

on·Q



**4 PORT ROUTER/SWITCH (P/N DA1004)
OWNER'S MANUAL**

1307993 REV O

FCC Certifications

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

You can try to correct the interference by one or more of the following measures:

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

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

CE Mark Warning

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

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Specifications are subject to change without prior notification.



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I. Introduction

The On-Q/Legrand 4 Port Router/Switch (P/N DA1004) is a flexible hardware configurable switch/router product designed to be used as a router with an integrated 4-port Fast Ethernet switch, or just as a 4-port Fast Ethernet switch for use with a 3rd party external router. It is the perfect solution to connect a small group of PCs to a high-speed broadband Internet connection (see **Figure 1**). Up to 253 users can have high-speed Internet access simultaneously via one single IP address (Internet account) of the Cable/xDSL modem.

With its built in NAT technology, this product also serves as an Internet firewall, protecting your network from being accessed by outside users. All incoming data packets are monitored and filtered. The Router can also be configured with Client Filtering, to filter internal users' access to the Internet.

The built-in 4-port Fast Ethernet Switch lets users plug the network cable into the device without buying additional Hub/Switch.

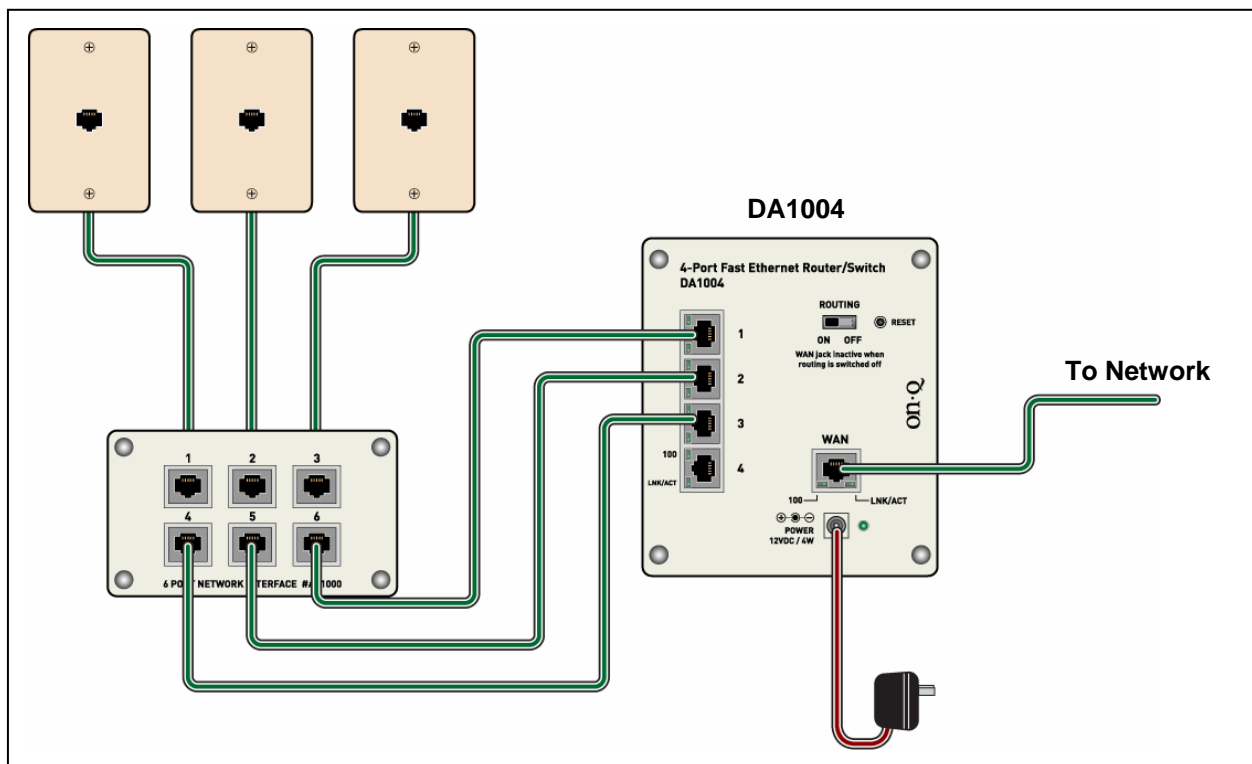


Figure 1

II. Product Overview

A. Features

- *Allows multiple users to share a single Internet line*
- *Supports up to 253 users*
- *Internet access via Cable or xDSL modem*
- *Access private LAN servers from the public network*
- *Equipped with four LAN ports (10/100M) and one WAN port (10/100M)*
- *Supports DHCP (Server/Client) for easy setup*
- *Supports advanced features such as: Special Applications, Port Mapping, DMZ, Virtual Servers, ALG and Firewall options*
- *Allows monitoring and logging router system status*
- *Web-based GUI for configuration and management*
- *Remote management over the Internet*
- *Switch to disconnect router from 4-port switch*

B. Components Included

The On-Q/Legrand 4 Port Router/Switch includes the following parts:

- Router/Switch Module
- Router/Switch DC Power Supply
- Router/Switch User Guide



C. On-Q/Legrand 4 Port Router/Switch Detailed Physical Description

The following information describes the physical characteristics of the On-Q Router/Switch:

1. Router/Switch Module Connection Area

Figure 2 shows the Router/Switch connection area including:

DC Input connector – connection from power supply

WAN (Internet) Port – 8 position RJ-45 jack (connects to Cable or DSL modem)

Local Switch Ports – 8 position RJ-45 jacks (connection from outlets in rooms)

Routing Switch – Disconnects router from 4-port switch when an external router is used.

Reset Button - A button press (over 3 seconds) resets the Router/Switch unit to the factory default settings. This clears all user settings, including User Name, Password, IP Address, and Subnet Mask.

NOTE: Refer to Section IV Configuration for instructions on re-configuring the Router/Switch.

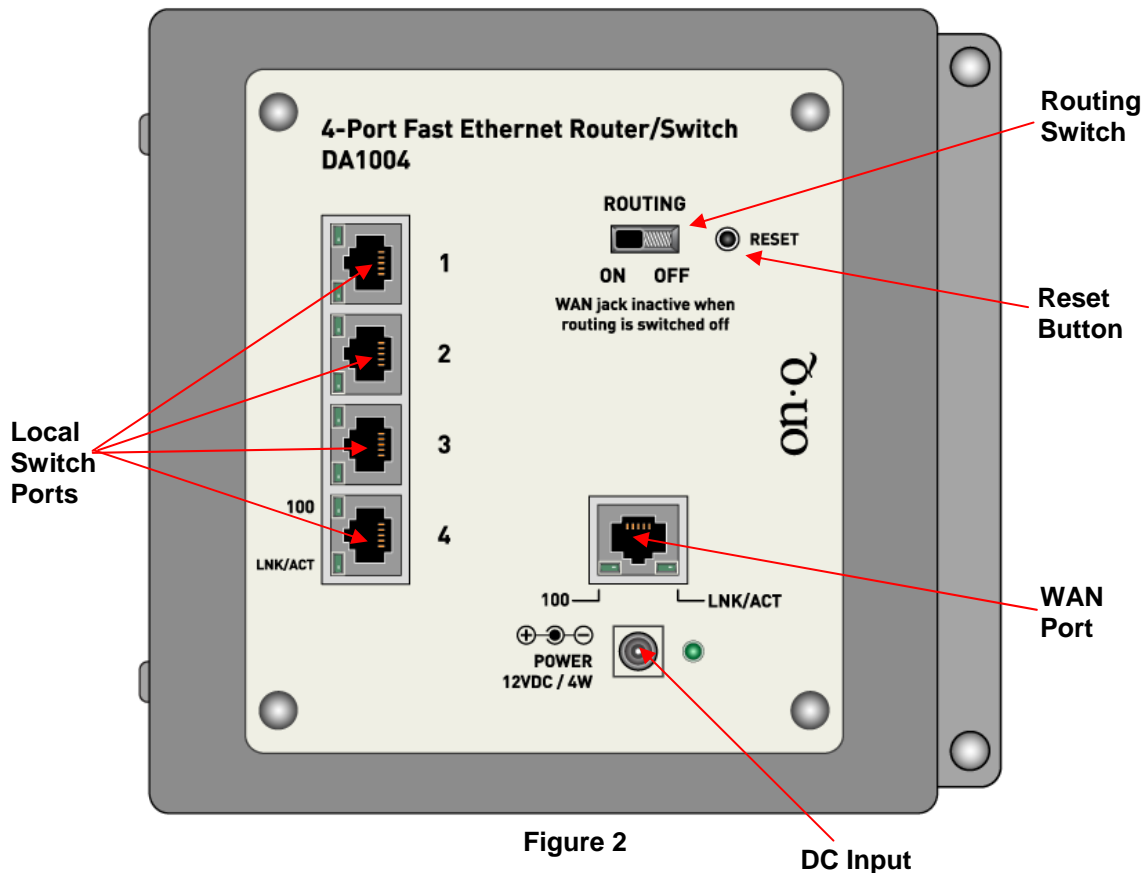


Figure 2

DC Input

2. Router/Switch Status LEDs next to each RJ45 connector(see Figure 2)

Power – On solid green when power is supplied.

Link/Act and 100 Local Port and WAN Port LEDs

Link/Act – On solid green indicates functional LAN or WAN link through the port with the attached device. Off means no LAN or WAN connection.

100 – On solid green indicates port is operating at 100 Mbps. Off indicates 10 Mbps.



III. Installation

The DA1004 On-Q 4 Port Router/Switch is best installed during new construction in two steps; at “rough-in” after the Electricians are done, but prior to drywall being installed, and at “trim-out” after the drywall is installed and painted. These steps are detailed below:

A. “Rough-in” steps:

1. A single dedicated Cat 5e should be run in the walls from the structured wiring enclosure location in the home where the On-Q 4 Port Router/Switch will be installed to each outlet location in the rooms where Internet service is required (leave extra cable at both ends).

NOTE: Run Cat 5e cable at least 12” from electrical cabling (preferably in a separate stud cavity) and cross electrical cables at a 90° angle. Use loose Velcro-style cable ties for bundling. If stapling is required, use specialty staples to avoid compressing the cable.

2. At the selected outlet locations, a single gang box or low voltage bracket should be installed, with the extra Cat 5e cable in the box, or attached in such a way that it may be fished out after the drywall is installed.

