Appendix F. *User Manual*

Contents

I. Installation of Wel+8010D

1.1 Basic Knowledge

1.1.1 What's the ADSL?

Asymmetric Digital Subscriber Line is a technology for transmitting digital information at a high bandwidth on existing phone lines to homes and business. Unlike regular dialup phone service, ADSL provides continuously available for telephone and internet lines at the same time. ADSL is generally offered at downstream data rates from 512 kbps to about 6Mbps.

1.1.2 Wel+8010D ADSL Modem Specification

ITEM	Specification		
Wel+8010D ADSL External Modem	Operation Environment	Power	input power :110/220Vac to 5Vdc frequency : 50/60Hz
		O.S	For Ethernet,Win95/98(first,second)/2K/NT /ME/Linux/Unix/Machintoch For USB, Win98(first,second)/2K/ME
	H/W	Interface	IEEE 802.3 10BaseT/USSB-B
		Rate(DN/UP)	max 8Mbps/1Mbps
		Standard	ANSI T1.413 issue2 /ITU-T G.992.1(G.dmt) G.992.2(G.lite),G.994.1(G.hs)
		Splitter	Internal
		LED	LAN(LINK,ACK)/ADSL(Sync,Rx,Tx) Power&ALARM
	S/W	Modulation	DMT
		Error Detect	Reed-Soloman
		Signaling	PVC
	Board specification		size(171mmX131mmX40mm)
	Interface		ADSL Line - RJ11
			POTS-RJ11
			Ethernet-RJ45
			USB - USB-B
			DC power - PC mounted DIN connector

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1.2 Wel+8010D ADSL Modem Installation

1.2.1 Confirmation of PC Installation

Before connect the Wel+8010D ADSL Modem to PC,

For Ethernet interface,confirm that LAN card has to installed on the PC. LAN card is available in the PC shop.

For USB interface, confirm that USB1.1 has to supported on the PC OS.

1.2.2 Ready for Cables

Telephone Line Port(LINE/TEL) - RJ-11 (telephone cable 1 each)

Ethernet port(LAN) - RJ-45 UTP Ethernet cable (cross cable for connection to PC directly or straight cable for connection to HUB)

CONSOLE Port - RS232-C cable

USB cable - USB-B

1.2.3 Connecting PC and Cable

Hook up one side of the RJ-45 UTP Ethernet cable to the Wel+8010D ADSL Modem Ethernet port(LAN), then connect the other jack to the LAN card on the PC

And Hook up retangular formed side of the USB cable to PC USB port, then connect the otehr jack to the Wel+8010D ADSL Modem USB port.

1.2.4 Connecting LINE

Connect the telephone line to the LINE port of the Wel+8010D ADSL Modem

1.2.5 Connecting Power

Connect the Power Adaptor to the power input port of the Wel+8010D ADSL Modem, then hookup the power cable to the consent

1.2.6 Connecting Console Cable (For protocol setup and monitoring)

Connect Wel+8010D ADSL Modem's CONSOLE Port and the Serial port of the PC by the RS232-C cable then it can perform by using your favorite VT100 terminal emulation program or webconsole offered on your CD-ROM

▶ Speed -- 9600bps
▶ no parity
▶ 8 bit data
▶ 1 bit stop
▶ no flow control

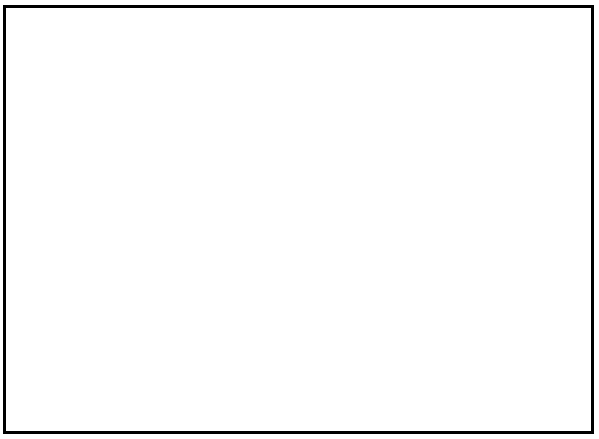
If you are using the Webconsole, we need not to set above items.

Now you can see several lines on the screen of the terminal when you turn on the Wel+8010D's power. This screen can be used for terminal.

Also you can monitor and configure your modem Wel+8010D with webconsole offered on your CD-ROM.

Webconsole is installed by "webconsole.exe" file in offered CD-ROM with Wel+8010D. You can start the installed program by double-clicking on Wel+8010D icon in the screen.

Click on the "Serial Config " at the starting menu to set the PC COM port connected with Serial Cable.



Also The Modem can be accessed with Telnet. IP is set at 192.168.1.1 by default, which can be changed. Type "password" for password.

1.2.7 Confirming Connection Status

Each ports of the Wel+8010D ADSL Modem can be confirmed its connection status by the following methods;

Confirm the ADSL Line Connecting Status

After Wel+8010D ADSL has been connected, normally ADSL sync. LED should be blanking within some seconds.
It is indicates that ADSL Line is in the status of LINK

Confirm the PC connecting Status

If LINK LED between the LAN card(or USB) of the PC and Wel+8010D ADSL Modem's lights are on,
it means that modem has been connected properly.

Confirm the Telephone Connecting Status

It is proper operation if you can hear normal telephone signal sound and no interruption sound when you pick up the phone,
it means that the operation has been operating successfully.
※If the PWR/ALARM LED shows RED light, ADSL Modem is not in the status of LINK or the Ethernet connecting status with PC has not been connected in properly.

1.3 Wel+8010D ADSL Modem USB interface installation

You are using one of the following Windows platforms as your PC in the PC-attached configuration:

▶ Windows 2000
▶ Windows 98 SE
▶ Windows 98 FE
▶ Windows ME

The example in this chapter uses Window 98 SE as the PC platform. If your are using any other version of Windows, the procedure to follow is very similar
You have the Windows Installation CD readily available.

For a PC-attached Gateway configuration, the following drivers need to be installed:

▶ USB Driver (VVBUSUSB driver)
▶ Ethernet Driver(VVB Client Ethernet driver)

The Ethernet Driver also needs to be configured for use.

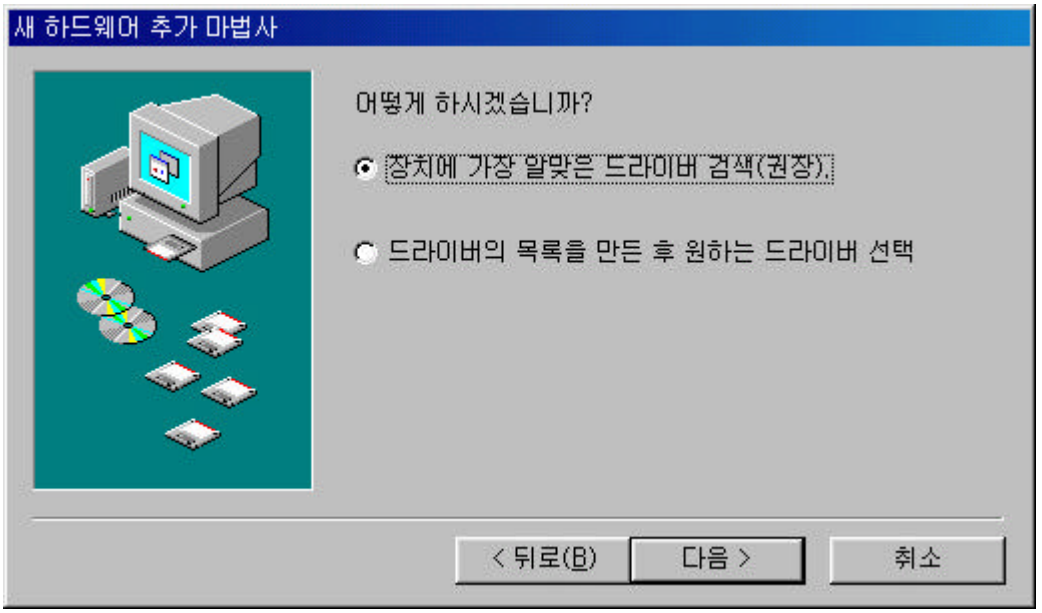
1.3.1 Installing the PC (USB) Driver

To install the PC USB driver for a PC-attached configuration on a PC running Windows 98 SE, follow the procedure below.

