

WH-ADSL-318RI One Port ADSL2+ Router

User Manual

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1 Overview

Thank you for using this Asymmetric Digital Subscriber Line (ADSL) router. With the asymmetric technology, this device runs over standard copper phone lines. In addition, ADSL allows you to have both voice and data services in use simultaneously all over one phone line. It is an ideal solution for the small and medium size business environment.

This ADSL router provides a 10/100BaseT interface for Ethernet connection. Computers can connect to the router via its Ethernet port to share its high-speed Internet access. You can connect to its port regardless of the operating system you are using. It receives adaptive rates up to 24Mbps and transmits 1Mbps upstream.

1.1 Features

1.1.1 ADSL Compliance

- ANSI T1.413 issue 2
- VLAN tagging
- Downstream: Up to 24Mbps.
- Max upstream speed: 1Mbps.
- Rate Adaptive at 32 Kbps steps
- Interoperable with all major DSLAM equipment
- TR-069 compliant with ACS

1.1.2 Standards & Protocols Conformance

- ITU G.994.1 G.992.1(G.DMT) G.992.2(G.LITE)
- ITU G.992.3(G.DMT.BIS)
- ITU G.992.5
- T1.413
- PPPoE

- PPPoA
- IPoA

1.1.3 Operating System Support

- WINDOWS 98
- WINDOWS 98 SE
- WINDOWS ME
- WINDOWS 2000
- WINDOWS XP
- Macintosh
- LINUX

1.1.4 ATM Capabilities

- ATM Connection
- VPI Range: 0-255
- VCI Range: 32-65535
- AESA (E.164, DCC, ICD)
- PVC Support
- UNI 3.0 & 3.1 Signaling
- Support AAL 5

1.1.5 Management Support

- Web Based GUI
- Upgrade or update via FTP/HTTP
- Command Line Interface via Telnet
- Diagnostic Test
- Firmware upgrade-able for future feature enhancement

1.1.6 *Environmental*

- Operating humidity: 10%-90% non-condensing
- Non-operating storage humidity: 5%-95% non-condensing

1.2 **Packet Contents**

The packet contents are as the following:

- ADSL Router x 1
- External Splitter x 1
- Power Adapter x 1
- Telephone Line x 1
- Ethernet Cable x 1
- CD x 1

1.3 **System Requirements**

Before using this ADSL router, verify that you meet the following requirements:

- Subscription for ADSL service. Your ADSL service provider should provide you with at least one valid IP address (static assignment or dynamic assignment via dial-up connection).
- One or more computers, each contains an Ethernet 10/100M Base-T network interface card (NIC).
- A hub or switch, if you are connecting the device to more than four computers.
- For system configuration using the supplied web-based program: A web browser such as Internet Explorer v5.0 or later, or Netscape v4.7 or later.

1.4 **Factory Defaults**

The device is configured with the following factory defaults:

- IP Address: 192.168.1.1
- Subnet Mask: 255.255.255.0

- Encapsulation: RFC 2516 LLC
- VPI/VCI: According to local information

1.5 Warnings and Cautions

- Never install telephone wiring during storm. Avoid using a telephone during an electrical storm. There might be a risk of electric shock from lightning.
- Do not install telephone jacks in wet locations and never use the product near water.
- To prevent dangerous overloading of the power circuit, be careful about the designed maximum power load ratings. Not to follow the rating guideline could result in a dangerous situation.
- Please note that telephone line on ADSL router must adopt the primary line that directly outputs from junction box. Do not connect ADSL router to extension phone. In addition, if your house developer divides a telephone line to multi sockets inside the wall of house, please only use the telephone that has connected with the splitter of ADSL router when you access the Internet. Under the above condition, if you also install telephone with anti-cheat-dial device, please pull out this kind of telephone, otherwise ADSL router may occur frequently off-line.

2 Hardware Description

Front Panel



LED	Color	Function
PWR	Green	On: Power Off: No power or system boot failed
DSL	Green	On: ADSL link established and active Blinking: ADSL is trying to establish a connection Off: No ADSL link
ACT	Green	Blinking: ADSL data activity occurs. Off: No ADSL data is being sent or received.
LAN	Green	On: LAN link established and active Blinking: ADSL data activity occurs. Off: No LAN link.

