Dynalink

ADSL2+ Wireless VoIP Router
User Manual

RTA1046VW

Copyright Notice

Disclaimer

Statement of Conditions

Trademarks

Safety and Precaution

For Installation

□ Use only the type of power source indicated on the marking labels.

□ Use only power adapter supplied with the product.

□ Do not overload wall outlet or extension cords as this may increase the risk of electric shock or fire. If the power cord is frayed, replace it with a new one.

□ Proper ventilation is necessary to prevent the product overheating. Do not block or cover the slots and openings on the device, which are intended for ventilation and proper operation. It is recommended to mount the product with a stack.

□ Do not place the product near any source of heat or expose it to direct sunlight.

□ Do not expose the product to moisture. Never spill any liquid on the product.

□ Do not attempt to connect with any computer accessory or electronic product without instructions from qualified service personnel. This may result in risk of electronic shock or fire.

□ Do not place this product on unstable stand or table.

For Using

□ Power off and unplug this product from the wall outlet when it is not in use or before cleaning. Pay attention to the temperature of the power adapter. The temperature might be high.

□ After powering off the product, power on the product at least 15 seconds later.

□ Do not block the ventilating openings of this product.

□ When the product is expected to be not in use for a period of time, unplug the power cord of the product to prevent it from the damage of storm or sudden increases in rating.

For Service

Do not attempt to disassemble or open covers of this unit by yourself. Nor should you attempt to service the product yourself, which may void the user's authority to operate it. Contact qualified service personnel under the following conditions:

□ If the power cord or plug is damaged or frayed.

□ If liquid has been spilled into the product.

□ If the product has been exposed to rain or water.

□ If the product does not operate normally when the operating instructions are followed.

□ If the product has been dropped or the cabinet has been damaged.

□ If the product exhibits a distinct change in performance.

Caution

□ Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

FCC

This equipment must be installed and operated in accordance with provided instructions and a minimum 20 cm spacing must be provided between computer mounted antenna and person's body (excluding extremities of hands, wrist and feet) during wireless modes of operation.

FCC Class B Notice

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

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 can generate, use and 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/television technician for help.

WEEE & RoHS

Askey Computer Corp. recognizes the need to be a responsible corporate citizen. With respect to the current EU directives and the equivalent domestic legislation which implement both the Waste Electric and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS), Askey is committed to producing products supplied into the EU that are fully compliant to both directives on or before their respective effective dates.

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Before You Use

Thank you for choosing the Wireless IAD. With the asymmetric technology, this device runs over standard copper phone lines. In addition, ADSL allows you to have both voice and data services in use simultaneously all over one phone line.

RTA1046VW Wireless IAD is a DSL broadband access device which allows ADSL connectivity while providing 802.11g wireless LAN interface and voice over IP function for home or office users. It supports ADSL2/ADSL2+ and is backward compatible to ADSL, even offers auto-negotiation capability for different flavors (G.dmt, G.lite, or T1.413 Issue 2) according to central office DSLAM's settings (Digital Subscriber Line Access Multiplexer). To benefit users' access to the Internet, 4-port 10/100 Mbps Ethernet switch hub is equipped with this wireless IAD. Also the feature-rich routing functions are seamlessly integrated to ADSL service for existing corporate or home users. Now users can enjoy various bandwidth-consuming applications via RTA1046VW Wireless IAD.

Unpacking

Check the contents of the package against the pack contents checklist below. If any of the items is missing, then contact the dealer from whom the equipment was purchased.

- ✓ Wireless IAD
- ✓ Power Adapter and Cord
- ✓ RJ-11 ADSL Line Cable
- ✓ RJ-45 Ethernet Cable
- ✓ USB Cable
- ✓ Phone Cable
- ✓ PSTN Cable
- ✓ Quick Start Guide
- ✓ Driver & Utility Software CD

Features

ADSL Compliance

- ✗ ANSI T1.413 Issue 2
- ✗ ITU G.992.1 Annex A (G.dmt)
- ✗ ITU G.992.2 Annex A (G.lite)
- ✗ ITU G.994.1 (G.hs)
- ✗ Support dying gasp
- ✗ Maximum Rate: 8 Mbps for downstream and 1 Mbps for upstream

ADSL2 Compliance

- ☒ ITU G.992.3 Annex A (G.dmt.bis)
- ☒ Maximum Rate: 12 Mbps for downstream and 1 Mbps for upstream

ADSL2+ Compliance

- ☒ ITU G.992.5 Annex A
- ☒ Maximum Rate: 24 Mbps for downstream and 1.2 Mbps for upstream

Wireless LAN Compliance

- ☒ IEEE 802.11g and IEEE 802.11b
- ☒ Data Rate: 54, 48, 36, 24, 18, 12, 9, 6 Mbps for 802.11g; 11, 5.5, 2, 1 Mbps for 802.11b
- ☒ Modulation Technique: OFDM for 802.11g; CCK (11 Mbps, 5.5 Mbps) for 802.11b; DQPSK (2Mbps) for 802.11b; DBPSK (1 Mbps) for 802.11b
- ☒ Network Architecture: infrastructure
- ☒ Operating Frequency: 2.4 ~ 2.5 GHz
- ☒ Operating Channels: depending on local regulations. For example, 11 Channels (Northern America), 13 Channels (Europe), and 14 Channels (Japan)
- ☒ Support the selection of best quality channel automatically
- ☒ RF Transmitter:

  Target Output Power (EIP): 13.5 dBm (22mW) for 802.11g

  17.5 dBm (56mW) for 802.11b

  Frequency Stability: 10 ppm

  TX Spectrum Mask: comply with IEEE802.11 b/g standard

- ☒ RF Receiver

  Sensitivity: provide the implemented sensitivity and comply with IEEE802.11b/g standard

	Data Rate (Mbps)	Minimum sensitivity (dBm)
802.11g	6	-86
	9	-84
	12	-82
	18	-80
	24	-78
	36	-75
	48	-70
	54	-68
802.11b	11	-85

Maximum input power: -10dBm

- ☒ Antenna: One external antenna is provided.

  External Antenna: 2.4G~2.5GHz Dipole and Omni radiation antenna with 3 dBi peak gain

- ☒ Coverage Area: 300 meters
- ☒ Support WEP (Wired Equivalent Privacy) mechanism which uses RC4 with

x

        64-bit or 128-bit key length

x   Support 802.1x and WPA/WPA2

x   Support the Access Control function: only registered WLAN clients are allowed to associate to this device.

x   SSID can be hidden for the security issue (Don't broadcast SSID).

x   Two SSIDs are supported currently. One SSID can be used for main wireless network and the other SSID can be used for guest wireless network. Two wireless networks can be configured in different wireless security level

x   Support the Repeater function to extend the coverage area

x   Support wireless user isolation for the hotspot

Voice over IP Features

x   Call Feature: basic outgoing and incoming call, Call Waiting, Three Party Conference, Call Transfer, Caller ID

x   Call Control: support MGCP (RFC2705) or SIP (RFC3261)

x   Voice Transport: compliance to RTP (RFC1889)

x   Voice Codec: G.711 (a-law and u-law), G.726, and G.729A

x   Tone/Ring Signal: compliance to North America, UK, France, Netherlands, Germany, Switzerland, etc.

x   Tone Generation: support dial tone, ring back tone, busy tone, ring tone, and various tones on demand

x   Tone Detection: support DTMF

x   Echo Cancellation: compliance to G.168

x   Support RFC2833 RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals

x   Support RFC3842 Voice Message Waiting Indication

x   Two VoIP (FXS) ports for VoIP phone calls

x   Both VoIP ports supporting intelligent lifeline backup

x   Manual selection of PSTN mode or VoIP mode while making a phone call

x   Automatic selection of PSTN phone call on dialing the emergency calls

x   Traffic flow control to guarantee voice quality

x   Support FAX/Analog Modem function

x   Support T.38 Fax relay[1]

ATM Features

x   Compliant to ATM Forum UNI 3.1 / 4.0 Permanent Virtual Circuits (PVCs)

x   Support up to 16 PVCs for UBR, CBR, VBR-nrt, VBR-rt with traffic shaping

x   RFC2684 LLC Encapsulation and VC Multiplexing over AAL5

x   RFC2364 Point-to-Point Protocol (PPP) over AAL5

x   RFC2225 Classical IP and ARP over ATM

x   RFC2516 PPP over Ethernet: support Relay (Transparent Forwarding) and Client functions

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[1] T.38 fax relay can be supported on demand.

- Support PPPoA or PPPoE Bridged mode (the IP address got from ISP can be passed to the user's PC and behave as the IP address of the user's PC.)
- OAM F4/F5 End-to-End/Segment Loopback Cells

Bridging Features

- Supports self-learning bridge specified in IEEE 802.1d Transparent Bridging
- Supports up to 4096 learning MAC addresses
- Transparent Bridging among 10/100 Mb Ethernet, USB, and 802.11g wireless LAN
- Supports IGMP Snooping
- Supports 802.1Q VLAN packet pass-through

Routing Features

- NAT (Network Address Translation) / PAT (Port Address Translation) let multiple users on the LAN to access the internet for the cost of only one IP address.
- ALGs (Application Level Gateways): such as NetMeeting, MSN Messenger, FTP, Quick Time, mIRC, Real Player, CuSeeMe, VPN pass-through with multiple sessions, RTSP, SIP, etc.
- Port Forwarding: the users can setup multiple virtual servers (e.g., Web, FTP, Mail servers) on user's local network.
- Support DMZ
- UPnP IGD (Internet Gateway Device) with NAT traversal capability
- Static routes, RFC1058 RIPv1, RFC1723 RIPv2
- DNS Relay, Dynamic DNS
- DHCP Client/Relay/Server
- Time protocol can be used to get current time from network time server
- Support IGMP Proxy
- Support port mapping function which allows you to assign all data traffic transmitted among specific Internet connections and LAN ports
- Support IP/Bridge QoS for prioritize the transmission of different traffic classes
- Support 802.1Q VLAN Tagging

Security Features

- PAP (RFC1334), CHAP (RFC1994), and MS-CHAP/MS-CHAP2 for PPP session
- Firewall support IP packets filtering based on IP address/Port number/Protocol type
- Bridge packet filtering (optional)
- URL filtering (optional)
- Support DoS (Deny of Services) which detect & protect a number of attacks (such as SYN/FIN/RST Flood, Smurf, WinNuke, Echo Scan, Xmas Tree Scan, etc)

Configuration and Management

- User-friendly embedded web configuration interface with password protection

- ꙮ Remote management accesses control
- ꙮ Telnet/SSH session for local or remote management
- ꙮ Firmware upgrades through HTTP, TFTP, or FTP
- ꙮ The boot loader contains very simple web page to allow the users to update the run-time firmware image.
- ꙮ Configuration file backup and restore
- ꙮ SNMPv1/v2 agent with MIB-II, ADSL Line MIB

Subscription for ADSL Service

To use the IAD, you have to subscribe for ADSL service from your broadband service provider. According to the service type you subscribe, you will get various IP addresses:

Dynamic IP: If you apply for dial-up connection, you will be given an Internet account with username and password. You will get a dynamic IP by dialing up to your ISP, such as using PPPoA, PPPoE, or MER mode.

