NetComm®
Broadband Solutions

User Guide

NB750
Load Balancing Router

Contents

CHAPTER 1. INTRODUCTION

1.1 Overview

The Load Balancing Router provides two 10/100 Mbps Ethernet WAN ports and one 10/100 Mbps Ethernet LAN port. The WAN ports are used to connect to broadband modems, such as an ADSL modem or CABLE modem, so the user can download or upload data at high speed. The NB750 provides one LAN port to connect to a computer via a cable. You can also connect the LAN port to a HUB/SWITCH device to extend the amount of connection devices/users if necessary. Families with multiple PCs could share one ISP account to play games against each other through the NB750.

Important Features:

- Allows many users to use it with a single user account
- Web configuration tool
- Multiple DMZ Host (PPPoE, FIX IP)
- Multiple Virtual Server
- Multiple NAT function
- Protocol Route Control (IP Binding Function, by IP & port number)
- Protocol Bandwidth Control (by application protocol port number)
- IP/URL Blocking
- User Bandwidth Control Function (by user IP address)
- H.323 VoIP ALG included
- Remote Configuration through Internet
- System Log
- Mail Alert
- Firewall
- Backup / Restore router configuration file from PC
- Display real time router configuration parameter
- Out-Bound Firmware

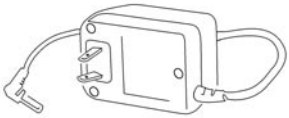
Package Contents:

Your NB750 package includes the following items:

- 1 x NB750 Load Balancing Router

- 1 x CD-ROM containing the NB750 user's manual

- 1 x AC Adapter suitable for your electric service



- 1 x Network cable with RJ-45 connectors for LAN connection

When you open your package, make sure all of the above items are included and not damaged. If any components are missing or damaged, please contact NetComm immediately.

1.2 Hardware

1.2.1 Front Panel View

LED Indicators

LEDs	Indication	
POWER	On	Power on
	Off	Power off
ALARM	On	System not working
	Off	Normal operation
WAN1 / WAN2	On	Linked
	Flash	Data Transmitting
	Off	Disconnected or undetected
LAN 10M/100M	On	Linked
	Flash	Data Transmitting
	Off	Disconnected or undetected

1.2.2 Rear Panel View

FG:	Ground connection.
DC 5V:	Connecting to AC adapter.
WAN:	The NB750 provides two RJ45 type WAN ports for connection to broadband transmission equipments such as ADSL or CABLE Modem via a RJ45 cable.
LAN:	The NB750 provides one RJ45 type LAN port for connection to your network devices such as Hub/ Switch via the RJ45 cable. Using a HUB/Switch will allow more PCs to connect with the NB750.
Factory Reset:	Should the NB750 incur a system crash, press the Factory Reset button to reload the factory default value or reset it back to the latest configuration file.

1.2.3 Hardware Load Default

If you need to reset the NB750 to factory default values or load the latest configuration file, please follow the description step by step to load the factory default settings or latest configuration file for the device. Please be careful. Do not press the Factory Reset button unless you want to clear the current data.

1. Plug in the power cord and then hold down the Factory Reset button for 2 seconds.
2. Release the Factory Reset button.
3. The NB750 will load the default settings or latest configuration file and complete a self-test.
4. This completes the reset procedure.

1.3 Features

1.3.1 Software Feature

In order to meet different application usage, you can configure this router in any of three different working modes:

1. Gateway mode
2. Router mode
3. Basic NAT mode (NAT Table up to 5000 entries)

Each working mode includes different features:

Function Mode	LAN to WAN Throughput	NAT Function	DMZ, DoS Virtual Ser IP Filtering	IP Domain	PPPoE Dial up
Gateway Mode	Good	Yes	Yes	Legal To Illegal	Yes
Router Mode	Best	No	No.... (1)	Legal To Legal (4)	No
Basic NAT Mode (2)	Good	Yes	Yes…(3)	Legal To Illegal	Yes

(1) All NAT related functions will be disabled

(2) The purpose of this mode is to have both high through-put and NAT function.

(3) Simple NAT functions available

(4) Simulates a multi-LAN port router

Working Mode / Function List

Function	Mode		
	Gateway	Router	Basic NAT
PPPoE/Dial Up DSL Type	X		X
Local IP Filtering	X		
Remote IP Filtering	X		
Intrusion Security	X		
Dos Defense	X		
URL Filtering	X		
Remote Configure	X	X	X
Virtual Server	X		X
DMZ Host	X		X
Multi-NAT	X		X
IP Binding	X		X
Load Balance	X		X
Dynamic DNS	X		X
Mail Alert	X		X
Time Zone	X	X	X
System Log	X	X	X
Mac Address Clone	X	X	X
Configure Proxy	X		X
Routing protocol	X	X	X
DOD (PPPoE)	X		X
Bandwidth Usage Control	X		X
QoS	X		X

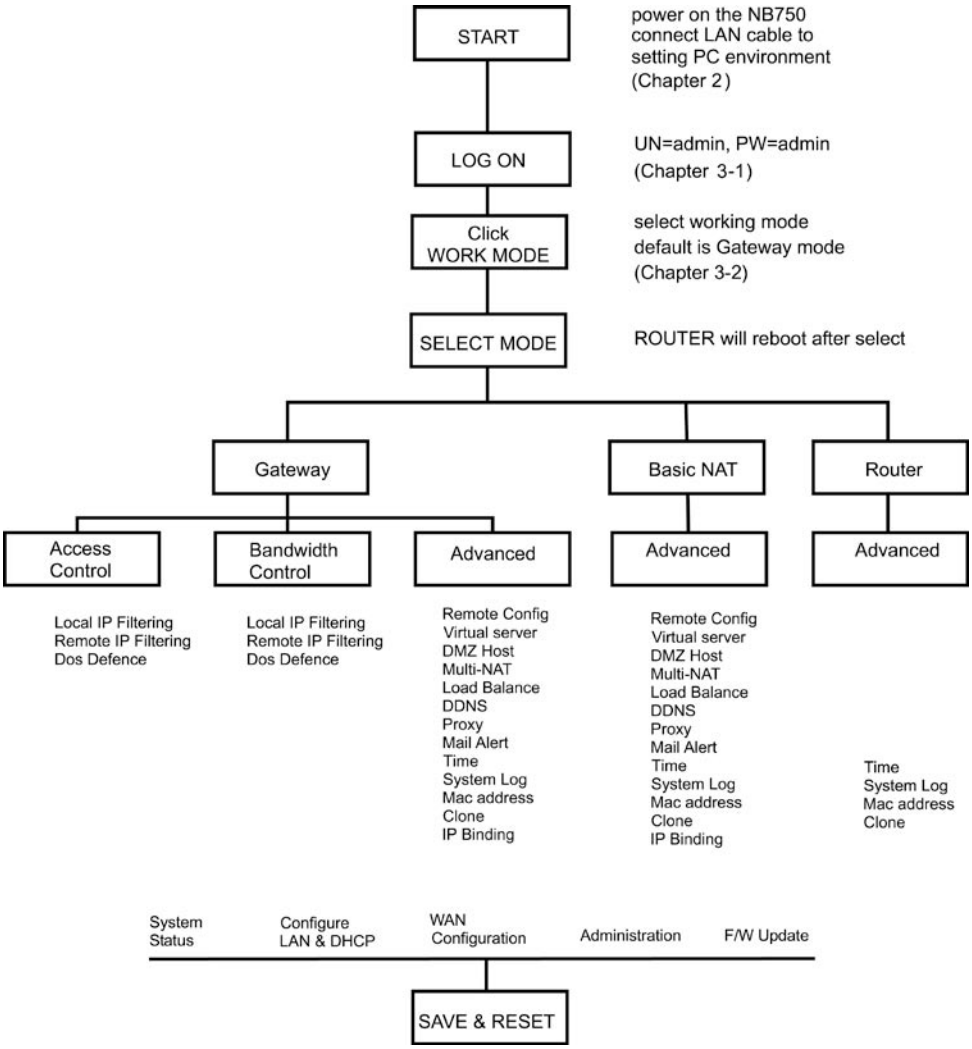
1.3.2 Factory Default Value

Function		Value		
		Default	Enable	Disable
Work Mode	Gateway	X		
	Router			
	Basic NAT			
System Status	Link Status		X	
	Data Monitor		X	
WAN Configure	Connect to	Internet		
	Health Check			X
	WAN Type	Dynamic IP		
	Schedule			X
Bandwidth Usage Control				X
Configure LAN & DHCP	DHCP server		X	
Routing Table	Static Route			X
	Dynamic Route			X
Access Control	Local IP Filtering			X
	Remote IP Filtering			X
	DoS Defense		X (Some items)	
	URL Filtering			X
Advance	Remote Config			X
	Virtual Server			
	DMZ Host			X
	Multi-NAT			X
	IP Binding			X
	DDNS			X
	Proxy			X
	Mail Alert			X
	Time Zone			X
	System Log		X	
	MAC Address Clone			X

Administration	Password			X
	Backup & Restore			X
	Load Factory Default	Load Default		
	Display		X	
	Save & Reset			X

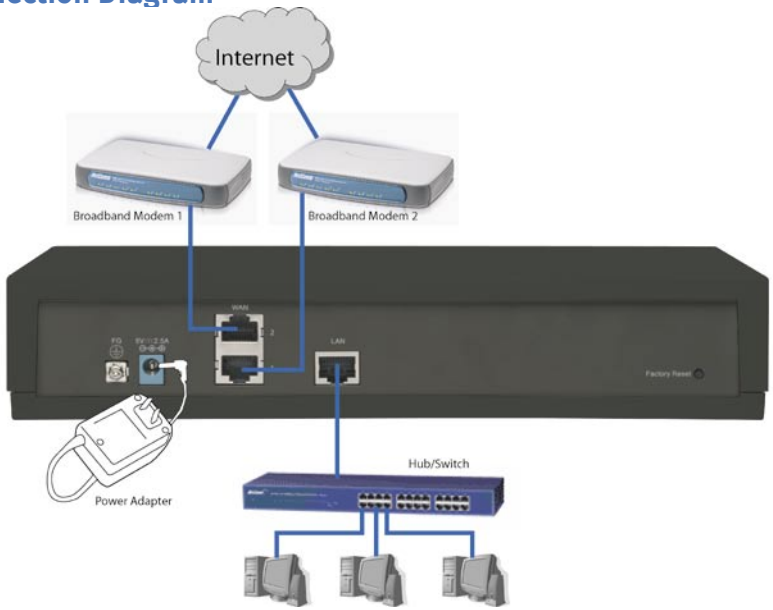
1.3.3 How to configure router

This equipment provides three working modes for various usages. In order to set the proper parameters in each function/mode, you can follow this flow chart before you start to configure the router.



CHAPTER 2. CONNECTION

2.1 Connection Diagram



The NB750 provides one LAN port connected to your network devices such as a PC, HUB or SWITCH via a RJ45 cable. Using a HUB/SWITCH allows more PCs to connect to the NB750. WAN ports are used to connect your ADSL or CABLE Modem to the broadband ISP.

For the RJ45 cable type, both WAN/LAN ports support the auto MDI/MDIX Function. You can choose to use either crossover or straight type RJ-45 cable.

2.2 Connection Procedure

1. Plug in DC power adapter to Router.
2. Connect the Router WAN port RJ45 modular jack to ADSL/CABLE Modem Ethernet port with the RJ45 cable.
3. Connect the Router LAN port RJ45 modular jack to HUB/SWITCH LAN port by RJ45 cable.
4. Connect PC LAN card port to HUB/SWITCH LAN port.
5. Connect FG to ground.
6. Plug in AC power cord to power source.

2.3 Prepare Computer TCP/IP Environment

This section provides instructions for configuring the TCP/IP (Network) settings on your computer to work with your NB750.

Windows® XP PCs

1. In the Windows task bar, click the **Start** button, and then click **Control Panel**.
2. Click on **Network & Internet Connections** icon. (Category mode only).
3. Click the **Network Connections** icon.
4. In the LAN or High-Speed Internet window, right-click on the icon corresponding to your network interface card (NIC) and select **Properties**. (Often, this icon is labelled **Local Area Connection**).
5. The Local Area Connection dialog box displays with a list of currently installed network items. Ensure that the check box to the left of the item labelled **Internet Protocol (TCP/IP)** is checked. Select **Internet Protocol TCP/IP** and click on **Properties**.
6. In the Internet Protocol (TCP/IP) Properties dialog box, click the radio button labelled **Obtain an IP address automatically**. Also click the radio button labelled **Obtain DNS server address automatically**.
7. Click **OK** twice to confirm your changes, and close the **Control Panel**.

Windows 2000 PCs

First, check for the IP protocol and, if necessary, install it:

1. In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then select **Properties**.
4. In the **Local Area Connection Properties** dialog box, select Internet Protocol (TCP/IP), and then click Properties
5. In the **Internet Protocol (TCP/IP) Properties** dialog box, click the radio button labelled Obtain an IP address automatically. Also click the radio button labelled Obtain DNS server address automatically.
6. Click **OK** twice to confirm and save your changes, and then close the **Control Panel**.