Rear Panel



Port	Function
DSL	Connects the device to an ADSL telephone jack or splitter using a RJ-11 telephone cable
LAN	Connects the device to your PC's Ethernet port, or to the uplink port on your hub/switch, using a RJ-45 cable
Reset	System reset or reset to factory defaults.
POWER	Connects to the supplied power adapter
⏻	Switches the unit on and off

3 Hardware Installation

This Hardware Installation describes how to connect ADSL router to your computer, LAN and the Internet. This Installation assumes you have subscribed to an ISP for ADSL service and only covers the basic configurations to be applied to residential or corporate networks.

Hardware Connection

- Using a telephone line to connect the **DSL** port of ADSL router to the **MODEM** port of the splitter, and using a other telephone line connect your telephone to the **PHONE** port of the splitter, then connect the wall phone jack to the **LINE** port of the splitter.

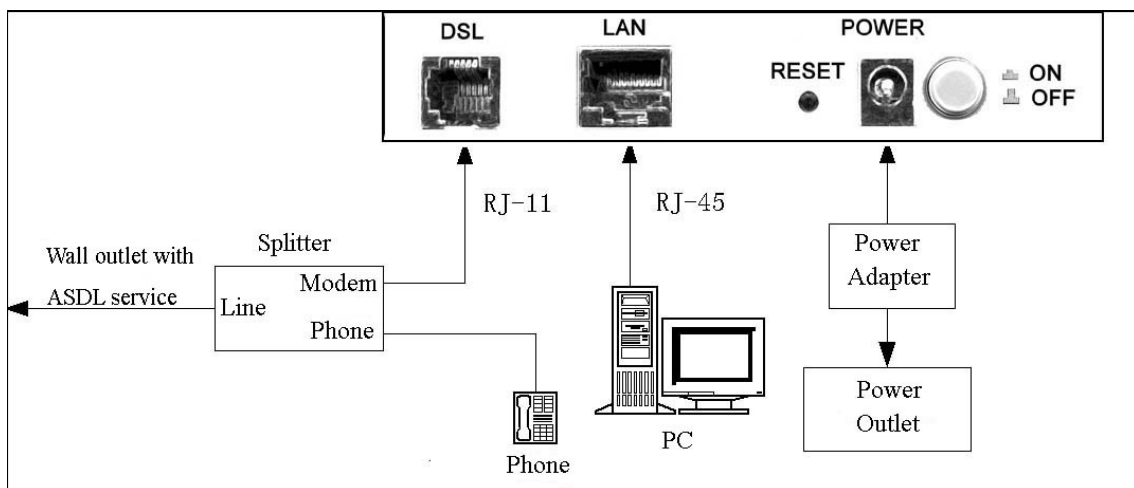
The splitter comes with three connectors as below:

LINE: Connects to a wall phone jack (RJ-11 jack)

MODEM: Connects to the DSL jack of ADSL router

PHONE: Connects to a telephone set

- Using an Ethernet Cable to connect the LAN port of the ADSL router to your LAN or a PC with network card installed.
- Connect the power cable to the PWR connector on ADSL router, then plug in the AC power adapter to the AC power outlet, and then press the on-off button.



Notes: Without the splitter and certain situation, transient noise from telephone can interfere with the operation of the ADSL router, and the ADSL router may introduce noise to the telephone line. To prevent this from happening, a small external splitter must be connected to each telephone.

4 PC Configuration Guide

4.1 Local PC Configuration

4.1.1 Windows 95, 98, ME, XP

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. On the "Configuration" tab, select the TCP/IP network associated with your network card and then click "Properties".
4. In the "TCP/IP Properties" dialog box, click the "IP Address" tab. Set the IP address as 192.168.1.x (x can be a decimal number from 2 to 254.) like 192.168.1.2, and the subnet mask as 255.255.255.0.
5. On the "Gateway" tab, set a new gateway as 192.168.1.1, and then click "Add".
6. Configure the "DNS" tab if necessary. For information on the IP address of the DNS server, please consult with your ISP.
7. Click "OK" twice to confirm and save your changes.
8. You will be prompted to restart Windows. Click "Yes".

