VDSL2/ADSL2+ Gateway

BEC 8800N

User Manual

CONTENTS

Caution

This device complies with Part15 of the FCC Rules.Operation is subject to the following conditions:

(1)this device may not cause harmful interference,and

(2) this device must accept any interference received,including interference that may cause undesired operation

Related Documents

Definition & Acronyms

VDSL	Very-High-Bit-Rate Digital Subscriber Loop
DHCP	Dynamic Host Configruration Protocol
FEXT	Far-end Cross Talk
HDSL	High-rate Digital Subscriber Line
POTS	Plain Old Telephone Service
PSTN	Public Switched Telephone Network
WINS	Windows® Internet Name Server
ADSL	Asymmetric Digital Subscriber Line
OAM	Operations, Administration And Maintenance
QAM	Quadrature Amplitude Modulation
DMT	Discrete Multitone
DSL	Digital Subscriber Line
FEC	Forward Error Correction
ATM	Asynchronous Transfer Mode
WAN	Wide Area Network
PRD	Pseudo-random Downstream
PRU	Pseudo-random Upstream
USB	Universal Serial Bus
LAN	Local Area Network
PVC	Permanent Virtual Circuit
SVC	Switched Virtual Circuit

PPP   Point to Point protocol

DNS   Domain Name Server

VPI   Virtual Path ID

VCI   Virtual Circuit ID

IP   Internet Protocol

CO   Central Office

EC   Echo Canceling

OVERVIEW

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1. OVERVIEW

1.1 ABOUT VDSL

VDSL is a fast version of ADSL.VDSL MODEM is a broadband Internet access device，which utilizes the high frequency segment of the phone line to transmit high-speed data without interfering with the voice transmission. The frequency of VDSL signal is higher than that of voice, so voice and VDSL signal can coexist in one line by using a splitter to insulate each from the other. VDSL data transfer on the asymmetry way.   The upload speed is up to 19.2Mbps and download speed is up to 55Mbps. It is an ideal device for broadband access.
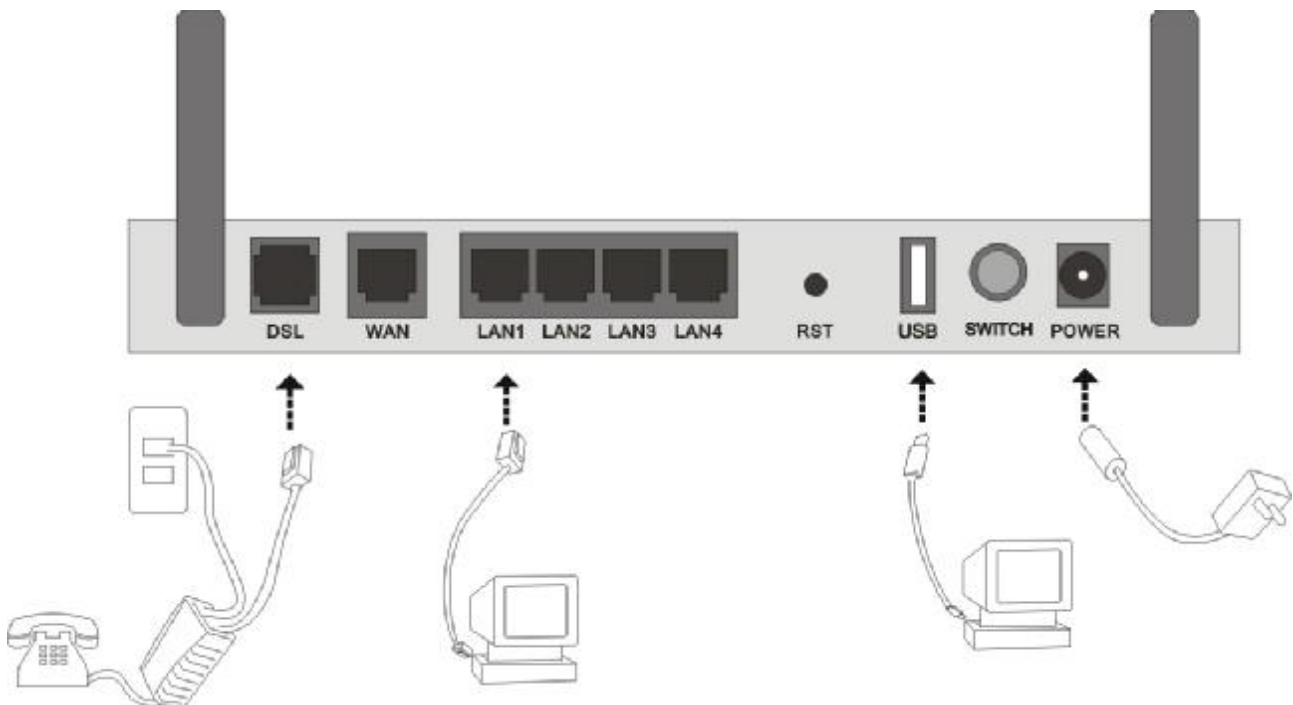
1.2 DEVICE INTRODUCTION

Figure 1.1

Interface introduction:

① Power Interface: 12V DC,1.25A.

② Power switch: To turn on or turn off the power.

③ Reset Key: Reset default configuration.

④ Ethernet Interface: To be connected to a PC network card by a network cable, also can use a crossover cable to connect to Hub, Switch or Router.

⑤ Line Interface: Connected with phone line or "VDSL" port of the splitter.

1.3 LED STATUS INDICATION

Table 1.1

Status	POWER (green)	LINK (green)	DATA (green)	USB(green)	WiFi (green)
Steady light	Power on	The modem is in good connection	PPP is on	USB line is connected	Wireless is connected
Flashing	/	No signal	/	USB port transmit or receive data	/
Fast flashing	/	In handshaking status	Transmitting or receiving data in PPP mode	/	/
Off	Power off	Power off	PPP is Off	USB line not connected properly	Wireless is not connected

1.4 PROTOCOLS

VDSL Modem supports the following protocols:

1. PPPoA（PPP over ATM ） LLC encapsulation or VCMUX encapsulation (RFC2364)
2. PPPoE (PPP over Ethernet) LLC encapsulation or VCMUX encapsulation (RFC2516)
3. 1483 bridge（1483 Bridged IP over ATM）LLC encapsulation or VCMUX encapsulation (RFC1483)
4. 1483 routing（1483 Routing IP over ATM）LLC encapsulation or VCMUX encapsulation (RFC1483)
5. Classical IP over ATM (RFC1577)

1.5 FEATURES

1. Supports ANSI T1.413 ISSUE 2, ITU G.992.1(G.DMT), ITU G.992.2(G.LITE), ITU G.992.3, ITU G.992.5.

2. Web-based configuration and monitoring.

3. Supports up to 8 PVCs.

4. Routing function.

5. NAPT、DHCP function.

6. Software upgradeable.

7. ATM management function.

HARDWARE INSTALLATION AND SOFTWARE CONFIGURATION

2

2. HARDWARE INSTALLATION AND SOFTWARE CONFIGURATION

2.1 SYSTEM REQUIREMENT

A computer with a USB interface or a network card with Ethernet interface.

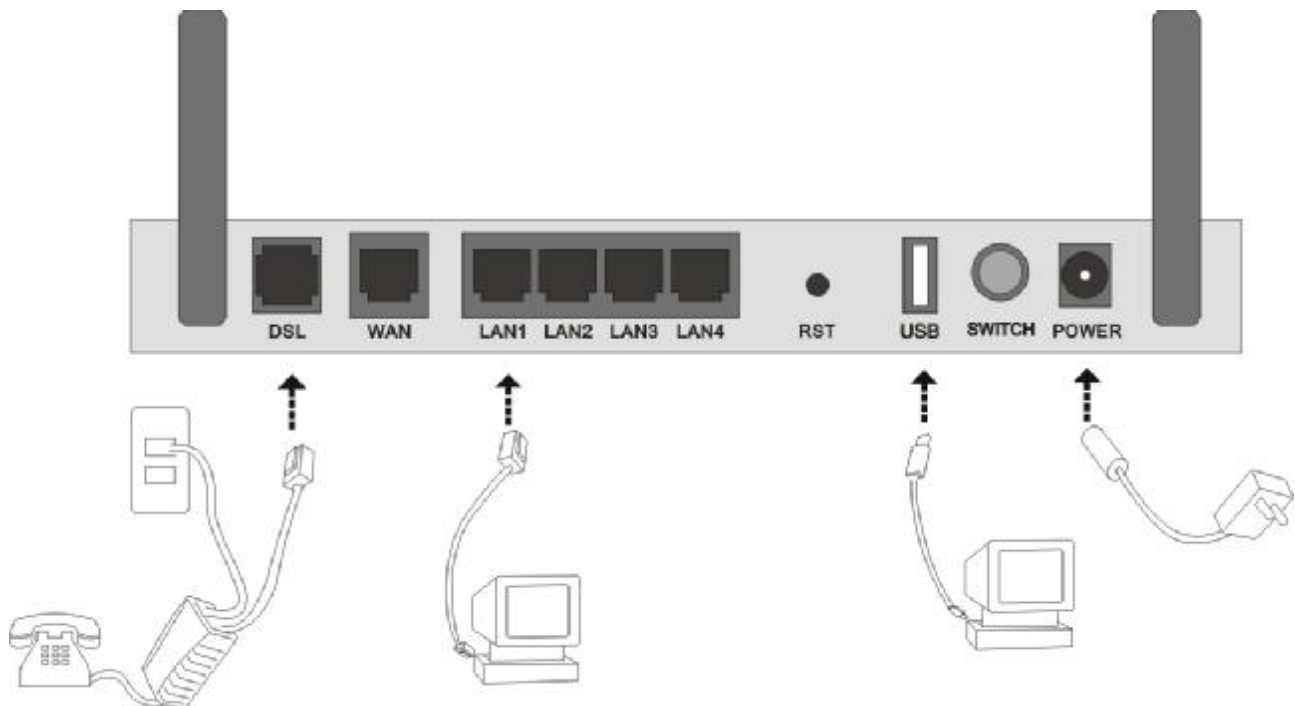### 2.2 HARDWARE INSTALLATION

2.2.1 HARDWARE CONNECTION

Figure 2.1

To go online and make phone calls simultaneously, please refer to Appendix B: SPLITTER CONNECTION.

2.2.2 INSTALLATION STEPS

1. Connect line port of the VDSL MODEM to telephone jack with the telephone cord that comes with the

modem.

2. Connect Ethernet port of the VDSL MODEM to Ethernet port of the computer using the network cable that comes with the modem.