B. “Trim-out” steps:

1. The Cat 5e that was secured at each of the outlets should be pulled out and terminated with a 110 punchdown tool on an RJ45 insert and attached to a wallplate, which is then installed in the single gang box or low voltage bracket.
2. In the structured wiring enclosure the Cat 5e from the outlets may be terminated with a 110 punchdown tool onto an On-Q Network Interface Module or with RJ-45 plugs, using a tool such as our EZ RJ45 Modular Plug Hand Toll (P/N 364555-01) for direct connection to the DA1004 On-Q 4 Port Router/Switch.
3. The On-Q 4 Port 10/100 Router/Switch is installed in the structured wiring enclosure by slipping the tabs into the square holes, and using the push pin in a round hole to secure the router.
4. If the outlet cables were punched down at a Network Interface Module, Cat 5e patch cables (available separately) are then connected from the On-Q 6 Port Network Interface Module to the input ports on the On-Q 4-Port 10/100 Router/Switch.
5. An additional Cat 5e patch cable is then connected from the network (WAN) port of the 4 Port 10/100 Router/Switch to the Cable Modem or DSL Modem housed in the structured wiring enclosure and make sure the routing switch is in the “On” position.
6. The 4 Port 10/100 Router/Switch is powered with an AC to DC adapter which also needs to be plugged in to an AC source.
7. Follow the steps in the next two sections for configuring the router.

NOTE: Use proper tools and standard TIA 568A rules to prep and terminate the Cat 5e cable, such as a Cat 5 Cable Stripper, an RJ45 Crimp Tool and a 110 Punchdown Tool.



IV. Initial Configuration

The DA1004 On-Q 4 Port Router/Switch is typically configured in one of two ways; (1) From a portable PC connected through one of the Local Switch Ports on the Router/Switch Module in the enclosure, or (2) From a PC in one of the rooms of the house, connected through an outlet in the room to the enclosure where it is patched to (or directly connected to) one of the Local Switch Ports (see **Figure 3**). In either case, the PC must have an Ethernet Network Interface Card to communicate with the Router/Switch.

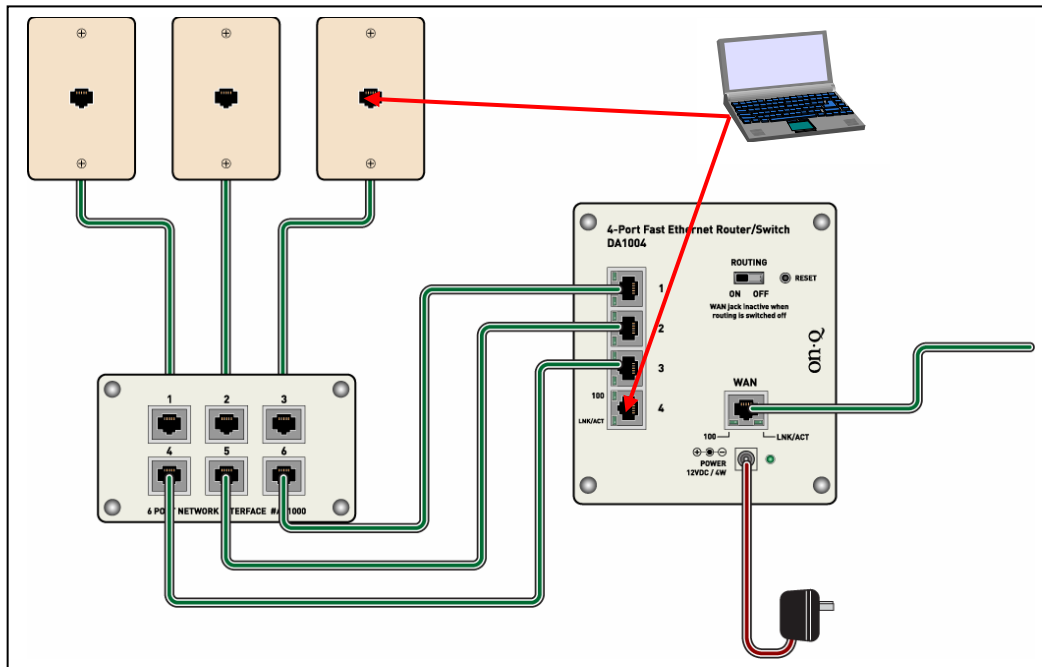


Figure 3

A. Configuring a Network Interface Card to talk to the Router/Switch

NOTE: The steps below assume that your PC's network interface card is set to DHCP, or in other words, to obtain IP addressing automatically. The steps also assume that the On-Q 4 Port Router/Switch is set to its default settings and that all the cables previously discussed are properly connected. It is also possible to perform these steps by configuring your computer (with installed Ethernet Network Interface Card) to talk to the On-Q Router/Switch on its specific IP subnetwork (192.168.40.xxx). The On-Q Router/Switch's default IP address in that subnetwork is 192.168.40.254, so your PC's Ethernet Card can be temporarily assigned an IP address, (like 192.168.40.10), on that same subnetwork to talk to and configure the Router/Switch. Giving the PC a specific IP address is also called assigning it a Static IP address, as compared to a Dynamic IP address that is typically assigned by a service provider when your PC's network interface card is configured for Dynamic Host Configuration Protocol (DHCP).

NOTE: Before doing any PC IP Address re-configuration, make sure you first write down all of the current IP settings. XP users can set "last known useable configuration" under System Accessories before re-configuring.



B. Logging on to the Router/Switch

1. With your PC connected to one of the local ports on the Router/Switch and its front panel routing switch in the “On” position, open a browser and enter the Router/Switch’s default IP address (192.168.40.254), and click “Go” (see **Figure 4**) to get the login page.

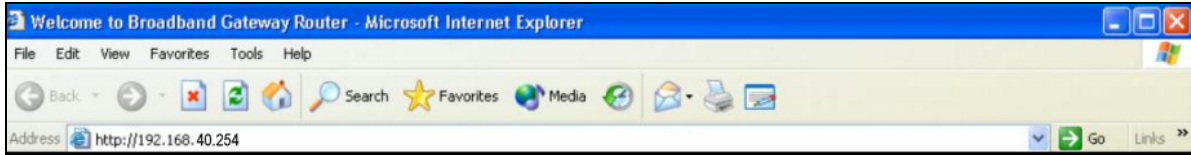


Figure 4

2. To logon, enter “admin” for the user name and password and just click **OK** (see **Figure 5**).

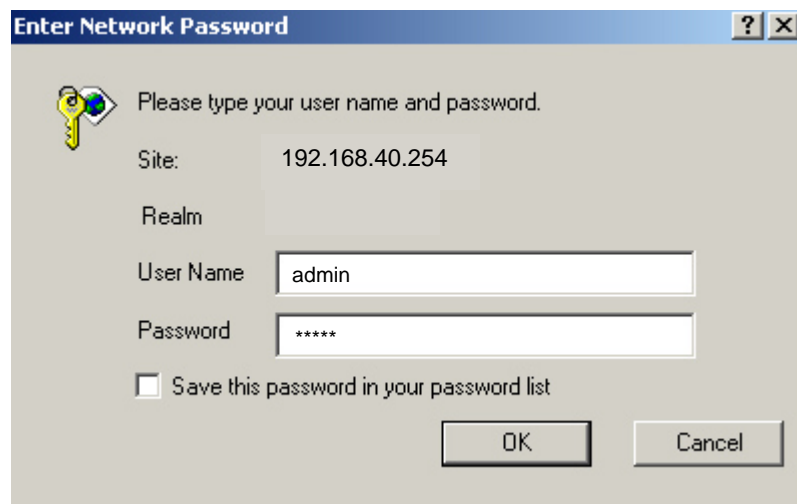


Figure 5

3. **Figure 6** shows the System Status screen that you will see once you have logged on. By clicking on the word WIZARD in the upper left corner (below our logo), the Setup Wizard will lead you step-by-step through the initial configuration of the Router.

NOTE: You can also manually configure the Router/Switch by clicking on a function listed across the top of the page, such as “SYSTEM” to change your User Name or Password, perform a firmware upgrade, restore factory defaults, or backup/restore system settings. You could also click on “WAN” to configure your network connection type, or “LAN” to identify the starting IP address for the LAN ports, or “NAT” or “FIREWALL” or “DDNS” to configure those functions.

on·Q 10/100 FOUR PORT STANDARD ROUTER

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WIZARD | SYSTEM | WAN | LAN | NAT | FIREWALL | ROUTING | UPnP | DDNS | LOGOUT

System Settings Help

System Status

System Status

INTERNET Refresh

Cable/DSL	Disconnected
WAN IP	0.0.0.0
Subnet Mask	0.0.0.0
Gateway	0.0.0.0
DNS	168.95.1.1
Secondary DNS	0.0.0.0
Domain Name	
Connection Type	Dynamic IP
Connection Time	00:00:00
Remaining Time	00:00:00
<input type="button" value="Release"/> <input type="button" value="Renew"/>	

GATEWAY

IP Address	192.168.40.254
Subnet Mask	255.255.255.0
DHCP Server	Enabled
NAT	Enabled
Firewall	Enabled

INFORMATION

System Up Time	00:01:30
System Date	1/1/1970 8:1:30
Connected Clients	1
Runtime Code Version	V22.1.2.101
Boot Code Version	V0.1.5.20
LAN MAC Address	00:30:4F:4E:7A:38
WAN MAC Address	00:30:4F:4E:7A:39

Figure 6

C. Using the Setup Wizard

When you click on “WIZARD” you’ll be shown the screen represented by **Figure 7**.

on·Q 10/100 FOUR PORT STANDARD ROUTER

legrand

WIZARD | SYSTEM | WAN | LAN | NAT | FIREWALL | ROUTING | UPnP | DDNS | LOGOUT

Wizard Next

1. Host Settings
2. WAN Settings
3. DNS

Wizard

Host Name	<input type="text" value="router"/>
Domain Name	<input type="text" value="Onqlegrand"/>
Time Zone	(GMT-05:00) Eastern Time (US & Canada) <input type="button" value="v"/>
Daylight Saving	<input checked="" type="checkbox"/> Enabled From: APR <input type="button" value="v"/> 2 <input type="button" value="v"/> To: OCT <input type="button" value="v"/> 29 <input type="button" value="v"/>

Figure 7

Notice that the wizard starts with Host Settings where you can specify a host name, domain name, time zone and even Daylight Savings time functionality. Once you are done, click on the “Next” button at the lower right and you will be shown the WAN Settings screen represented by **Figure 8**. This is where you select the type of network service to which the router is being attached. Examples for Cable modems and DSL modems are shown below.

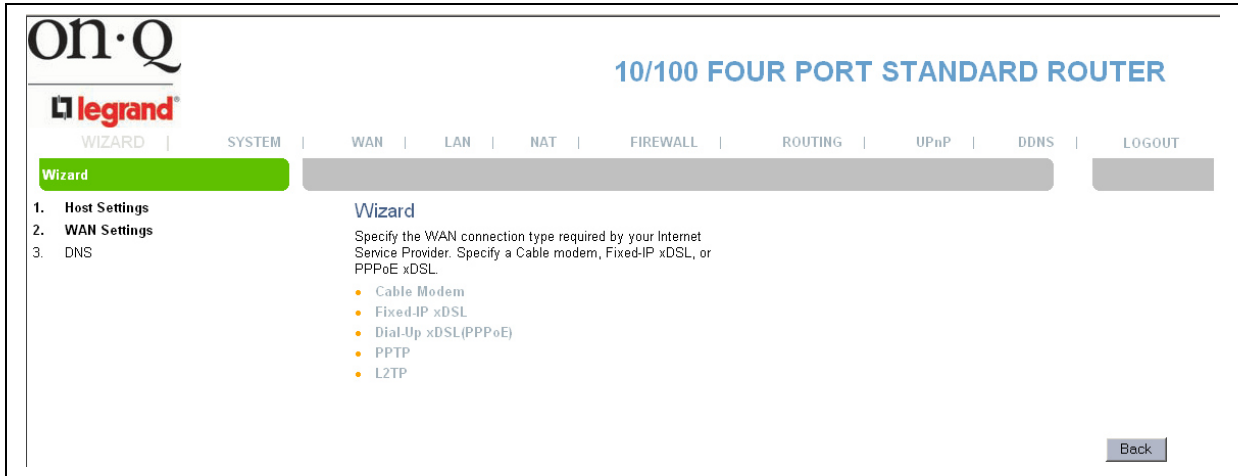


Figure 8

1. Cable Modem Setup

By clicking on “Cable Modem” you will be shown the screen represented by **Figure 9**. Notice that if you made a mistake, and actually meant to select a different network type, you can click on the Back button.