Windows Me PCs

1. In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Click on **View All Control Panel Options.**
3. Double-click the **Network** icon.
4. The **Network Properties** dialog box displays with a list of currently installed network components. If the list includes Internet Protocol (TCP/IP), then the protocol has already been enabled. Skip to step 10.
5. If Internet Protocol (TCP/IP) does not display as an installed component, click **Add**…
6. In the **Select Network Component Type** dialog box, select **Protocol**, and then click **Add**…
7. Select Microsoft in the **Manufacturers** box.

8. Select Internet Protocol (TCP/IP) in the **Network Protocols** list, and then click **OK**. You may be prompted to install files from your Windows ME installation CD or other media. Follow the instructions to install the files. If prompted, click **OK** to restart your computer with the new settings.

   Next, configure the PC to accept IP information assigned by the modem:
9. Follow steps 1 – 4 above..
10. In the **Network Properties** dialog box, select TCP/IP, and then click Properties. If you have multiple TCP/IP listings, select the listing associated with your network card or adapter.
11. In the **TCP/IP Settings** dialog box, click the radio button labelled **Obtain an IP address automatically**.
12. Click **OK** twice to confirm and save your changes, and then close the **Control Panel**.

Windows 95, 98 PCs

First, check for the IP protocol and, if necessary, install it:

1. In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network** icon.
3. The **Network** dialog box displays with a list of currently installed network components. If the list includes TCP/IP, and then the protocol has already been enabled. Skip to step 9.
4. If TCP/IP does not display as an installed component, click Add… The **Select Network Component Type** dialog box displays.
5. Select Protocol, and then click Add… The **Select Network Protocol** dialog box displays.
6. Click on Microsoft in the **Manufacturers** list box, and then click TCP/IP in the **Network Protocols** list box.
7. Click **OK** to return to the **Network** dialog box, and then click **OK** again. You may be prompted to install files from your Windows 95/98 installation CD. Follow the instructions to install the files.
8. Click **OK** to restart the PC and complete the TCP/IP installation.

   Next, configure the PCs to accept IP information assigned by the Modem:
9. Follow steps 1 – 3 above.
10. Select the network component labelled **TCP/IP**, and then click **Properties**. If you have multiple TCP/IP listings, select the listing associated with your network card or adapter.
11. In the **TCP/IP Properties** dialog box, click the **IP Address** tab.
12. Click the radio button labelled **Obtain an IP address automatically**.
13. Click **OK** twice to confirm and save your changes. You will be prompted to restart Windows.
14. Click **Yes**.

CHAPTER 3 CONFIGURATION

3.1 Log on

Type the default IP address 192.168.1.1 into the address bar of the IE browser. Then enter your user name and password. The default user name and password are both admin.

Figure 1 Login

Web configuration display includes:

- Welcome
- Work Mode
- System Status,
- WAN Configure
- Bandwidth Usage Control
- Configure LAN&DHCP
- Routing Table
- Access Control
- QoS
- Load Balance
- Advance
- Administration
- Firmware Update
- Save & Reset

The welcome page and various configuration menus are displayed overleaf.

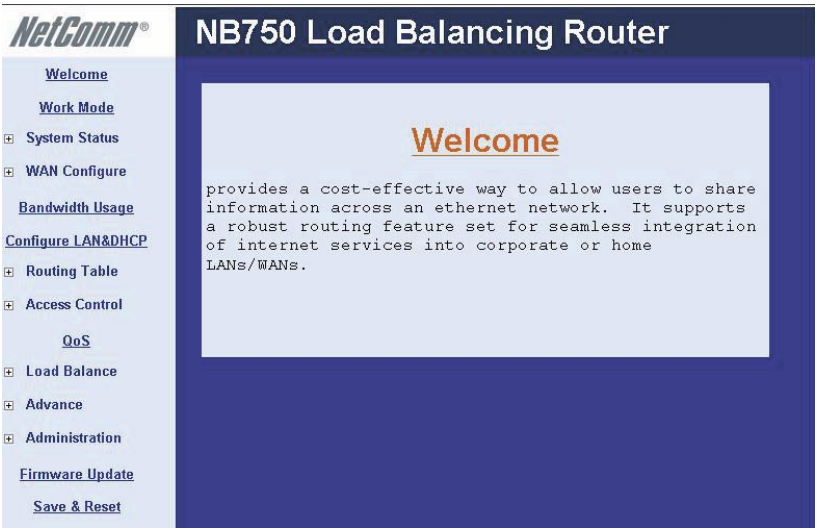


Figure 2 Welcome

You can select various functions listed in the left-hand side of the Welcome display. You are advised to change your password immediately. Advice on managing your password can be found in the section 3.12.1.

3.2 Work Mode

In order to meet different application usage, this router can be configured in three different working modes, as outlined below.

1. Gateway mode
2. Router mode
3. Basic NAT mode

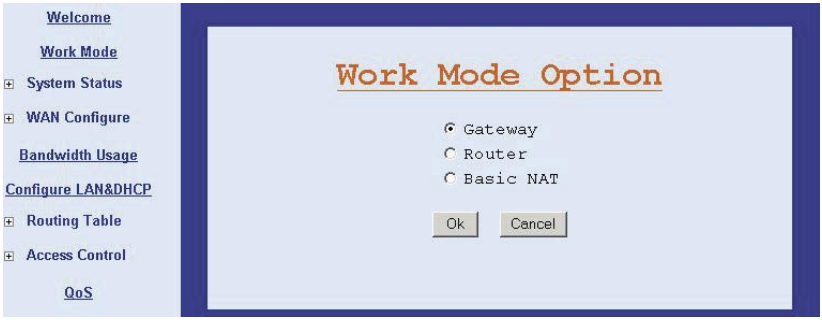


Figure 3 Work Mode

Each working mode includes different features:

Function Mode	LAN to WAN Through put	NAT Function	DMZ, Dos Virtual Ser IP Filtering	IP Domain	PPPoE Dial up
Gateway Mode	Good	Yes	Yes	Legal To Illegal	Yes
Router Mode	Best	No	No.... (1)	Legal To Legal (4)	No
Basic NAT Mode (2)	Good	Yes	Yes…(3)	Legal To Illegal	Yes

(1) All NAT related functions will be disabled

(2) The purpose of this mode is to have both high through-put and NAT function.

(3) Simple NAT function available

(4) Simulates a multi-LAN port router

Note: Once you have selected the “Work Mode” and click “OK”, you will need to power off the NB750 by unplugging the power adapter and then powering it on again for the settings to take effect.

Working Mode / Function List

Function	Mode		
	Gateway	Router	Basic NAT
PPPoE/Dial Up DSL Type	X		X
Local IP Filtering	X		
Remote IP Filtering	X		
Intrusion Security	X		
Dos Defense	X		
URL Filtering	X		
Remote Configure	X	X	X
Virtual Server	X		X
DMZ Host	X		X
Multi-NAT	X		X
IP Binding	X		X
Load Balance	X		X
Dynamic DNS	X		X
Mail Alert	X		X
Time Zone	X	X	X
System Log	X	X	X
Mac Address Clone	X	X	X
Configure Proxy	X		X
Routing protocol	X	X	X
DOD (PPPoE)	X		X
Bandwidth Usage Control	X		X
QoS	X		X

3.3 System Status

3.3.1 Link Status

You can get the following information in the Link Status window:

- LAN Status,
- WAN Status,
- Firmware Information,
- DHCP TABLE.

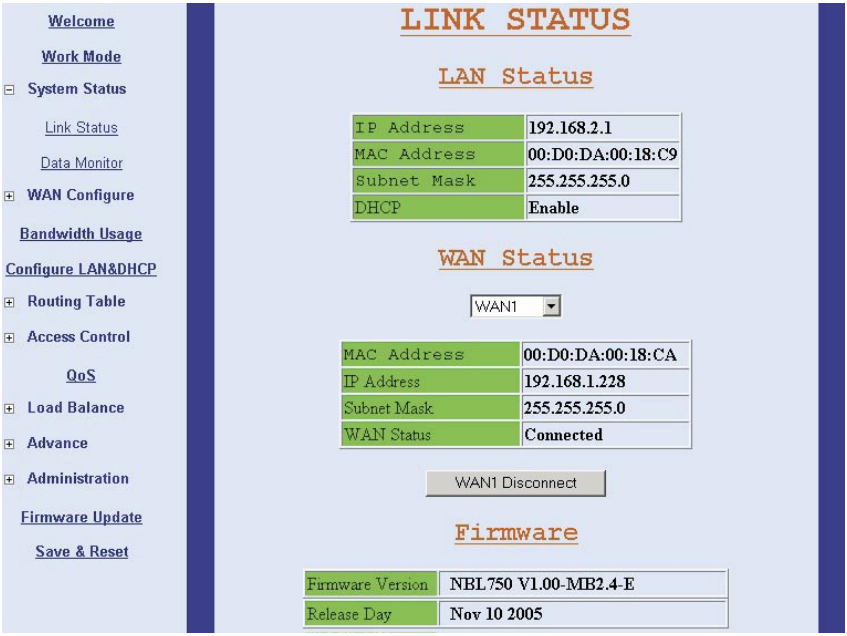


Figure 4 Link Status

LAN Status: Shows the information of MAC Address, IP Address, Subnet Mask and DHCP Status (Enable/Disable).

WAN Status: Shows the information of MAC Address, IP Address, and Subnet Mask on each or all WAN ports.

Firmware version: Version of software and its release date.

DHCP TABLE: Shows the information of MAC Address and IP Address.

3.3.2 Data Monitor

The Data Monitor window provides detailed packet transfer status. It shows Accumulated Data and Real Time Data for each WAN port.

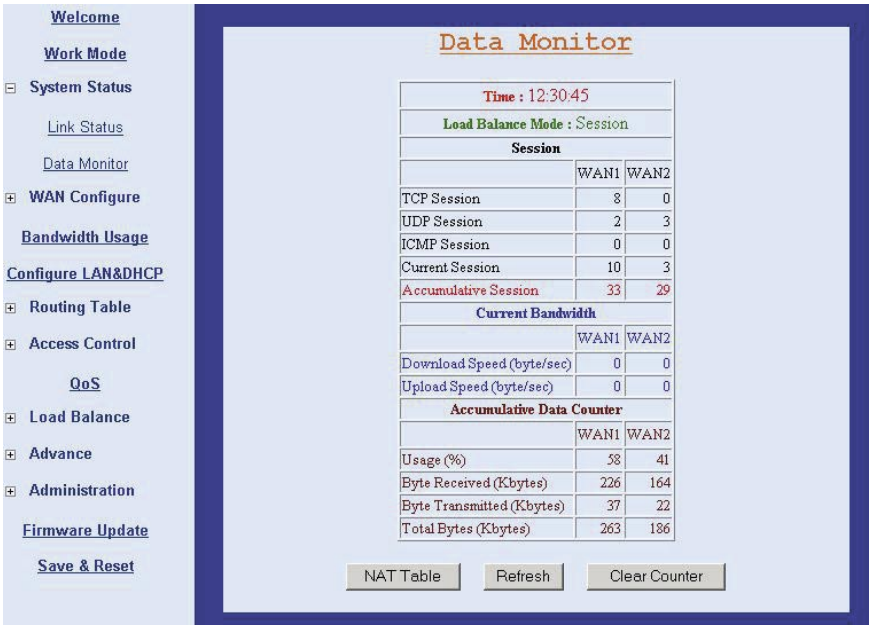


Figure 5 Data Monitor

Current Session

TCP Session:

UDP Session:

ICMP Session:

Total Session:

Current Bandwidth

Download Speed:

Upload Speed:

Accumulated packets in each WAN port

Data Counter

Usage: % of total packet sent through each WAN port

Example: WAN1 usage% = $\frac{\text{WAN1 total packets}}{\text{(WAN1+WAN2) total packets}}$ %

Byte Transmit:	Packets begin accumulating from power on. Click "clear counter" to reset the data counter. When the counter reaches its upper limit (4294967K) it will reset from 0 automatically.
Byte Receive:	Packets begin accumulating from power on. Click "clear counter" to reset the data counter. When the counter reaches its upper limit (4294967K) it will reset from 0 automatically.
Total Bytes:	Total packets transferred by each WAN port. Packets begin accumulating from power on. Click "clear counter" to reset the data counter. When the counter reaches its upper limit (4294967K) it will reset from 0 automatically.
NAT Table button:	List current user detail NAT data.
Refresh button:	Update data monitor table to display newest data
Clear Counter button:	Reset Data Counter. Data will accumulate again from zero.

3.4 WAN Configuration

Configure WAN1 / WAN2

There are several WAN functions in this display. You can configure functions to each WAN port separately.

