Wellink Corporation

Wel+8010S ADSL Modem

Installation Guide

Wellink Corporation

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FCC Statement

FCC WARNING

This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

INFORMATION TO THE USER

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 generate 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 the 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 to an outlet on a circuit different from that to which the receiver is connected.

· Consult the dealer for technical assistance.

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I. Installation of Wel+8010S

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+8010S ADSL Modem Specification

ITEM	Specification		
Wel+8010 (ADSL External Modem)	Operation Environment	Power	input power :110/220Vac to 5Vdc frequency : 50/60Hz
		O.S	Win95/98(first,second)/2K/NT /ME/Linux/Unix/Machintoch
	H/W	Interface	IEEE 802.3 10BaseT
		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
			DC power - PC mounted DIN connector

1.2 Wel+8010S ADSL Modem Installation

1.2.1 Confirmation of PC Installation

Before connect the Wel+8010S ADSL Modem to PC, confirm that LAN card has to installed on the PC. LAN card is available in the PC shop.

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)

CONSOLE Port - RS232-C cable

1.2.3 Connecting PC and Cable

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

1.2.4 Connecting LINE

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

1.2.5 Connecting Power

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

1.2.6 Connecting Console Cable (For protocol setup and monitoring)

Connect HI-NET 1120 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

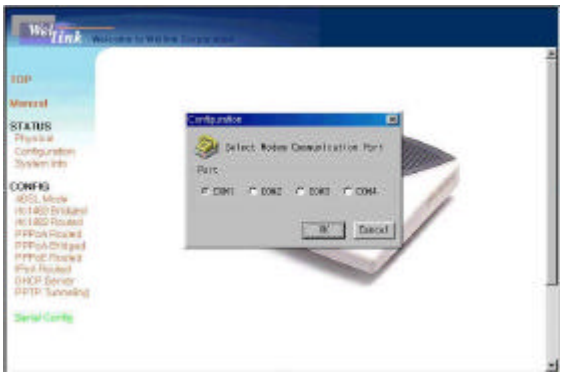
If you are using the Webconsole, we need not to set above items.

Now you can see several lines on the screen of the terminal when you turn on the HI-NET 1120's power. This screen can be used for terminal.

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

Webconsole is installed by “webconsole.exe” file in offered CD-ROM with Wel+8010S. You can start the installed program by double-clicking on Wel+8010S 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+8010S ADSL Modem can be confirmed its connection status by the following methods;

Confirm the ADSL Line Connecting Status

After Wel+8010S 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 of the PC and Wel+8010S 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.

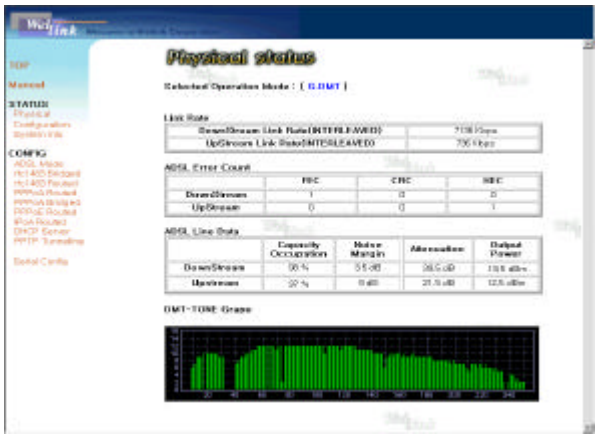
II. Showing status of Wel+8010S

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

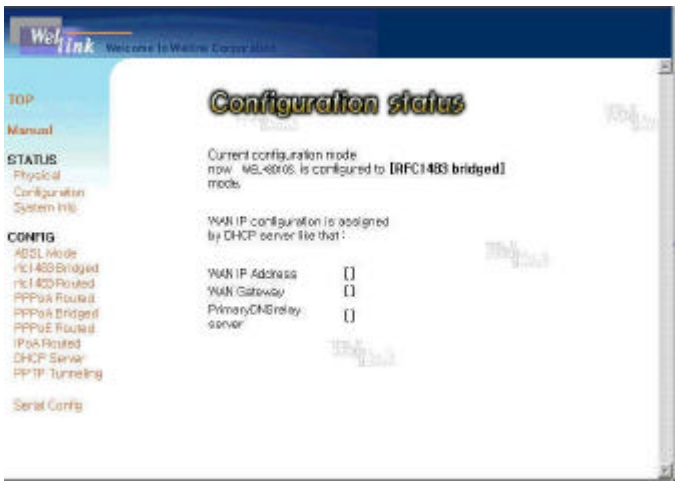
In using Webconsole, you can check the link status by selecting STATUS/Physical at the stating menu.



