

ADSL External Modem (SL-4560)



 **JOOHONG**

FCC NOTE

: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.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

OPERATION IS SUBJECT TO THE FOLLOWING TWO 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**

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

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1. Introduction of SL-4560 ADSL Modem

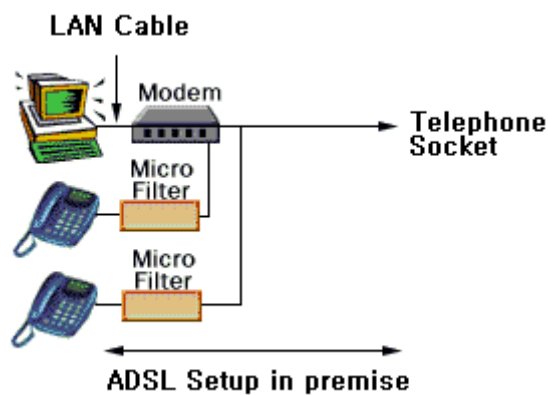
1.1 Introduction of ADSL

ADSL means 'Asymmetric Digital Subscriber Line'. Using word of 'Asymmetric', because there are difference between upstream speed and down stream speed. As you could see in the diagram below, downstream use more wide bandwidth than upstream.

Technology that allows more data to be sent over existing copper telephone lines (POTS). ADSL supports data rates of from 1.5 to 9 Mbps when receiving data (known as the *downstream* rate) and from 16 to 640 Kbps when sending data (known as the *upstream* rate).

ADSL requires a special ADSL modem.

ADSL is growing in popularity as more areas around the world gain access.



<Picture 1-1> ADSL Service Diagram

1.2 SL-4560 ADSL Modem /Frontside

- The Front of SL 4560



<Picture 1-2> the front of SL-4560 ADSL

- LED Explanation.

LED	Color	Status	Description
PWR	Green	On	Power on
		Off	Power Off
LAN	Green	Blinking	Data transfer
		ON	Connected with user PC
DATA	Green	Blinking	Data transfer through WAN
		ON	Idle status of Data transfers through WAN.
ADSL	Green	Blinking	Tempting to make a connect with DSLAM
		ON	Connection had been made with DSLAM

<Table 1-1> SL-4560 ADSL / LED Function

1.3 SL-4560 ADSL Modem / Backside

- Backside / Connector block plan



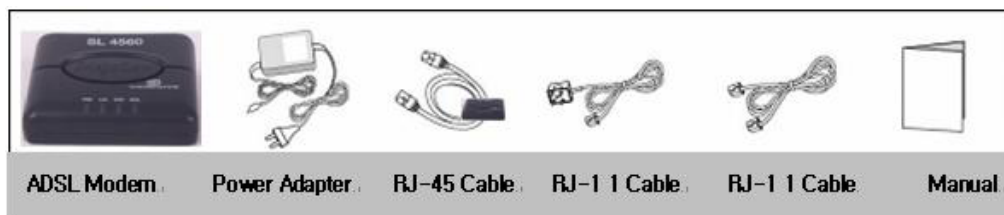
<Picture 1-3> SL-4560 / Backside

NAME	Function
LINE	Connect with ADSL Line
PHONE	Connect with Phone
LAN	Connect with LAN port of PC
PWR SW	Power Switch
F/G	For ground
DC 5V	For Power adapter

<Table 1-2> SL-4560 ADSL / Backside / Name and Function

1.4 Contents in the Package

Please check the contents in the package.



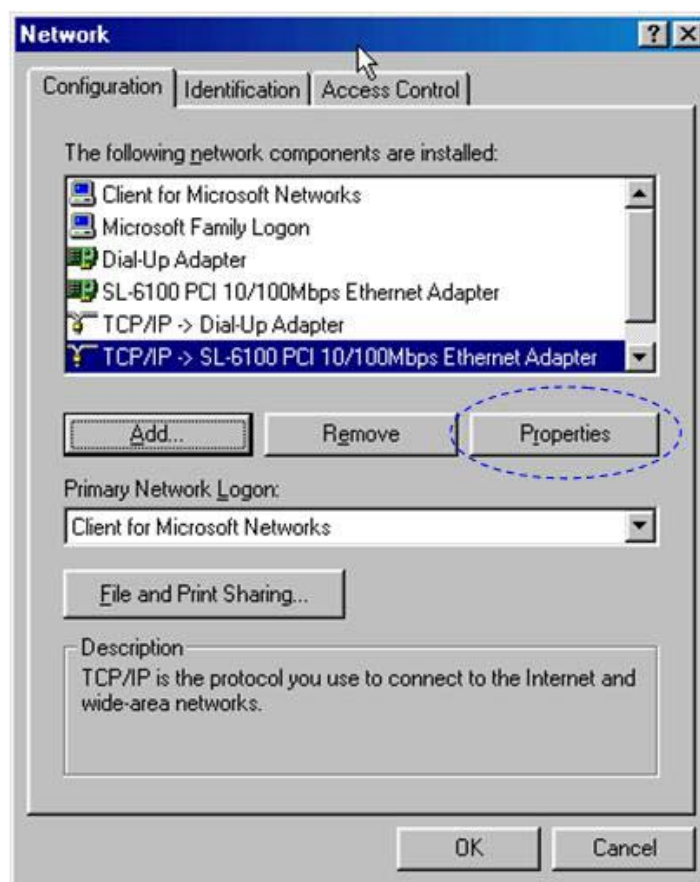
<Picture 1-4> Contents in the package

1.5 Network configuration setup

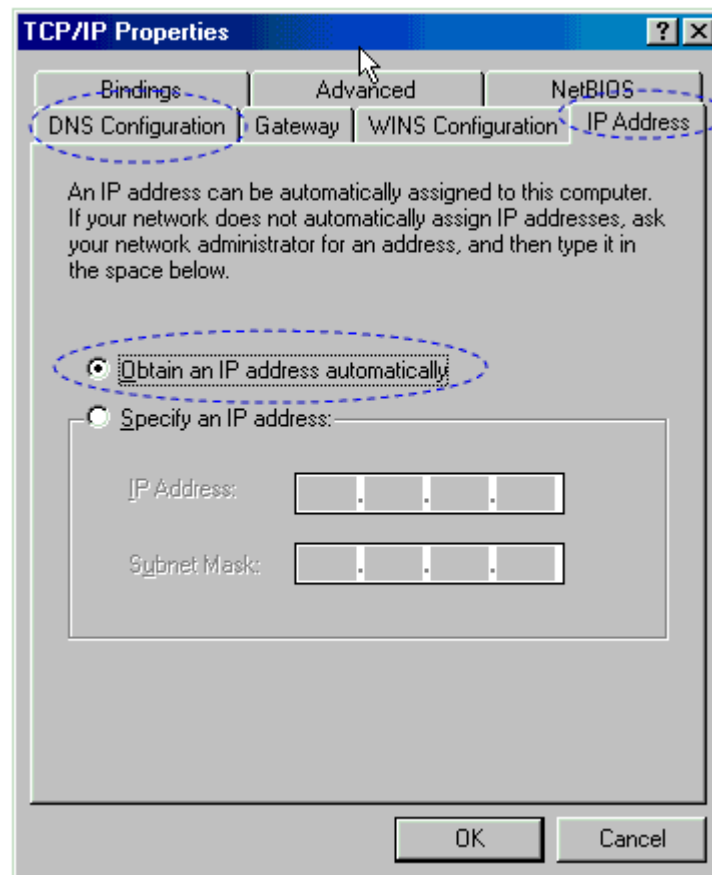
※ Before you make the connection with modem

- Windows 95/98/Me

1. [Start] → [Control Panel] → [Network], in the 'Local Area connection property', choose the 'TCP/IP'. Please click 'Property'.



2. In 'TCP/IP Properties', please check the 'Obtain an IP address Automatically' and 'Obtain an DNS Server address Automatically'.
3. Click 'OK'.



4. If prompted to restart your computer, do so.

- Windows 2000/NT

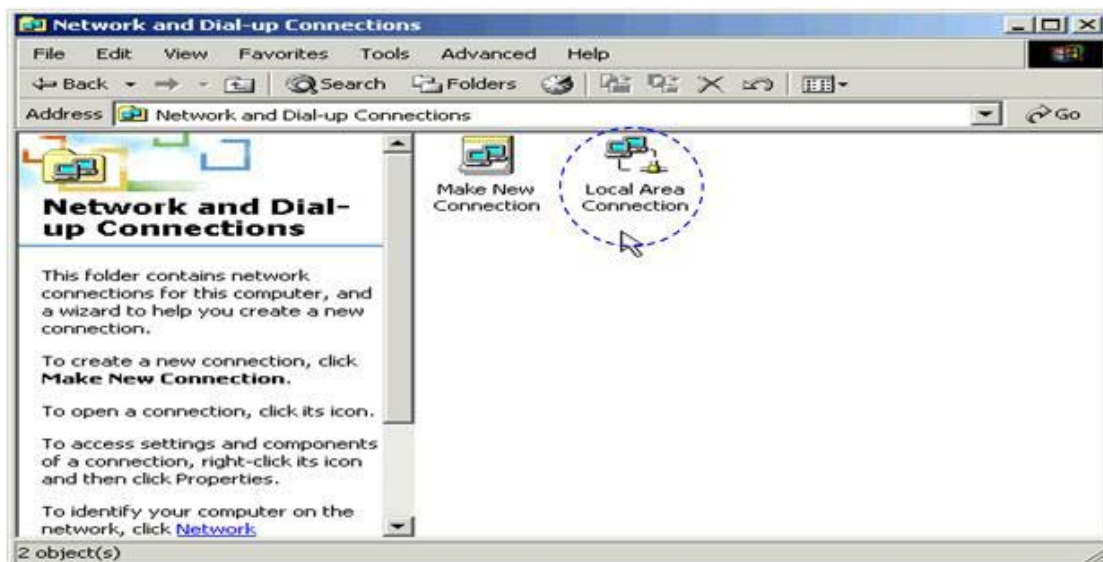
1. [Start] → [Settings] → [Control panel]

'Network and Dial-up Connections' double click it.