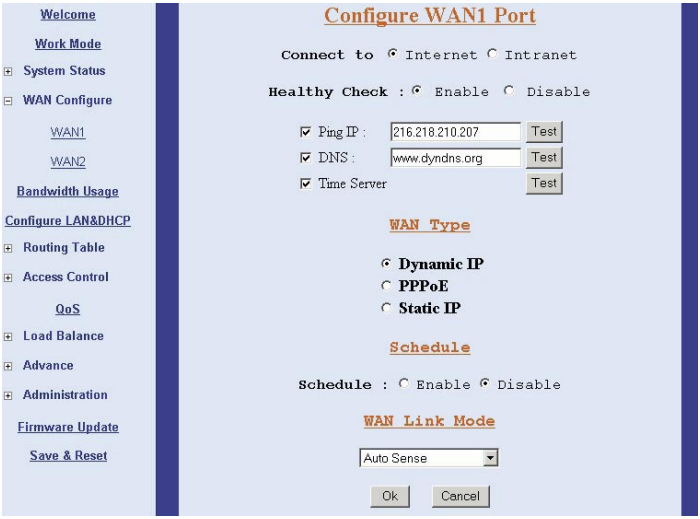


Figure 6 Configure WAN Port

Connect to:

- Internet: WAN port is connected to the Internet through ADSL/Cable modem
- Intranet: WAN port is connected to another router LAN port, working together with "Static Route" function. This can restrict IP packets to a specific route path.

Healthy Check

If the Health Check is enabled, the NB750 will check the ADSL link automatically to ascertain whether or not the link is alive. Should the link fail, the NB750 will switch packets to another existing link (except TCP packet). The router will switch back to the ADSL link as soon as possible.

The NB750 provides three methods to check the ADSL link. You can choose one or two methods:

- Ping IP: Enter a public IP address (e.g. 4.2.2.1) which the NB750 will ping.
- DNS: Enter a DNS IP address which the NB750 will ping.
- Time Server: Enter a Time Server IP address for the NB750 to ping.

Note: We advise you to select at least two methods to check the ADSL link in order to avoid the router taking the wrong action should the Internet Server be disabled.

If the Healthy Check function is disabled no link check will be carried out.

If “Time Server” does not exist, this function will be disabled automatically

Healthy Check can be set up to test three different destination IPs, in order to avoid the wrong operation (incase destination server fails).

WAN TYPE

There are three WAN types to select on each WAN port:

1. **Dynamic IP** connects to CABLE MODEM.

   Obtain an IP address from ISP automatically.

   Usually this is used to connect to the CABLE modem. You will not need to assign an IP Address. The NB750 will get the IP address for you automatically.

2. **PPPoE** (Gateway / Basic NAT Mode only) connects to Dial Up DSL

   Some ISPs require the use of PPPoE to connect to their service.

   Connect to the ISP via a dial-up connection. The ISP will assign a legal IP to you after the user ID and password have been confirmed and a connection made. (The user ID and password here are provided by your ISP.)

3. **Static IP** connect to Leased DSL

   ISP assigns you a static IP address.

   When using the leased line of ADSL the ISP will provide you the relative IP, Subnet Mask, Gateway and DNS. You need to indicate the static IP manually.

SCHEDULE

This function gives you 24/7 control of each WAN port link’s up/down time.

Start Time (hh: mm)

End Time(hh: mm)

- Using 00 ~23 to indicate Hours.
- Example 17:00 means 05:00 PM

Weekly: choose by day

Note: When the SCHEDULE function is enabled, the Line will be up/down following the timer set, whether the DOD function is enabled or not.

WAN SPEED: you need to enter the speed of each WAN port (in Load Balance Traffic Mode or Bandwidth Usage Control), otherwise the NB750 will not work properly.

WAN Link Mode:

You can choose the WAN port work mode with an ADSL modem

- Auto Sense
- 10Mbps Half Duplex
- 10Mbps Full Duplex
- 100Mbps Half Duplex
- 100Mbps Full Duplex

3.4.1 Dynamic IP Connect to CABLE MODEM

Gateway / Basic Mode: When choosing Dynamic IP, you only need to save this selection. After setting each parameter, reboot the NB750.

Router Mode: For Intranet use only, the NB750 can obtain IP(s) from the DHCP server automatically.

3.4.2 PPPoE/Dial Up DSL Type

PPPoE/Dial Up DSL is available in Gateway / Basic NAT Mode only. Select [PPPoE /Dial Up DSL] and you will need to enter the ID and Password. You may also need to input the Service Name if the ISP requires it. Max Idle Time is used to disconnect the ADSL connection automatically after the idle period you define. The units are in minutes and the default is 0. This default value lets the NB750 remain connected all the time unless disconnected by the user manually, or by the ISP. If you define the period as 3, the NB750 will automatically be disconnected after idling for 3 minutes.

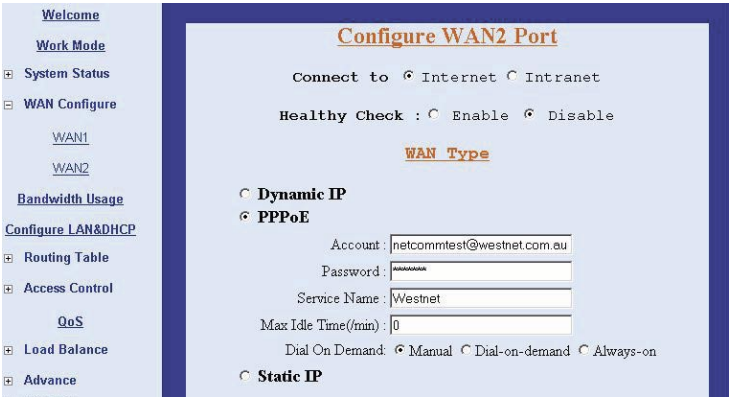


Figure 7 PPPoE

Account: User Name. This is provided by the ISP and can be up to 40 characters.

Password: Again, this is provided by the ISP and can be up to 40 characters in length.

Max Idle Time: 0 = no check, check by minutes

Dial On Demand (DOD): Manual: You need to initiate WAN connection manually, by clicking the “WAN1 connect” or “WAN2 connect” button in “System Status” - “Link Status” menu. However, power up or reset can also initiate the WAN connection.

Dial-on-demand: Whenever a user is trying to access the Internet from a computer, the WAN port will start connection automatically if it is disconnected.

Always-on: The WAN port will try to establish the connection as long as it is disconnected, whether the port is in use or not.

3.4.3 Static IP/Leased DSL Type

If you select [Static IP/Leased DSL], you will need to input the IP Address, Subnet Mask, Primary DNS, Secondary DNS and Gateway provided by your ISP. The picture below is an example of a static IP's settings.

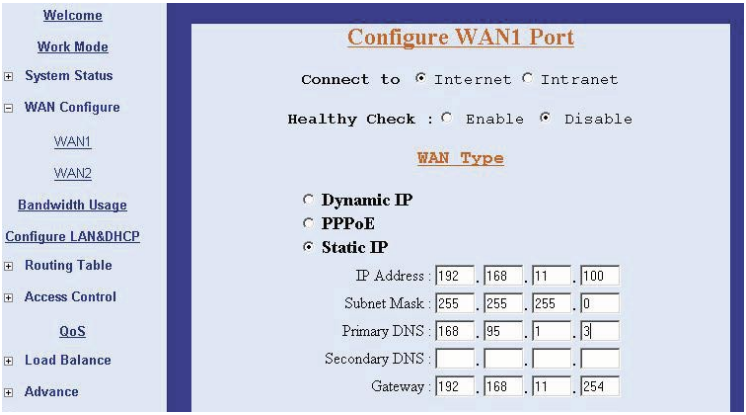


Figure 8 Static IP

3.5 Bandwidth Usage Control

This useful function allows you to control the WAN port bandwidth usage for each protocol. Take FTP for example. When someone uses FTP to transfer a file, it will occupy a heavy bandwidth. By using this function, you can limit dedicated application bandwidth.

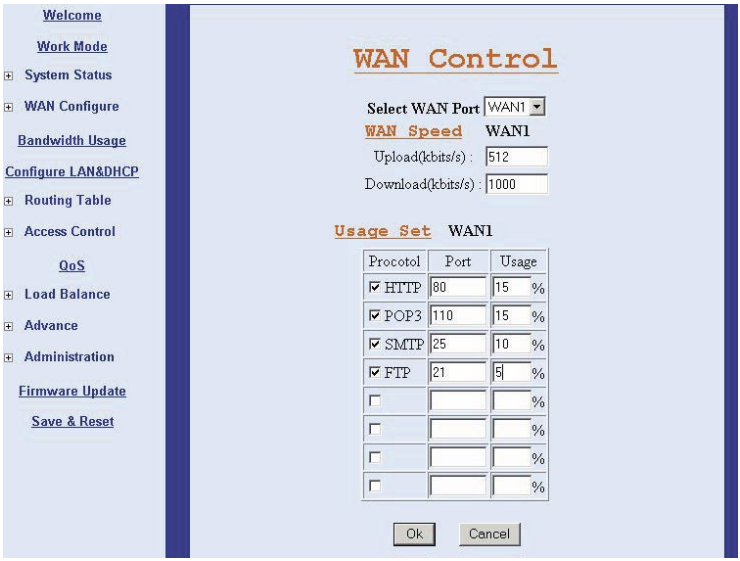


Figure 9 Bandwidth usage Control

Example:

In the following display, FTP, HTTP & Mail bandwidth will be limited by a certain percentage. This router provides three commonly used protocols in the table.

Just fill in the port number and % usage for each application.

Protocol: Name of protocol data packet will be limit.

Port: Protocol port number

Usage: % of WAN speed.

The percentage of Protocol usage cannot exceed 100% for each WAN port. The NB750 provides another 4-user self-defined port number for easy use. Just fill in the port number for each protocol.

3.6 Configure LAN&DHCP

This function configures the LAN ports

- IP address
- Subnet Mask
- DHCP.

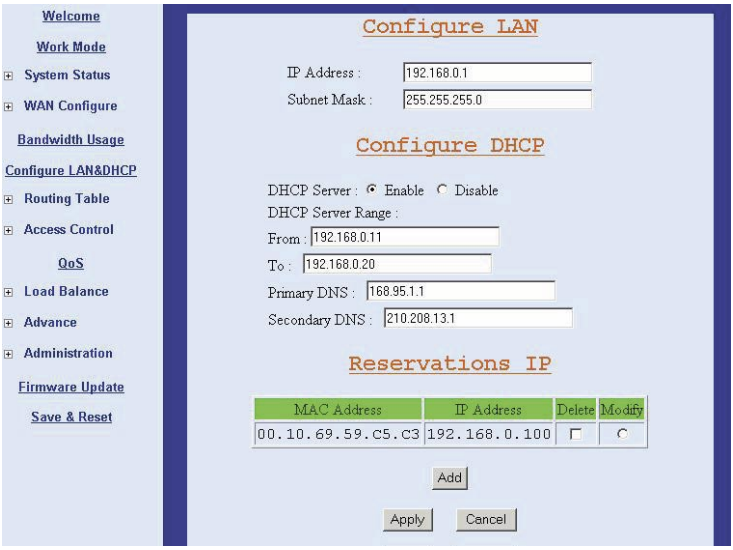


Figure 10 LAN and DHCP Configuration

You can choose whether or not to use a Dynamic Host Configuration Protocol (DHCP) server. DHCP allows the NB750 to dynamically assign IP addresses to network devices. Dynamic IP assignment alleviates the need for the network administrator to maintain and monitor IP address assignments. It also simplifies IP use because the IP addresses are automatically and dynamically assigned when a station powers-on. You will need to indicate the range of DHCP servers and DNS addresses if you enable DHCP server function.

You can also assign some IP's to specific computers. You need to enter the name (MAC address) of the network card installed in your computer to assign a particular IP to it. Enter the relative values and then click ADD.

- When you enable the DHCP Server in "From", "TO" field, you can reserve up to 253 IP address to DHCP server.
- Fill in local DNS Server IP address in "DNS Address" field. You can ask your local ISP to provide this information.

3.7 Routing Table

3.7.1 Configure

Static Routing:

This function can be manually defined by users as the only path to the destination. Users can configure the static routing path to the NB750.

Example:

There is one PC with two interfaces in this area. One interface is connected to the NB750 (Domain A), and the other connected to another Server (Domain B). Users need to set the static routing path in the NB750 to let it recognize that there is another domain in this area. These settings enable the packets from Domain A to reach the destination in Domain B via the gateway configured in the NB750.