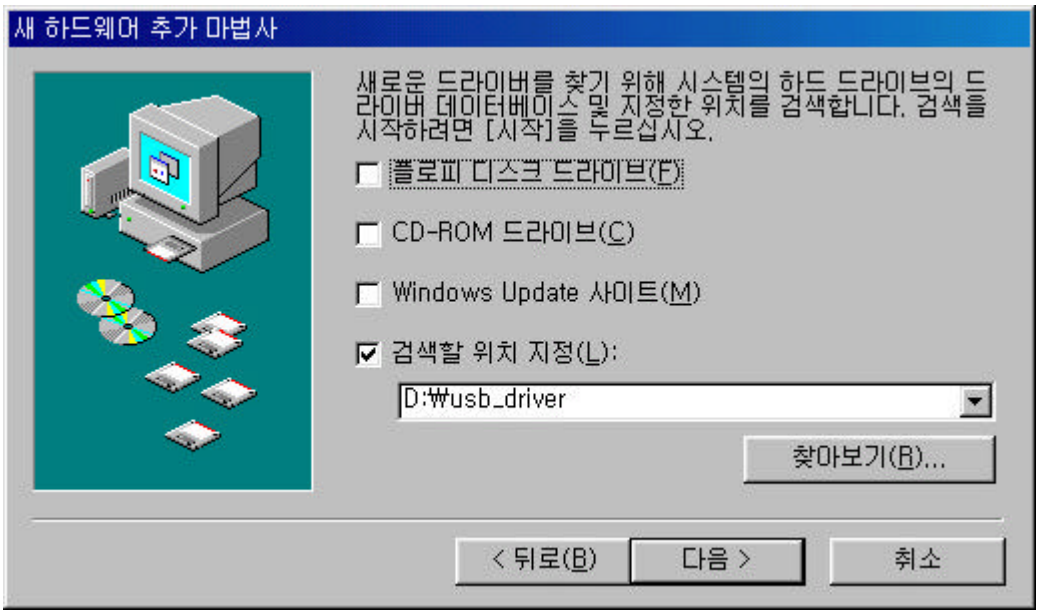
1. The "Add New Hardware Wizard dialog box" is displayed showing the type of USB device that has booted up:

2. Click on "Next" to continue.

The following dialog box is displayed asking you to specify how to install the driver:

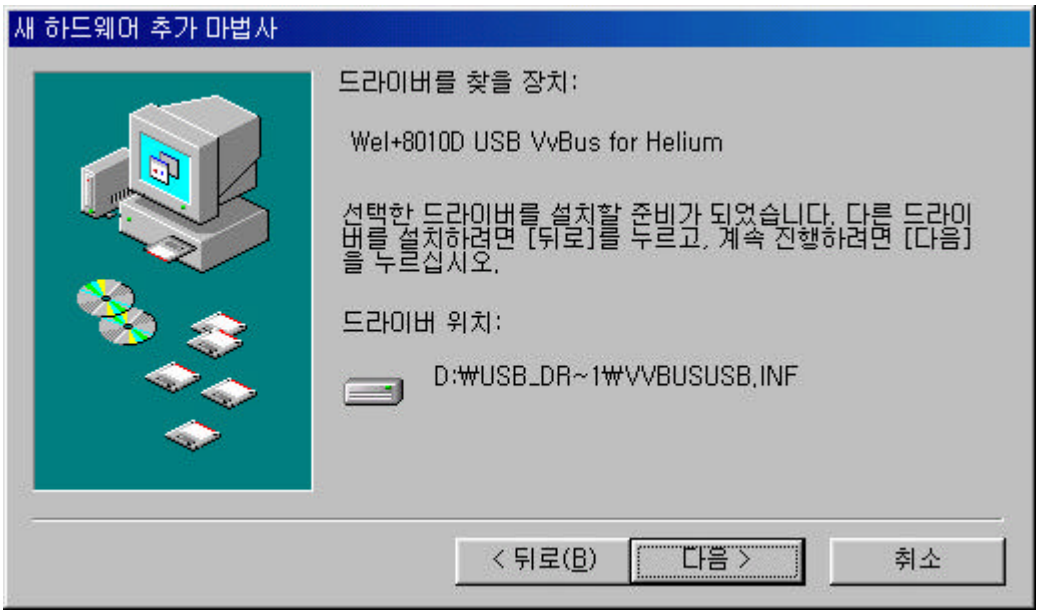


3. The Following dialog box is displayed which confirms that a suitable driver has been found on the path which will now be installed:

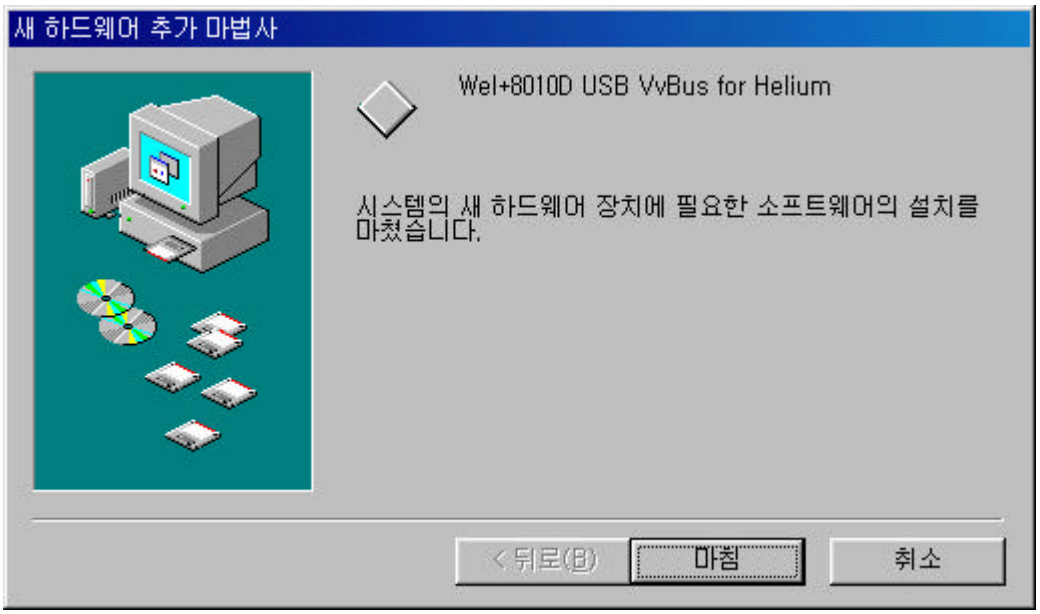


4. Click on "Next" to begin the installation of the driver.

When the installation has finished, the following dialog box is displayed:



The PC driver for the USB device is now installed.



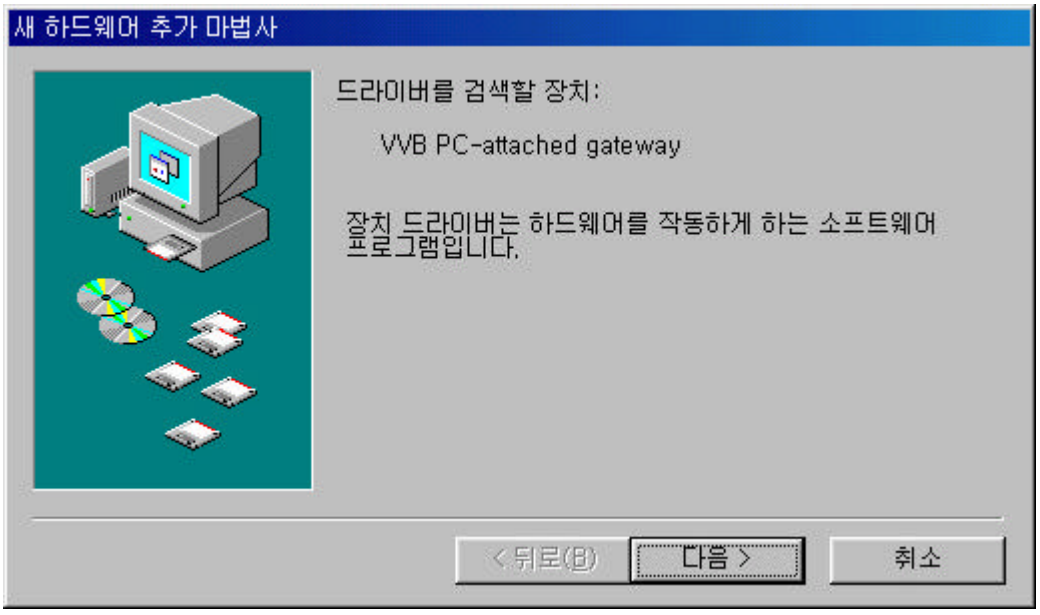
5. Click on the "Finish" button to complete the installation.

The PC Driver for the USB device is now installed.

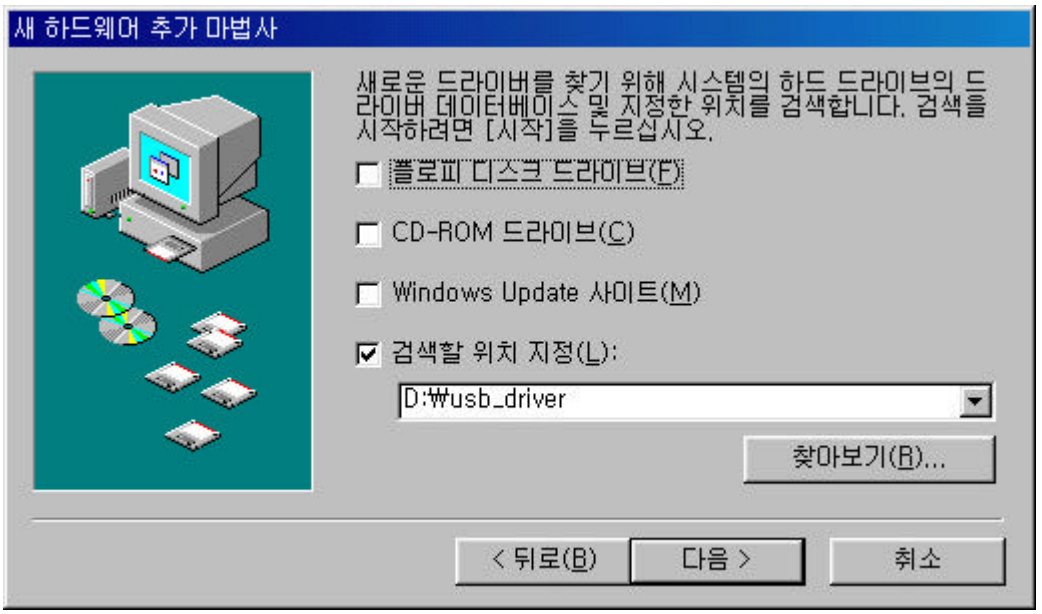
1.3.2 Installing the PC (USB) Driver

To install the PC (Ethernet Client) driver for a PC-attached configuration on a PC running Windows 98 SE, follow the procedure below.