3. Connect USB port of the VDSL MODEM to USB port of the computer using the USB cable that comes with the modem.

4. Plug in the power cord , and turn on the power.

2.3 SOFTWARE CONFIGURATION

2.3.1 PREPARATION BEFORE SOFTWARE INSTALLATION

Before the installation, please confirm information below or consult with the VDSL service provider. Table 2.1 shows all the information needed to configure for different protocols.

Table 2.1

Protocol	Virtual Dial Mode		Private Line Mode
	PPPOE	PPPOA	1483 Bridged
Necessary Information	VPI	VPI	VPI
	VCI	VCI	VCI
	User name	User name	
	Password	Password	

2.3.2 COMPUTER CONFIGURATION

The default factory-set IP Address for the VDSL MODEM is: 192.168.1.1. The Subnet Mask is: 255.255.255.0. Users can configure VDSL MODEM through an Internet browser. VDSL MODEM can be used as a gateway and DNS server and users need to set the computer's TCP/IP protocol as follow:

1. Set the computer at same Internet segment with VDSL MODEM so as to enter VDSL MODEM configuration page through a browser.

2. Set the computer's gateway's IP address the same as the VDSL Modem's.

3. Set the computer's DNS server's IP address the same as the VDSL Modem's or that of an effective DNS server.

If the user has any question regarding the computer's TCP/IP protocol, please refer to APPENDIX C: TCP/IP PROTOCOL CONFIGURATION.

2.3.3 VDSL MODEM CONFIGURATION

Open the browser; input **http://192.168.1.1** in the address column. Press "Enter" key then the entry dialog box will pop up as Figure 2.2, Input username: **admin,** and password: **admin**   (Note that this is capital sensitive), then press "Enter".   The VDSL MODEM configuration page will be shown.

Figure 2.2

2.3.4 VDSL MODEM WORK MODE CONFIGURATION

1． For different protocols, the users need to set VDSL Modem accordingly as listed below:

Table 2.2

	ATM VC	Protocol	Use DNS	User Name	Password
PPPoE PPPoA	√	PPPoE	Enable	√	√
	√	PPPoA	Enable	√	√

	Lower interface	Default route
1483 Bridged	√	Disable

Note: √ means configure according to VDSL service provider's instructed value.

PPPoE can also be realized via third party dialup software.

User Manual Reference Chapter	PPPoE	PPPoA	1483 Bridged
	3.3	3.3	3.2

2． After getting through every page for parameters set-up, click "Apply" to save the value in VDSL MODEM

3． Click the "**Restore Default Settings**" on "**Management**" Tab to enter the saving configuration page as Figure 2.3. After the Modem reboot,The VDSL MODEM will work on the new parameters.
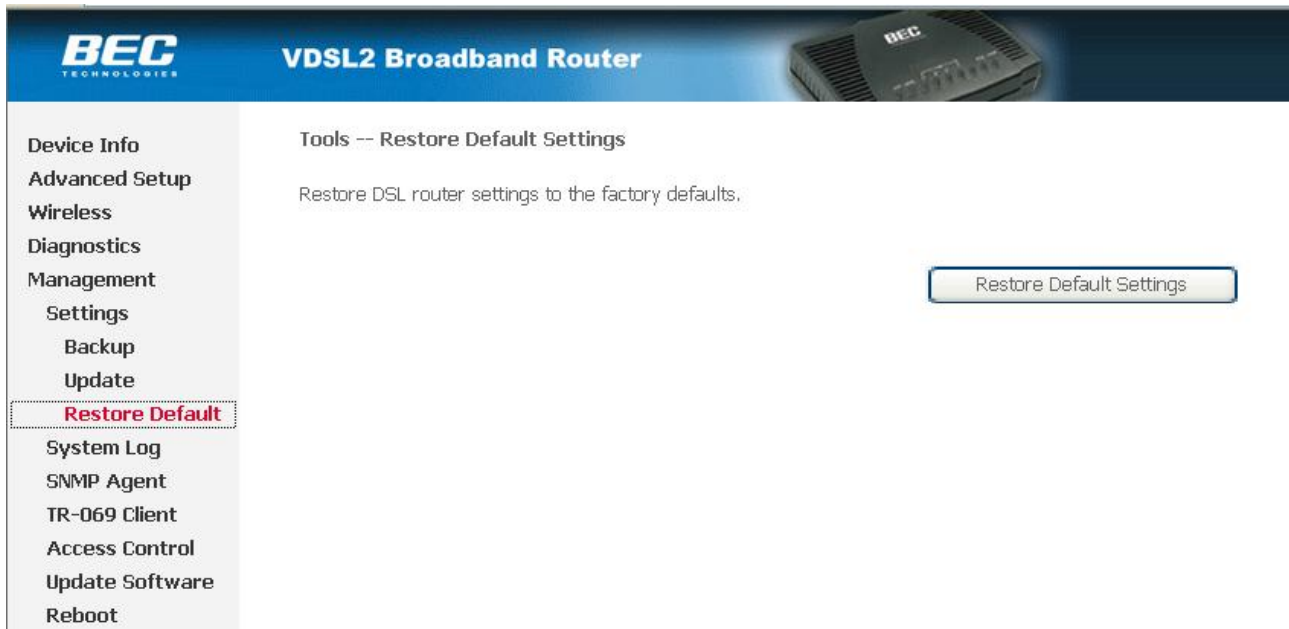
Figure 2.3

PROTOCAL CONFIGURATION

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3. PROTOCOL CONFIGURATION

If the configuration is bridge encapsulation, there is no need to configure any more parameters. Only need to use the third party dial-up software to connect the Internet.

Totally, this router supports：PPPoA、PPPoE、Bridging. For detail configuration information, please check the following configuration guide.

3.1 CONFIGURATION GUIDE

Click "Advanced Setup" on the left page, enter into **"DSL ATM Interface Configuration"** page.

Note: At most we can have eight connections. If you need to add a new connection, please delete or modify an existing connection

Figure 3.1

Click on the next connection which you want add. Press "Add" button, enter the configure guide, as Figure 3.2
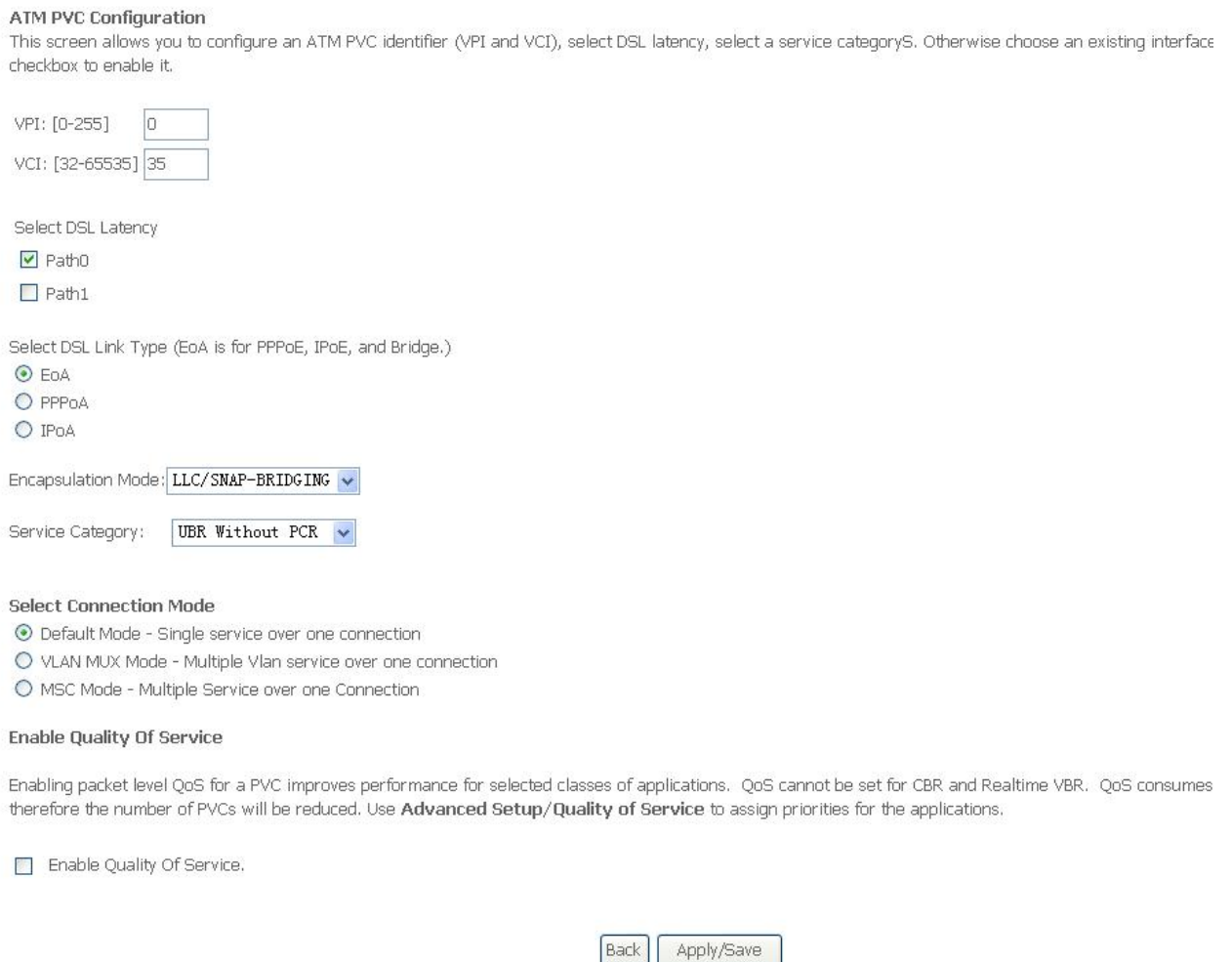

Figure 3.2

The value for VPI/VCI is assigned by your ISP.   After inputing the PVC value, press "Apply/Save" to save configuration.   As Figure 3.3.

Figure 3.3

The Modem supports five VDSL protocol modes. Choose the protocol which is appointed by ISP and PVC encapsulation.

• PPP over ATM (PPPoA)   • PPP over Ethernet (PPPoE)

• Bridging

Some connection lines need to confirm the LLC or VC, if you can't confirm, please don't modify the default value or ask your ISP.

3.2 RFC1483 BRIDGE CONFIGURATION

Click "Advanced Setup" on the left page, enter into **"**WAN Service Setup" page. As Figure 3.4.

