Wireless **N** Router

L7-NR2000

L7 Wireless N Router – L7-NR2000

Agenda

Product Overview

- Package Content

- Hardware Overview

- Features of L7-NR2000/TM

- Factory Default Settings

Setting up of Devices

- Quick Setup Wizard (Easy)

- Setup Internet

- Setup Wireless

Agenda

Setting up of Devices

- Setup SharePort Network USB Utility

Troubleshooting

Questions and Answers

L7-NR2000 Overview

- **Faster Wireless Networking**
  - The L7-NR2000 provides up to 300Mbps wireless connection with other 802.11n wireless clients.

- **Compatible with 802.11b and 802.11g Devices**
  - The L7-NR2000 is still fully compatible with the IEEE 802.11b and IEEE 802.11g standard.

- **Advanced Firewall Features**
  - Content Filtering & DHCP Reserved
  - Filter Scheduling
  - Secure Multiple/Concurrent Sessions (IPSec/PPTP)

- **User-friendly GUI**
  - Through its easy-to-use Web-based user interface, the L7-NR2000 lets you control what information is accessible to those on the wireless network

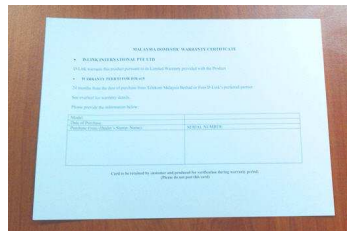# L7-NR2000 Package Content

- 1 x D-Link L7-NR2000 Wireless Router
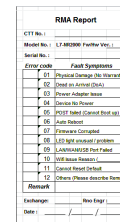
- 1 x Power adapter

- 1 x Manual CD

- 1 x Warranty Card

- 1 x QIG

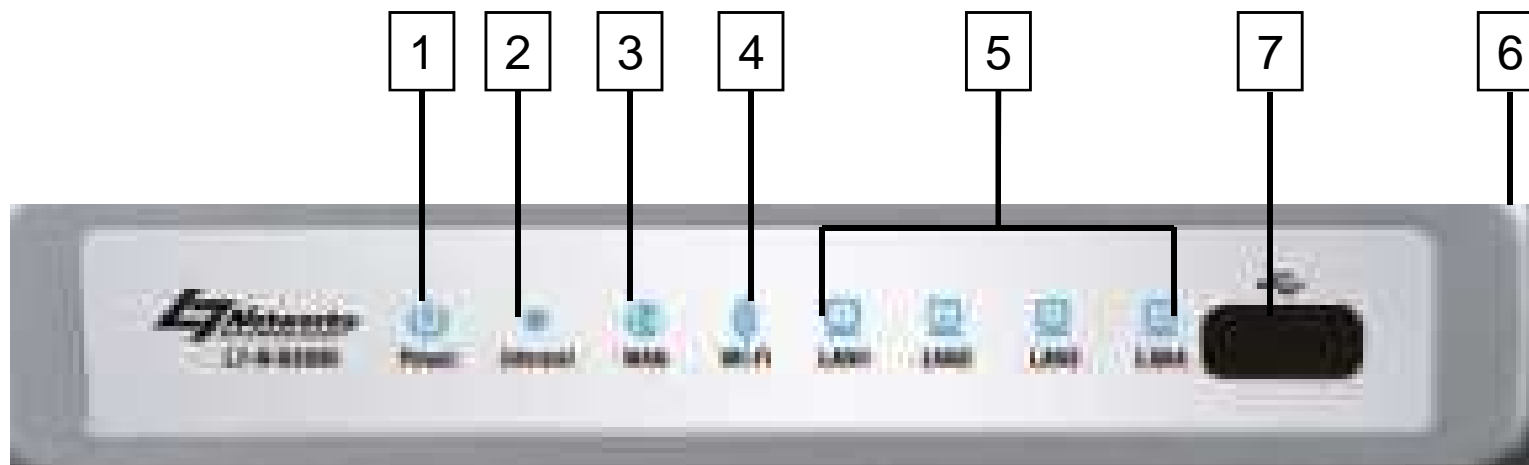- 3 x Ethernet Cable (Red, Yellow & Blue)

- 1 x Error Check List

Hardware Overview

- The L7-NR2000 creates a wireless network using 802.11n technology with multiple antennas to maximize wireless speed and range, and share Internet access with computers, game consoles, and media players.
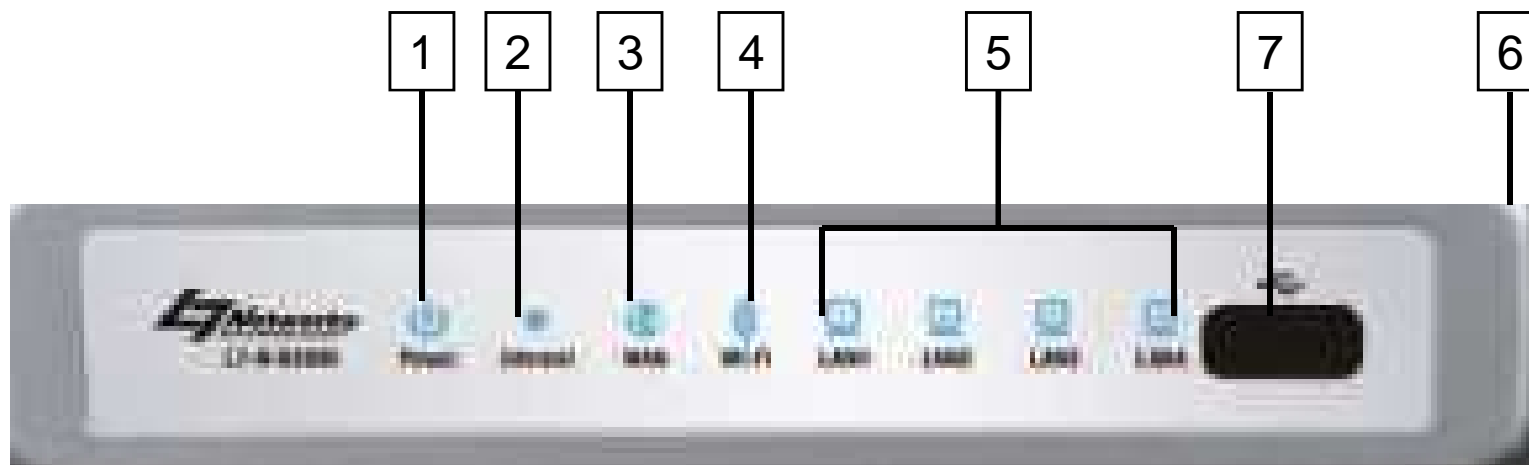
Hardware Overview – Front View