NOTE: If required due to restrictions by your local cable provider, the Cable Modem WAN Settings screen also allows you to configure MAC Cloning, where you decide what MAC (hardware) address is given to the ISP when they interrogate your home network. That allows you to run multiple PCs behind your router without having to identify each one to the ISP, as the ISP may want to charge you access for each PC.

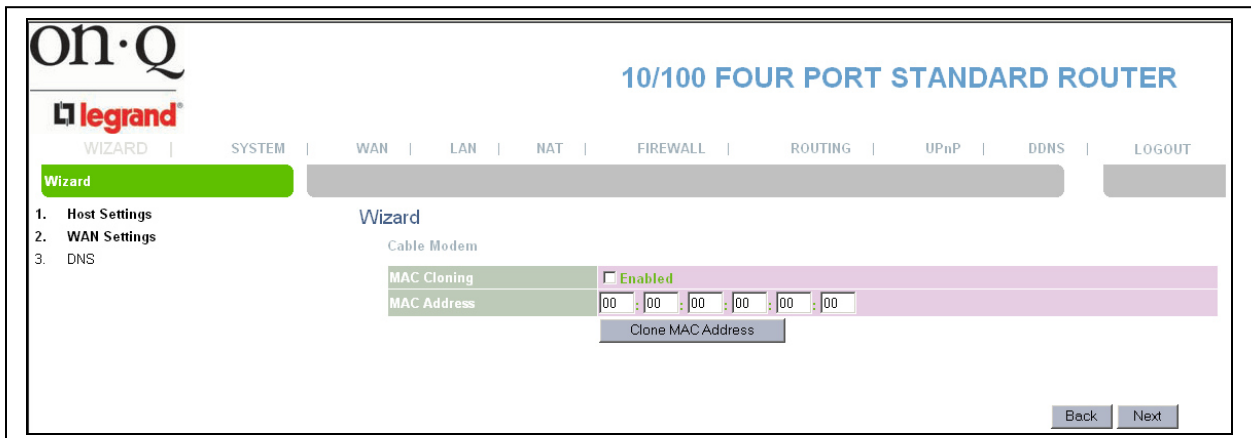


Figure 9

2. DSL Modem Setup

If you are using DSL service, you probably clicked on “Dial-Up xDSL (PPPoE)” as shown on the WAN Settings screen of the Wizard shown in **Figure 8**. By clicking on “Dial-Up xDSL (PPPoE)” you will be shown the screen represented by **Figure 10**. As before, notice that if you made a mistake, and actually meant to select a different network type, you can click on the Back button. Many DSL ISPs will specify the information that gets entered on this screen.

The screenshot shows the on-Q router configuration wizard for a 10/100 FOUR PORT STANDARD ROUTER. The wizard is currently on the 'Dial-Up xDSL (PPPoE)' screen. The left sidebar shows the progress: 1. Host Settings, 2. WAN Settings (highlighted), and 3. DNS. The main content area has a title 'Wizard' and a subtitle 'Dial-Up xDSL (PPPoE)'. Below this is a form with the following fields:

User Name	pppoe_user
Password	*****
Retype password	*****
Service Name	
MTU (546-1492)	1492
Maximum Idle Time	300 (seconds)

At the bottom right of the form are 'Back' and 'Next' buttons.

Figure 10

3. DNS Configuration

After configuring either Cable Modem or DSL Modem WAN Settings, and clicking “Next” in the lower right corner of either screen, you will be shown the DNS configuration screen represented by **Figure 11**. In most cases the DNS Server IP Address from the ISP is provided automatically, but if the ISP wants you to use a static DNS Server address, click on “Enable” and enter the “Primary DNS Address” that they specify.

The screenshot shows the on-Q router configuration wizard for a 10/100 FOUR PORT STANDARD ROUTER. The wizard is currently on the 'DNS Settings' screen. The left sidebar shows the progress: 1. Host Settings, 2. WAN Settings, and 3. DNS (highlighted). The main content area has a title 'Wizard' and a subtitle 'DNS Settings'. Below this is a form with the following fields:

Static DNS Server	<input type="checkbox"/> Enable
Primary DNS address	[][][][]
Secondary DNS address	[][][][]

At the bottom right of the form are 'Back' and 'Finish' buttons.

Figure 11

Click on “Finish” in the lower right corner when your initial Router/Switch configuration is complete. Installation is now complete.

D. Contact Information

For additional configuration information, please access the product area of our website at www.onqlegrand.com. You can also reach us at 1-800-321-2343.



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V. Advanced Configuration

If you used the Wizard to configure the On-Q DA1004 4 Port Router/Switch, you do NOT need to configure anything else for you to start using the Internet.

Advanced configuration (using any of the selections to the right of the Wizard) allows you to configure the router to meet your unique network's needs such as: Special Applications, Port Mapping, DMZ, Virtual Servers, ALG, and Firewall option.

A. System Operations

This selection allows you to set the On-Q 4 Port Router/Switch's system settings, password and Remote Management Administrator. It also allows you to check system status and log, and provides you the configuration tools.

Notice the System Status display (see **Figure 12**) provides you with system information in three areas, the Internet (WAN info), Gateway (Router connection info) and Information (Router hardware/software info).

The screenshot displays the 'System Status' page of an On-Q 10/100 FOUR PORT STANDARD ROUTER. The page is divided into three main sections: INTERNET, GATEWAY, and INFORMATION. The INTERNET section shows a 'Disconnected' status with a 'Refresh' button. The GATEWAY section lists various settings like IP Address, Subnet Mask, DHCP Server, NAT, and Firewall. The INFORMATION section provides details on system up time, date, and hardware/software versions.

INTERNET	
Cable/DSL	Disconnected
WAN IP	0.0.0.0
Subnet Mask	0.0.0.0
Gateway	0.0.0.0
DNS	168.95.1.1
Secondary DNS	0.0.0.0
Domain Name	
Connection Type	Dynamic IP
Connection Time	00:00:00
Remaining Time	00:00:00
<input type="button" value="Release"/> <input type="button" value="Renew"/>	

GATEWAY	
IP Address	192.168.40.254
Subnet Mask	255.255.255.0
DHCP Server	Enabled
NAT	Enabled
Firewall	Enabled

INFORMATION	
System Up Time	00:01:30
System Date	1/1/1970 8:1:30
Connected Clients	1
Runtime Code Version	V22.1.2.101
Boot Code Version	V0.1.5.20
LAN MAC Address	00:30:4F:4E:7A:38
WAN MAC Address	00:30:4F:4E:7A:39

Figure 12

The System Settings display (see **Figure 13**) allows you to specify a time zone, to specify the Host Name and Domain Name, and to enable or disable the NAT function of the On-Q Router /Switch.

The screenshot shows the 'System Settings' page for an On-Q router. The page title is '10/100 FOUR PORT STANDARD ROUTER'. The navigation menu includes 'WIZARD', 'SYSTEM', 'WAN', 'LAN', 'NAT', 'FIREWALL', 'ROUTING', 'UPnP', 'DDNS', and 'LOGOUT'. The 'SYSTEM' menu is expanded, showing 'System Settings' as the active page. The 'System Settings' section contains the following fields:

Host Name	router
Domain Name	<input type="checkbox"/> Pass WAN Domain Onqlegrand
NTP Server	<input type="text"/> (option)
Set Time Zone	(GMT+08:00) Hong Kong, Perth, Singapore, Taipei
Daylight Saving	<input type="checkbox"/> Enabled From: FEB 2 To: FEB 2
NAT	<input checked="" type="checkbox"/> Enabled

Buttons for 'OK' and 'Cancel' are located at the bottom right of the form.

Figure 13

The Administrator Settings display (see **Figure 14**) allows you to design an administrator user name (default is “admin”), password (default is “admin”) and the idle time. It also allows you to configure a Remote Management admin capability for the On-Q Router /Switch.

The screenshot shows the 'Administrator Settings' page for an On-Q router. The page title is '10/100 FOUR PORT STANDARD ROUTER'. The navigation menu includes 'WIZARD', 'SYSTEM', 'WAN', 'LAN', 'NAT', 'FIREWALL', 'ROUTING', 'UPnP', 'DDNS', and 'LOGOUT'. The 'SYSTEM' menu is expanded, showing 'Administrator Settings' as the active page. The 'Administrator Settings' section contains the following fields:

Password Settings	
User Name	admin
Current Password	<input type="password"/>
Password	<input type="password"/>
Re-type password	<input type="password"/> (3-12 Characters)
Idle Time Out	300 seconds (0: No timeout)
Remote Management	
Enabled	<input type="checkbox"/>
IP Address	0 . 0 . 0 . 0
Port	81

Buttons for 'OK' and 'Cancel' are located at the bottom right of the form.

Figure 14

The Firmware Upgrade screen (see **Figure 15**) allows you to upgrade the On-Q Router's system firmware. To upgrade the firmware of your router, you need to download the firmware file from the On-Q/Legrand website to your local hard disk, and enter that file name and path in the appropriate field on this page. You can also use the Browse button to find the firmware file on your PC.