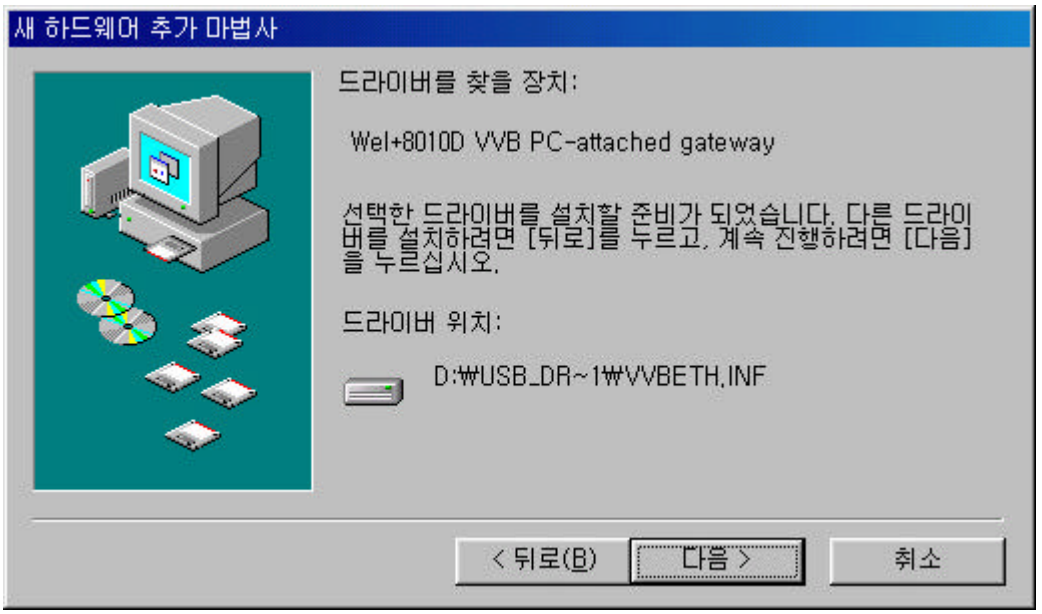
1. The "Add New Hardware Wizard dialog box" is displayed showing that it needs to install a driver for the VVB Ethernet port:



2. The following dialog box is displayed which confirms that a suitable driver has been found on the path which will now be installed:



3. Click on "Next" to begin the installation of the driver.

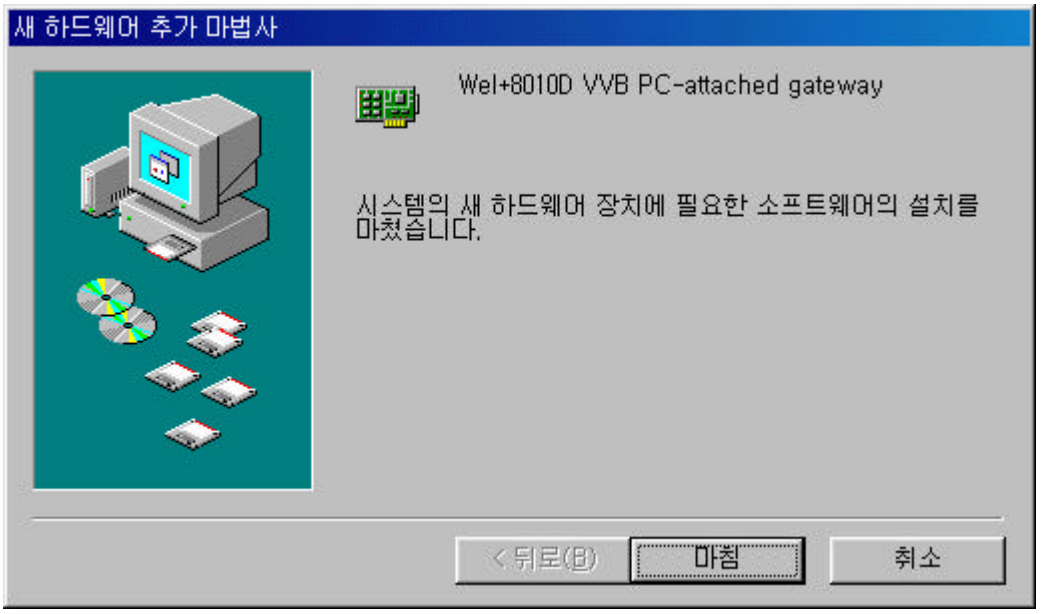


4. You nay be asked th insert the Windows installation CD-ROM that was supplied with your PC. If so, insert the CD and click on "Next".

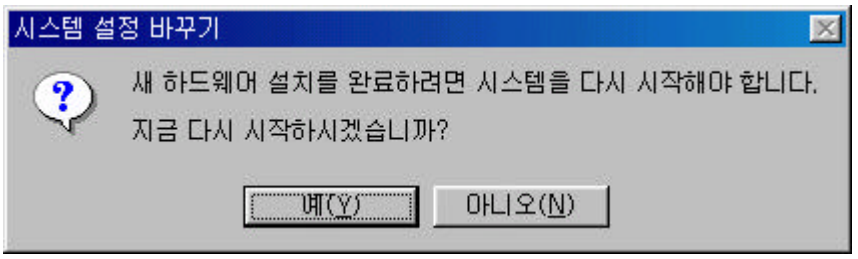
When the installation has finished, the following dialog box is displayed:

The PC driver for the VVB Ethernet port is now installed.

5. Click on the "Finish" button to complete the installation.



6. You will be asked to restart your computer:



Click on "yes" to restart the computer.

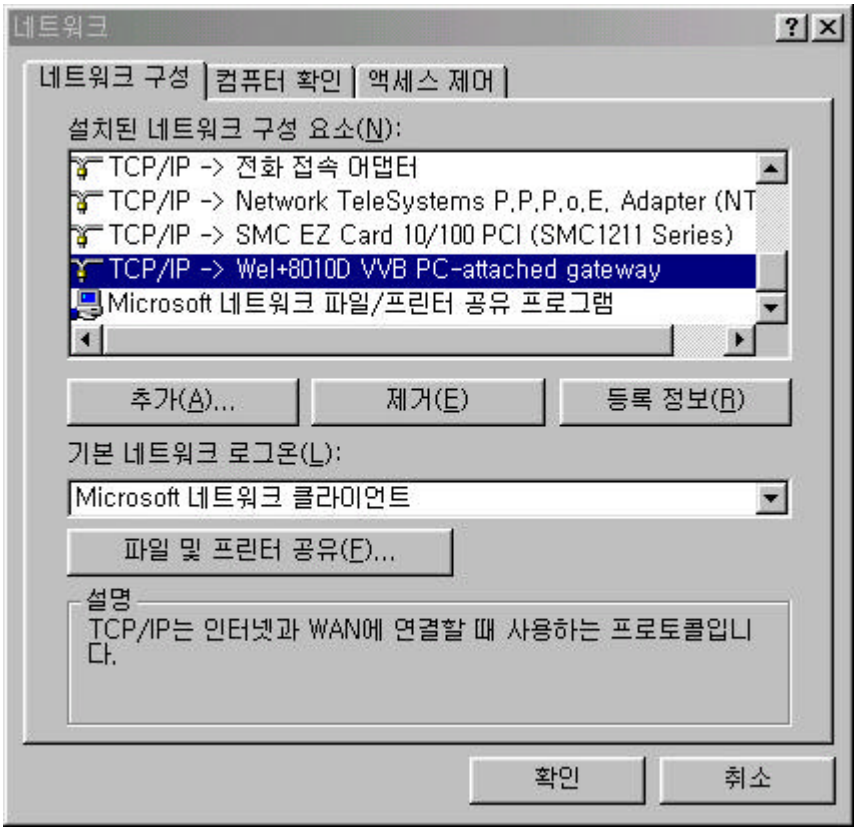
After the reboot, the PC Driver for the Ethernet port will be fully installed.

Refer to the next section to configure the driver.

1.3.3 Configuring the Ethernet Client driver

To configure the Ethernet Client driver, follow the procedure below.

1. Choose "Setting > Network and Dial-up Connections" from the "Start" menu.
2. The "Network and Dial-up Connections" window is displayed.