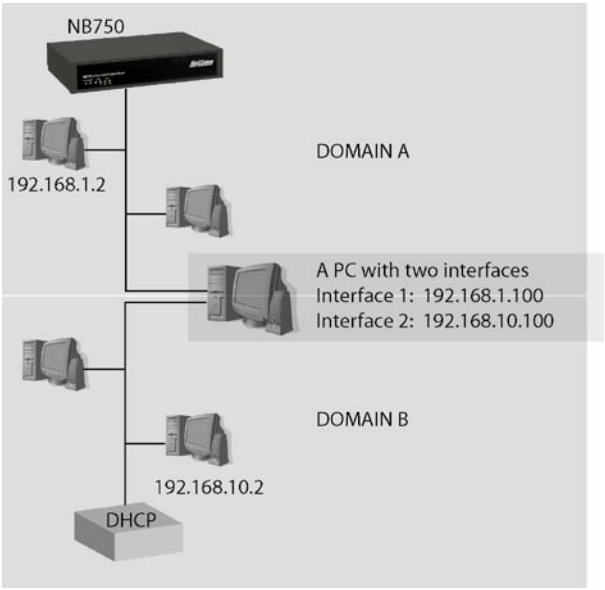
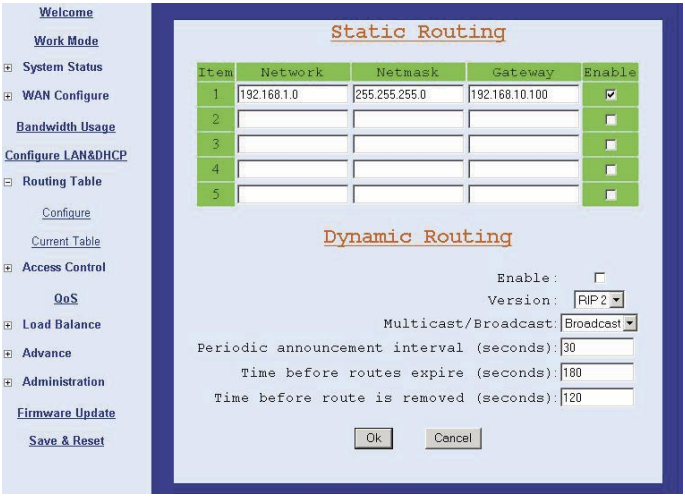


Figure 11 Example

Dynamic Routing:

Dynamic Routing allows the NB750 to learn of the path to the destination by receiving periodic updates from others. The protocol used in communication between routers is RIP 1 and 2 (Routing Information Protocol). RIP1 supports only broadcast mode while RIP2 supports broadcast and multicast modes.



3.7.2 Current Table

This display shows the valid routing paths in the NB750. Users can view the information about current routing paths.

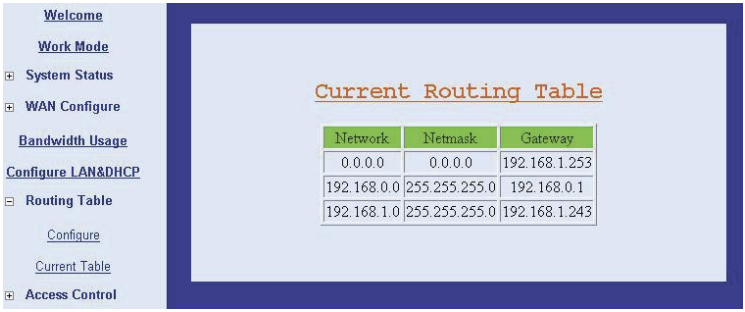


Figure 13 Routing Table

3.8 Access Control

3.8.1 Local IP Filtering (Gateway Mode only)

The NB750 allows you to restrict access by either blocking or allowing outgoing IP packets by protocol (port number).

You may restrict some IP's to perform limited protocols or allow them to execute partial protocols. The first thing you have to know is the port numbers and their usages.

Local IP Filtering allows you to set ten items where item 1 has the highest priority. In principle, the same IP should not be listed in different items. If an IP setting conflict occurs, the item with a higher priority would take precedence.

You can reserve certain IP addresses to particular users from "Configure LAN" display -> "Reservations IP" function. By using this function, users can have specified IP addresses matched to their computer NIC MAC address.

There are ten items in this function. You can allow or restrict specific IP(s) access to some port numbers.

Example 1, if you restrict the PC of IP 192.168.1.13-192.168.1.15 to access HTTP, the settings are:

Item 1:	Enable
IP address:	192.168.1.13-192.168.1.15
Port Number:	80
Filter entry:	Block

Example 2, if you allow the PC of IP 192.168.1.16-192.168.1.18 to access FTP only, the settings are:

Item 2:	Enable
IP address:	192.168.1.16-192.168.1.18
Port Number:	21
Filter entry:	Allow

Example 3, if you allow the PC of IP 192.168.1.40, 192.168.1.56, 192.168.1.100-192.168.1.120 to access port 50, port53, port100-120 only, the settings are:

Item 3:	Enable
IP address:	192.168.1.40, 192.168.1.56, 192.168.1.100-120
Port Number:	50, 53, 100-120
Filter entry:	Allow

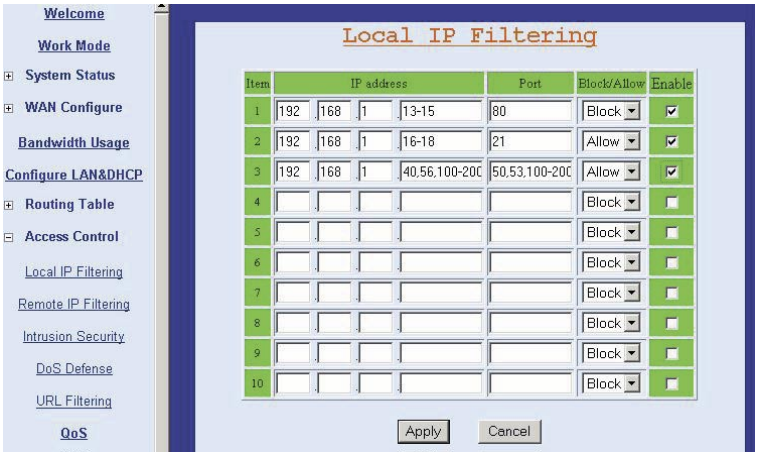


Figure 14 Local IP Filter

Note: Port and IP address can accept digits 0-9, "," and "-" only.

3.8.2 Remote IP Filtering (Gateway Mode only)

The NB750 allows you to restrict user access using the Remote IP Filter function. You may restrict some destination IP addresses.

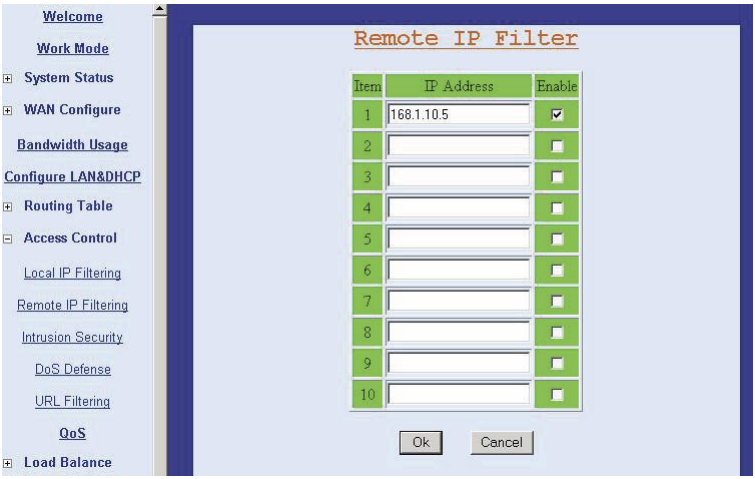


Figure 15 Remote IP Filter

IP Address: Destination IP address restricted from user.

Enable: Enable restrict function.

3.8.3 Intrusion Security

This feature can stop unauthorized accesses from your LAN to Internet.

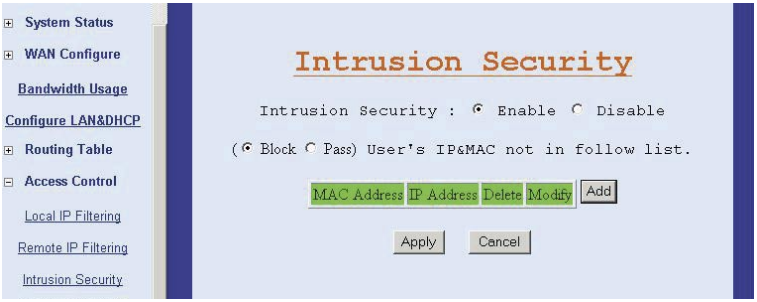


Figure 16 Intrusion Security

Tick Enable option to enable this feature. You can add users in the authorization list. Simply click Add button and then fill in the MAC address and IP address. The NB750 checks MAC addresses and IP addresses of any access. If both addresses match, the access is passed. If the MAC address or IP address are not on the list or they do not match, you have two options: you can block it or let it pass through by ticking the Block or Pass option.

After configuration, click Apply button to submit the settings.

3.8.4 DoS Defense

The NB750 also provides a DoS (Denial of Service Defense) function to protect your network servers, hosts, routers and other devices from mass data transmission attacks. The default value in the display is the optimal parameter for the NB750.

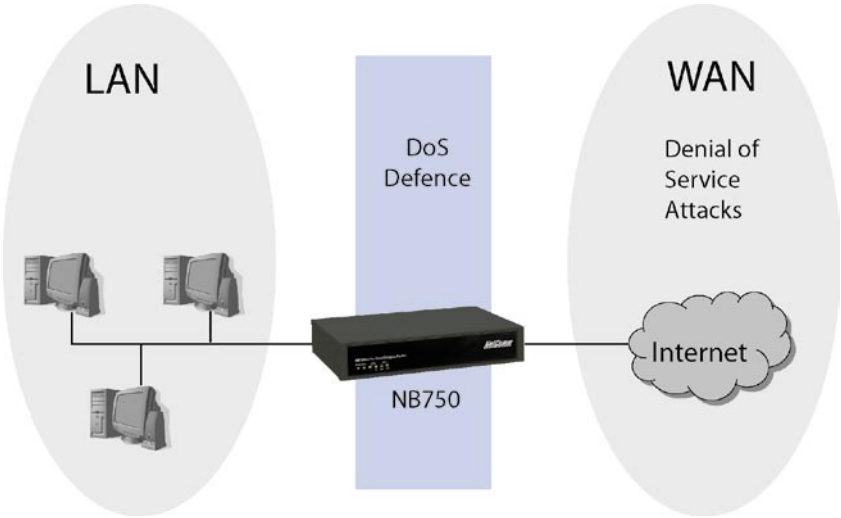


Figure 17 How DoS Works

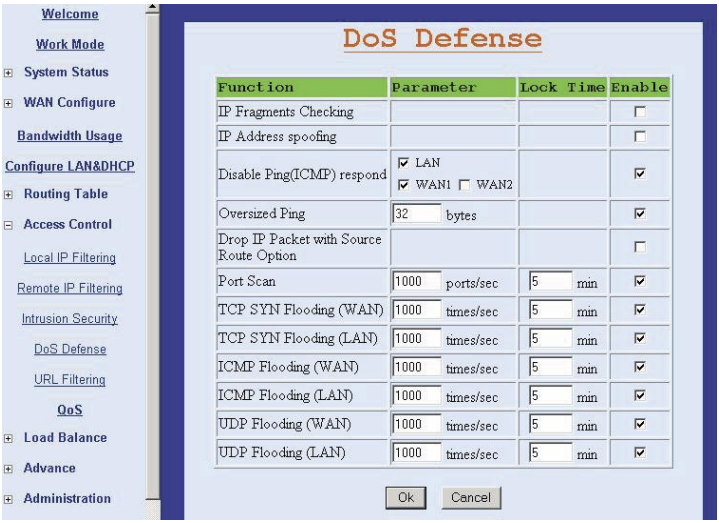


Figure 18 DoS Defense

* Some viruses use the "PING" command to attack a network. The NB750 can be defined to accept or reject the "PING" command from WAN or LAN.

Function	Description
IP Fragments Checking	Checking the IP fragments. When it detects that someone from WAN side is trying to attack your network using overlap IP fragments, this function will identify these packets and drop them.
IP Address spoofing	Finding out whether the source addresses and destination addresses are legal IP's or not. If they are illegal IP's or multicast addresses, this function will drop these packets.
Oversized Ping	Dropping the packets of "ping" which exceed the size you set. The default value is 32 bytes. Drop IP Packet with Source Route Option - Packet is dropped when it contains source route option(s) in its IP.
Port Scan	When an IP from the Internet tries to scan the IP of the NB750 up to 10000ports/sec (default value), this function will drop all the packets from this IP within 5 minutes (default value).
TCP SYN Flooding (WAN)	When a destination address and destination port of the NB750 receives TCP SYN packet from WAN over 10000 times (default value) in one second, the NB750 will close this address and port for 5 minutes (default value) temporarily.

