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Aolynk DR814Q ADSL2+ Broadband Router
User Manual

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User Manual

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Table of Contents

1 Product Overview

This chapter focuses on the appearance and functionality of Aolynk DR814Q ADSL2+ Broadband Router for you to get familiar with this product.

1.1 Introduction

Aolynk DR814Q ADSL2+ Broadband Router (hereinafter referred to as the DR814Q) provides four 10/100 Mbps Ethernet ports, and one USB port, making it easy to establish a LAN without additional expenses on switches.

The DR814Q, an ideal tool for SOHO (small office, home office) users, features built-in ADSL2+ technology, high-speed Internet access, and remote connectivity. It enables LAN users to share high-speed broadband connection through the built-in NAT (network address translation) and DHCP (dynamic host configuration protocol) server and provides complete network security solutions to prevent hackers and invasions from outside. In addition, it meets the network requirements as it supports multiple connections such as DHCP/static IP address, IPoA (IP over ATM), PPPoE (PPP over Ethernet) and PPPoA (PPP over ATM).

The DR814Q offers the Web-based configuration pages as the way to configure it via common Web browsers. Friendly built-in graphical user interface eases the configuration and management.

This user manual introduces how to install and configure the DR814Q. After guiding you through the device connection and basic configuration, it focuses on the advanced configurations so that you can best facilitate the DR814Q.

1.2 Appearance

1.2.1 Front Panel

The LEDs on the front panel indicate the state of the DR814Q.

Figure 1-1 Front view

Table 1-1 LED state description of the DR814Q

LED	State	Description
Power	ON	The power is ON and the operation is normal.
	OFF	The power is OFF or a fault occurs.
Link	ON	The ADSL link is up.
	Blinking	The ADSL link is starting up.
	OFF	The ADSL link is down.
Act	Blinking	Data is being transmitted and/or received on the ADSL link.
	OFF	No data transmission is present on the link.
USB	ON	The USB connection is established.
	Blinking	Data is being transmitted and/or received on the USB port.
	OFF	No USB connection is present.
LAN1/2/3/4	ON	The Ethernet link is established.
	Blinking	Data is being transmitted and/or received on the Ethernet port.
	OFF	No link is present.
Diag	—	For manufactory test only.

1.2.2 Rear Panel

All ports of the DR814Q, a power port, four Ethernet ports, a USB port, a Reset button and an ADSL port, are located on the rear panel. Refer to Table 1-2 for details.

Figure 1-2 Rear view

Table 1-2 Description of the ports and reset button

Item	Quantity	Port	Description	Usage
Power port	1	—	—	Connect with the power adapter.
Ethernet port	4	RJ-45	10/100 Base-TX 10/100 Mbps auto-negotiation auto-MDI/MDIX IEEE 802.3/802.3u compatible	LAN port. Connect with the Ethernet port of a PC, Hub or switch.
USB port	1	Series-B Receptacle	USB 1.1	Connect with the USB port of a PC.
Reset button	1	—	—	Restore factory default settings (press and hold down the button for about five seconds).
ADSL port	1	RJ11	ANSI T1.413 Issue 2 ITU G.992.1 AnnexA G.dmt ITU G.992.2 G.lite ITU G.992.3 ADSL2 ITU G.992.5 ADSL2+	Connect with the telephone jack on the wall or the ADSL port of a splitter.

1.3 Features

DR814Q performs excellent network connection, featuring:

- Asymmetrical data transmission technology with downstream speed of 24 Mbps and upstream speed of 1.2 Mbps.
- Attachment of a LAN port to a PVC (permanent virtual channel), which allows you to access Internet services through different LAN ports.

- NAT technology that allows all PCs on a network to access the Internet sharing a single IP address.
- DHCP/static IP address, IPoA, PPPoE and PPPoA connection types, which make the DR814Q applicable to different networks and satisfy varied demands.
- Capability of a DHCP client to obtain an IP address from a DHCP server of an ISP.
- Capability of a DHCP server to assign IP addresses to hosts in a LAN.
- DNS (domain name system) relay that allows you to specify the IP address of an Ethernet port on the DR814Q as a DNS server IP address of a PC.
- DHCP relay that allows one DHCP server available for multiple DHCP clients in different network segments.
- Firewall, IDS (intrusion detection system) and IP filtering that secure your LAN.
- UPnP (Universal plug-and-play) for LAN users to use all the functions provided by UPnP-supported software (such as MSN) without any further configuration.
- IP routing, DNS configuration, and the services such as the IP and DSL performance monitoring.
- Friendly built-in Web-based graphical user interface for ease of configuration and management through common Web browsers.

2 Installation

On the assumption that you have acquired DSL services from your ISP, the following sections describe how to set up the DR814Q and configure your PC.

2.1 Packing List

Unpack the shipping carton carefully and check the following items listed in Table 2-1.

Table 2-1 Packing list

Item	Quantity
Aolynk DR814Q ADSL2+ Broadband Router	1
Power adapter	1
Telephone cable	1
Straight-through cable	1
USB cable	1
Set of screw and anchor	2
Aolynk DR814Q ADSL2+ Broadband Router Quick Start	1
CD including manuals and a driver	1
Warranty Card	1
Certificate of Quality	1

If anything is broken or missing, contact your agent for help.

2.2 Precautions

To guarantee normal operation and longevity of the DR814Q, its installation site should meet the requirements described below:

- Use the DR814Q indoors and keep it far away from the heat sources and water/liquid.

- Keep the cabinet or desk stable enough to hold the DR814Q. Fix the DR814Q and power adapter well on the wall when wall-mounting it.
- Reserve more than 10 cm (4 in.) of clearance around the DR814Q chassis for heat dissipation.
- Keep the operation environment clean. Dust buildup on the chassis may result in static absorption, reducing the life span and causing communication failure.
- Use an earthing system or lightning protection grounding different from that for the power supply equipment and keep them as far as possible.
- Wire the port cable indoors. Outdoor cabling is prohibited, to prevent the signal port from damages that may be caused by overvoltage and overcurrent from lightning strike.

2.3 Device Connection

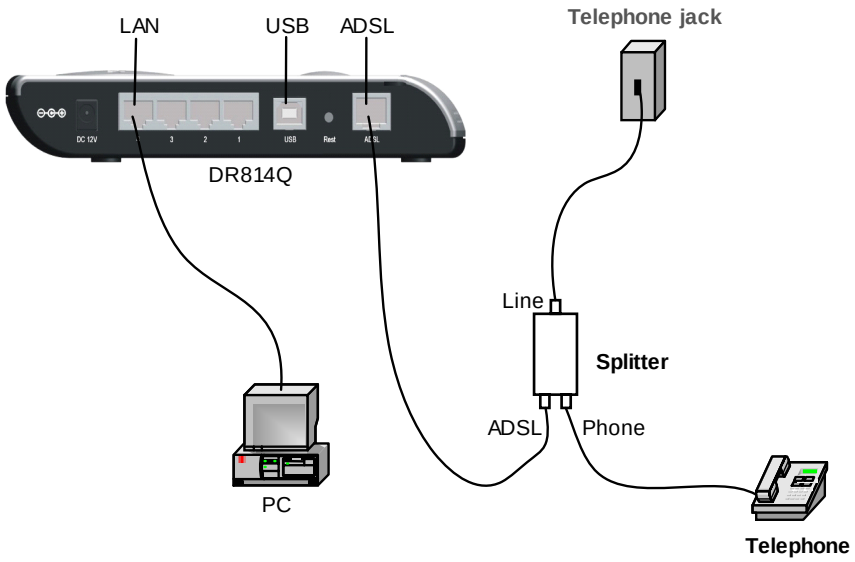


Figure 2-1 Connect the DR814Q

I. Connect to an ADSL line

To connect the DR814Q to an ADSL line, two options are available:

- Connect one end of the telephone cable to the ADSL port (similar to a common telephone port) on the DR814Q rear panel, and the other end to the telephone jack on the wall.
- As shown in Figure 2-1, connect both the ADSL port on the DR814Q and the telephone to a splitter, and then connect the splitter to the telephone jack on the wall. It allows you to use the telephone when you access the network.

II. Connect to a PC or Ethernet

To connect the DR814Q to a PC or Ethernet, two options are available:

- The Ethernet ports of the DR814Q are auto-MDI/MDIX, so you can use the crossover or straight-through cable to connect your PC, Hub, or switch to the Ethernet port (one among LAN1 through LAN4) of the DR814Q.
- Connect your PC to the DR814Q through the USB ports with a USB cable. It is suitable for the PC without NIC to access the Internet.

⚠ **Caution:**

To use the USB port on the DR814Q, you must install the USB driver and configure your PC (refer to section 8 "Appendix – USB Configuration" for detailed information).

III. Connect to the power adapter

Attach one end of the power adapter to the DR814Q and the other end to the power outlet. Approximately one minute later, the states of the LEDs on the front panel should be those listed in Table 2-2.

Table 2-2 Description of the LED states

LED	State	Description
Power	ON	The power is ON and the operation is normal.
Link	ON	The ADSL link is normal.
Act	Blinking	Data is being transmitted and/or received on the ADSL link.
LAN	ON/Blinking (when a LAN connection is present)	The Ethernet link is normal.
USB	ON/blinking (when a USB connection is present)	The USB connection is normal.
Diag	OFF	Contact the agent for help if this LED is ON.

3 Getting Started

The DR814Q offers a series of Web-based configuration pages for configurations and management. You can configure the DR814Q as needed. This chapter guides you to be familiar with the Web-based configuration pages.

3.1 Prerequisite Tasks for Configuration

To configure the DR814Q through its built-in Web pages, you must configure your PC as the following.

I. System requirements on your PC

- A Web browser (Microsoft Internet Explorer 5.5, Netscape 6.0 or later)
- TCP/IP protocol employed

II. IP address of your PC

Before accessing Web-based configuration pages of the DR814Q, you need to configure your PC as obtaining IP address and DNS server address automatically. If you assign a static IP address for the PC instead, note to assign an IP address in the same network segment as the DR814Q. The default IP address and subnet mask of the DR814Q Ethernet port are 192.168.1.1 and 255.255.255.0 respectively. Refer to section 7 “Appendix – TCP/IP Protocol”.

III. No proxy server

If your PC uses the proxy server to access the Internet, you must disable the proxy service.

1) Choose [Tool/Internet options] to open the [Internet options] window.
2) Click the [Connections] tab and click <LAN settings…>.
3) Make sure the Use a proxy server option is not selected.

IV. Important

1) The DR814Q provides the automatic dialing function, thus the dialing software (PPPoE dialing software, for example) provided by the operation system or other client dialing software is not needed and can be uninstalled.

2) Only English input is supported by the DR814Q.

3.2 Login

Run your Web browser and enter **http://192.168.1.1** in the address bar. The login dialog box appears, as shown in Figure 3-1.

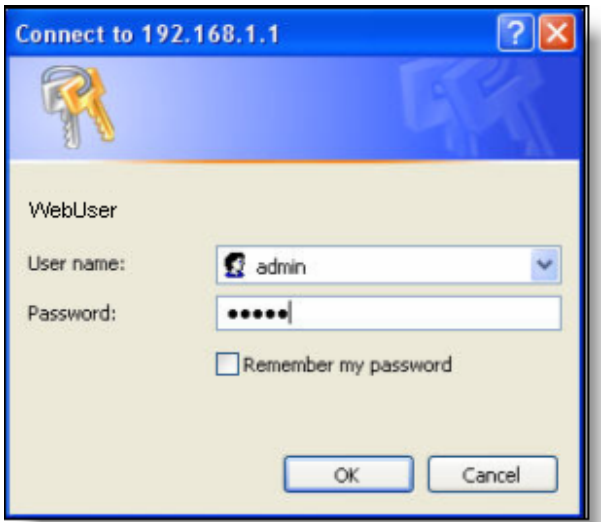


Figure 3-1 Login dialog box

Type in the default username (**admin**) and the default password (**admin**). Click <OK> to enter the Web-based configuration page shown in Figure 3-2.

The Web-based configuration page contains the navigation bar, title bar and parameter setting section. In the left pane is the navigation bar, where you can click a navigation link to display corresponding parameters in the right pane to make configurations.

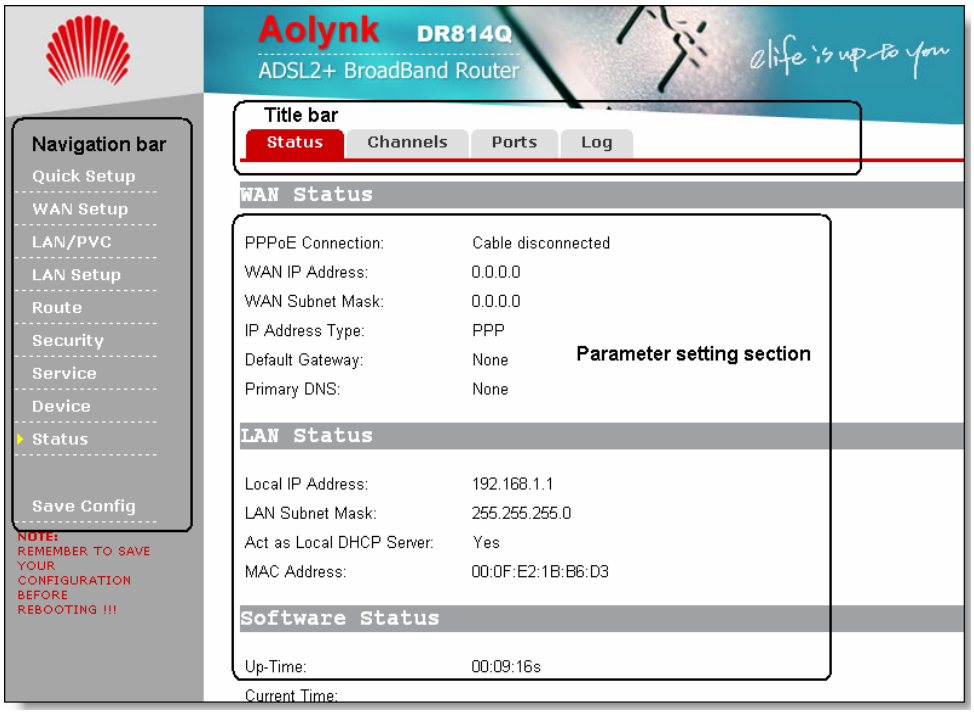


Figure 3-2 Welcome page

Note:

- The DR814Q supports two user levels, namely, administrator and user.
- An administrator, whose login username and password are both **admin**, enjoys higher authorities than a common user, whose login username and password are both **user**. An administrator can use all functions in Figure 3-2, while for a common user, the [WAN Setup], [LAN/PVC] and [Service] navigation links are unavailable.
- The following sections use the administrator view for description.
- To change the login password, refer to section 4.4.2 “Password” for detailed information.
- If you receive an error message or the configuration page cannot be displayed, refer to section 6.1 “DR814Q Troubleshooting” for detailed instructions.

3.3 Web Page Layout

Links to detail setting pages are listed in the navigation bar (see Figure 3-3) on the left pane of the Web-based configuration page. Click any link to display the corresponding page in the right pane.

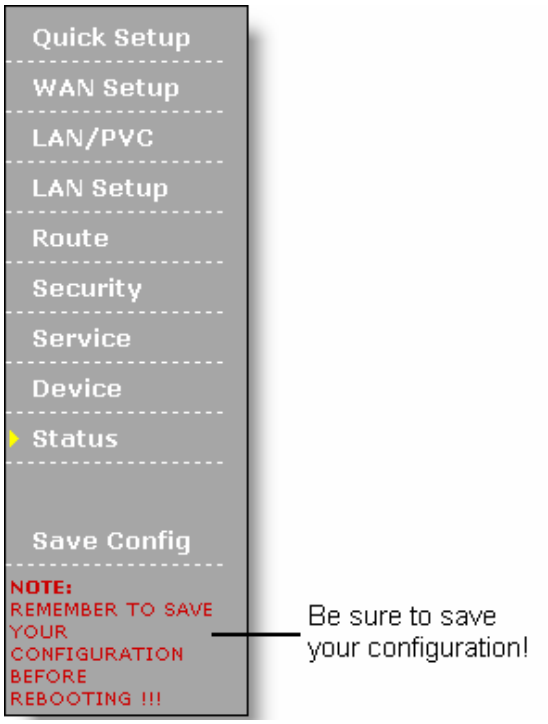


Figure 3-3 Navigation bar

Table 3-1 describes the commonly used controls in Web configuration pages.

Table 3-1 Description of the commonly used Web page controls

Control	Description
Apply Add Delete Delete this connection	Click these buttons to confirm and apply the settings or changes you have made. If you want to restart the DR814Q, be sure to first click [Save Config] and save your configurations on the corresponding page, otherwise the configurations will be lost.
Return	Click this button to return to the upper-level configuration page.
Cancel	Click this button to cancel the settings you have made on the current page.
Delete... QoS Setting...	Click such blue links to enter the corresponding configuration pages. For instance, you can click <Delete…> to open the corresponding dialog box and confirm a deletion.

Control	Description
	Such option buttons are provided in groups, and within each group containing multiple options for a parameter, you can select only one button. To enable a corresponding function, select the Enabled option. To disable a corresponding function, select the Disabled option.
	Drop-down list box – Click the down arrow button to open the drop-down list and select the desired option from the list.

3.4 Description of the Factory Default Settings

The DR814Q is configured with factory default settings that satisfies most common SOHO user demands.

The table below lists some of the most important default settings and the subsequent chapters will cover all the features in detail. If you are familiar with network configuration, review these settings to verify that they meet the requirements of your network and follow the instructions to change them if necessary. If not, use the DR814Q with the default settings.

Table 3-2 Description of the factory default settings

Item	Default settings	Description
Default username/password	Administrator: admin/admin Common user: user/user	You can log into the Web-based configuration page as an administrator or a common user. Different operation rights are available for different login users. Refer to 4.4.2 “Password” for detailed information.
IP address of the LAN port	Assigned static IP address: 192.168.1.1 Subnet mask: 255.255.255.0	This is the IP address of the DR814Q LAN port, and LAN users can maintain the DR814Q through this IP address. Generally, there is no need to change this address.
DHCP	DHCP server enabled with the following pool of addresses: 192.168.1.2 to 192.168.1.51	The DR814Q provides a pool of private IP addresses for dynamic assignment to PCs in the LAN. To use this service, you must configure your PC to obtain an IP address dynamically. Refer to section 7.2.1 “Specifying to Obtain an IP Address Automatically”.

Item	Default settings	Description
NAT	NAT enabled	Your PC's private IP address is translated to the public IP address whenever it accesses the Internet. Refer to section 5.2.4 "NAT" for detailed information.
DSL mode	Multimode	Applicable to multiple standard DSL line modes.

4 Web-based Basic Configuration

This chapter describes the basic configuration pages of the DR814Q for SOHO users to implement its basic functions. For details of advanced configuration, refer to section 5 “Advanced Configuration”.

4.1 Quick Setup

Click [Quick Setup] in the navigation bar to enter the [Quick Start] page on which you can perform some simple settings to access the Internet quickly. Here, two common login types are available: PPPoE and DHCP.

