL: **"http://192.168.100.1"** to access the system configuration server. (If you changed the LAN port IP, please use the new IP.)
2. Enter system configuration password. (The default password is "admin" case sensitive. For security reason, please do change the password from factory default immediately to prevent unauthorized change of Router settings.)
3. Click on **Set-Up Wizard**



4. Click on **Sharing an always-on ADSL connection**




5. Enter the IP address, Subnet Mask, Gateway, and DNS provided by your NSP. Using TAB key or mouse pointer to move the cursor between cells. You can choose to set one, two, or three DNS information and leave those cells not used in blank.



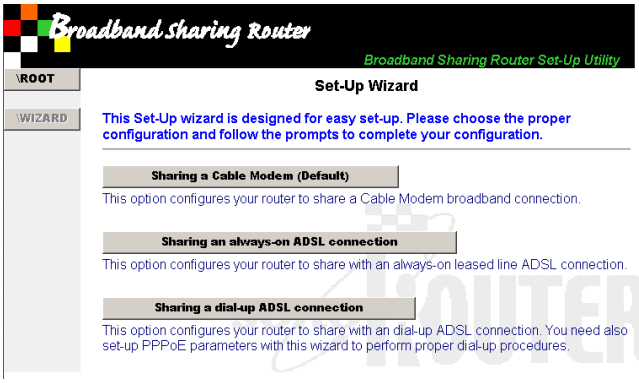

6. Double confirm the configuration. Click **OK** to accept this configuration, any other button to cancel this setup.

## 3.4.3 Sharing a dial up ADSL connection

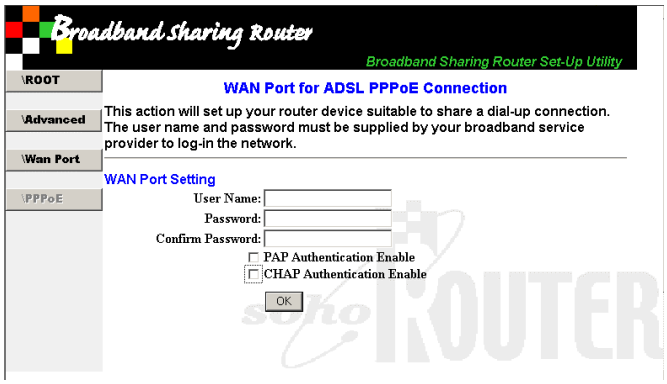
Dial up ADSL (PPPoE, Point-to-Point Protocol over Ethernet) is a cost effective and popular broadband connection. Although the ADSL circuit is always attached and don't need to dial numbers to make the circuit connected. The dial up ADSL use the log in / log out to active / inactive the data communication and counting the communication fee.

To properly set up this ADSL network, the Broadband Sharing Router should configure its log in information and auto-disconnect setting in WAN port configuration. Auto-disconnect time means the connection will be disconnected utomatically if there's no data transmission in a certain amount of time in seconds.

1. Running your browser and go URL: **"http://192.168.100.1"** to access the system configuration server.
2. Enter system configuration password. (The default password is "admin" case sensitive. For security reason, please do change the password from factory default immediately to prevent unauthorized change of Router settings.)
3. Click on **Set-Up Wizard**
4. Click on **Sharing a dial-up ADSL connection**



5. Enter your account information and check **PAP authentication** and / or **CHAP authentication** as your NSP indicated.




6. Double confirm the configuration. Click **OK** to accept this configuration, any other button to cancel this setup.

## 3.4.4 Compart your network

Your RT710 Broadband Sharing Router is also a LAN-to-LAN Router. You can use it to segment networks for better network traffic and security. Before you attach the RT710 Broadband Sharing Router on to a corporate network, please be sure you got the permission and appropriate configuration information from network administrator. Inadequate network set up may paralize your corporate network.

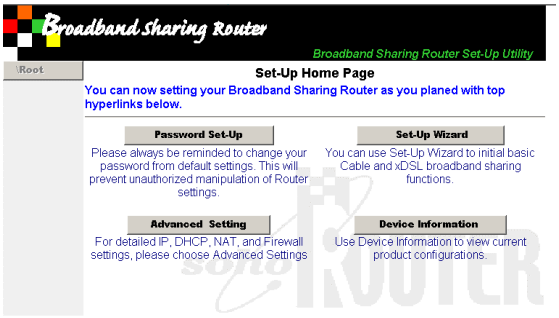
The easiest way to add a private network on a corporate network is using DHCP service. If your corporate network equipped with DHCP server, you can simply configure your RT710 Broadband Sharing Router to factory default configuration (the same as to share a Cable Modem) and it's done.