No	LED	Color	Status	Description
1	Power	Green	Off	No Power Supply
			On	Power on Properly
2	Internet	Green	Off	PPP Not connected
			On	PPP Connected
3	WAN	Green	Off	WAN Cable Disconnected
			On	WAN Cable Connected
			Blinking	WAN Data transmitting

Hardware Overview – Front View

No	LED	Color	Status	Description
4	Wireless	Green	Off	Wireless Off (Default)
			On	Wireless On
			Blinking	Wireless is transmitting
5	LAN	Green	Off	Cable disconnected
			On	Cable Connected
			Blinking	Data is transmitting
6	WPS	Blue	Off	WPS not in progress
			Blinking	WPS in Progress (Max 120 Seconds)
			On	WPS session success (Steady 5 Seconds)
7	USB	None	None	USB Share Port

Hardware Overview – Rear View
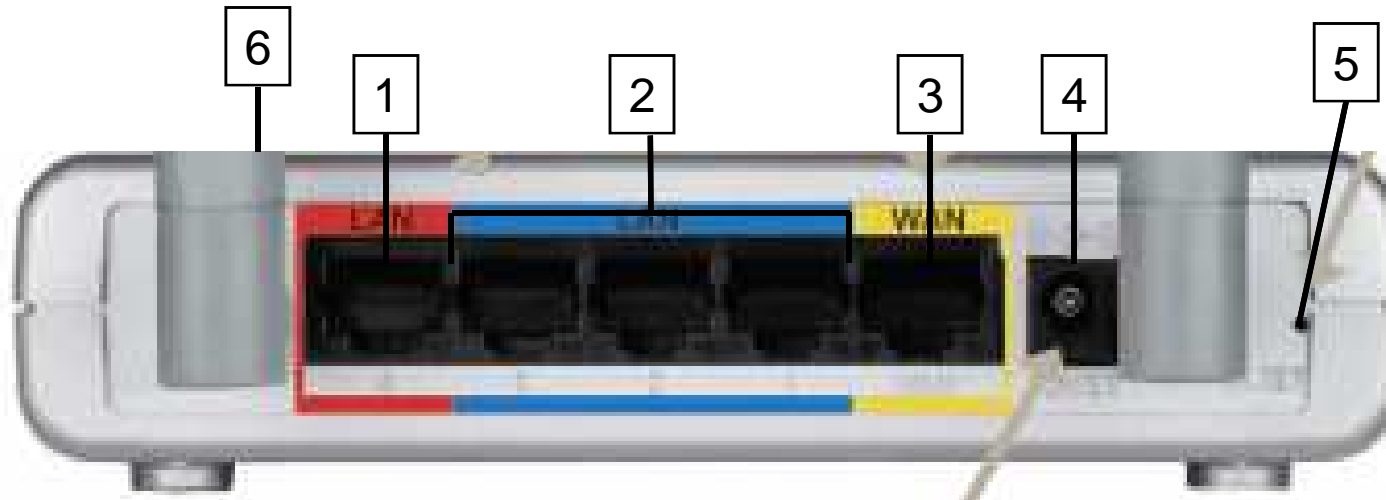
No.	Description	Usage
1	IPTV Port - (Red)	Connect the Red Ethernet cable to the Set-Top-Box (STB)
2	High Speed Internet (HSI) Ports - (Blue)	Connect the Blue Ethernet cables to Ethernet devices
3	WAN Port – (Yellow)	Connect the Yellow Ethernet cable for VDSL/Fiber Home connection
4	Power Connector	Receptor for power adapter
5	Reset Button	Press to restore to factory default settings
6	USB Share Port	To share multi-function printers, scanners or storage device through the network

Features of L7-NR2000

- 4 x LAN ports + 1 x WAN port (10/100Mbps)

- 1 x USB SharePort

- 2 x 5dBi Detachable Omni-Directional antennas

- 2.4GHz wireless b/g/n (1~13) channels

- Wireless speed of 300Mbps

- WEP/WPA/WPA2 - Personal

- WPS support

- Supports Multiple SSIDs

Features of L7-NR2000 – cont'd

- Firewall/NAT/DMZ

- Parental Control

- Virtual Server/Port forwarding/Port triggering

- TR-069, TR-111 ready

- Network/Website filtering

- WAN management

- DDNS

Factory Default Settings

- IP address: 192.168.0.1
- DHCP Server: Enabled

- Login User Name: admin
- Login Password: *blank*

- Wireless SSID: TMHSBB (default not enabled)
- Wireless Auto Channel: On

- Firewall: default Disabled

- Remote Management: default Disabled

Hardware Connections Example

Laptop (Wireless)

Set-Top-Box (STB)

Desktop (Wired)

Broadband Termination Unit

Ethernet Cable (Red)

Ethernet Cable (Blue)

Ethernet Cable (Yellow)