Static IP address: If you apply for full-time connectivity, you may get either one static IP address or a range of IP addresses from your ISP. The IP address varies according to different ADSL service provider, such as using IPoA or MER mode.

Notes and Cautions
Note and *Caution* in this manual are highlighted with graphics as below to indicate important information.

Note Contains information that corresponds to a specific topic.

Caution Represents essential steps, actions, or messages that should not be ignored.
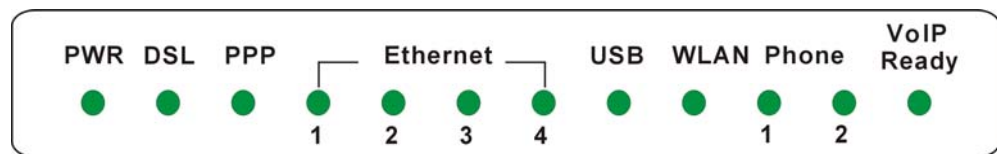
Chapter 1: Overview

This chapter provides you the description for the LEDs and connectors on the front and rear surface of the IAD. Before you use/install this wireless IAD, please take a look at the information first.

Physical Outlook

Front Panel

The following illustration displays the front panel of the Wireless IAD:

LED Indicators

The Wireless IAD is equipped with several LEDs on the front panel as described in the table below:

Function	Color	Definition
Power	Off	Power is off.
	Solid Green	Power is on and the device operates normally.
	Solid Red	Power on self-test in progress
		The device enters the console mode of the boot loader.
		Power on self-test failure if the led always stays solid red.
	Flash Red	Firmware upgrades in progress
DSL	Off	No DSL signal is detected.
	Slow Flash Green	DSL line is handshaking in progress
	Fast Flash Green	DSL line is training in progress
	Solid Green	DSL line connection is up.
PPP	Off	No PPPoA or PPPoE connection
	Solid Green	At least one PPPoA or PPPoE connection is up. The users can access the Internet now.
Ethernet	Off	No Ethernet signal is detected.
	Flash Green	User data is going through Ethernet port
	Solid Green	Ethernet interface is ready to work.
USB	Off	No USB signal is detected.
	Flash Green	User data is going through USB port
	Solid Green	USB interface is ready to work.
WLAN	Off	No radio signal is detected.
	Flash Green	User data is going through WLAN port
	Solid Green	WLAN interface is ready to work.
Phone 1 or 2	Off	The phone is on-hook or in PSTN mode.
	Flash Green	There is one incoming VoIP phone call.
	Solid Green	VoIP phone call is in use.
VoIP Ready	Off	Voice over IP service is not ready. The users can make PSTN phone calls only.
	Solid Green	Voice over IP service is ready.

Rear Panel

The following figure illustrates the rear panel of your Wireless IAD:
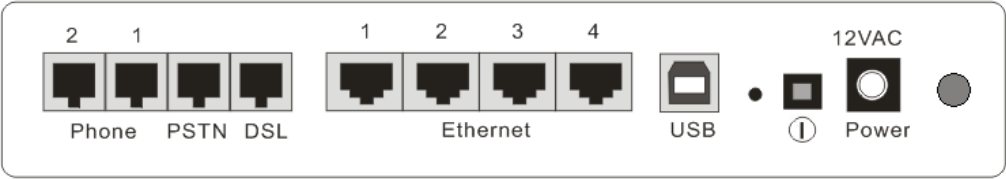
Connector	Description
Phone	Phone set connector
PSTN	PSTN connector
DSL	RJ-11 connector
Ethernet 1 - 4	Ethernet 10/100 Base-T auto-sensing
USB	USB client port
⏻	Power Switch
12VAC	Power connector

Note: For use only with power supply OEM type AA-121A5BN, Leader type A48120150-C5.

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Chapter 2: System Requirement and Installation

System Requirement

To access the Wireless IAD via Ethernet, the host computer must meet the following requirements:

- ❖ Equipped with an Ethernet network interface.

- ❖ Have TCP/IP installed.

- ❖ Allow the client PC to obtain an IP address automatically or set a fixed IP address.

- ❖ With a web browser installed: Internet Explorer 5.x or later.

The Wireless IAD is configured with the **default IP address of 192.168.1.1** and subnet mask of **255.255.255.0.** Considering that the DHCP server is **enabled** by default, the DHCP clients should be able to access the Wireless IAD, or the host PC should be assigned an IP address first for initial configuration.

You also can manage the Wireless IAD through a web browser-based manager: **ADSL ROUTER CONTROL PANEL**. The Wireless IAD manager uses the HTTP protocol via a web browser to allow you to set up and manage the device.

> To configure the device via web browser, at least one properly-configured PC must be connected to the network (either connected directly or through an external hub/switch to the LAN port of the device).

Choosing a place for the Wireless IAD

❶ Place the Wireless IAD close to ADSL wall outlet and power outlet for the cable to reach it easily.

❷ Avoid placing the device in places where people may walk on the cables. Also keep it away from direct sunlight or heat sources.
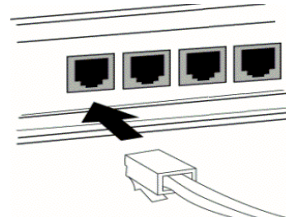
❸ Place the device on a flat and stable stand.

Connecting the Wireless IAD

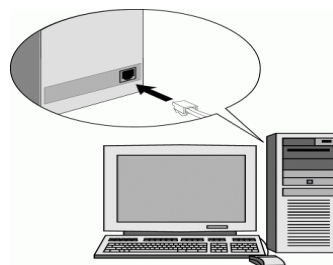Follow the steps below to connect the related devices.

❶ Connecting the ADSL line: connect the DSL port of the device to your ADSL wall outlet with RJ-11 cable.
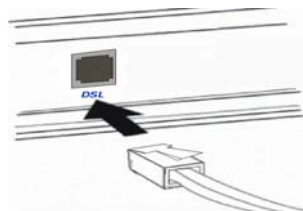
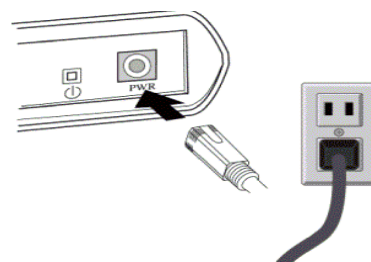❷ Please attach one end of the Ethernet cable with RJ-45 connector to the **LAN** port of your Wireless IAD.

❸ Connect the other end of the cable to the Ethernet port of the client PC.
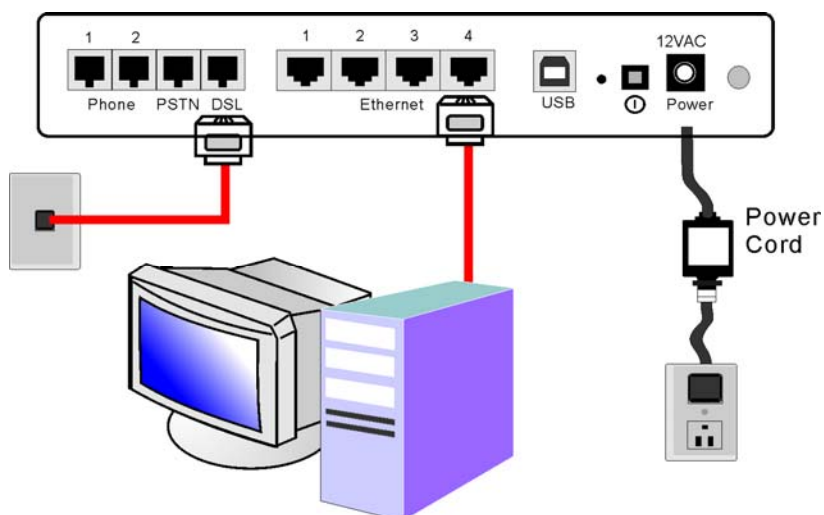
❹ Connect the supplied power adapter to the **PWR** port of your Wireless IAD, and plug the other end to a power outlet.

❺ Turn on the power switch.

Here is an example for connecting the PC to the Wireless IAD.

USB Driver Installation

If the Wireless IAD is connected to a PC through the USB interface, you will be prompted for the USB drivers when plugging the USB cable to the PC. Refer to the relevant operating system to install the USB drivers.

For Windows ME

❶ Run the USB installation program from the CD provided in your IAD package.

❷ An **InstallShield Wizard** will appear. Please wait for a moment.

❸ When the welcome screen appears, click **Next** for the next step.

❹ When the complete window of the InstallShield Wizard appears, click **Finish**.

❺ Link your IAD and the PC with a USB cable.

❻ The system will detect the USB driver automatically.   Then, the system will copy the proper files for this IAD.

> Note: If the USB device is not detected automatically, check the USB cable between the PC and the device. Besides, verify that the device is power on.

❼ When the file copying finished, the dialog above will close. Now the USB driver is installed properly. You can use the IAD.

For Windows 2000

❶ Run the USB installation program from the CD provided in your IAD package.

❷ An **InstallShield Wizard** will appear. Please wait for a moment.

❸ When the welcome screen appears, click **Next** for the next step.

❹   When the complete window of the InstallShield Wizard appears, click **Finish**.

❺   Link your IAD and the PC with a USB cable.