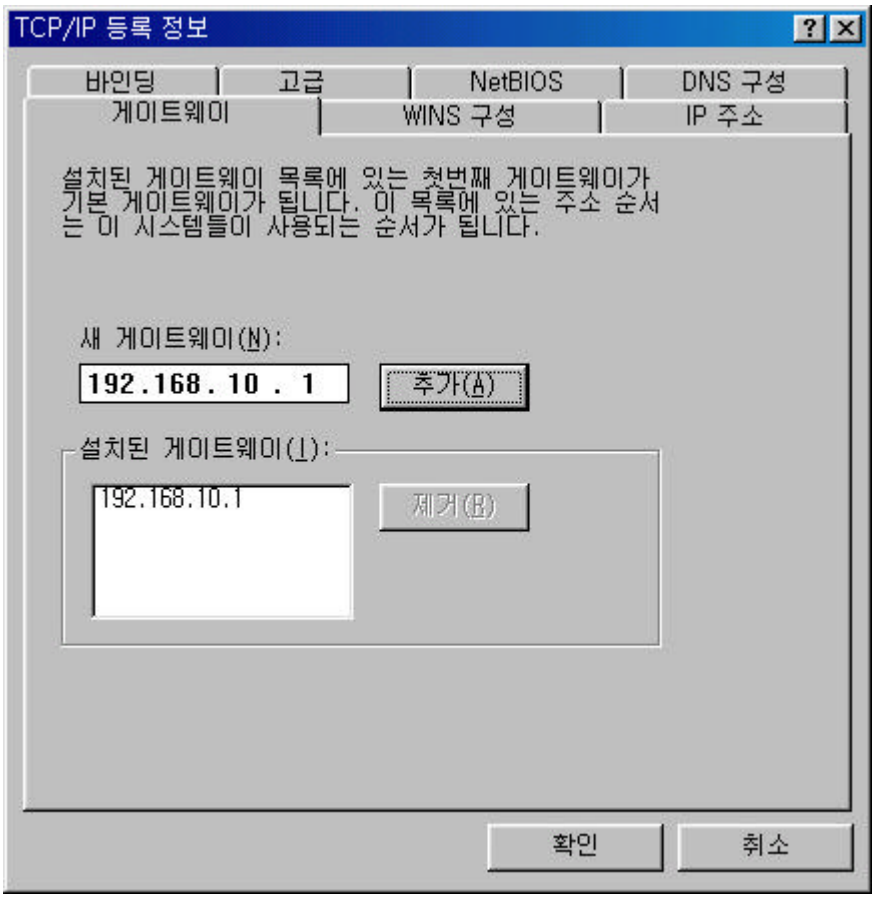
3. Right-click on the "local Area connection" icon in this window and choose "Propertied" form the menu displayed.

The "Local Area Connection Properties"dialog box is displayed:

4. Click on the "Internet Protocol" item in the list box.

Now set IP Address and gateway for USB interface(for example, IP address is 192.168.10.2 and gateway IP is 192.168.10.1)


TCP/IP 등록 정보
바인딩
고급
NetBIOS
DNS 구성
게이트웨이
WINS 구성
IP 주소
이 시스템에 IP 주소를 자동으로 지정할 수 있습니다. IP 주소가 네트워크에서 자동으로 지정되지 않으면 네트워크 관리자에게 주소를 문의한 다음 아래 공백에 해당 주소를 입력하십시오.
자동으로 IP 주소 지정(O)
할당된 IP 주소 사용(S)
IP 주소(I):
192.168.10 . 2
서브넷 마스크(U):
255.255.255. 0
확인
취소


TCP/IP 등록 정보
바인딩
고급
NetBIOS
DNS 구성
게이트웨이
WINS 구성
IP 주소
설치된 게이트웨이 목록에 있는 첫번째 게이트웨이가 기본 게이트웨이가 됩니다. 이 목록에 있는 주소 순서는 이 시스템들이 사용되는 순서가 됩니다.
새 게이트웨이(N):
192.168.10 . 1
추가(A)
설치된 게이트웨이(I):
192.168.10.1
제거(R)
확인
취소

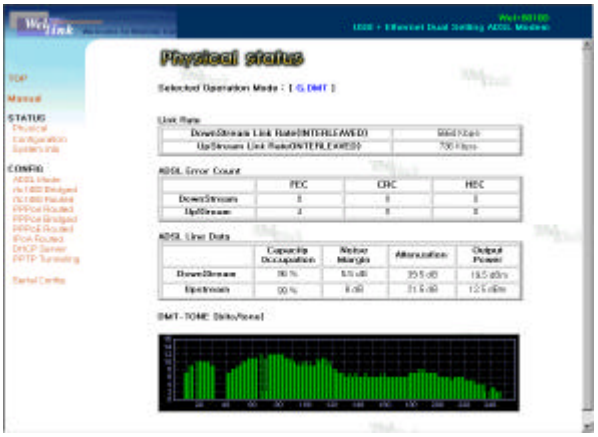
II. Showing status of Wel+8010D

2.1 Physical Layer status

You can check the connecting status of the modem such as Physical Link Rate, Error count, DMT-tone by CLI(Command Line Interface)

> bsp sysinfo

In using Webconsole, you can check the link status by selecting STATUS/Physical at the stating menu.



In the Physical Status screen,
Selected Operation Mode shows the current setting mode from CO like DSLAM and displays Physical Link Rate and Error Count of the modem which is linked to CO.

DMT-tone at the bottom part, displays each Carrier load (bits/tone) for 256 sub-channels (0~31 for upstream, 40~255 for downstream) in graphics.

2.2 Current configuration of Wel+8010D

Using Webconsole, if you click on STATUS/Configuration you can see the current protocol setting status of the modem and IP configuration on the WAN assigned from DHCP server.

IP Configuration which is displayed in the bottom of the Configuration Status screen shows the IP setting assigned from CO on the WAN.
Therefore, any IP setting is not displayed in case that you use a Static IP.

2.3 System Infomation

Using CLI(Command Line Interface), you can check SYSTEM information of the modem by the following commands;

```
Wel+8010D> chips info

Wel+8010U ADSL Modem version 7.1.0.25.2/4.6.4.1.3.5ub (25 July 2001)
Machine Name:   Wel+8010D
MAC address:    0:20:2b:0:55:20
```

vIn this version string, 7.1.0.25.2 of the front part refers to the ATMOS version of available OS, 4.6.4 refers to a bsp s/w version of the ADSL chips, and 1.3.5ub refers to a firmware version of the ADSL chipset.

Using Webconsole, you can check the SYSTEM Information of the modem by selecting
" STATUS " / " System info " of the starting menu.

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Ⅲ. Configuration of Wel+8010D

3.1 Changing Wel+8010D ADSL Mode

Using CLI(Command Line Interface), you can select a specific ADSL Mode with the following commands.

```
Wel+8010D> bsp gdmt
ADSL Mode is now Gdmt (0x00000002)

Wel+8010D> config save
Saving configuration...Configuration saved.

Wel+8010D> restart
```

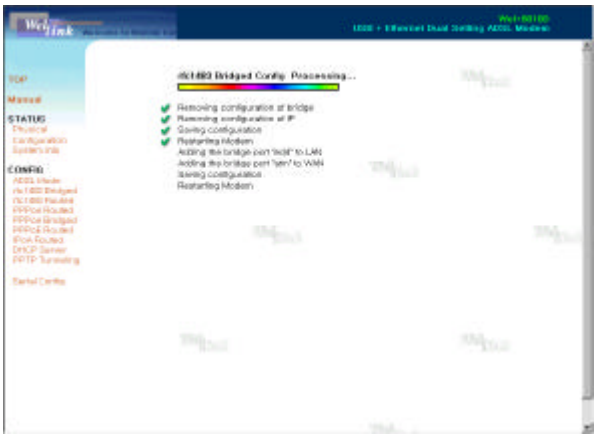
A modem is set as a Multi Mode in default.
You can change the ADSL Mode using bsp glite(G.Lite), bsp ansi(T1.413) and bsp multi(Multi sensing) instead of bsp gdmt.
You can confirm the Mode with the following commands.

```
Wel+8010D> bsp mode
ADSL Modem Mode is: gdmt (State : SHOWTIME_L0)
```

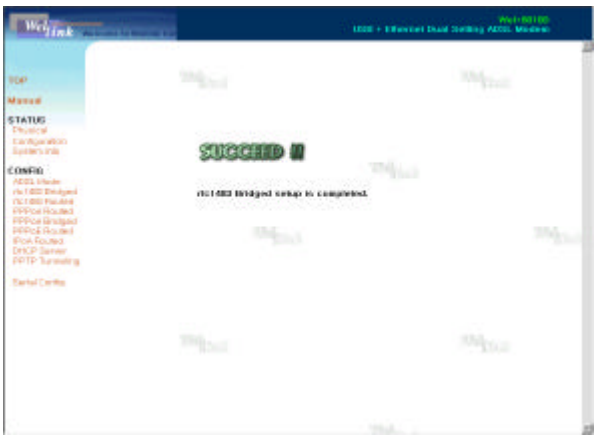
Using Webconsole, you can change the ADSL Mode by clicking Config/ADSL Mode and selecting the specific ADSL Mode.

On ADSL Mode screen,
“Modem State” shows the ADSL Sync. Status
Modem Mode 는 현재 모뎀에 설정된 and “Modem Mode” displays the current setting mode of the modem.
If you want to change the mode to Specific Mode, select a Mode you want and click on “SAVE” button.

During the alteration of a Configuration value in System, you can see the following screen..



If the configuration is changed successfully, you can see the following message.



TOP

3.2 Establishing of Wel+8010D Protocol

3.2.1 RFC1483 bridged

Using CLI(Command Line Interface), you can change the Protocol of the modem to RFC1483 bridged mode.