Power Adapter

Power

Telephone Cable

Telephone Wall Socket

3   LAN   2   WAN   5V⎓2.5A   RESET
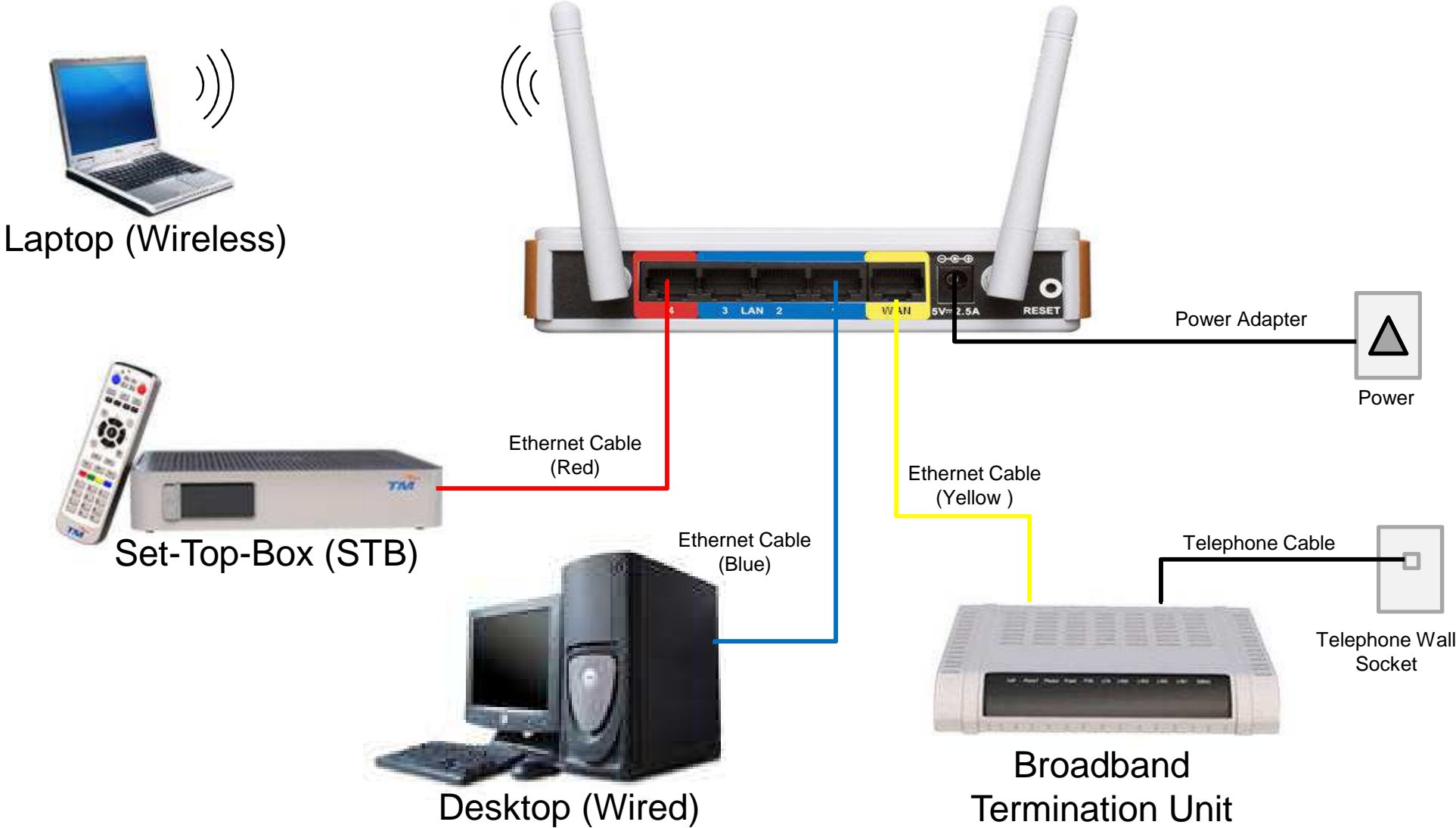
Quick Setup Wizard

Quick Setup of L7-NR2000

LOGIN

Login to the router:

User Name admin ①

Password [ ] Login ②

Networks
Secure Networks at Layer-7

Quick Setup of L7-NR2000

Quick Setup of L7-NR2000

STEP 1: SET YOUR PASSWORD

By default, your new Router does not have a password configured for administrator access to the Web-based configuration pages. To secure your new networking device, please set and verify a password below:

Password : ●●●●●●●●●●●●●●●●●

Verify Password : ●●●●●●●●●●●●●●●●●

4

[Prev] [Next] 5 [Cancel]   [Connect]

Quick Setup of L7-NR2000 – Dynamic IP

Quick Setup of L7-NR2000 – Static IP

Quick Setup of L7-NR2000

STEP 1: WELCOME TO THE WIRELESS SECURITY SETUP WIZARD

Give your network a name, using up to 32 characters.

Network Name (SSID) : TNHSBB   (13)

○ Automatically assign a network key (Recommended)

To prevent outsiders from accessing your network, the router will automatically assign a security (also called WEP or WPA key) to your network.

◉ Manually assign a network key

Use this options if you prefer to create our own key.

☑ Use WPA encryption instead of WEP(WPA is stronger than WEP and all wireless client adapters support WPA)

Note: All wireless adapters currently support WPA.

[Prev] [Next (14)] [Cancel]

Quick Setup of L7-NR2000

STEP 2: SET YOUR WIRELESS SECURITY PASSWORD

You have selected your security level - you will need to set a wireless security password.

The WPA (Wi-Fi Protected Access) key must meet one of following guidelines:

- Between 8 and 64 characters (A longer WPA key is more secure than a short one)

- Exactly 64 characters using 0-9 and A-F

Wireless Security Password : Very Very Long Password   15

Note: You will need to enter the same password as keys in this step into your wireless clients in order to enable proper wireless communication.

Prev   Next 16   Cancel

Quick Setup of L7-NR2000

SETUP COMPLETE!

Below is a detailed summary of your wireless security settings. Please print this page out, or write the information on a piece of paper, so you can configure the correct settings on your wireless client adapters.

Wireless Network Name (SSID) : TMHSBB

Security Mode : Auto (WPA or WPA2) - Personal

Cipher Type : TKIP and AES

Pre-Shared Key : Very Very Long Password

Prev   Save 17   Cancel

Setting up of L7-NR2000 Internet (Manually)

Setting up of L7-NR2000 Internet

LOGIN

Login to the router:

User Name admin (1)

Password _____ (Login) (2)

Setting up of L7-NR2000 Internet

Setting up of L7-NR2000 Internet - Dyn IP

9 Save Settings   Don't Save Settings

PPPOE INTERNET CONNECTION TYPE

Enter the information provided by your Internet Service Provider (ISP).

Address Mode	◉ Dynamic IP **5** ○ Static IP
Dual LAN :	☐
IP Unnumbered Address :	0.0.0.0
IP Unnumbered Netmask :	0.0.0.0
LAN Start IP :	0.0.0.0
LAN End IP :	0.0.0.0
Username :	username@unifi **6**
Password :	password **7**
Verify Password :	password **8**
Service Name :	(optional)
Reconnect Mode :	◉ Always on ○ On demand ○ Manual
Maximum Idle Time :	5 (minutes, 0=infinite)
Primary DNS Server :	0.0.0.0 (optional)
Secondary DNS Server :	0.0.0.0 (optional)
MTU :	1492 (bytes) MTU default = 1492

Setting up of L7-NR2000 Internet- Static IP

11 Save Settings   Don't Save Settings

PPPOE INTERNET CONNECTION TYPE

Enter the information provided by your Internet Service Provider (ISP).

Address Mode	○ Dynamic IP ● Static IP **5**
Dual LAN :	☑ **6**
IP Unnumbered Address :	202.111.222.1
IP Unnumbered Netmask :	255.255.255.248/252
LAN Start IP :	202.111.222.2
LAN End IP :	202.111.222.6/2
Username :	username@unifbizi **8**
Password :	password **9**
Verify Password :	password **10**
Service Name :	(optional)
Reconnect Mode :	● Always on ○ On demand ○ Manual
Maximum Idle Time :	5 (minutes, 0=infinite)
Primary DNS Server :	0.0.0.0 (optional)
Secondary DNS Server :	0.0.0.0 (optional)
MTU :	1492 (bytes) MTU default = 1492

7

Networks
Secure Networks at Layer-7

Setting up of L7-NR2000 manually

THE NEW SETTINGS HAVE BEEN SAVED....

Please wait 40 seconds.

The new settings have been saved.

Continue (12)

Setting up of L7-NR2000 Internet

Setting up of L7-NR2000 Wireless

Setting up of L7-NR2000 Wireless

Setting up of L7-NR2000 Wireless

Setting up of L7-NR2000 Wireless

WIRELESS

Use this section to configure the wireless settings for your Router. Please note that changes made on this section may also need to be duplicated on your Wireless Client.