2. 'Network and Dial-up Connections' → 'Local Area Connection'

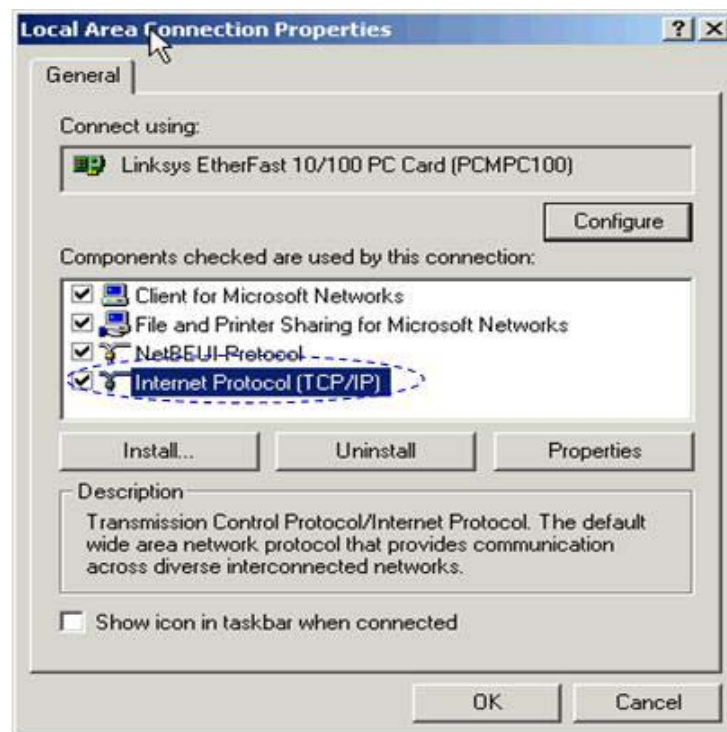
Double click.



3. In Local Area Connection Status, click 'Properties'.



4. 'Local Area Connection Properties' → 'Internet Protocol(TCP/IP)' → 'Properties' click.

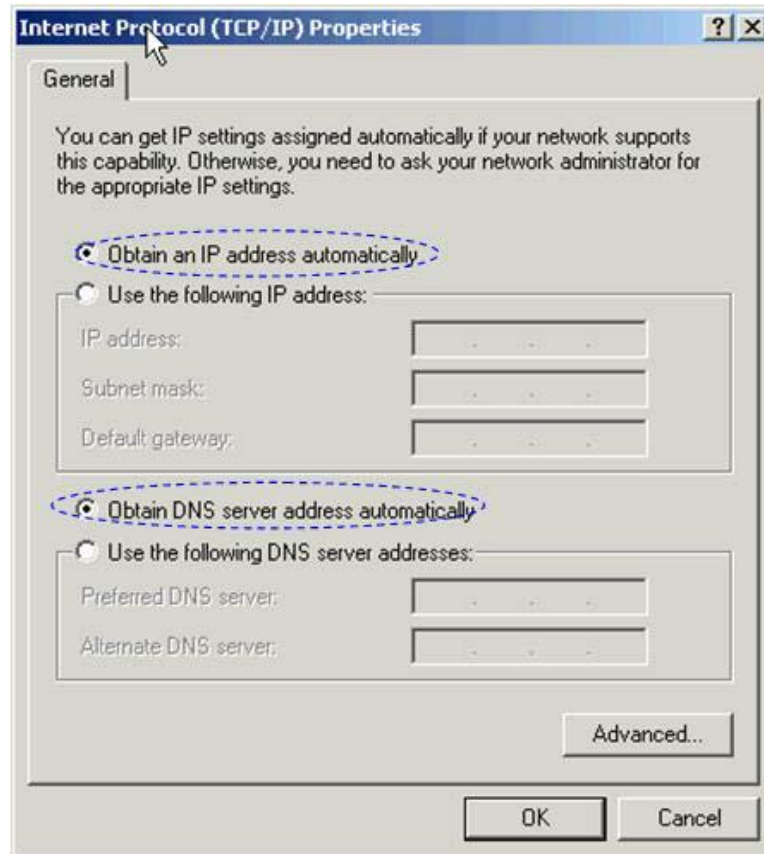


5. 'Internet Protocol(TCP/IP) Properties'

→ check 'Obtain an IP address automatically '

→ check 'Obtain DNS Server address automatically'

→ click 'OK'



6. Local Area Connection Properties → click 'OK'

Local Area Connection Status → click 'Close'

Network and Dial-up Connections → click 'Close'

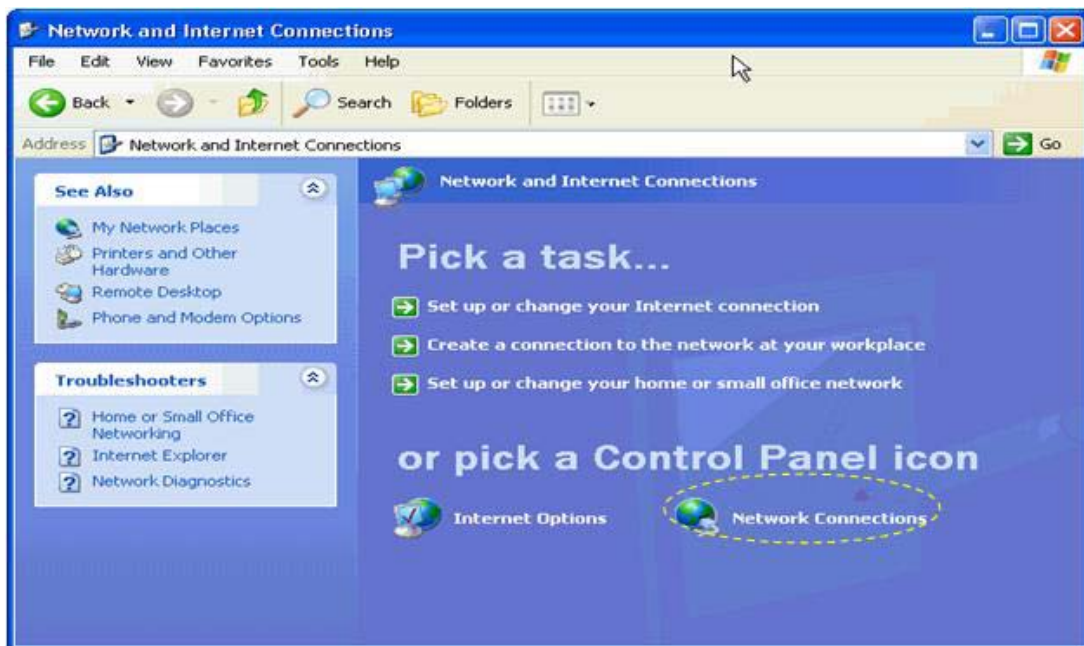
- Configuration for Win XP

1. [Start] → [Control panel]

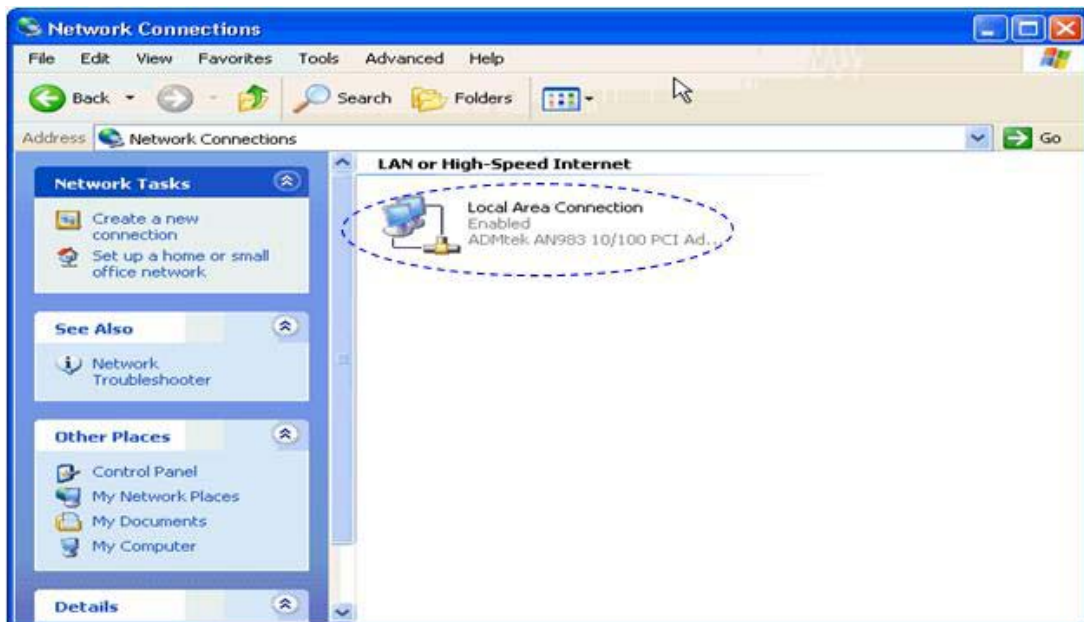
'Network and Internet Connections' double click.