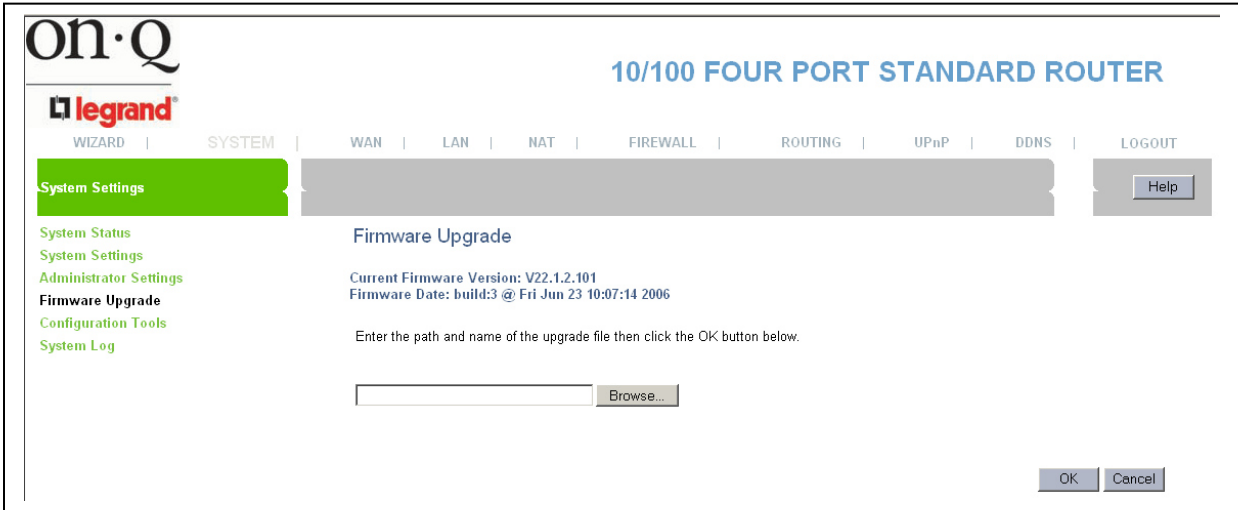


Figure 15

The Configuration Tools screen (see **Figure 16**) allows you to save (**Backup**) the router's current configuration setting. Saving the configuration settings provides an added protection and convenience, if problems occur with the router and you have to reset to factory default. When you save the configuration setting (**Backup**) you can re-load the saved configuration into the router through the **Restore** selection. If extreme problems occur, you can use the **Restore to Factory Defaults** selection, this will set all configurations to its original default settings (e.g. when you first purchased the router). You also can **Restart** the router's system if any problems exist.

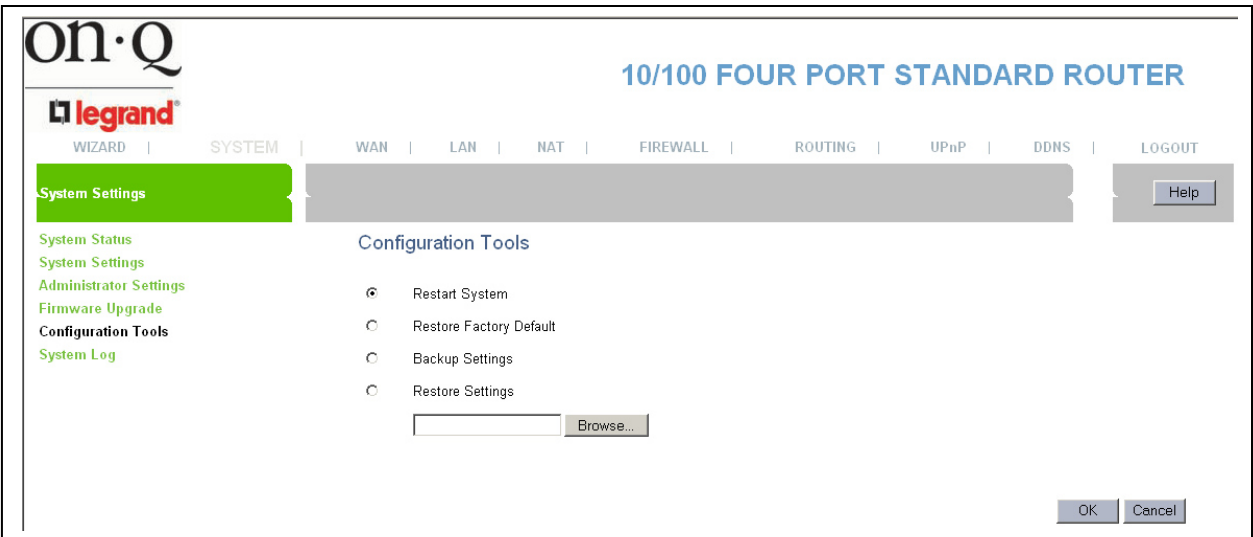


Figure 16

The System Log (see **Figure 17**) records various types of activity on the On-Q Router/Switch. This data is useful for troubleshooting, but enabling all logs will generate a large amount of data and adversely affect performance. Since only a limited amount of log data can be stored in the Router, log data can also be configured to be emailed to your PC or sent to a Syslog Server.

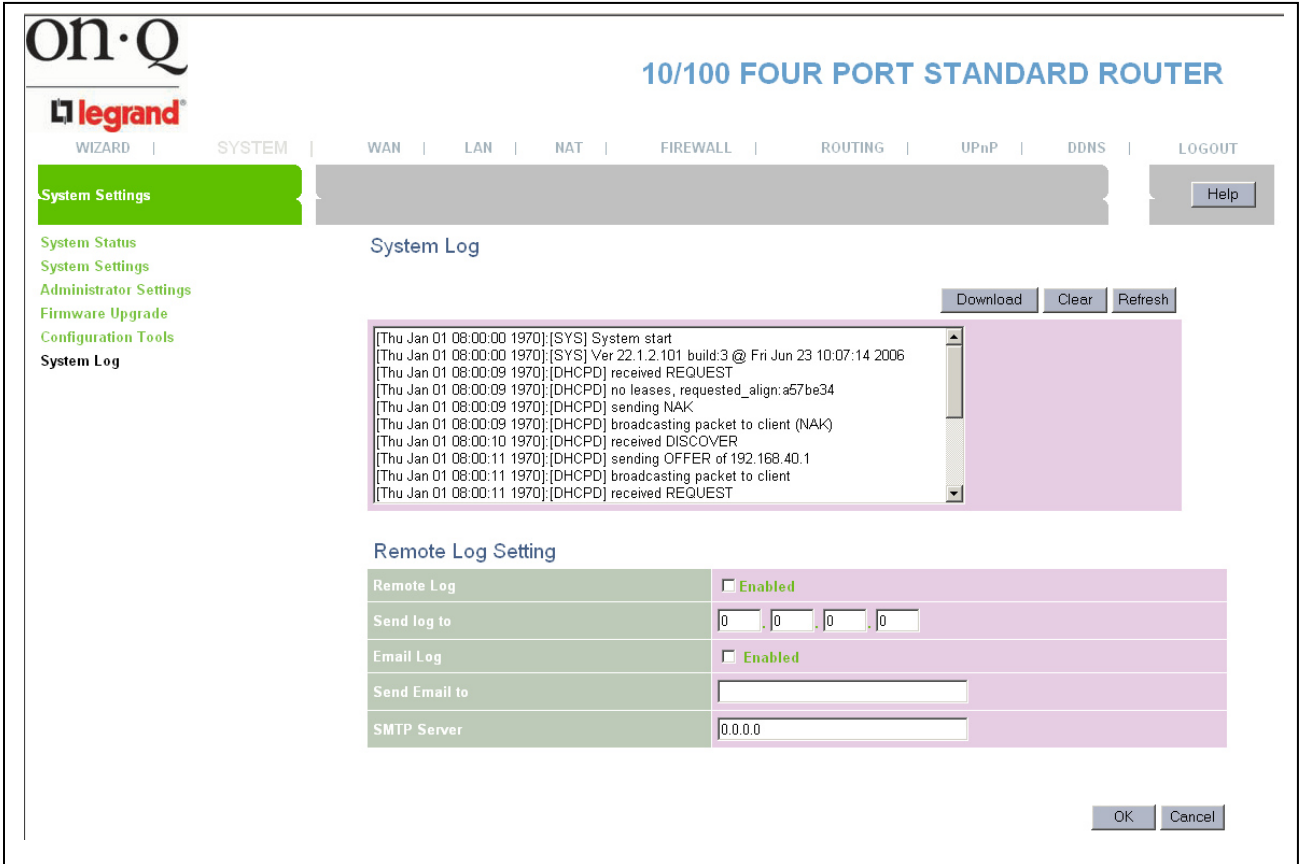


Figure 17

B. WAN Configuration

Use the WAN selection (see **Figure 18**) if you have already configured the router using the Wizard and you would like to change your Internet connection type. Notice that the Connected Type selection portion of the screen is followed with the detail area for that connected type (Static IP Address shown in this example). The Connected Types include, **Dynamic IP Address, Static IP Address, PPPoE, PPTP and L2TP.**

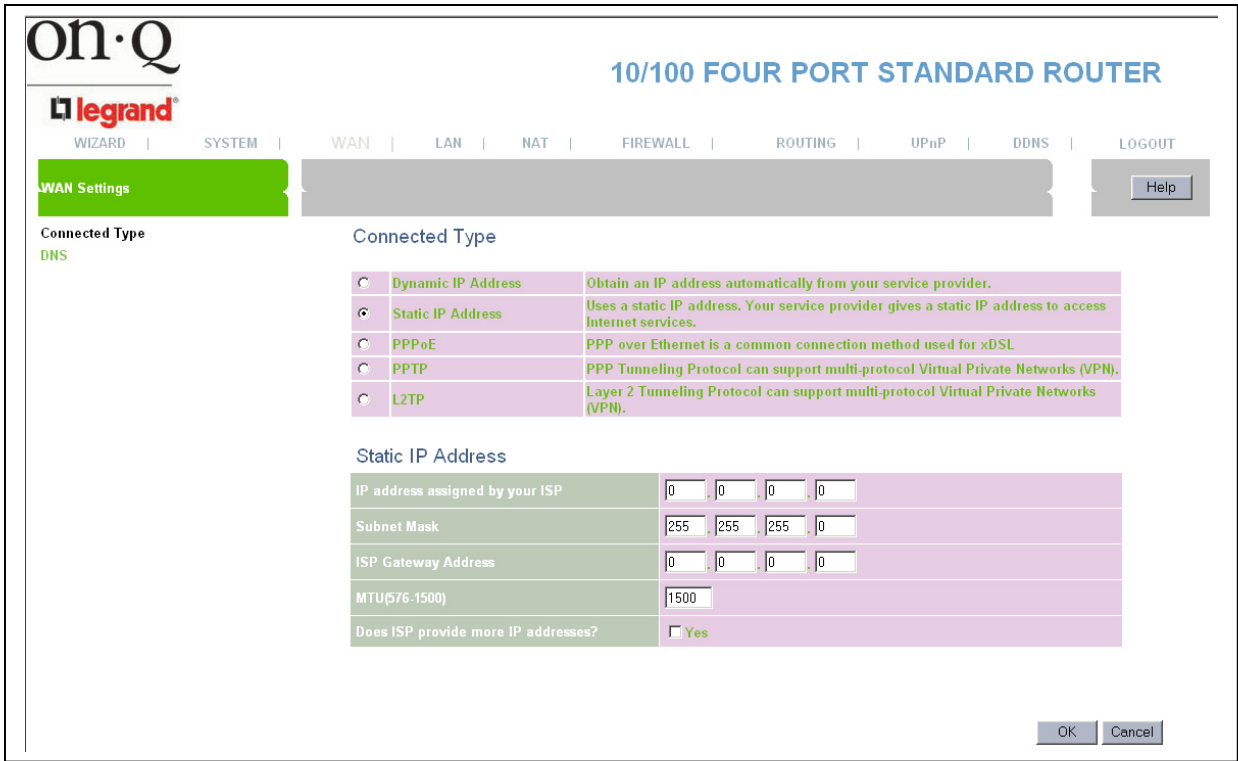


Figure 18

Select DNS (see **Figure 19**) to configure a Domain Name System Server if required. A Domain Name System (DNS) server is like an index of IP addresses and Web addresses. If you type a Web address into your browser, such as www.router.com, a DNS server will find that name in its index and the matching IP address. .