(10) [Save Settings] [Don't Save Settings]

Security Mode : WPA-Personal ▼

WPA

Use **WPA or WPA2** mode to achieve a balance of strong security and best compatibility. This mode uses WPA for legacy clients while maintaining higher security with stations that are WPA2 capable. Also the strongest cipher that the client supports will be used. For best security, use **WPA2 Only** mode. This mode uses AES(CCMP) cipher and legacy stations are not allowed access with WPA security. For maximum compatibility, use **WPA Only**. This mode uses TKIP cipher. Some gaming and legacy devices work only in this mode.

To achieve better wireless performance use **WPA2 Only** security mode (or in other words AES cipher).

WPA Mode : WPA2 Only (7)
Cipher Type : AES ▼ (8)
Group Key Update Interval : 3600 (seconds)

PRE-SHARED KEY

Enter an 8- to 63-character alphanumeric pass-phrase. For good security it should be of ample length and should not be a commonly known phrase.

Pre-Shared Key : This is a very long wireless password (9)

Setting up of L7-NR2000 Wireless

THE NEW SETTINGS HAVE BEEN SAVED....

Please wait 3 seconds.

The new settings have been saved.

Continue (11)

Setting up of L7-NR2000 Wireless

Using *SharePort*™ Network USB Utility

Using *SharePort™* Network USB Utility

- The D-Link SharePort technology will allow you to connect a multi-function printer (MFP), scanner, or USB storage device* to your router and share the device with multiple computers**. Only these devices will be supported.

- Install the software on the computer(s) you would like to use the USB device with. Remember that the computer(s) will also need the device drivers installed.

- SharePort application can be found in the installation CD:
  - *CDRomDrive:*\Resource\SHAREPORT\setup.exe

  * Only 1 USB device is to be used for SharePort. USB hubs are not supported to expand the USB port

  ** The device can only be used by one computer at a time.

Using *SharePort™* Network USB Utility

- **Step 1**: Run the SharePort™ installation program and follow the on-screen instruction. Choose a language and click "OK".

- **Step 2**: Click "Next" to start the installation

Using *SharePort™* Network USB Utility

- **Step 3**: Choose another destination folder to install or click "Next" to continue.
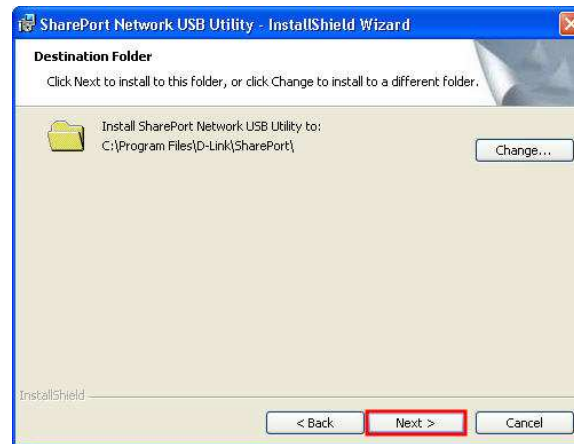
- **Step 4**: Wait for the installation to complete
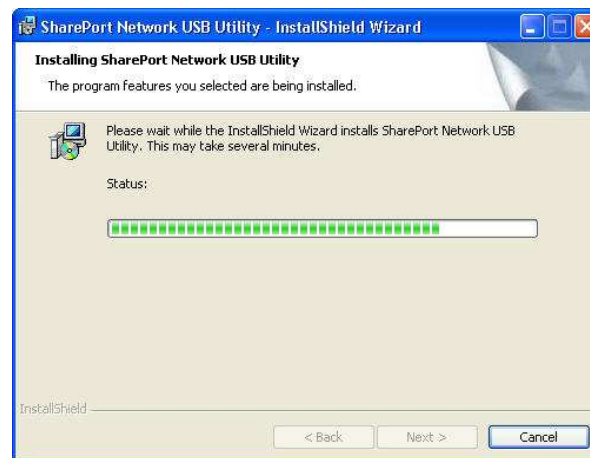
Using *SharePort™* Network USB Utility

- **Step 5**: Click "Finish" to complete the installation.
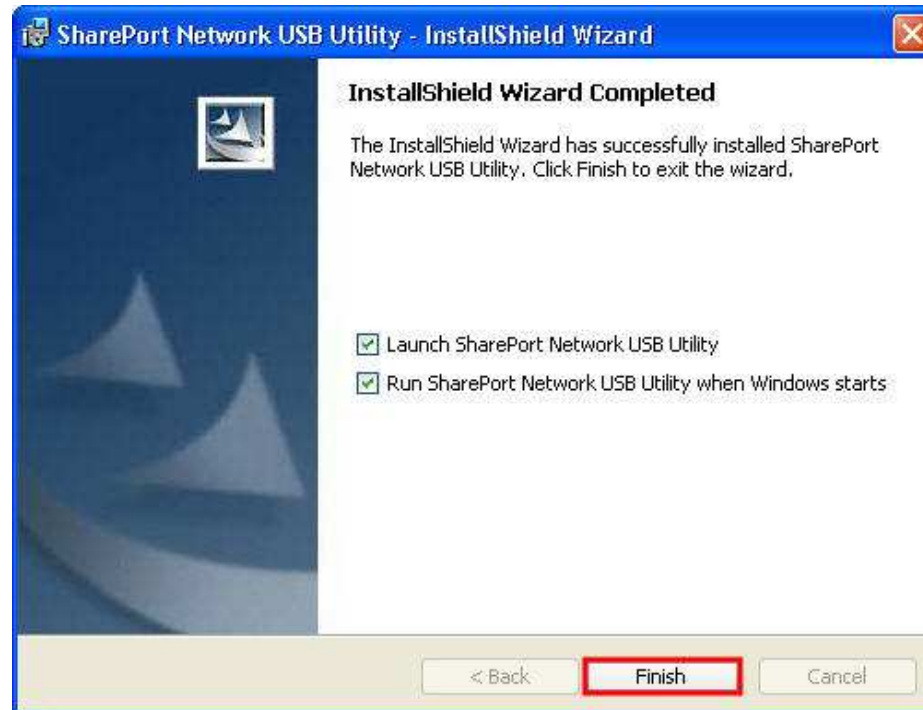
- Once installation completes, the SharePort™ icon will appear in the system tray at the bottom right corner of the screen.

Using *SharePort™* Network USB Utility

- **Step 6**: Right-click on in the icon, a window pops up to display the router with the respective IP address. Select "Enable" to activate SharePort™ service for the PC from the router.

- The icon will turn from to once the router automatically detects any USB device is plugged into the USB SharePort. A window will pop up showing the connected USB device.

Using *SharePort™* Network USB Utility

- **Step 7**: Double-click on the icon to open the D-Link Network USB Utility. Showing the detected USB device.