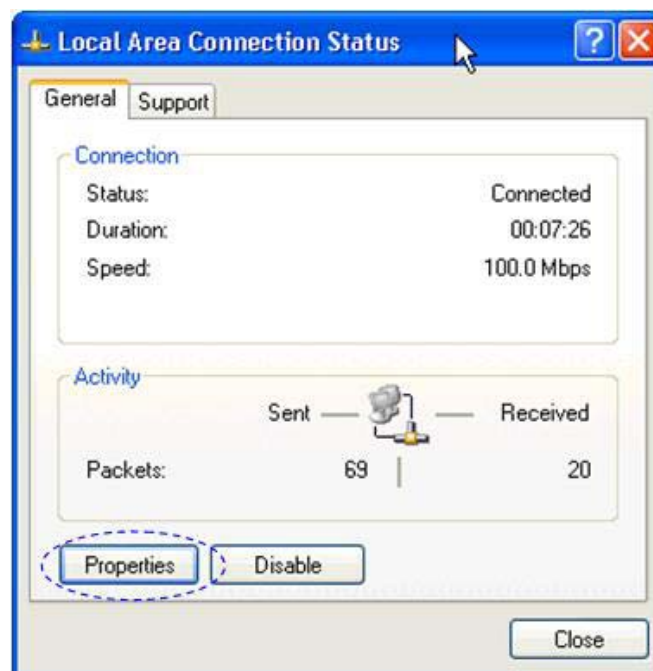
2. 'Network and Internet Connections' → 'Network connections'



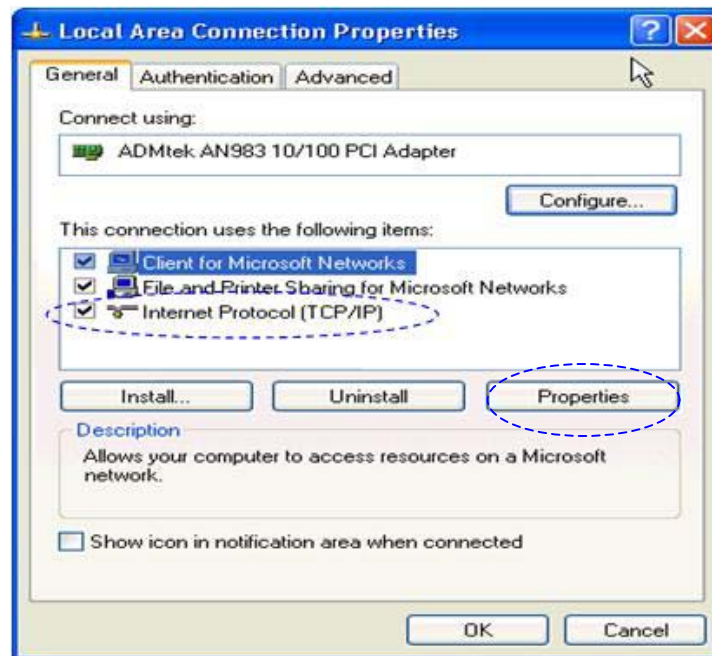
3. 'Network Connections' → 'Local Area Connection' double click.



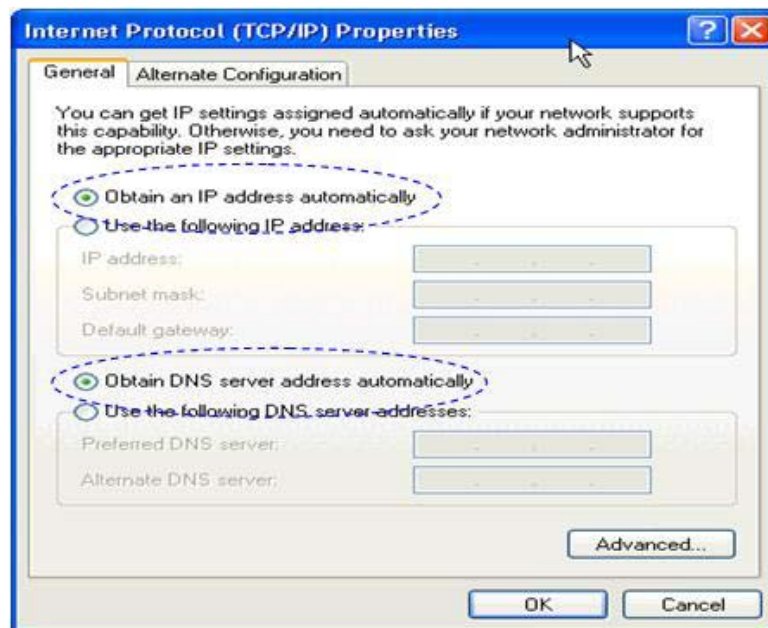
4. In 'Local Area Connection Status', click 'Properties'.



5. 'Local Connection properties' → 'Internet protocol(TCP/IP)' check.
click 'Properties'.



6. 'Internet protocol (TCP/IP) Properties'
- Check 'Obtain an IP address automatically'.
 - Check 'Obtain DNS server address automatically'.
 - Click 'OK'.



7. 'Local Area Connection Properties' → Click 'OK'
- 'Local Area Connection Status' → Click 'Close'
- 'Network Connections' → Click 'Close'

2. SETUP the SL-4560 ADSL Modem

► SL-4560 ADSL Modem Web management start

SL-4560 ADSL Modem support 'Web Management'

Note :

- Please connect Ethernet cable only, make a start with Web management and set-up the configuration. (Don't make a connection with ADSL Line)
- After set-up the configuration, make a connection with ADSL Line. Please check the LED-On of LINK LED. (If the configuration was proper, Link LED will be on after blinking; Blinking means 'on the NAS authentication process') after 10seconds, Check again with Web Management.

1. Finish 1.5 Network configuration setup
2. Connect LAN Cable: PC ↔ SL4560
3. Insert the SL 4560 ADSL Modem Install CD or Diskette
(If use Install Diskette, double click on autorun.exe)
 - 1) Click 'SETUP'



Recommend higher version of Microsoft Internet Explorer 4.0

- 2) Please type your user name and password.



- **Administrator mode** : You can configure all the setting value of modem

User name	admin
Password	admin

- **User mode** : You can check modem status only.

User name	user
Password	user

- 3) Click 'OK'
- 4) The 'BROADCOM Device Info' main page shown below will load. (Refer to 2.1)
- 5) Configure SL4560 ADSL Modem. (Refer to 2.2 and 2.3)

► Main menu

2.1. Status Information

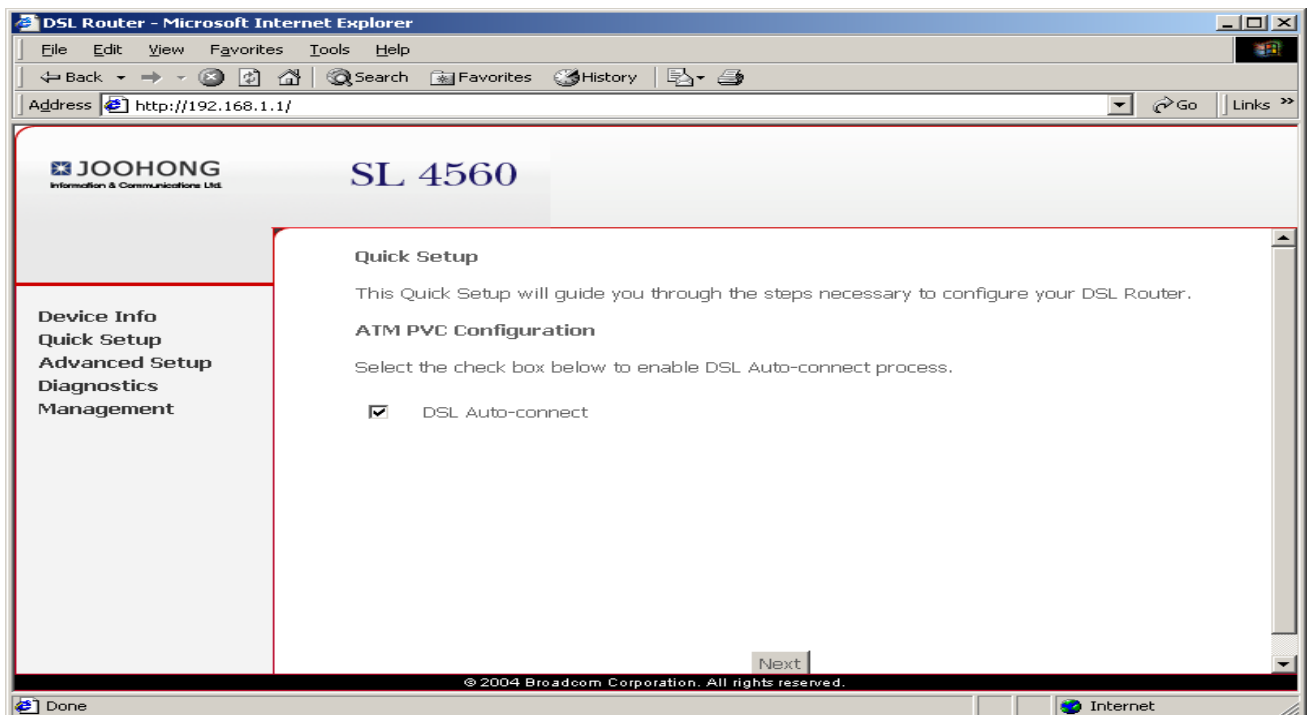
Connection status with DSLAM and other information like an IP address obtained from NAS.

Device Info	
This information reflects the current status of your DSL connection.	
Line Rate - Upstream (Kbps):	256
Line Rate - Downstream (Kbps):	288
Software Version:	2.14L.02.a2a013b
LAN IP Address:	192.168.1.1
Default Gateway:	
Primary DNS Server:	192.168.1.1
Secondary DNS Server:	192.168.1.1

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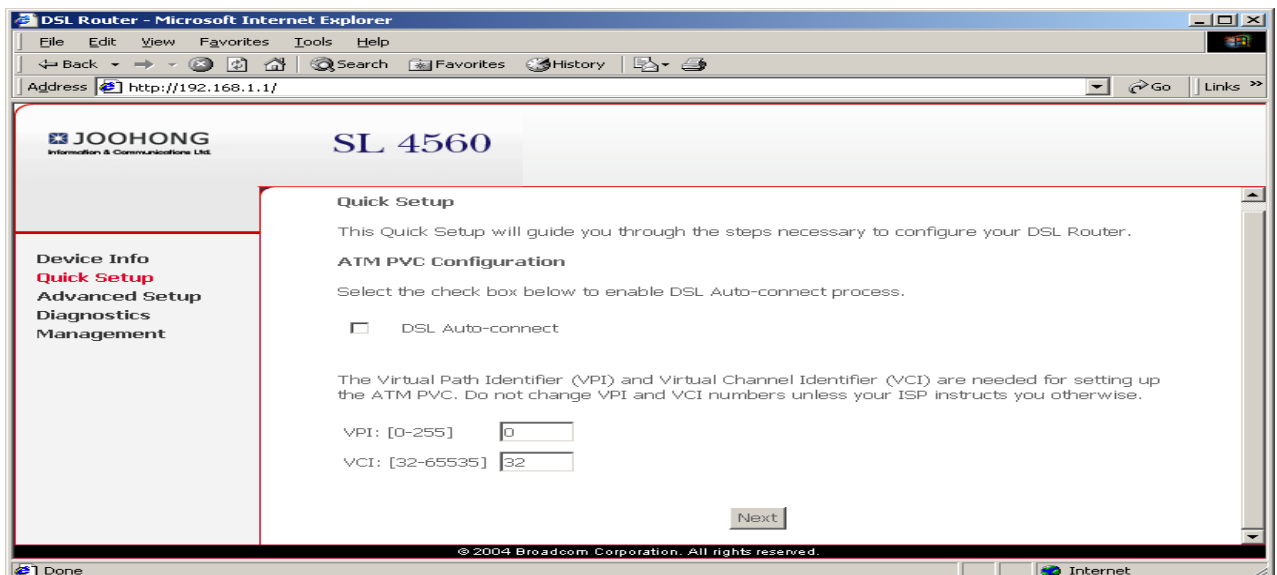
2.2. Quick Setup

You could change the modem configuration.