❻   The system will detect the USB driver automatically.   And then, the system will copy the proper files for this IAD.
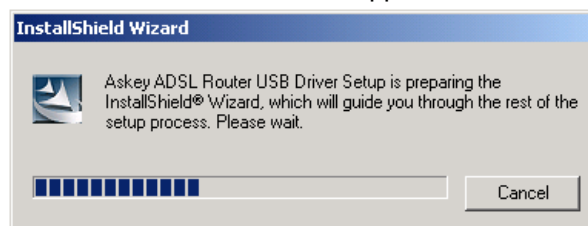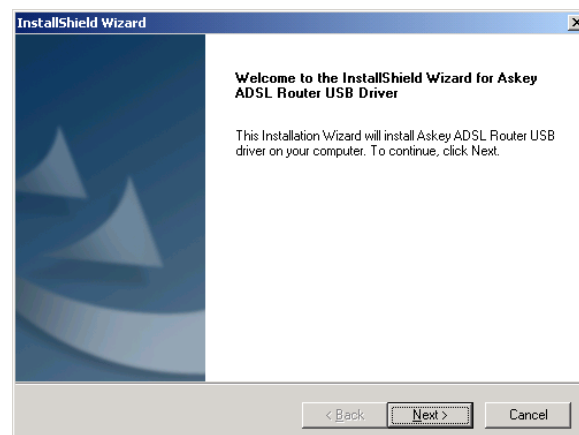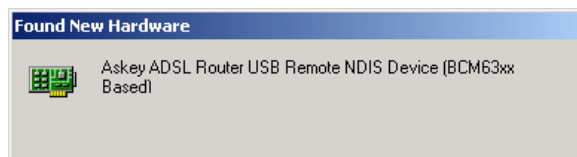

Note: If the USB device is not detected automatically, check the USB cable between the PC and the device. Besides, make sure that the device is power on.

❼   When the file copying finished, the dialog above will close. Now the USB driver is installed properly. You can use the IAD.

To make sure that your IAD is properly installed, please do the following steps.

1. Right-click on **My Computer** and press **Properties**.

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2. On the **Hardware** tap, click **Device Manager**.

3. Confirm that the **Askey ADSL Router USB Remote NDIS Device** is on the **Network adapters** list.
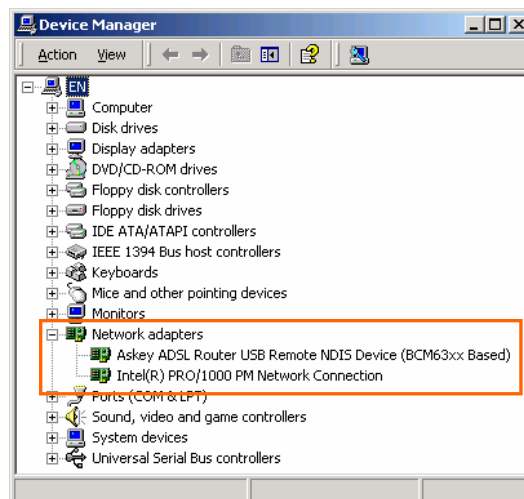
For Windows XP

❶ Run the USB installation program from the CD provided in your IAD package.

❷ An **InstallShield Wizard** will appear. Please wait for a moment.

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❸ When the welcome screen appears, click **Next** for the next step.
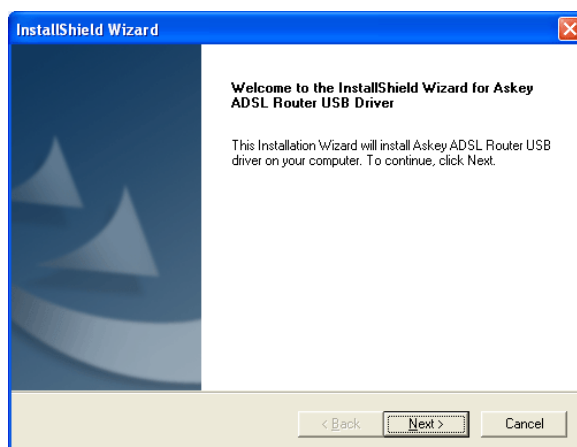
❹ When the complete message of InstallShield Wizard appears, click **Finish**.

❺ Link your IAD and the PC with a USB cable.

❻ The system will detect the USB driver automatically.
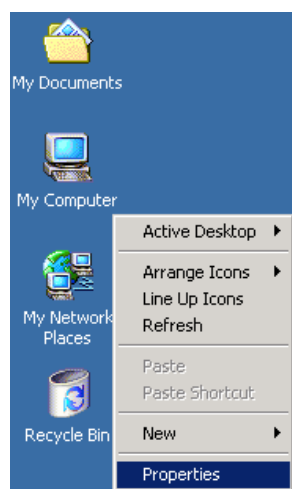

Note: If the USB device is not detected, check the USB cable between the PC and the device. Also make sure that the device is power on.

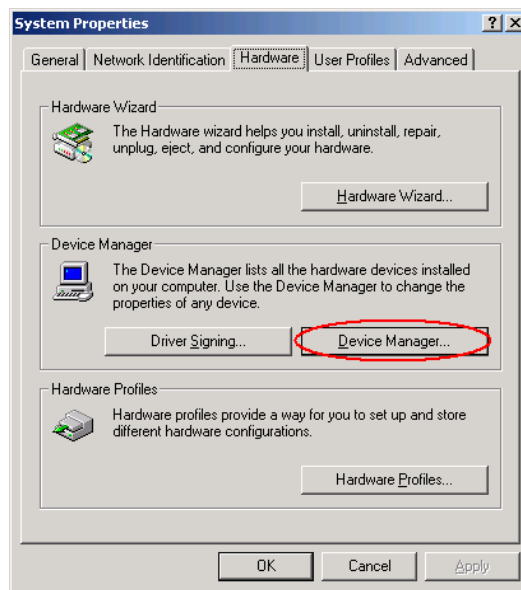❼ Then the system will try to find the proper driver for your IAD and copy the files automatically.

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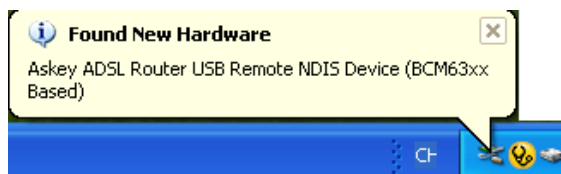
❽   After the file copying finished, a completing message will appear.
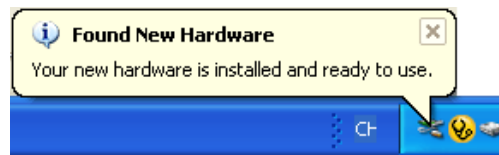
❾   You can use the wireless IAD now.

To make sure your IAD is properly installed, please do the following steps.

1.   Right-click on **My Computer** and press **Properties**.
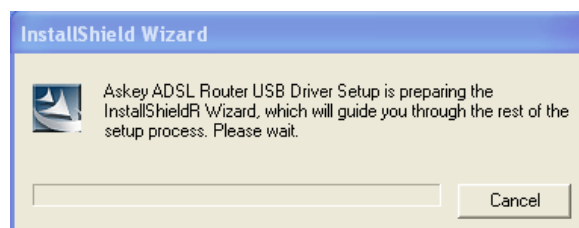

2.   On the **Hardware** tab, click **Device Manager**.
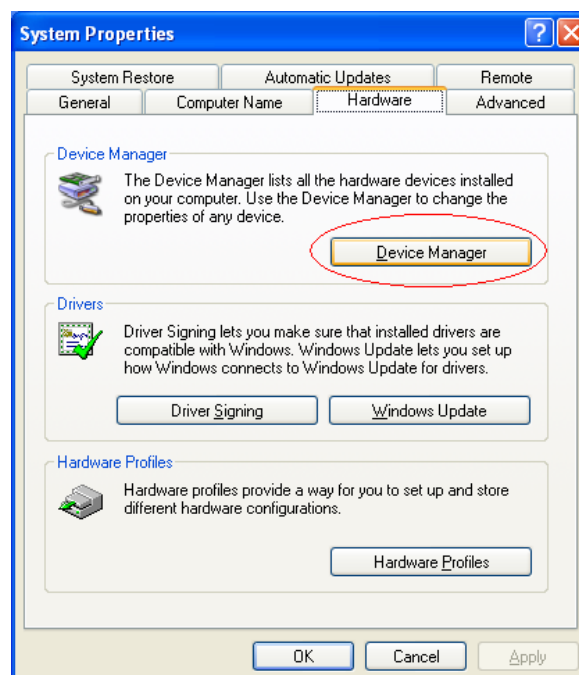
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3. Confirm that the **Askey ADSL Router USB Remote NDIS Device** is on the
   **Network adapters** list.

For Windows Vista

For Vista users, please press **Continue** whenever a prompted window asking for permission to continue during USB driver installation process (see the figure below for example).
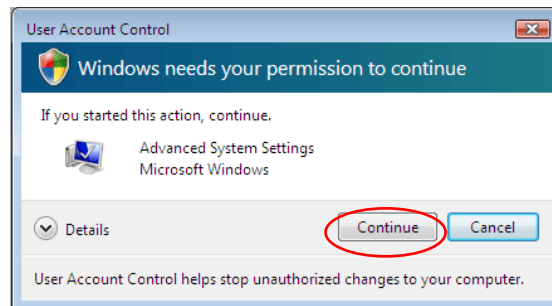
To install the USB driver before connect the router to the PC, here provides two methods.

Method One – Use the driver CD came with the product package.

❶   Run the USB installation program on the CD provided in your router package.

❷   An **InstallShield Wizard** will appear. Please wait for a moment.
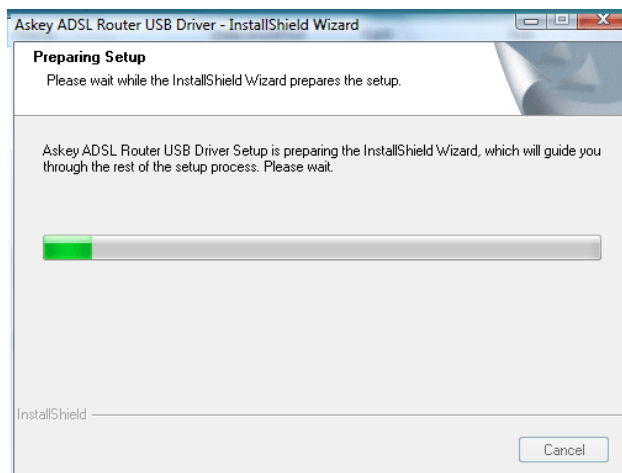
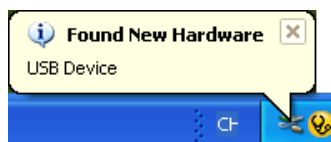❸   When the welcome screen appears, click **Next** for the next step.