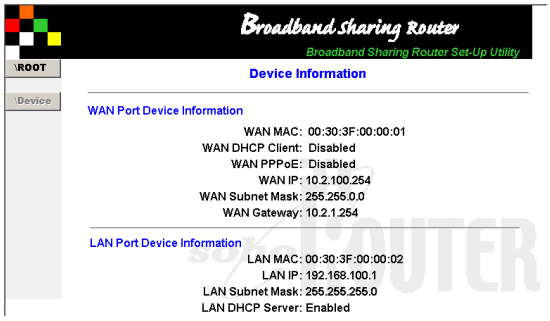
# 3.5 Advanced Configuration

Your RT710 Broadband Sharing Router is a featured intellgient Router. You can have more detailed and advanced configurations and make your network more efficient. Beside the simple IP routing function, this Router also provide IP masqurade and firewall (filtering) functions.

## 3.5.1 Device Information

Before you configure your Router, you need to know the current Router configurations. It's simple. You can find the latest device information from the configuration server. Just click the **Device Information** on configuration home page and all basic configurations are listed.



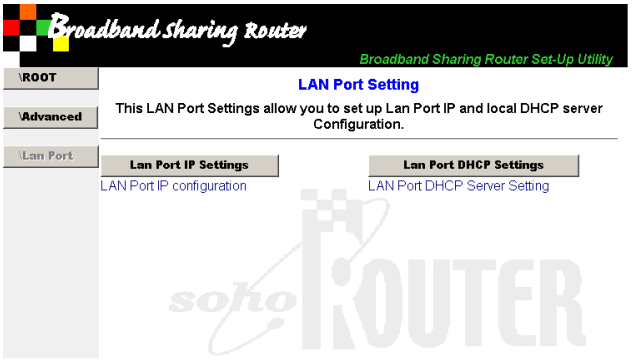
## 3.5.2 WAN port setting

You can change the WAN port settings without modifying other configurations.

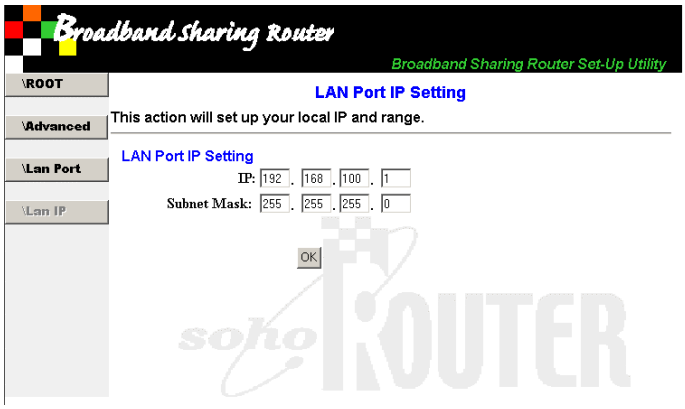
1. **PPPoE Function Setting.** Set up the PPPoE connection, which mostly apply to ADSL dial up network.
2. **DHCP Client Setting.** Set the WAN port as a DHCP client and get IP dynamically. Using when connect to Cable Modem or Ethernet network.
3. **WAN Port IP Setting.** Assign WAN port a fixed IP address. It is required when your local PCs provide services.

## 3.5.3 LAN port setting

You can change the LAN port settings without modifying other configurations.




1. **LAN IP Setting.** Assign a range of IPs for local PCs. Set up the PPPoE connection, which mostly apply to ADSL dial up network.

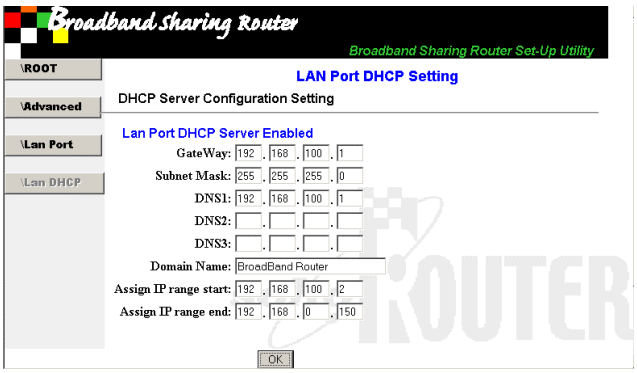


**IP:** This is also the IP of configuration server and Router gateway

***Attention: If you change the LAN IP and click OK. The Router IP will be updated as new IP. If the IP of your PC is out of LAN IP range, please renew your dynamic assigned or fixed IP. Use the new IP to operate further configurations after confirms the LAN IP change.***

**Subnet Mask:** This value specifies the total available LAN port IP range. You have to make sure your PC is located in this IP range for further configuration.