Note: At most we can have eight connections. If you need to add a new connection, please delete or modify an existing connection
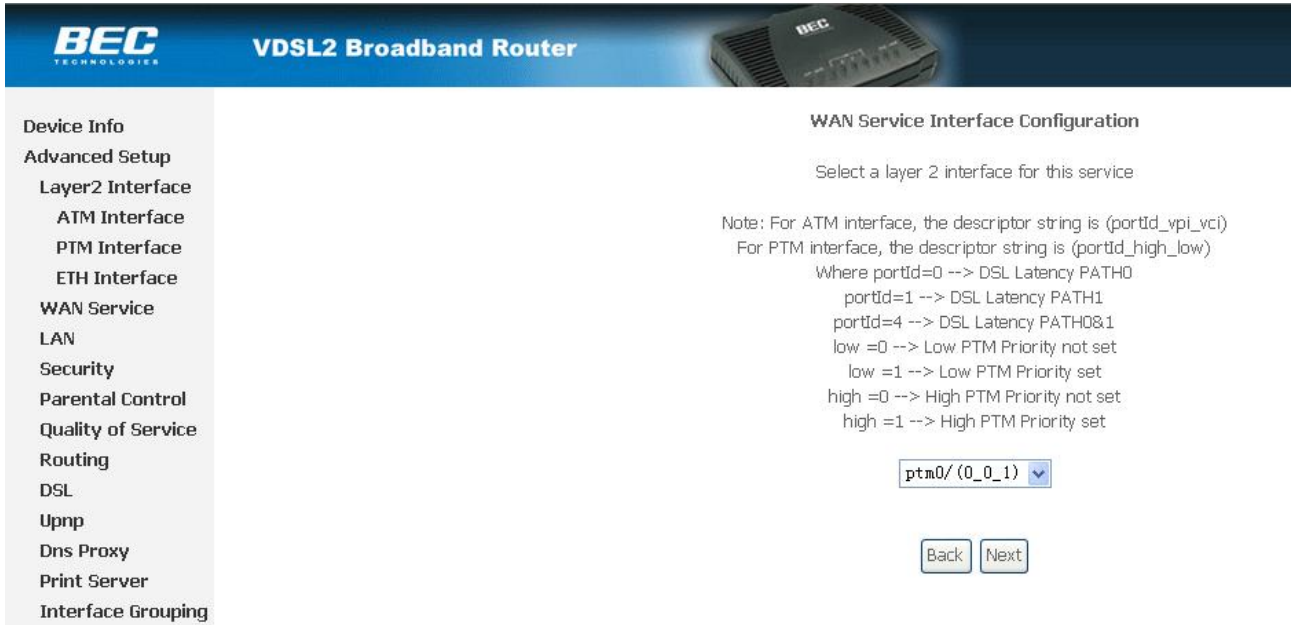
Figure 3.4

Press "Next" button, enter the configure guide, as Figure 3.5

Figure 3.5

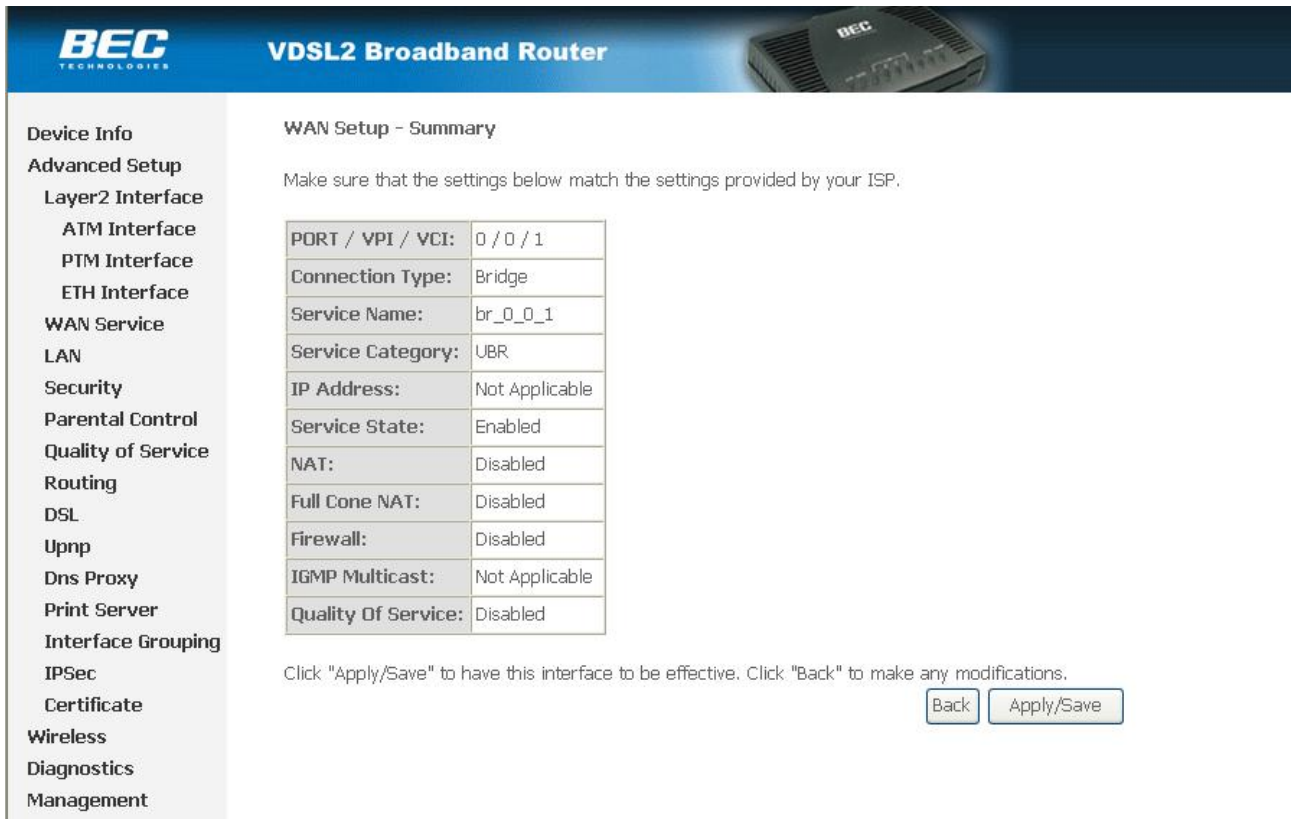Press "Next" button, enter the configure guide, as Figure 3.6

Figure 3.6

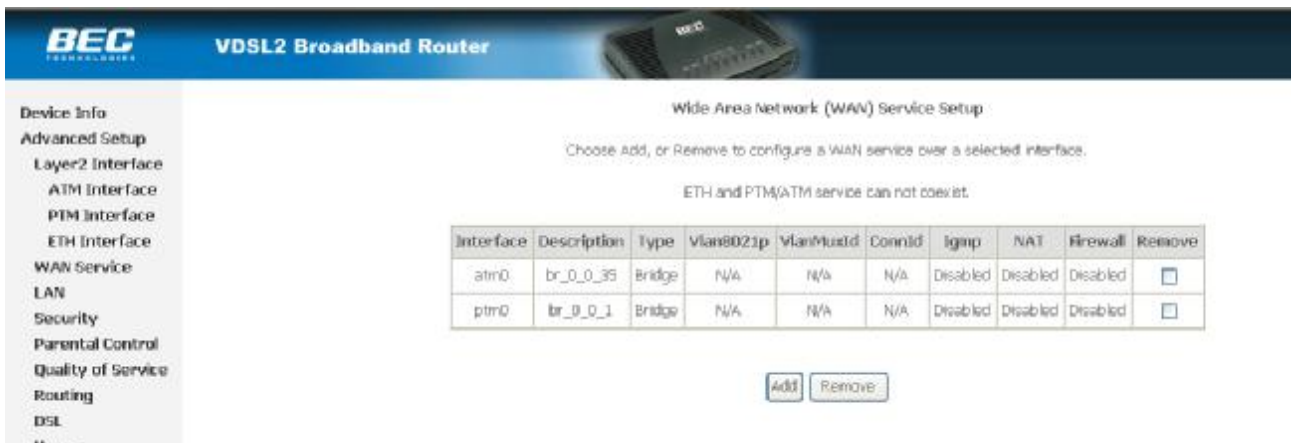Press "Apple/Save" to save your configuration,and you will see as following Figure 3.7.

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Figure 3.7

3.3 PPPOA AND PPPOE CONFIGURATION

PPPoE is also known as RFC 2516. It is a method of encapsulating PPP packets over Ethernet.

PPPoA is also known as RFC2364 and named as Peer to Peer Protocol over ATM. As PPPoE, it also has all the features of PPP. Although it's based on ATM protocol, the setting of all the other parameters is similar with PPPoE. So we only introduce PPPoE in detail here.

Click "Advanced Setup" on the left page, enter into "WAN Service Setup" page.

Note: At most we can have eight connections. If you need to add a new connection, please delete or modify