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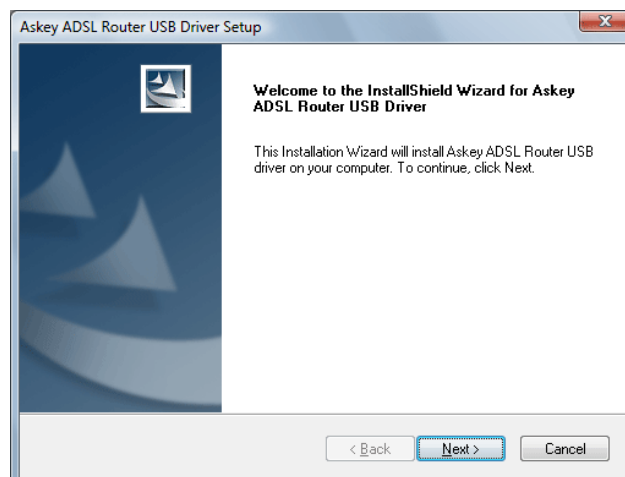
❹ When the complete message of InstallShield Wizard appears, click **Finish**.
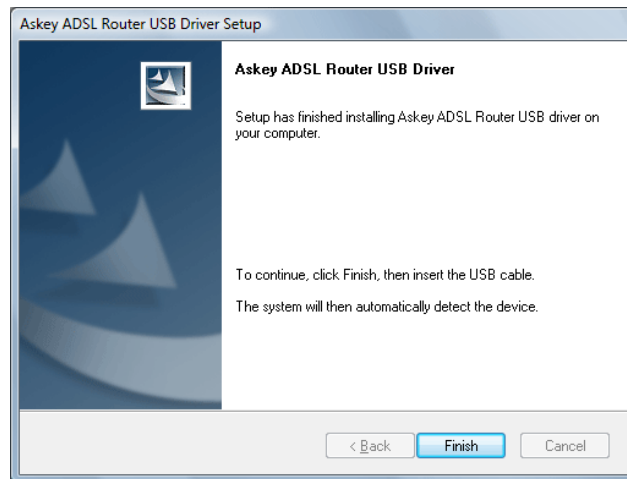
❺ Link your router and the PC with a USB cable.

❻ The system will detect the USB driver automatically.

Note: If the USB device is not detected, check the USB cable between the PC and the device. Also make sure that the device is power on.

❼ After the file copying finished, a completing message will appear.

❽ You can use the router now.

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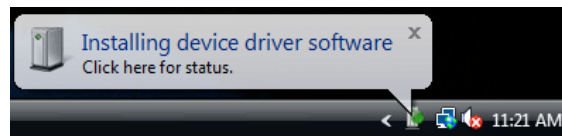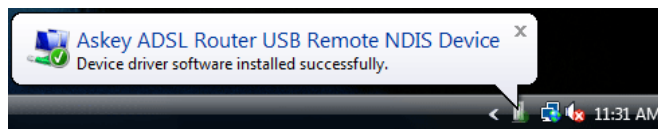
Method Two – Run a silent installation.

❶　　　　Copy the USB driver folder from the driver CD to somewhere on the PC. (In our example, the driver files are put under D:\Askey ADSL USB WHQLed.)

❷　　　　Open **Start** menu, key in *cmd* in the blank and press enter. Then click **cmd.**
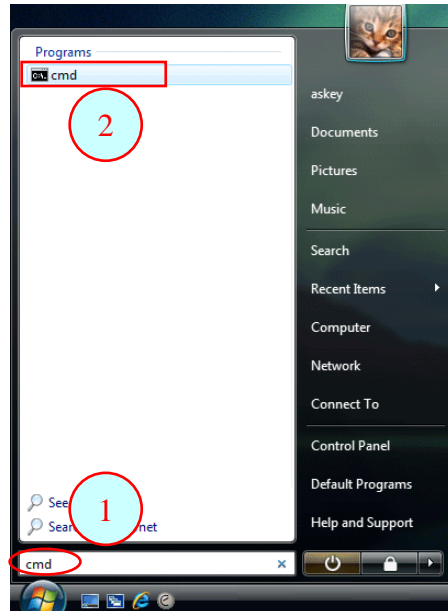
❸　　　　When the Command Prompt screen appears, point to the driver folder on your PC, and then enter *setup -s.* Press enter to start silent installation.
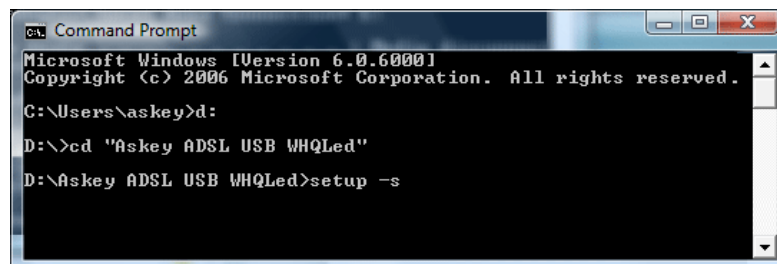
❹　　　　The system will install the driver automatically. You can connect your router and the PC with a USB cable now.
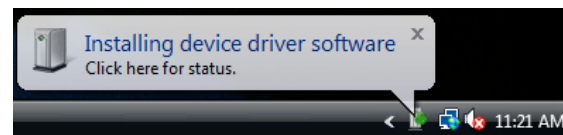
❺　　　　The system will detect the USB driver automatically.

Note: If the USB device is not detected, check the USB cable between the PC and the device. Also make sure that the device is power on.

❻　After the file copying finished, a completing message will appear.

❼　　　　You can use the router now.

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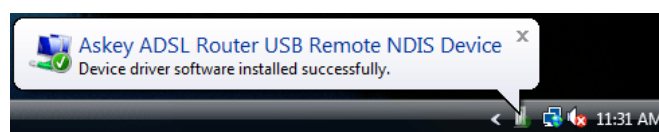
If the USB driver has not been installed yet, you can also connect the router to the PC with a USB cable and wait for *Universal Plug and Play* device to detect the router, and then install the driver.

❶ Plug the USB cable into the USB port on the PC.

❷ A **Found New Hardware** window will appear. Press **Locate and install driver software (recommended)**.
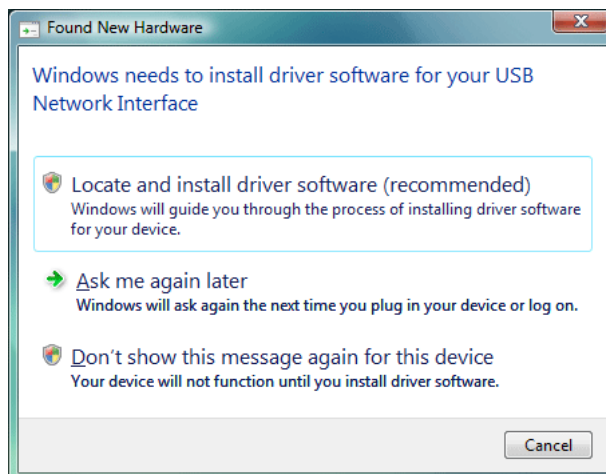
❸ Then insert the USB driver CD provided in your router package into the PC, and press **Next**.
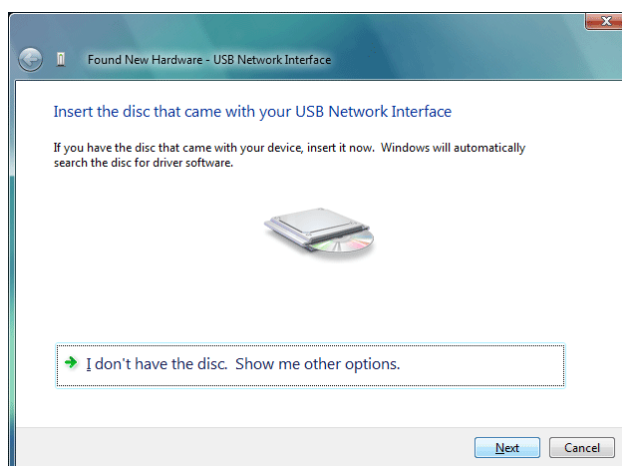
❹ The system will search disc for the USB driver needed and then complete the installation.
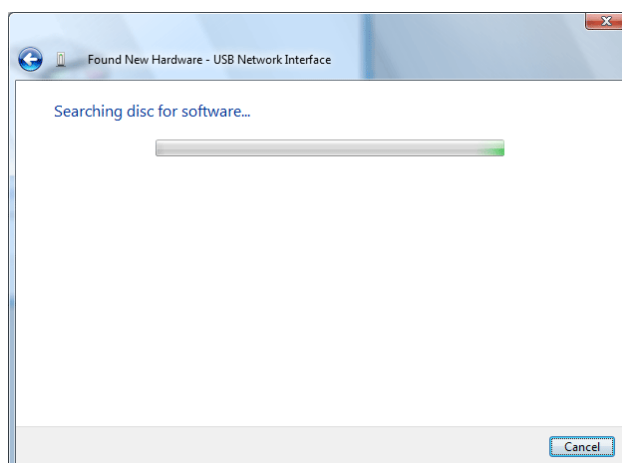
Or if you do not have a disc, but have the driver files on your PC, you can follow the steps below:

❸   Press **I don't have the disc. Show me other options**.
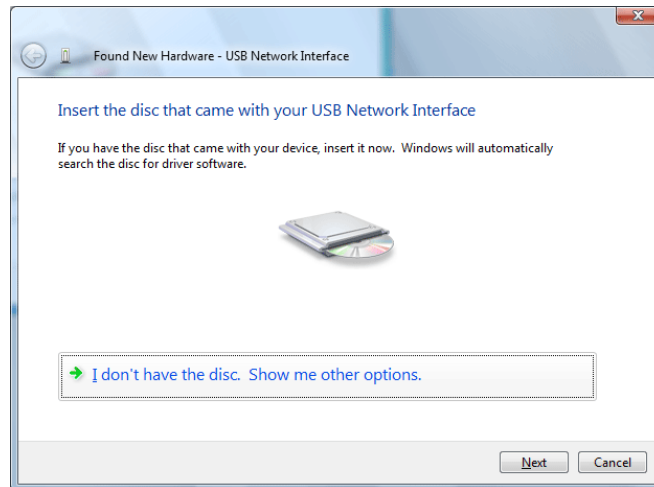
❹   Select **Browse my computer for driver software (advanced)**.
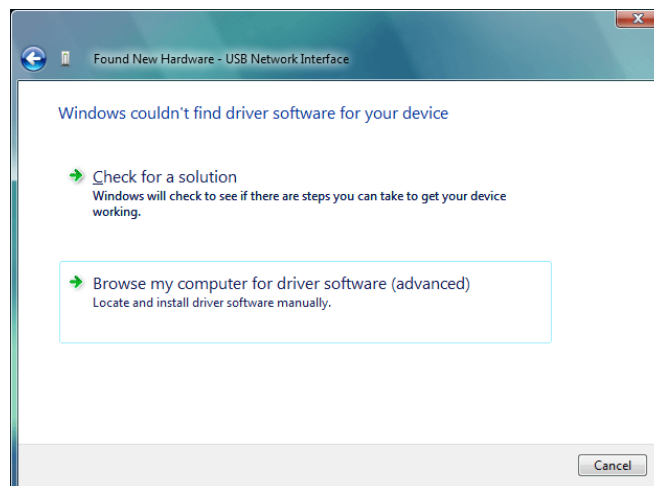
❺   Press **Browse** to set the path for the driver file, and then press **Next**.