At Terminal console screen,

remove the current configuration.

```
> config reset bridge

> ip device flush

> config reset ppp

> config save
Saving configuration...Configuration saved.

> restart
```

In this way, setup for rfc1483 bridged mode is completed.

```
> bridge device add edd/DEVICE=1  (for Ethernet interface)

> bridge device add edd/DEVICE=2  (for USB interface)

> bridge device add bun/port=atm/rfc1483=true/mode=llcbridged/vpi=x/vci=y

> config save
Saving configuration...Configuration saved.

> restart
```

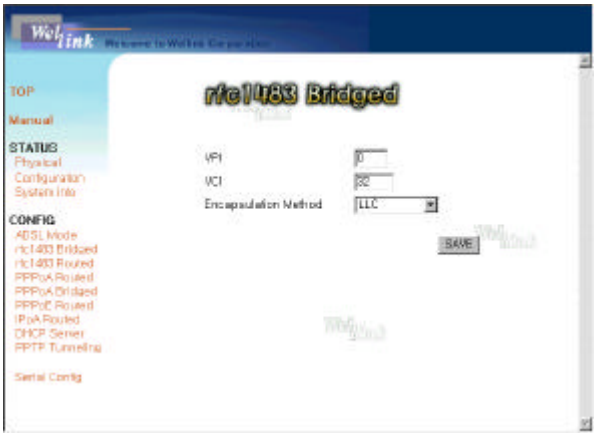
Among the above commands, "bridge device add edd/DEVICE=1" means an add Ethernet(10BaseT) Port on the bridge.
"bridge device add edd/DEVICE=2" means an add USB Port on the bridge.
"bridge device add bun/port=atm/rfc1483=true/mode=llcbridged/vpi=x/vci=y" is a Port configuration using RFC1483 Protocol. The "x","y" refers to the value of VPI and VCI which is set by the information from ISPs.
Wel+8010D supports up to 16 PVC value simultaneously.
You can check the protocol setting by the following commands on the consol screen.

```
> bridge device list
Port 1: 'edd/DEVICE=1'
Port 2: 'edd/DEVICE=2'
Port 3: 'bun/port=atm/rfc1483=true/mode=llcbridged/vpi=x/vci=y'
```

After you have done for Protocol installation and if ADSL Sync LED is in the condition of stable after it has been blinking, you will be online.

If you need to connect PPP server for PPPoE service, you will be online by perform the PPP Client Program such as EnterNet300 (WinPoet,etc)

Using Webconsole, you can change the protocol of the modem to RFC1483 bridged mode by clicking on " Config/rfc1483 Bridged "



For setting as RFC1483 bridge, you need to have the information for VPI(Virtual Path Identifier)/VCI(Virtual Channel Identifier) from the ISP.

The range of VPI value is from 0 to 4095,
and the range of VCI value is from 1 to 65535.

As well, you need to select a proper Data Encapsulation Method.
Usually, LLC(Logical Link Control) encapsulation Method is used for RFC1483 bridge mode.

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3.2.2 RFC1483 Routed Mode (dhcpserver+NAT)

This is an example of setup for rfc1483 routed mode.
You can set the DHCP server as follows;
If set up is as follows,

PC Side(for 10BaseT)
subnet1: 192.168.1.0
netmask: 255.255.255.0 (this has set up as dhcpserver)
gateway: 192.168.1.1

PC Side(for USB)
subnet2: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

Telco Side
subnet3: 202.1.136.0
gateway:202.1.136.1
Modem's WAN IP : 202.1.136.2

Using CLI(Command Line Interface), you can change the protocol of the modem to RFC1483 bridged mode by the following steps;

At terminal Console Screen:

Remove all of the existing module devices

```
> config reset bridge

> ip device flush

> config reset ppp

> config save
Saving configuration...Configuration saved.

> restart
```

In this way, setup for rfc1483 routed mode is completed.

Ethernet block gateway setup

```
> ip device add ether1 ether //edd/DEVICE=1 192.168.1.1

> ip subnet add ether1.home . 192.168.1.1 ff:ff:ff:00

> ip device add ether2 ether //edd/DEVICE=2 192.168.10.1

> ip subnet add ether2.home . 192.168.10.1 ff:ff:ff:00
```

if subnetmask is the C class(255.255.255.0), subnet command is not needed.

Set up pvc value of WAN and IP to be given from telco

```
> ip device add rfc1483 ptp //bun/port=atm/rfc1483=true/mode=llcrouted/vpi=x/
  vci=y 202.1.136.2
  ("x" and "y" are VPI and VCI value for LLC capsulation respectively)

Or,
```

```
>ip device add rfc1483 ptp //bun/port=atm/rfc1483=true/mode=vcmuxrouted/vpi
  =x/vci=y 202.1.136.2
  ("x" and "y" are VPI and VCI value for VCMUX capsulation respectively)

>ip relay all

>ip route add default 0.0.0.0 202.1.136.1 0:0:0:0
   (Sets up default routing table between LAN subnet and WAN subnet)

> ip nat rfc1483    (this activates rfc1483 at net interface)

> config save
Saving configuration...Configuration saved.

> restart
```

After completing setup, connect modem to HUB and PC to HUB, to use several PCs for ADSL service at the same time. In this case, RJ-45 UTP Ethernet cable must be straight cable, not cross cable.
Select "Obtain an IP address automatically" in "IP Address" tab of the "TCP/IP Properties" on PC connected a HUB.
And give no gateway IP address at gateway tab.
For USB interface, IP configuration of PC connected a Wel+8010D ADSL Modem is set at 192.168.10.2, subnetmask 255.255.255.0 and gateway IP is set at 192.168.10.1.

If you want to configure LAN subnets(subnet1&subnet2) of Wel+8010D to be same, you can configure LAN interfaces in following way.

PC Side(for both USB and 10BaseT)
subnet2: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

Telco Side
subnet3: 202.1.136.0
gateway:202.1.136.1
Modem's WAN IP : 202.1.136.2

Ethernet block gateway setup

```
> bridge device add edd/DEVICE=1

> bridge device add edd/DEVICE=2

> ip device add bridge ether //bridge 192.168.10.1

> ip subnet add bridge.home . 192.168.10.1 ff:ff:ff:00
```

if subnetmask is the C class(255.255.255.0), subnet command is not needed.

Using Webconsole, you can change the protocol of the modem to RFC1483 Routed mode by clicking on " Config/rfc1483 Routed "

In the mode of RFC1483 Routed, the modem has two subnet for LAN and WAN(or 2LAN subnet and WAN),
each LAN IP address and Netmask take a role as a gateway for LAN and construct Private Subnet in case of using NAT.
For setting as RFC1483 Routed, you need to have the information for VPI(Virtual Path Identifier)/VCI(Virtual Channel Identifier) from ISP.

The range of VPI value is from 0 to 4095, and the range of VCI value is from 1 to 65535.

As well, you need to select a proper Data Encapsulation Method.
In case that the modem acts as a DHCP client and IP of WAN is assigned from CO automatically, make DHCP enable. On the other hand, if IP is assigned from an ISP, fill the blank of WAN IP Address and WAN Gateway.
If you want to set up LAN as a Private Subnet, make the NAT enable.

TOP

3.2.3 PPPoA Routed Mode(RFC2364/dhcpclient mode)

Here is one example of setup for PPPoA routed mode(dhcpclient mode)

If set up is as follows,
PC Side(for 10BaseT)
subnet1: 192.168.1.0
netmask: 255.255.255.0
gateway: 192.168.1.1

PC Side(for USB)
subnet2: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

Using CLI(Command Line Interface), you can change the protocol of the modem to PPPoA Routed Mode by the following commands;
At terminal Console Screen:
Remove all of the existing module devices

```
> config reset bridge

> ip device flush

> config reset ppp

> config save
Saving configuration...Configuration saved.

> restart
```

Now, ppp configuration setup is ready.
Ethernet block gateway setup

```
> ip device add ether1 ether //edd/DEVICE=1 192.168.1.1 (for 10BaseT interface)

> ip subnet add ether1.home . 192.168.1.1 ff:ff:ff:00

> ip device add ether2 ether //edd/DEVICE=2 192.168.10.1 (for USB interface)
```

```
> ip subnet add ether2.home . 192.168.10.1 ff:ff:ff:00
```

if subnetmask is the C class(255.255.255.0), subnet command is not needed.

Set up pvc value of WAN and PPP session item(User ID and Password) to be given from telco
If assume that user ID is "hinet10", password is "1234", vpi="0", vci="32",

```
> ip device add ppp_device ether //ppp/DEVICE=1

> ppp 1 welogin hinet10 1234 chap

> ppp 1 pvc 0 32 ip

> ppp 1 llc 0  (0 =LLC encapsulation/ 1=VCMUX encapsulation)

> ppp 1 enable

> ip nat add ppp_device

> ip relay all

> config save
Saving configuration...Configuration saved.

> restart
```

In the case of using DEVICE 1 and interface 1, add up default router when Modem LINK, and finish ip configuration for routing interface. That is, the modem will receive IP address automatically by the operation of dhcpclient.
If the contents of ID, password, vpi, vci change in the above, then retry the above commands related to ppp.

If you want to configure LAN subnets(subnet1&subnet2) of Wel+8010D to be same, you can configure LAN interfaces in following way.

PC Side(for both USB and 10BaseT)
subnet2: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

Telco Side
subnet3: 202.1.136.0
gateway:202.1.136.1
Modem's WAN IP : 202.1.136.2

Ethernet block gateway setup

```
> bridge device add edd/DEVICE=1 (for 10BaseT interface)

> bridge device add edd/DEVICE=2 (for USB interface)

> ip device add bridge ether //bridge 192.168.10.1

> ip subnet add bridge.home . 192.168.10.1 ff:ff:ff:00
```

if subnetmask is the C class(255.255.255.0), subnet command is not needed.