Input the PVC value of DSLAM and [Next].

Basically, using 'make a connection with DSL automatically' option.



2.2.1. PPPoE (RFC2516) configuration

2.2.1.1. Select 'PPP over Ethernet (PPPoE)' and [Next]

The screenshot shows the 'DSL Router - Microsoft Internet Explorer' window with the address bar set to 'http://192.168.1.1/'. The page title is 'JOOHONG SL 4560'. On the left, there is a sidebar with links: 'Device Info', 'Quick Setup' (highlighted in red), 'Advanced Setup', 'Diagnostics', and 'Management'. The main content area is titled 'Connection Type' and contains the instruction: 'Select the type of network protocol and encapsulation mode over the ATM PVC that your ISP has instructed you to use.' Below this, there are five radio button options: 'PPP over ATM (PPPoA)', 'PPP over Ethernet (PPPoE)' (which is selected), 'MAC Encapsulation Routing (MER)', 'IP over ATM (IPoA)', and 'Bridging'. Underneath these options is a section for 'Encapsulation Mode' with a dropdown menu currently set to 'LLC/SNAP-BRIDGING'. At the bottom right of the main area are 'Back' and 'Next' buttons. The footer of the page reads '© 2004 Broadcom Corporation. All rights reserved.'

2.2.1.2. Input 'PPP User Name', 'PPP Password', Select 'PPP IP extension' then Next]

The screenshot shows the 'DSL Router - Microsoft Internet Explorer' window with the address bar set to 'http://192.168.1.1/'. The page title is 'JOOHONG SL 4560'. On the left, there is a sidebar with links: 'Device Info', 'Quick Setup' (highlighted in red), 'Advanced Setup', 'Diagnostics', and 'Management'. The main content area is titled 'PPP Username and Password' and contains the instruction: 'PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.' Below this, there are three input fields: 'PPP Username:' with the value 'joohong1', 'PPP Password:' with the value '****', and 'Authentication Method:' with a dropdown menu set to 'AUTO'. There are two checkboxes: 'Dial on demand (with idle timeout timer)' and 'PPP IP extension' (which is checked). At the bottom right of the main area are 'Back' and 'Next' buttons. The footer of the page reads '© 2004 Broadcom Corporation. All rights reserved.'

If you don't check the 'PPP IP extension' then DHCP function of Modem will be functional.

SL-4560 ADSL Modem

2.2.1.3. You could see the IP address of modem. Do not change the IP address. Then
[Next]

The screenshot shows the 'DSL Router - Microsoft Internet Explorer' window with the address bar set to 'http://192.168.1.1/'. The page title is 'SL 4560' and the logo is 'JOOHONG Information & Communications Ltd.'. The left sidebar contains a menu with 'Device Info', 'Quick Setup', 'Advanced Setup', 'Diagnostics', and 'Management'. The main content area is titled 'Device Setup' and contains the following text: 'Configure the DSL Router IP Address and Subnet Mask for LAN interface.' Below this are input fields for 'IP Address' (192.168.1.1) and 'Subnet Mask' (255.255.255.0). There are two radio buttons: 'Disable DHCP Server' (unselected) and 'Enable DHCP Server' (selected). Below the 'Enable DHCP Server' option are input fields for 'Start IP Address' (192.168.1.2), 'End IP Address' (192.168.1.254), and 'Leased Time (hour)' (24). At the bottom of the main content area is a checkbox labeled 'Configure the second IP Address and Subnet Mask for LAN interface' which is unchecked. At the bottom right of the main content area are 'Back' and 'Next' buttons. The footer of the page says '© 2004 Broadcom Corporation. All rights reserved.'

If you change the IP then, you have to input changed IP address for to start Web management.

2.2.1.4. After check the all the values and [Finish]

The screenshot shows the 'DSL Router - Microsoft Internet Explorer' window with the address bar set to 'http://192.168.1.1/'. The page title is 'SL 4560' and the logo is 'JOOHONG Information & Communications Ltd.'. The left sidebar contains a menu with 'Device Info', 'Quick Setup', 'Advanced Setup', 'Diagnostics', and 'Management'. The main content area is titled 'WAN Setup - Summary' and contains the following text: 'Make sure that the settings below match the settings provided by your ISP.' Below this is a table with the following data:

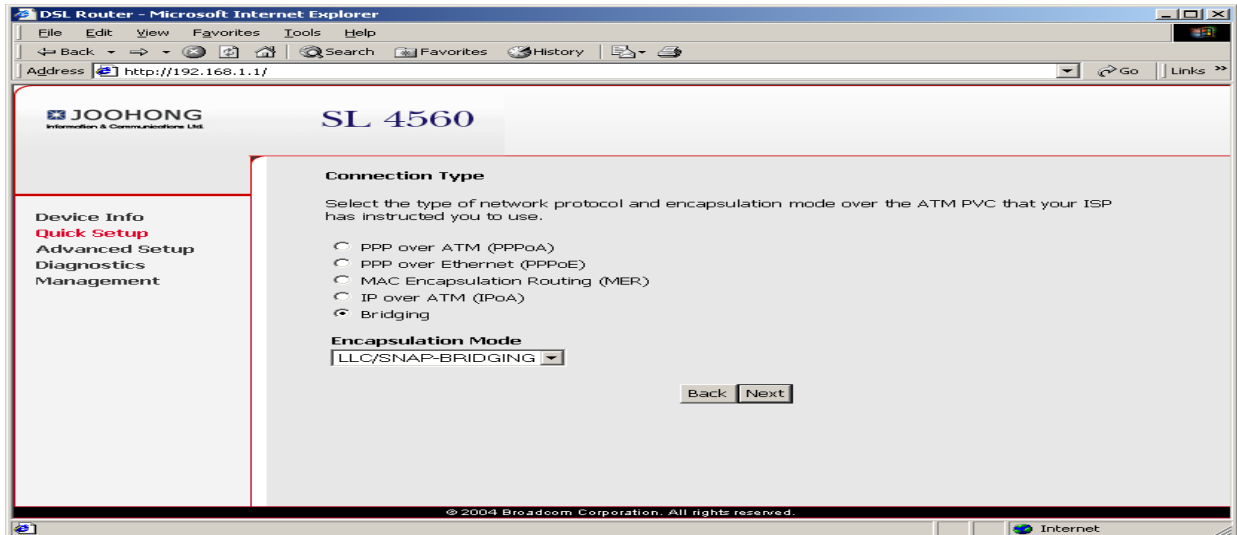
VPI / VCI:	0 / 32
Connection Type:	PPPoE
Service Name:	pppoe_0_32
Service Category:	UBR
IP Address:	Automatically Assigned
Service State:	Enabled
NAT:	Enabled
Firewall:	Enabled
IGMP Multicast:	Disabled
Quality Of Service:	Disabled

Below the table is a note: 'Click "Save/Reboot" to save these settings and reboot router. Click "Back" to make any modifications. NOTE: The configuration process takes about 1 minute to complete and your DSL Router will reboot.' At the bottom right of the main content area are 'Back' and 'Save/Reboot' buttons. The footer of the page says '© 2004 Broadcom Corporation. All rights reserved.'

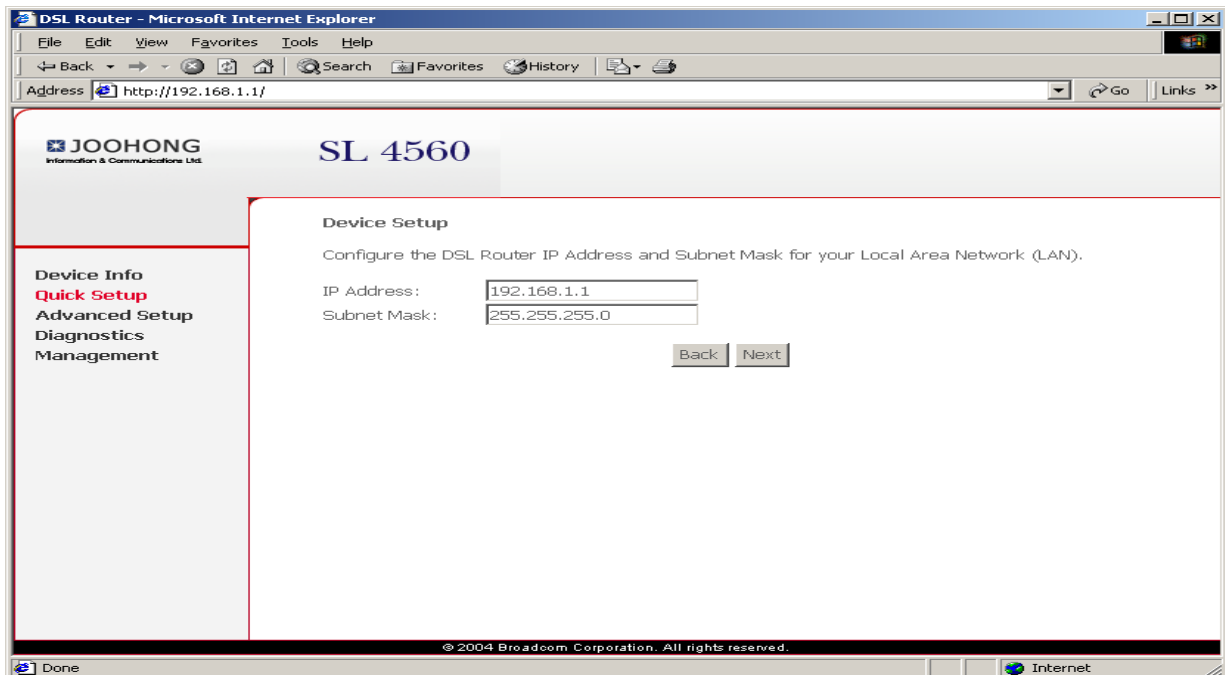
If the values are not collect, then you could change the value using 'back' button