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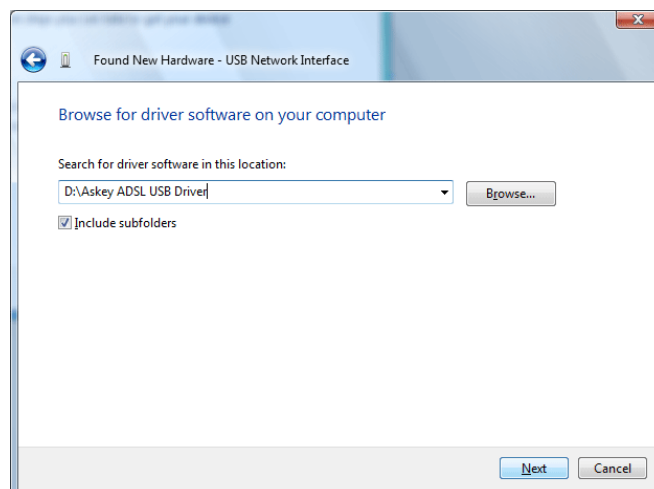
❻   Wait while the system installing the driver.
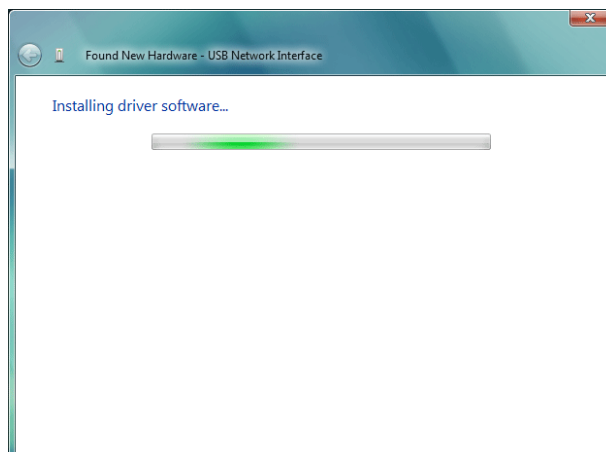
❼   Now the driver software is installed successfully. Press **Close** to start using the router.
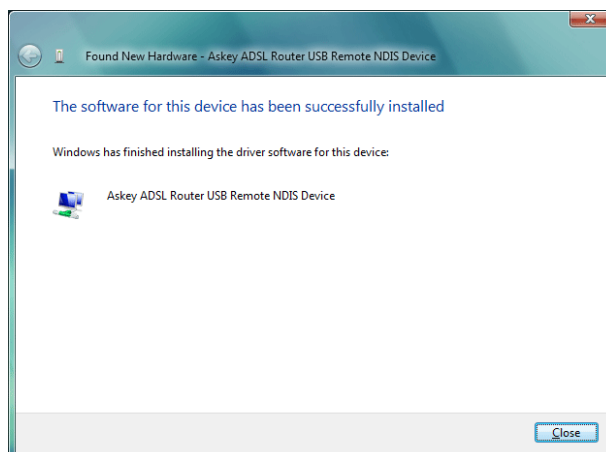
To make sure the USB driver for your router is properly installed, please do the following steps.

1.   Open the Start menu and press **Control Panel**.

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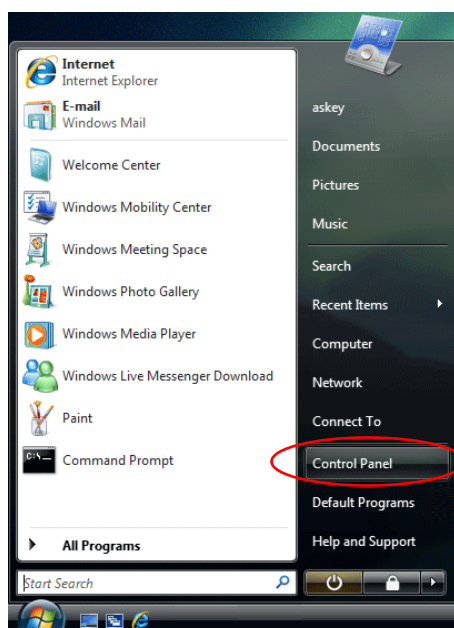
2. On the **Control Panel** folder, click **System and Maintenance**.
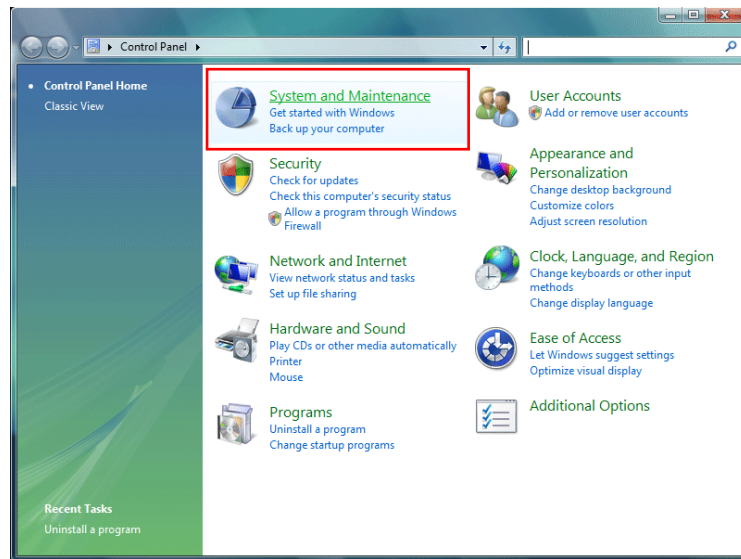
3. Press **System**.
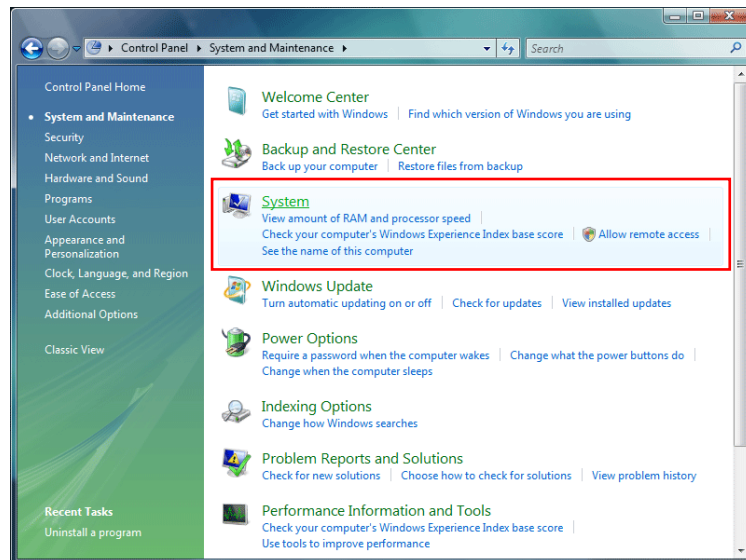
4. Click **Device Manager**.

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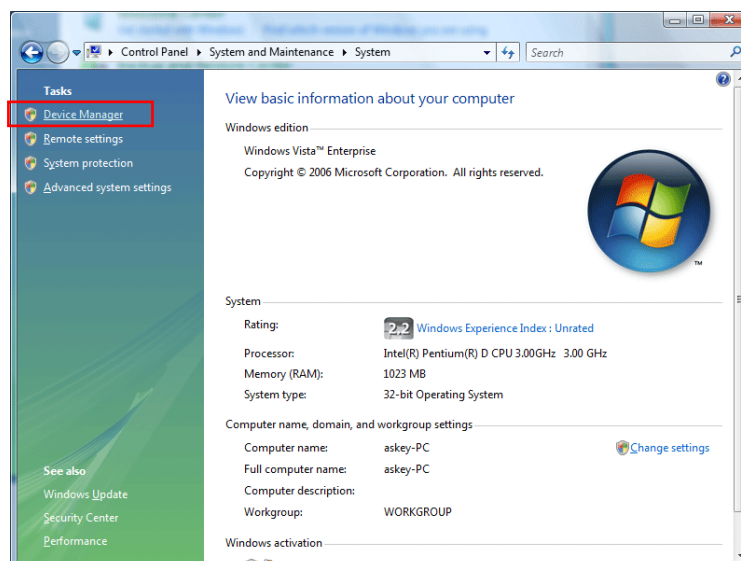
5. Confirm that the **Askey ADSL Router USB Remote NDIS Device** is on the **Network adapters** list.
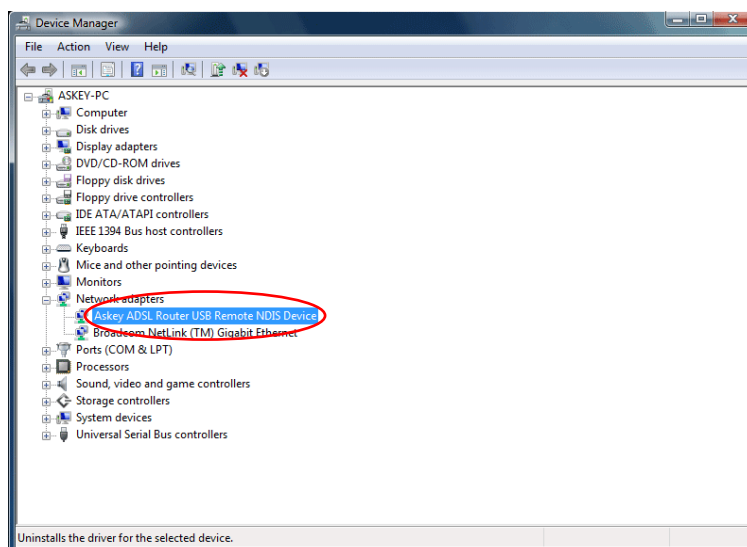
Uninstalling the USB Driver

For Windows ME

To uninstall the USB driver, please follow the procedures below.