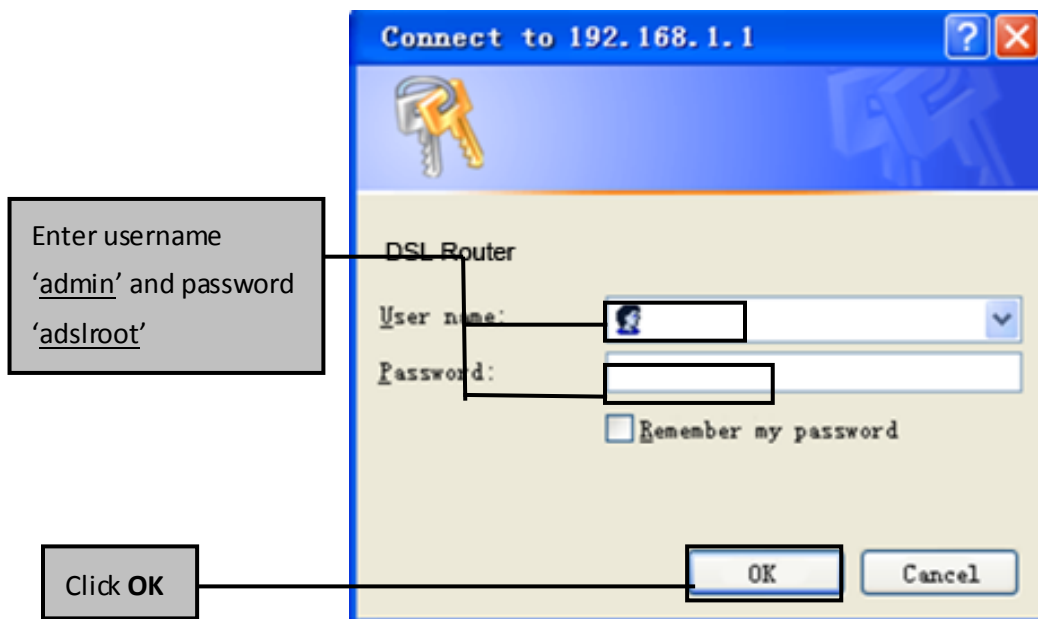
4.1.2 Windows 2000

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. Highlight "Internet Protocol (TCP/IP)", and then click "Properties".
5. In the "Internet Protocol (TCP/IP) Properties" dialog box, set the IP address as 192.168.1.x (x can be a decimal number from 2 to 254.), and the subnet mask as 255.255.255.0 and the default gateway as 192.168.1.1. Then click "OK".

6. Configure the “DNS” tab if necessary. For information on the IP address of the DNS server, please consult with your ISP.
7. Click “OK” twice to confirm and save your changes.

4.2 Access the program

After configuring the IP Address of you computer, powering on the ADSL Router, and launching a web browser, such as Internet Explorer, use <http://192.168.1.1> to log on to the setting pages.



Attention: the username and password are both lowercase.

4.3 Quick setup

If there aren't any pre-configured PVCs in the router, you can find **Quick Setup** option on the left of router configuration page. Or user can delete the PVCs pre-configured to find the option.

1. From home page, click **Quick Setup**.

Quick Setup

This Quick Setup will guide you through the steps necessary to configure your DSL Router.

ATM PVC Configuration

Select the check box below to enable DSL Auto-connect process.

DSL Auto-connect

2. Unselect the check box to disable DSL Auto-connect process. Set VPI/VCI value provided by your ISP.

Quick Setup

This Quick Setup will guide you through the steps necessary to configure your DSL Router.

ATM PVC Configuration

Select the check box below to enable DSL Auto-connect process.

DSL Auto-connect

The Port Identifier (PORT) Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) are needed for setting up the ATM PVC. Do not change VPI and VCI numbers unless your ISP instructs you otherwise.

PORT: [0-3]

VPI: [0-255]

VCI: [32-65535]

Enable Quality Of Service

Enabling QoS for a PVC improves performance for selected classes of applications. However, since QoS also consumes system resources, the number of PVCs will be reduced consequently. Use **Advanced Setup/Quality of Service** to assign priorities for the applications.