an existing connection

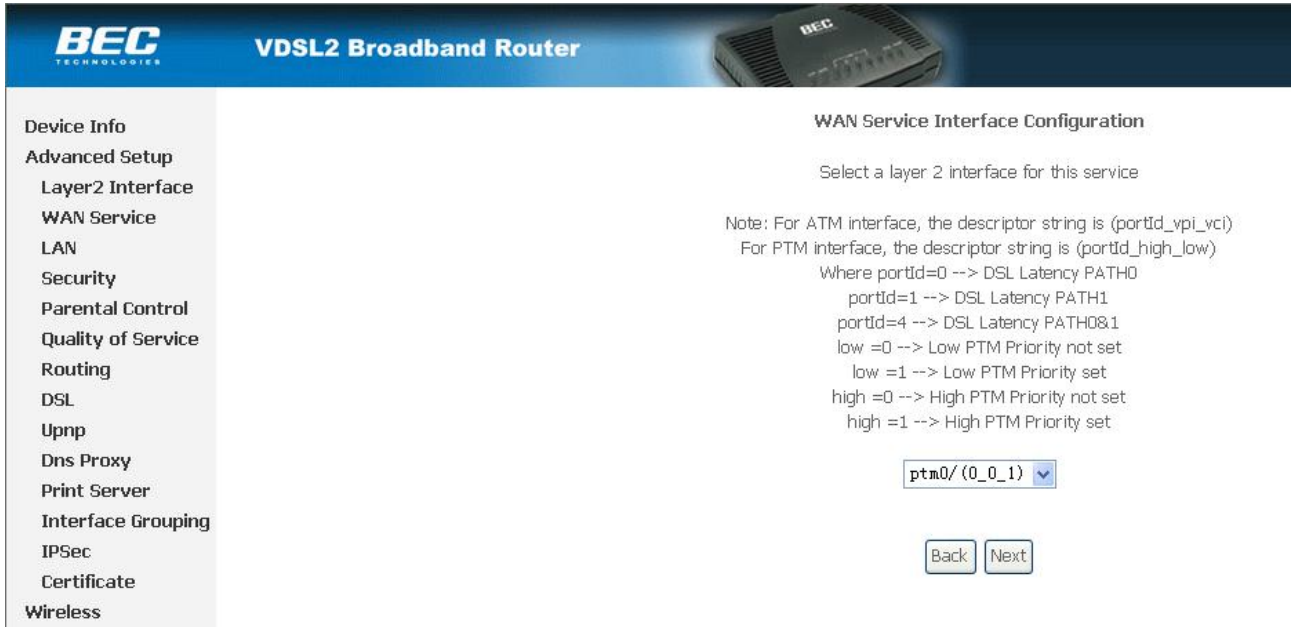
Figure 3.8

Press "Next" button, enter the configure guide, as Figure 3.9
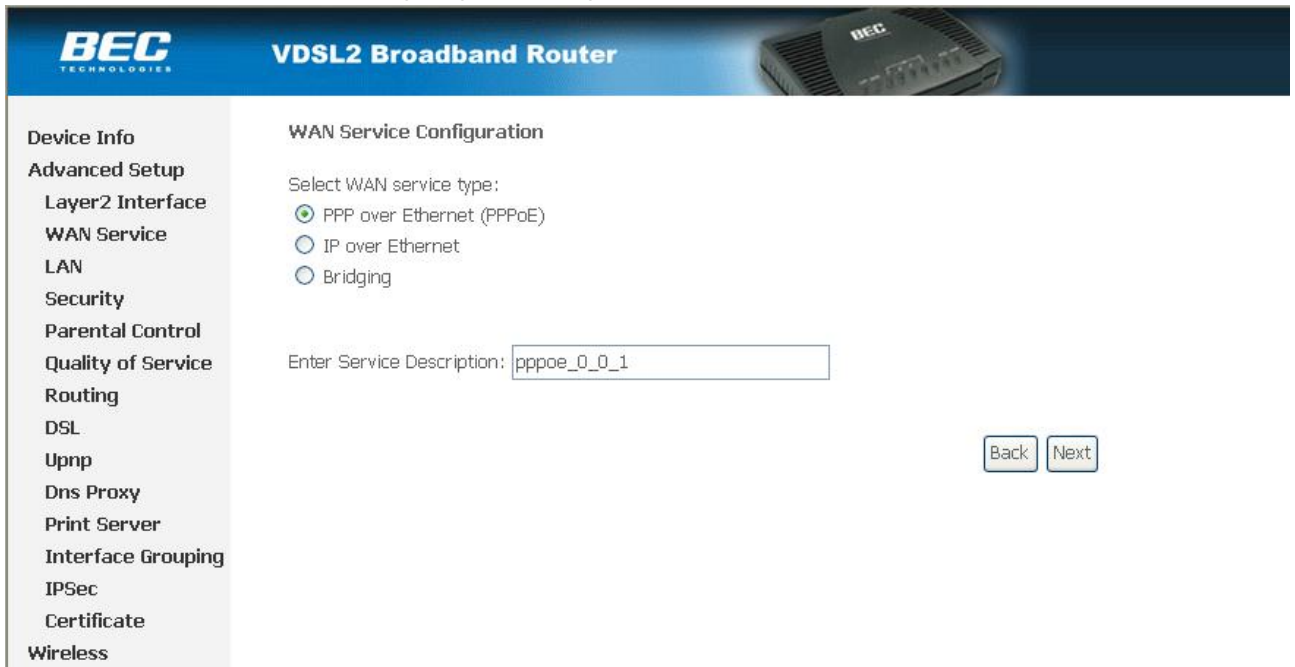

Figure 3.9

The value for VPI/VCI is assigned by your ISP.Press "Next" button, enter the configure guide, as Figure 3.10.
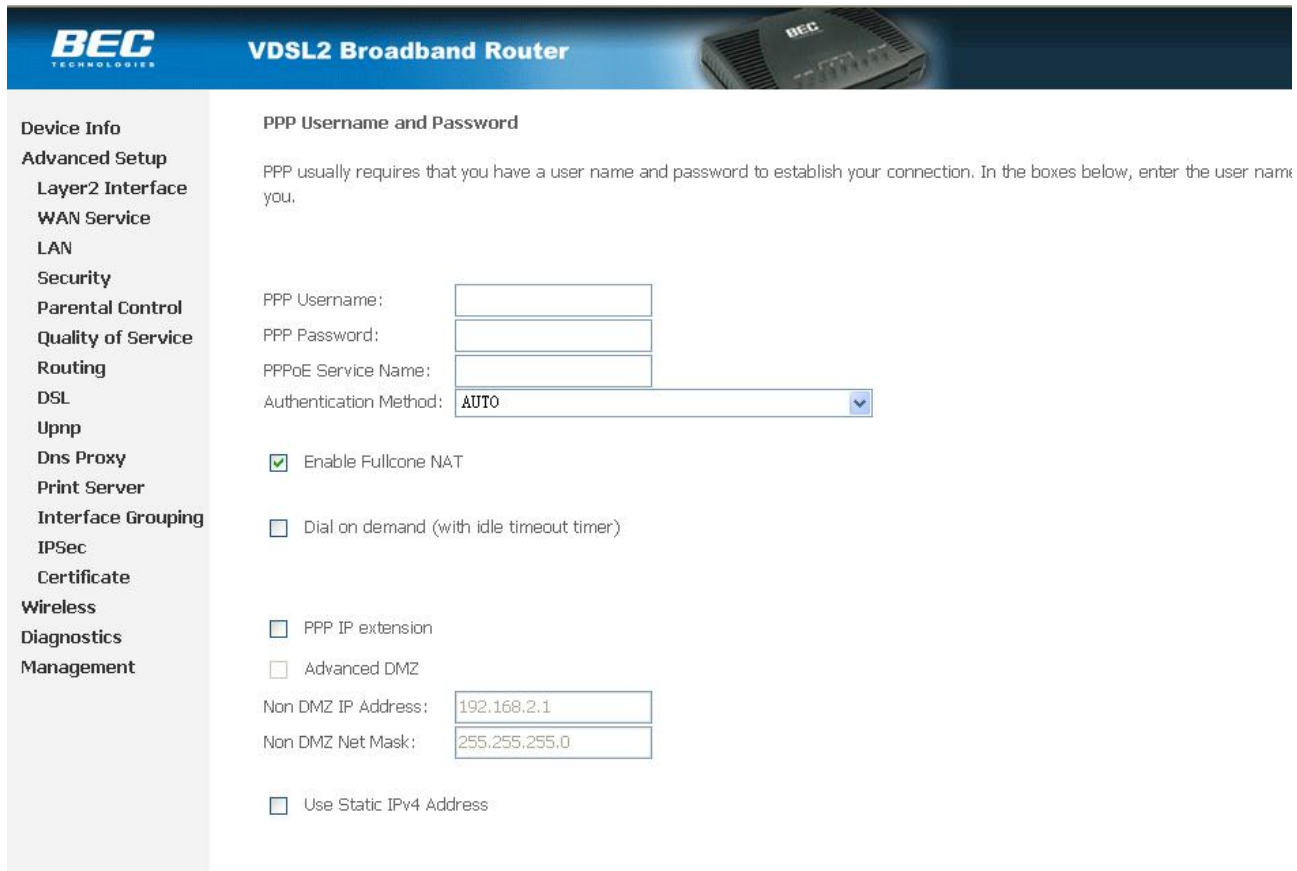
Figure 3.10