Method One:

❶   Unplug the USB cable from the USB port on your PC.

❷   Choose **Programs – Askey Broadband – Uninstall Askey ADSL Router USB Driver** from the **Start** menu.

❸   The InstallShield Wizard dialog will appear.

❹   A dialog appears to confirm whether you really want to remove the USB driver or not. Please click **Ok**.

❺   When the Maintenance Complete screen appears, the USB driver is removed successfully. Click **Finish.**

Method Two:

❶   Unplug the USB cable between your IAD and your PC. Then click **OK**.

❷   Choose **Settings – Control Panel** from the **Start** menu. Choose **Add/Remove Programs**.

❸   A dialog appears to ask you to choose the program that you want to remove. Please select **Askey ADSL Router USB Driver** and click **Change/Remove**.

❹   The InstallShield Wizard dialog will appear.

❺   When the Maintenance Complete screen appears, the USB driver is removed successfully. Click **Finish**

For Windows 2000

To uninstall the USB driver, there are two ways to do it. Please do the following procedures.

Method One:

❶   To safely unplug the USB cable from the USB port on your PC:

     1.   Go to the right lower corner for **Unplug and Eject Hardware** and left click on it.

     2.   Click the dialog for **Stop Askey ADSL Router USB Remote NDIS Device**.

3. The Router is safely removed, click **OK** to continue.

❷ Choose **Programs – Askey Broadband – Uninstall Askey ADSL Router USB Driver** from the **Start** menu.

❸ The InstallShield Wizard dialog will appear.

❹ A dialog appears to confirm whether you want to remove the USB driver or not. Please click **Ok**:

❺ When the Maintenance Complete screen appears, the USB driver is removed successfully. Click **Finish.**

Method Two:

❶ To safely unplug the USB cable from the USB port on your PC:

1. Go to the right lower corner for **Unplug and Eject Hardware** and left click on it.

2. Click the dialog for **Stop Askey ADSL Router USB Remote NDIS Device**.

3. The Router is safely removed, click **OK** to continue.

❷ Choose **Settings – Control Panel** from the **Start** menu. Choose **Add/Remove Programs**.

❸ A dialog appears to ask you to choose the program that you want to remove. Please select **Askey ADSL Router USB Driver** and click **Change/Remove**.

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❹   A Confirm Uninstall dialog will show up, unplug your device from the USB port and click **OK**.
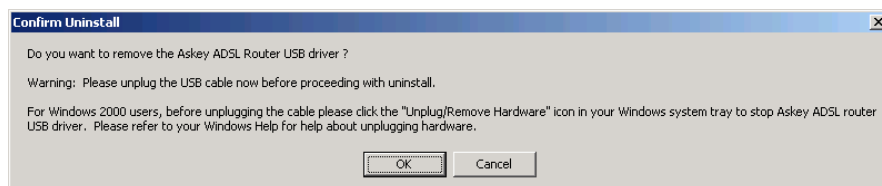
❺   The InstallShield Wizard will guide you till the USB driver is removed.
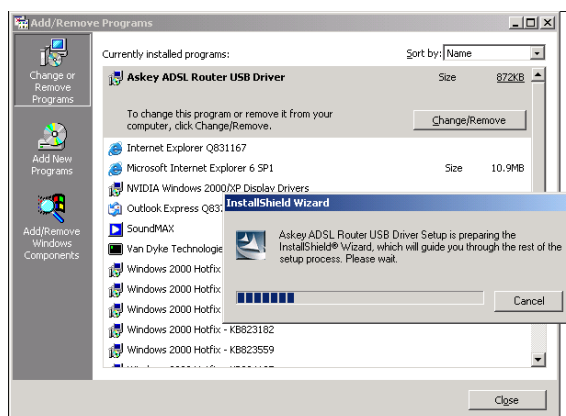
❻   When the **Maintenance Complete** screen appears, the USB driver is removed successfully. Click **Finish.**
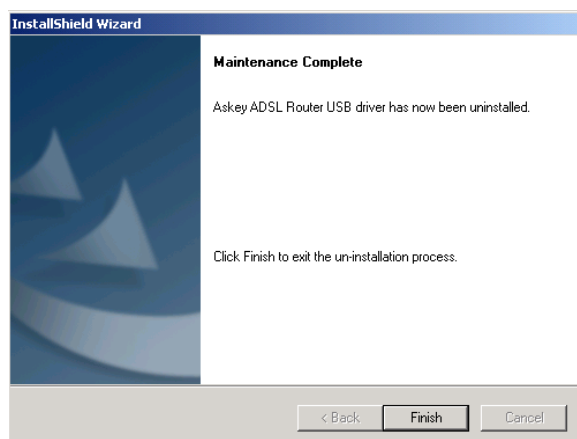
For Windows XP

To uninstall the USB driver, there are two ways to do it. Please do as follows.

Method One:

❶   Unplug your USB cable between your IAD and your PC.

❷ Choose **Programs – Askey Broadband – Uninstall Askey ADSL Router USB Driver** from the **Start** menu.

❸ The InstallShield Wizard dialog will appear.

❹ A dialog appears to confirm whether you want to remove the USB driver or not. Unplug the USB cable from your PC, and click **Ok.**

❺ When the Maintenance Complete screen appears, the USB driver is removed successfully.   Click **Finish.**

Method Two:

❶ Unplug your USB cable between your IAD and your PC.
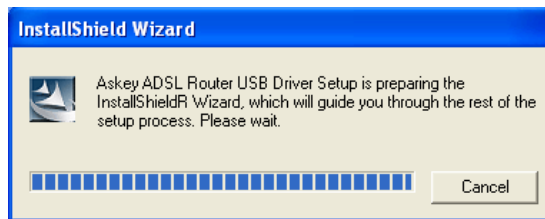
❷ Choose **Settings – Control Panel** from the **Start** menu. Choose **Add or Remove Programs**.
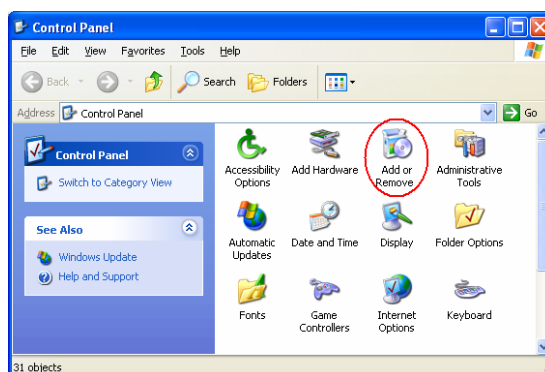
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❸ A dialog appears to ask you to choose the program that you want to remove. Please select **Askey ADSL Router USB Driver** and click **Change/Remove**.
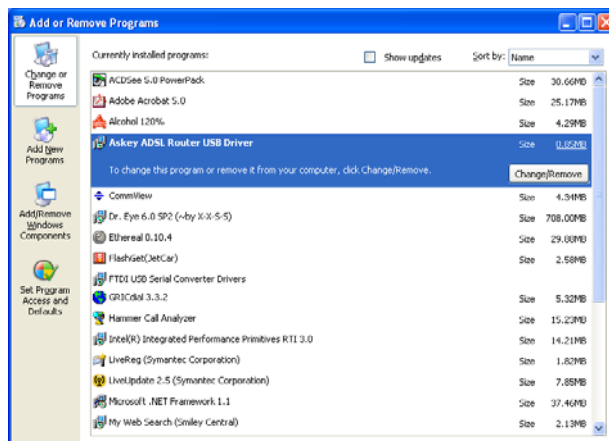
❹ The InstallShield Wizard dialog will appear.

❺ A dialog appears to confirm whether you want to remove the USB driver or not. Unplug the USB cable from your PC, and click **Ok**.
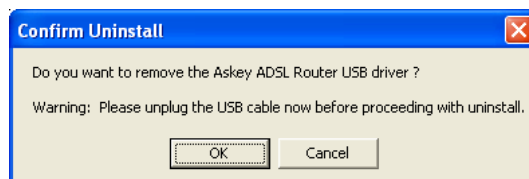
❻ When the Maintenance Complete screen appears, the USB driver is removed successfully. Click **Finish.**

For Windows Vista

For Vista users, please press **Continue** whenever a prompted window asking for permission to continue during USB driver uninstallation process (see the figure below for example).
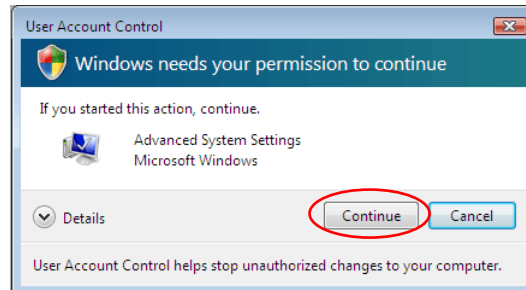
To uninstall the USB driver, there are two ways to do it. Please follow the instructions.

Method One: Remove from Device Manager.