I. PPPoE

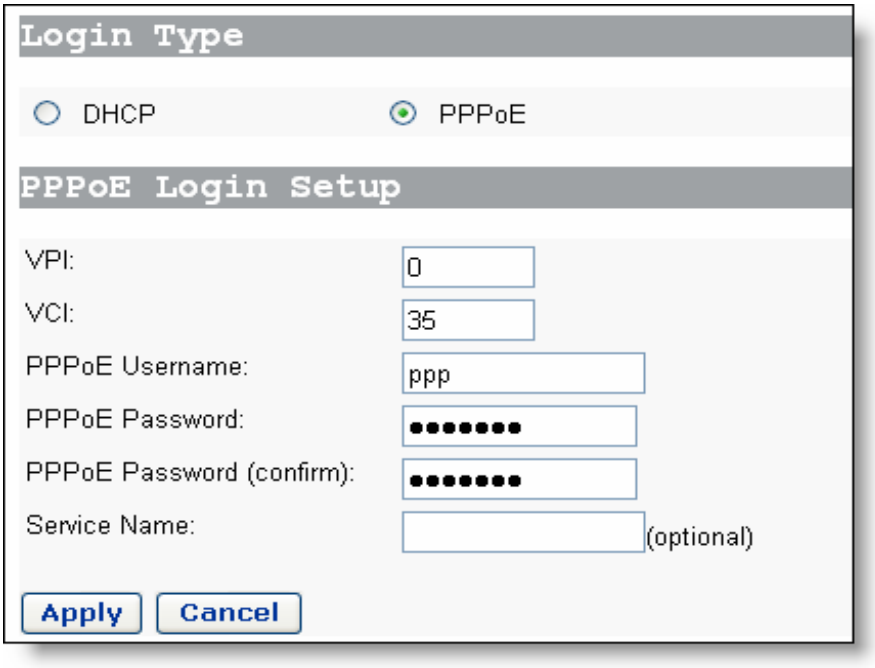


Figure 4-1 Quick Setup – PPPoE

The default login type on the page is PPPoE. This type requires you to type in the VPI and VCI values, PPPoE username and PPPoE password, and service name (optional)

specified by your ISP, and repeat the password for confirmation in the [PPPoE Password (confirm)] text box.

If your ISP provides the service name, you can specify it in the [Service Name] text box. If the service name is not needed, keep the box null.

Click <Apply> after the configuration is complete.

II. DHCP

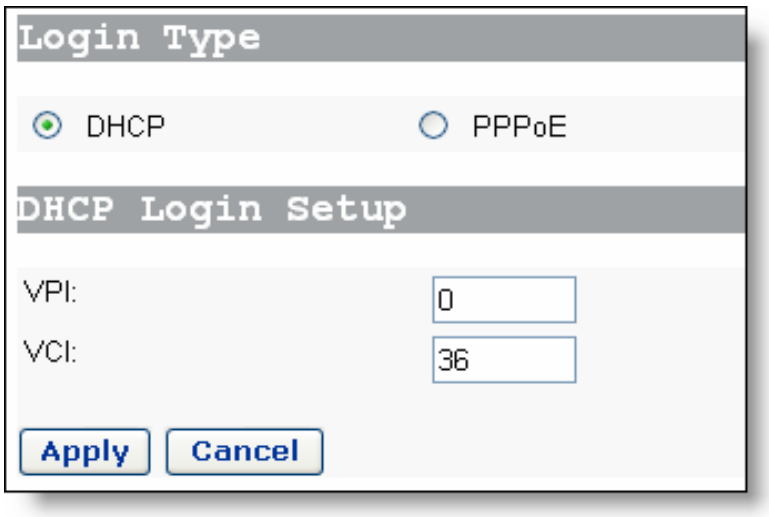


Figure 4-2 Quick Setup – DHCP

If you use DHCP for network access, select the DHCP option on the [Quick Start] page (see Figure 4-1) and type in the VPI and VCI values specified by your ISP on the page (see Figure 4-2).

Click <Apply> after the configuration is complete.

⚠ **Caution:**

Do not set the same VPI and VCI values for the DHCP or PPPoE login type.

4.2 WAN Setup

Click [WAN Setup] in the navigation bar to enter the corresponding page show in Figure 4-3, where you can configure WAN services, DNS relay and DDNS (dynamic DNS) functions, and PVC scan settings.

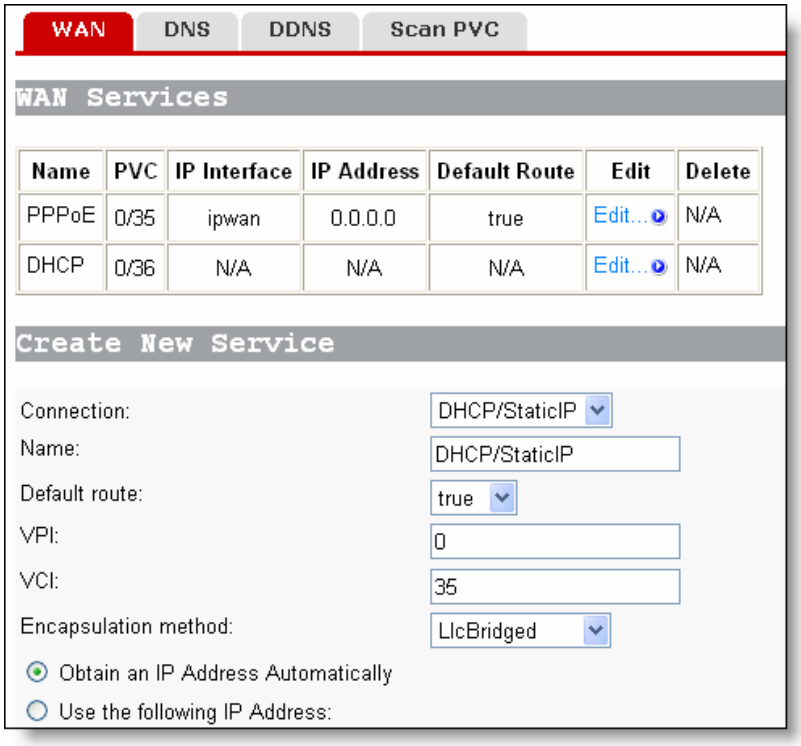
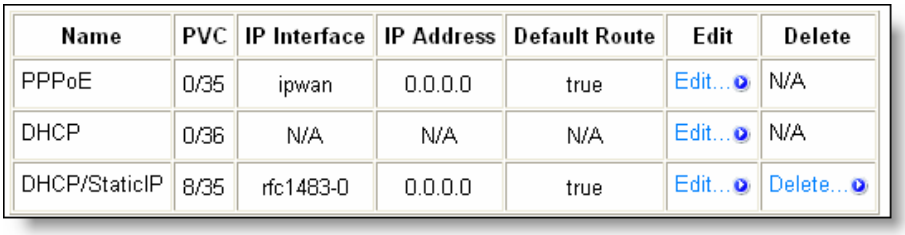


Figure 4-3 WAN setup page

4.2.1 WAN

This page allows you to configure WAN services in detail, or to modify attributes of services that you configured in the quick setup page. You can access the Internet normally only when these attributes are set correctly.

I. WAN service list



Name	PVC	IP Interface	IP Address	Default Route	Edit	Delete
PPPoE	0/35	ipwan	0.0.0.0	true	Edit...	N/A
DHCP	0/36	N/A	N/A	N/A	Edit...	N/A
DHCP/StaticIP	8/35	rfc1483-0	0.0.0.0	true	Edit...	Delete...

Figure 4-4 WAN service list

The WAN service list contains configuration about each WAN connection service created on the DR814Q. For service modification and advanced configuration, refer to section 4.2.1 II. “Create a new service”. To delete an existing WAN service, click the corresponding <Delete…> button.

Caution:

The first two items in the WAN service list are default services and cannot be deleted. You can only delete those you have created.

II. Create a new service

Below the [WAN Services] section, the [Create New Service] section is for creating WAN connection services. You can select one from the four options of the [Connection] drop-down list: DHCP/StaticIP, IPoA, PPPoA and PPPoE, and the corresponding settings will be listed in the lower part of the page. The four options are described below.

1) DHCP/Static IP

The IP address in this mode can be manually specified (Use the following IP Address) or automatically assigned by your ISP (Obtain an IP Address Automatically). The former requires you to manually specify the DNS server address on the [DNS Relay] page. For details, refer to section 4.2.2 “DNS Relay”.

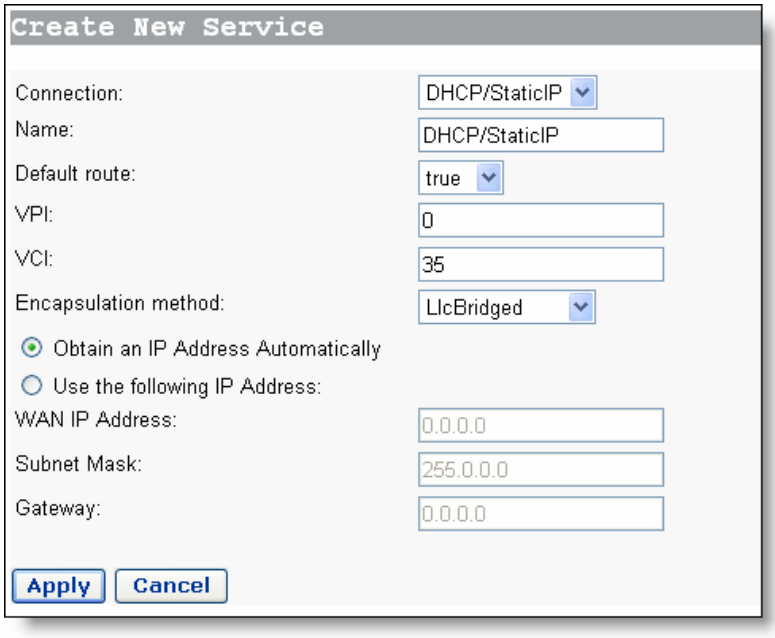


Figure 4-5 DHCP/Static IP

Table 4-1 Description of DHCP/Static IP items

Item	Description
Name	Type in the distinctive description on this service.
Default route	Specify (true/false) whether to generate a default route for this service.
VPI	Type in the VPI value provided by your ISP.
VCI	Type in the VCI value provided by your ISP.
Encapsulation method	Select the packet encapsulation method, LlcBridged or VcMuxBridged, from the drop-down list according to your ISP. LlcBridged is usually selected.
Obtain an IP Address Automatically	Select this option to obtain an IP address from your ISP's DHCP server automatically.
Use the following IP Address	Select this option if you have the static IP address provided by your ISP. You need also provide the IP address, subnet mask and gateway address.
WAN IP Address	Type in the static IP address provided by your ISP.
Subnet Mask	Type in the subnet mask provided by your ISP.
Gateway	Type in the IP address of the next-hop gateway device.

2) IPoA

IPoA allows IP packets directly over the ADSL physical link at high transmission rate.

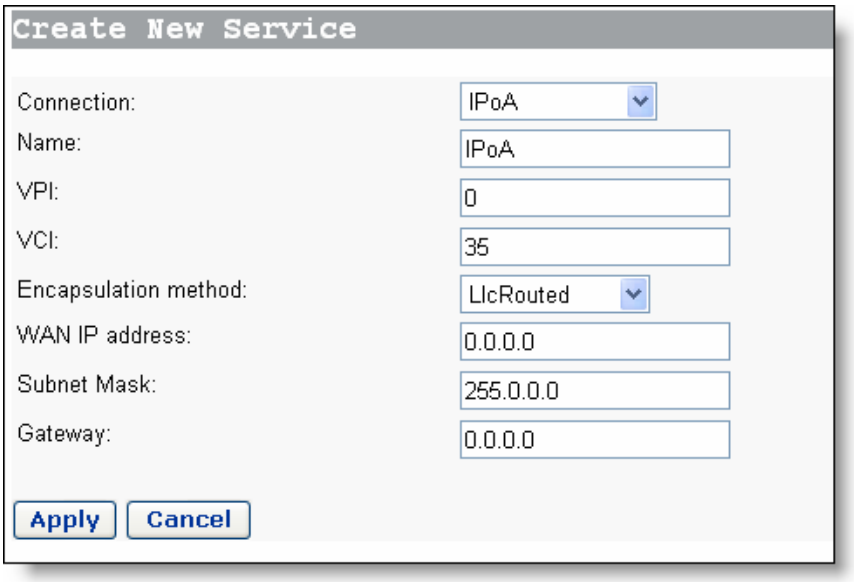


Figure 4-6 IPoA

Table 4-2 Description of IPoA items

Item	Description
Name	Type in the distinctive description on this service.
VPI	Type in the VPI value provided by your ISP.
VCI	Type in the VCI value provided by your ISP.
Encapsulation method	Select the packet encapsulation method,, LlcRouted or VcMuxRouted, from the drop-down according to your ISP. LlcRouted is usually selected.
WAN IP Address	Type in the static IP address provided by your ISP.
Subnet Mask	Type in the subnet mask provided by your ISP.
Gateway	Type in the IP address of the net-hop gateway device.

3) PPPoA

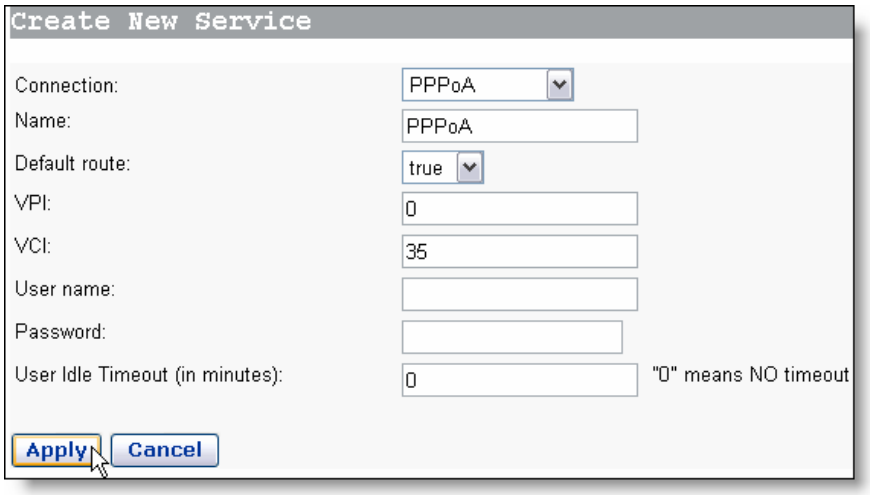


Figure 4-7 PPPoA

Table 4-3 Description of PPPoA items

Item	Description
Name	Type in the distinctive description on this service.
Default route	Specify (true/false) whether to generate a default route for this service.
VPI	Type in the VPI value provided by your ISP.
VCI	Type in the VCI value provided by your ISP.
User name	Type in the username provided by your ISP.
Password	Type in the password provided by your ISP.

Item	Description
User Idle Timeout	Type in the auto-disconnect idle time. Network connection is disconnected automatically in the case of no data transmission within the set time. This is suitable for time-based network accounting. If the time is set to 0, it indicates that the connection is never disconnected.

4) PPPoE

PPPoE configuration is similar to PPPoA configuration, and therefore you can refer to Table 4-3 for related description. Generally, ATM-related parameters can adopt default values. Refer to section 5.1 II. “QoS configuration” for parameter description.

Caution:

- Do not set the same VPI and VCI values for different services.
- Two WAN services can be created at most.

4.2.2 DNS Relay

The DR814Q has the DNS relay function. When the DNS server address on your PC is the IP address of the LAN port, the DR814Q forwards the DNS query from your PC to the DNS server set on the DR814Q.

When your ISP changes the DNS server or you modify the connected ISP, there is no need to modify the IP address of the DNS server on your PC.

Click the [DNS] tab of the WAN setup page and the DNS relay setting page shown in Figure 4-8 appears. Type in the DNS server IP address(es) provided by your ISP. Generally, the IP address of the primary DNS server is used, and the secondary is adopted in case the primary one becomes unavailable.

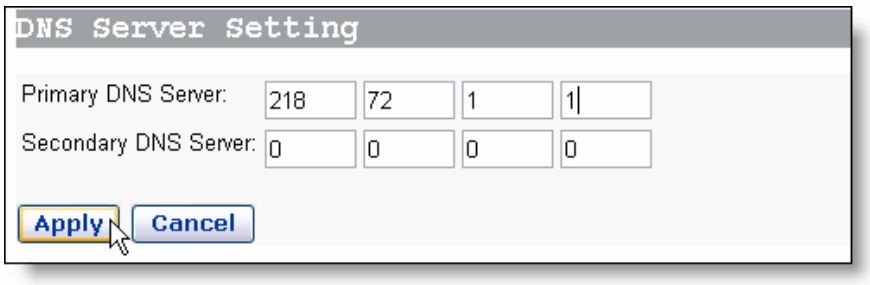


Figure 4-8 DNS relay settings

4.2.3 DDNS

By way of PPPoE or dynamic IP, the IP address that the WAN port obtained is unfixed, making it inconvenient for the Internet users to access the LAN server. DDNS solves this problem. After you set the DDNS function, the DR814Q update the mapping between the domain name and the IP address automatically, ensuring the Internet users to access the LAN through the domain name.

Click the [DDNS] tab of the WAN setup page to enter the page shown in Figure 4-9.

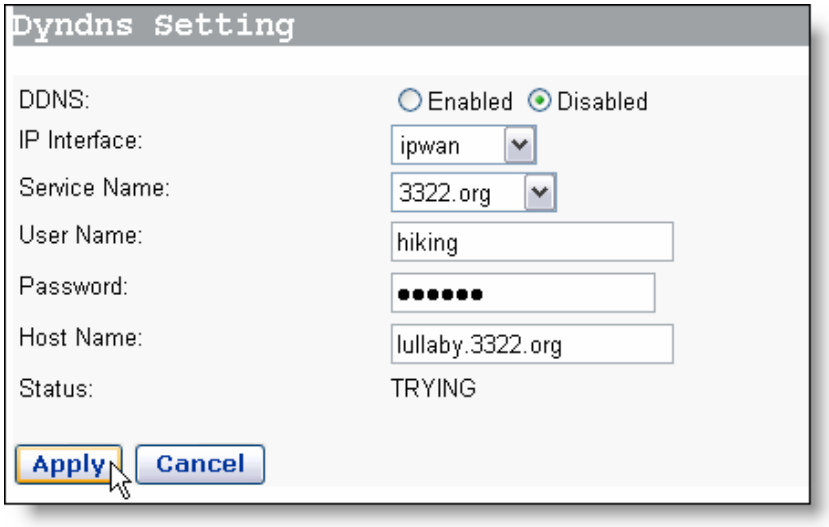


Figure 4-9 DDNS settings

Table 4-4 Description of DDNS items

Item	Description
DDNS	Select Enable or Disable to enable or disable the DDNS function.
IP interface	Select the interface on which you want to enable the DDNS function.
Service Name	Select the web site where to obtain the DDNS service.
User Name	Type in the username you register with the DDNS server.
Password	Type in the password you register with the DDNS server.
Host Name	Type in the domain name you apply from the DDNS server.
Status	Display the status of the DDNS function.

Note:

As the client tool of the DDNS service, the DDNS function must cooperate with the DDNS server. Visit www.3322.org, www.dyndns.org or www.tzo.com to apply for a domain name before you enable the DDNS function. After you complete the DDNS settings on the DR814Q, the mapping between the domain name and the IP address of the WAN port is established.

Example: If you have applied for the domain name lullaby from www.3322.org, see Figure 4-9 for the settings to make the mapping between the domain name and the IP address of the WAN port on the DR814Q.

4.2.4 Scan PVC

The PVC scan function allows you to search the currently unused PVC settings. If your ISP has configured PVC services within the scannable range, after the scan, these PVC services will be automatically configured to the service list on the [WAN Connections] page.

Click the [Scan PVC] tab of the WAN setup page to enter the [Scan PVC] page shown in Figure 4-10.