- **Step 8**: Click on the device, and click "Connect" to connect to that USB device.

Using *SharePort™* Network USB Utility

- **Step 9**: Once connected, it will be reflected as "In used by (PC name)". Drivers for the USB device will be installed like how it is when plugging the USB device directly to the PC.

- **Step 10**: User will be able to use the USB device as per normal.
  - Example: After connecting to a USB flash drive, it will appear as a Removable Storage drive in My Computers

  - For MFP, user will need the printer's installation CD to install on that PC first before using the functions of the MFP.

Using *SharePort™* Network USB Utility

- **Step 11**: If another user has connected to the USB device, it will be reflected as "In used by (PC name)".

- Click on the device, and click "Request to use"

Using *SharePort™* Network USB Utility

- A Window will pop up at the other computer's side to inform the user that another user is requesting to use the USB device.

- The user will have to disconnect the USB device before any other users can connect to it again. Please note that only one user will be able to use the USB device at one time.

Using *SharePort™* Network USB Utility

- **Step 12**: To disconnect the USB device, click on the device that is currently connected, and click "Disconnect".

- Now the USB device is ready to be connected by another user.

Error Check List

Error Check List

RMA Report

CTT No. :		
Model No. :	L7-NR2000	Fw/Hw Ver. :
Serial No. :		

Error code		Fault Symptoms
	01	Physical Damage (No Warranty)
	02	Dead on Arrival (DoA)
	03	Power Adapter Issue
	04	Device No Power
	05	POST failed (Cannot Boot up)
	06	Auto Reboot
	07	Firmware Corrupted
	08	LED light unusual / problem
	09	LAN/WAN/USB Port Failed
	10	Wifi Issue Reason (_____)
	11	Cannot Reset Default
	12	Others (Please describe Remark)
Remark		

Exchange:		Rno Engr :

Date : _____ / _____ / _____

Troubleshooting

Troubleshooting

- Recommended sequence of troubleshooting

    - LED status
    - Power connector
    - Physical cabling connector
    - PC's configuration
    - Router's status/log
    - LAN (Ethernet) connection
    - Wi-Fi connection
    - WAN connection
    - USB SharePort Utility
    - WPS

Troubleshooting

- **Step 1**: Verify physical connectivity by checking the LED lights status on the device. If you do not get a solid link light, try using a different cable or connect to a different port on the device if possible. If the computer is turned off, the link light should not be on.

Troubleshooting

- **Step 2:** If no light is on, please check the power adapter's connection and the power source. Switch off the power, wait for 5-10 seconds before switching it on again.

- **Step 3:** Please use wired connection for any configuration purpose. Check that the Ethernet LED is active for the PC connecting to the router directly. Try to change to another Ethernet port/cable (Blue) if the LED light is still not ON.

- **Step 4:** Ensure that the PC is configured to receive an IP address from a DHCP server.

- **Step 5:** Disable any internet security software running on the computer. Software firewalls such as Zone Alarm, Black Ice, Sygate, Norton Personal Firewall, and Windows® XP firewall may block access to the configuration pages.

Troubleshooting

- **Step 6:** Access the web management. Open your web browser and enter the IP address of your D-Link router in the address bar. This should open the login page for your the web management. Verify that the settings are correct.

- **Step 7:** If still unable to access the configuration page, unplug the power to the router for 10 seconds and plug back in. Wait for the router to boot up and try accessing the configuration. If you have multiple computers, try connecting using a different computer.

- **Step 8:** If you forgot your password, you will need to reset your router. With the router powered on, use a pointed object to hold the reset button down for 10 seconds. Release the button and the router will go through its reboot process. Wait about 30 seconds to access the router.

  - *Please note that this process will change all your settings back to the factory defaults.*

Troubleshooting

- **Step 9**: Login to the router, go to "Status" tab, check that all router is able to receive a public IP address.

- If router still unable to obtain IP address, please check again the username and password issued by ISP and re-enter it at the Internet setup page.

GENERAL

Time :	Wednesday, February 15, 2012 12:37:30 PM
Firmware Version :	1.00TM , 07, Feb, 2012

WAN

WAN Connection :	WAN Connection 1 ▼
Connection Type :	PPPoE
Cable Status :	Connected
Network Status :	Connected [Connect] [Disconnect]
Connection Up Time :	0 Day, 0:00:25
MAC Address :	14:FE:B5:B8:FB:B9
IP Address :	192.168.70.107
Subnet Mask :	255.255.255.255
Default Gateway :	192.168.70.1
Primary DNS Server :	8.8.8.8
Secondary DNS Server :	8.8.4.4
Advanced DNS :	Disabled

WIRELESS LAN

802.11 Mode :	802.11bgn
Channel Width :	20/40 MHz
Channel :	1
Wi-Fi Protected Setup :	Disabled

SSID List :

Network Name (SSID)	Wireless Radio	MAC Address	Security Mode
L7Testing	On	00:18:E7:95:6F:C4	WPA-Personal
dlink_guest	Off	00:18:E7:96:6F:C4	Off
dlink	Off	00:18:E7:97:6F:C4	Off
dlink	Off	00:18:E7:98:6F:C4	Off

Troubleshooting

- **Step 10:** Login to the router. Go to "Status" tab, "Log" sub-tab. Check for any error messages generated by the router.