TCP SYN Flooding (LAN)	When an IP in LAN of the NB750 tries to send a TCP SYN packet over 10000 times (default value) in one second, the NB750 will close this source address for 5 minutes (default value) temporarily.
ICMP Flooding (WAN)	When a destination address of the NB750 receives ICMP from WAN over 10000 times (default value) in one second, the NB750 will close this address for 5 minutes (default value) temporarily.
ICMP Flooding (LAN)	When an IP in LAN of the NB750 tries to send ICMP over 10000 times (default value) in one second, the NB750 will close this source address for 5 minutes (default value) temporarily.
UDP Flooding (WAN)	When a destination address of the NB750 receives UDP from WAN over 10000 times (default value) in one second, the NB750 will close this address for 5 minutes (default value) temporarily.
UDP Flooding (LAN)	When an IP in LAN of the NB750 tries to send UDP over 10000 times (default value) in one second, the NB750 will close this source address for 5 minutes (default value) temporarily.

3.8.5 URL Filtering

Besides restricting users by local/destination IP, the NB750 also provides you with access restriction for users by URL. You may restrict some URL addresses that are not allowed to be reached.

Figure 19 URL Filtering

Keyword:	Destination URL name containing this keyword will be filtered out.
Enable:	Enable restrict function.

3.9 QoS

With this function, you can set up USER BANDWIDTH with a Maximum & Minimum bandwidth value.

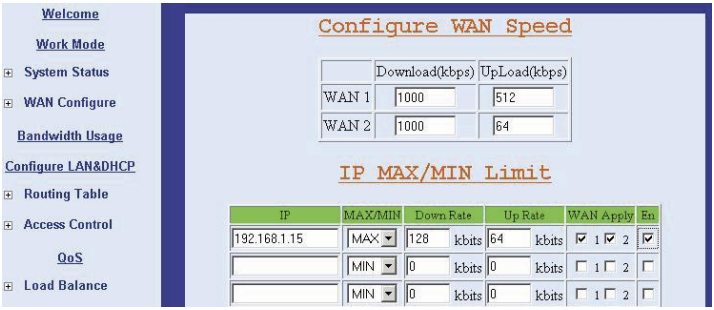


Figure 20 QoS

Configure WAN Speed

The WAN speeds must be configured for the QoS configuration to take effect.

IP MAX/MIN Limit

The IP MAX/MIN Limit allows you to manage bandwidth allocation for users.

IP: IP address of specified user.

MAX: Bandwidth limitation to this user.

MIN: Minimal Bandwidth kept for this user before allocating any bandwidth from this user to others.

Down Rate: Download speed.

Up rate: Upload speed.

WAN Apply: Which WAN you want the allocation to use. (Do not use this option to specify which WAN to use for this user.)

3.10 Load Balance

3.10.1 Mode

The NB750 provides three load balance work modes:

Session:	All the enabled WAN ports have the same (1:1) bandwidth rate.
Weight round robin:	Configure the WAN ports bandwidth rate manually.
Dynamic Traffic:	The NB750 will find the lowest loading WAN port to transmit and receive data automatically.

Session mode:

When choosing this mode, the NB750 will assign each incoming session to each WAN port one by one, no matter what the traffic loading on each WAN port.

Figure 21 Session Mode

Weight Round Robin mode:

Configure the WAN ports bandwidth rate manually so that you can distribute each coming session from users to each WAN port, following the Rate that you assign in each WAN port.

The session in each WAN can be numbered from 1 to 100. The suggested number is 1 ~ 10. If rate is 1:1 for each WAN port, the NB750 function will act like Session mode

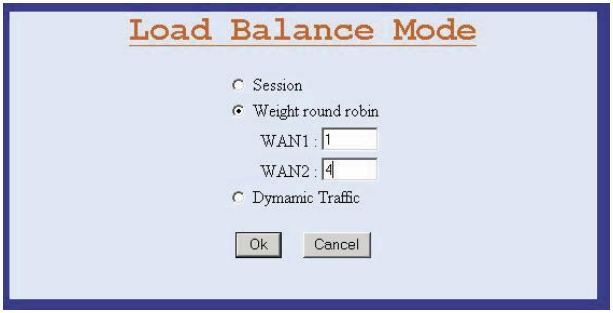


Figure 22 Weight Round Robin Mode

Dynamic Traffic Mode:

The NB750 will find the lowest loading WAN port to transmit and receive data automatically. You need to enter the correct ADSL/CABLE WAN speed. The NB750 checks the available bandwidths in all WAN ports periodically then assigns the next session to a WAN port according to current situations and the speed settings in all WANs.

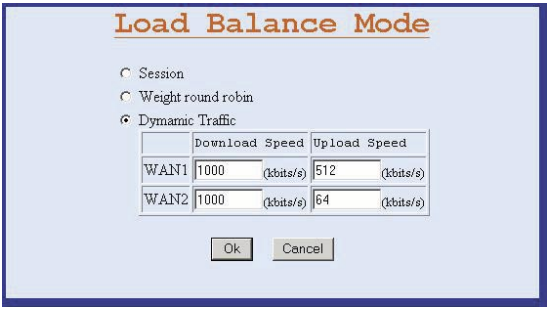


Figure 23 Dynamic Traffic Mode

3.10.2 Special Application

Some Internet WEB servers do not grant access to multi WAN addresses. These WEB servers may also use dynamic IP addresses. In this case, the NB750 can let you define a dedicated port number to go to a dedicated WAN port. The dedicated port is used to access these special WEB Servers.

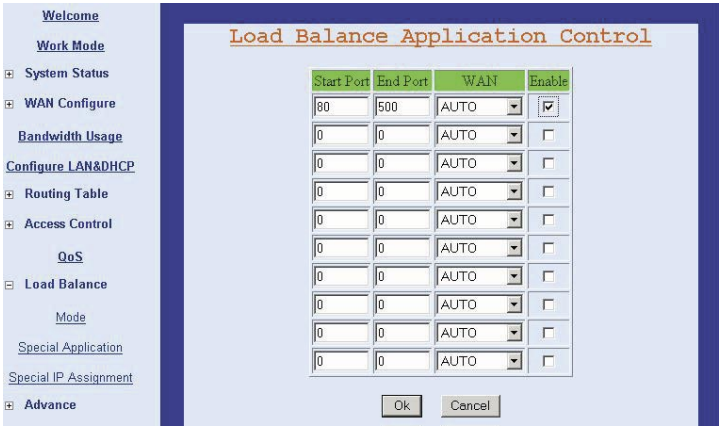


Figure 24 Special Application

3.10.3 Special IP Assignment.

The NB750 can let you to define a dedicated IP address (destination IP address or Source IP address) to go to a dedicated WAN port.

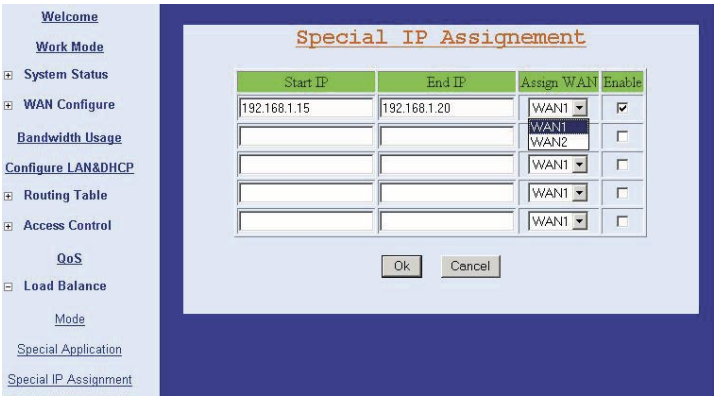


Figure 25 Special IP Assignment

3.11 Advance

3.11.1 Remote Configure

The NB750 can be managed from either local computers or remotely via the Internet. If enabled, the “remote configure” allows the NB750 web-based interface to be accessed by a specific IP address over the Internet. If it is not enabled, access is only available to computers on the LAN.

To access the NB750 from the LAN: Type 192.168.1.1 in the URL field of your browser.

To access the NB750 from the Internet: Type the WAN port IP address in the URL field.

The NB750 provides easy access to the Internet via “Dynamic IP” & “Dynamic port”.

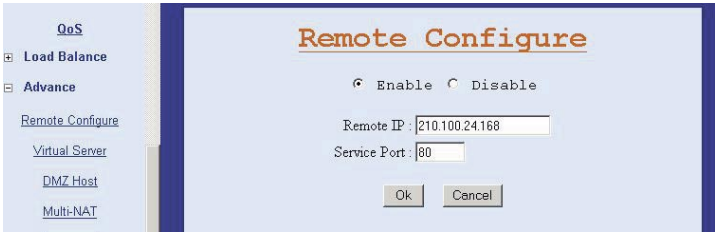


Figure 26 Remote Configuration

Remote IP: specific dedicated PC can remotely access the NB750

- Leaving these fields blank will allow access by any PC.
- Entering a specific IP address means the PC can only access that address remotely.
- The address must be an Internet IP address.

Remote Port: The port number used when connecting remotely.

Example: If the local user

- Enables the remote configure function
- Remote port is 80 (default is 80, can be different port number)
- Remote IP is blank.
- The NB750 WAN port IP is 110.111.112.1

When accessing the NB750 web configure remotely, the remote user only needs to enter http:// 110.111.112.1:80

3.11.2 Virtual Server / VPN Pass Through /ALG options

The NB750 supports:

- VPN Pass Through, such as IPSEC/PPTP
- H.323 ALG. VoIP Gateway can be connected directly to this router LAN port, and opened by the corresponding VoIP port number.

Figure 27 ALG Options and Virtual Server

You may have FTP, MAIL, VPN or other servers on your LAN. If you would like to allow global users to access some servers providing special services on your LAN, this function can help you to do this.

The NB750 includes a global port & local port mapping function. You can easily configure an internal server with the same port number mapping on to a WAN IP with a different port number.

Global port: WAN virtual protocol number

Global IP: WAN IP

Local port: Used by internal server port number

Local IP: Local server IP address

For multi-wan port router, no matter which data packet is coming in from which WAN port (WAN IP address), the NB750 will check the incoming data port number only.

For example:

Global port number 1021 map to local server IP 192.168.1.10 port 21

Global port number 8080 map to local server IP 192.168.1.10 port 80

Global port number 2323 map to local server IP 192.168.1.25 port 23

Global port number 1100 map to local server IP 192.168.1.13 port 21

You can also configure a global port number 1022 map into local server IP 192.168.1.20 port 21. Some port numbers in the local server have different global port numbers.

To use VPN Pass-Through function, you need to configure the following port number in a Virtual Server Table List.

Protocol	**Port Number**
PPTP	1723
IKE (IPSec)	500

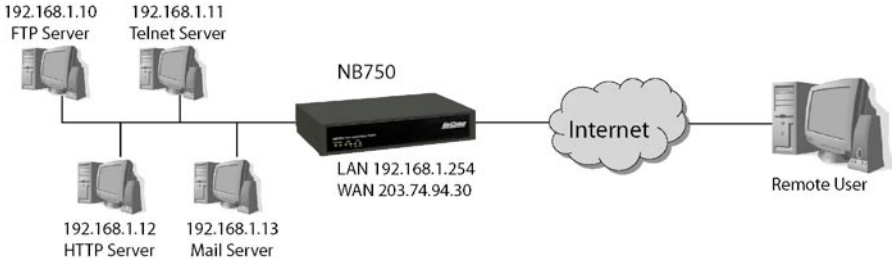


Figure 28 VPN Pass-Through Example

Example:

Supposing you want to have four servers providing FTP, HTTP, Mail and Telnet services, you must enter four virtual servers and enable them.

If users key in ftp://203.74.94.30, the NB750 will send the data of FTP protocol to the server of 192.168.1.10.

If users use telnet software to connect to203.74.94.30, they will connect to the server of 192.168.1.11.

If users key in http://203.74.94.30, the NB750 will send the data of HTTP protocol to the server of 192.168.1.12.

If users use email to connect to 203.74.94.30, they can receive the mails in the Mail server of 192.168.1.13.

3.11.3 DMZ Host

The Demilitarized Zone (DMZ) function provides a way for public servers (Web, e-mail, FTP, etc.) to be visible to the outside world (while still being protected from DoS (Denial of Service) attacks such as SYN flooding and Ping of Death). These public servers can still be accessed from the secure LAN.

By default the firewall allows traffic between the WAN and the DMZ, traffic from the DMZ to the LAN is denied, and traffic from the LAN to the DMZ is allowed. Internet users can have access to host servers configured in DMZ Host list but not access the LAN, unless special filter rules allowing access were configured by the administrator or the user is an authorized remote user.

It is highly recommended that you keep all sensitive information off of the public servers. Store sensitive information in computers on LAN.

If you would like to grant remote users the right to access one of your computers on LAN to perform some actions such as Internet games, you must enable the function of DMZ. When remote users access your legal IP(s), Broadband Router will transmit these packets to the corresponding virtual IP(s).