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+8010S

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

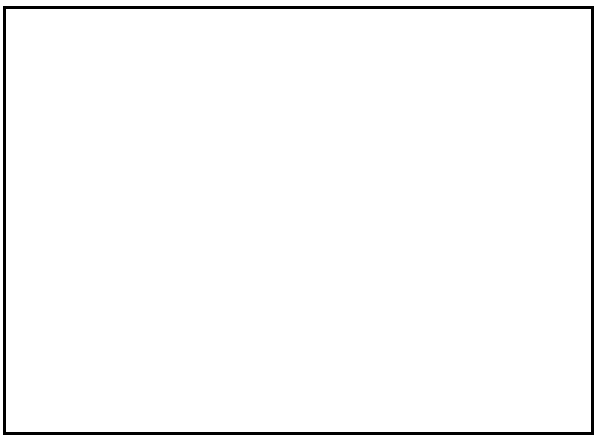
Using CLI(Command Line

Interface), you can check SYSTEM information of the modem by the following commands;

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

In 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 1.3.5b 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.



Ⅲ. Configuration of Wel+8010S

3.1 Changing Wel+8010S ADSL Mode

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

```
Wel+8010S> bsp gdmt
ADSL Mode is now Gdmt (0x00000002)
Wel+8010S> config save
Saving configuration...Configuration saved.
Wel+8010S> restart
```

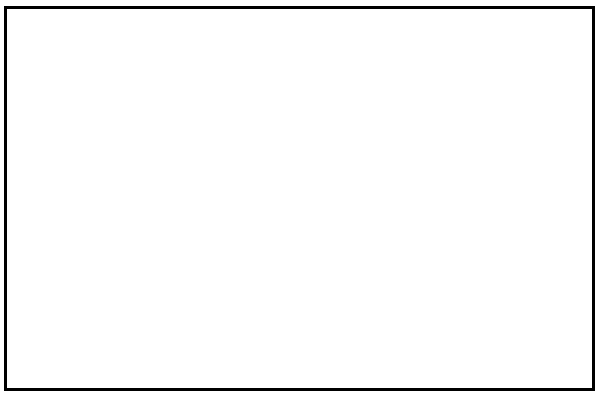
A modem is set as a Multi Mode in default.
You can change the ADSL Mode using bsp glite(G.Lite), bsp ansi(T1.413) and bsp multi(Multi sensing) instead of bsp gdmt.
You can confirm the Mode with the following commands.

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

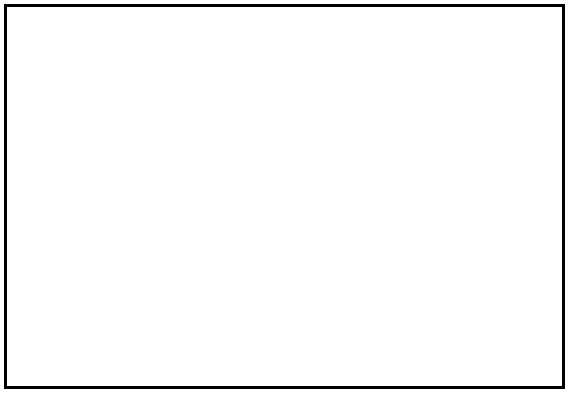
Using Webconsole, you can change the ADSL Mode by clicking Config/ADSL Mode and selecting the specific ADSL Mode.
On ADSL Mode screen,
" Modem State " shows the ADSL Sync. Status

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.



3.2 Establishing of HI-NET 1120 Protocol

3.2.1 RFC1483 bridged

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

On the 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
> 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`" means an add Ethernet Port on the bridge.

“bridge device add bun/port=atm/rfc 1483=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+8010S 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'
Port 2: 'bun/port=atm/rfc1483=true/mode=llcbridged/vpi=x/vci=y'
```

After Protocol installation, if ADSL Sync LED is in the stable condition, the modem is online.

If you need to connect a PPP server for PPPoE service, you can access by executing 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.

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;

PC Side

subnet1: 192.168.1.0

netmask: 255.255.255.0 (this has set up as dhcpserver)

gateway: 192.168.1.1

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 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 ethernet ether //edd 192.168.1.1
> ip subnet add ethernet.home . 192.168.1.1 ff:ff:ff:00
```