LOG DETAILS

First Page Last Page Previous Next

Refresh Clear Email Now Save Log

1/2

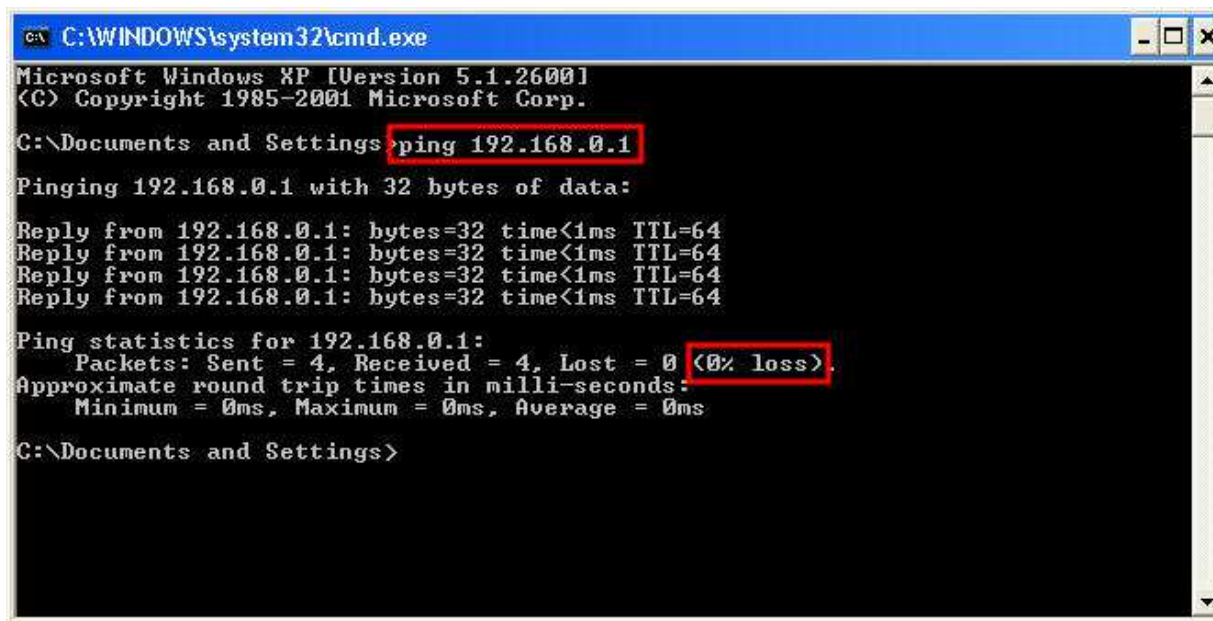| Time	Message
Feb 15 12:37:05	daemon.info: dnsmasq[2955]: using nameserver 8.8.8.8#53
Feb 15 12:37:05	daemon.info: dnsmasq[2955]: using nameserver 8.8.4.4#53
Feb 15 12:37:05	daemon.info: dnsmasq[2955]: reading /etc/resolv.conf
Feb 15 12:37:02	daemon.notice: pppd[31984]: secondary DNS address 8.8.4.4
Feb 15 12:37:02	daemon.notice: pppd[31984]: primary DNS address 8.8.8.8
Feb 15 12:37:02	daemon.notice: pppd[31984]: remote IP address 192.168.70.1
Feb 15 12:37:02	daemon.notice: pppd[31984]: local IP address 192.168.70.107
Feb 15 12:37:02	daemon.notice: pppd[31984]: peer from calling number 00:0C:29:3C:62:25 authorized
Feb 15 12:37:02	daemon.notice: pppd[31984]: CHAP authentication succeeded
Feb 15 12:37:02	daemon.info: pppd[31984]: CHAP authentication succeeded: Welcome.

Troubleshooting

- **Step 11**: Check that the LAN connectivity is OK. Connect 2 or more PC's to the router, do a "ping" command from 1 PC to another, or to the router, check that all pings are successful.

- Go to "Start Menu", "Run…", and type "cmd" (without the colons), to open the Command Prompt.
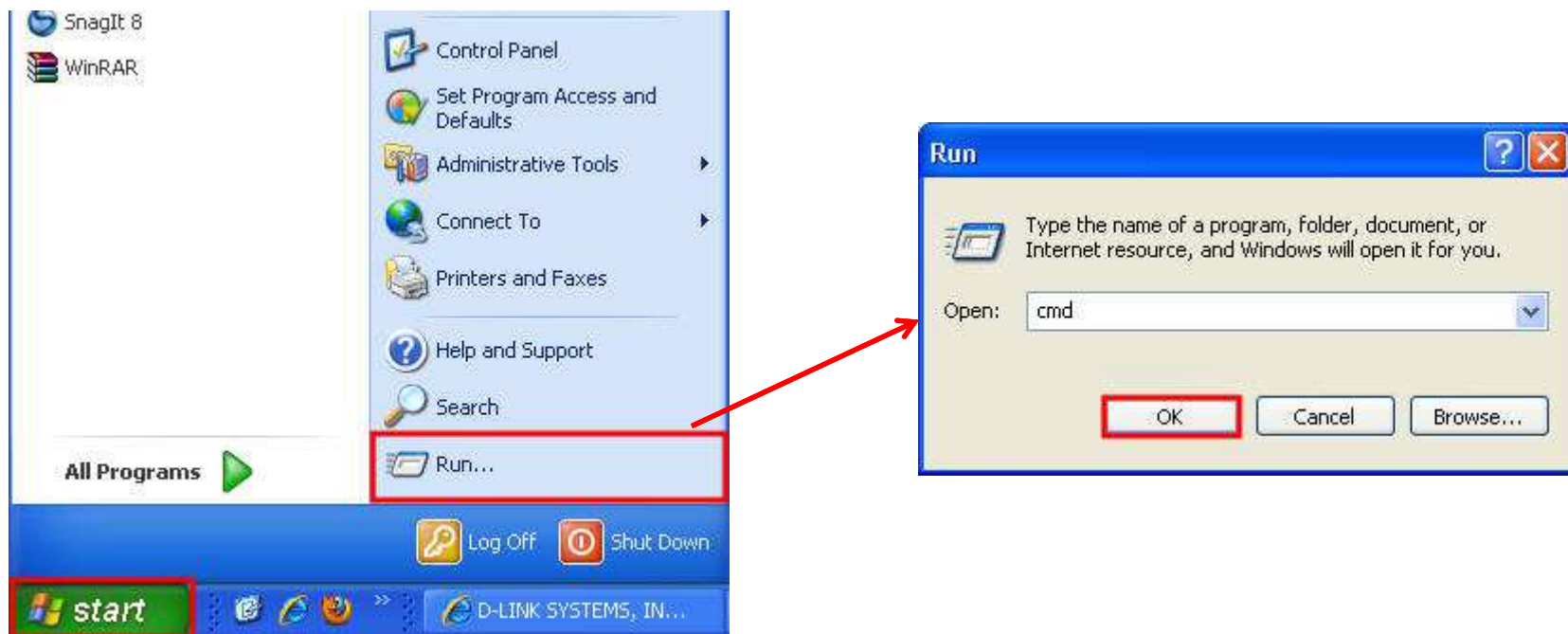
Troubleshooting

- Type "ping 192.168.0.1" in the Command Prompt window to send ping requests to the router.

- Check that the pings should be replied successfully, 0% loss

- You may change the IP address to another PC in the network.

- If there is any ping loss, restart the router, check your PC's network configuration and try again.
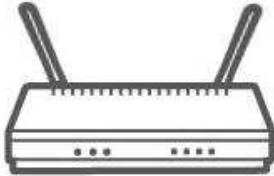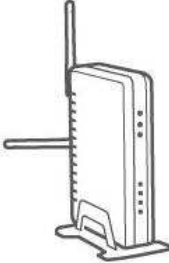
Troubleshooting

- **Step 12:** Wireless Installation Considerations

- Minimize the number of walls and ceilings between the router and adapter

- Try to position access points, wireless routers, and computers so that the signal passes through drywall or open doorways. Materials and objects such as glass, steel, metal, walls with insulation, mirrors, will degrade your wireless signal.

- Place home appliances such as cordless telephones, microwaves, wireless home security and televisions as far away as possible from the router/access point. This would significantly reduce any interference that the appliances might cause since they operate on same frequency.