2.2.2. Bridge Mode(RFC1483) Configuration – When you using IP DSLAM or My IP Service

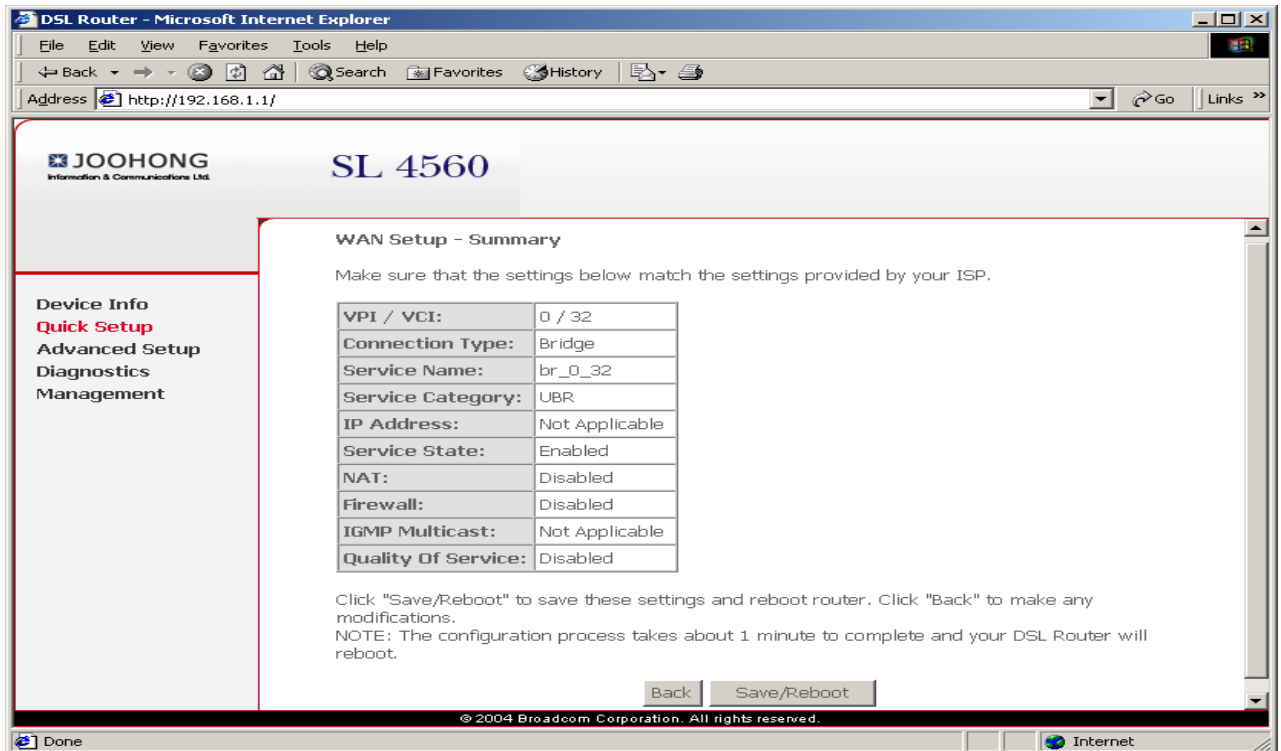
2.2.2.1. In 'Configuration wizard', select 'Bridging' and [Next]



2.2.2.2. Displayed IP is the IP for web management. Do not change the IP address and [Next]



2.2.2.3. Check the configuration and [Save and reboot]



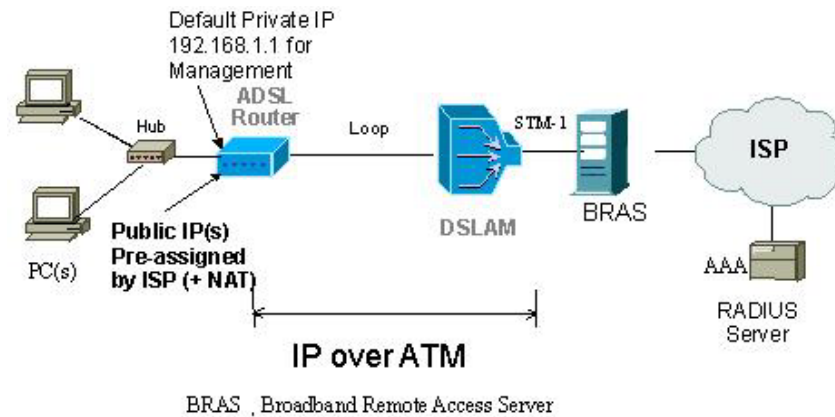
When you using the IP-DSLAM, you could use internet service after PPPoE LED turned on.

This is one of example..

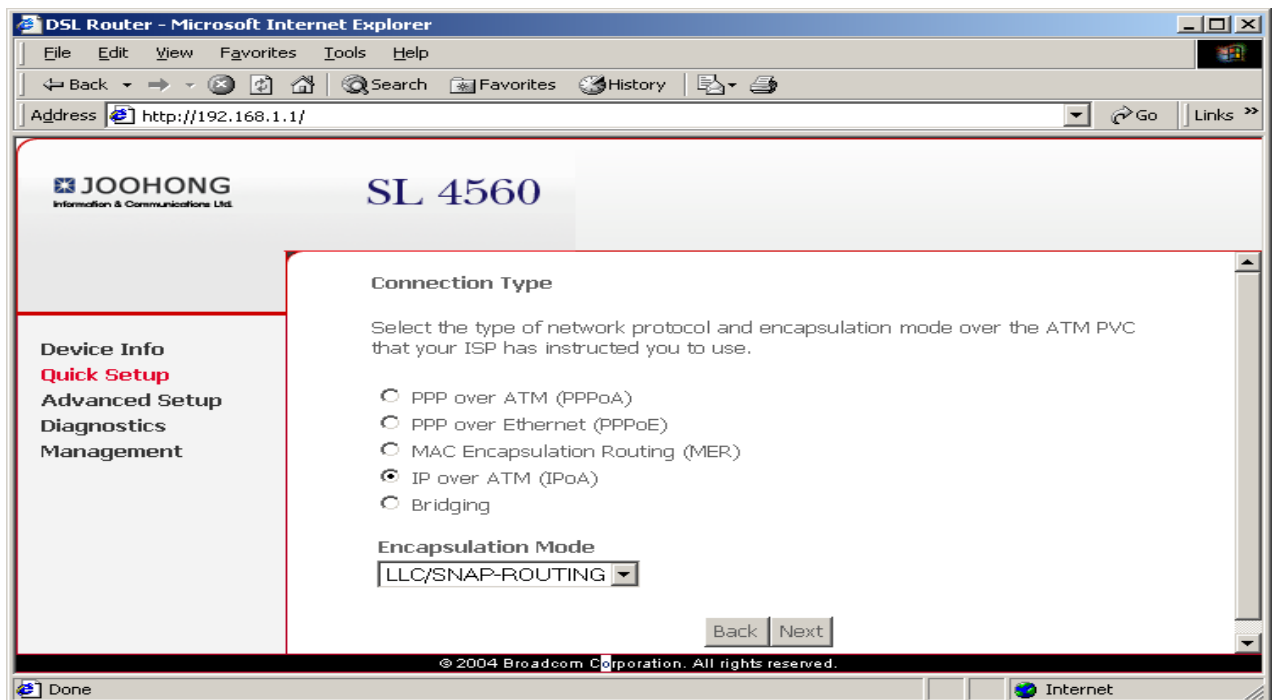


2.2.3. Multi IP (IPoA) Configuration

2.2.3.1. Multi IP (IPoA) diagram



2.2.3.2. Select 'IP over ATM(Multi IP)' then [Next]



2.2.3.3. 'WAN IP Configuration', Input the IP that you got from KT, then [Next]

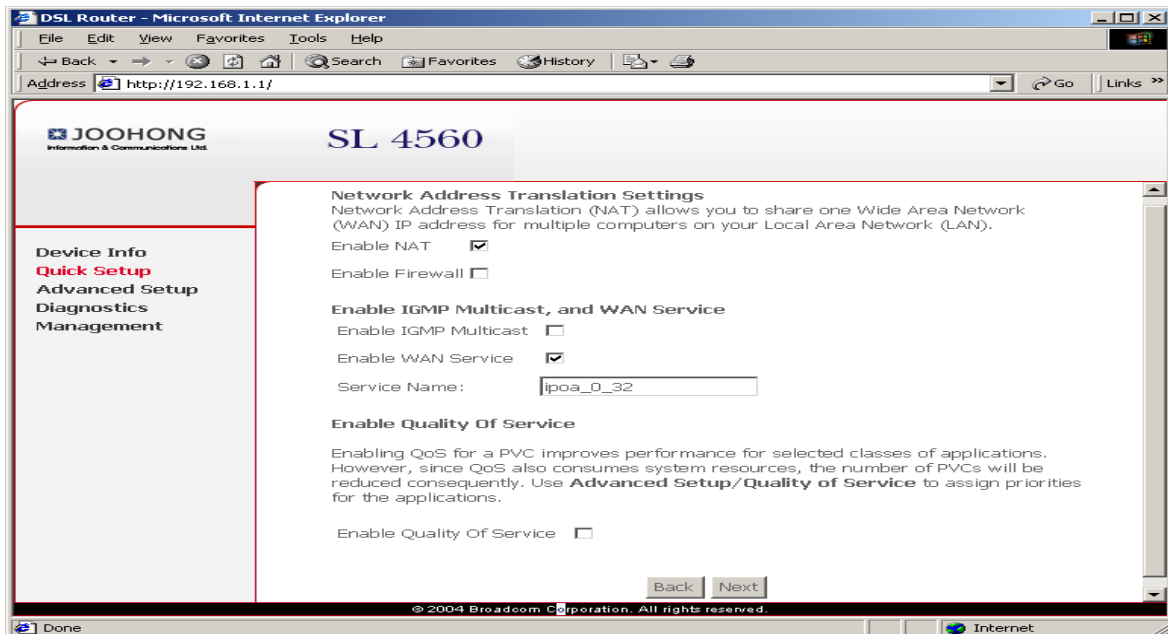
This is one of the example.