Ealble "Fullcone NAT "press "Next" to continue.   As Figure 3.11.
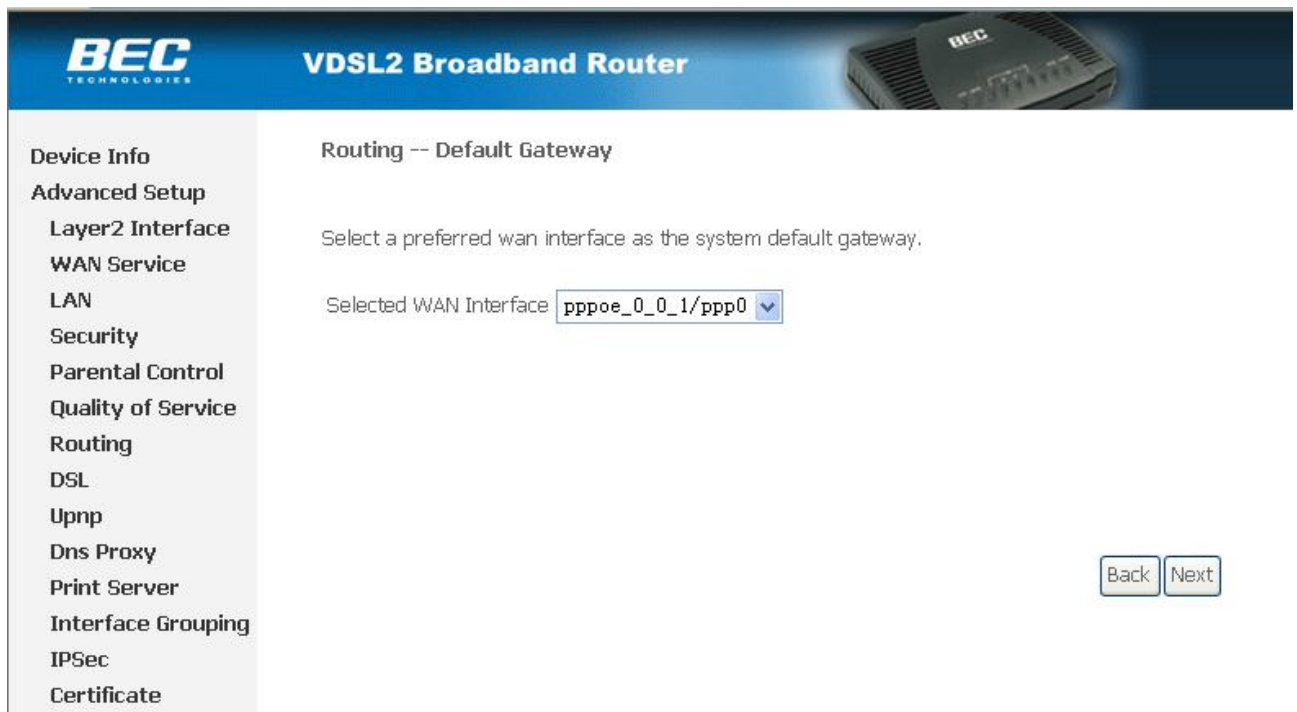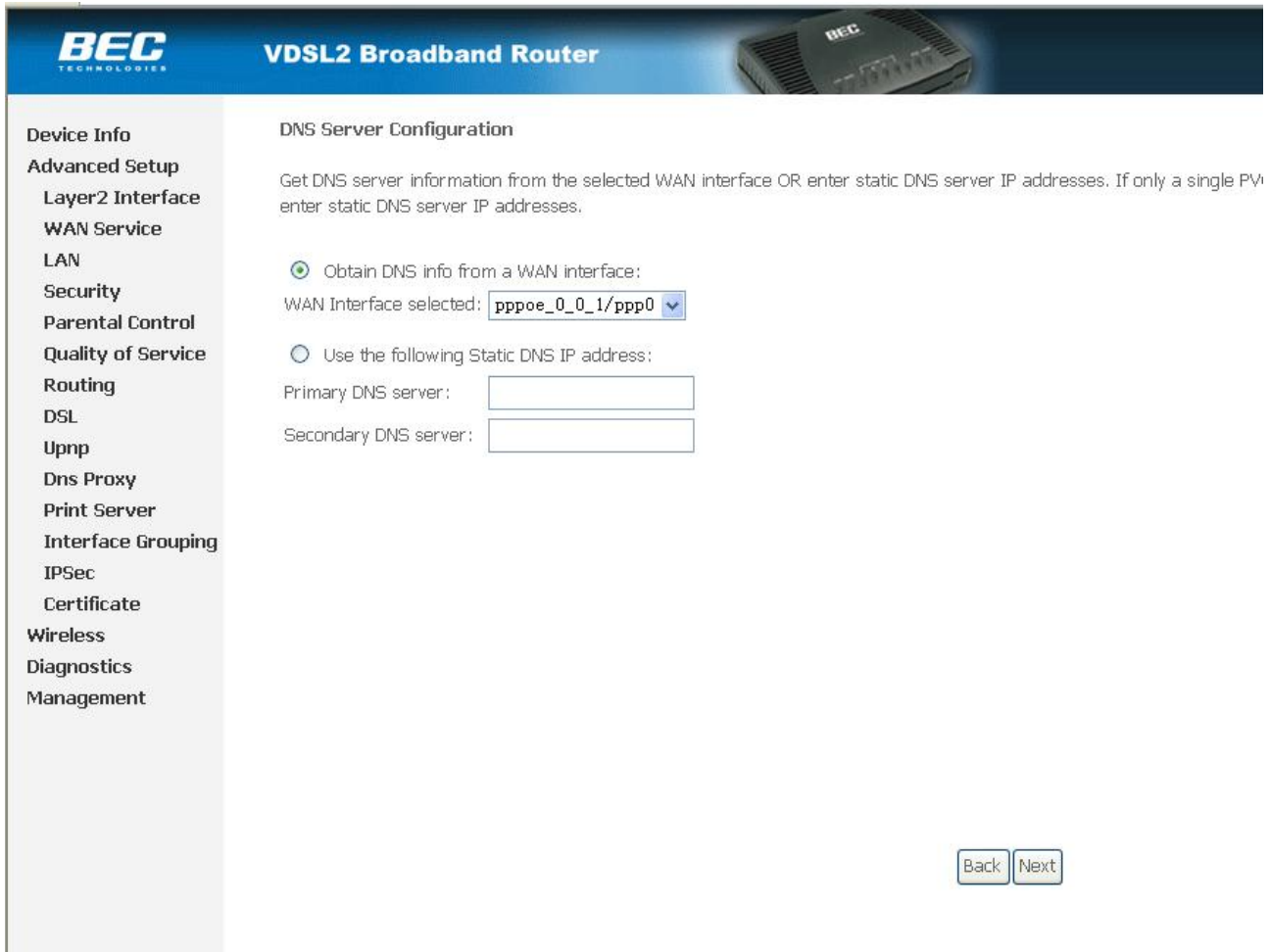
Figure 3.11

Press "Next" to continue. As Figure 3.12

. Figure 3.12

Configure your DNS info and press "Next" to save your configuration,and you will see as following Figure 3.13.

.
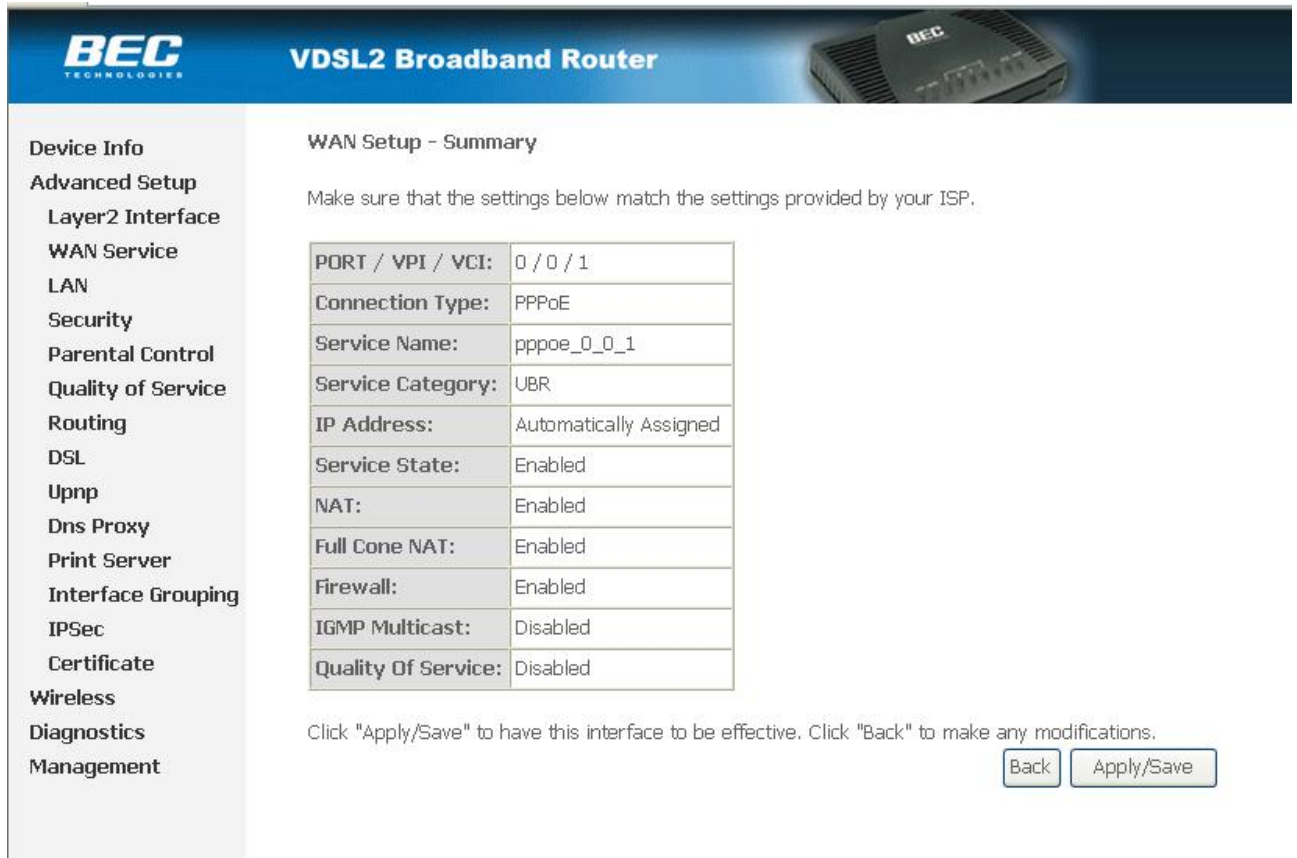
Figure 3.13

Press "Apply/Save" to save your configuration. As Figure 3.14.

Figure 3.14

4.1 TCP/IP PROTOCOL CONFIGURATION

1. Set IP address as "192.168.1.1";
2. Set netmask as"255.255.255.0";

4.2 MODEM CONFIGURATION
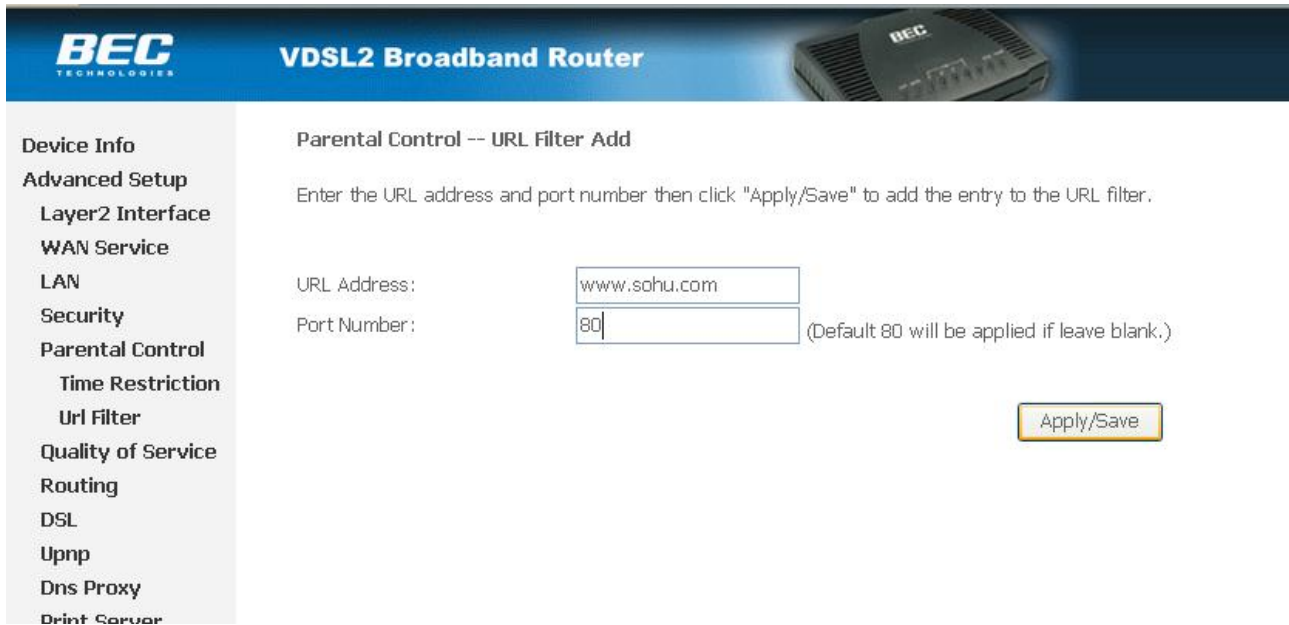
1. Click "Advanced Setup" on the left page, enter into **"Url Filter"** page, shown as Figure 4.1.