Troubleshooting

- Wireless Installation Considerations (cont'd)

- Make sure you place the router/access point in a centralized location within your network for the best performance

- Try to place the router/access point as high as possible in the room, so the signal gets dispersed throughout your home.
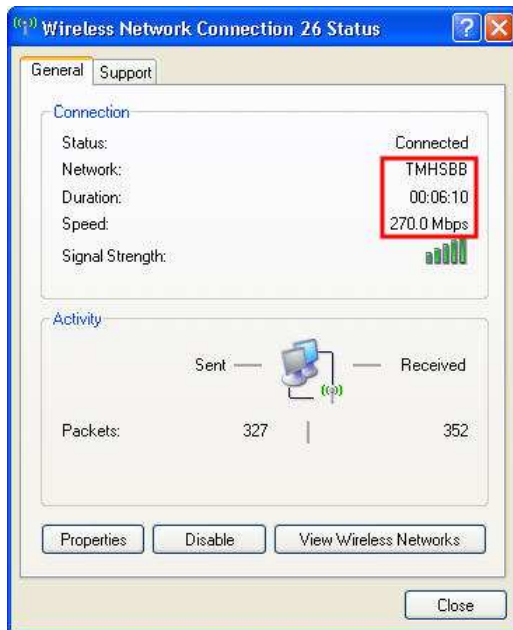
Troubleshooting

- Wireless Installation Considerations (cont'd)

- Recommended solution for placement of router and antennas positioning

	Horizontal Layout	Vertical Layout
2 Antennas		

Troubleshooting

- **Step 13**: Connect a PC wirelessly to the router, check that the PC can connect successfully and can obtain the respective speed (raw data rate).

- Place wireless PC about 5 meters away from router with no obstruction in between to check the speed more accurately.

Wireless N Client
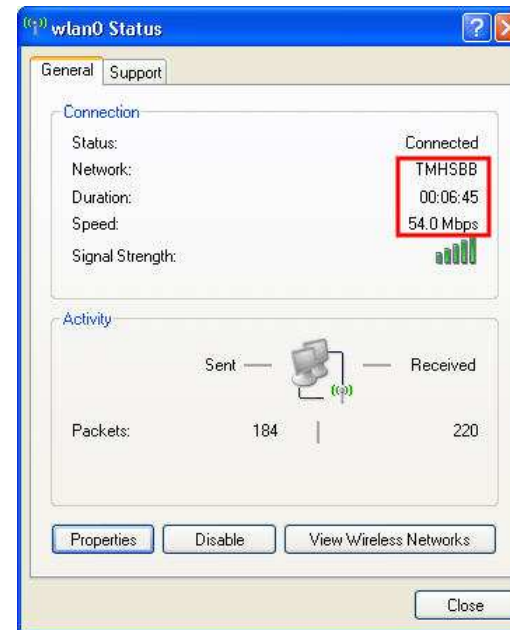
Wireless G Client

Troubleshooting

- Please note that actual throughput may differ from speed shown. Result varies due to factors as discussed earlier in **"Wireless Installation Considerations"**.

- Ensure that the following fields are configured properly to enjoy the benefits of wireless N speed
    - Wireless Security: Any type except WEP or TKIP
    - Wireless Mode: Mixed(**n**/g/b) or (**n** ONLY)
    - Bandwidth: 20/40MHz
    - Short Guard Interval: Enabled

Troubleshooting

- Please note that in a wireless network, if there is a mixture of wireless N and wireless G clients exist, the network's throughput will step down to wireless G's speed (54Mbps)

- If the wireless network is configured with WEP security, the wireless speed will be reduced to 54Mbps, since WEP is a proprietary wireless G security.

- Do a ping test with other wireless PC's in the network to check the wireless connectivity of the wireless network.

Troubleshooting

- **Step 15**: If you are unable to access the internet even the router obtained an public IP address, you can try to the following ping test :-

i. Ping DNS IP address, 202.188.0.133 from PG (L7-NR2000)

ii. Ping DNS IP address, 202.188.0.133 from desktop.

Troubleshooting

- Do another Ping test to public IP address **216.239.61.104** (www.google.com) or **98.137.149.56** (www.yahoo.com) from PC & PG.

- If both ping test on DNS IP and public IP address replied successfully (from both PG & PC), there might be a chance that the DNS server is under maintenance. Restart both the router and the Broadband Termination Unit and try again.

- If you are able to received replies on ping test from PG (on both DNS IP & public IP), but not on PC, please restart your PC & try again.

Troubleshooting

- **Step 15**: Do a internet speed test using TM's speed test utility to test your home's internet connection speed is up to the speed subscribed

- http://speedtest.tm.net.my

- Please note that actual throughput may differ slightly from expected results due to signal loss during transmission through distance and intermediate devices.