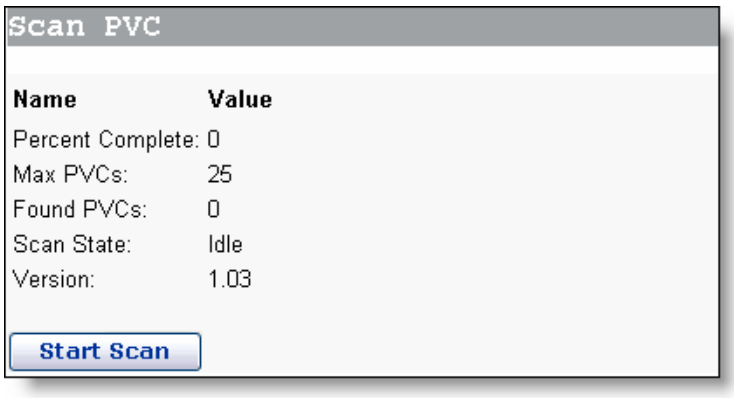


Figure 4-10 Scan PVC

Click <Start Scan> to start the scan, which may take about five minutes.

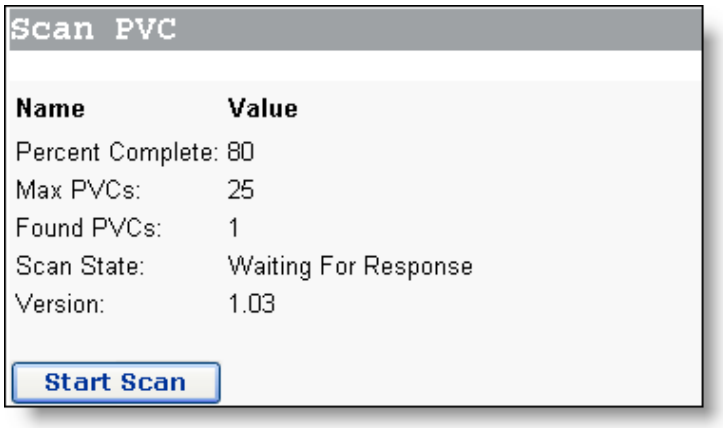


Figure 4-11 Scan PVC

As shown in Figure 4-11, one PVC is found. Click [WAN Setup] in the navigation bar, you will find that one service found by the DR814Q is automatically added to the WAN service list, as shown in Figure 4-12.

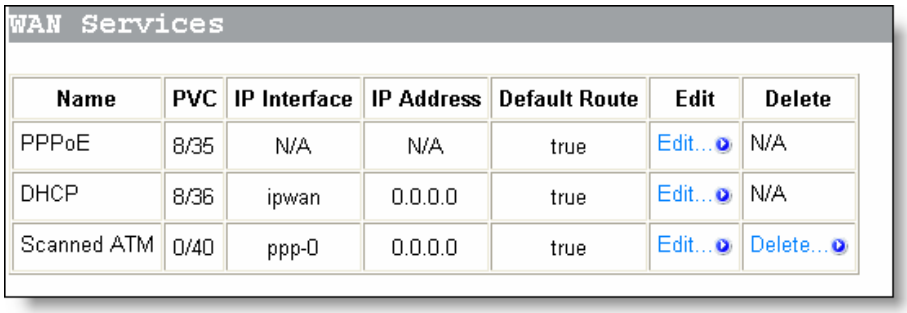


Figure 4-12 Add the found services automatically

If the PPPoE or PPPoA service is found and it needs confirmation by username and password, you need to edit this automatically added service by typing in a username and a password.

4.3 LAN Setup

Click [LAN Setup] in the navigation bar to enter the corresponding page, where you can make LAN port and DHCP configurations, and view DHCP client information.

4.3.1 LAN

This page allows you to set IP address for the LAN port and to configure virtual interfaces.

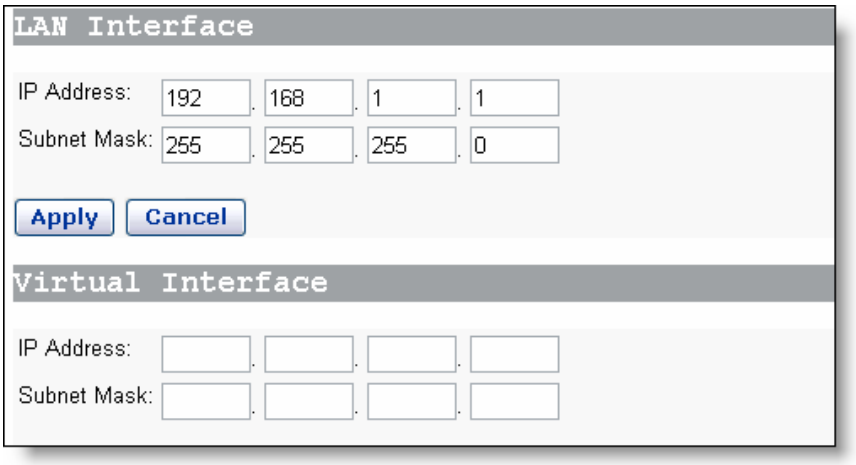


Figure 4-13 LAN connections

I. Set a LAN port

To change the IP address of the LAN port, type in the new IP address and subnet mask directly in the corresponding fields of the [LAN Interface] section, and then click <Apply>. By default, the IP address of the LAN port and subnet mask for the DR814Q are 192.168.1.1 and 255.255.255.0 respectively.

⚠ **Caution:**

After modifying the IP address of the LAN port, the new address is needed for logging into the Web-based configuration page. For example, the IP address of the LAN port is changed to 192.168.2.1, and then you need to input **http://192.168.2.1** to log into the Web-based configuration page. Before logging in, be sure to update your PC's IP address to make it in the same network segment with the DR814Q according to instructions on the [LAN Connection] page.

II. Create a virtual interface

You can create a virtual interface for the DR814Q, and manage the DR814Q through the IP address of the network segment where the virtual interface is located. This IP address, in a different network segment with the LAN Interface of the DR814Q, can also be used by the DMZ (demilitary zone) server and virtual server. In this way, the virtual interface enables better network security.

To create a virtual interface, type the IP address and subnet mask for the virtual interface in the fields of the [Virtual Interface] section, and click <Apply>. Note that the

IP address of the virtual interface cannot be within the same subnet with that of the LAN port.

4.3.2 DHCP Server

The DR814Q can act as a DHCP server to automatically assign IP addresses within a certain range to any PC running in the LAN.

Click the [DHCP] tab of the LAN setup page to enter the corresponding page shown in Figure 4-14, where you can configure DHCP server and DHCP relay.

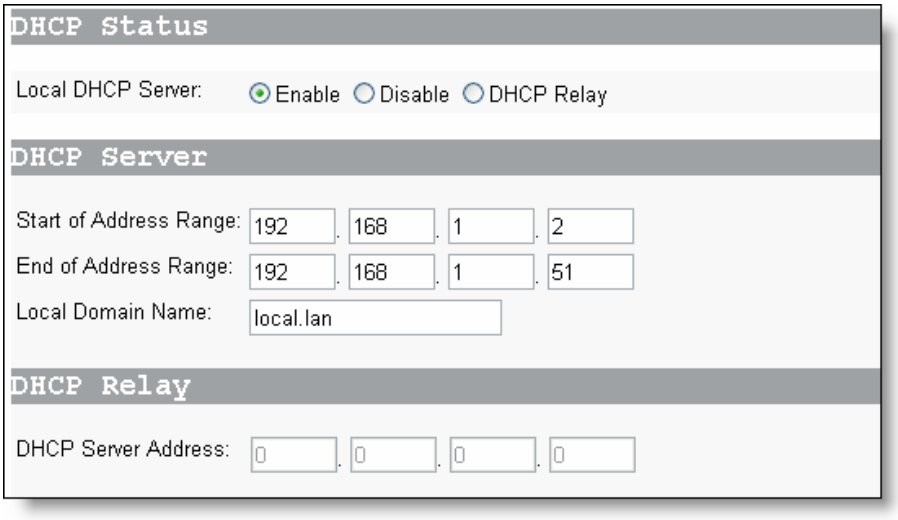


Figure 4-14 DHCP settings

I. DHCP status

- Enable: Enable the DHCP server (default).
- Disable: Disable the DHCP server.
- DHCP Relay: Enable the DHCP relay.

II. DHCP server

The DR814Q can act as a DHCP server and automatically assign IP addresses, according to the range defined in this page, to running PCs in the LAN.

To make the DR814Q assign IP address to the DHCP client sending a request, select the Enable option in the [DHCP] status section, type in the start IP address and end IP address in the proper fields, and then click <Apply>.

If necessary, you can type in commonly used DNS suffixes such as **local.lan** in the [Local Domain Name] text box. Thus, you can access the Web server whose host name is qqq by entering **http://qqq** in the Web browser instead of **http://qqq.local.lan**. Small and medium–sized enterprises can also set their own DNS suffixes here while home users need not.

III. DHCP relay

The DR814Q offers the DHCP relay function to forward packets between a DHCP client and a DHCP server that are in different network segments, thereby making DHCP clients on multiple networks use the DHCP server across network segments.

To allow communications between DHCP clients with a DHCP server through the relay function of the DR814Q, select the DHCP Relay option in the [DHCP] status section, and then type the IP address of the DHCP server in the corresponding field.

⚠ **Caution:**

To make DHCP relay work properly, note to disable NAT and the firewall on the corresponding service interface, that is, the service interface set for the DHCP server in route configuration.

- To disable NAT, click the [NAT] tab on the security setup page, and then set [NAT Setting] as Disable for the corresponding interface.
- To disable the firewall, click the [Firewall] tab on the security setup page, and then set [Security Setting] as Disable.

4.3.3 DHCP client

Click the [DHCP Clients] tab of the LAN setup page to enter the DHCP client setting page shown in Figure 4-15. This page provides the current IP address assignment information of the DHCP server, including the host name, IP address and MAC address. You can click <Refresh> to get the latest data.

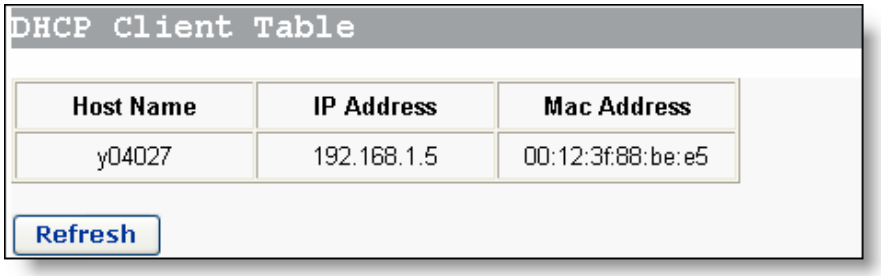


Figure 4-15 DHCP client information

4.4 Device

Click [Device] in the navigation bar to enter the corresponding page, where you can change the Web page login password, configure remote management, backup/restore configuration or reboot/update the DR814Q..

4.4.1 Restarting/Restoring Factory Default Settings

This page allows you to restart the DR814Q, or reset all configurations to factory default settings.

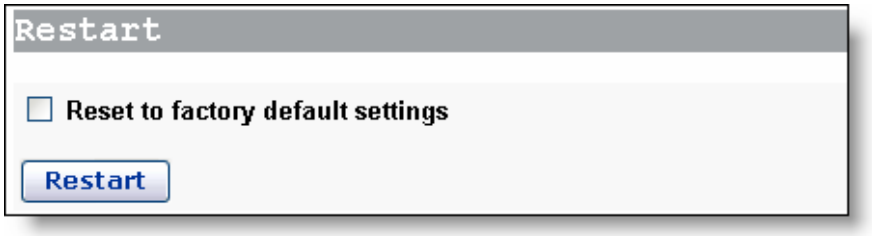


Figure 4-16 Restart page

To restart the DR814Q, click <Restart>.

To reset all configurations to the factory default settings, select the [Reset to factory default settings] check box and click <Restart>.

Note:

Another method to restore the factory default settings is to press the Reset button on the rear panel of the DR814Q and hold it down for about five seconds.

4.4.2 Password

Click the [Password] tab of the device setup page to enter the corresponding page. You can access the Web-based configuration page of DR814Q via two usernames: admin and user. The administrator has the maximum rights while the common user can only access part of the configuration pages. Only the administrator can enter the password setting page to change the login passwords for the two users. The common user can only change its own password.

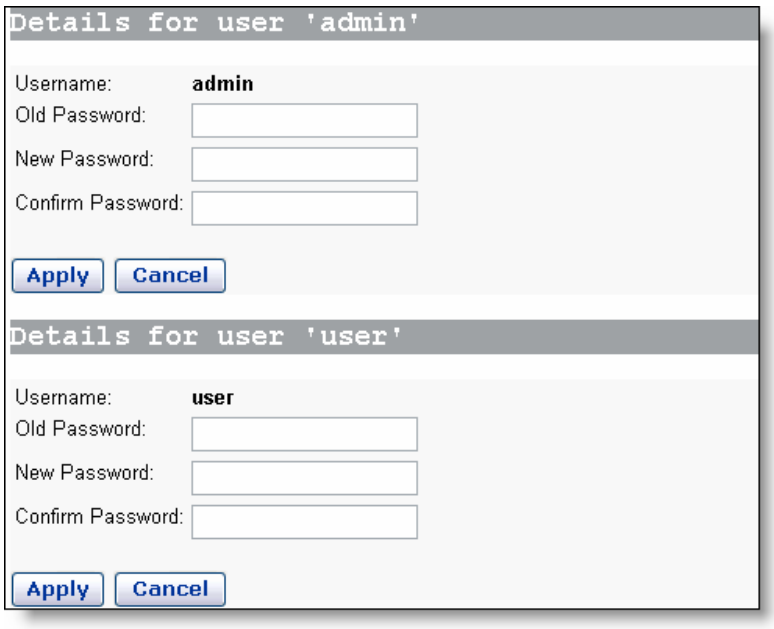


Figure 4-17 Change the password

By default, admin and user are the passwords for administrator and common user respectively.

To change the password, type in the related information in the [Old Password], [New Password] and [Confirm Password] text boxes, and then click <Apply>.

4.4.3 Remote Access

If remote access is enabled, you can view the current configuration page and manage the DR814Q remotely.

Click the [Remote] tab of the device setup page to enter the corresponding page shown in Figure 4-18.

Figure 4-18 Remote access – disabled

By default, the remote access is disabled. You can set the timeout value in the textbox. Thus, when remote access is enabled, if no remote operation is made, the DR814Q tracks the elapsed idle time. When the elapsed idle time exceeds the timeout value set here, the DR814Q will terminate the remote connection to avoid remote attacks. The idle timeout value is set to 0 by default, that is, not to terminate the remote connection.

You can click <Enable> to enable remote access, as shown in Figure 4-19.

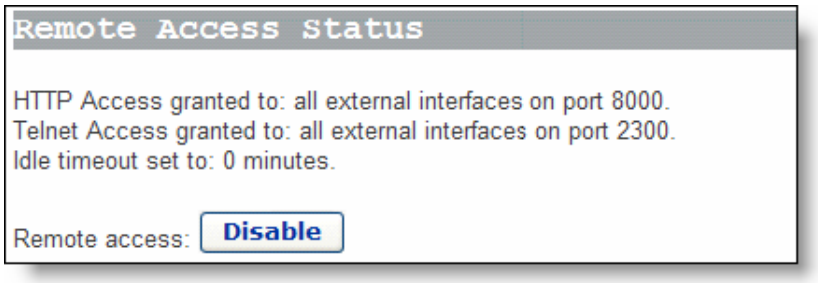


Figure 4-19 Remote access – enabled

Figure 4-19 indicates the port for remote management is 8000, so you can manage the DR814Q remotely by entering **http://xxx.xxx.xxx.xxx:8000** in your Web browser. The xxx.xxx.xxx.xxx is the IP address of the WAN port on the DR814Q. If multiple WAN services are configured and all of them obtain the IP addresses, the IP address of any service can be used for remote access.

To disable the remote access, click <Disable> on the page.

⚠ **Caution:**

A remote connection is maintained only when the idle timeout time is set to 0. If you set another value and save the configuration, remote access will begin a new timing circle after the DR814Q restarts.

4.4.4 Backing Up/Restoring Configuration

Click the [Backup] tab of the device setup page to enter the corresponding page. This page allows you to back up the current configuration to your PC, or restore the configuration from a previously saved file.

I. Back up the current configuration

Click <Backup> to open the [File Download] dialog box as below.

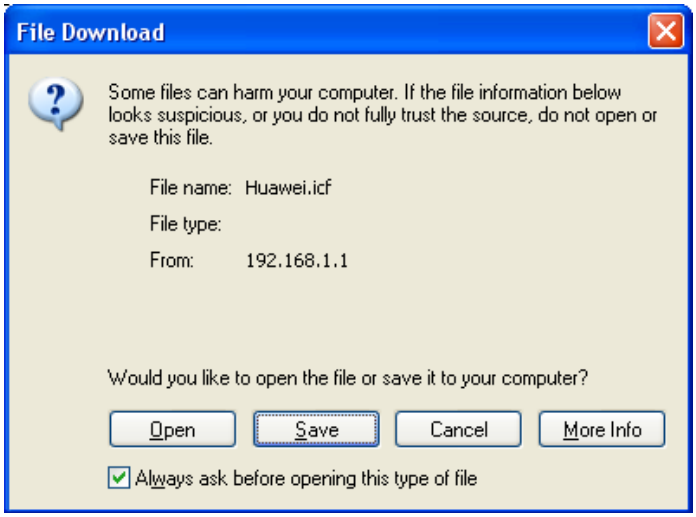


Figure 4-20 File Download dialog box

Click <Save> to open the [Save As] window as below.

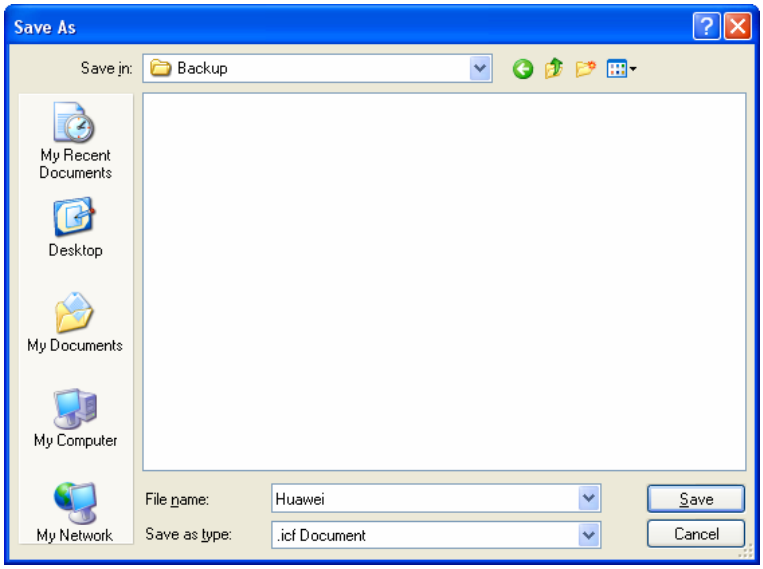


Figure 4-21 Save the configuration file

Select a directory to save the file and type in a valid file name (with the .icf suffix), and then click <Save> to back up the current configuration to the file.

II. Use the file to restore the configuration

To use the previously saved file to restore the configuration, click <Browse…> to open the [Choose file] window shown in Figure 4-22.