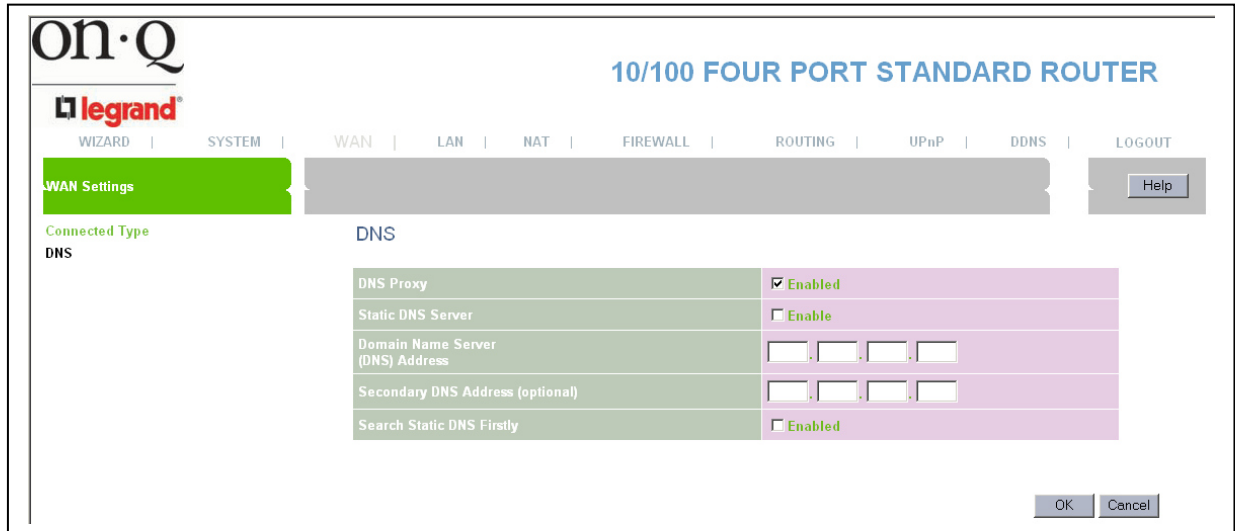


Figure 19

C. LAN Configuration

The LAN selection (see **Figure 20**) allows you to specify a private IP address for your router's LAN ports as well as a subnet mask for your LAN segment.

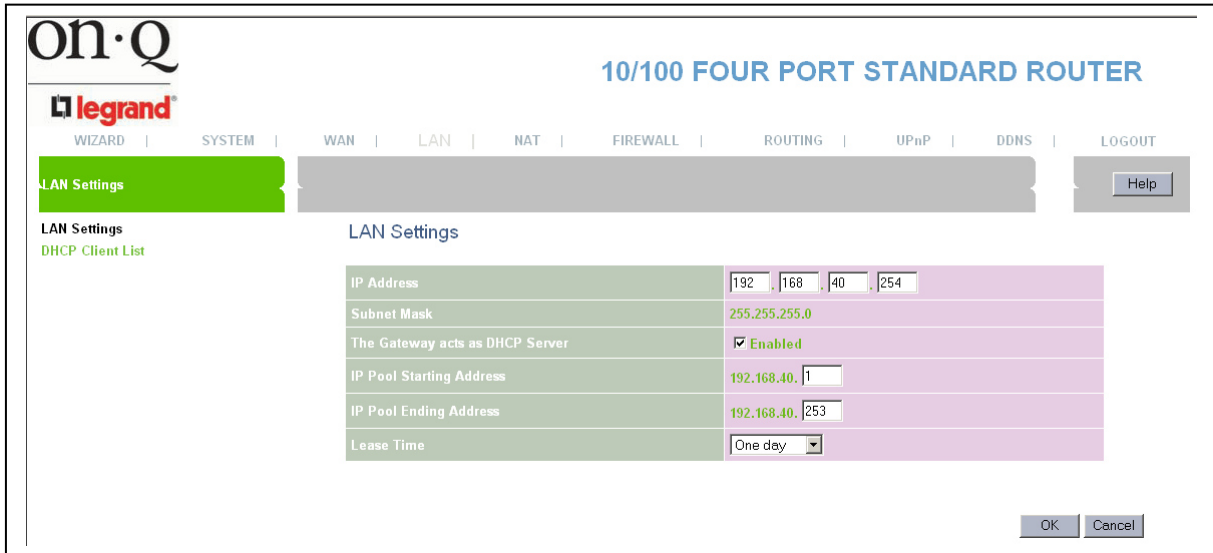


Figure 20

The LAN selection also allows you to view your DHCP client list (see **Figure 21**) and also assign static clients as required.

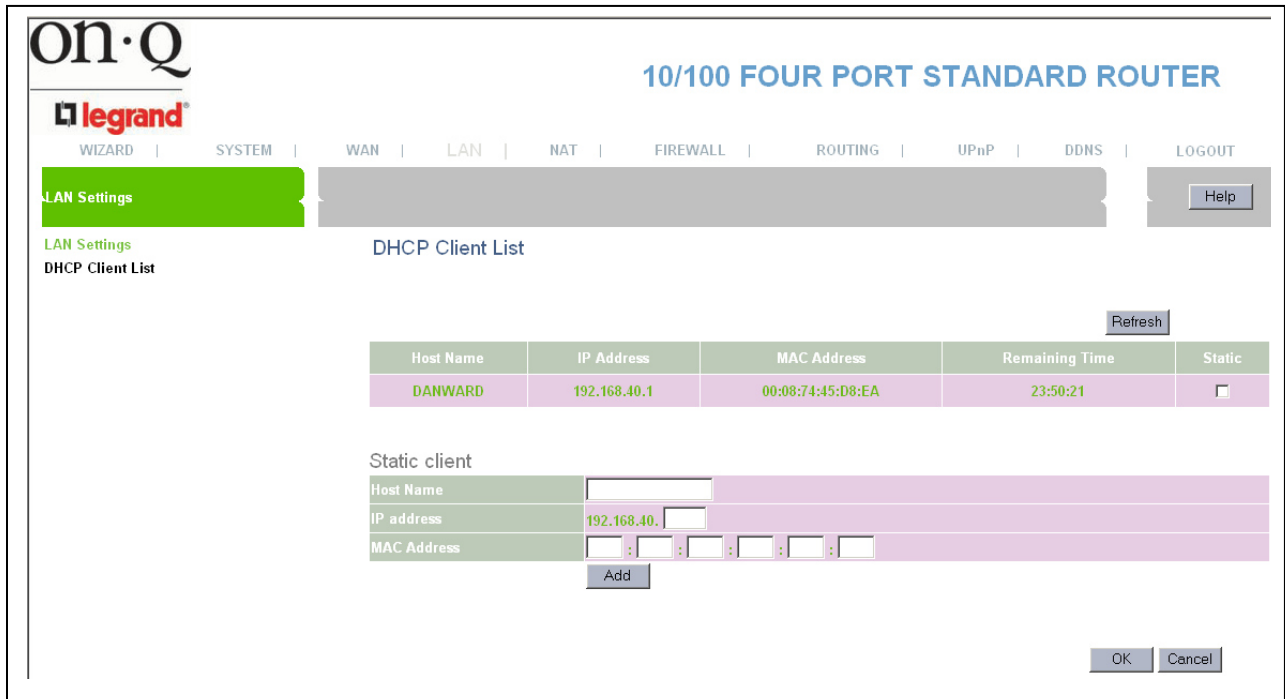


Figure 21

D. NAT Configuration

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

Use the Virtual Server function (see **Figure 22**) when you want different servers/clients in your LAN to handle different service/Internet application types (e.g. email, FTP, Web server etc.) from the Internet. Computers use numbers called port numbers to recognize a particular service/Internet application type. The Virtual Server allows you to re-direct a particular service port number (from the Internet/WAN Port) to a particular LAN private IP address and its service port number.

The screenshot shows the 'NAT Settings' page for a '10/100 FOUR PORT STANDARD ROUTER'. The 'Virtual Server' section is active, displaying a table with 20 rows for configuring port forwarding. Each row includes a sequence number, a Private IP address (all set to 192.168.40.), a Private Port field, a Type dropdown menu (all set to TCP), a Public Port field, a Comment field, and an Enabled checkbox.

	Private IP	Private Port	Type	Public Port	Comment	Enabled
1.	192.168.40.		TCP			<input type="checkbox"/>
2.	192.168.40.		TCP			<input type="checkbox"/>
3.	192.168.40.		TCP			<input type="checkbox"/>
4.	192.168.40.		TCP			<input type="checkbox"/>
5.	192.168.40.		TCP			<input type="checkbox"/>
6.	192.168.40.		TCP			<input type="checkbox"/>
7.	192.168.40.		TCP			<input type="checkbox"/>
8.	192.168.40.		TCP			<input type="checkbox"/>
9.	192.168.40.		TCP			<input type="checkbox"/>
10.	192.168.40.		TCP			<input type="checkbox"/>
11.	192.168.40.		TCP			<input type="checkbox"/>
12.	192.168.40.		TCP			<input type="checkbox"/>
13.	192.168.40.		TCP			<input type="checkbox"/>
14.	192.168.40.		TCP			<input type="checkbox"/>
15.	192.168.40.		TCP			<input type="checkbox"/>
16.	192.168.40.		TCP			<input type="checkbox"/>
17.	192.168.40.		TCP			<input type="checkbox"/>
18.	192.168.40.		TCP			<input type="checkbox"/>
19.	192.168.40.		TCP			<input type="checkbox"/>
20.	192.168.40.		TCP			<input type="checkbox"/>

Figure 22

Some applications require multiple connections, such as Internet games, video conferencing, Internet telephony and others. The Special Applications section (see **Figure 23**) allows you to configure the router to support multiple connections for these types of applications.