Troubleshooting

- **Step 16**: To save the current router's configuration, go to "Tools" tab, "System" sub-tab.
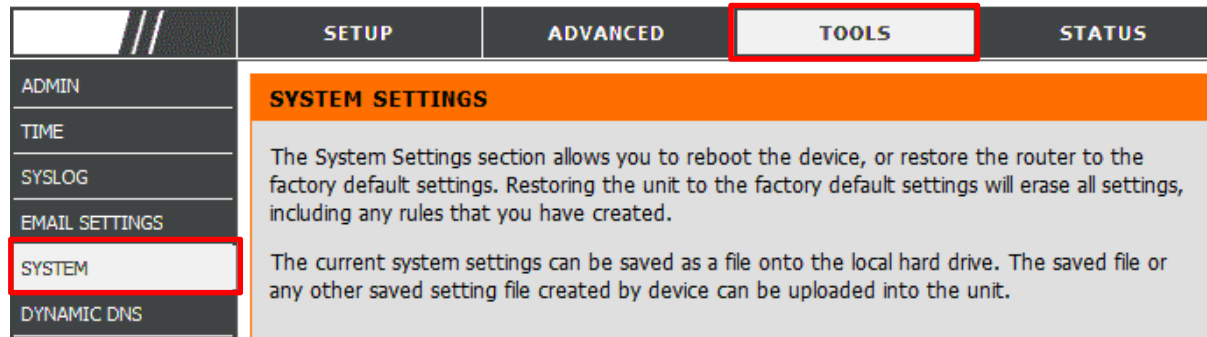
- **Step 17**: Click on "Save" to save the settings to the local PC.
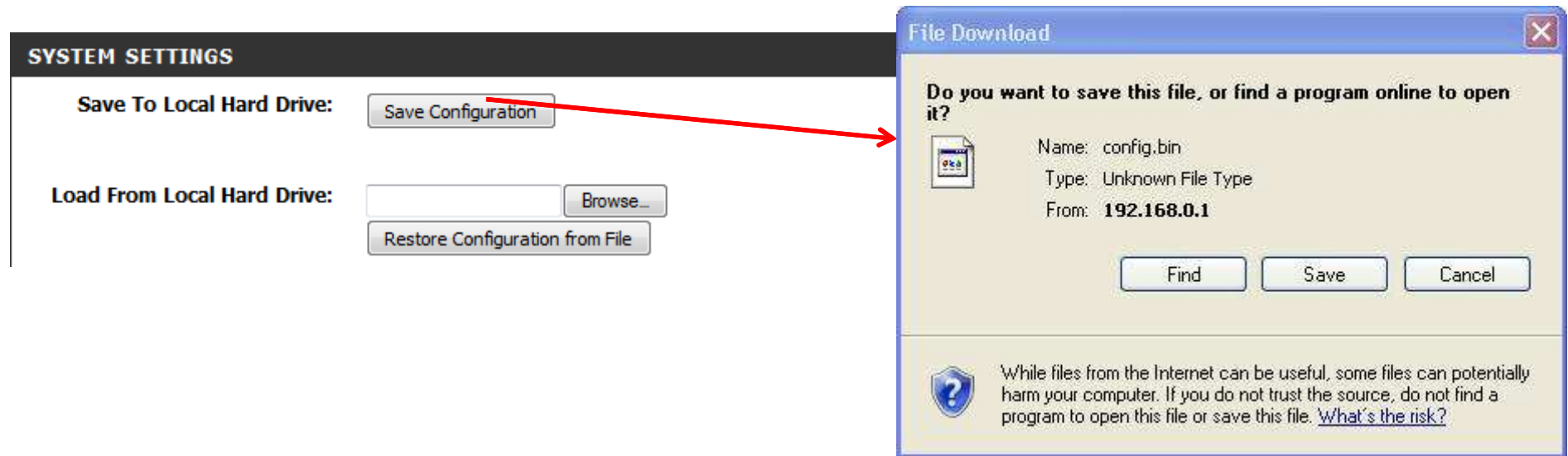
Troubleshooting
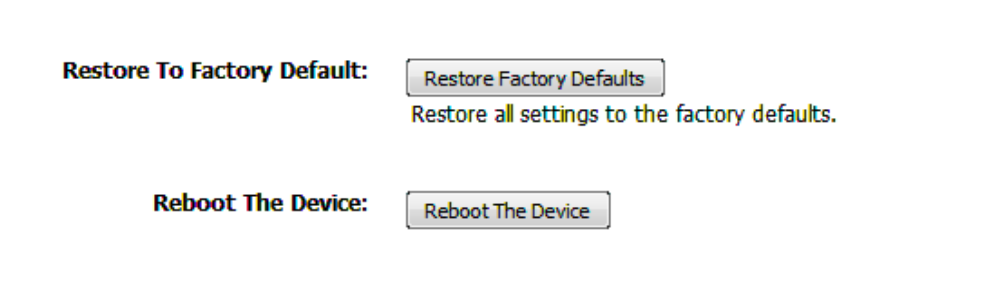
- **Step 18**: To restore the router to factory default settings, click on "Restore Device"

Restore To Factory Default: Restore Factory Defaults
Restore all settings to the factory defaults.

Reboot The Device: Reboot The Device
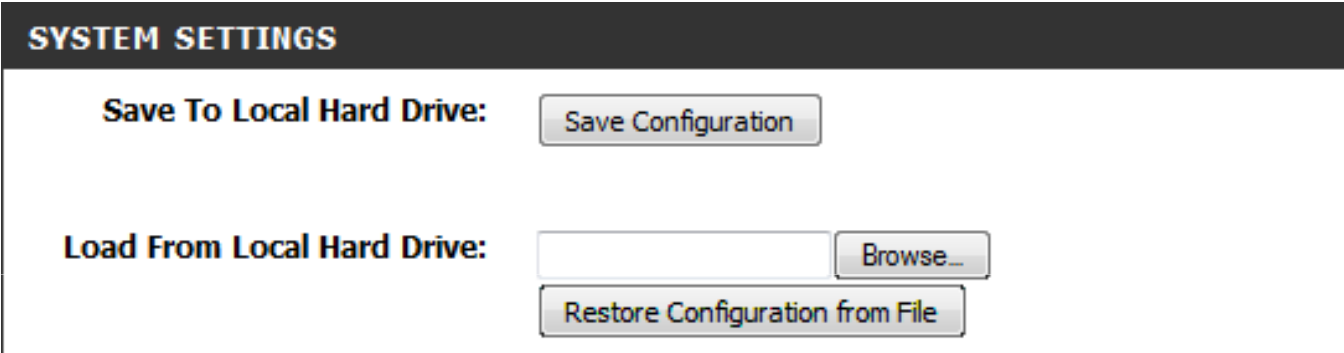
- The router will reboot with the default settings

UPLOAD SETTINGS

The device is rebooting...

Please DO NOT POWER OFF the device.

Please wait for 36 seconds...

- Alternatively, this can be done by using a pointed object to push and hold on to the physical reset button for 10 seconds.

Troubleshooting

- **Step 19**: To upload the previous configuration, click on "Browse" to search for the configuration file in the local PC. Click on "Upload Settings".

- The router will reboot to the previous configuration settings

Frequently Asked Questions

Q : What can I do if I am having wireless connection problems?

• Signal strength drop or fluctuation are common causes of RF interference.

Try these basic troubleshooting steps:

• Change the channel on your access point or wireless router.
• 2.4GHz phones, X-10, and bluetooth devices will interfere with your wireless network. Change the location of the base for your phone, or downgrade to 900Mhz phones, or upgrade to 5.8GHz phones.
• Change the location of your wireless products. Subtle changes (2-3 feet) can make a big difference.
• Do not put the access point or wireless router in a cabinet or enclosure.
• The wireless signal will degrade (or die completely) when going through brick (fireplace), metal (file cabinet), steel, lead, mirrors, water (fish tank), large appliances, glass, etc.
• If your wireless connection is only dropping during large file transfers or when a large number of wireless clients are connecting, change the **preamble** on all wireless devices to short.

Frequently Asked Questions

- ## What is 20/40Mhz?

Primary Channel	20 MHz	40 MHz above			40 MHz below		
	blocks	Sec. Ch.	center	blocks	Sec. Ch.	center	blocks
1	1-3	5	3	1-7	Not Available		
2	1-4	6	4	1-8	Not Available		
3	1-5	7	5	1-9	Not Available		
4	2-6	8	6	2-10	Not Available		
5	3-7	9	7	3-11	1	3	1-7
6	4-8	10	8	4-12	2	4	1-8
7	5-9	11	9	5-13	3	5	1-9
8	6-10	12	10	6-13	4	6	2-10
9	7-11	13	11	7-13	5	7	3-11
10	8-12	Not Available			6	8	4-12
11	9-13	Not Available			7	9	5-13
12	10-13	Not Available			8	10	6-13
13	11-13	Not Available			9	11	7-13