2. **LAN Port DHCP Server Setting.** Set the LAN port as a DHCP server and assign IPs dynamically.

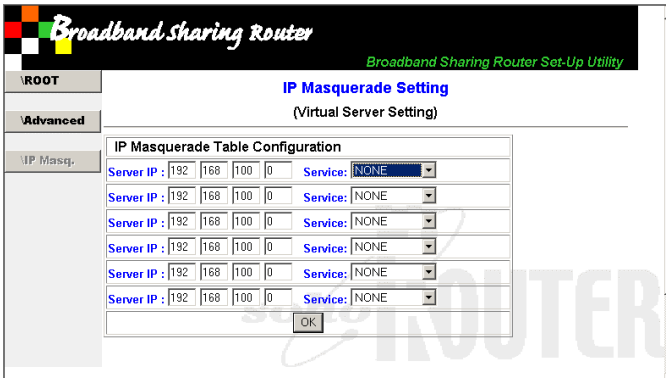



**Gateway:** This is also the IP of configuration server and Router gateway
**Subnet Mask:** Specify the subnet range. When a DHCP client requests an IP, the DHCP server will apply this setting to client specifying the subnet range.
**DNS:** When a DHCP client requests an IP, the DHCP server will apply this setting to client specifying the subnet range.
**Domain Name:** Specify the name of your network domain.
**Assign IP range start/end:** Specifies the IP range that DHCP server can issue. The number should cover the total number of the group, which will be served by the Router.

## 3.5.4 IP masqurade setting

IP masqurade is a key feature in IP sharing. You can relay many remote or local services through a single WAN IP.

**IP Masqurade Table Configuration.** Relating different WAN IP ports to different local IPs.

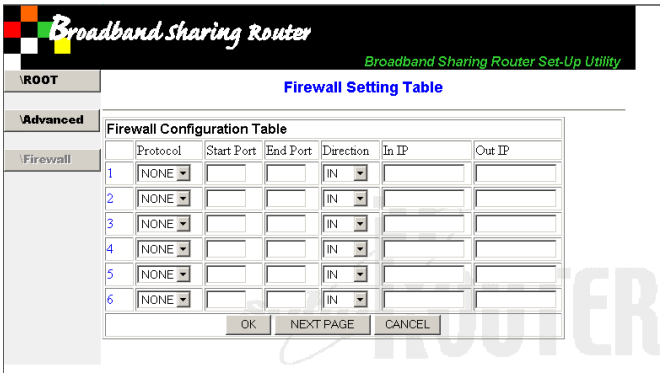



**Service IP:** The IP where the service provided.
**Service:** The related WAN IP port.

## 3.5.5 Firewall setting

The RT710 Broband Sharing Router featured the packet filtering firewall function. You can easily enable / disable packet traffic whatever you want.

**Firewall Configuration Table.** This packet filtering firewall allows you to setup more than 6 packet-filtering rules. Use the page navigation buttons to view all the rules.

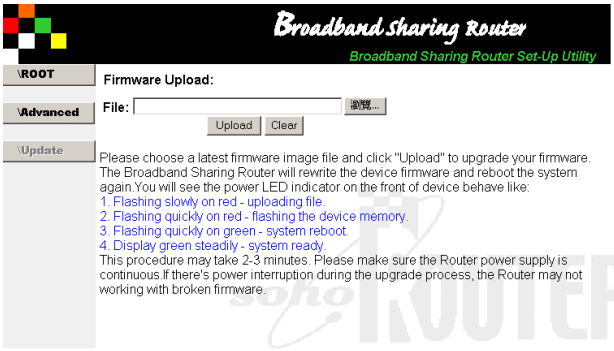



**Protocol:** Which IP packet protocol type.
**Start Port and End Port:** Going through which WAN IP port.
**Direction:** Where packets going in or going out.
**In IP:** Filtering request from specific IP.
**Out IP:** Filtering specific service destination IP

## 3.5.6 Firmware upgrade

The RT710 Broband Sharing Router is a firmware upgradeable device. New firmware will be updated with adding features after a while. You can get your latest firmware from your dealer or service web site and feature your Router as a featured device.