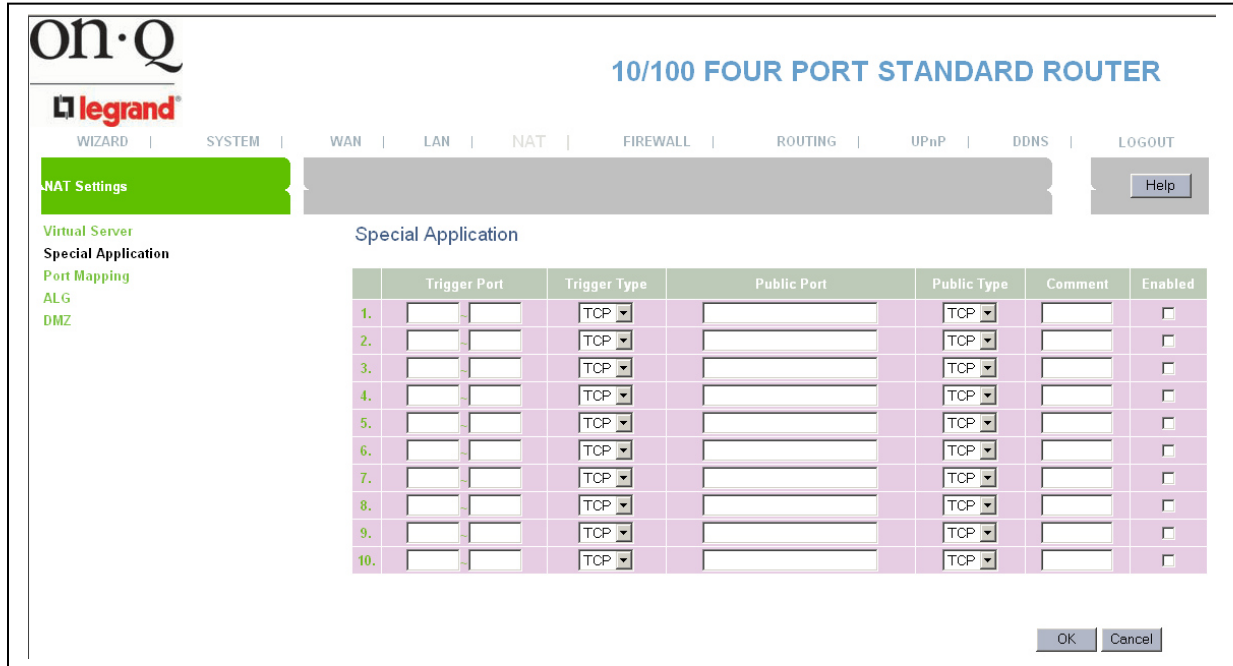


Figure 23

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

Example:

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

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

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

The Port Mapping function (see **Figure 24**) allows you to re-direct a particular range of service port numbers (from the Internet/WAN Ports) to a particular LAN IP address. It helps you to host some servers behind the router NAT firewall.

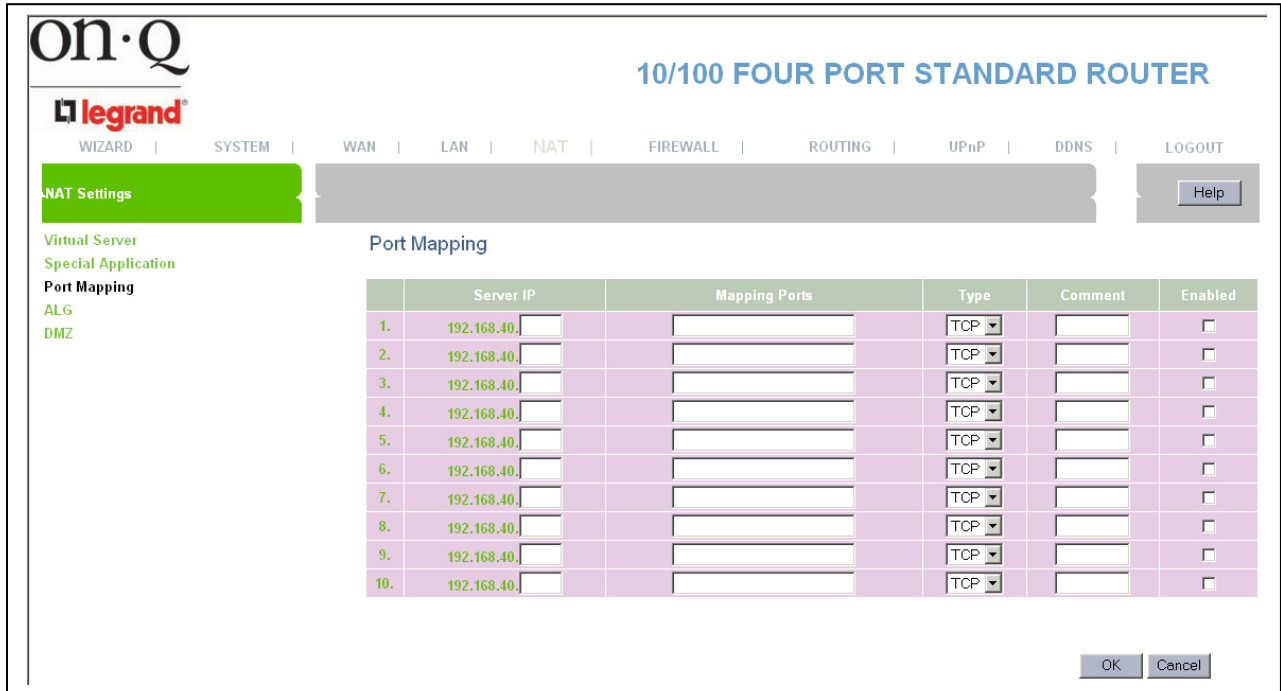


Figure 24

You can select ALG (see **Figure 25**) to enable “Application Layer Gateway” for an application and then the router will let that application correctly pass through the NAT gateway. If you are having trouble supporting VPN functionality, try selecting “PPTP passthrough”.

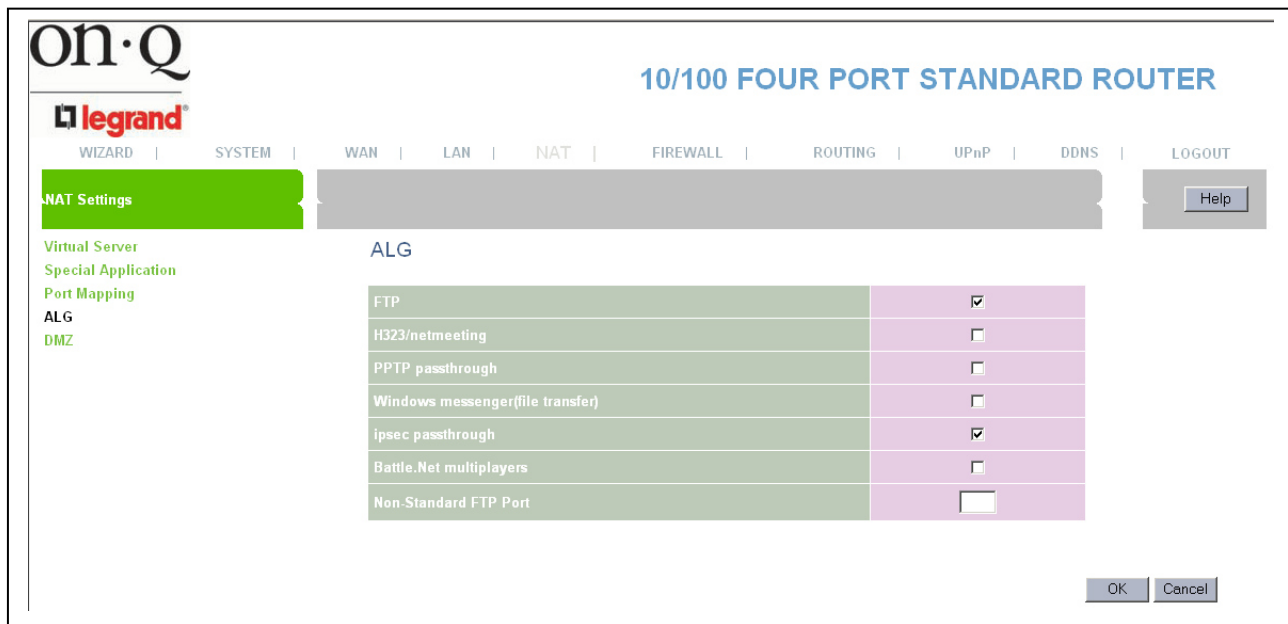


Figure 25

If you have a local client PC that cannot run an Internet application (e.g. Games) properly from behind the NAT firewall, then you can open the client up to unrestricted two-way Internet access by defining a DMZ Host. The DMZ function (see **Figure 26**) allows you to re-direct all packets going to your WAN port IP address to a particular IP address in your LAN. The difference between the virtual server and the DMZ function is that the virtual server re-directs a particular service/Internet application (e.g. FTP, websites) to a particular LAN client/server, whereas DMZ re-directs all packets (regardless of services) going to your WAN IP address to a particular LAN client/server.

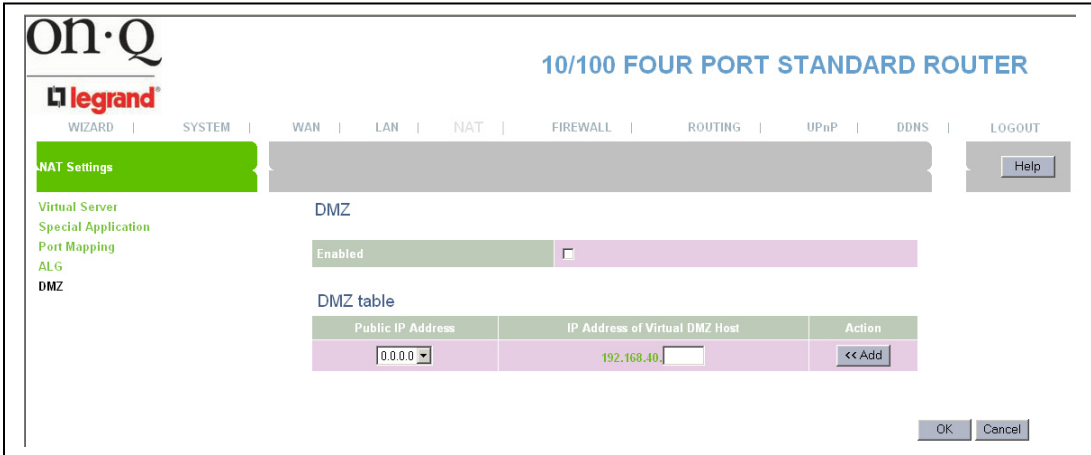


Figure 26

E. Firewall Configuration

The Firewall selection of the On-Q Router provides an extensive array of firewall protection capability by restricting connection parameters, thus limiting the risk of hacker attack, and defending against a wide variety of common Internet attacks.

The Firewall Options selection screen (see **Figure 27**) enables the firewall to block common hacker attacks, including Denial of Service, Ping of Death, Port Scan and Sync Flood. If Internet attacks occur the router can log the events.