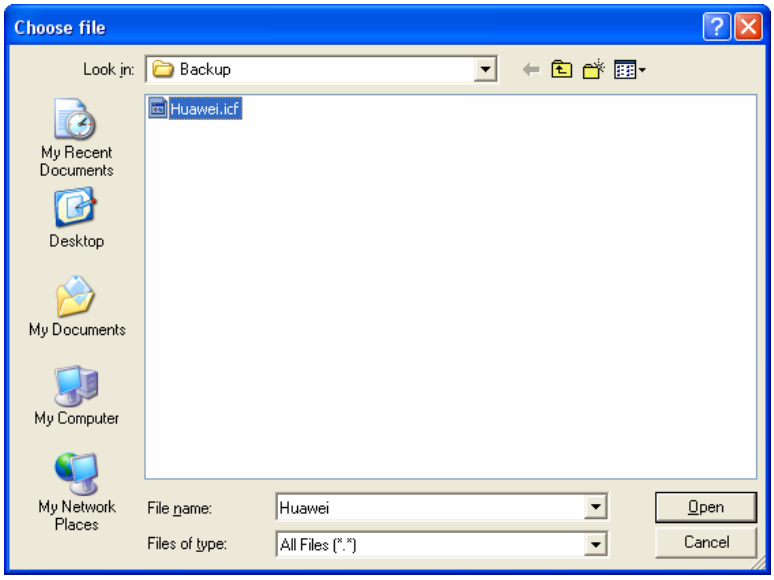


Figure 4-22 Choose the backup file

Find the configuration file and then click <Open> to open the page as below. Click <Restore> to use the file to restore the configuration.

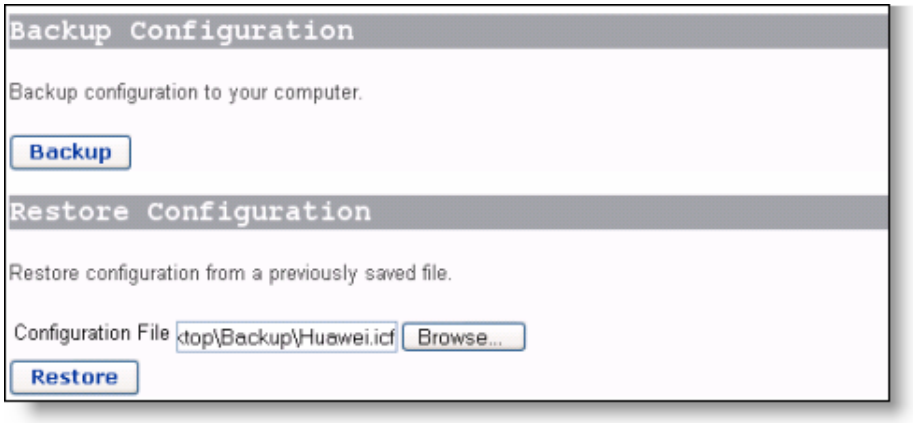


Figure 4-23 Restore the configuration

Caution:

Make sure the correct configuration file is adopted for your restoration. Wrong configuration files may cause abnormal operation of the device.

4.4.5 Upgrade

Click the [Upgrade] tab of the device setup page to enter the corresponding page shown in Figure 4-24, where you can upgrade the DR814Q software.

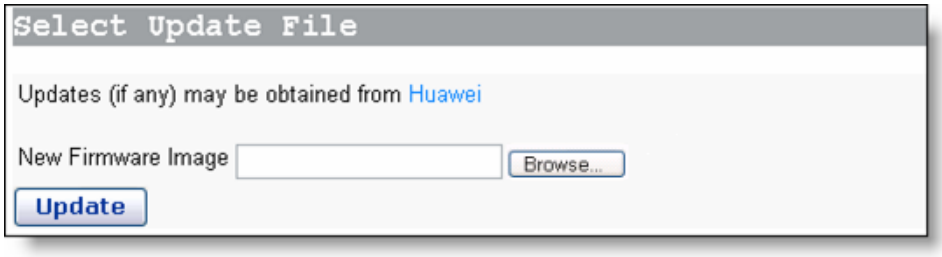


Figure 4-24 Software upgrade

Type in the local path of the software update file downloaded from Huawei technical support website, or click <Browse…> to select this file on your PC and then click <Update>.

When the update is complete, you need to restart the DR814Q by clicking <Restart>.

Note:

After the upgrade and restart, you are recommended to restore factory default settings to ensure the normal device operation.

Click <Huawei> to access Huawei technical support website to obtain the latest software version.

4.5 Status

Click [Status] in the navigation bar to enter the corresponding page, where you can view the DR814Q status, log information and interface information.

4.5.1 Status

This page lists the current information about the DR814Q, including WAN connections, LAN settings and software status.

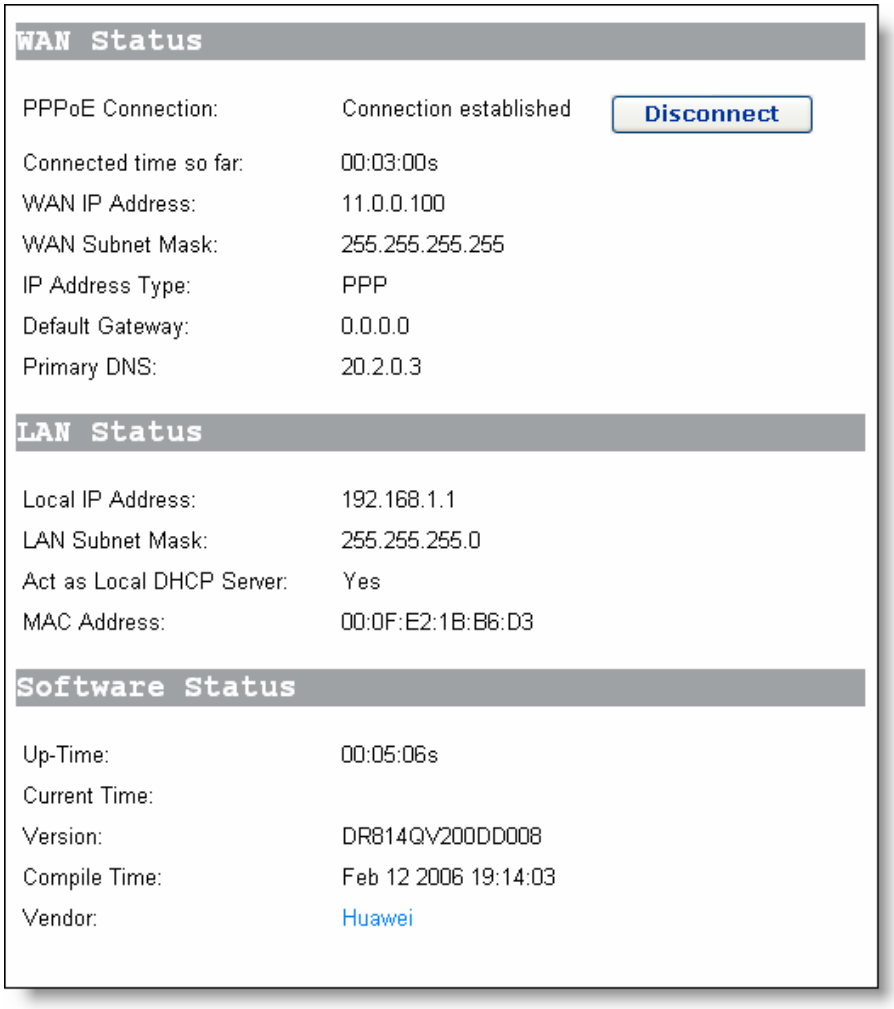


Figure 4-25 Status page

4.5.2 Data Transmission Channels

Click the [Channels] tab of the status page to enter the corresponding page shown in Figure 4-26, where you can click <Show Statistics> to view details of each data transmission channel.

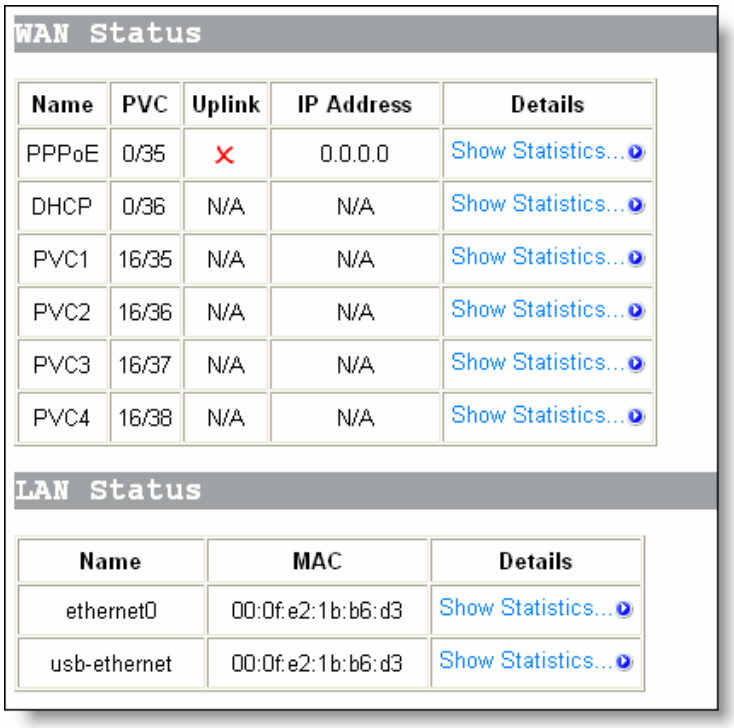


Figure 4-26 Data transmission channel status

4.5.3 Port Status

Click the [Ports] tab of the status page to enter the corresponding page shown in Figure 4-27, where you can click any link (displayed in blue) of the “Port” column to show related status information, such as connections on this port and received/sent packets.

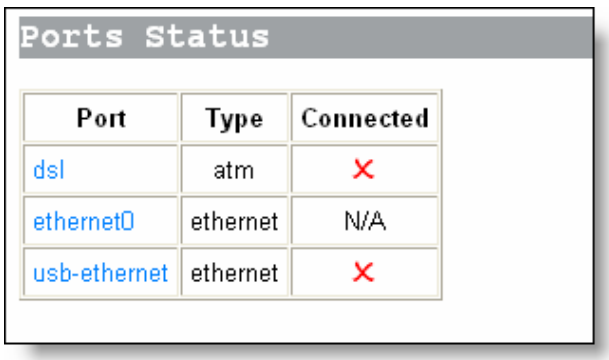


Figure 4-27 Port status

4.5.4 Log

Click the [Log] tab of the status page to enter the corresponding page, which records all types of events occurring during the running of the DR811/814.

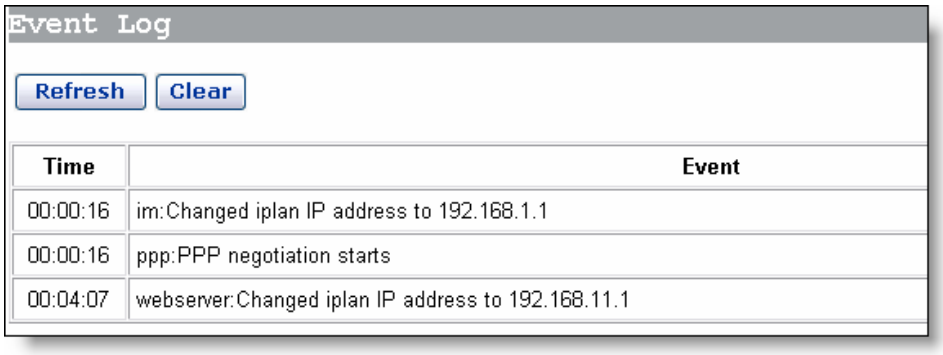


Figure 4-28 Log

Click <Refresh> to show the latest information.

Click <Clear these entries> to clear the currently displayed events.

4.6 Saving the Configuration

After all the configurations are complete, click [Save Config] in the navigation bar to enter the [Save configuration] page. Click <Save> to save your configurations so that they take effect when the DR814Q restarts.

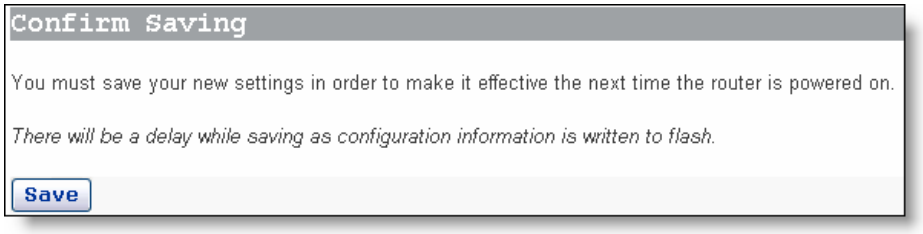


Figure 4-29 Save the configuration

⚠ **Caution:**

Do save your configurations, otherwise, they will be lost after the DR814Q restarts.

---

5 Advanced Configuration

After you complete the proceeding configuration correctly, the DR814Q can access all Internet services. This chapter introduces how to configure the advanced functions of the DR814Q to enhance the performances, thereby satisfying various demands on network configuration.

5.1 Attaching LAN Ports to PVCs

Click [LAN/PVC] to enter the PVC attachment page. You can attach the Ethernet port to a PVC and set the corresponding QoS parameters for PVC.

I. PVC attachment settings

With the PVC attachment function, you can attach any one or ones of the four LAN ports to any of the four upstream PVCs, while each port can be attached to only one PVC. Each PVC bridges data through the bound LAN port(s) to the broadband access server (BAS) to accommodate different Internet services through different LAN ports. Services such as the Internet accessing, video-on-demand (VOD), and IPTV carried out by different access servers separate services effectively and can ensure enough bandwidth for services with high priorities.

You can also configure an Ethernet port as a management port to manage devices. You can access the configuration management page of your DR814Q through a host that is connected to the management port. By default, the four LAN ports of the DR814Q are all the management ports (Attach to Router).

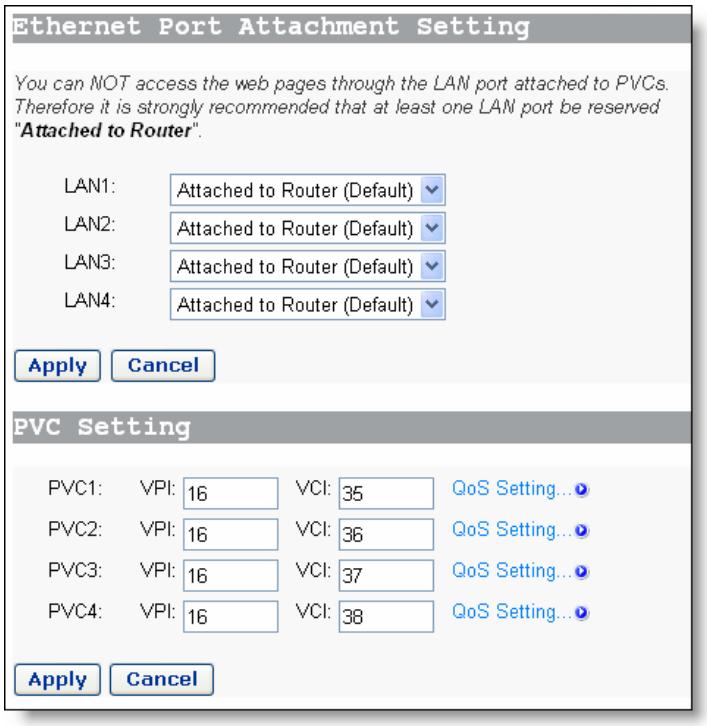


Figure 5-1 PVC attachment settings

As Figure 5-1 shows, there are five options for each Ethernet port (LAN1 to LAN4) in the drop-down list: Attached to PVC1/2/3/4 and Attached to Router (Default).

Upon the configuration of these LAN ports, you need to click <Apply> to save your configuration and have it take effect. Then in the [PVC Setting] section set VPIs/VCIs for the corresponding PVCs. Values of VPI/VCI are provided by your ISP. Click <Apply> in this section to save your configuration.

⚠ **Caution:**

- You can manage your DR814Q only through the PC connected to the management port or the USB port.
- It is recommended to configure at least one Ethernet port as management port. If all the four Ethernet ports are configured to be bound to PVCs, you can still access the configuration management page through the USB port. Refer to Chapter 8 “Appendix – USB Configuration” for more information about the USB port.
- The VPI/VCI values of different PVCs cannot be identical with each other or the same as those on the other configuration pages.

The following example illustrates the configuration upon the assumption:

- Attach a LAN port to PVC 16/35 to access the IPTV Website that your ISP set up. The Website uses DHCP to assign IP addresses dynamically.
- Attach other two LAN ports to PVC 16/100, and the PCs connecting to these ports access the Internet through PPPoE dial-up connections.
- Set the last LAN port as the management interface and apply NAT-enabled PPPoE service on it. Attach it to PVC 8/35. The username and password your ISP assigns are **userName** and **myPassword** respectively.

Follow these steps to achieve the settings on your DR814Q.

1) On the [Ethernet Port Attachment Setting] page (see Figure 5-2), select the Attached to PVC1 option from the LAN1 drop-down list to attach LAN1 to PVC1 and attach LAN2 and LAN3 to PVC2 in the same way. Leave the LAN4 default setting Attached to Router untouched. Click the <Apply> to save your configuration.
2) In the [PVC Setting] section, set **16/35** as the VPI/VCI value of PVC1, **16/100** as that of PVC2. Click <Apply> in the [PVC Setting] section to save your settings. Since you do not use PVC3 and PVC4 here, there is no need to specify VPI/VCI values for them.

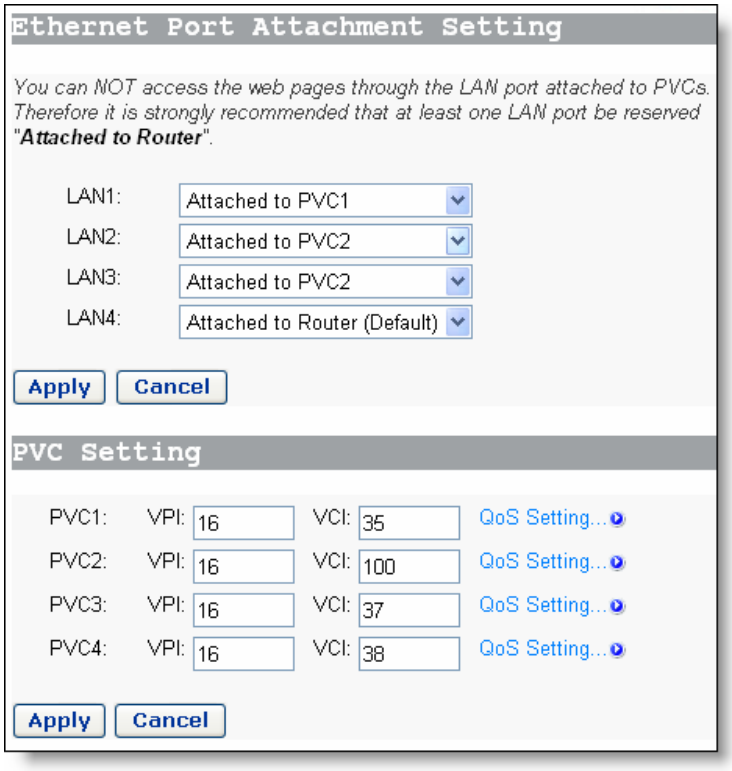


Figure 5-2 Actual configuration on the Attachment Setting page

3) Verify the attachment of the LAN ports to the PVCs. Connect a PC that is configured to obtain an IP address automatically to port LAN1. Wait for a while and the PC can obtain an IP address, and then you can access the IPTV website of

your ISP. Similarly, connect PCs to ports LAN2 and LAN3 and access the Internet by PPPoE connection. After you enter the username and password, the PC can obtain an IP address quickly and set up a connection with the website.