Figure 4.1

2. URL FILTER settings:

a) Choose Exclude or Include,then press ''add'' to add the url you want to configration.

b) Fill in the url and press Apply/Save to save your configration, shown as Figure 4.2

BEC TECHNOLOGIES

VDSL2 Broadband Router

Device Info
Advanced Setup
  Layer2 Interface
  WAN Service
  LAN
  Security
  Parental Control
    Time Restriction
    Url Filter
  Quality of Service
  Routing
  DSL
  Upnp
  Dns Proxy
  Print Server

Parental Control -- URL Filter Add

Enter the URL address and port number then click "Apply/Save" to add the entry to the URL filter.

URL Address: www.sohu.com

Port Number: 80 (Default 80 will be applied if leave blank.)

Apply/Save

Figure 4.2

OTHER FUNCTIONS AND CONFIGURATION

5
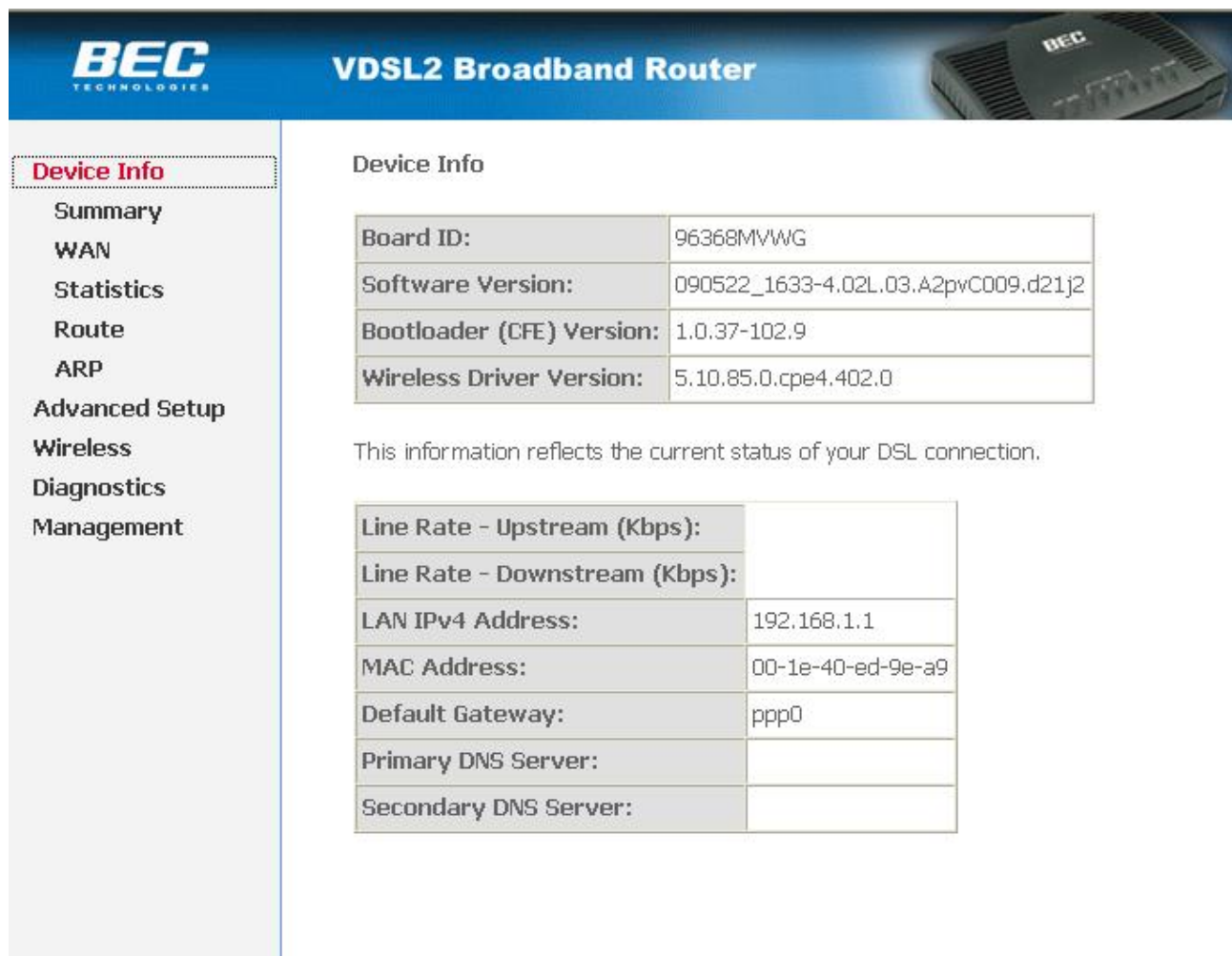
5. OTHER FUNCTIONS AND CONFIGURATION

5.1 STATUS CHECKING

The working status of VDSL MODEM can be monitored by some pages.

1.   Overview of Device Information

As shown in Figure 5.1, the information of hardware version, software version, DSL link status, link speed and LAN interface can be viewed on this page.

Figure 5.1

5.2 CONFIGURATION OF MODEM'S IP ADDRESS AND PASSWORD

1.   CONFIGURATION OF MODEM'S IP ADDRESS

As a network device, VDSL Modem has its own IP address and MAC address. The factory sets the VDSL Modem at a default IP address of **192.168.1.1** and subnet mask of **255.255.255.0**. The user can configure these addresses through the Local Network page as shown in Figure 5.2
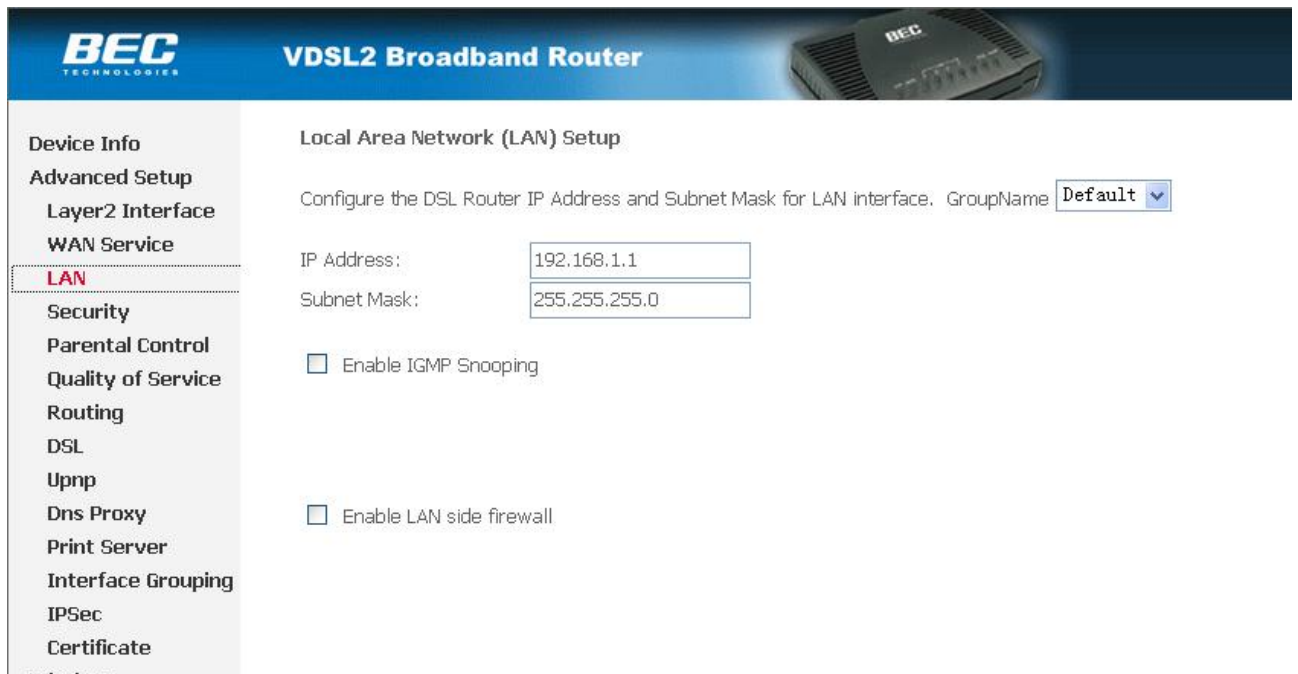
Figure 5.2**.**

2.   Configuration of administrator's password and user's password

When logging on the setting page of VDSL Modem, the system requires user name and password to verify for permission. The default administrator's account is "admin" and the default password for this account is "admin". The user, through the user configuration tab on page **M**anagement, can change the passwords. (Attention: please remember the password after changing otherwise you will not be able to change configuration after saving.)

RESET TO DEFAULT SETTING

6

6. RESET TO DEFAULT SETTING

If you are experiencing difficulty logging on to the configuration page (For example: you forget the password), you can reset the VDSL MODEM to the default configuration，Then you will be able to log on with the default username and password.

Method:

Turn on the VDSL MODEM, put a pin into the eyelet, and press only once.

7
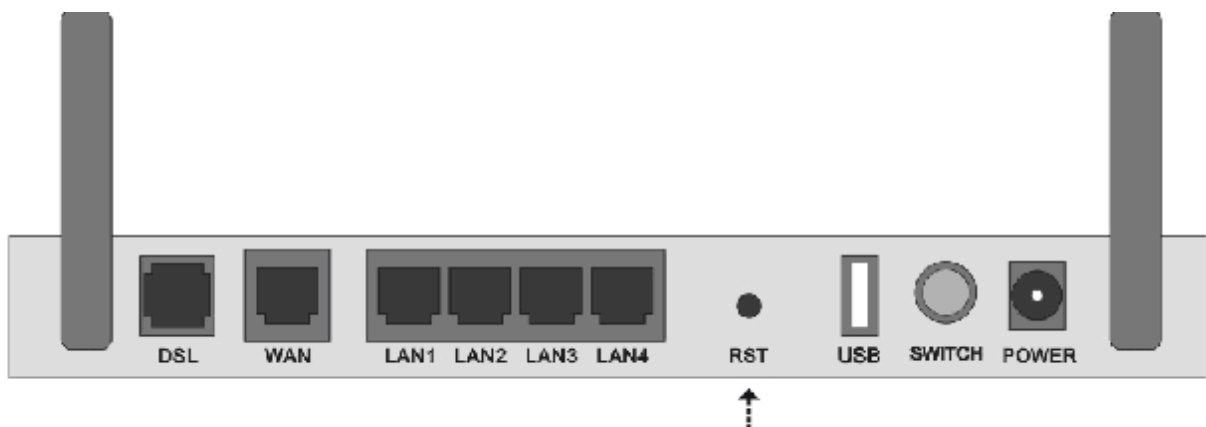
USAGE OF USB INTERFACE

7. USAGE OF USB INTERFACE

The Combo DSL Gateway is a device with both Ethernet Interface and USB Interface, which is independent, you may use either of them to connect to the different computers, in this way the two computers can connect to the network at one time.   The Gateway can be seen as a simple two-port HUB.   So, do not connect both the Ethernet Interface and USB Interface to a same computer.