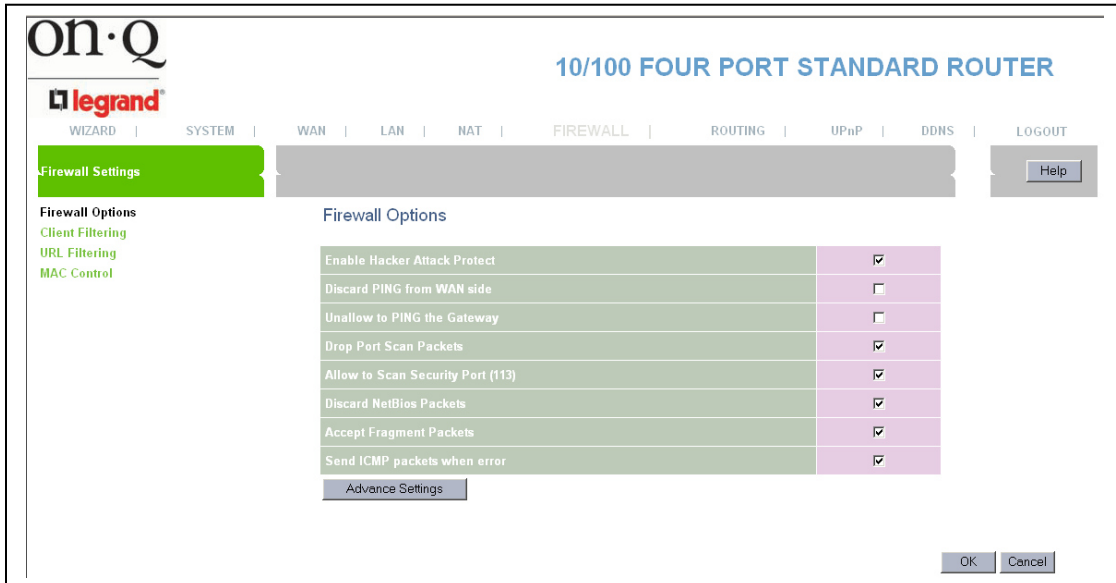


Figure 27



When you select the Client Filtering Option (see **Figure 28**), you can filter Internet access for local clients based on IP addresses, application types, (i.e., HTTP port), and time of day.

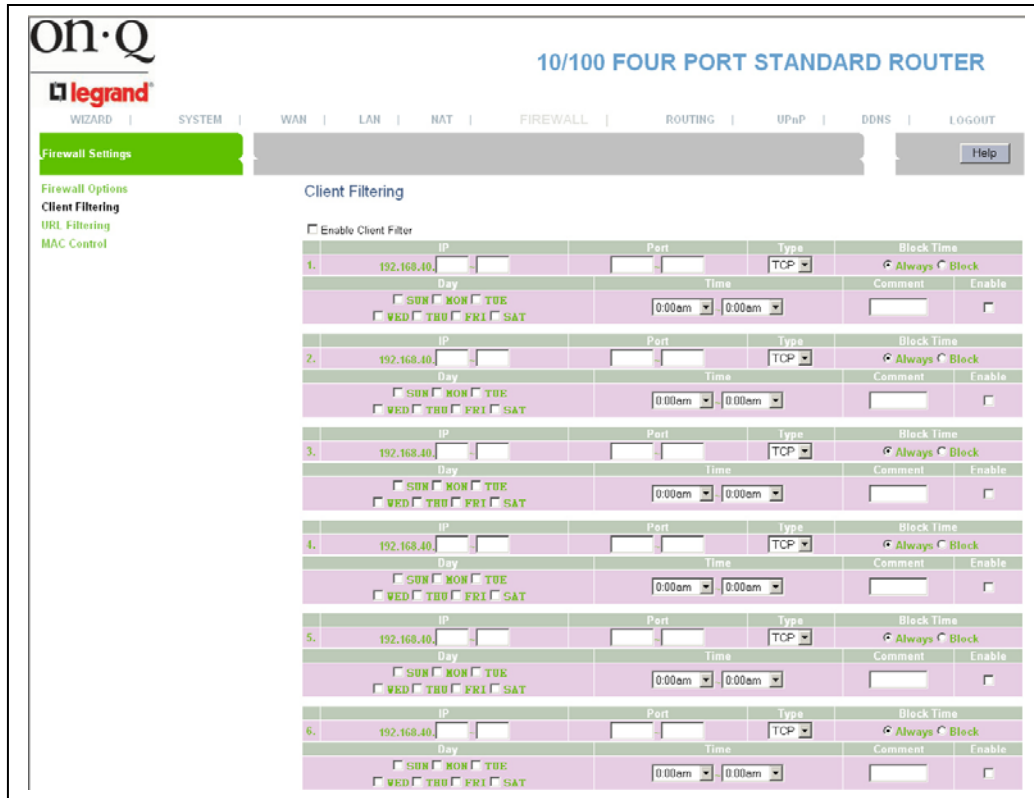


Figure 28

With the URL Filtering Option (see **Figure 29**), you can block access to some Web sites from particular PCs by entering a full URL address or just keyword of the Web site.

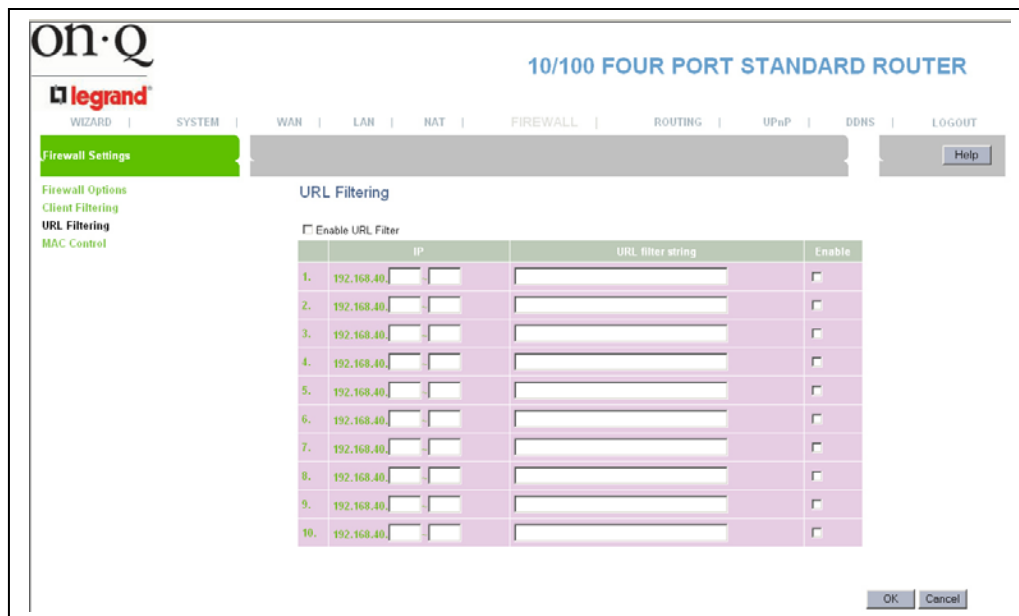


Figure 29

You can also filter Internet access for local clients based on MAC Address (see **Figure 30**).

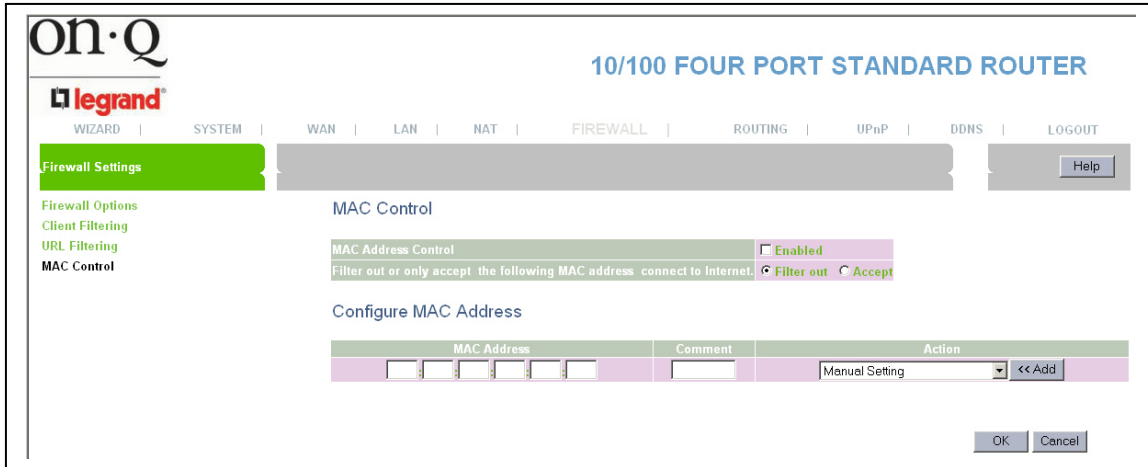


Figure 30

F. Routing Configuration

The “Routing” selection at the top of the page allows you to set up an internal static route on the On-Q Router/Switch (see **Figure 31**) and check the current routing table (see **Figure 32**). The routing is only for internal routing use, so you do not need to disable any NAT function.

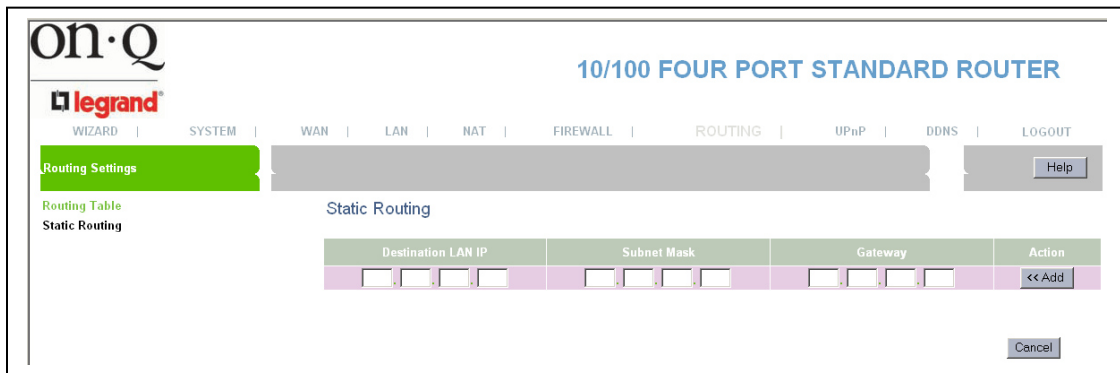


Figure 31

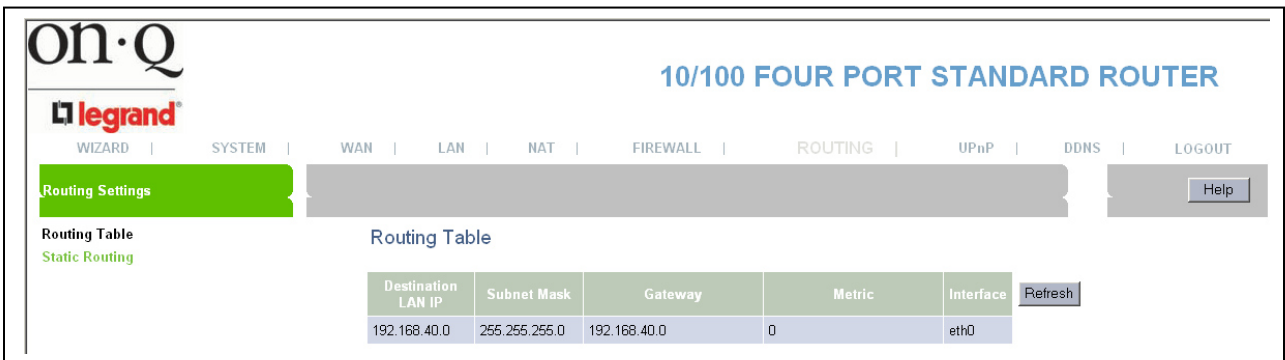


Figure 32

G. UpnP Configuration

The “UpnP” (Universal Plug and Play) selection at the top of the page (see **Figure 33**) enables all PCs in your Intranet to discover this router automatically. You do not have to do any configuration for your PC and can access the Internet through this router easily. The “Port Mapping” selection (see **Figure 34**) shows you a status of the automatically configured connections.