4) Access the Internet on a PC through the management port (LAN4). Click [Quick Setup] in the navigation bar and select the PPPoE option on the [Quick Setup] page. Set the values of VPI and VCI to **8** and **35** respectively, type **userName**, **myPassword**, and **myPassword** in the PPPoE Username, PPPoE Password, and PPPoE Password (confirm) text boxes respectively and then click <Apply> to save your settings.

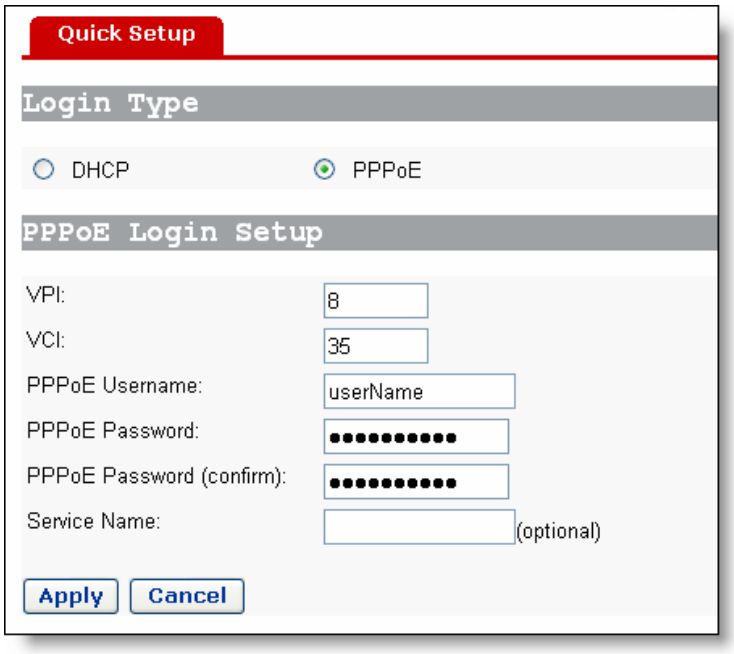


Figure 5-3 Set the PPPoE authentication information

5) It takes about two minutes for your settings to take effect. Figure 5-4 depicts these settings. Actual configuration on the WAN connections page Click [Status] in the navigation bar to bring up the [Status] page as shown in Figure 4-25. You can find that the WAN IP Address item is a public IP address instead of the original one 0.0.0.0. Then you can access the Internet through a PC connected to the LAN4 port.

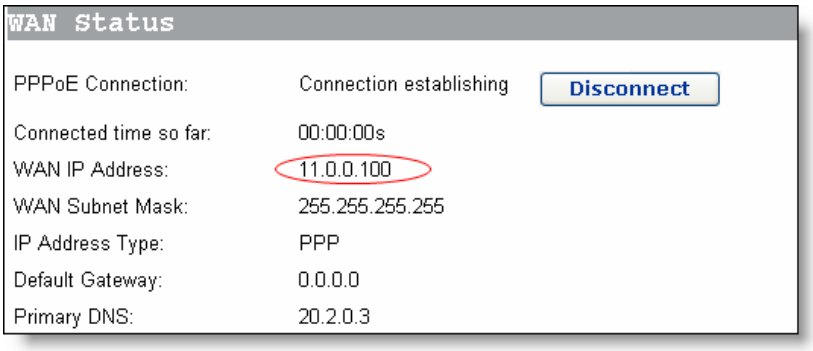


Figure 5-4 Actual settings on the Status page

II. QoS configuration

For the upstream packets over an ADSL line, your DR814Q supports multiple asynchronous transfer mode (ATM) services, such as CBR, VBR-rt, VBR, UBR, and ABR. DR814Q provides different measures, caching space, scheduling priorities, and service shaping to allocate appropriate bandwidth to ATM services of different types. This ensures high-performance QoS.

Click <QoS Setting…> in the [PVC Setting] section as shown in Figure 5-1 to enter the [QoS Config] page of a corresponding PVC as below.

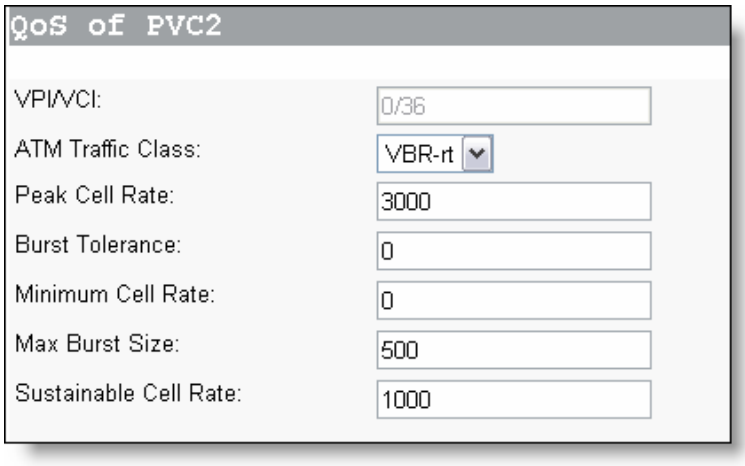


Figure 5-5 QoS Config page

You can set different ATM service types for specified PVCs from the ATM Traffic Class drop-down list and configure QoS parameters for the selected service type. For more information, refer to Table 5-1.

Table 5-1 Description of commonly used ATM service types

Service type	Description
UBR (unspecified bit rate)	Suitable for services that are not real-time-critical and with large burst traffic. UBR demands best-effect services on the network side. When applying for services, you are not required to set QoS parameters except for PCR, which limits the upper rate. The network side does not guarantee QoS for UBR services. UBR cells will be discarded first in a network congestion. Error correction is carried out by upper-layer protocols. Typical applications are FTP and E-mail.
CBR (constant bit rate)	Suitable for services that require static bandwidth and demand the highest priority. This type of service can provide stable traffic with the minimum burst. Only PCR parameter is needed for CBR service application. The source can transmit cells at a negotiated PCR or a rate lower than it. Typical applications are circuit and emulated voice.
VBR-rt (real-time variable bit rate)	Sensitive to delay and jitter of data flow. Similar to CBR except that they are delay- and jitter-sensitive. VBR-rt services allow limited burst. The transmission rate on source side can be different at different time. The parameters required for VBR-rt service application include PCR, SCR, and MBS or BT. Typical VBR-rt applications are voice, interactive video services and IPTV.
VBR (non-real-time variable bit rate)	Suitable for bursting non-real-time services. Compared to VBR-rt, a distinct feature of VBR services is that demands of real-time are not so crucial, and the priority for service data processed on the network side is also lower than that of VBR-tithe parameters required by VBR services include PCR, SCR, and MBS (or BT), the same as that of VBR-rt.

Keep the default value unchanged for those options unrelated to the configuration. As shown in Figure 5-5, if the VBR-rt option is selected from the ATM Traffic Class drop-down list, you need to set values for Peak Cell Rate, Max Burst Size, and Sustainable Cell Rate and leave **0** in the Burst Tolerance and Minimum Cell Rate text boxes.

An example is taken to explain how to configure ATM QoS parameters.

Suppose that:

The actual upstream rate of ADSL is 896 Kbps, and two PVCs (PVC1 and PVC2) are configured on a single ADSL line. PVC1 is used for network access, with not much real-time requirement. PVC2 is used for real-time video conferencing, requiring a least upstream/downstream rate of 384 Kbps.

Analysis:

A total upstream rate of 896 Kbps is configured for PVC1 and PVC2. Audio and video services carried out over them may be interfered. For example, an uploading service, which consumes a bandwidth larger than 500 Kbps, bursts on PVC1 when a video

conference is carried out over PVC2. This results in the available bandwidth for PVC2 less than 384 Kbps, thus causing the audio and video service interrupted.

To avoid the above problem. configure QoS parameters for PVC2 as shown in Figure 5-5. For PVC1, keep the default UBR settings. Thus, PVC1 can occupy all the upstream bandwidth when there is no traffic on PVC2, and PVC2 can always be guaranteed with sufficient bandwidth for audio and video services over it. This ensures normal upload over PVC1 and non-interrupted real-time communication over PVC2.

Note:

QoS parameters for WAN services mean the same as those for LAN/PVC attachment.

5.2 Security

Click [Security] in the navigation bar to enter the corresponding page, where you can configure the virtual server, firewall policy, trigger and IDS function.

5.2.1 Virtual Server

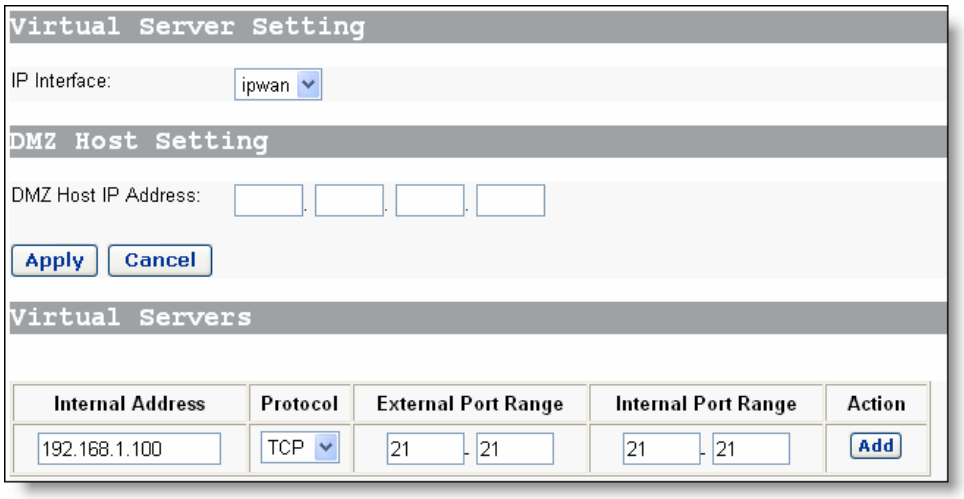


Figure 5-6 Virtual server settings

I. Set the interface

Before configuring the virtual server, you need to select a service interface in the [IP Interface] drop-down list. The virtual server and DMZ host will run on this interface.

II. Set the virtual server

When NAT (network address translation) is enabled on an internal network device, access to it from the Internet will be forbidden. In this case, a virtual server is needed if you want to provide public services (Web services, E-mail, FTP, for example) to outside. Although the internal address is still inaccessible for external users, the DR814Q can identify service requests and forward them to the virtual server.

Table 5-2 Description of virtual server setting items

Item	Description
Internal Address	Type in the IP address of the internal PC that will provide the application service.
Protocol	Select the protocol of the application service.
External Port Range	Type in the range of ports that the application provides for access from outside.
Internal Port Range	Type in the range of ports that the application actually uses.

After the configuration, click <Add>. The virtual server is added to the virtual server list. You can click <Delete> to delete the corresponding virtual server.

Example: To configure the PC with the address 192.168.1.100 as a virtual server to provide an FTP service for the outside (with the port number 21), refer to the configuration in Figure 5-6. Thus, all FTP requests from the Internet users will be forwarded to the PC (server) with the fixed IP address 192.168.1.100.

⚠ **Caution:**

The values for [Internal Port Range] and [External Port Range] should be set as the same, or the configuration will fail.

III. Set the DMZ host

The Demilitarized Zones (DMZ) host is actually a default virtual server. When the DR814Q receives a connection request from the external network, it first searches the virtual service list for a matching item. If a corresponding item is found, the DR814Q forwards the request message to the corresponding virtual server. Otherwise, it forwards the message to the DMZ host.

Type the IP address of the PC to be used as the DMZ host in the [DMZ Host IP Address] field.

Caution:

Be sure to configure a LAN static IP address for each PC that acts as the virtual server or DMZ host.

5.2.2 Firewall

With the firewall function, you can configure limit on outgoing and/or incoming data, thus securing the network effectively. Click the [Firewall] tab of the security setup page to enter the corresponding page shown in Figure 5-7.

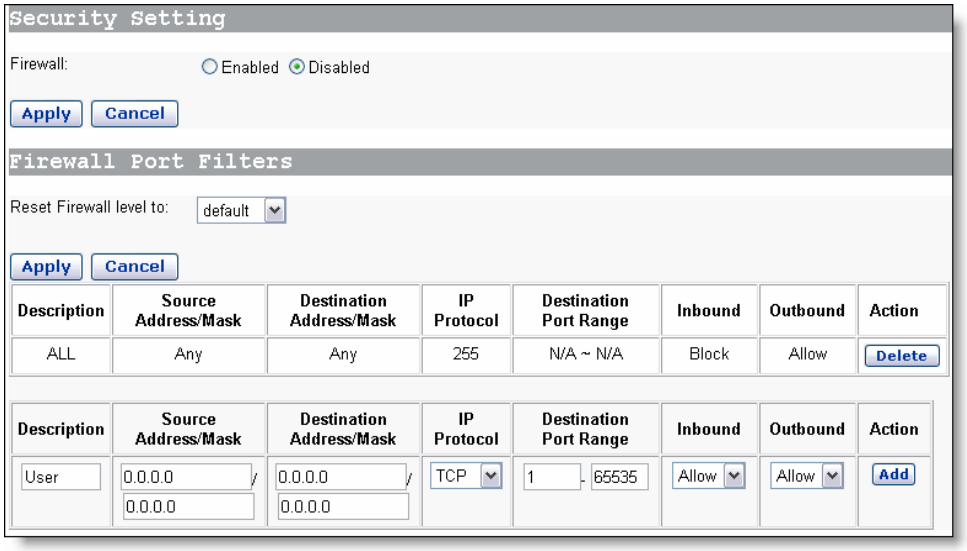


Figure 5-7 Firewall settings

I. Enable/disable the firewall

To enable/disable the firewall, select the corresponding Enable/Disable option, and then click <Apply>. The firewall is disabled by default.

II. Set the firewall level

You can choose one from the firewall levels, each corresponding to a port filtering policy that limits outgoing and/or incoming data of a specific protocol. The proper policy is displayed as you set one of the following firewall level in the drop-down list:

- high: Indicates that the internal users have some access rights and the external users have no access right.
- medium: Indicates that the external and internal users have more access rights than “high”.

- low: Indicates that the external and internal users have more access rights than “medium”.
- default: Indicates that the internal users can access all the Internet services, while the external users are prevented to access the internal network.

III. Configure port filtering policies

You can configure port filtering policies manually to meet the actual demands.

Table 5-3 Description of port filtering policy setting items

Item		Description
Description		Type in a description of the port filtering policy to identify it.
Source	Address	Type in the source IP address. The default address 0.0.0.0 indicates any node on the network.
	Mask	Type in the subnet mask of the source. The default mask 0.0.0.0 indicates any node on the network.
Destination	Address	Type in the destination IP address. The default address 0.0.0.0 indicates any node on the network and is usually adopted.
	Mask	Type in the subnet mask of the destination. The default mask 0.0.0.0 indicates any node on the network and is usually adopted.
IP Protocol		Select a protocol type (TCP, UDP or ICMP) from the drop-down list and apply the filtering policy to the packets of this type.
Destination Port Range		Type in the port range of the destination. Generally, this parameter needs to be set. For example, to control Web services, type in the corresponding port number **80**. To control FTP services, type in the port number **21**.
Inbound		The direction of inbound data. Select the Allow option to permit external hosts to access internal hosts. Select the Block option to forbid external hosts to access internal hosts.
Outbound		The direction of outbound data. Select the Allow option to permit internal hosts to access external hosts. Select the Block option to forbid internal hosts to access external hosts.

Click <Add> after the configuration. This policy will be added to the list of port filtering policies. You can click <Delete> to delete the corresponding policy.

Example: External hosts are not allowed to ping the WAN port of the DR814Q when the security level is set to “low”. To allow the internal hosts and external hosts to ping each other, you can perform the configuration as shown in Figure 5-8 and Figure 5-9.

Delete the settings that forbid external hosts to ping the WAN port of the DR814Q. Note that the protocol type of ping is ICMP.

Figure 5-8 Configure port filtering policy – delete the settings

Add settings that permit external hosts to ping the WAN port of the DR814Q.

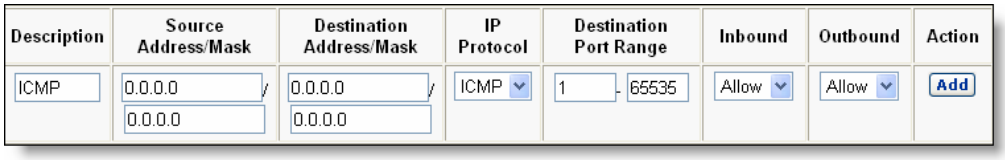


Figure 5-9 Configure port filtering policy – add new settings

---

⚠ **Caution:**

Any request mismatching no filtering policy will be blocked by the firewall.

5.2.3 Trigger

A trigger is used to deal with application protocols that set up separate sessions. Some application protocols, such as NetMeeting, open the primary sessions and secondary connections at the same time during the normal operations. The trigger tells the security mechanism to handle these secondary sessions and instruct it how to handle them. The trigger handles the situation dynamically, allowing the secondary sessions only when appropriate. These newly triggered sessions are not restricted by the firewall.

Click the [Trigger] tab in the security setup page to enter the corresponding page shown in Figure 5-10.

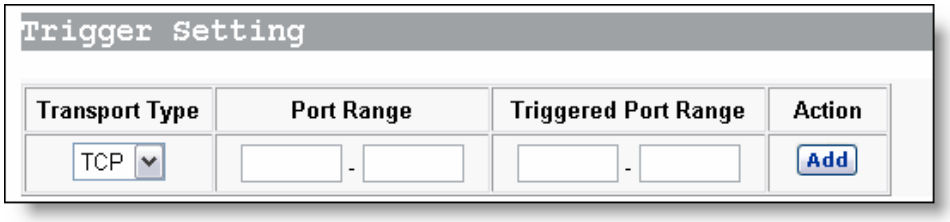


Figure 5-10 Trigger settings

Table 5-4 Description of trigger setting items

Item	Description
Transport Type	Transport type of the trigger port. From the drop-down list, select a transport type (TCP or UDP) to which the newly added trigger is specified.
Port Range	Port range of the trigger port. (1 – 65535)
Triggered Port Range	Port range of the triggered port. (1024 – 65535)

5.2.4 NAT

The NAT technology can translate the internal private address of a PC in the LAN into a valid public IP address, and thus the PC can communicate with the WAN. Click the [NAT] tab of the security setup page to enter the corresponding page shown in Figure 5-11.

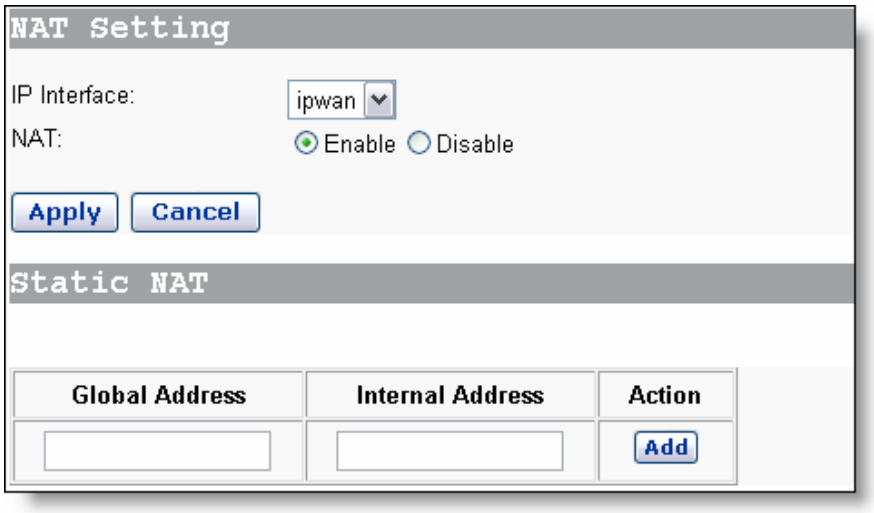


Figure 5-11 NAT settings

I. Configure NAT

Before configure NAT, select a service interface from the [IP Interface] drop-down list so that NAT and static NAT run on this interface.