***Attention: The firmware upgrade process is very critical. Please make sure the upgrade process will not be interrupted. Otherwise, your Router can be dead with if the firmware is brocken.***



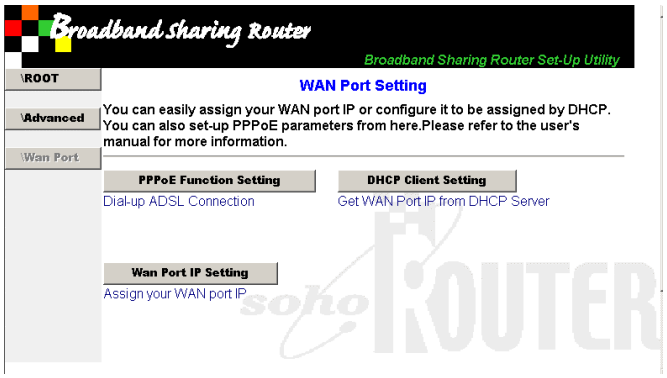

1. Download and make sure the firmware image file is OK.
2. Locate the place of image file.
3. Click Upload to stare the upgrade process. And do not interupt the upgrade process. You can check with PWR/CHK LED to moniter the total process.
   i. Flashing slowly on red – uploading file
   ii. Flashing quickly on red – writing the device memory
   iii. Flashing quickly on green – system boot-up
   iv. Display green steadly – system ready

# 3.5.7 PPPoE setting

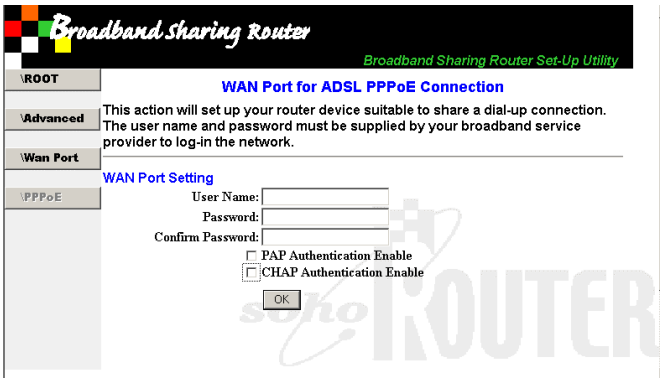
## PPPoE setup

When you want to connect or disconnect RT710 Broband Sharing Router PPPoE service (dial up ADSL). You can:

1. go **Advanced Setting → PPPoE Function Setting**.

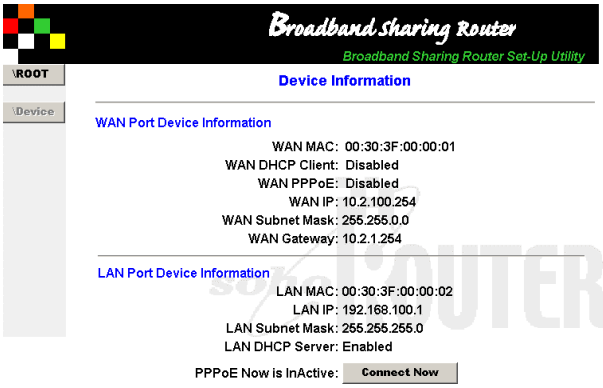



2. Enter your account information and check **PAP authentication** and / or **CHAP authentication** as your service provider indicated.

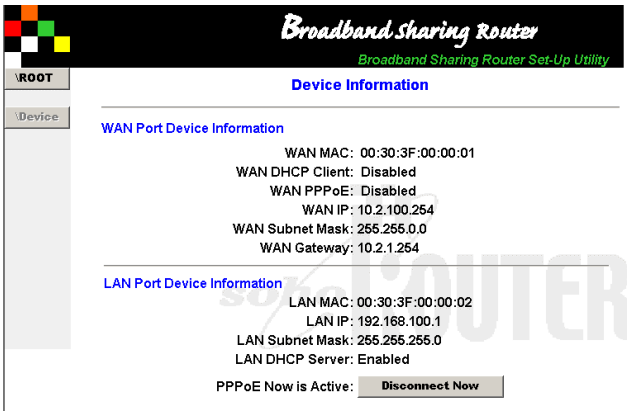


## PPPoE connect/disconnect

When you want to make PPPoE connection. Please go Home → Device Information. If your PPPoE is properly setup, you can see the connecting / disconnecting button on the last line of Device Information page.