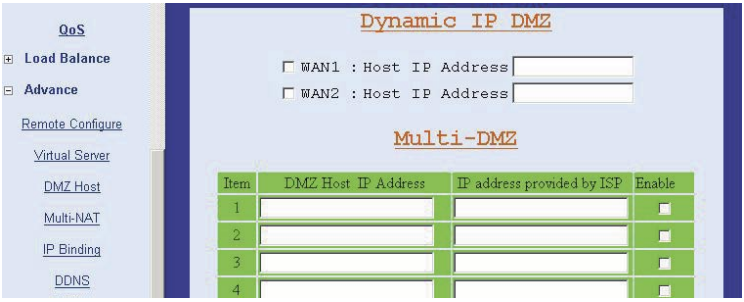


Figure 29 DMZ Host

Dynamic IP DMZ

When a WAN port IP is assigned by an ISP and obtained by PPPoE or Dynamic IP, you can use this section to specify the DMZ host disregarding the exact WAN IP address. Tick the WAN port option and fill in the IP address of the DMZ host inside the network, the NB750 will map the corresponding WAN IP to the internal DMZ host automatically. When a remote computer wants to access the internal LAN through this WAN, the port number not specified by Virtual Server Host will be mapped into this internal DMZ host. For example, if your WAN1 uses a PPPoE connection to obtain a public IP address, the NB750 will let a data packet with the destination address pointing to WAN1 pass through into the DMZ Host when the port number of the packet does not exist in Virtual Server Host table.

Multi-DMZ

If you use a fixed WAN IP address assigned by your ISP, you can use this section to specifically assign the WAN IP address to a corresponding DMZ host. If you own several legal WAN IPs, you can assign which WAN IP corresponds to which IP on your LAN. This assignment will allow most protocols to access the assigned IP on the LAN. The following figure is an example.

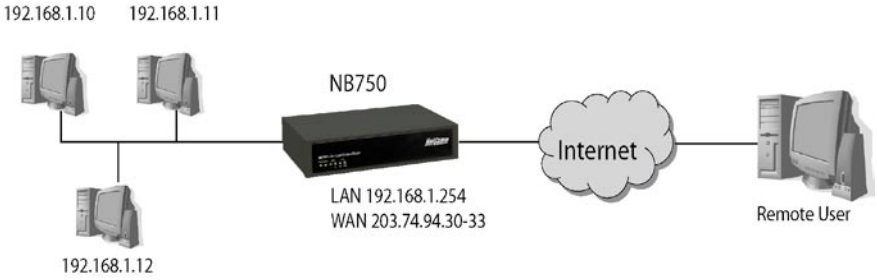


Figure 30 Multi-DMZ example

3.11.4 Multi-NAT

Multi-NAT function allows you to configure multiple LAN IP Domain to each WAN port (Total 10 LAN IP can be defined). After configuring multiple NAT functions, it will act like you have a virtual router connected to the NB750 LAN port and then all traffic between each LAN IP domain will send and receive through the NB750. It will provide following benefit:

- restrict broadcast storm in single IP domain;
- the NB750 can check each packet with DoS function enabled.

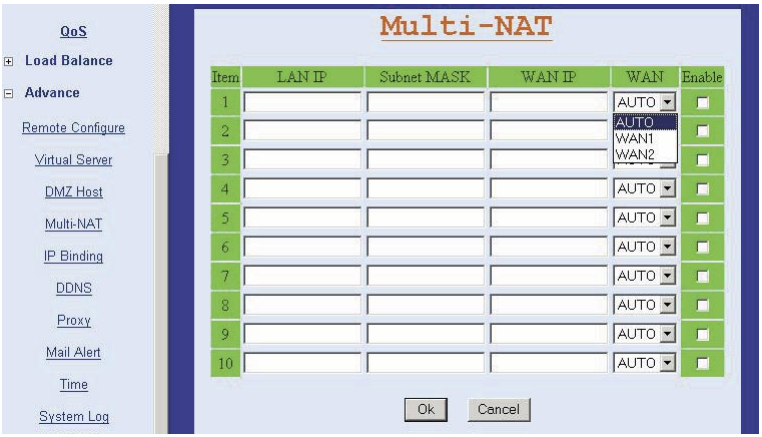


Figure 31 Multi-NAT

LAN IP: Separated LAN IP domain.

Subnet Mask: Mask for IP domain.

WAN IP: Specific WAN IP addresses that match the LAN IP domain.

You can leave this field blank for PPPoE connection, or write down the specific WAN IP address, if WAN port defines multiple IP addresses on it (DMZ used)

Blank: The NB750 will send packet followed by WAN file selected.

WAN: WAN1, WAN2, AUTO

WAN1/2 The NB750 will route packet to correspond LAN/WAN

AUTO The NB750 will route packet follow by “load balance” - Function selected

3.11.5 IP Binding (Protocol Route Control)

Some Game Servers, SSL protocol users or Personal Servers require a special request for connection. These special requests include.

(1) Use special port number to perform specific function.

(2) Do not allow user to connect with multiple WAN IP address

Example:

When using the load Balance function to connect to the Server, the Server might respond with many login displays because each session has a different WAN port with a different IP address. The Server treats it like a different request.

By enabling this function, you can specify the IP packet to go through a dedicated WAN port to reach a dedicated destination server. They will show only 1 IP address. That means if the destination server address shows in this display, when a user wants to reach the destination server, the packet will only go through the dedicated WAN port. It cannot have the load balance function.

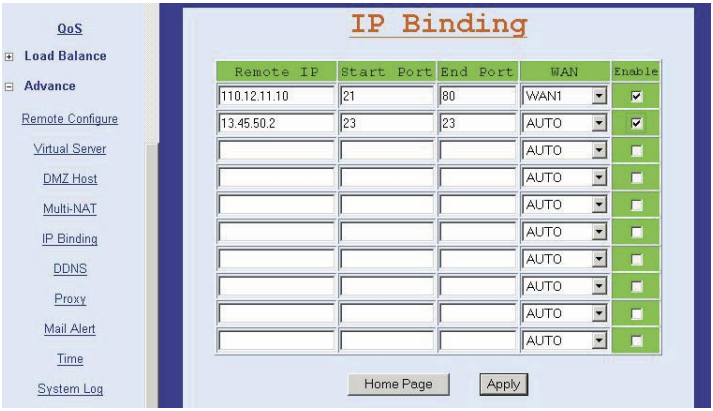


Figure 32 IP Binding

IP Address: The destination server IP address will be restricted to the dedicated WAN port.

Not having a specific destination Host IP address in this field, means the port number specific to the port number field will have limited packet transfers to the dedicated WAN port.

Start port: The packet of specific protocol port number will be restricted.

End port: The packet of specific protocol port number will be restricted

The protocol port number starts from 0 and goes to 65535. You can decide what range of port numbers will be restricted. If you enter:

0	0	all packets will be restrict to dedicated WAN port
blank	blank	all packets will be restrict to dedicated WAN port
80	80	only packet types from port 80 will be restricted, the other packet types will not be restricted to use load balance function.
1	21	only packet types from port 1 to port 21 will be restricted, the other types of packet will not be restricted to use the load balance function.
WAN:		Select WAN port to transfer packets for designated destination packet.

Example (1)

IP Address	Start port	End Port	WAN
210.3.1.23	1	65535	WAN1

All packets going to Internet Host with IP 210.3.1.23 will be restricted to dedicated WAN 1.

Example (2)

IP Address	Start port	End Port	WAN
210.3.1.23	23	23	WAN2

Packet type belonging to protocol 23 and going to Internet Host with IP 210.3.1.23 will be restricted to dedicated WAN2.

Example (3)

IP Address	Start port	End Port	WAN
Blank	21	21	WAN1

Packet type belonging to protocol 21(FTP) and going to any Internet Host will be restricted to designated WAN1.

3.11.6 DDNS (Gateway Mode / Basic NAT Mode only)

You need to apply for a free DNS domain name from www.dyndns.org. The NB750 will update the WAN IP address to DDNS's database once a WAN port is connected to the Internet if the DDNS function is enabled. Internet users can find the NB750 via this domain name.

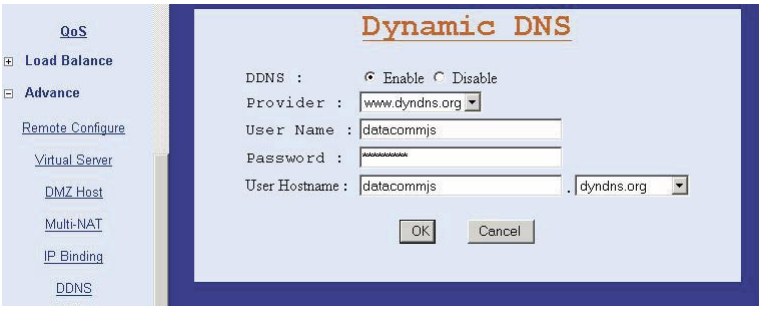


Figure 33 DDNS

User Name: Please apply from www.dyndns.org

Password: Please apply from www.dyndns.org

User Hostname: Please apply from www.dyndns.org

3.11.7Proxy

This function works together with the Mail Alert function. If there is a Proxy Server in your local LAN, please fill in the necessary Proxy information in this display.

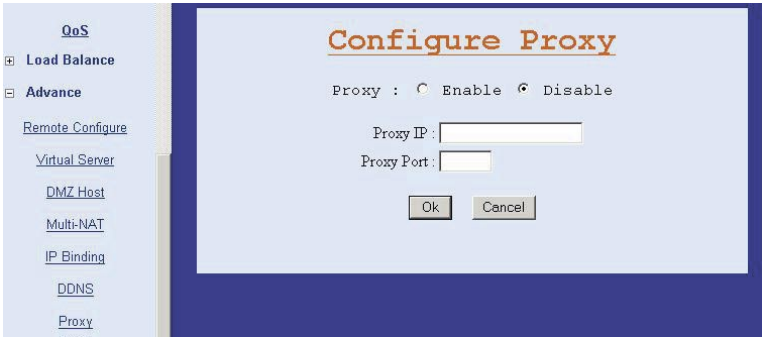


Figure 34 Proxy

3.11.8 Mail Alert (Gateway Mode / Basic NAT Mode only)

Enter the Receiver/Sender e-mail address in the appropriate fields and check the items you want. The system will send e-mails to the Receiver address once the conditions are met.

Figure 35 Email Alert

Email Address

Receiver mail address: The mail address that will receive the alert mail.

Sender mail address: The mail address that sends out the alert mail. You should fill in a legal format address (ex . router@yahoo.com)

Send by

Direct send: Emails are sent from the Sender mail address directly

Mail server forward: Emails are forwarded by the email server

Many email servers do not accept directly sent emails. It is safer to use the Email server forward option.

Example:

The “log record” is 50. When the condition happens 50 times, the NB750 will send 50-log messages together to the Receiver.

“log record” range : 10~150.

The NB750 provides four condition selections:

WAN Up	System will send the mail, once WAN port(s) is connected to Internet.
WAN Down	System will send the mail, once WAN port(s) is disconnected from Internet.
DoS Attack	System will send the mail, once the selected condition occurs in DoS (you will need to enable DoS function)
System log	System will send the mail of log information, once the log records conform to your setting. The minimum number is 10. You are not advised to use any number too small. Otherwise too many emails might be generated. A number more than 50 is more practical, for example 100.

3.11.9 Time (Gateway Mode / Basic NAT Mode only)

The NB750 will obtain Greenwich Mean Time (GMT) after it is connected to the Internet. You need to indicate the local time so the system shows the correct time. For example, Sydney's local time is GMT + 10 hours.

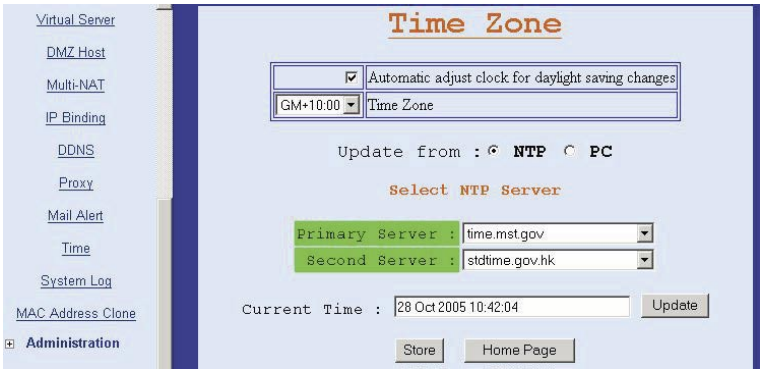


Figure 36 Time Zone

Select "Automatically adjust clock for daylight saving changes," so that it will automatically be adjusted to daylight savings time.

"Update from" is defaulted in NTP so that the NB750 updates time from a server whenever it is booted up. If at any time, the server is changed, you can save by clicking the Store button. Otherwise the new time server setting will be lost after the reboot. The PC can be used to synchronize the NB750 to the time set in the configuration of the PC. This is for temporary use especially if neither time server is unavailable. Once the reboot occurs, the NB750 will try to synchronize to a time server again.

3.11.10 System Log

When the NB750 powers on, it will show all the records, such as WAN port up/down, WAN IP address, the obtained time, DDNS current corresponding WAN IP address and so forth. You can use the page saving function of your browser to save the log details.