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

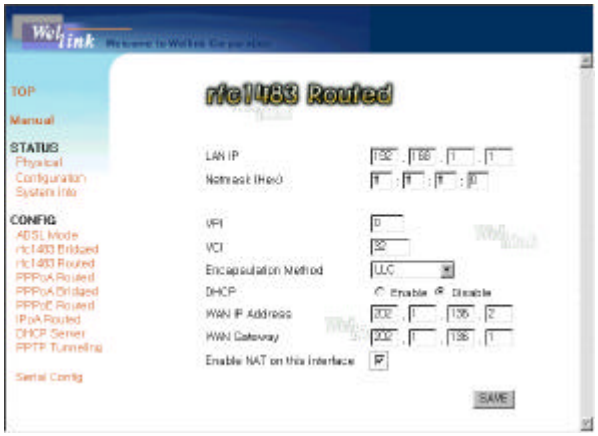
Set up pvc value of WAN and IP to be given from telco;

```
> 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 the 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.

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, 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.

3.2.3 PPPoA Routed Mode(RFC2364/dhcpclient mode)

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

If set up is as follows,
PC Side
subnet1: 192.168.1.0
netmask: 255.255.255.0
gateway: 192.168.1.1

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 ethernet ether //edd 192.168.1.1
> ip subnet add ethernet.home . 192.168.1.1 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 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.
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.

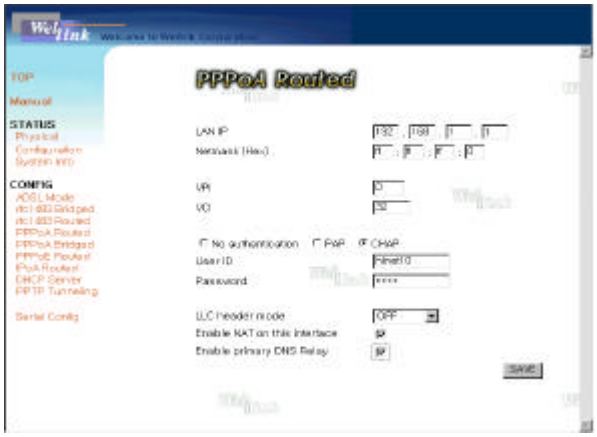
At this time, you can check out PPP interface information by using the following commands.

```
  > ip device
device Ethernet ether //edd mtu 1500 192.168.1.1
device ppp_device ether //ppp/DEVICE=1 mtu 1500 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 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.

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, 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.

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
> bridge device add ppp/DEVICE=1
> config save
Saving configuration...Configuration saved.
> restart
```

Among the above commands, "`bridge device add edd`" is used to add Ethernet 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.

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

Here is an example of setup for PPPoE routed mode(No using PPP client S/W)
If set up is as follows,
PC Side
subnet1: 192.168.1.0
netmask: 255.255.255.0
gateway: 192.168.1.1

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

At the 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 ethernet ether //edd 192.168.1.1
> ip subnet add ethernet.home . 192.168.1.1 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.

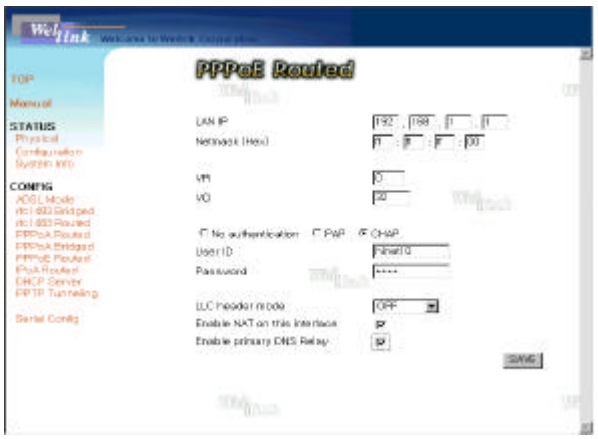
The mtu value of PPPoE should be 1492.
If the contents of IP, password, vpi, vci change in the above, then retry the above commands related to ppp.
After finishing the configuration, if the ADSL Sync LED is in the "turn-on" condition after it had been blinked in couple of seconds, you can use Internet.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

```
 > ip device
device Ethernet ether //edd mtu 1500 192.168.1.1
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.

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.
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 an example of setup for rfc1483 routed mode.
DHCP server setup should be performed by this.