The screenshot shows a web browser window titled "DSL Router - Microsoft Internet Explorer" with the address bar displaying "http://192.168.1.1". The page content is for the "SL 4560" modem. On the left is a sidebar with links: "Device Info", "Quick Setup", "Advanced Setup", "Diagnostics", and "Management". The main content area is titled "WAN IP Settings" and contains the following text: "Enter information provided to you by your ISP to configure the WAN IP settings." and a notice: "Notice: DHCP is not supported in IPoA mode. Changing the default gateway or the DNS effects the whole system. Configuring them with static values will disable the automatic assignment from other WAN connection." Below this are several input fields and checkboxes: "WAN IP Address:" with value "211.192.176.49", "WAN Subnet Mask:" with value "255.255.255.192", a checked checkbox "Use the following default gateway:" with sub-options "Use IP Address:" (checked, value "211.192.176.64") and "Use WAN Interface:" (unchecked, dropdown value "ipoa_0_32/atm49"), and a checked checkbox "Use the following DNS server addresses:" with "Primary DNS server:" (value "192.168.1.1") and "Secondary DNS server:" (value "192.168.1.1"). At the bottom are "Back" and "Next" buttons. The footer of the page reads "© 2004 Broadcom Corporation. All rights reserved."

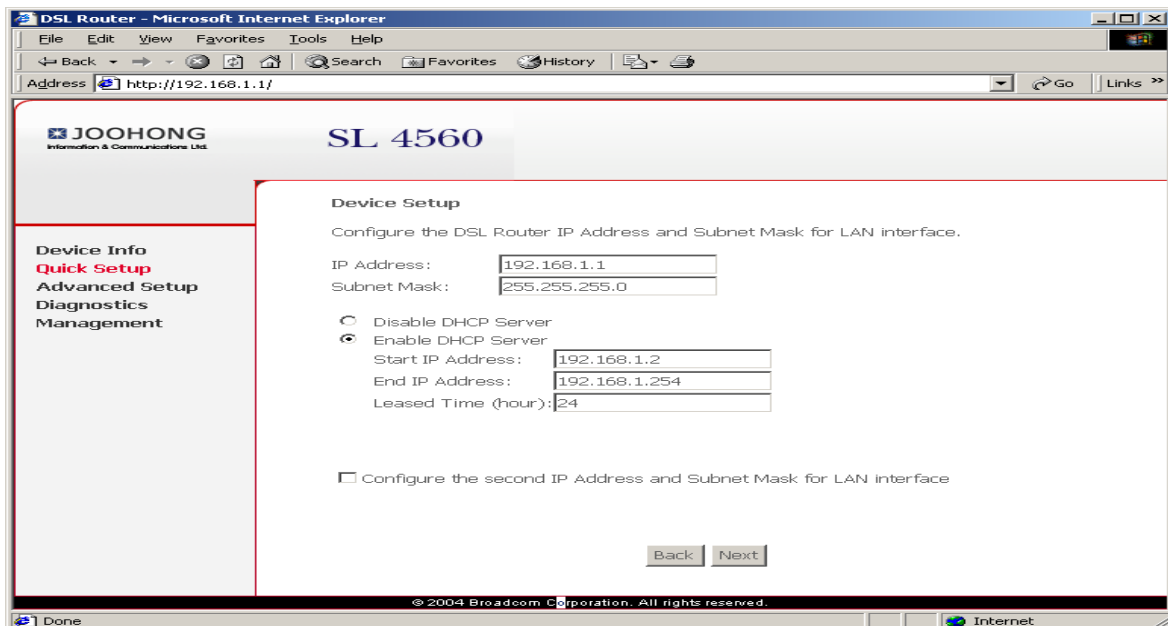
- WAN IP Address : IP that you got from ISP
- WAN Subnet Mask : Subnet Mask that you got from ISP
- Default IP Gateway Address : NAS IP
- DNS server Address : DNS Server IP of ISP

2.2.3.4. Do not check the 'Enable NAT' , 'Enable Firewall' options. Then [Next]

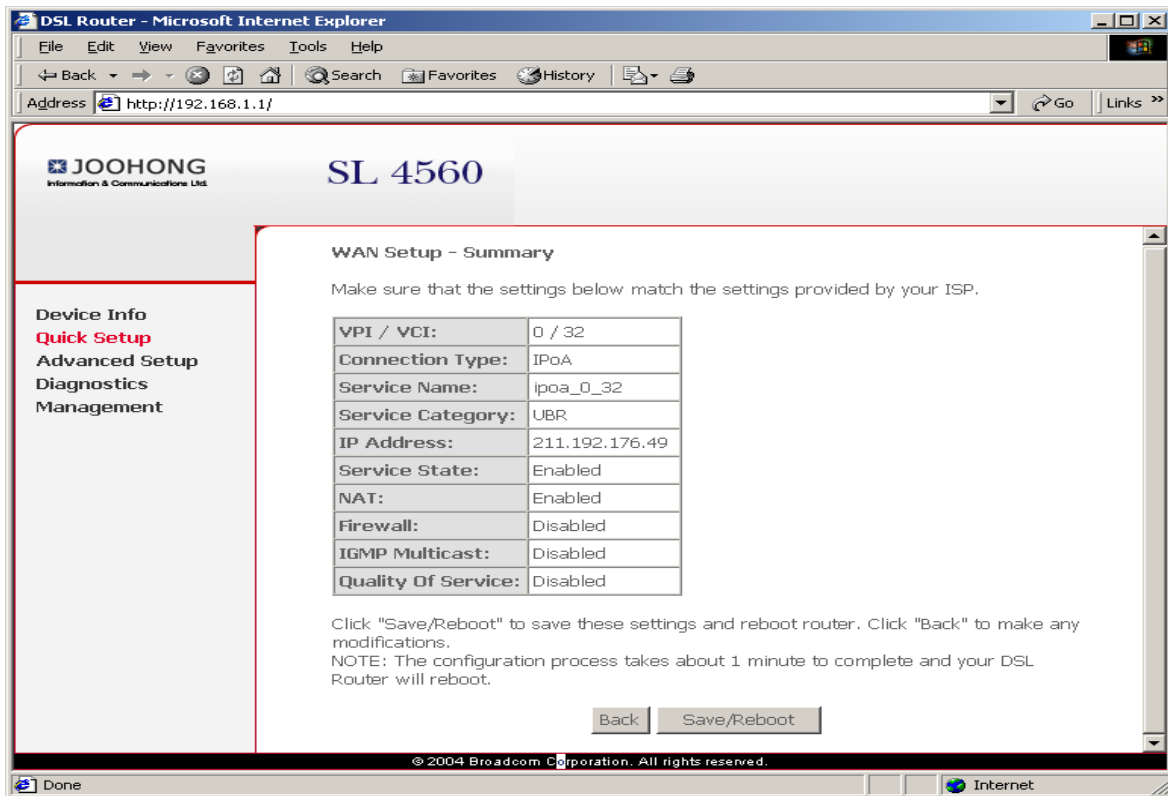
Basically, 'Enable NAT' and 'Enable Firewall' would be checked.