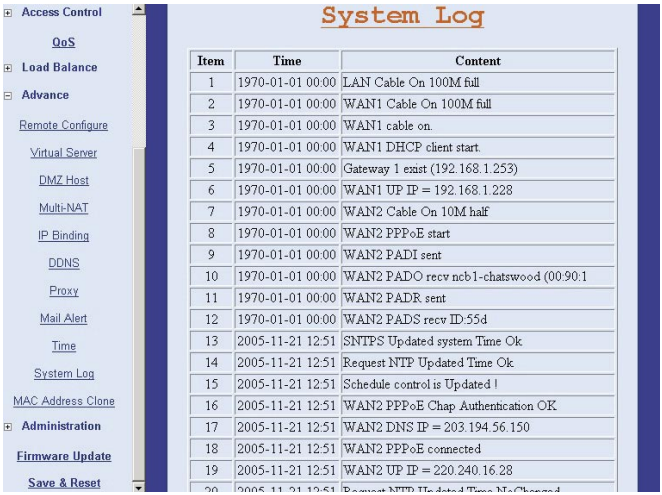


Figure 37 System Log

3.11.11 MAC Address Clone

If your ISP blocked the MAC address of a network card, you may change the MAC address of any WAN port.

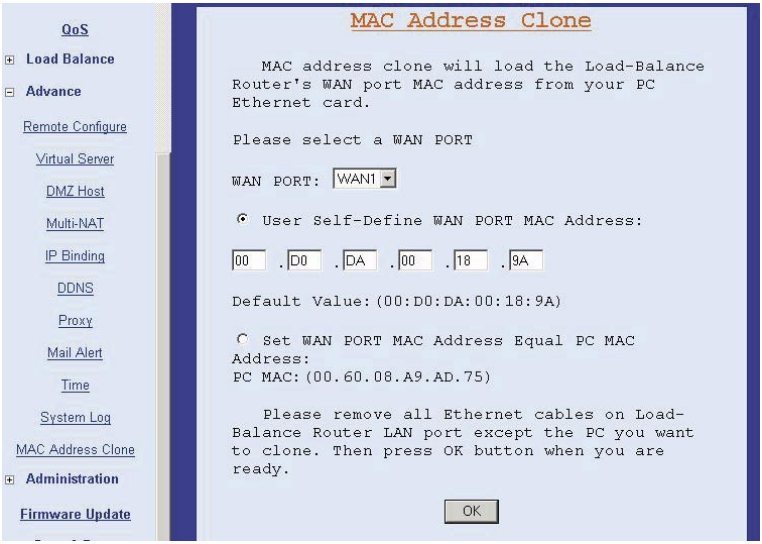


Figure 38 MAC Address Clone

- Use Self-Define WAN PORT MAC Address

  Select the WAN port to clone, fill in the MAC address you want to use, then click OK.

- Set WAN PORT MAC Address Equal PC MAC Address

  Duplicate the MAC address to the MAC address in each WAN port. Remove all Ethernet cables on the NB750 LAN port except for the PC you want to clone. Then press OK when you are ready.

You need to reboot your NB750 after it has finished cloning for the new MAC address to take effect.

3.12 Administration

3.12.1 Change Password

Use this function to change the Password that is used to access the web configuration. Type in the Old Password, New Password and Retype Password in their respective fields and then click OK. The password will be changed to the new one after the re-boot.

"Password length can up to 30 alphanumeric characters (case sensitive)"

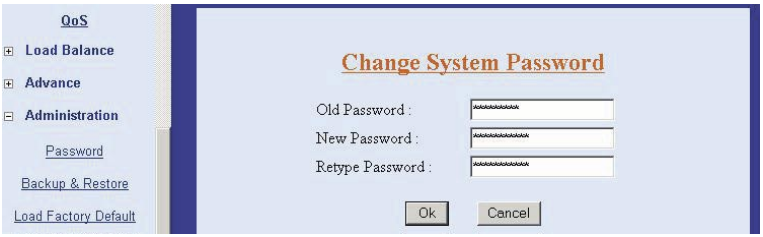


Figure 39 Password

WE ADVISE YOU TO CHANGE THE NB750 PASSWORD AND KEEP IT IN A SAFE PLACE AFTER YOU RECEIVE THE NB750 AND FINISH ALL THE ROUTER PARAMETER SETTINGS.

3.12.2 Back Up & Restore

Use the Back Up & Restore function to save all the setting parameters to your PC, to avoid losing all parameter settings if your system crushes.

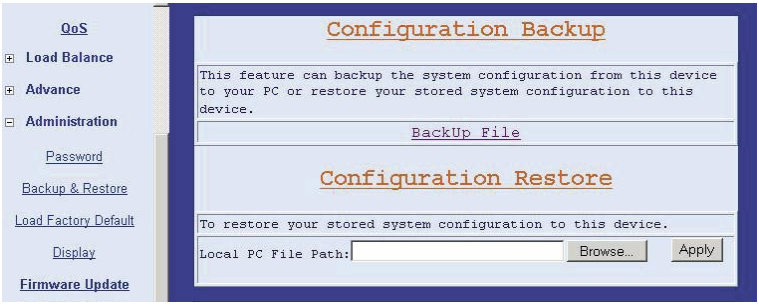


Figure 40 Backup and Restore

3.12.3 Load Factory Default

Use this function to reset all the settings to their factory default values or latest configuration file. Click OK after selection. The NB750 will restart automatically.

Figure 41 Load Default

Default Button Option

This option is used to define Default button on the back panel of the NB750.

- Load Default: press Default button and hold for 2 seconds, the factory default configuration will be loaded.
- Reset: press Default button and hold for 2 seconds. The latest configuration file will be loaded.

Load Factory Default Now

Tick the **Yes** option, then click **OK** and you can load the factory default value immediately. If you only want to submit a new setting for the Default Button Option without loading the factory default, tick the **No** Option before clicking **OK**.

3.12.4 Display

You can use this function to check all the parameter settings, in order to save time checking every display.

3.13 Firmware Update

The NB750 allows you to easily update the embedded firmware. We will occasionally provide new firmware on the web site to help you updating the firmware of your NB750.

Follow the procedure to update your firmware after downloading the new code.

Method 1:

Run a TFTP server program such as TFTPD32. (TFTPD32 is a shareware and you may download it or another TFTP server program from the Internet.)

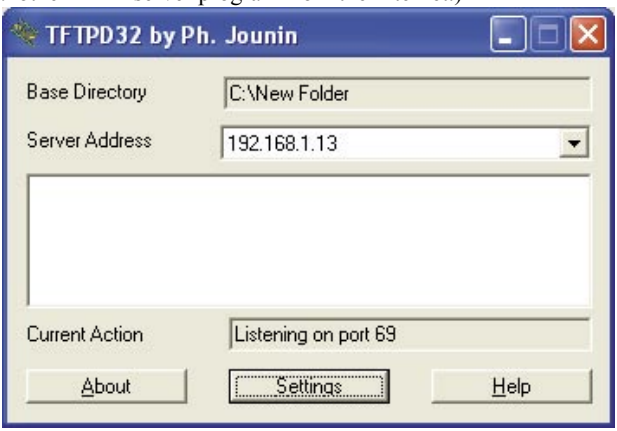


Figure 42 Run TFTP

Make a base directory in this server.

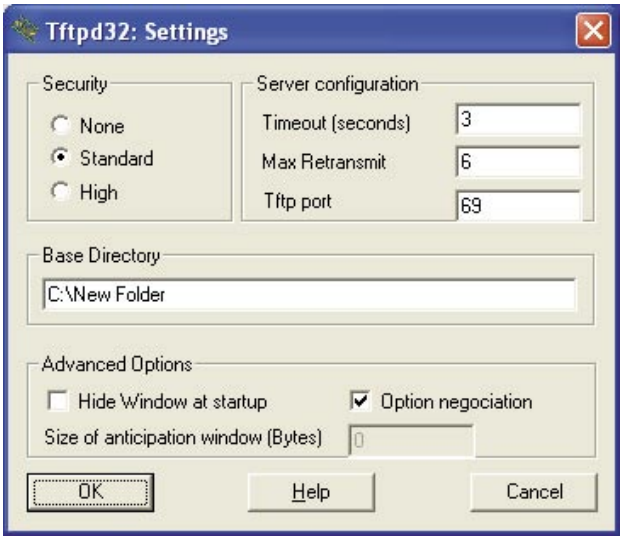


Figure 43 Set TFTP

Save the image file of firmware to the directory of TFTPD32.

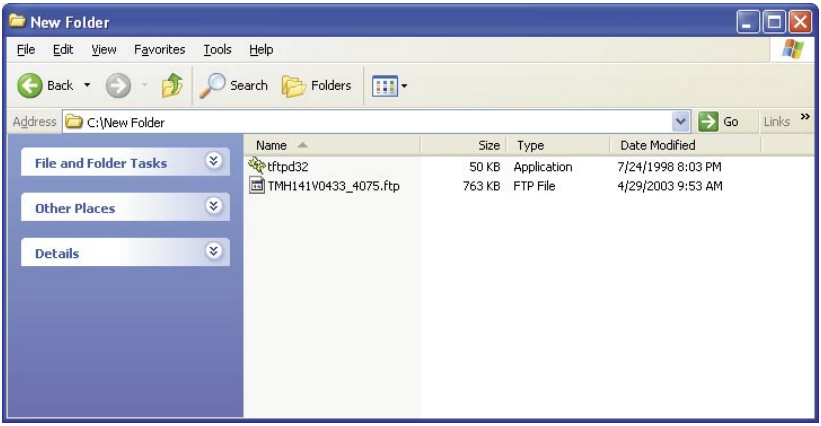


Figure 44 Save TFTP File

Enter the Server Name and File Name in the new folder fields of Firmware Update window and then click OK.

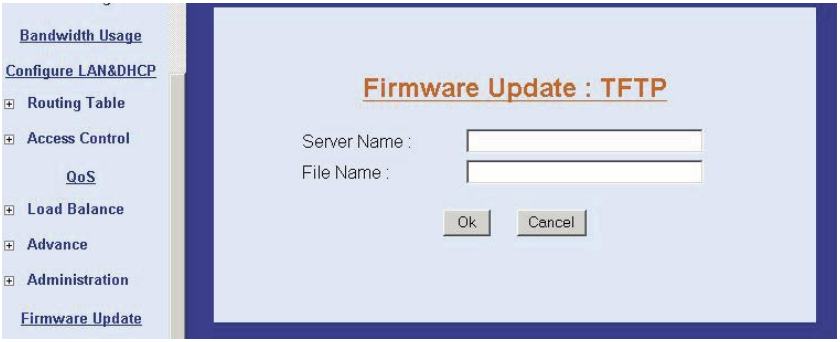


Figure 45 Fill in Server Name and File Name

You will see the process of the update. After finishing the update procedure, you must reboot the NB750 to run new code.

Method 2:

Double click the executable file (the file with exe extension file name) you downloaded. Here we take v105.exe as the example of new version file.

Click Search to find the IP of the NB750.

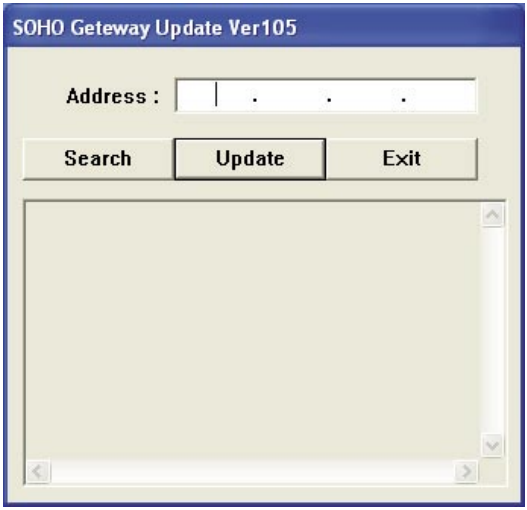


Figure 46 Search for IP Address

The IP address of the NB750 is 192.168.1.1 (default value).

Click Update to update the firmware.

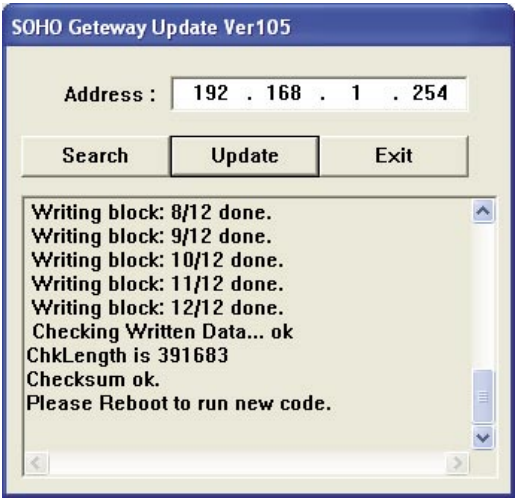


Figure 47 Update Progress

3.14 Save & Reset

In order to save the configuration changes that have been made to the NB750, you must save them to the NB750's Flash memory. If you do not save the changes, the configuration settings will be lost in the event of a power loss or system reboot.