After finishing the configuration, if the ADSL Sync LED is in the "turn-on" condition after it had been blinked in couple of seconds, you can use Internet.

At this time, you can check out PPP interface information by using the following commands.

```
> ip device
device Ether1 ether //edd/DEVICE=1 mtu 1500 192.168.1.1
device Ether2 ether //edd/DEVICE=2 mtu 1500 192.168.10.1
device ppp_device ether //ppp/DEVICE=1 mtu 1500 O.O.O.O <-Assigned by DHCP server on
CO side
```

As above, IP address will be allocated to ppp_device.
If checking out the aboves, all setting for PPPoA service is completed.

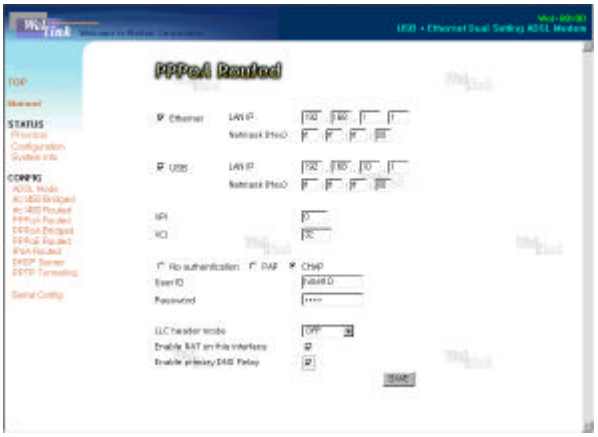
As below, you can check out data transmission flow through PPPoA service.

```
> ppp 1 info all
```

If the modem has set up dhcpserver, select "Obtain an IP address automatically, and do not need to setup IP address of gateway at the gateway tab on your PC conneted to modem.

For USB interface, IP configuration of PC connected a Wel+8010D ADSL Modem is set at 192.168.10.2, subnetmask 255.255.255.0 and gateway IP is set at 192.168.10.1.

Using Webconsole, you can change the protocol of the modem to PPPoA Routed mode by clicking on "Config/ PPPoA Routed"



In the mode of PPPoA Routed, the modem has two subnet for LAN and WAN(or 2LAN subnet and WAN). You can choose which interface port is used by checking the radio button.
each LAN IP address and Netmask take a role as a gateway for LAN and construct Private Subnet in case of using NAT.
For setting as PPPoA Routed, you need to have the information for VPI(Virtual Path Identifier)/VCI(Virtual Channel Identifier) from ISP.

The range of VPI value is from 0 to 4095, and the range of VCI value is from 1 to 65535.
As well, you need to select a proper Data Encapsulation Method.

IP of WAN is assigned from CO automatically through the authentication. In this case, required User ID and Password are given from the ISP.
If you want to set up LAN as a Private Subnet, you should make the NAT enable. If you make the Primary DNS Relay Enable, the modem acts as a DNS client. In this case, DNS IP is assigned automatically and it is relayed to PC.

At the side of PC, modem act like a DNS Server, so you can use the Modem LAN IP as DNS Server IP.

TOP

3.2.4 PPPoA Bridged Mode(RFC2364)

Using CLI(Command Line Interface), you can change the protocol of the modem to PPPoA Bridge mode by the following steps.

At terminal Console Screen:

Remove all of the existing module devices

```
> config reset bridge

> ip device flush

> config reset ppp
```

```
> config save
Saving configuration...Configuration saved.

> restart
```

Now, ppp configuration setup is ready.

```
> bridge device add edd/DEVICE=1

> bridge device add edd/DEVICE=2

> bridge device add ppp/DEVICE=1

> config save
Saving configuration...Configuration saved.

> restart
```

Among the above commands, "`bridge device add edd/DEVICE=1`" is used to add Ethernet(10BaseT) Port on the bridge
"`bridge device add edd/DEVICE=2`" means an add USB Port on the bridge.
As well, "`bridge device add ppp/DEVICE=1` refers to setup bridge port using RFC2364 (PPPoA) protocol on the WAN.

Set up pvc value of WAN and PPP session item(User ID and Password) to be given from telco
If assume that user ID is "hinet10", password is "1234", vpi="0", vci="32",

```
> ppp 1 welogin hinet10 1234 chap

> ppp 1 pvc 0 32 mac

> ppp 1 llc 0  (0 =LLC encapsulation/ 1=VCMUX encapsulation)

> ppp 1 enable

> config save
Saving configuration...Configuration saved.

> restart
```

If the contents of ID, password, vpi, vci change in the above, then retry the above commands related to ppp.
After finishing the configuration, if the ADSL Sync LED is in the "turn-on" condition after it had been blinked in couple of seconds, you can use Internet.

Using Webconsole, you can change the protocol of the modem to PPPoA Bridged mode by clicking on " Config/PPPoA Bridged "

For setting as PPPoA bridged, you need to have the information for VPI(Virtual Path Identifier)/VCI(Virtual Channel Identifier) from ISP.
The range of VPI value is from 0 to 4095,
and the range of VCI value is from 1 to 65535.
As well, you need to select a proper Data Encapsulation Method.
To set the Bridge Port on the WAN, User ID and Password for authentication are given from the ISP.
You can select a proper authentication method.

TOP

3.2.5 PPPoE Routed Mode(RFC2516/No using PPP client S/W)

Here is one example of setup for PPPoE routed mode(No using PPP client S/W)

If set up is as follows,
PC Side(for 10BaseT)
subnet1: 192.168.1.0
netmask: 255.255.255.0
gateway: 192.168.1.1

PC Side(for USB)
subnet2: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

Using CLI(Command Line Interface), you can change the protocol of the modem to PPPoE Route mode by the following steps.

At terminal Console Screen:

Remove all of the existing module devices

```
> config reset bridge

> ip device flush

> config reset ppp

> config save
Saving configuration...Configuration saved.

> restart
```

Now, ppp configuration setup is ready.

Ethernet block gateway setup

```
> ip device add ether1 ether //edd/DEVICE=1 mtu 1492 192.168.1.1 (for 10BaseT interface)

> ip subnet add ether1.home . 192.168.1.1 ff:ff:ff:00

> ip device add ether2 ether //edd/DEVICE=2 mtu 1492 192.168.10.1 (for USB interface)

> ip subnet add ether2.home . 192.168.10.1 ff:ff:ff:00
```

if subnetmask is the C class(255.255.255.0), subnet command is not needed.

Set up pvc value of WAN and PPP session item(User ID and Password) to be given from telco

If assume that user ID is "hinet10", password is "1234", vpi="0", vci="32",

```
> ip device add ppp_device ether //ppp/DEVICE=1 mtu 1492

> ppp 1 welogin hinet10 1234 chap

> ppp 1 pppoe 0 32
```

```
> ppp 1 llc 0  (0 =LLC encapsulation/ 1=VCMUX encapsulation)

> ppp 1 enable

> ip nat add ppp_device

> ip relay all

> config save
Saving configuration...Configuration saved.

> restart
```

In case of using DEVICE 1 and interface 1, add up default router when the modem is linked and finish ip configuration for routing interface. That is, the modem will receive IP address automatically by the operation of dhcpclient.

The mtu value of PPPoE should be 1492.
If the contents of IP, password, vpi, vci change in the above, then retry the above commands related to ppp.
After finishing the configuration, if the ADSL Sync LED is in the "turn-on" condition after it had been blinked in couple of seconds, you can use Internet.
In this case, you can check out PPP interface information by using the following commands.

```
> ip device
device ether1 ether //edd/DEVICE=1 mtu 1500 192.168.1.1
device ether2 ether //edd/DEVICE=2 mtu 1500 192.168.10.1
device ppp_device ether //ppp/DEVICE=1 mtu 1492 0.0.0.0
(Assigned by DHCP server on CO side)
```

As above, IP address will be allocated to ppp_device.
If checking out the aboves, all setting for PPPoA service is completed.

As below, you can check out data transmission flow through PPPoE service.

```
> ppp 1 info all
```

If the modem has set up dhcpserver, select "Obtain an IP address automatically, and do not need to setup IP address of gateway at the gateway tab on your PC conneted to modem.
For USB interface, IP configuration of PC connected a Wel+8010D ADSL Modem is set at 192.168.10.2, subnetmask 255.255.255.0 and gateway IP is set at 192.168.10.1.

If you want to configure LAN subnets(subnet1&subnet2) of Wel+8010D to be same, you can configure LAN interfaces in following way.

PC Side(for both USB and 10BaseT)
subnet2: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

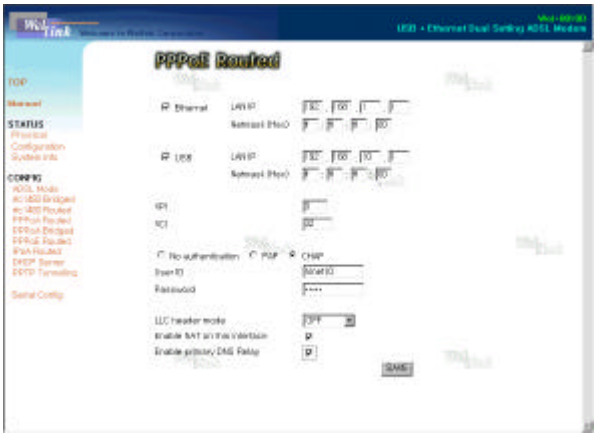
Telco Side
subnet3: 202.1.136.0
gateway:202.1.136.1
Modem's WAN IP : 202.1.136.2

Ethernet block gateway setup

```
> bridge device add edd/DEVICE=1  (for 10BaseT interface)

> bridge device add edd/DEVICE=2  (for USB interface)

> ip device add bridge ether //bridge 192.168.10.1

> ip subnet add bridge.home . 192.168.10.1 ff:ff:ff:00
```

if subnetmask is the C class(255.255.255.0), subnet command is not needed.