Select the Enable/Disable option behind “NAT” to enable/disable NAT.

II. Configure static NAT

The [Static NAT] section is used to configure NAT conversion items. Public IP addresses correspond to private IP addresses in a one-by-one way.

Table 5-5 Description on static NAT setting items

Item	Description
Global Address	Type in the public IP address.
Internal Address	Type in the corresponding private IP address.

5.2.5 IDS

IDS can protect the network from external attacks. Click the [IDS] tab of the security setup page to enter the corresponding page shown in Figure 5-12.

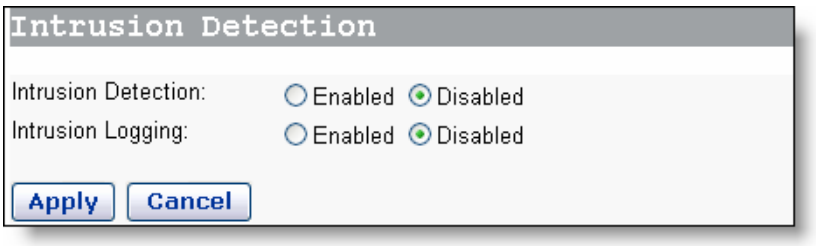


Figure 5-12 IDS settings

- Intrusion Detection: Select the Enabled/Disabled option to enable/disable IDS .
- Intrusion Logging: When this function is enabled, intrusion detection information will be recorded in the log.

5.3 Route Configuration

Click [Route] in the navigation bar to enter the corresponding page, where you can configure static and dynamic routes.

5.3.1 Static Route Configuration

The static route configuration makes the DR814Q to communicate with PCs on different network segments. This option allows you to create static IP routes to destination addresses by an IP interface name or a gateway address.

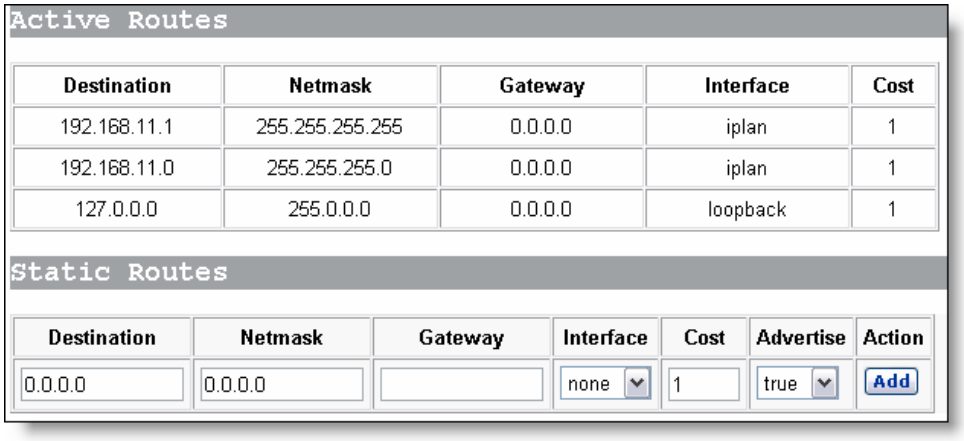


Figure 5-13 Route configuration

The route list displays details of all active routes on the DR814Q.

You can configure static routes manually. The setting items are listed in Table 5-6.

Table 5-6 Description of static route setting items

Item	Description
Destination	Type in the destination IP address, that is, the IP address of the termination (target network or host that data to be sent to) for the static route.
Netmask	Type in the subnet mask, which determines the network address and host address parts of the IP address.
Gateway	Type in the IP address of the gateway device through which the DR814Q communicates with the destination network or host.
Interface	Select the service interface that runs this route. The default option none indicates that no interface is needed.
Cost	Type in the hop count from the DR814Q to the destination.
Advertise	Set whether to advertise (true/false) the route through RIP.

Caution:

For DHCP or Static IP services, you must type in the next hop address in the [Gateway] filed (you cannot leave it blank), while for the [Interface] drop-down list, you can keep the default value (none) or select the corresponding interface.

For other services (IPoA, PPPoA, and PPPoE), you can specify a value of either the interface or the gateway. If both of them are specified, only the interface value takes effect.

Example: Figure 5-14 illustrates a physical connection that requires static routes.

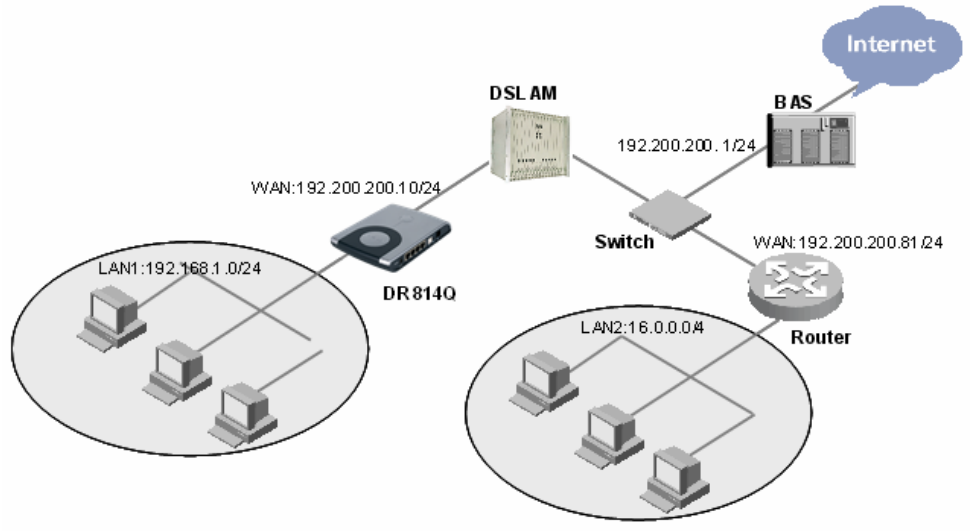


Figure 5-14 Network diagram for the static route configuration

In Figure 5-14, suppose that a DHCP service is configured for the DR814Q, the gateway address is 192.200.200.1, and there is a default route to broadband access server (BAS).A router is connected to another network segment, LAN2 (16.0.0.0/4), on the WAN side, and the IP address of the WAN port is 192.200.200.81. To make hosts in LAN1 access hosts in LAN2 normally, you need to create a route as below so that the DR814Q can choose routes for packets correctly.

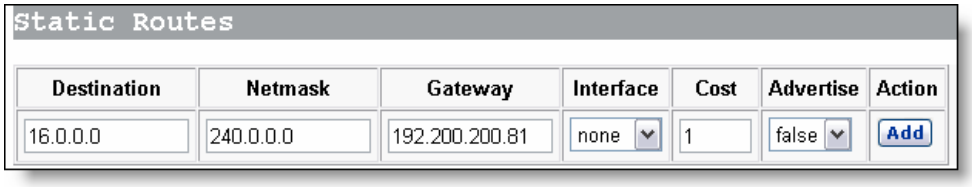


Figure 5-15 Example of the static route configuration

5.3.2 Dynamic Route Configuration

The static route configuration makes the DR814Q to learn route information of other routers on the network through RIP. Click the [RIP] tab on the route setup page to enter the dynamic route configuration page shown in Figure 5-16.

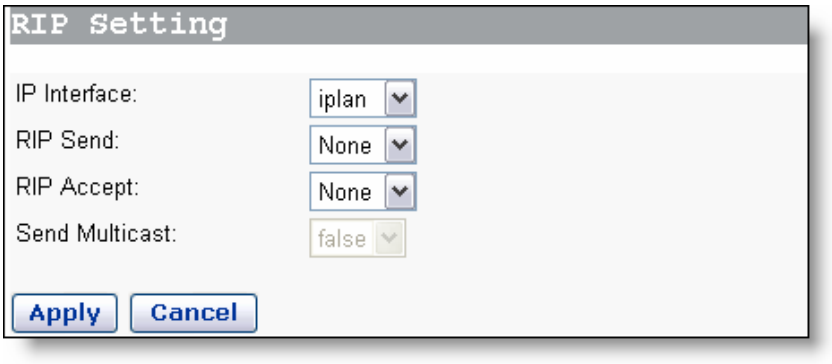


Figure 5-16 Dynamic route settings

Table 5-7 Description of dynamic route setting items

Item	Description
IP Interface	Select the interface to be configured with RIP.
RIP Send	Select the protocol version (RIP1/RIP2) used to send RIP route information. “None” indicates not to send route information. It is recommended to set this parameter the same as the neighboring router.
RIP Accept	Select the protocol version used to receive RIP route information. “Both” indicates to receive both RIP1 and RIP2 route information, and “None” indicates not to receive route information. It is recommended to set this parameter the same as the neighboring router.
Send Multicast	If RIP2 is selected to send RIP route information, this parameter is required to specify whether to send (true/false) multicast packets.

5.4 Service

Click [Service] in the navigation bar to enter the corresponding page, where you can configure the DR814Q as an SNTP (simple network time protocol) client, SNMP (simple network management protocol) proxy or IGMP (Internet group management protocol) proxy.

5.4.1 SNTP

Configure the DR814Q as an SNTP client and thus you can obtain accurate time/date information from the corresponding SNTP server.

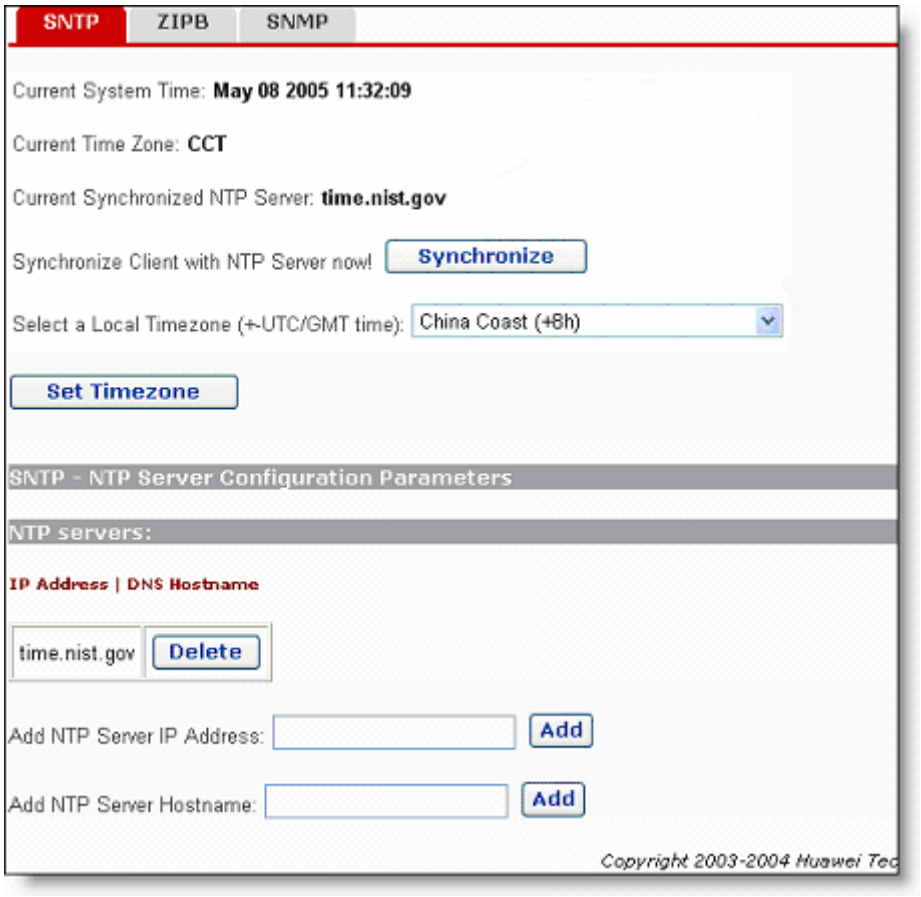


Figure 5-17 SNTP configuration

Table 5-8 Description of SNTP setting items

Item	Description
Primary/ Secondary / Tertiary SNTP Server	Type in the IP address or domain name of the SNTP server. Up to three SNTP server can be configured. Generally, the DR814Q obtains time information from the primary SNTP server. It will switch to the secondary SNTP server if the primary SNTP server fails, and switch to the tertiary SNTP server if the secondary SNTP server fails.
Select a Local Timezone	Select the local time zone from the drop-down list.

5.4.2 SNMP

The DR814Q supports simple network management protocol (SNMP) proxy function, exchanging SNMP information with the network management sites through SNMP. Click the [SNMP] tab of the service setup page to enter the corresponding page shown in Figure 5-18.

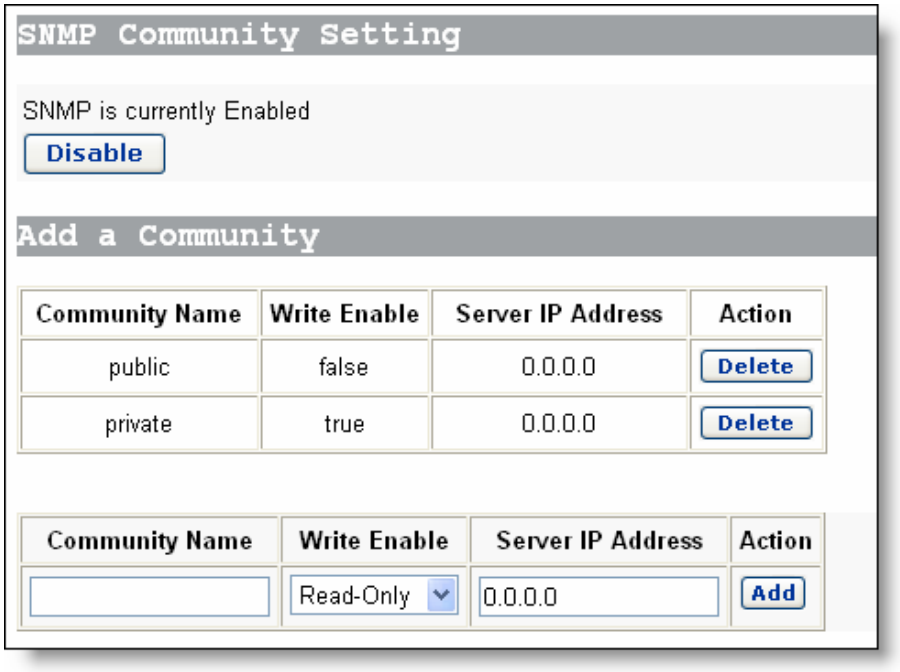


Figure 5-18 SNMP Client Setting page

By default, SNMP is enabled. You can click <Disable> to disable it.

You can create an SNMP community in Figure 5-18 and this community will be displayed in the community list. The DR814Q authenticates the SNMP packets according to the defined information in the list.

Table 5-9 Description of SNMP setting items

Item	Description
Community Name	Type in the community name, which uniquely identifies an SNMP community. SNMP packets that mismatch this community name will be discarded.
Write Enable	Specify the access right for the community. If the Read-Only option is selected, this community can only view the DR814Q information; if the Read-Write option is selected, this community can view or modify the DR814Q information.
Server IP Address	Specify the IP address of the management site sending SNMP packets. It is recommended that you keep the default setting 0.0.0.0, which indicates the source IP address sending the SNMP packets is not restricted.

5.4.3 IGMP Proxy

When the LAN host needs a multicast service outside the WAN, you need to enable the IGMP proxy function. Click the [IGMP] tab of the service setup page to enter the corresponding page shown in Figure 5-19.

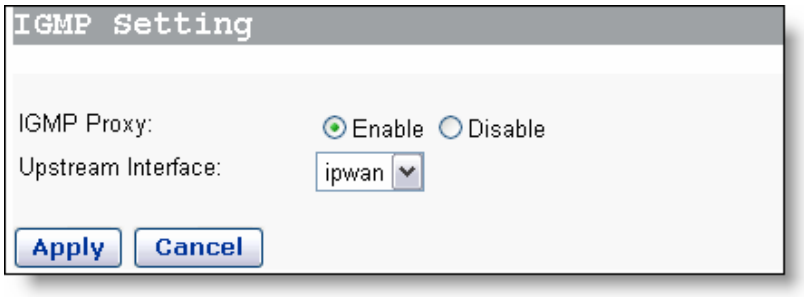


Figure 5-19 IGMP proxy settings

Select a WAN service interface in the [Upstream interface] drop-down list and select the Enable option to enable the IGMP proxy, so as to provide services for multicast clients in the LAN.

6 Troubleshooting

This chapter gives solutions to problems you may encounter when installing or using the DR814Q, and provides instructions for using several IP utilities to diagnose problems. Contact Customer Support if these suggestions do not resolve the problems.

6.1 DR814Q Troubleshooting

Symptom 1: The power LED does not illuminate.

Solution: Check whether:

- The power adapter that comes with the DR814Q is used.
- The power adapter is securely connected to the DR814Q and the power socket.

Symptom 2: The ADSL2+ Link LED does not illuminate after the telephone cable is connected.

Solution: Check whether the telephone cable is securely connected to the ADSL port and the telephone port.

Symptom 3: The LAN LED does not illuminate after the Ethernet cable is connected.

Solution: Check whether:

- The power connection is good.
- The Ethernet cable is securely connected to the port.
- The correct cable is used. To check this, connect two ends of the cable to the LAN ports of the DR814Q, observe whether the corresponding LED illuminates. If not, change the cable and follow the steps described in section 2.3 “Device Connection” to set up the connection.
- The PC has an Ethernet NIC installed correctly.

Symptom 4: You forget your password.

Solution: If you have not changed the password, use the default username (**admin**) and password (**admin**).Press the Reset button for about five seconds to restore the default settings on the DR814Q. Then you can use the default username and password.

Caution:

Resetting the DR814Q removes all the customized settings and restores the default ones.

Symptom 5: Fail to access the Web-based configuration page.

Solution: Follow the procedures to check whether:

1) The version of the Internet Explorer is Microsoft Internet Explorer 5.5 or Netscape 6.0 or later.
2) PC and the DR814Q are in the same network segment.
3) Use the **ping** command in an MS-DOS window to check the network connectivity:

- Ping 127.0.0.1 to see if the TCP/IP protocol is installed.
- Ping 192.168.1.1 (the default IP address of the gateway) to check for the connection between the PC and DR814Q in the LAN.

4) If the physical connections are normal, but you still cannot access the Web-based configuration pages of the DR814Q, make sure the proxy server and the dialup connection are disabled.

Symptom 6: Fail to access the Internet with your PC.