❶   Choose **Start** menu, and then select **Control Panel**.
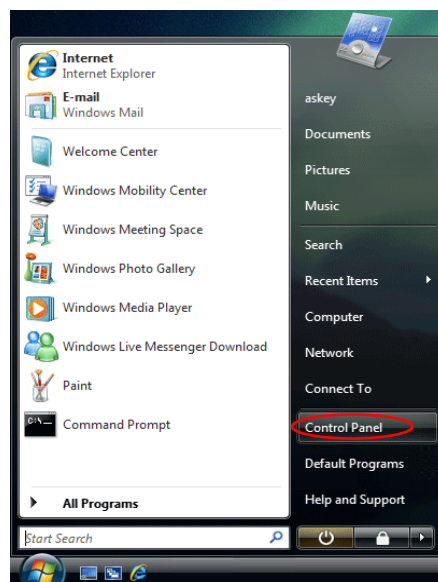
❷   Click **System and Maintenance**.
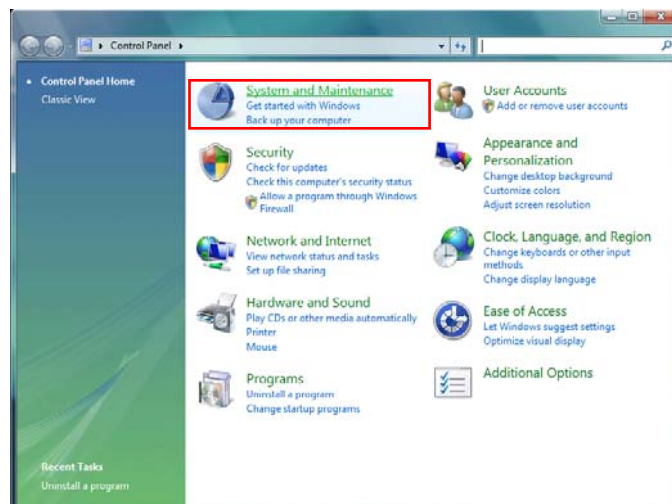
❸ Press **System**.
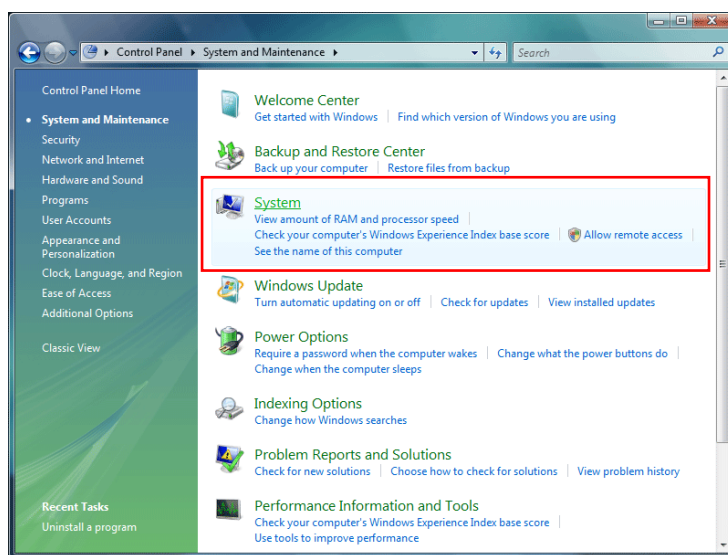
❹ Click **Device Manager**.
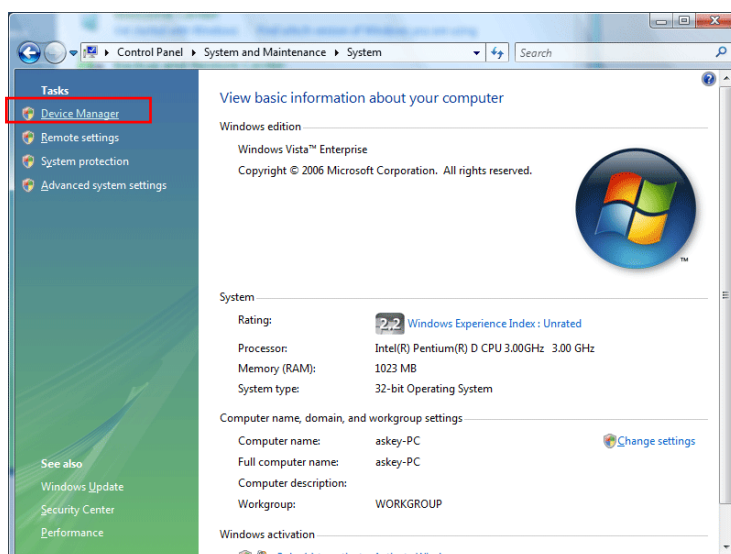
❺ Right click **Askey ADSL Router USB Remote NDIS Device** on the **Network adapters** list, and press Uninstall.
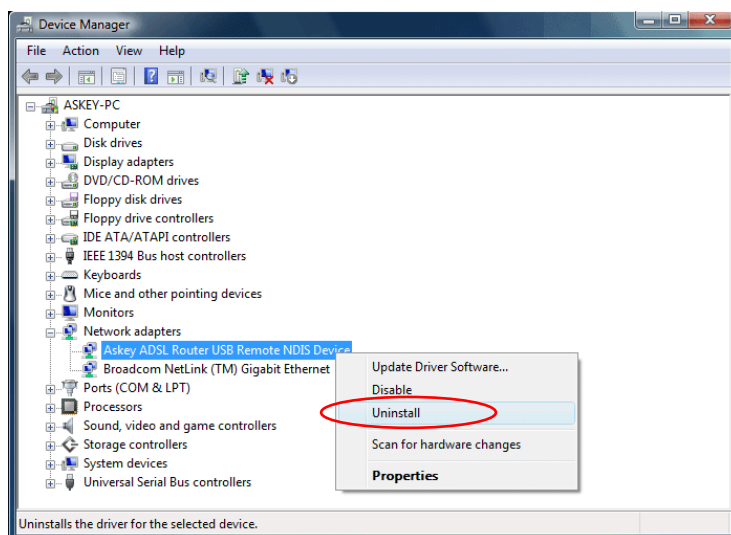
❻ Click **OK** when the Confirm Uninstall window appears.

Confirm Uninstall

Do you want to remove the Askey ADSL Router USB driver ?

Warning: Please unplug the USB cable now before proceeding with uninstall.

OK   Cancel
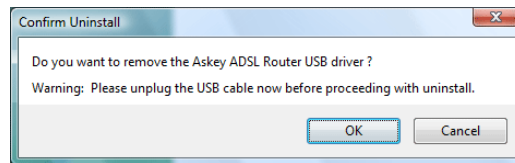
Remember to unplug the USB cable before continue the uninstallation, or you will see the reminder as follows. Unplug and press **OK**.

Confirm Uninstall

Please unplug the USB cable now before proceeding with uninstall.

OK   Cancel
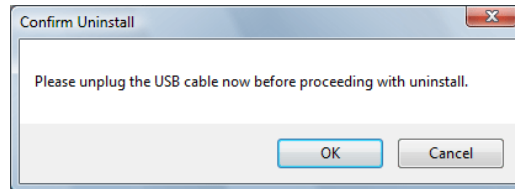
❼ When the **Confirm Device Uninstall** screen show up, check **Delete the driver software for the device** and click **OK** to continue.

Confirm Device Uninstall

Askey ADSL Router USB Remote NDIS Device

Warning: You are about to uninstall this device from your system.

☑ Delete the driver software for this device.

OK   Cancel
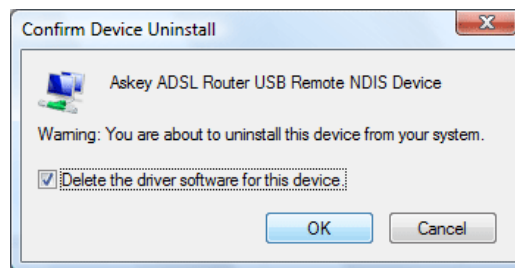
❽ Wait while the system is uninstalling.

Confirm Device Uninstall

Askey ADSL Router USB Remote NDIS Device

Uninstalling devices...

OK   Cancel
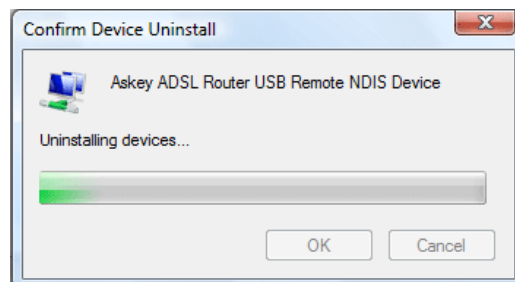
❾ When the uninstallation is finished, the icon of this router under network adapter list will disappear.

Device Manager

File Action View Help

ASKEY-PC
  Computer
  Disk drives
  Display adapters
  DVD/CD-ROM drives
  Floppy disk drives
  Floppy drive controllers
  IDE ATA/ATAPI controllers
  IEEE 1394 Bus host controllers
  Keyboards
  Mice and other pointing devices
  Monitors
  Network adapters
    Broadcom NetLink (TM) Gigabit Ethernet
  Other devices
    USB Network Interface
  Ports (COM & LPT)
  Processors
  Sound, video and game controllers
  Storage controllers
  System devices
  Universal Serial Bus controllers

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Method Two – uninstall from program list

Note: If your USB driver is installed by UPnP device, you can only use method one (via the **Device Manager**) to uninstall, because the installed driver will not be shown on the program list.

❶ Unplug your USB cable between your router and your PC.