When using USB Interface, you must install the drivers.   After installation, a virtual network card, "USB Remote NDIS Network Device", will be added into the computer.   It has all the functions of a real network card, and it makes installation more easily.

NOTES:

The following shows the steps for Windows®2000, the installation, configuration and uninstallation of Windows®98 or Windows®XP are similar to this.

7.1 DRIVER INSTALLATION

1. Open the Modem, and connect the USB port.   Then double click "Setup.exe" in "G:\Driver\" .   You will enter the **DSL MODEM Setup Wizard** as figure 7.1.1, click "Next".

Figure 7.1.1

2. A new dialog box will show you a figure 7.1.2.   Click "Accept" to continue.

Figure 7.1.2

3. A new box will show whether you want to reboot the computer.   Choose "No, I will reboot the computer later", then click "close" button to finish the installing.

Figure 7.1.3

7.2 UNINSTILL DRIVER

1.Click "**Start**" à "**Program**s" à "**DSL Two Ports MODEM**" à "**Uninstall**". As shown figure 7.2.1.
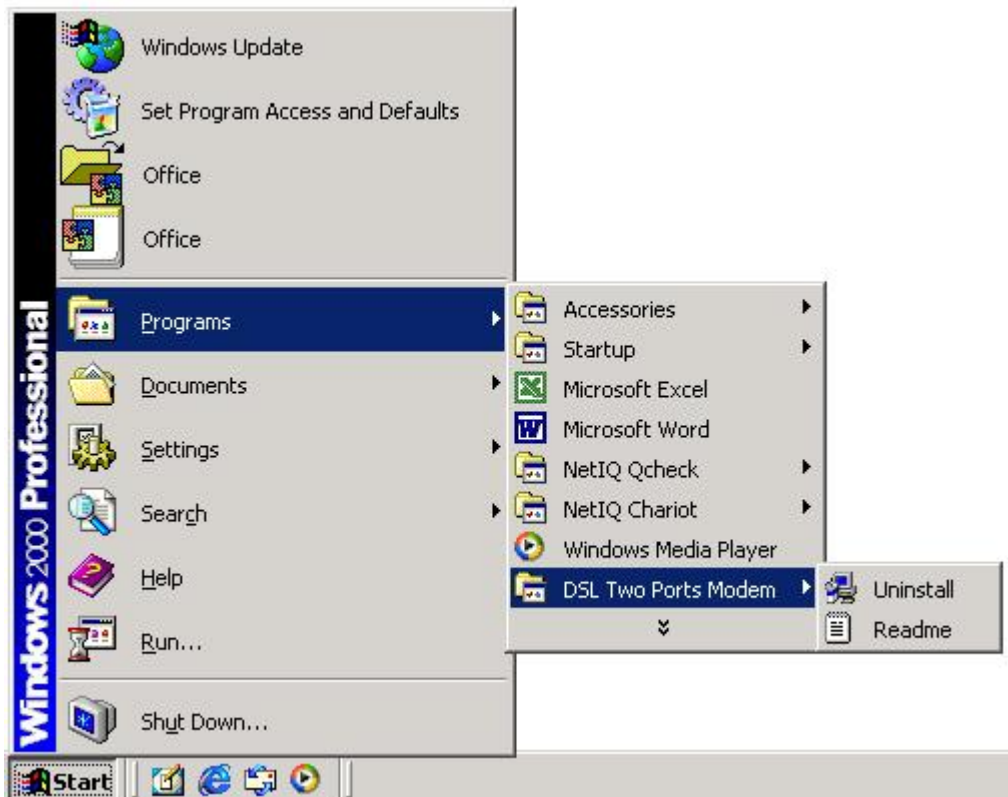
Figure 7.2.1

2. It will ask you to click "**Ye**s" to confirm deletion. As shown figure 7.2.2.
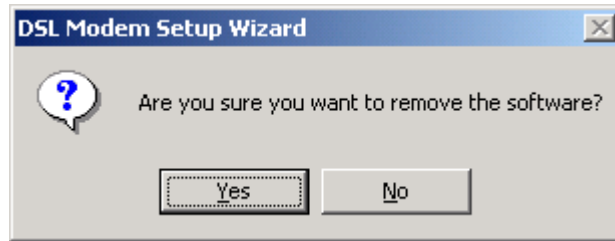
Figure 7.2.2

3．Choose "Yes, reboot the computer now". As shown figure 7.2.3.

Figure 7.2.3

7.3 CONFIGURATION OF "USB IAD LAN MODEM"

As a virtual network card, "USB IAD LAN MODEM " can be configured as a normal network card.

Set the computer IP address at same segment of VDSL MODEM, such as set the IP address of the network card to one of the "192.168.1.3"～ "192.168.1.254".

User can also change its configuration for special reason.
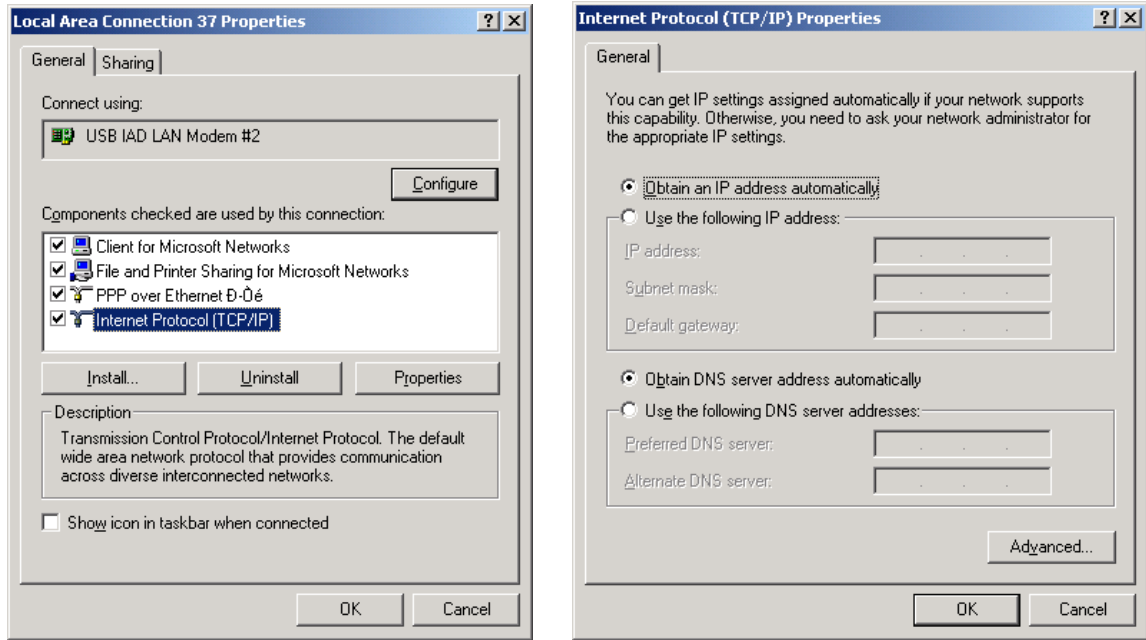
Figure 7.3.1

SPECIFICATION 8

8. SPECIFICATION

8.1 POWER SUPPLY

l   Exterior power adapter

l   Input: 220VAC, 50Hz

l   Output: 12VDC

l   Polarity：$\oplus$—$\odot$—$\ominus$

8.2 STANDARDS

l   EMI/Immunity: FCC Part 15 Class B, CE Mark (EN55022 Class B/EN50082)

l   Safety Standard: UL, EN60950, 3C

l   Communication: FCC   Part 68, CYR21

l   Electromagnetic: in accordance with FCC, ETSI and CISPR standard

8.3 ENVIRONMENT REQUIREMENTS

l   Temperature: 5℃－40℃(41F－104F)

l   Relative humidity:30%－90%

l   Electromagnetic disturbance：FCC PART15&68

APPENDIX

APPENDIX

APPENDIX A. TROUBLESHOOTING

Phenomena	Solution
The indicator of power supply is not on	1. Make sure the connection of power supply is good. 2. Make sure the switch of power supply is turned on. 3. Make sure the output of power supply is correct.
The indicator of PC is not on	1. Check the connection between the cable and the network card. 2. Make sure that the correct cable is used. 3. Make sure the cable works fine by pinging the host IP address.
Can not access Internet or remote networks	1. Make sure the problems listed above are eliminated. 2. Make sure the software configuration of the VDSL Modem is correct. 3. Make sure you have restarted the VDSL Modem after configuration change. 4. Check IP connection using ping command. 5. Make sure the DNS of the computer is correct.
Can't access some web server	1. The MTU of operating system might be too large. 2. Some operating systems might need to be patched.
Can not log on to the configuration page	1. Make sure the PC indicator is on. 2. Make sure the configuration of TCP/IP is correct. 3. Make sure the data indicator of Modem is on when using Ping command. 4. Make sure the user name and password is correct. 5. Reset the device.