Using Webconsole, you can change the protocol of the modem to PPPoE Routed mode by clicking on "Config/ PPPoE Routed"



LAN IP address and Netmask take a role as a gateway for LAN and construct Private Subnet in case of using NAT.
You can choose which interface port is used by checking the radio button.
For setting as PPPoE Routed, you need to have the information for VPI(Virtual Path Identifier)/VCI(Virtual Channel Identifier) from ISP.
The range of VPI value is from 0 to 4095,
and the range of VCI value is from 1 to 65535.
As well, you need to select a proper Data Encapsulation Method.
IP of WAN is assigned from CO automatically through the authentication. In this case, required User ID and Password are given from the ISP.

If you want to set up LAN as a Private Subnet, you should make the NAT enable. If you make the Primary DNS Relay Enable, the modem acts as a DNS client. In this case, DNS IP is assigned automatically and it is relayed to PC.
At the side of PC, modem act like a DNS Server, so you can use the Modem LAN IP as DNS Server IP.

3.2.6 IPoA Routed(RFC1577/dhcpserver+NAT)

Here is one example of setup for rfc1483 routed mode.
DHCP server setup must be followed for this.

If set up is as follows,
PC Side (for 10BaseT)
subnet1: 192.168.1.0
netmask: 255.255.255.0 (this has set up as dhcpserver)
gateway: 192.168.1.1

PC Side (for USB)
subnet1: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

Telco Side
subnet2: 202.1.136.0
gateway:202.1.136.1
Modem's WAN IP : 202.1.136.2

Using CLI(Command Line Interface), you can change the protocol of the modem to IPoA Route mode by the following steps.
At terminal Console Screen:
Remove all of the existing module devices

```
> config reset bridge

> ip device flush

> config reset ppp
```

```
> config save
Saving configuration...Configuration saved.

> restart
```

In this way, setup for IPoA Routed Mode is completed.
Ethernet block gateway setup

```
> ip device add ether1 ether //edd/DEVICE=1 192.168.1.1

> ip subnet add ether1.home . 192.168.1.1 ff:ff:ff:00

> ip device add ether2 ether //edd/DEVICE=2 192.168.10.1

> ip subnet add ether2.home . 192.168.10.1 ff:ff:ff:00
```

If subnetmask is the C class(255.255.255.0), subnet command is not needed.
Set up pvc value of WAN and IP to be given from ISP

```
> ip device add ipoa atmpvc //atm 202.1.136.2

> ip subnet add ipoa.home . 202.1.136.2 ff:ff:ff:00

>ip relay all

>ip route add default 0.0.0.0 202.1.136.1 0:0:0:0
  (202.1.136.1 is ISP's gateway for WAN)

> ip ipatm pvc add ipoa atm x/y
    (Set pvc values for IPoA service)

> ip nat add ipoa

> config save
Saving configuration...Configuration saved.

> restart
```

PCR(Peak Cell Rate) can be assigned in the Console, and use 60000 as default.
If you use remoteip, you can change configuration by the following command.

```
> ip ipatm pvc add ipoa atm x/y pcr 50000 remoteip 202.1.136.1
```

In this case, the command "ip nat add ipoa" is not needed any more.

After completing setup, connect modem to HUB and PC to HUB, to use several PCs for ADSL service at the same time. In this case, RJ-45 UTP Ethernet cable must be straight cable, not cross cable.
Select "Obtain an IP address automatically" in "IP Address" tab of the "TCP/IP Properties" on PC connected a HUB.
And give no gateway IP address at gateway tab.
If you want to configure LAN subnets(subnet1&subnet2) of Wel+8010D to be same, you can configure LAN interfaces in following way.

PC Side(for both USB and 10BaseT)
subnet2: 192.168.10.0
netmask: 255.255.255.0
gateway: 192.168.10.1

Telco Side
subnet3: 202.1.136.0
gateway:202.1.136.1
Modem's WAN IP : 202.1.136.2

Ethernet block gateway setup

```
> bridge device add edd/DEVICE=1 (for 10BaseT interface)

> bridge device add edd/DEVICE=2 (for USB interface)

> ip device add bridge ether //bridge 192.168.10.1

> ip subnet add bridge.home . 192.168.10.1 ff:ff:ff:00
```

if subnetmask is the C class(255.255.255.0), subnet command is not needed.

Using Webconsole, you can change the protocol of the modem to IPoA Routed mode by clicking on
“ Config/ IPoA Routed ”

In the mode of IPoA Routed, the modem has two subnets for LAN and WAN, each.
LAN IP address and Netmask take a role as a gateway for LAN connected to PC and construct Private Subnet in case of using NAT
For setting as IPoA Routed, you need to have the information for VPI(Virtual Path Identifier)/VCI(Virtual Channel Identifier) from the ISP.
The range of VPI value is from 0 to 4095,
and the range of VCI value is from 1 to 65535.

Set the WAN IP Address and WAN Gateway IP assigned from the ISP for each blank.
If you want to configure LAN as a Private Subnet, make the NAT enable.

TOP

3.2.7 DHCP server(Only 10BaseT interface)

Wel+8010D can be used as DHCP server. It makes it easy for user to set up Ethernet subnet of routed mode.
It's following to routed mode(rfc1483routed, PPPoA/oE routed and IPoA route) configuration.

Using CLI(Command Line Interface), you can set the DHCP server by the following steps.

If PC side is set up as

subnet1: 192.168.1.0
netmask:255.255.255.240
gateway:192.168.1.1
PC's IP range : 192.168.1.2~15

At Terminal console screen,
remove the current dhcpserver configuration.

```
> dhcpserver config flush
dhcpserver: Configuration file flushed.
```

```
> dhcpserver config confirm
dhcpserver: Config changes confirmed, use "flashfs update" to commit.
            : New config will not be parsed and adopted until server
            : reset - do this ASAP.
```

In this way, setup for DHCP server is completed.

DHCP Server Setup

```
> dhcpserver config add subnet 192.168.1.0 netmask 255.255.255.240

> dhcpserver config add {

> dhcpserver config add range 192.168.1.2 192.168.1.15;
(15 IP addresses of PC can be allocated from 192.168.1.2 to 192.168.1.15 automatically)

> dhcpserver config add default-lease-time 3600;
(Put 1hour as default lease time)

> dhcpserver config add max-lease-time 86400;
(Put 1 day as maximum lease time)

> dhcpserver config add option routers 192.168.1.1;
(It play the role of gateway of Ethernet block and also it is LAN IP of Modem)

> dhcpserver config domain-name-servers 210.94.0.7;

> dhcpserver config add }

> dhcpserver config confirm
dhcpserver: Config changes confirmed, use "flashfs update" to commit.
            : New config will not be parsed and adopted until server
            : reset - do this ASAP.

> config save
Saving configuration...Configuration saved.

> restart
```

You can disable DHCP server as follows.

```
> dhcpserver config flush
dhcpserver: Configuration file flushed.

> dhcpserver config confirm
dhcpserver: Config changes confirmed, use "flashfs update" to commit.
          : New config will not be parsed and adopted until server
          : reset - do this ASAP.

> config save
Saving configuration...Configuration saved.

> restart
```

Using Webconsole, you can set the DHCP server on the modem by clicking on " Config/ IPoA Routed "

It makes easy to configure LAN subnet when you set Routed Protocol. Therefore, set this item after Routed Protocol is set.
On the DHCP Server setting menu, LAN IP Address and Netmask are derived from the LAN setting of the Routed Protocol.
It means the LAN IP of the modem takes a role as a Gateway on the LAN(10BaseT).

Set the starting/ending IP address to accord with the Subnet you ' ve already set. Also set the Lease Time information and DNS(Domain Name Server)Address for this IP setting information.
At the side of PC, the modem act like a DNS Server, since it makes DNS Address relay between the external DNS server and PCs on the LAN.
If you activate PrimaryDNS Relay on " PPPoA/PPPoE Routed " setting, you don ' t need to set this and it gets disabled.

TOP

3.2.8 PPTP Tunneling

PPTP(Point to Point Tunneling Protocol) allows a PPP connection to be tunneled through an IP network. To use PPTP Tunneling Protocol Service, a VPN adaptor should be installed on the PC connected with the modem.
The PPP connection is set from the PC connected the modem to PPP server on CO side.
The PC and modem use PPTP in order to tunnel this PPP link through a separate IP network running over Ethernet. PC provides functionality known as a PNS(PPTP Network Server), and modem provides functionality known as a PAC(PPTP Access Concentrator)
Here is one example of setup for PPTP Tunneling mode(only Ethernet use)

Using CLI(Command Line Interface), you can change the protocol of the modem to PPTP Tunneling Mode by the following steps.

At terminal Console Screen:

Remove all of the existing module devices

```
> config reset bridge

> ip device flush

> config reset ppp

> config save
Saving configuration...Configuration saved.

> restart
```

Now, PPTP configuration setup is ready.