Solution: Follow the procedure:

1) Check whether the ADSL2+ Link LED is solid ON. If not, check the ADSL line connection.
2) Check whether the IP address is obtained and you can ping the IP address of the DR814Q's LAN port if you configure the PC to obtain the IP addresses of the host and the DNS server automatically (recommended). Refer to section 6.2.1 "Ping" for instructions on how to use the ping utility. If you cannot ping the port, check if the Ethernet cable is correct.
3) When the current PC is specified with a private IP address, make sure that: The PC resides in the same segment as that of the DR814Q's LAN port. The IP address of the gateway is specified as that of the DR814Q's LAN port. The IP address of the DNS is specified as that of the DR814Q's LAN port or the DNS Server the ISP allocates. The host is able to ping the IP address of the DR814Q's LAN port.
4) When the host can communicate with the DR814Q normally, but cannot connect to the Internet, log into the [Status] page of the DR814Q (refer to section 4.5 "Status") first, and check to see if the WAN port of the DR814Q has obtained the Internet IP address and if the default route exists.

Symptom 7: You cannot access the Web pages through the PC in the LAN.

Solution: Follow the procedure to check:

1) The DNS server IP address specified on the PC is correct. If you specify the PC to obtain the DNS server address dynamically, verify with your ISP that the address configured on the DR814Q is correct, and then you can use the ping utility to test the connectivity with your ISP's DNS server.
2) Generally, if a host can ping the Internet IP address, but cannot open the Web pages, the DNS server of the ISP is experiencing a failure temporarily. In this case, you can choose either of the following to solve the problem: Manually change your PC's DNS IP address to the address of a normally functioning DNS server. Log into the Web page of the DR814Q and manually modify the configuration for DNS Relay (refer to section 4.2.2 "DNS Relay"), and then check by the **nslookup** command as instructed in section 6.2.2 "Nslookup".

Symptom 8: Fail to save the changes made on the Web-based configuration pages.

Solution: Make sure that you click <Apply> to confirm every change you have made. After completing all the settings, enter the [Save Configuration] page to save them, thus making them take effect when the DR814Q is powered on next time.

Symptom 9: You can visit most websites successfully, while access to some websites fails due to timeout. Configuring the DR814Q to operate in the bridge mode and your PC to establish a dialup connection can solve this problem.

Solution: This may be caused by an over-high MTU value set on the router between the user end and the website. Usually you can set a small MTU value (1440, for example) on the detail setting page of the WAN service to avoid this problem. Refer to section 4.2.1 "WAN" for detailed operations.

Symptom 10: Some services are unavailable once the firewall is enabled.

Solution: As the firewall rules of the DR814Q are very strict, it is recommended someone familiar with the WAN services and router configuration enable the firewall and configure the firewall rules. Before the creation of firewall rules, you must be clear about the Internet service deployment. It is recommended that you disable the firewall.

6.2 Diagnosis Tools

6.2.1 Ping

Use the **ping** command to check whether your PC can recognize other computers on the network. A **ping** command sends messages to the specified computer. If the computer receives the messages, it replies with the response message. Before using the command, you must know the IP address of the destination host with which your PC is trying to communicate.

At the DOS prompt, enter the following command:

ping 192.168.1.1

If the destination host receives the packet, the command prompt window displays the contents as shown in Figure 6-1.

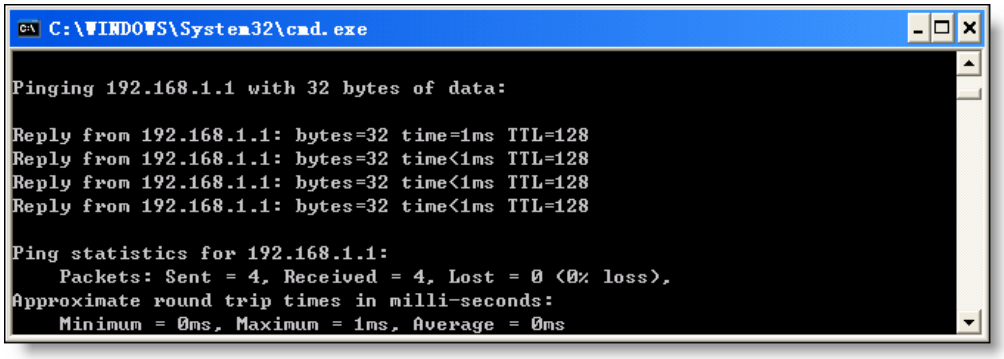


Figure 6-1 Use the **ping** command – the ping succeeds

If the destination PC is not reachable, the Request timed out message is displayed as follows:

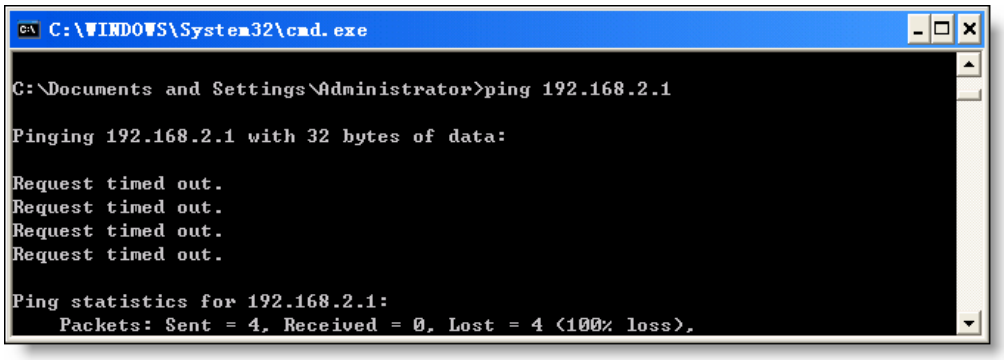


Figure 6-2 Use the **ping** command – the ping fails

To check the connectivity with the DR814Q, use the **ping** command with the default IP address of the LAN port (192.168.1.1) or the address you assign.

To check the connectivity with the Internet, enter an Internet domain name, such as **www.yahoo.com** (216.115.108.243).If you want to look up the IP address of a website, use the nslookup command as instructed in section 6.2.2 “Nslookup” for details.

For other operating systems running the IP protocol, you can enter the same ping command at a command prompt or through a system administration utility.

6.2.2 Nslookup

The **nslookup** command is used to query the IP address associated with a domain name. You can specify the common domain name and use the **nslookup** command to look up in the DNS server (usually located though your ISP).If that name is not in your ISP’s DNS table, the request is then sent to a higher-level server until the name is found. The server then returns the associated IP address.

On Windows-based computer, you can execute the **nslookup** command from the [Start] menu. Choose [Start/Run] and in the open text box type the following:

nslookup

Click <OK> and a command prompt window appears. The [Command Prompt – nslookup] window is displayed with a bracket prompt (>).At the prompt, type the domain name of the desired Website, for example **www.microsoft.com**.

The window displays the associated IP address as shown below.

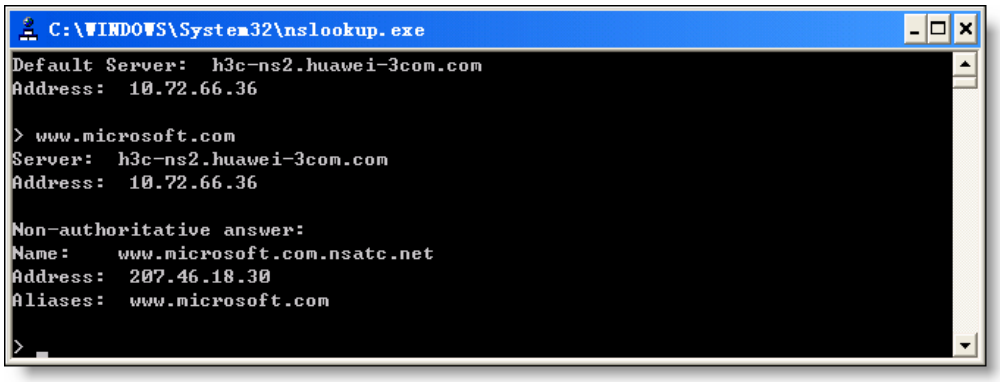


Figure 6-3 Use the **nslookup** command

Some websites with heavy traffic use multiple servers to carry the same information. So it is common to have several IP addresses associated with one Internet domain name.

To exit from the nslookup utility, enter **exit**.

7 Appendix – TCP/IP Protocol

7.1 Installing TCP/IP

The PC through which you configure your DR814Q must have the TCP/IP installed. If you are not sure whether TCP/IP is installed, follow these steps.

⚠ **Caution:**

By default, TCP/IP is installed on Windows 2000/XP. The following steps are described for the Windows 98/ME/NT.

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1) Choose [Start/Settings/Control Panel].
2) Double-click the Network Connection icon to open the [Network] dialog box and click the [Configuration] tab (see Figure 7-1).
3) Check the list on the [Configuration] tab page to see if the item that contains both the TCP/IP and the name of the NIC you are currently using exists. If not, click <Add> to open the [Select Network Component Type] dialog box (see Figure 7-1).

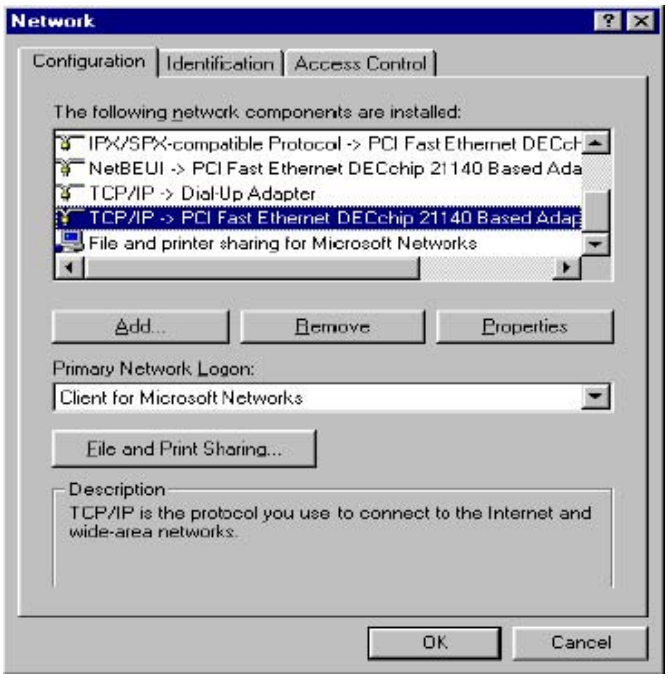

Figure 7-1 Network dialog box

4) Double-click “Protocol” from the list of [Select Network Component Type] dialog box (or click “Protocol” and then click <Add…>) to open the [Select Network Protocol] dialog box (see Figure 7-2).

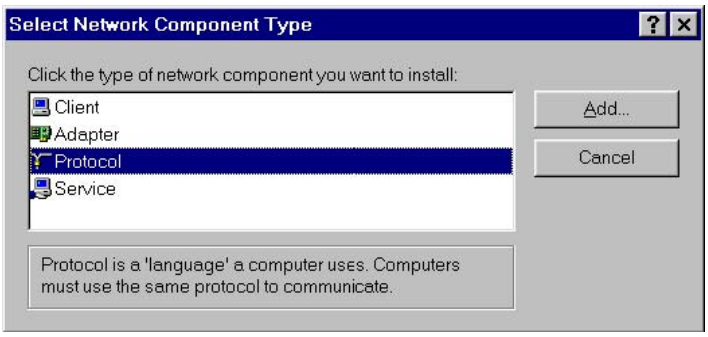

Figure 7-2 Select Network Component Type dialog box

5) Select “Microsoft” from the Manufacturers list in the [Select Network Protocol] dialog box, double-click “TCP/IP” in the Network Protocols list (or click “TCP/IP”, and then click <OK>) to return to the [Network] dialog box. Then you can see the TCP/IP item in the section listing the installed network components.

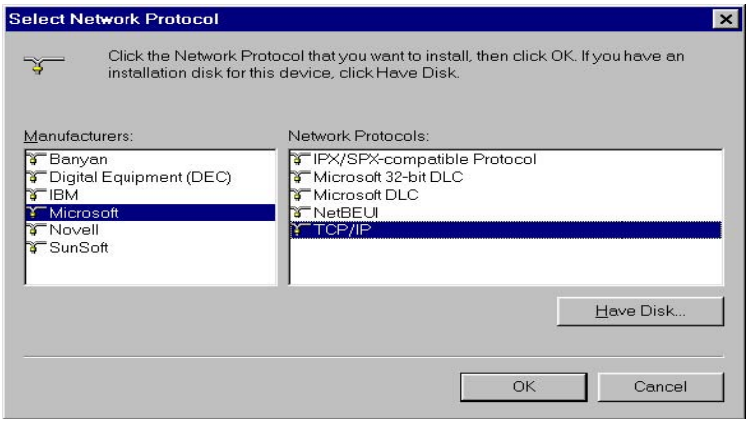

Figure 7-3 Select Network Protocol dialog box

6) Click <Properties> in the [Network] dialog box to open the [TCP/IP Properties] dialog box (see Figure 7-4). Click the [IP address] tab and select the Obtain an IP address automatically option. Click <OK> and restart your PC to complete the TCP/IP installation.

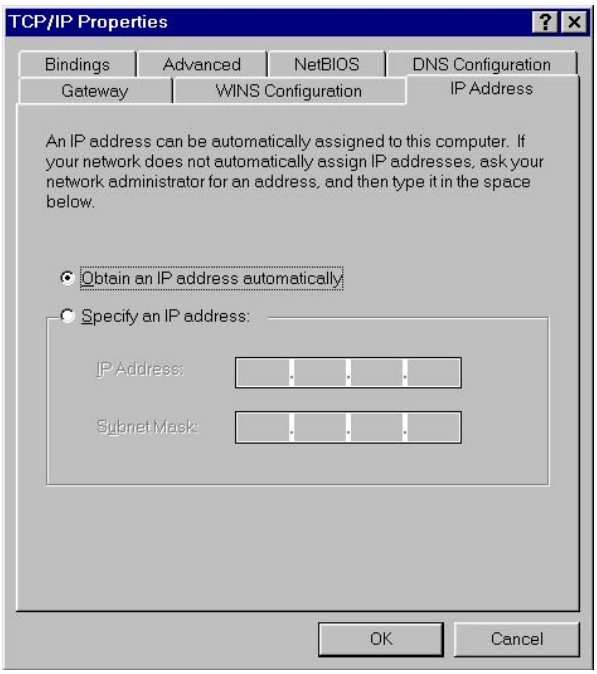

Figure 7-4 TCP/IP Properties dialog box

7.2 Configuring TCP/IP

7.2.1 Specifying to Obtain an IP Address Automatically

If you are running Windows 98/ME/NT, refer to those described in section Figure 7-3 to specify to obtain an IP address automatically. If you are running Windows 2000/XP, perform the following operation.

1) Choose [Start/Settings/Control Panel] to open the [Control Panel] dialog box. Double-click the Network Connection icon to open the [Network Connection] dialog box and then double-click the Local Connection icon to open the [Local Area Connection Status] dialog box (see Figure 7-5).

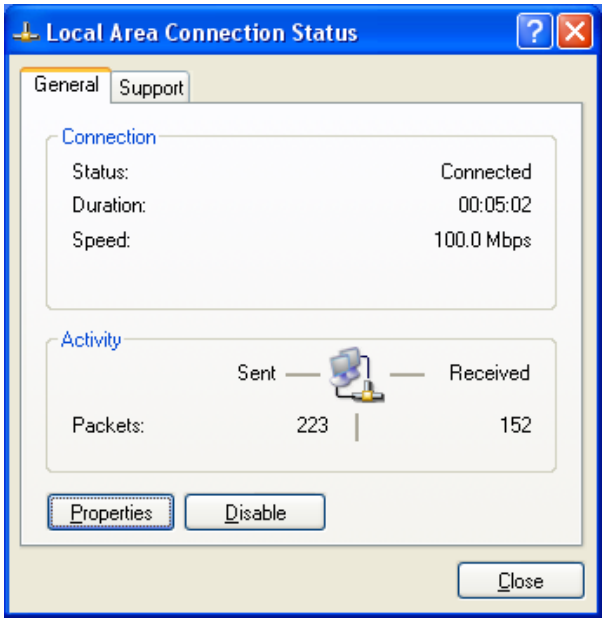

Figure 7-5 Local Area Connection Status dialog box

2) Click <Properties> to open the [Local Area Connection Properties] dialog box (see Figure 7-6). Click the [General] tab and select Internet Protocol (TCP/IP) in the [This connection uses the following items:] section, and then click <Properties> to open the [Internet Protocol (TCP/IP) Properties] dialog box as shown in Figure 7-7.

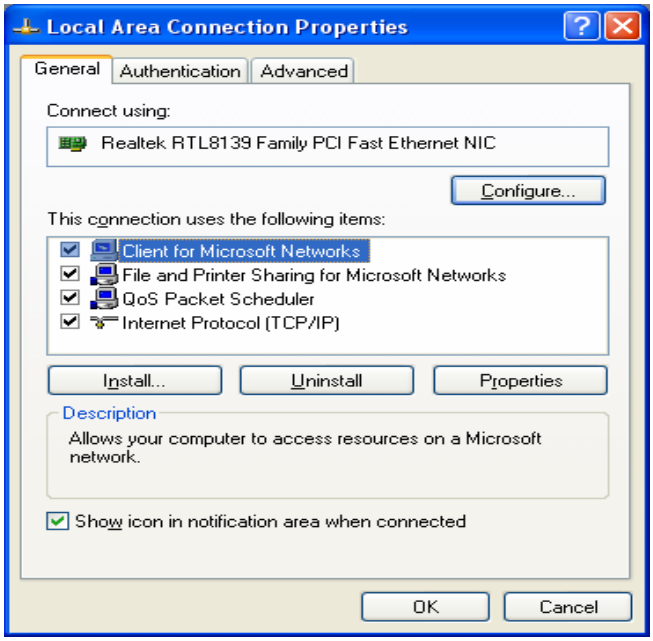

Figure 7-6 Local Area Connection Properties

3) On the [General] tab page of the [Internet Protocol (TCP/IP) Properties] dialog box select the Obtain an IP address automatically option and click <OK>.

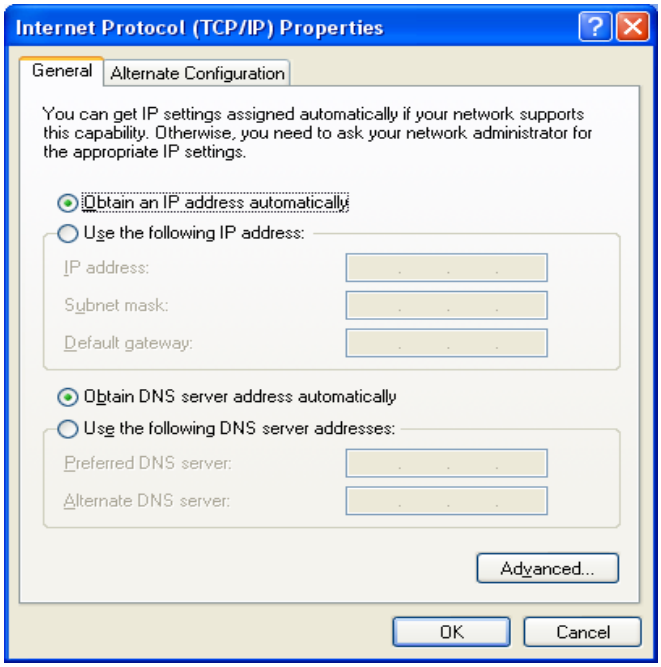

Figure 7-7 Internet Protocol (TCP/IP) Properties dialog box

7.2.2 Specifying a Static IP Address

Since the DR814Q enables the DHCP by default, the PCs in the LAN can obtain related information dynamically, thus there is no need to assign static IP addresses for PCs in

the LAN. But in some cases you still need to configure network settings for some or even all the PCs on a network.