Enable Quality Of Service

a. PPP over Ethernet (PPPoE)

1. Select **PPP over Ethernet (PPPoE)** as connection type, and select **LLC/SNAP-BRIDGING** as encapsulation mode.

- PPP over ATM (PPPoA)
- PPP over Ethernet (PPPoE)
- MAC Encapsulation Routing (MER)
- IP over ATM (IPoA)
- Bridging

Encapsulation Mode

LLC/SNAP-BRIDGING ▼

2. Input **PPP Username & PPP Password** and then click **Next**. The user interface allows a maximum of 256 characters in the user name and a maximum of 32 characters in the password. Just remember to enable **NAT** and **Firewall** as below.

PPP Username:

PPP Password:

PPPoE Service Name:

Authentication Method: ▼

Enable Fullcone NAT

NAT

Firewall

Dial on demand (with idle timeout timer)

PPP IP extension

Use Static IP Address

Retry PPP password on authentication error

Enable PPP Debug Mode

Bridge PPPoE Frames Between WAN and Local Ports (Default Enabled)

PPPoE service name can be blank unless your Internet Service Provider gives you a value to enter.

Authentication method is default to **Automatic**. It is recommended that you leave the **Authentication method** in **Automatic**, however, you may select **PAP** or **CHAP** if necessary. The default value for MTU (Maximum Transmission Unit) is **1500** for PPPoA and **1492** for PPPoE. Do not change these values unless your ISP asks you to.

The gateway can be configured to disconnect if there is no activity for a specific period of time by selecting the **Dial on demand** check box and entering the **Inactivity timeout**. The entered value must be between 1 minute and 4320 minutes.

The **PPP IP Extension** is a special feature deployed by some service providers. Unless your service provider specifically requires this setup, do not select it. If you need to select it, the PPP IP Extension supports the following conditions:

- It allows only one computer on the LAN.
- The public IP address assigned by the remote using the PPP/IPCP protocol is actually not used on the WAN PPP interface. Instead, it is forwarded to the computer's LAN interface through DHCP. Only one system on the LAN can be connected to the remote, since the DHCP server within the ADSL gateway has only a single IP address to assign to a LAN device.
- NAPT and firewall are disabled when this option is selected.
- The gateway becomes the default gateway and DNS server to the computer through DHCP using the LAN interface IP address.
- The gateway extends the IP subnet at the remote service provider to the LAN computer. That is, the PC becomes a host belonging to the same IP subnet.
- The ADSL gateway bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the gateway's LAN IP address.

3. Unselect **Enable IGMP Multicast**, and select **Enable WAN Service** and then click **Next**

Enable IGMP Multicast, and WAN ServiceEnable IGMP Multicast Enable WAN Service Service Name

4. Configure the DSL Router's IP Address and Subnet Mask for LAN interface. In this page, you can use DHCP (Dynamic Host Configuration Protocol) to control the assignment of IP addresses on your local network (LAN only).

Device Setup

Configure the DSL Router IP Address and Subnet Mask for LAN interface.

IP Address: Subnet Mask: Disable DHCP Server Enable DHCP ServerStart IP Address: End IP Address: Subnet Mask: Leased Time (hour): Configure the second IP Address and Subnet Mask for LAN interfaceIP Address: Subnet Mask:

Item	Description
IP address	This is the IP address that other devices on your local network will use to connect to the modem.

Subnet mask	This defines the size of your network. The default is 255.255.255.0 .
Disable / Enable DHCP server	The DHCP server assigns an IP addresses from a pre-set pool of addresses upon request from DHCP client (e.g. your computer). Do not disable the DHCP server unless you wish to let another device handle IP address issuance on the local network.
Start / end IP address	This is the beginning and ending range for the DHCP server addresses.
Lease time	The amount of time before the IP address is refreshed by the DHCP server.
Configure the second IP address and...	Use this feature to create a public network on your local LAN, accessible from the Internet. By assigning an address to this interface and then statically setting your LAN clients to the same network, the LAN clients are accessible from the public network (e.g. FTP or HTTP servers).