2.2.3.5. Displayed IP is the IP for web management.

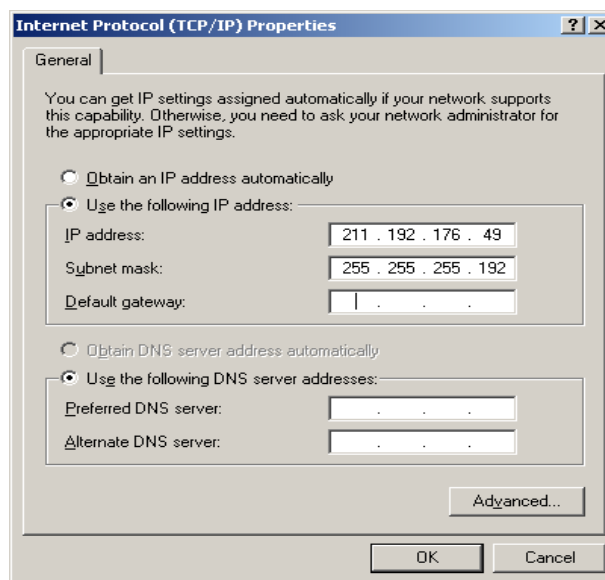


2.2.3.6. Check the configuration and [Save/Reboot].



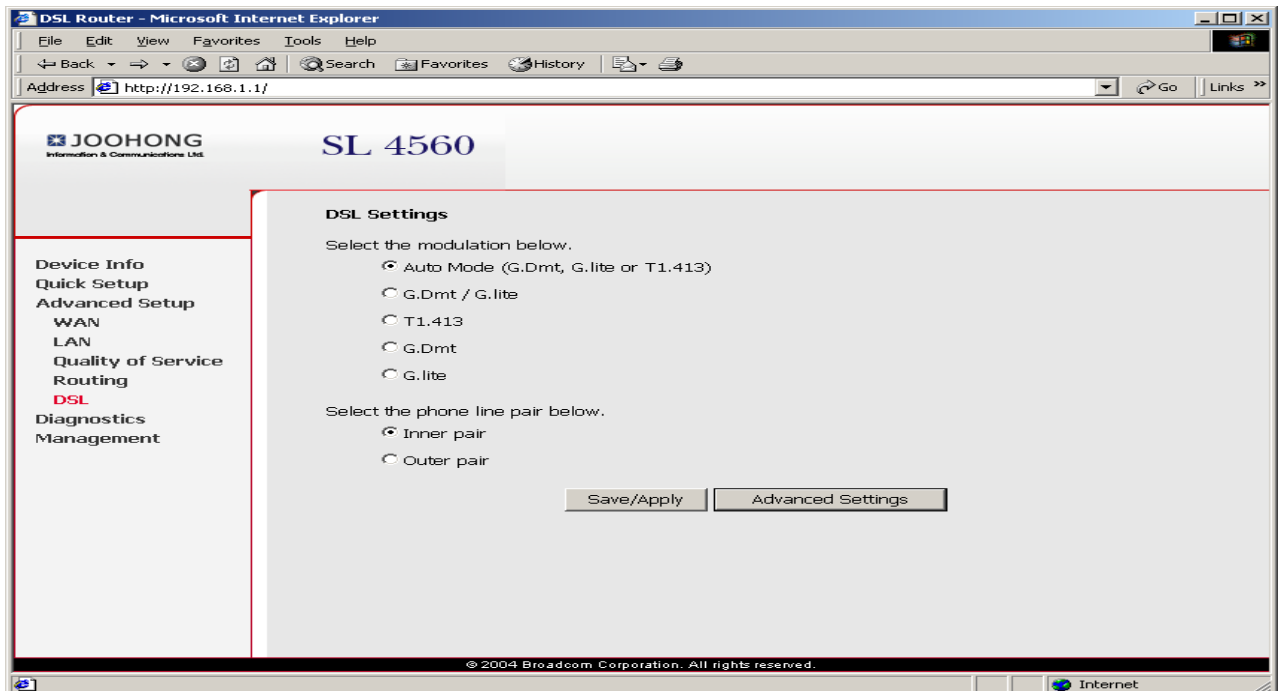
2.2.3.7. After configuration finished, set-up the IP address of PC.

This is one of the example.



2.3. DSL Configuration

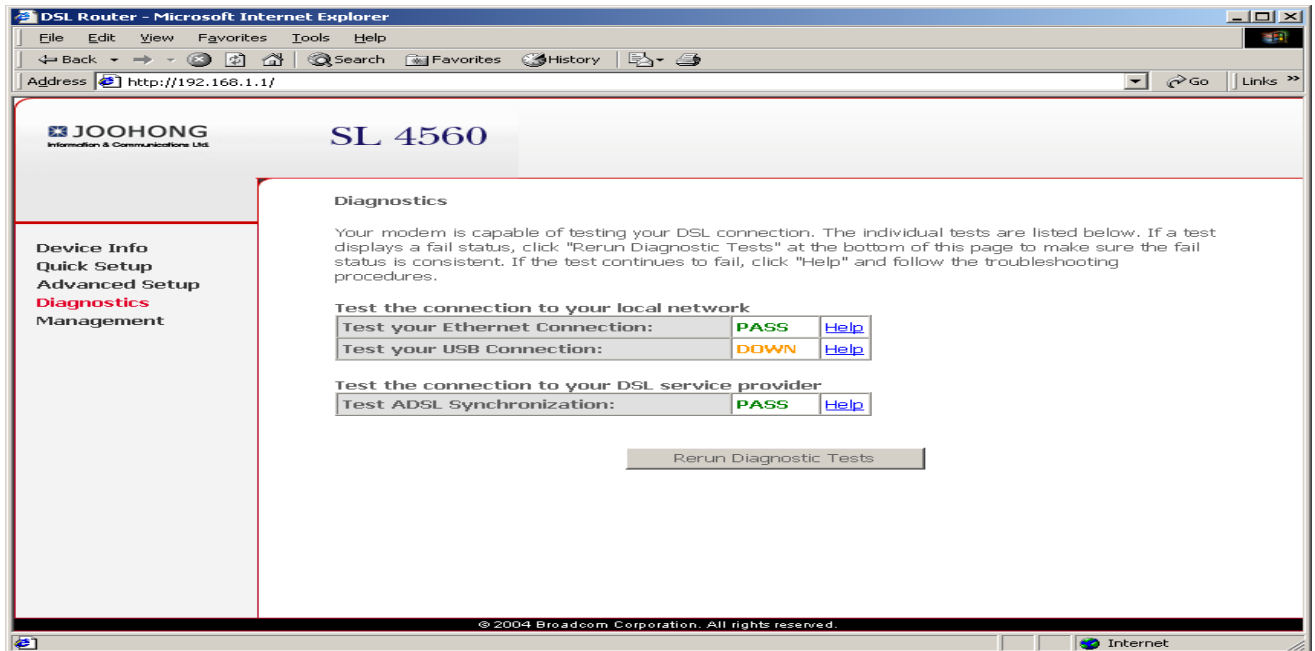
Select the DSLAM and Modulation option and 'Save/Apply'



- If you choose Auto mode, modem will select Modulation mode that DSLAM service automatically.
- If Modulation mode selected not properly, connection will be failure.
(Default selection of Modem is Auto Mode.)
- After you click the [Save/Apply] , modem try to make a connection with DSLAM.

2.4 Diagnostics.

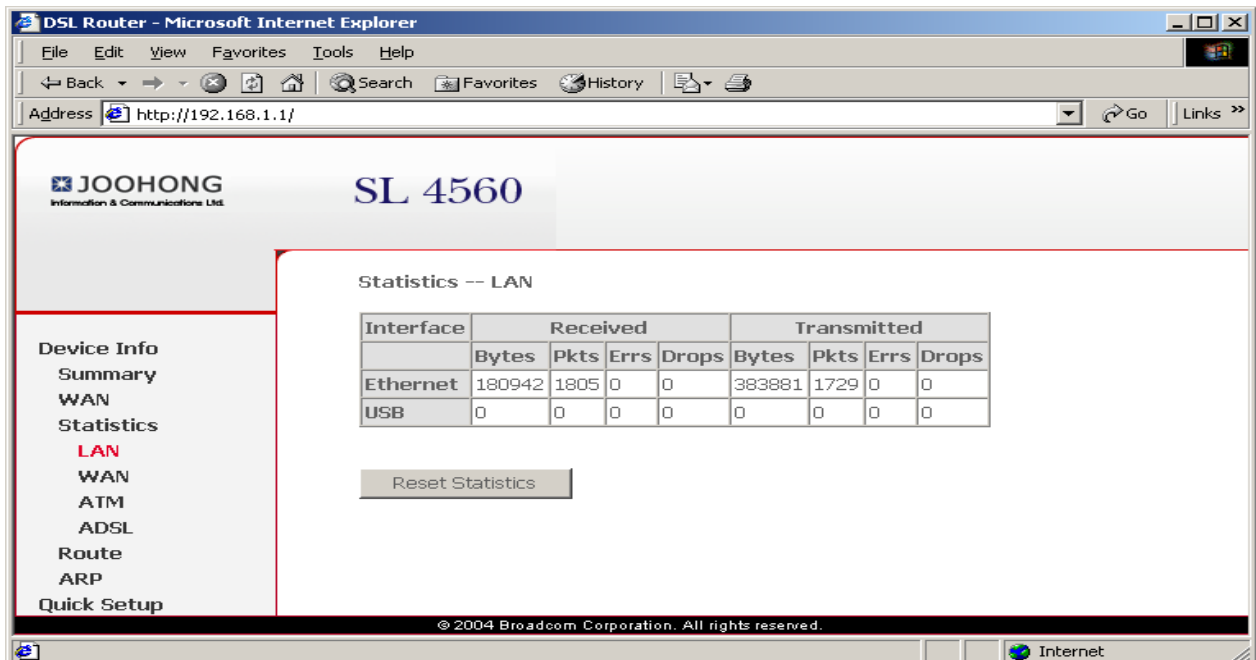
- You could see the modem status(LAN, ISP).



(Diagnostics function could be varied by DSLAM)

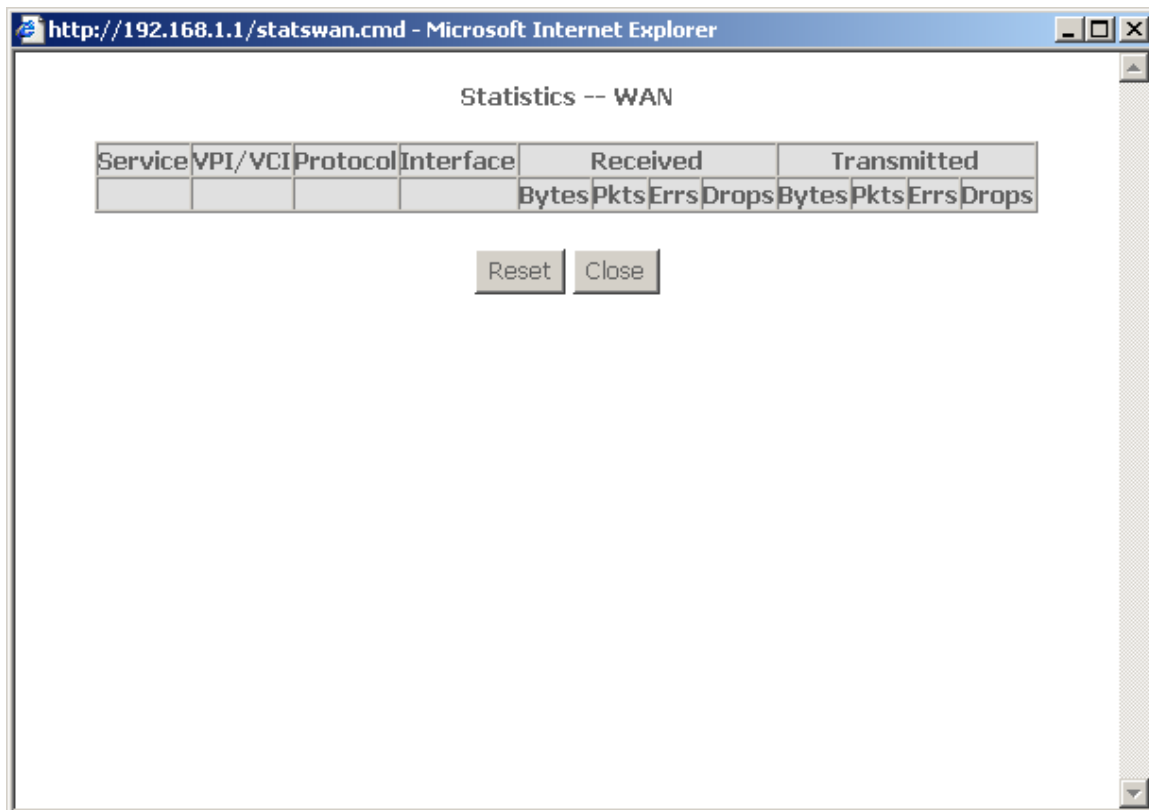
2.5. Modem Status

- 'LAN-Statistics' displayed network statistics



After you click the [Reset statistics], Values will be '0'