By default, the IP address of the Ethernet port of DR814Q is 192.168.1.1, and the subnet mask is 255.255.255.0. Generally, you can choose any from 192.168.1.2 to 192.168.1.254 to make your PC in the same segment with 192.168.1.1/24. Follow the procedure suitable for your operating system to specify IP addresses.

1) Specify the IP address of your PC.

- Windows 98/ME/NT: In the [TCP/IP Properties] dialog box (see Figure 7-4), click the [IP Address] tab and select the Specify an IP address option.
- Windows 2000/XP: In the [Internet Protocol (TCP/IP) Properties] dialog box (see Figure 7-7) select the [General] tab, and then the Use the following IP address option. Type in the IP address and subnet mask in the corresponding fields and click <OK>.

2) Specify the IP address of the gateway.

- Windows 98/ME/NT: In the [TCP/IP Properties] dialog box (see Figure 7-4) select the [Gateway] tab. Type in the default IP address of your DR814Q (**192.168.1.1**) in the [New gateway] text box and click <Add>.
- Windows 2000/XP: In the [Internet Protocol (TCP/IP) Properties] dialog box (see Figure 7-7), select the [General] tab. Type in the default IP address of your DR814Q (**192.168.1.1**) in the [Default gateway] text box and click <OK>.

3) Specify the IP address of the DNS server.

- Windows 98/ME/NT: In the [TCP/IP Properties] dialog box (see Figure 7-4), click the [DNS configuration] tab and type in the default IP address of your DR814Q (**192.168.1.1**) as the DNS server IP address in the corresponding field.
- Windows 2000/XP: In the [Internet Protocol (TCP/IP) Properties] dialog box (see Figure 7-7) click <Advanced…> to open the [Advanced TCP/IP Configuration] dialog box. Click the [DNS] tab and click <Add…>. Type in the default IP address of the DR814Q (**192.168.1.1**) in the [DNS server] field and click <Add>.

4) Making the settings take effect.

- Windows 98/ME/NT: Click <OK> and restart your PC for the above settings to take effect.
- Windows 2000/XP: Click <OK> to make the above settings to take effect.

8 Appendix – USB Configuration

8.1 Installing USB Driver

Make sure the USB function of your PC operates properly.

The Microsoft Windows 98/98 SE/ME/2000/XP supports USB driver. The following installation procedure is based on Windows XP. Use it for reference when running any other operating system.

I. Insert the driver CD into the CD-ROM of your PC.

The CD that comes with the DR814Q contains the USB driver.

II. Plug one end of the USB cable into the USB port of the DR814Q, and the other into the USB port of your PC.

The USB cable has a rectangular Type A connector on one end and a square Type B connector on the other end. Connect the Type A to your PC and the Type B to the DR814Q.

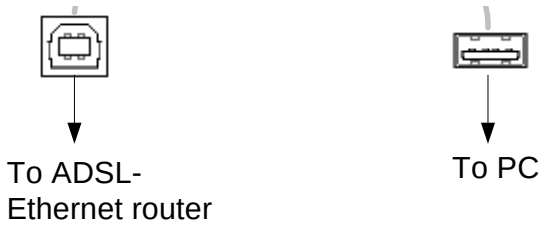

Figure 8-1 USB cable connector

III. The [Found New Hardware Wizard] dialog box appears (see Figure 8-2). Select the Install the software automatically (Recommended) option and click <Next> to proceed.

Figure 8-2 Find new hardware

IV. The PC searches the CD for the driver configuration file. When this file is found, the PC begins to install the driver.

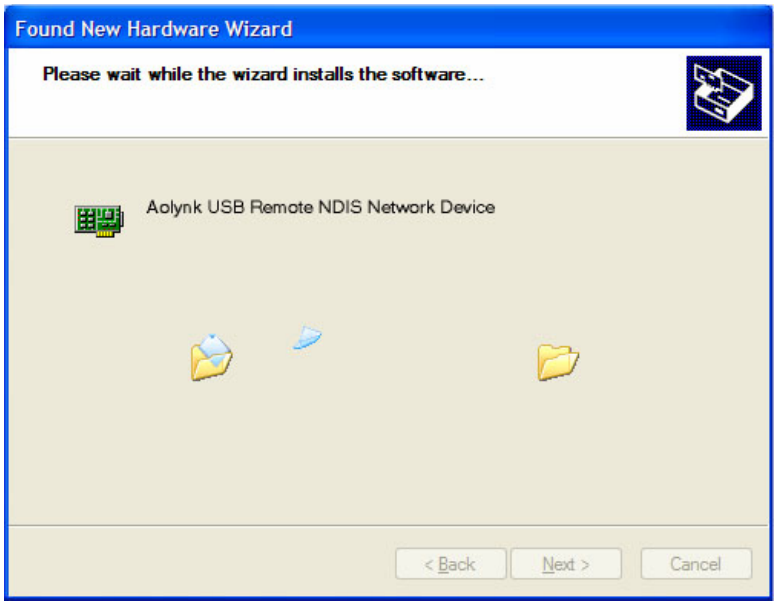

Figure 8-3 Install software

The dialog box (see Figure 8-4) appears during installation, warning that the device is not compatible with Windows XP. Just click <Continue Anyway> to proceed. Microsoft logo test

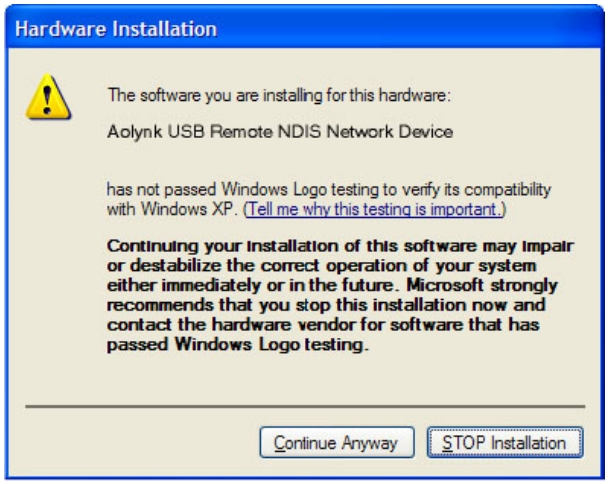

Figure 8-4 Microsoft logo test

V. The dialog box (see Figure 8-5) indicates the installation is complete. Click <Finish> to exit the installation.

Figure 8-5 Complete the installation

8.2 Configuring IP Properties

After the USB driver installation is complete, you need to configure the PC to place it in the same subnet as the DR814Q USB port. Two options are available to configure the IP properties:

- Your DR814Q can be a DHCP server to assign IP addresses to PCs in the LAN, so you can specify your PC to obtain IP address automatically. Refer to section 7.2.1 “Specifying to Obtain an IP Address Automatically” for detailed information.
- If you want to specify a static IP address to the PC, follow the instructions in section 7.2.2 “Specifying a Static IP Address” and use the following information..

The USB port on the DR814Q is preconfigured with these properties:

IP address: 192.168.1.1

Subnet mask: 255.255.255.0

Therefore, your PC should be configured as the following:

IP address: 192.168.1.n (n is an integer ranging from 2 to 254)

Subnet mask: 255.255.255.0

9 Appendix – IP Address and Subnet Mask

9.1 IP Address

Note:

- This section refers to the IP address of IPv4 (version 4 of the Internet Protocol) only and the IP address of IPv6 is not covered.
- This section describes the basic knowledge of binary numbers, bits, and bytes.

An IP address, like the telephone number on the Internet, is used to identify the individual node (a PC or network device) on the Internet. Every IP address contains four sets of numbers, each from 0 to 255 and separated by dots, for example 20.56.0.211. These numbers are called, from left to right, field 1, field 2, field 3, and field 4.

The representation of four sets of digits separated by dots for IP address is called dotted decimal notation.

9.1.1 Structure of the IP Address

Like a telephone number, the IP address contains two components. For instance, the first three digits of a seven-digit telephone number identify a group with thousands of telephone lines, while the last four digits identify a specific line in this group.

Similarly, an IP address contains two components:

- Network ID

Identify a specific network segment on the Internet or the intranet.

- Host ID

Identify a specific PC or device on the segment.

The starting part of every IP address is the network ID and the rest is the host Dither length of the network ID depends on the class of the network (refer to section 9.1.2 “Classes of IP Addresses”). Table 9-1 describes the structure of the IP address.

Table 9-1 Structure of the IP address

Class	Field 1	Field 2	Field 3	Field 4
Class A	Network ID	Host ID		
Class B	Network ID		Host ID	
Class C	Network ID			Host ID

The following are some valid IP address examples:

Class A: 10.30.6.125 (network ID = 10, host ID= 30.6.125)

Class B: 129.88.16.49 (network ID = 129.88, host ID = 16.49)

Class C: 192.60.201.11 (network ID = 192.60.201, host ID = 11)

9.1.2 Classes of IP Addresses

Three common IP addresses are of Cass A, B, and C. (Class D is for special use and is beyond the scope of this discussion.) These classes have different uses and characteristics.

The class A network is the largest on the Internet. This allows at least 16 million hosts per network. Such 126 class A networks can hold at least two billion PCs. These enormous networks are quite suitable for the LAN or Internet fundamental organizations such as Internet service provider (ISP).

The class B network is relatively smaller than the class A network, but it still allows 16,384 class B networks and 65,000 hosts in each class B network. This kind of network is suitable for the large organizations such as enterprises and governments.

The class C network is the smallest one. It allows over two million (2,097,152 exactly) class C networks and 254 hosts in each class C network. The LANs connecting to the Internet are usually of this class networks.

Following are the key points about the IP address:

- The easiest way to determine the class of an IP address is to look at its number in the field 1:

  Class A: The number is from 1 to 126.

  Class B: The number is from 128 to 191.

  Class C: The number is from 192 to 223.

(The numbers for special use are not given here.)

- Not all the fields of a host ID can be 0s or 255s as these numbers are reserved for special use.

9.2 Subnet Mask

Note:

A network mask looks like a regular IP address and a subnet mask can tell the division of the network ID and the host ID: A bit set to 1 means this bit is part of the network ID and a bit set to 0 means this bit is part of the host ID.

Subnet masks are used to define subnets For example, to divide a Class C address 192.168.1.0 into two subnets, you need to set the subnet mask as follows:

255.255.255.128

It is much more straightforward to define the address in binary notation.

11111111. 11111111. 11111111.10000000

For any Class C address, all the bits in the filed 1 through field 3 are part of the network ID, but note how the mask specifies that the first bit in field 4 is also included. Since this extra bit has only two values (0 and 1), this means there are two subnets. Each subnet uses the remaining 7 bits in field 4 for its host IDs, which range from 1 to 126 hosts (instead of the usual 0 to 255 for a Class C address).

Similarly, to divide a class C network into four subnets, set the mask as follows:

255.255.255.192 or 11111111. 11111111. 11111111.11000000

The two extra bits in field4 can have four values (00, 01, 10, and 11), so there are four subnets. Each subnet uses the remaining six bits in field 4 for its host IDs, ranging from 1 to 62.

Note:

Sometimes a subnet mask does not specify any additional network ID bits, and thus no subnets exist. Such a mask is called a default subnet mask. These masks are:

- Class A: 255.0.0.0
- Class B: 255.255.0.0
- Class C: 255.255.255.0

They are so called because they are used for an initially configured network without subnets.

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10 Appendix – Technical Specifications

Table 10-1 Technical specifications

Item	Description
Ports and buttons	Four 10/100M Base-TX Ethernet ports One ADSL port One USB port One Reset button to restore the factory default settings
Power consumption	< 12 W
Power supply (external)	12 VDC, 1 A
Physical dimensions (H x W x D)	30 × 193 × 123 mm (1.2 × 7.6 × 4.8 in.)
Weight	Approximately 510g (11 oz)
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	–10°C to +70°C (14°F to 158°F)
Operating humidity (noncondensing)	20% to 85%
Storage humidity (noncondensing)	10% to 90%
Certification	FCC Class B CE

11 Appendix – Glossary

I. 100Base-TX

Category 5 twisted pair cable with the maximum transmission distance of 100 meters (328 ft) and maximum transmission rate of 100 Mbps.

II. 10Base-T

Category 3/4/5 twisted pair cable with the maximum transmission distance of 150 meters (492 ft) and the maximum transmission rate of 10 Mbps.

III. ADSL

Asymmetric digital subscriber line. The most popular flavor of DSL for home users. The term asymmetrical refers to its unequal data rates for download and upload (the download rate is higher than the upload rate).The asymmetrical rate benefits home users because they typically download much more data from the Internet than they upload.

IV. ATM

Asynchronous transfer mode. A technology that uses fixed length packets, called cells, for the packet-switched network. The cell, consisting of a cell header and the text, are switched over a public or private ATM network.

V. Bridging

The data is sent from your network to your ISP and in return your ISP sends the data to the devices on the network by the physical addresses. Compared with routing, bridging makes it more intelligent to transfer data by using network addresses. DR814Q can perform both routing and bridging. When both functions are enabled, the DR814Q routes IP data and bridges all the other types of data.

VI. Broadcast

A technology used to send data to all the computers on a network.

VII. DHCP

Dynamic host configuration protocol. DHCP automates IP address assignment and management. When a PC connects to the LAN, DHCP assigns it an IP address from a shared address pool, and after a specified period, DHCP returns the address to the pool.

VIII. DHCP server

Dynamic host configuration protocol server. A DHCP server is a computer responsible for assigning IP addresses to the computers in a LAN.

IX. DNS

Domain name system. The DNS translates domain names into IP addresses. DNS information is distributed hierarchically throughout the Internet among the computers called DNS servers. For example, www.yahoo.com is the domain name associated with the IP address 216.115.108.243. When you start to access a website, a DNS server looks up the requested domain name and searches for its corresponding IP address. If the DNS server cannot find the IP address, it communicates with higher-level DNS servers to determine the IP address.

X. Domain name

A domain name is a user-friendly name in place of its associated IP address. A domain name must be unique and is controlled by the Internet Corporation for Assigned Names and Numbers (ICANN).A domain name is a key element of a URL which identifies a specific file at a website.

XI. DSL

Digital subscriber line. A technology that allows both digital data and analog voice signals to travel over the existing copper telephone lines.

XII. Ethernet

The most commonly installed computer network technology, usually using the twisted pair cables. The Ethernet data rates are 10 Mbps and 100 Mbps.

XIII. Firewall

A firewall can protect your computer or LAN from malicious attacks and other unexpected accesses. Unauthorized users may attempt to attack your network in order to prevent you or others on your LAN from the services.

Using the firewall, you can block certain types of IP traffic commonly used by hackers to protect your network. You can also restrict the types of IP traffic sent from your network to the outside. Some firewall protection can be provided by packet filtering and network address translation services.

XIV. FTP

File transfer protocol. A program used to transfer files between computers connected to the Internet. Common uses include uploading new or updated files to a Web server, and downloading files from a Web server.

XV. HTTP

Hypertext transfer protocol. It is the main protocol used to transfer data between websites so that it can be displayed by Web browser.

XVI. Hub

A hub receives the data from devices and forwards them. It usually performs the switching function by connecting a device such as an Ethernet bridge or a router to a group of computers in a LAN and allowing communication between those devices.

XVII. ICMP

Internet control message protocol. An Internet protocol used to report errors and other network-related information. The **ping** command makes use of ICMP.

XVIII. IEEE

Institute of Electrical and Electronics Engineers. It is a technical professional society that fosters the development of standards that often become national and international standards.

XIX. ISP

Internet service provider. A company that provides Internet services and charges the customers for services.

XX. LAN

Local area network. A network limited to a small geographic area, such as a home, office, or small building.

XXI. MAC

Media access control address. It is the permanent hardware address of a device, assigned by its manufacturer. MAC addresses are expressed as six pairs of two hexadecimal digits, separated by hyphens, such as 00-0F-1F-80-65-25.

XXII. NAT

Network address translation. This enables computers in a LAN to access the Internet by sharing the same IP address. When a computer accesses the Internet, its private IP address is translated into a public address of the WAN port.

XXIII. NIC

Network interface card. An adapter provides the physical interface for your network cabling. The Ethernet NIC usually has an RJ-45 connector.

XXIV. Packet

Data that consists of units transmitted on a network are called packets. Each packet consists of a header, which contains the information about the source and destination addresses of the packet, and a data field.

XXV. Ping

A program used to check whether the host associated with an IP address can connect to the network. It can also be used to reveal the IP address for a given domain name.

XXVI. Port

A physical access point on a device such as a computer or router, through which data flows into and out of the device.

XXVII. PPP

Point-to-point protocol. It is a communication protocol for data transmission between devices over the standard telephone line. The WAN port on the DR814Q uses two types of the PPP, that is, PPPoA and PPPoE.

XXVIII. PPPoA

Point-to-point protocol over ATM. One of the two PPP service types. The other type is PPPoE. You can specify only one PPPoA service for each VC.

XXIX. PPPoE

Point-to-point protocol over Ethernet. One of the two PPP service types. The other type is PPPoA. You can specify multiple PPPoE services for each VC.

XXX. Protocol

A set of rules to govern the data transmission. The two connected ends must obey these rules to transmit data.

XXXI. Remote

A geographically separated location. For example, an employee on travel who logs into the company's intranet is a remote user.

XXXII. RJ-11

The standard connector used to connect telephones, fax machines, and Modems to a telephone port. It is a 6-pin connector usually holding four wires.

XXXIII. RJ-45

The 8-pin connector used for connecting Ethernet switches, hubs and routers. Straight-through cables are usually the connector of this type.

XXXIV. Routing

Forwarding data between the local network and the Internet through the most efficient path, based on the data's destination IP address and current network conditions. A device that performs routing is called a router.

XXXV. SNMP

Simple network management protocol (SNMP), a network management standard, is widely used in the TCP/IP network. SNMP provides a way to manage the network nodes from the host located in the center of the network, such as the server, work station, router, bridge, and hub. It usually performs the management through the distributed structure administration and proxy.

XXXVI. TCP/IP

Transmission control protocol/internet protocol.

It defines a suite of the basic protocols, not just the TCP/IP protocol, for the network communication.

XXXVII. Telnet

An interactive, character-based program used to access a remote computer. The HTTP and FTP only allow you to download files from a remote computer, while Telnet allows you to log into and use a computer from a remote location.

XXXVIII. Twisted pair

A common copper cable used for the telephony application. It contains one or more cable pairs twisted together to minimize the interference and the noise. In an Ethernet LAN, category 3 cable is used for the 10Base-T network while the category 5 cable, the higher level, is used for the 100Base-T network.

XXXIX. Upstream

The upstream flows from users to the Internet.

XL. USB

Universal serial bus. A serial interface that attaches the devices such as printers and scanners to the computer. The DR814Q provides a USB port to connect a host.

XLI. VC

Virtual circuit. A connection from the DSL router to the ISP.

XLII. VCI

Virtual channel identifier. Together with the virtual path identifier (VPI), the VCI uniquely identifies a virtual circuit (VC).The ISP provides the VCI value for each VC.

XLIII. VPI

Virtual channel identifier. Together with the virtual path identifier (VPI), the VCI uniquely identifies a virtual circuit (VC).The ISP provides the VPI value for each VC.

XLIV. WAN

Wide area network. A network covering a large area such as a country or a continent is called a WAN. With respect to the ADSL router, WAN refers to the Internet.

XLV. Web page

A website file typically containing text, graphic images and hyperlinks to the other pages. When you access a website, the first displayed page is called the home page.