5. Make sure that the settings below match the settings provided by your ISP.

PORT / VPI / VCI:	0 / 0 / 35
Connection Type:	PPPoE
Service Name:	pppoe_0_0_35_1
Service Category:	UBR
IP Address:	Automatically Assigned
Service State:	Enabled
NAT:	Enabled
Firewall:	Enabled
IGMP Multicast:	Disabled
Quality Of Service:	Disabled

6. Click on the **Save/Reboot** button to save your configurations.

b. PPP over ATM (PPPoA)

1. Select **PPP over ATM (PPPoA)** as connection type, and select **VC/MUX** as encapsulation mode.

- PPP over ATM (PPPoA)
- PPP over Ethernet (PPPoE)
- MAC Encapsulation Routing (MER)
- IP over ATM (IPoA)
- Bridging

2. Input **PPP Username & PPP Password** and then click **Next**. The user interface allows a maximum of 256 characters in the user name and a maximum of 32 characters in the password. Just remember to enable **NAT** and **Firewall** as below.

PPP Username:

PPP Password:

Authentication Method:

Enable Fullcone NAT

NAT

Firewall

Dial on demand (with idle timeout timer)

PPP IP extension

Use Static IP Address

Retry PPP password on authentication error

Enable PPP Debug Mode

PPPoA service name can be blank unless your Internet Service Provider gives you a value to enter.

Authentication method is default to **Automatic**. It is recommended that you leave the **Authentication method** in **Automatic**, however, you may select **PAP** or **CHAP** if necessary. The default value for MTU (Maximum Transmission Unit) is **1500** for PPPoA and **1492** for PPPoE. Do not change these values unless your ISP asks you to.

The gateway can be configured to disconnect if there is no activity for a specific period of time by selecting the **Dial on demand** check box and entering the **Inactivity timeout**. The entered value must be between 1 minute and 4320 minutes.

The **PPP IP Extension** is a special feature deployed by some service providers. Unless your service provider specifically requires this setup, do not select it. If you need to select it, the PPP IP Extension supports the following conditions:

- It allows only one computer on the LAN.
- The public IP address assigned by the remote using the PPP/IPCP protocol is actually not used on the WAN PPP interface. Instead, it is forwarded to the computer's LAN interface through DHCP. Only one system on the LAN can be connected to the remote, since the DHCP server within the ADSL gateway has only a single IP address to assign to a LAN device.
- NAPT and firewall are disabled when this option is selected.
- The gateway becomes the default gateway and DNS server to the computer through DHCP using the LAN interface IP address.
- The gateway extends the IP subnet at the remote service provider to the LAN computer. That is, the PC becomes a host belonging to the same IP subnet.
- The ADSL gateway bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the gateway's LAN IP address.

3. Unselect **Enable IGMP Multicast**, and select **Enable WAN Service** and then click **Next**

Enable IGMP Multicast, and WAN ServiceEnable IGMP Multicast Enable WAN Service Service Name

4. Configure the DSL Router's IP Address and Subnet Mask for LAN interface. In this page, you can use DHCP (Dynamic Host Configuration Protocol) to control the assignment of IP addresses on your local network (LAN only).

Device Setup

Configure the DSL Router IP Address and Subnet Mask for LAN interface.

IP Address:
 Subnet Mask:

- Disable DHCP Server
 Enable DHCP Server

Start IP Address:
 End IP Address:
 Subnet Mask:
 Leased Time (hour):

- Configure the second IP Address and Subnet Mask for LAN interface

IP Address:
 Subnet Mask:

Item	Description
IP address	This is the IP address that other devices on your local network will use to connect to the modem.

Subnet mask	This defines the size of your network. The default is 255.255.255.0 .
Disable / Enable DHCP server	The DHCP server assigns an IP addresses from a pre-set pool of addresses upon request from DHCP client (e.g. your computer). Do not disable the DHCP server unless you wish to let another device handle IP address issuance on the local network.
Start / end IP address	This is the beginning and ending range for the DHCP server addresses.
Lease time	The amount of time before the IP address is refreshed by the DHCP server.
Configure the second IP address and...	Use this feature to create a public network on your local LAN, accessible from the Internet. By assigning an address to this interface and then statically setting your LAN clients to the same network, the LAN clients are accessible from the public network (e.g. FTP or HTTP servers).