Ethernet block gateway setup

```
> ip device add ether1 ether //edd/DEVICE=1 192.168.1.1

> ip subnet add ether1.home . 192.168.1.1 ff:ff:ff:00
```

Set up pvc value of WAN and PPP session item(User ID and Password) to be given from ISP

If assume that user ID is "hinet10", password is "1234", vpi="0", vci="32",

The PPTP module uses functionality provided by the PPP module.

```
> ppp 2 pvc 0 32

> ppp 2 interface 0

> ppp 2 tunnel 1 pptp out

> ppp 2 enable
```

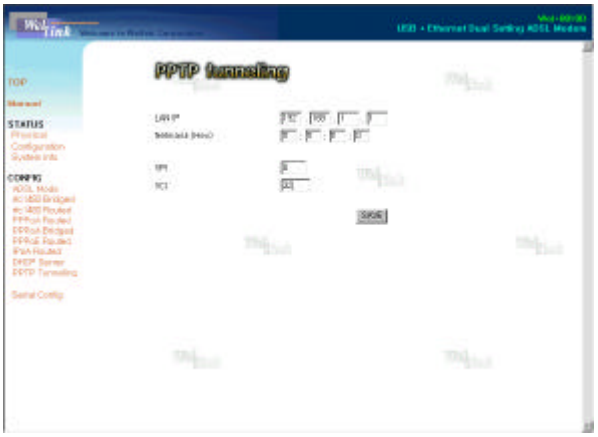
Configure the PPTP module to listen on the IP address 192.168.1.1 and set up tunnel 1 to listen(Waiting for PC to initiate the connection)

```
> pptp bind 192.168.1.1

> pptp 1 create listen

> config save
Saving configuration...Configuration saved.

> restart
```

At this time, you can check out PPP interface information by using the following commands.

```
> ppp 2 info all

> pptp 1 info
```

Using Webconsole, you can change the protocol of the modem to PPTP Tunneling Mode by clicking on " Config/PPTP Tunneling "



In the mode of PPTP Tunneling, the modem has two subnets for PPTP Tunneling Access between the PC and modem.
LAN IP address and Netmask take a role as a gateway for LAN and construct Private Subnet in case of using NAT.
For setting as PPTP Tunneling, you need to have the information for VPI(Virtual Path Identifier)/VCI(Virtual Channel Identifier) from ISP.

The range of VPI value is from 0 to 4095,
and the range of VCI value is from 1 to 65535.

The User ID and Password for PPP authentication are assigned from ISP and they are used in dail_out with VPN adaptor of PC

[PC Setup]

IP configuration of the PC LAN card is as follows;

IP Address = 192.168.1.2

Gateway IP = 192.168.1.1

Subnetmask = 255.255.255.0

After finishing the configuration, if the ADSL Sync LED is in the "turn-on" condition after it had been blinked in couple of seconds, you can dail_up according as follow configuration of "Dial-UP Networking" and access internet.

1. From your PC desktop, double click th My Computer icon.
2. From the "My Computer" window, double click the Dial-Up Networking icon.
3. From the "Dial-Up Networking" window, double click "Make New Connection"
4. Put on connection name "PPTP connection" and Select connection device "Microsoft VPN Adapter", then click the "Next" button.
4. Put on IP address "192.168.1.1" to connection and then click the "Next" button.
5. From the "Dial-Up Networking" window, double click "PPTP connection"
6. Put following values on property items respectively

IP address of PAC = 192.168.1.1

Dial-out user name = hinet10

Dial-out Password = 1234

TOP

Ⅳ. Troubleshooting

Here, we will arrange common problems and its solutions when you"re using ADSL Modem

4.1 Common malfunction items

middot about power
middot about network connection

4.2 About power problem

These following items are possible malfunctions

▷ PWR/ALARM LED cannot be turned on after connect the power adaptor and hook up the power cable into the consent Solution
▷ Check up the power consent
▷ Try reconnect and rebooting modem after you have pulled out the jack from the Wel+8010D ADSL Modem and it had been passed around 10 seconds

4.3 Network connection problem

These following items are possible malfunctions

▷ cannot be online
▷ ADSL sync. LED or LINK LED are not operating Solution
▷ Check out the connecting status for each these items: Wel+8010D ADSL Modem, POTS Micro filter, PC
▷ Check up the status of Ethernet Card on the PC
▷ Check up the operating status of PC
▷ Check up the network adapter(Vvb usb-gateway adapter) for USB1.1 interface.
▷ Check out if right IP address has been selected for telco online service
▷ If you have been connected, using following order words then you can check up the quality of ADSL

```
> bsp sysinfo
```

Also you can check up the data of each levels for ATM, Ethernet by following command words below

```
> tell bun list channels
```

These are showing the cell/packet"s errors that might be happened when it does transmitting and receiving.

Moreover Using Webconsole STATUS/physical menu, you can check Line status.

▷ If the PWR/ALARM LED is turned on RED light, you have to check the cable see if it is connected in properly

※Reading Wel+8010D Modem LED

1 PWR/ALARM LED : Power light should be on when it receives the power supply. In case of the ALARM, ALARM LED light(RED) should be turned on except the incorrect ways of ethernet and ADSL
2 ADSL Rx : It indicates the from modem
3 ADSL Tx : It indicates the ADSL data"s flowing that transmitting from Modem
4 ADSL Sync. : It indicates the physical connecting status between the Modem and the ADSL. During the modem is connecting, LED will be blinking then stays in the "ON" condition after it had connected
5 LINK : It indicates the connecting status between Ethernet and PC. It should be turned on the light when the LAN card of PC and LAN port of Modem has been connected in physical way.
6 ACT : It indicates the Ethernet data"s flowing status between Modem and PC

TOP

Appendix A : Command words

After ADSL Line has been connected, you can check up the ADSL Line status by following command words

```
Wel+8010D bsp> help all

Commands are:
channel      - showing channel data
defects      - Showing defect
down          -Online anti activity
gasp          - send dying gasp
glite         - Applying G.Lite mode
mode          -showing the current line status/mode
multi         - Multi-mode installation
line          - showing line data
```

perf - showing performance counter
up - Line activity
vendor - showing bender id
version - showing the information of ADSL modem software version
sysinfo - when the ADSL Link has occurred it shows every datas (speed/error/noise/ margin).
debug bspconfig - showing bsp setup information of Modem
obj - showing firmware version

Wel+8010D bsp>

If you use a sysinfo command words, you can check up these following parameters

```
Wel+8010D bsp>sysinfo
        modem uptime : 17 hours 28 minitues 32 seconds
        Operation Mode Seletected : G.DMT
        Downstream Capacity Occupation : 99 %
        Downstream Noise Margin   : 7 dB
        Downstream Attenuation    : 39.5 dB
        Downstream Output Power   : 19.5 dBm
        Upstream Capacity Occupation : 99 %
        Upstream Noise Margin   : 8 dB
        Upstream Attenuation    : 21.5 dB
        Upstream Output Power   : 12.5 dBm
        Carrier Load (bits/tone)
        [   0] -- 0       [   1] -- 0       [   2] -- 0       [   3] -- 0
        [   4] -- 0       [   5] -- 0       [   6] -- 0       [   7] -- 0
        [   8] -- 6       [   9] -- 7       [ 10] -- 6       [ 11] -- 7
        ============= The rest is omitted  ================
        [244] -- 3        [245] -- 2        [246] -- 3        [247] -- 2
        [248] -- 0        [249] -- 0        [250] -- 0        [251] -- 0
        [252] -- 0        [253] -- 0        [254] -- 0        [255] -- 0
        Actual Bit Rate (NEAR END INTERLEAVED CHANNEL): 7072 Kbps
        Actual Bit Rate (FAR END INTERLEAVED CHANNEL): 736 Kbps
        -------------------------------------------------
        FEC(Near-End): 0              | FEC(Far-End): 0
        CRC(Near-End): 0              | CRC(Far-End): 0
        HEC(Near-End): 0              | HEC(Far-End): 0
        -------------------------------------------------
```

```
Wel+8010D>oamloop stats
OAM loopback process statistics:

Total OAM cells rxed: xxx
F4 loopback cells rxed: 0
F5 loopback cells rxed: xxx
( "xxx' will count the numbers of Loopback cell that received from the DSLAM or other devices)
```

Even the modem is not connected physically, version of software, machine name and Mac address can be checked up by following commands

```
Wel+8010D>chips info
Wel+8010D ADSL Modem version 7.1.0.25.2/4.6.4.1.3.5ub (25 July 2001)
Machine Name:   Wel+8010D
MAC address:    0:20:2b:0:55:20
```

When Modem is setup as DHCP server, you can check IP address allocation status for connected PC by using following commands.

```
Wel+8010D>dhcpserver status
DHCP server lease status

Interface 'ether1'
IP address | Client UID | Expiry
---------------------+-----------------------------------
192.168.1.2 | 01:00:e0:29:60:ca:f7 | 11 hours
192.168.1.15 | <unknown> | Never
192.168.1.14 | <unknown> | Never
192.168.1.13 | <unknown> | Never
192.168.1.12 | <unknown> | Never
192.168.1.11 | <unknown> | Never
192.168.1.10 | <unknown> | Never
-------------------- Omission Below ------------------------
```

TOP

Appendix B : Webconsole Errors

This Error message indicates that both Webconsole and Terminal are used at the same time.
In this case, select just one way between these two types of configurations.

This Error message appears when the user selects “ STATUS/Physical ” to display the Link Status information without Physical Link.
This message indicates that the modem is not a Link status yet.