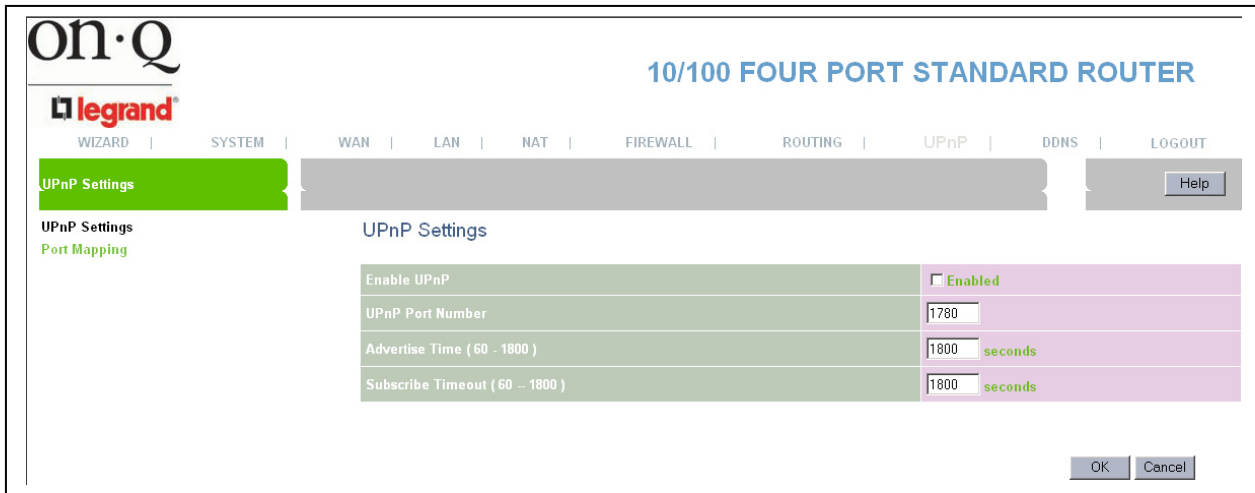


Figure 33

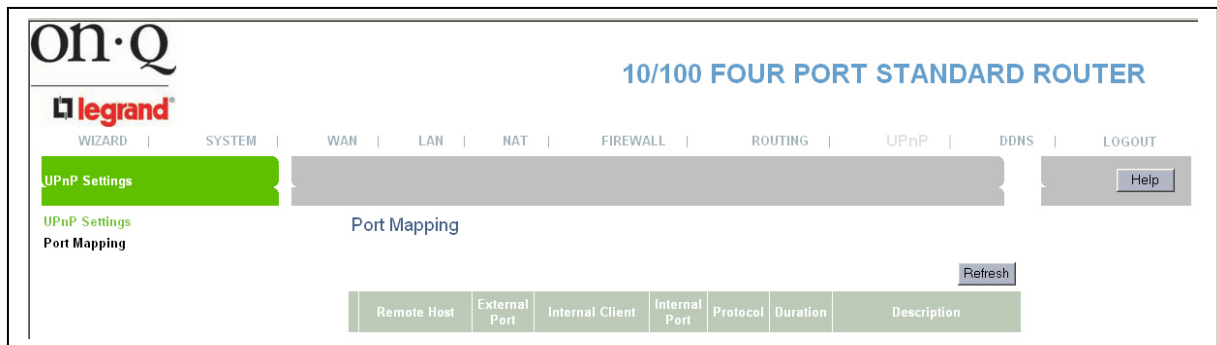
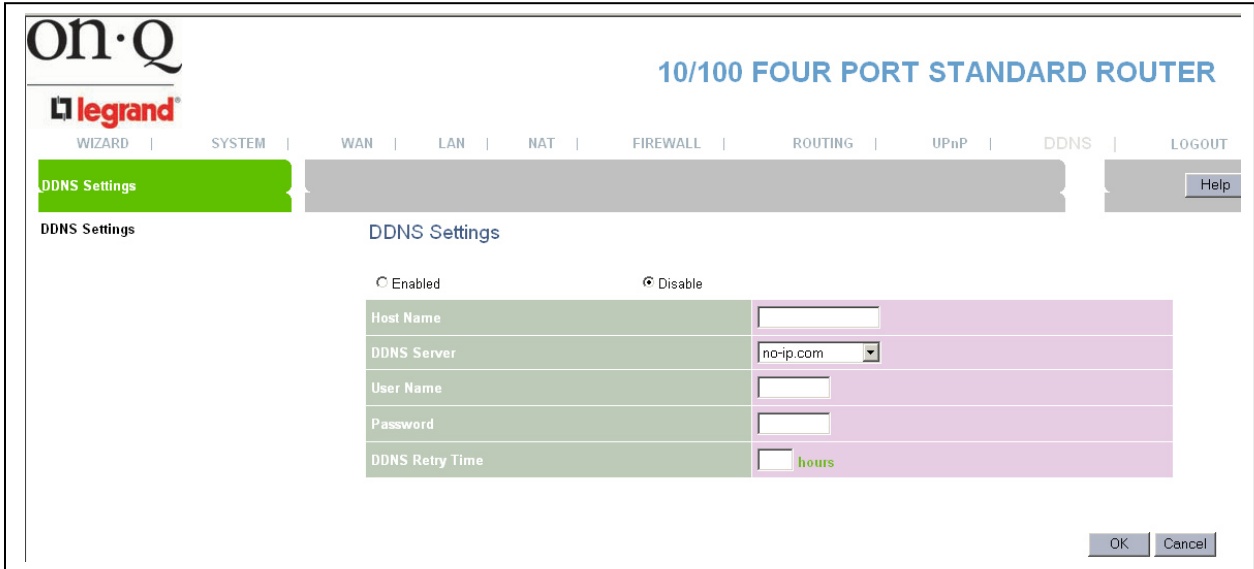


Figure 34

H. DDNS Configuration

The “DDNS” selection (Dynamic Domain Name Service) allows you to map the static domain name to a dynamic IP address. You must get an account, password and your static domain name from the DDNS service provider (see **Figure 35**).



The screenshot shows the on·Q router configuration interface. At the top, the text "10/100 FOUR PORT STANDARD ROUTER" is displayed. Below the on·Q logo, there is a navigation menu with options: WIZARD, SYSTEM, WAN, LAN, NAT, FIREWALL, ROUTING, UPnP, DDNS, and LOGOUT. The "DDNS" option is highlighted in green. Underneath, the "DDNS Settings" section is active, showing a "DDNS Settings" heading. There are two radio buttons: "Enabled" (unselected) and "Disable" (selected). Below this, there are five input fields: "Host Name" (text box), "DDNS Server" (dropdown menu showing "no-ip.com"), "User Name" (text box), "Password" (text box), and "DDNS Retry Time" (text box with "hours" label). At the bottom right, there are "OK" and "Cancel" buttons.

Figure 35

VI. Logging Out

Select “LOGOUT” at the top of the page when you are done with router configuration. The screen shown in **Figure 36** will tell you that you have successfully logged off and remind you to close your browser window.

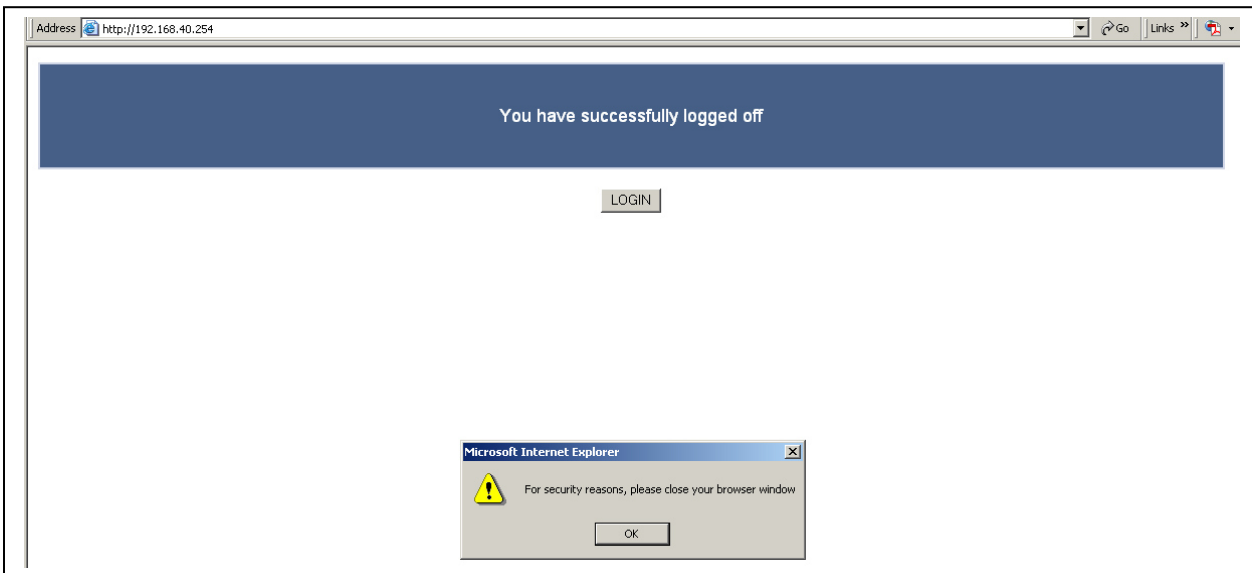


Figure 36

Glossary

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

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

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

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

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

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

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

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

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

`11111111.11111111.11111111.00000000`. Therefore sometimes a network mask can also be described simply as "x" number of leading 1's.

When both are represented side by side in their binary forms, all bits in the IP address that correspond to 1's in the network mask become part of the IP network address, and the remaining bits correspond to the host ID.

For example, if the IP address for a device is, in its binary form,

`11011001.10110000.10010000.00000111`, and if its network mask is,

`11111111.11111111.11110000.00000000`

It means the device's network address is

`11011001.10110000.10010000.00000000`, and its host ID is,

`00000000.00000000.00000000.00000111`. This is a convenient and efficient method for routers to route IP packets to their destination.



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

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

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

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

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

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

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

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

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

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

Subnet Mask: A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers (e.g. 255.255.255.0) configured like an IP address. It is used to create IP address



numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).

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

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

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