5. Make sure that the settings below match the settings provided by your ISP.

PORT / VPI / VCI:	0 / 0 / 35
Connection Type:	PPPoA
Service Name:	pppoa_0_0_35_1
Service Category:	UBR
IP Address:	Automatically Assigned
Service State:	Enabled
NAT:	Enabled
Firewall:	Enabled
IGMP Multicast:	Disabled
Quality Of Service:	Disabled

6. Click on the **Save/Reboot** button to save your configurations.

c. Bridging (RFC 2684)

Select the bridge operating mode if your ADSL service provider tells you that you should. To configure bridging, do the following:

1. Select **Bridging (RFC 2684)** as connection type.

- PPP over ATM (PPPoA)
- PPP over Ethernet (PPPoE)
- MAC Encapsulation Routing (MER)
- IP over ATM (IPoA)
- Bridging

Encapsulation Mode

LLC/SNAP-BRIDGING ▾

2. Select the appropriate **Encapsulation mode** and click **Next**. The following screen appears:

Unselect the check box below to disable this WAN service

Enable Bridge Service: Service Name:

3. Enable or disable bridge service and enter a bridge service name. Click **Next** and configure your LAN.

Device Setup

Configure the DSL Router IP Address and Subnet Mask for your Local Area Network (LAN).

IP Address: Subnet Mask:

4. The summary page presents the entire configuration summary. Click **Save** if the settings are correct or **Back** to change any of the settings.

PORT / VPI / VCI:	0 / 0 / 35
Connection Type:	Bridge
Service Name:	br_0_0_35
Service Category:	UBR
IP Address:	Not Applicable
Service State:	Enabled
NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Not Applicable
Quality Of Service:	Disabled

Note: If you want to cancel all modification that you do on the router, please select from “Management⇒Setting⇒Restore Default Settings” to restore factory default settings.

Appendix Frequent Asked Questions

Q: None of the LEDs are on when you power on the ADSL router?

A: Please make sure what you use is the power adaptor attached with the ADSL router package, and check the connection between the AC power and ADSL router.

Q: DSL LED does not turn on after connect telephone line?

A: Please make sure what you use is the standard telephone line (as attached with the package), make sure the line is connected correctly and check whether there is poor contact at each interface. Wait for 30 seconds to allow the ADSL router establishes connection with you ADSL operator.

Q: DSL LED is in the circulation of slow-flashing and fast-flashing after connecting telephone line?

A: This situation means the ADSL router is in the status of failing to establish connection with Central Office. Please check carefully and confirm whether the ADSL router has been installed correctly.

Q: LAN LED does not turn on after connect Ethernet cable?

A: Please make sure Ethernet cable is connected hub/PC and ADSL router correctly. Then please make sure the PC/hub have been power on.

Please make sure that you use parallel network cable to connect UpLink port of hub, or use parallel network cable to connect PC. If connect normal port of hub (not UpLink port), you must use cross-cable. Please make sure that your network cables meet the networking requirements above.

Q: PC cannot access the Internet?

A: First check whether PC can ping the interface Ethernet IP address of this product successfully (default value is 192.168.1.1) by using ping application. If ping application fails, please check the connection of Ethernet cable and check whether the states of LEDs are in gear.

If the PC uses private IP address that is set manually (non-registered legal IP address), please check:

1. Whether IP address of the PC gateway is legal IP address. Otherwise please use the right gateway, or set the PC to Obtain an IP address automatically.
2. Please confirm the validity of DNS server appointed to the PC with ADSL operator. Otherwise please use the right DNS, or set the PC to Obtain an IP address automatically.
3. Please make sure you have set the NAT rules and convert private IP address to legal IP address. IP address range of the PC that you specify should meet the setting range in NAT rules.

Central Office equipment may have problem.

Q: PC cannot browse Internet web page?

A: Please make sure DNS server appointed to the PC is correct. You can use ping application program to test whether the PC can connect to the DNS server of the ADSL operator.

Q: Initialization of the PVC connection failed?

A: Be sure that cable is connected properly from the DSL port to the wall jack. The DSL LED on the front panel of the ADSL router should be on. Check that your VPI, VCI, type of encapsulation and type of multiplexing setting are the same as what you collected from your service provider, Re-configure ADSL router and reboot it. If you still can not work it out, you may need to verify these variables with the service provider.

If the cause is not given above, please contact your local service provider!