To disconnect PPPoE, just click the disconnect button on Device Information page.



# Appendix A Glossary

**10Base-T**
IEEE 802.3 standard for the use of Ethernet LAN technology over unshielded twisted pair wiring, running at 10Mbps.

**100Base-T**
IEEE 802.3 standard for the use of Ethernet LAN technology over unshielded twisted pair wiring, running at 100Mbps.

**ADSL**
Asymmetric Digital Subscriber Line - Technology that delivers high-speed data and voice connections over existing phone lines. Up to 8 Mbits/sec can be sent downstream and 640 Mbits/sec upstream.

**ANSI (American National Standards Institute)**
Devises and proposes recommendations for international communications standards.

**ARP**
Address Resolution Protocol. An Internet protocol used to bind an IP address to Ethernet/802.3 addresses.

**ASCII**
American Standard Code for Information Interchange. 8-bit code for character representation.

**CHAP**
Challenge Handshake Authentication Protocol. A security protocol supported under Point-to-Point Protocol (PPP) used to prevent unauthorized access to devices and remote networks. Uses encryption of password, device names, and random number generation.

**Class A, B, and C networks:**

The values assigned to the first few bits in an IP network address determine which class designation the network has. In decimal notation, Class A network addresses range from 1.X.X.X to 126.X.X.X, Class B network addresses range from 128.1.X.X to 191.254.X.X, and Class C addresses range from 192.0.1.X to 223.255.254.X.

**Client**

An intelligent workstation that makes requests to other computers known as servers. PC computers on a LAN can be clients.

**DHCP**

Dynamic Host Configuration Protocol - Service that provides network information (such as IP addresses, masks, domain names) to PCs and other clients automatically.

**DNS**

Domain Name Service - Transmission Control Protocol / Internet Protocol (TCP / IP) service which translates a name that a person can remember into an IP address that a computer can use.

**DTE**

Data Terminal Equipment - Term defined by standards a committee, that applies to communications equipment, typically personal computers or data terminals, as distinct from other devices that attach to the network, typically modems.

**Ethernet address**

Sometimes referred to as a hardware address. A 48-bits long number assigned to every Ethernet hardware device. Ethernet addresses are usually expressed as 12-character hexadecimal numbers, where each hexadecimal character (0 through F) represents four binary bits. Do not confuse the Ethernet address of a device with its network address.

**Firmware**

System software stored in a device's memory that controls the device.

**Internet**

A set of networks connected together by routers. This is a general term, not to be confused with the large, multi-organizational collection of IP networks known as the Internet. An Internet is sometimes also known as an internetwork.

**Internet address, IP address**

Any computing device that uses the Internet Protocol (IP) must be assigned an internet or IP address. This is a 32-bit number assigned by the system administrator, usually written in the form of 4 decimal fields separated by periods, e.g., 192.9.200.1. Part of the internet address is the IP network number (IP network address), and part is the host address (IP host address). All machines on a given IP network use the same IP network number, and each machine has a unique IP host address. The system administrator sets the subnet mask to specify how much of the address is network number and how much is host address.

**IP**

Internet Protocol - A networking protocol developed for use on computer systems that use the UNIX operating system. Often used with Ethernet cabling systems. In this manual, IP is used as an umbrella term to cover all packets and networking operations that include the use of the Internet Protocol. See also *TCP/I*P.

**ISP**

Internet service provider - A company that provides Internet-related services. Most importantly, an ISP provides Internet access services and products to other companies and consumers.

**ITU**

International Telecommunication Union - United Nations specialized agency for telecommunications

**LAN**

Local area network - A privately owned network that offers high-speed communications channels to connect information processing equipment in a limited geographic area. (usually within a single campus or building).

**LED**

Light Emitting Diodes - Type of indicator lights on the panel of the router.

**MAC layer/address**

Media Access Control layer / address defined by the IEEE 802.3 specifications, which defines media access including framing and error detection. Part of the OSI reference model data link layer.