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

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 ethernet ether //edd 192.168.1.1
> ip subnet add ethernet.home . 192.168.1.1 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

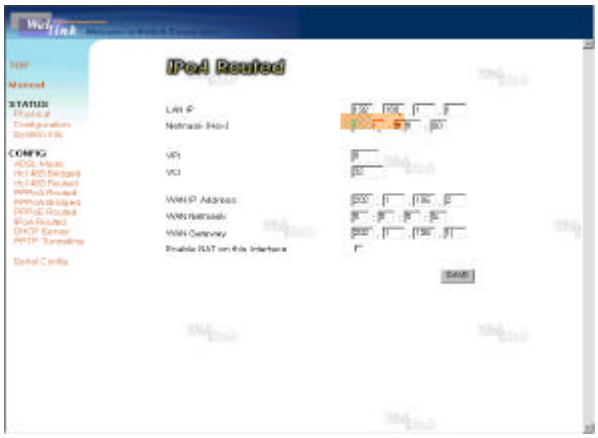
```
 > ip device add ipoa atmpvc //atm 202.1.136.2
> ip subnet add ipoa.home . 202.1.136.2 ff:ff:ff:00
```

```
>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 on the Console, and used 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.

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.

3.2.7 DHCP server

Hi-Net 1120 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.

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.

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

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.

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
```

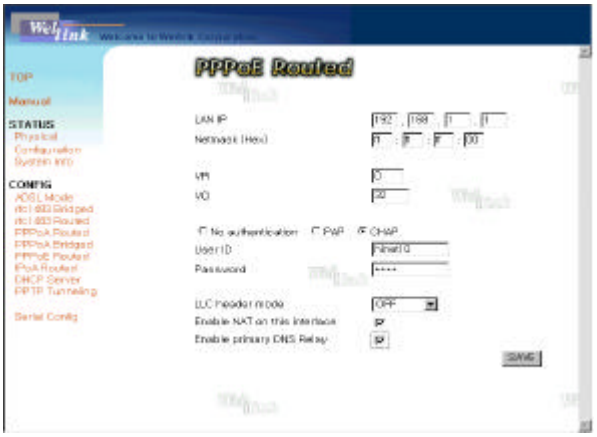
Configure the PPTP module to listen on the IP address 192.168.1.1 and set up tunnel 1 to listen(Waiting for PC to initiate the connection)

```
> pptp bind 192.168.1.1
> pptp 1 create listen
> config save
Saving configuration...Configuration saved.
> restart
```

In this case, 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

Ⅳ. Troubleshooting

Here, you can see the solutions for commonly occurred problems when you use an 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 Hi-Net 1120 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: Hi-Net 1120 ADSL Modem, POTS Micro filter, PC

▷ Check up the status of Ethernet Card on the PC

▷ Check up the operating status of PC

▷ 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+8010S 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

Appendix A : Commands

After ADSL Line is connected, you can check up the ADSL Line status by following command.
Wel+8010S 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+8010S bsp>

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

```
Wel+8010S 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+8010S>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)

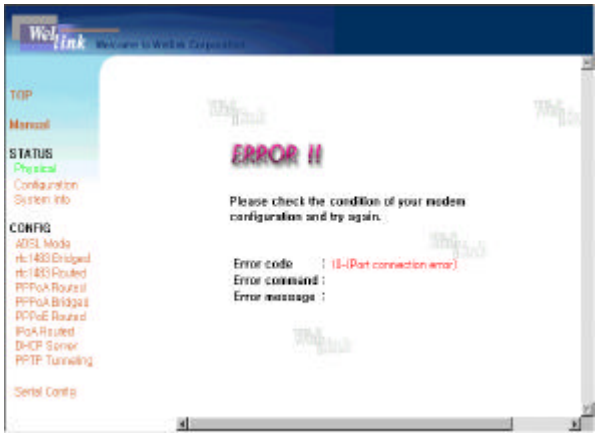
Even the modem is not connected physically, version of software, machine name and Mac address can be checked up by following commands

```
Wel+8010S>chips info
Wel+8010S ADSL Modem version 7.1.0.25.2/4.6.4.1.3.5b (25 July 2001)
Machine Name:   Wel+8010S
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.

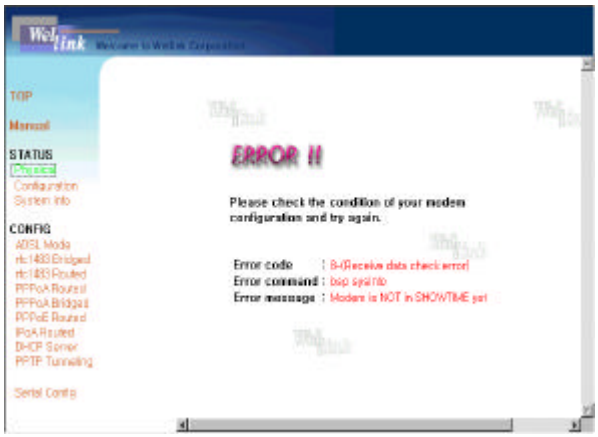
```
HiNet1120>dhcpserver status
DHCP server lease status


Interface 'ethernet'
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 ------------------------
```

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.