Figure 48 Save and Reset

Appendix A: TCP/IP Protocol Port Number List

Protocol	Service	Port no.	Protocol	Service	Port no.
TCP	FTP	21	TCP	LADP	389
TCP	SSH	22	TCP	HTTPS	443
TCP	TELNET	23	UDP	IKE	500
TCP	SMTP	25	TCP	RLOGIN	513
UDP	DNS	53	UDP	SYSLOG	514
UDP	TFTP	69	UDP	TALK	517,518
TCP	GOTHER	70	UDP	RIP	520
TCP	FINGER	79	TCP	AFPOWERTCP	548
TCP	HTTP	80	TCP	Net-Meeting	1503,1702
TCP	POP3	110	TCP	L2TP	1701
UDP	NFS	111	TCP	PPTP	1723
TCP	NNTP	119	TCP	AOL	5190~5194
UDP	NTP	123	UDP	PC Anywhere	5631~5632
TCP	IMAP	143	TCP	XWINDOW	6000-6063
UDP	SNMP	161	TCP	IRC	6660~6669
TCP	BGP	179	TCP	Real-Media	7070
TCP	WAIS	210	TCP		6000-6063

Appendix B: Load Balancing Router Specification

The NetComm NB750 Load Balancing Router is the next generation of Broadband hardware aimed at improving the reliability and speed of Internet services by combining the performance of two broadband connections in a single, easy to manage network gateway.

Along with gateways security, the NetComm NB750 allows you to determine how your Internet traffic is shared or it can automatically balance the load according to bandwidth usage level. An added bonus is continuous Internet connection: should any WAN connection drop out, the NB750 maintain Internet services by automatically routing data to an active connection.

The NB750 provides one LAN port to connect to a computer via a cable. You can also connect the LAN port with a HUB/SWITCH device to extend amount of connections/users if necessary.

Specification	Features	Remark
HARDWARE		
WAN Port	- 2*10M/100M port	- Auto -sensing (RJ-45) - 802.3/802.3u, auto MDI/MDIX
LAN Port	- 1 *10 M/100 M	- Auto -sensing (RJ-45) - 802.3/802.3u, auto MDI/MDIX
CPU	- MIPS with 150MHz	
Memory	- Flash: 2M bytes - SDRAM: 16M bytes	
Indicator (6 LEDs)	- Power - Alarm - LAN 10M & 100M - WAN1 & WAN2	
Reset Switch	- Push to load factory default value or back to latest configuration file	- What to load is defined in web management
Power	- DC 5V/2.8A	- External Switching Power Adapter with full range 110v~240v AC input

SOFTWARE		
Out-bound Load Balance	Provide 3 working modes - Session - Weight round robin - Dynamic Traffic	
Protocol	- TCP/IP, UDP - ARP, BOOTP - ICMP - Routing Protocol - DHCP server/client - FTP, TFTP - Telnet - PPPoE	
VPN pass through	- IPSEC - PPTP	
Routing Protocol	- Static Route - RIP 1 - RIP 2	
Dynamic DNS	- Support dyndns.org, dtdns.com, 88ip.com, oray.net	
Working mode	- Router mode	- Work as a router with . 3 different LAN . Not support PPPoE
	- Gateway mode	- All functions enable
	- Basic NAT mode	- All function except . IP packet filtering . DoS defense
Security	- DMZ Host - Multi NAT/NAPT - PAP/CHAP - Virtual Server Mapping support - Internet Access Control (Packet filtering base on port & address)	Support - Net-meeting - Messenger - Real Audio - Cu-See-Me.

Firewall	- DoS (Denial of Service) protection including . Active ports scan, . TCP SYNC flood . ICMP flood . IP source route option detection . IP spoofing . Ping of death . IP fragment overlap . UDP flooding . PING oversize . Ping Enable/Disable	
Mail Alert	- WAN up - WAN down - DoS attack - System Log	- Support both direct sending and Mail Server forwarding
System Timer	- NTP (Network Timer Protocol) - Use PC local time	
System Log	- Local event logging	
DHCP Server/Client	- DHCP Server can reserved up to 253 IP - Support up to 512 users	
Firmware upgrade	- HTTP web based download /TFTP	
Configuration file	- Backup the configuration file into PC - Restore the saved configuration file into the device	
Remote Configure	- Configure Router through Internet	

MANAGEMENT		
WAN Port		
MAC address clone	- Up to 2 WAN port	
WAN IP Convert	- WAN port can connect to different IP domain gateway	
Dial on demand & Auto-Disconnection (PPPoE)	- Up to 2 WAN port	
Healthy-check	- Up to 2 WAN port	- Check WAN port link - Check ADSL link - Automatically switch packet to well-connect line from broken line
Scheduling control	- Up to 2 WAN port	- Set up each WAN port Connect/ Disconnect automatically
IP Binding	- specific destination IP address plus port number through dedicated WAN port	
Special IP assignment	- specific destination IP or local IP address through dedicated WAN port	Route path control by IP
Special Port assignment	- specific destination port number address through dedicated WAN port	Route path control by port number
VoIP pass through	- support H.323 ALG	
Protocol Bandwidth Control	- Dynamic allocate bandwidth for specific protocol in each WAN port	- Avoid link congestion
QoS	- Limit specific application bandwidth & wan port route path - Limit specific User bandwidth & wan port route path	
System data monitor	- Show each WAN port bandwidth usage and traffic status	

MANAGEMENT		
LAN Port		
DMZ (De-Militarized Zone)	- Support Multiple DMZ	
Multi-NAT	- User definable - Up to 10 different LAN segment IP can be define at LAN port	
Virtual Server	- Bi-direction virtual server - Local virtual server pass through - Support group virtual server setting mode	- LAN users can use WAN IP to reach virtual server
Temperature	- 0 ~ 40 C (operation) - -10 ~ 60 C (storage)	
Dimension	- 180mm(W)*160mm(D)*50 mm(H)	
Weight	- Under 600g	
Humidity	- 10 ~ 95% RH	
ESD	- +/- 4 KV	
Certification	- CE /FCC	

Appendix C: Cable Information

This cable information is provided for your reference only. Please ensure you only connect the appropriate cable into the correct socket on either this product or your computer.

If you are unsure about which cable to use or which socket to connect it to, please refer to the hardware installation section in this manual. If you are still not sure about cable connections, please contact a professional computer technician or NetComm for further advice.

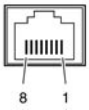
RJ-45 Network Ports

RJ-45 Network Ports can connect any networking devices that use a standard LAN interface, such as a Hub/Switch Hub or Router. Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable to connect the networking device to the RJ-45 Ethernet port. Depending on the type of connection, 10Mbps or 100Mbps, use the following Ethernet cable, as prescribed.

10Mbps: Use EIA/TIA-568-100-Category 3, 4 or 5 cable.

100Mbps: Use EIA/TIA-568-100-Category 5 cable.

Note: To prevent loss of signal, make sure that the length of any twisted-pair connection does not exceed 100 metres.



RJ-45 Connector Pin Assignment	Normal Assignment
1	Input Receive Data +
2	Input Receive Data -
3	Output Transmit Data +
6	Output Transmit Data -
4,5,7,8	Not used

Figure 1

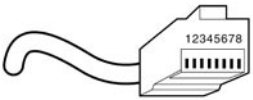


Figure 2

Straight and crossover cable configuration

There are two types of the wiring: Straight-Through Cables and Crossover Cables. Category 5 UTP/ STP cable has eight wires inside the sheath. The wires form four pairs. Straight-Through Cables has same pinouts at both ends while Crossover Cables has a different pin arrangement at each end.

In a straight-through cable, wires 1,2,3,4,5,6,7 and 8 at one end of the cable are still wires 1~8 at the other end. In a crossover cable, the wires of 1,2,3,6 are reversed so that wire 1 become 3 at the other end of the cable, 2 becomes 6, and so forth.

To determine which wire is wire 1, hold the RJ-45 cable tip with the spring clip facing towards the ground and the end pointing away from you. The copper wires exposed upwards to your view. The first wire on the far left is wire 1. You can also refer to the illustrations and charts of the internal wiring on the following page.

Straight-Through Cabling

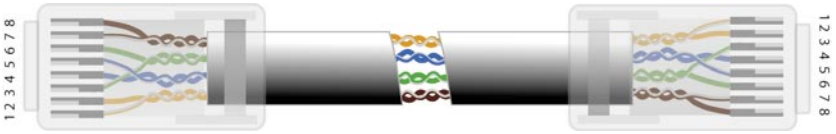


Figure 3

Wire	Becomes
1	1
2	2
3	3
6	6

Cross-Over Cabling

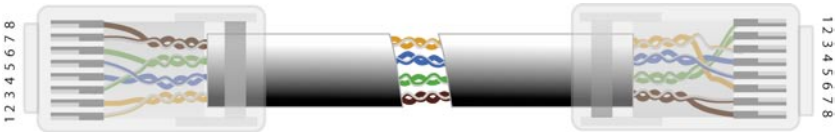


Figure 4

Wire	Becomes
1	3
2	6
3	1
6	2

Note: To prevent loss of signal, make sure that the length of any twisted-pair connection does not exceed 100 metres.

Appendix D: Registration and Warranty Information

All NetComm Limited ("NetComm") products have a standard 12 month warranty from date of purchase against defects in manufacturing and that the products will operate in accordance with the specifications outlined in the User Guide. However some products have an extended warranty option (please refer to your packaging). To be eligible for the extended warranty you must supply the requested warranty information to NetComm within 30 days of the original purchase by registering on-line via the NetComm web site at:

www.netcomm.com.au

Contact Information

If you have any technical difficulties with your product, please do not hesitate to contact NetComm's Customer Support Department.

Email:	support@netcomm.com.au
Fax:	(+612) 9424-2010
Web:	www.netcomm.com.au

Copyright Information

Customer Information

ACA (Australian Communications Authority) requires you to be aware of the following information and warnings:

(1) This unit shall be connected to the Telecommunication Network through a line cord which meets the requirements of the ACA TS008 Standard.

(2) This equipment has been tested and found to comply with the Standards for C-Tick and or A-Tick as set by the ACA. These standards are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio noise and, if not installed and used in accordance with the instructions detailed within this manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur with the installation of this product in your home or office. If this equipment does cause some degree of interference to radio or television reception, which can be determined by turning the equipment off and on, we encourage the user to try to correct the interference by one or more of the following measures:

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

(3) The power supply that is provided with this unit is only intended for use with this product. Do not use this power supply with any other product or do not use any other power supply that is not approved for use with this product by NetComm. Failure to do so may cause damage to this product, fire or result in personal injury.

Product Warranty

The warranty is granted on the following conditions:

1. This warranty extends to the original purchaser (you) and is not transferable;
2. This warranty shall not apply to software programs, batteries, power supplies, cables or other accessories supplied in or with the product;
3. The customer complies with all of the terms of any relevant agreement with NetComm and any other reasonable requirements of NetComm including producing such evidence of purchase as NetComm may require;
4. The cost of transporting product to and from NetComm's nominated premises is your responsibility; and,
5. NetComm does not have any liability or responsibility under this warranty where any cost, loss, injury or damage of any kind, whether direct, indirect, consequential, incidental or otherwise arises out of events beyond NetComm's reasonable control. This includes but is not limited to: acts of God, war, riot, embargoes, acts of civil or military authorities, fire, floods, electricity outages, lightning, power surges, or shortages of materials or labour.
6. The customer is responsible for the security of their computer and network at all times. Security features may be disabled within the factory default settings. NetComm recommends that you enable these features to enhance your security.

The warranty is automatically voided if:

1. You, or someone else, use the product, or attempts to use it, other than as specified by NetComm;
2. The fault or defect in your product is the result of a voltage surge subjected to the product either by the way of power supply or communication line, whether caused by thunderstorm activity or any other cause(s);
3. The fault is the result of accidental damage or damage in transit, including but not limited to liquid spillage;
4. Your product has been used for any purposes other than that for which it is sold, or in any way other than in strict accordance with the user manual supplied;
5. Your product has been repaired or modified or attempted to be repaired or modified, other than by a qualified person at a service centre authorised by NetComm; and,
6. The serial number has been defaced or altered in any way or if the serial number plate has been removed.

Limitations of Warranty

The Trade Practices Act 1974 and corresponding State and Territory Fair Trading Acts or legalisation of another Government ("the relevant acts") in certain circumstances imply mandatory conditions and warranties which cannot be excluded. This warranty is in addition to and not in replacement for such conditions and warranties.

To the extent permitted by the Relevant Acts, in relation to your product and any other materials provided with the product ("the Goods") the liability of NetComm under the Relevant Acts is limited at the option of NetComm to:

- Replacement of the Goods; or
- Repair of the Goods; or
- Payment of the cost of replacing the Goods; or
- Payment of the cost of having the Goods repaired.

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