**MIB**

Management information; base on a standardized structure for SNMP management information.

**MDI/MDIX (Media Dependence Interface – Straight-through/Crossover)**

The IEEE 10Base-T standard for the UTP cable interface. The MDI (straight-through) mode is usually configured to connect to network terminal equipment, such as a PC. The MDIX mode is usually configured to connect/uplink to another network equipment, such as a cable modem, ADSL or HUB.

MDI/MDIX autodetect feature eliminates typical concerns about crossover cabling, limited uplinks, or to which devices a switch is linked. The ports automatically sense if they need to function as straight or crossover ports, thus crossover cables can connect both PCs and switches or hubs.

**MSO**

Multimedia System Operator – the term indicate the entetity who provide multiple services including, broadband data service, on CATV cable network. Usually indicated as a cable operator.

**NAT**

Network Address Translation - A feature that allows communication between the LAN connected to the Modem and the Internet using a single IP address, instead of having a separate IP address for each computer on the network.

**NSP**

Network Service Provider - Company from which you buy your network services.

**PAP**

PPP Authentication Protocol - A method for ensuring secure network access.

**Ping**

An echo message, available within the TCP/IP protocol suite, sent to a remote node and returned; used to test the accessibility of the remote node.

**Port number**

A number that identifies a TCP/IP-based service. Telnet, for example, is identified with TCP port 23.

**Protocol**

A set of rules for communication, sometimes made up of several smaller sets of rules also called protocols.

**PPP**

Point-to-Point Protocol - A Data Link layer protocol that provides asynchronous and synchronous connectivity between computer / network nodes. It defines how packets of information are exchanged between computers or network nodes connect via a point-to-point connection (as opposed to multipoint or broadcast). Includes standardization for security and compression negotiation.

**RFC**

Request for Comment - A series of documents used to exchange information and standards about the Internet.

**RJ-45**

A telephone-industry standard connector type, usually containing eight pins.

**Routing**

A network layer function that determines the path for transmitting packets through a network from source to destination.

**Router**

A device that supports network communications. A router can connect identical network types, however—unless a gateway is available—a common protocol, such as TCP / IP, must be used over both networks. Routers may be equipped to provide WAN line support to the LAN devices they serve. They may also provide various management and monitoring functions as well as a variety of configuration capabilities.

**Routing table**

A list of networks maintained by each router on an Internet. Information in the routing table helps the router determine the next router to forward packets to.

**Server**

A device or system that has been specifically configured to provide a service, usually to a group of clients.

**Subnet**

A network address created by using a subnet mask to specify that a number of bits in an internet address will be used as a subnet number rather than a host address.

**Subnet Address**

An extension of the Internet 32-bit addressing scheme which allows the separation of physical or logical networks within the single network number. assigned to an organization. TCP / IP entities outside this organization have no knowledge of the internal 'subnetting'.

**Subnet mask**

A 32-bit number to specify which part of an internet address is the network number, and which part is the host address. When written in binary notation, each bit written as 1 corresponds to 1 bit of network address information. One subnet mask applies to all IP devices on an individual IP network.

**TCP/IP**

Transmission Control Protocol / Internet Protocol - An open network standard that defines how devices from different manufacturers communicate with each other over one or more interconnected networks. TCP / IP protocols are the foundation of the Internet, a worldwide network of networks connecting businesses, governments, researchers, and educators. TCP provides a connection-oriented transport layer ensuring end-to-end reliability in data transmission. IP provides for network layer connectivity using connectionless datagrams.

**TFTP**

Trivial File Transfer Protocol - A protocol used to transfer files between IP nodes. TFTP is often used to transfer firmware and configuration information from a UNIX computer acting as a TFTP server to an IP networking device.

**TELNET**

Internet standard protocol for remote terminal emulation that allows a user to remotely log in to another device and appear as if directly connected.

**UDP**

User Datagram Protocol - A TCP / IP protocol describing how packets reach applications in destination nodes.

**Wall jack**

A small hardware component used to tap into telephone wall cable. An RJ-11 wall jack usually has four pins; an RJ-45 wall jack usually has eight pins.

**WAN**

Wide Area Network - A network that consists of nodes connected by long-distance transmission media, such as telephone lines. WANs can span a state, a country, or even the world.