APPENDIX B. SPLITTER CONNECTION

1. **Splitter**
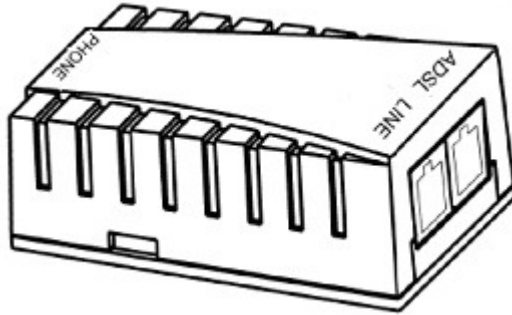
2. **Connection**

Firstly, use a telephone cord to connect the LINE port of the splitter and the RJ-11 port (the phone jack) on the wall. Then use another telephone cord to connect the VDSL port of the splitter and the LINE port of the VDSL Modem. Finally, use another telephone cord to connect the telephone set and the PHONE port of the splitter.
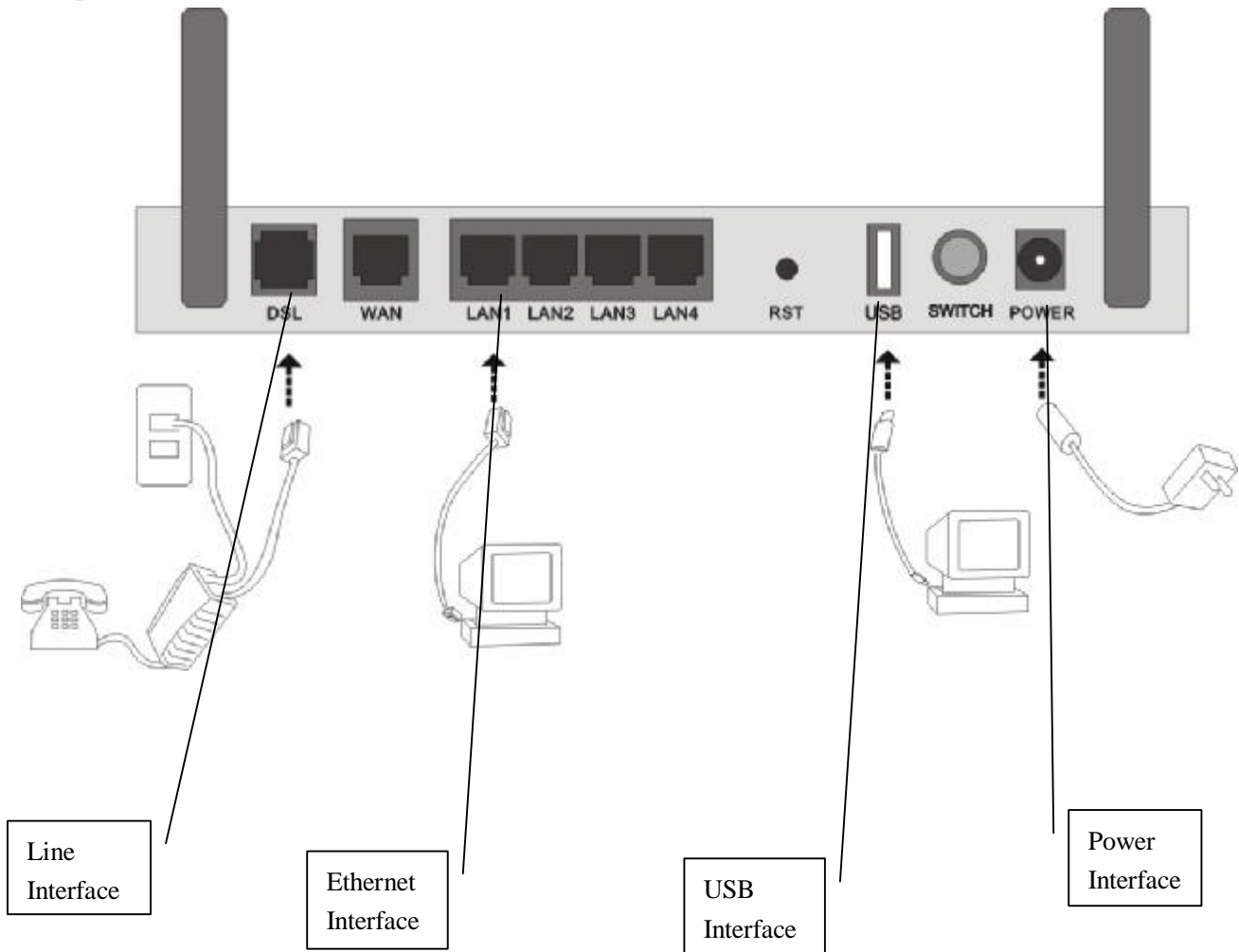
APPENDIX C. CONFIGURATION OF TCP/IP PROTOCOL

Here we will explain the configuration which using Windows 2000 operation system as an example. For other operation systems the process is similar.

1. Right click on the "**Local Area Connection**", click "**Properties**" on the pop up menu, as shown in Figure C.1.
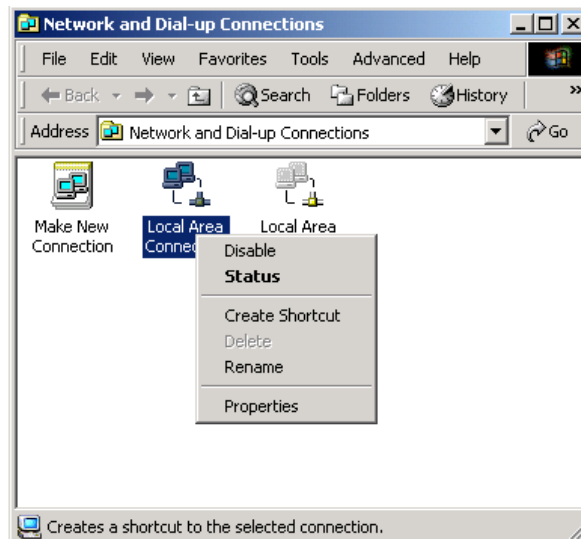
Figure C.1

2. The dialog box of networks is shown in Figure C.2. On the "**General**" property page select "**Internet Protocol(TCP/IP)**"，and then click the "**Properties**" button.
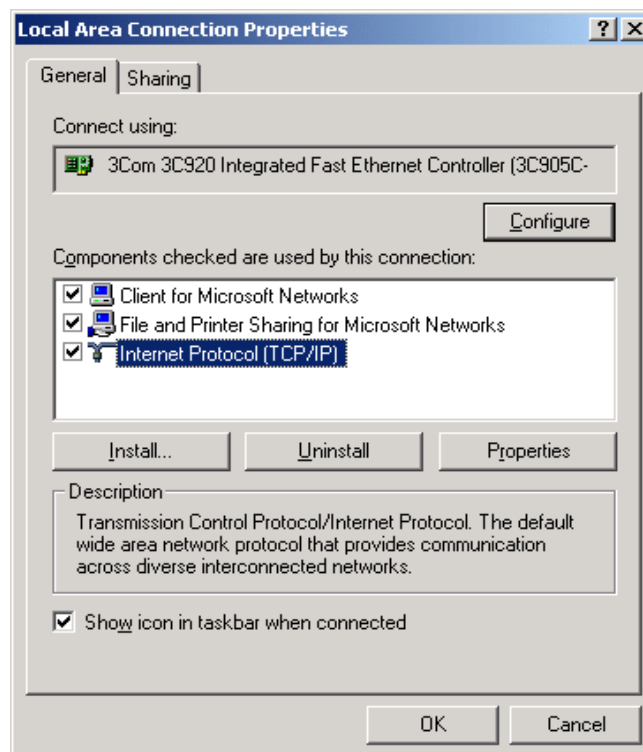
Figure C.2

3. The "**Internet Protocol (TCP/IP) properties**" pop up window is shown as Figure C.3. Select "**Use the following IP address**". Input the following IP address: 192.168.1.11 and subnet mask: 255.255.255.0 (These addresses and subnet mask are similar with the factory default setting. The user can set different IP address and subnet mask whenever necessary). Select "Gateway", input the default IP address of the gateway: 192.168.1.1 and IP address of Preferred DNS server: 202.96.209.133 (you can use your ISP's address), IP address of Alternate DNS server: 202.96.209.5(you can use your ISP's address). The result is shown in Figure C.3.
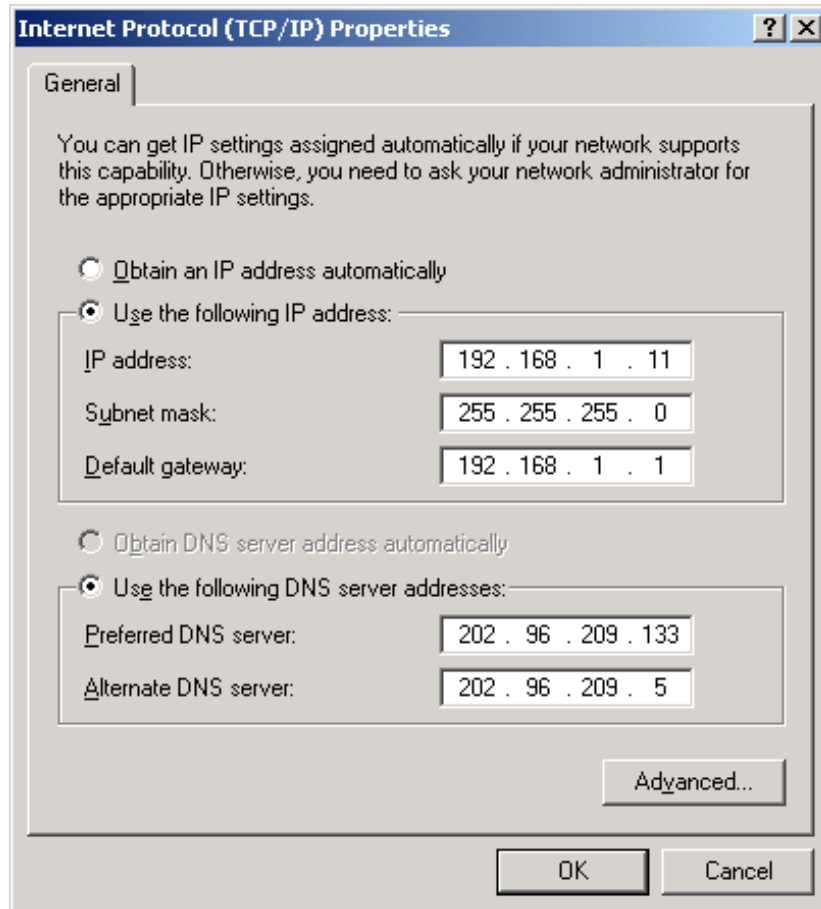
Figure C.3

4. Click "OK" button to return to the "**Local Area Connection Property**" dialog box.

5. Click "OK" button to close the Network property dialog box.

APPENDIX D. SHIPPING LIST

Make sure the following items are included in the box. If any one of them is missing, please contact the vendor immediately.

VDSL MODEM	×1
User Manual	×1
Telephone Line(RJ-11)	×2
Power Adapter	×1
USB Line	×1
Cable Cat5 RJ45	×1
User CD	×1
Splitter	×1

FCC INFORMATION

This equipment complies with CFR 47, Part 15.19 of the FCC rules. Operation of the equipment is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received; including interference that may cause undesired operation.

THIS DEVICE MUST NOT BE CO-LOCATED OR OPERATING IN CONJUNCTION WITH ANY OTHER ANTENNA OR TRANSMITTER

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Federal Communications Commission (FCC) Requirements, Part 15

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

   ---Reorient or relocate the receiving antenna.

   ---Increase the separation between the equipment and receiver.

   ---Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

   ---Consult the dealer or an experienced radio/TV technician for help.

REGULATORY INFORMATION / DISCLAIMERS

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government

CAUTION: To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use on the supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

MPE Statement (Safety Information)

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

SAFETY INFORMATION

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use only with supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

Please use the factory recommended power supply.