- WAN : WAN displayed network statistics



The screenshot shows a Microsoft Internet Explorer window with the address bar displaying `http://192.168.1.1/statswan.cmd`. The main content area is titled "Statistics -- WAN" and contains a table with network statistics. The table has columns for Service, VPI/VCI, Protocol, Interface, Received (Bytes, Pkts, Errs, Drops), and Transmitted (Bytes, Pkts, Errs, Drops). Below the table are two buttons: "Reset" and "Close".

Service	VPI/VCI	Protocol	Interface	Received				Transmitted						
				Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops			

Reset Close

- ADSL : ADSL Connection status and error log.

http://192.168.1.1/statsadsl.html - Microsoft Internet Explorer

Statistics -- ADSL

Mode:	G.DMT	
Type:	Fast	
Line Coding:	Trellis On	
Status:	No Defect	
Total ES:	1	
Total SES:	0	
Total UAS:	10	
	Downstream	Upstream
SNR Margin (dB):	5.9	7.0
Attenuation (dB):	51.5	25.0
Output Power (dBm):	14.5	12.2
Attainable Rate (Kbps):	320	364
Rate (Kbps):	288	256
K (number of bytes in DMT frame):	10	9
R (number of check bytes in RS code word):	0	0
S (RS code word size in DMT frame):	1	1
D (interleaver depth):	1	1
Super Frames:	128679	128677
Super Frame Errors:	1	0
RS Words:	0	0
RS Correctable Errors:	0	0
RS Uncorrectable Errors:	0	N/A
HEC Errors:	1	0
OCD Errors:	0	0
LCD Errors:	0	0

If you click the [Reset], error values go to '0'

- ATM : Displayed status of ATM Layer and its error.

http://192.168.1.1/statsatm.cmd - Microsoft Internet Explorer

In Octets	Out Octets	In Errors	In Unknown	In Hec Errors	In Invalid Vpi Vci Errors	In Port Not Enable Errors	In PTI Errors	In Idle Cells	In Circuit Type Errors	In OAM RM CRC Errors	In GFC Errors
0	0	0	0	0	0	0	0	0	0	0	0

In Octets	Out Octets	In Ucast Pkts	Out Ucast Pkts	In Errors	Out Errors	In Discards	Out Discards
0	0	0	0	0	0	0	0

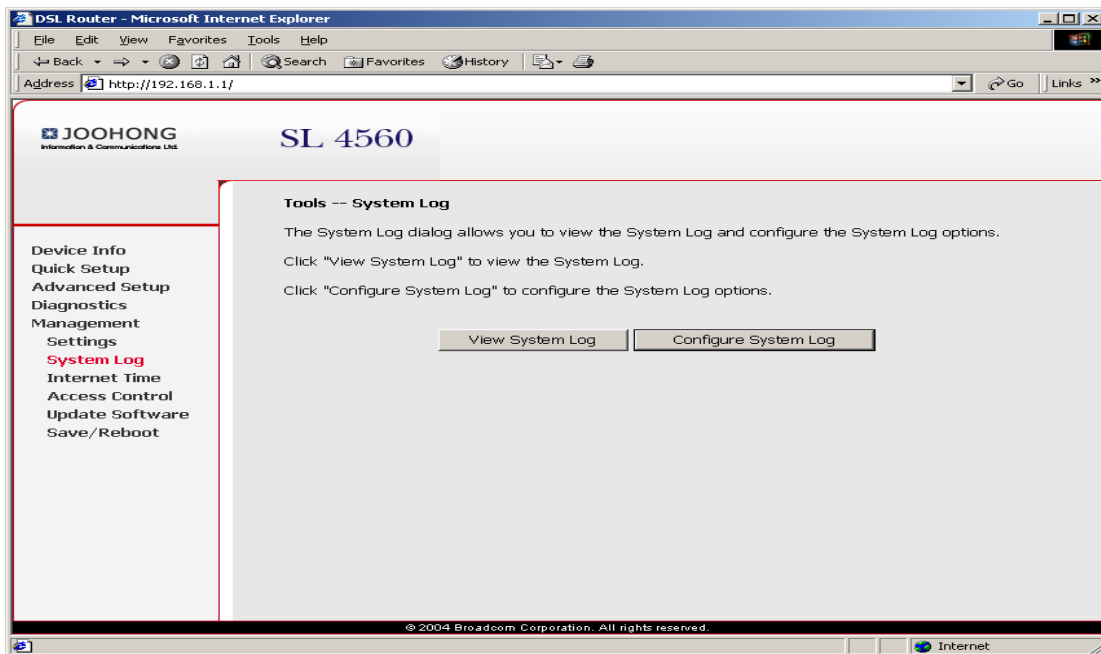
Service	VPI/VCI	Protocol	CRC Errors	SAR Timeouts	Oversized SDUs	Short Packet Errors	Length Errors
---------	---------	----------	------------	--------------	----------------	---------------------	---------------

Reset Close

If you click the [Reset], error values go to '0'

2.6. Tool – System log

You can check the system status.

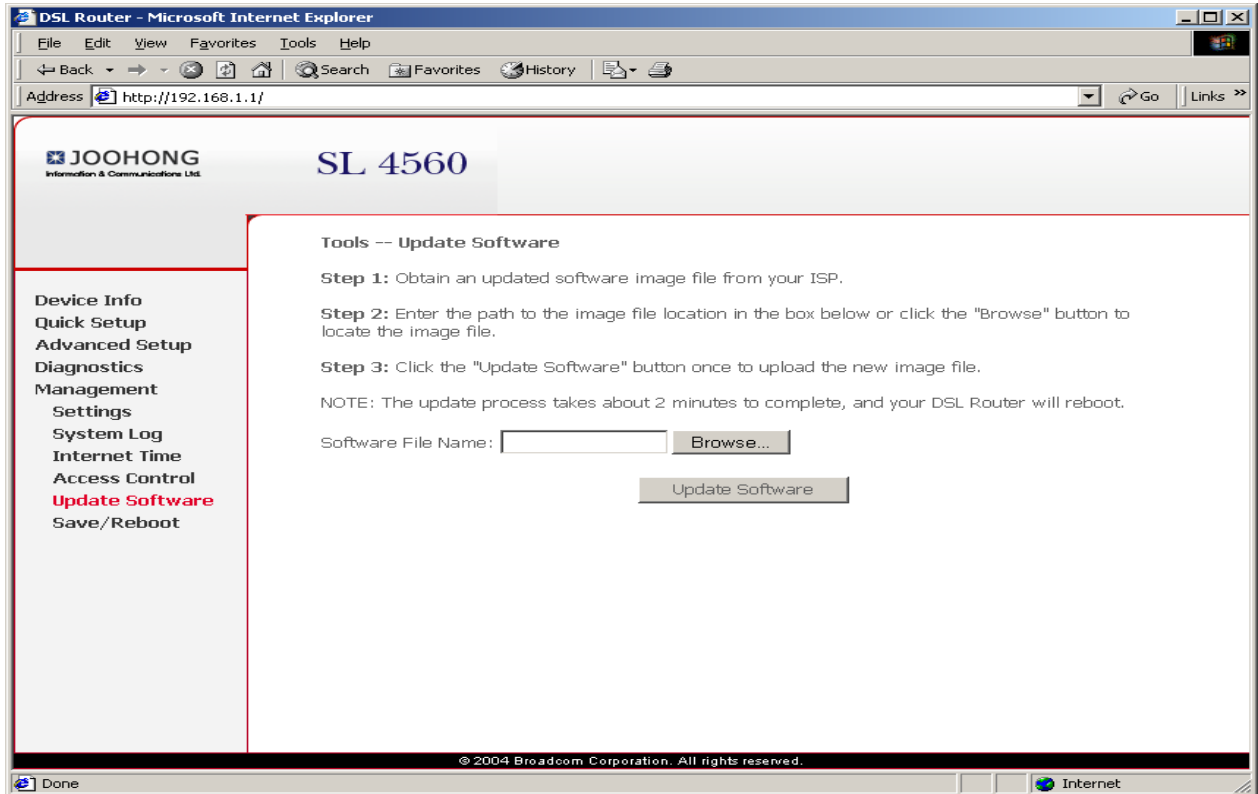


If you click the [View System Log], you can see the modem status as below.



2.7. Tool – Software update

You can update the modem software with new one.



1. Save the update software in PC.
2. Browsing the new software that you saved by [Browse] button.
3. Select the [Update Software] and you can install the new software.

The value that you configured will not be changed after you update the software.

(You don't need to configure again.)

2.8. Tool – Default value

‘Default Value’ function make all the configured value goes to the default value.



- Default value : PVC(0/32), Connection(PPPoE), Modulation(G.dmt)

If you click the [Restore Default Configuration], System will restart automatically.