# Appendix B Product Specifications

| | |
|---|---|
| WAN Interface | Port: 1 port (MDIX)<br>Interface: IEEE 802.3u (10/100Base-T)<br>Connector: 8 pin modular (RJ-45) |
| LAN Interface | Port: 4 ports (MDI/MDIX auto detect X 4)<br>Interface: IEEE 802.3u (10/100Base-T)<br>Connector: 8 pin modular (RJ-45) |
| Human Interface | Switch: Factory **DEFAULT** reset button<br>LED Indicator: PWR/CHK, Link/Active status,<br>Link speed (100Base-T) |
| Network Functions | Protocol<br>• DHCP: RFC1541 (Client and Server Function)<br>• IP: RFC791<br>• ARP: RFC826<br>• UDP: RFC768<br>• TCP: RFC793<br>• RIP: RFC 1058<br>• PPP: PPPoE support for ADSL<br>• NAT/IP Masqurade |

| | |
|---|---|
| | Networking Management<br>• Web based configuration through Ethernet interfaces<br>• Syslog for recording connection log<br>• Telnet and TFTP for firmware update and configuration file backup and restore<br><br>Firewall: Packet Filtering and Port Filtering for controlled access to and from your network |
| EMC Emission | FCC part 15, class B |
| Power | Power input: 9VAC/ 1500mA |
| Mechanical | Size: 228mm(width) x 143mm (depth) x 30mm (height)<br>Net Weight: 800 g |
| Environmental | Operating temperature: 0°C ~ 40°C<br>Humidity: 25 % ~ 85 % (non-condensing)<br>Storage temperature: -20°C ~ 60°C |

## Power Adaptor

The RT710 Broadband Sharing Router is powered by a 9V/1.5A AC power adaptor, which included in this package. In any case the standard power adaptor come with this package is not available, please find a power adaptor meet above specifications.

# Appendix C Troubleshooting

This chapter is intended to help you troubleshoot problems you may encounter while setting up and using the Router. It also describes some common hardware and software problems and gives some suggestions to troubleshoot them.

## C.1 Diagnostics with the LEDs

Most hardware problems can be diagnosed and solved by checking the LEDs on the front panel of your Router.

- **If the PWR/CHK LED is dark**
  - Make sure the power cord is firmly plugged into the back panel of the router and the other end into an active AC wall or power strip outlet.
- **If the LAN or WAN port LINK/ACT LED is dark**
  - Make sure your Ethernet cable is firmly plugged into the back panel of the router and the other end into your computer or HUB.
  - Make sure you using the correct Ethernet cable on WAN port for your application.
  - Make sure your Ethernet board is installed properly in your system by ping the IP address of your PC.

## C.2 No respond or active data

- **No respond from system configuration server**
  - Make sure your URL is correct and not conflict with any other device on network. The factory default URL is "http: / / 192.168.100.1 ". You cannot recall any page or budirectory without password verification. Please do not add any parameter after the IP address. If you changed the LAN IP address, please use the new system configuration server IP you changed. If you forget the IP you changed, you can only reset the configuration to factory default to setup your Router again. Please refer **3.1 Get your Broadband Sharing Router ready** to know how to reset the Router configuration to factory default.
  - Make sure you are accessing the configuration server through LAN ports. The configuration server can only be accessed through LAN ports, not from WAN port.
  - Make sure your configuration PC is in the same subnet which LAN port setup specified or your IP is getting from Router DHCP. Please use IP configuration check to verify your PC's IP address.
  - Make sure your LAN port connection is linked and active correctly.
- **Data link is brocken**
  - If your network is configured correctly, you can share and connect different computers. If the data cannot be accesses through the Router, restart your Router with unplug the power cord. Wait for a while and plug in the power again. The system needs one to two minutes to boot itself up. Please wait until the PWR/CHK LED light steadly and then keep going for further operation.
  - Make sure that all devices IPs connected with LAN port, direct connect or through HUBs, should follow the rule of LAN port configuration. Gateway IP is the same as system configuration server and cannot be used by any other device.

## C.3 Contact us for Technical support

We are committed to providing our customers with reliable products and documentation, backed by excellent technical support.

*Before contacting us, please l*ook in this chapter for a solution to your problem. You may find a solution in this chapter. If you cannot find a solution, collect your configuration information listed below before contacting our technical support. We can help you with your problem more effectively if you have completed the configuration information.

Model number:
Serial (MAC) number:
Firmware version:
PC configuration
Network configuration
Other:

# Appendix D Government compliance notices

## D.1 FCC compliance

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

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