❷ Choose **Start** menu, and open **Control Panel** folder. Click **Uninstall a program**.
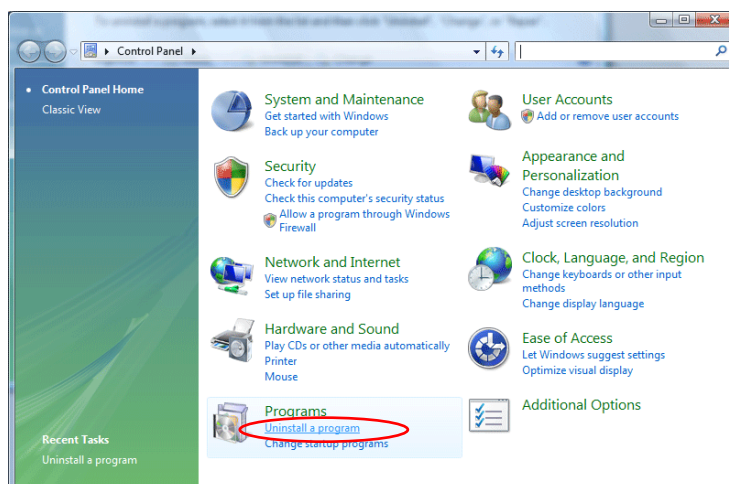
❸ If the driver name is not on the list, click **Refresh** button or **F5** to update the information. To remove the driver, select it, and then press **Uninstall**.
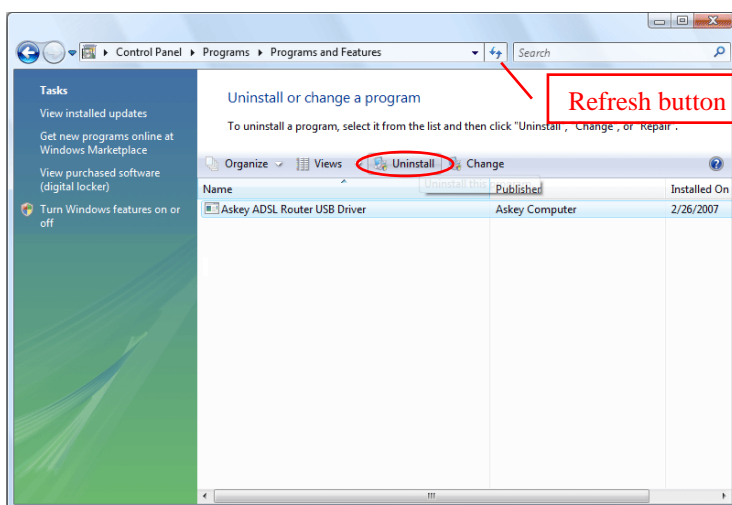
❹ Then the system will start to uninstall the USB driver software automatically.
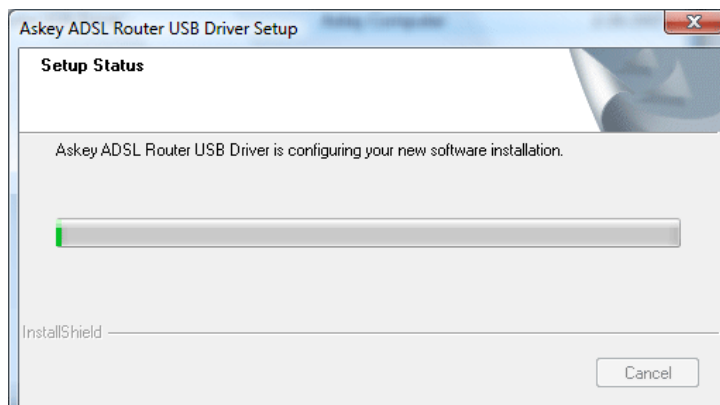
❺   When Maintenance Complete window shows up, click **Finish** to exit.
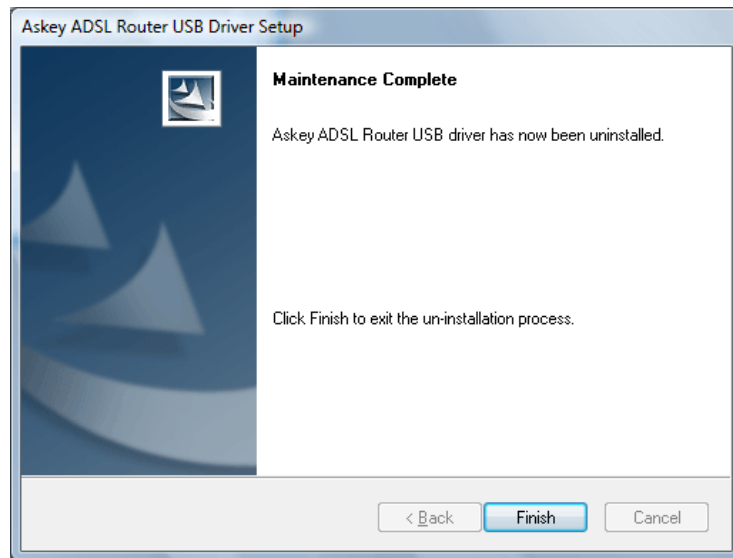
❻   The USB driver is successfully removed now**.**

Setting up TCP/IP

> In order to access the Internet through the IAD, each host on your network must install/setup TCP/IP first. Please follow the steps below to set your network adapter.

If the TCP/IP protocol has not been installed yet, please follow the steps below for installation. In the following illustrations, we will set the PC to **get an IP address automatically** at the same time.

For Windows 98

1. Open the **Start** menu, point to **Settings** and click on **Control Panel**.

2. Double-click the **Network** icon.

3. The **Network** window appears. On the **Configuration** tab, check out the list of installed network components.

   Option 1: If there is **no** TCP/IP protocol, click **Add**.

   Option 2: If you have TCP/IP protocol, skip to Step 6.

   Your network interface card.

   Check out if TCP/IP for your NIC is installed or not.

4. Highlight **Protocol** and click **Add**.
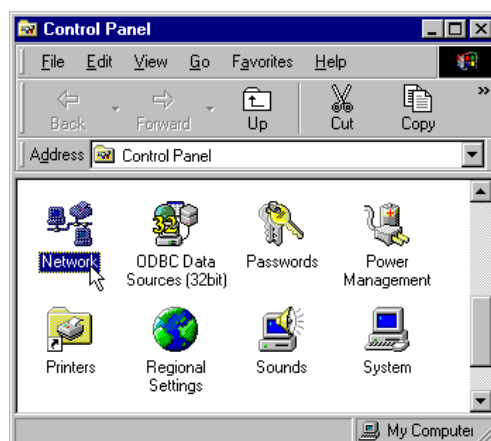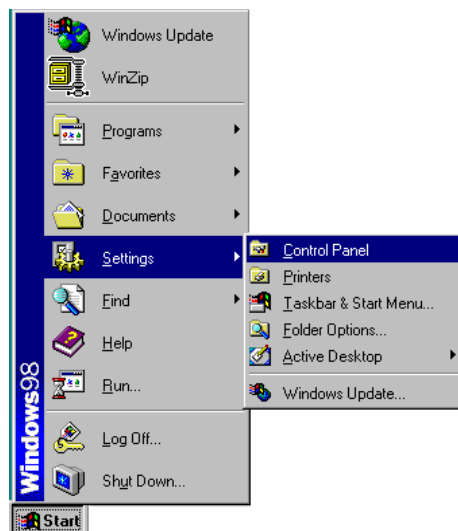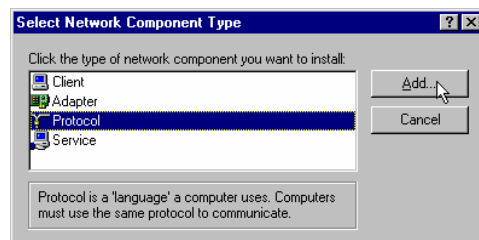
5. Highlight **Microsoft** on the left side of the window, and select **TCP/IP** on the right side. Then click **OK.**
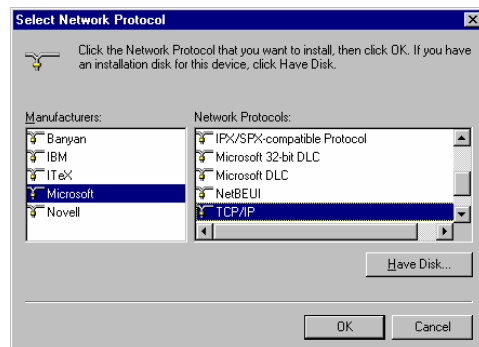
6. When returning to the **Network** window, highlight **TCP/IP** protocol for your NIC and click **Properties**.

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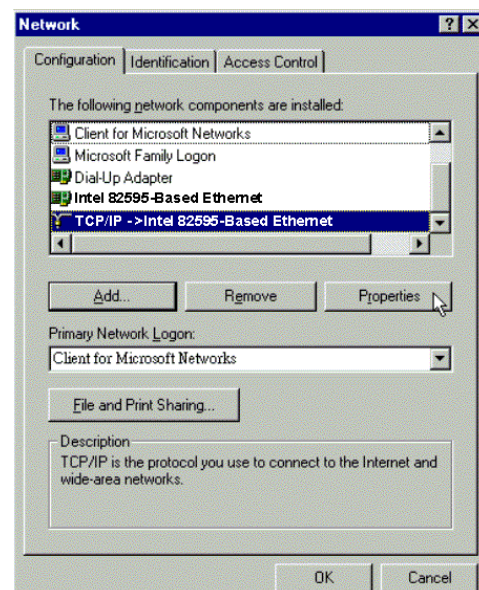
7. On the **IP Address** tab:
   Enable **Obtain an IP address automatically** and click OK.
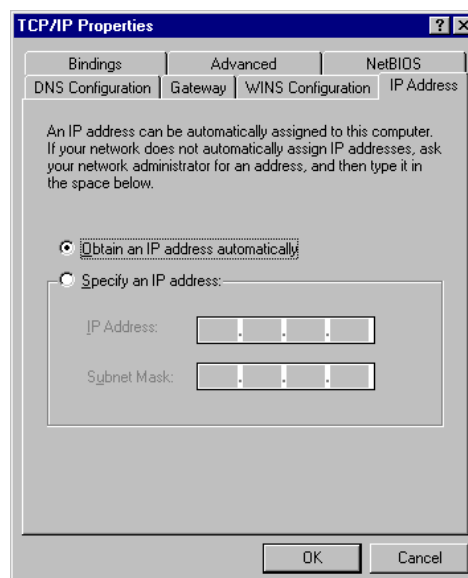
8. When returning to the **Network** window, click **OK**
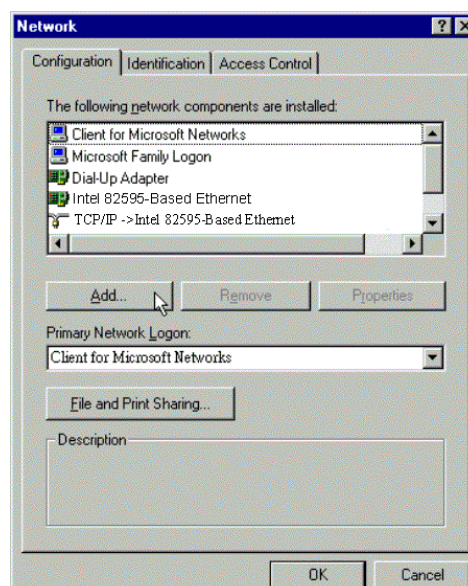
9. Wait for Windows when copying files.
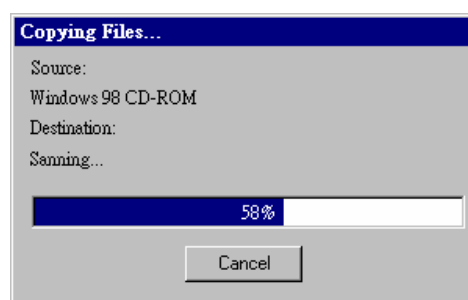
10. When prompted with **System Settings Change** dialog box, click **Yes** to restart your computer.
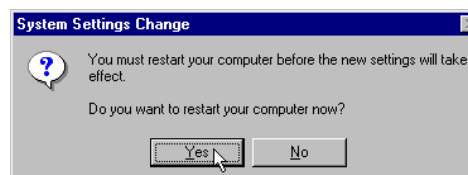
For Windows ME

1. Open the **Start** menu, point to **Settings** and click on **Control Panel**.
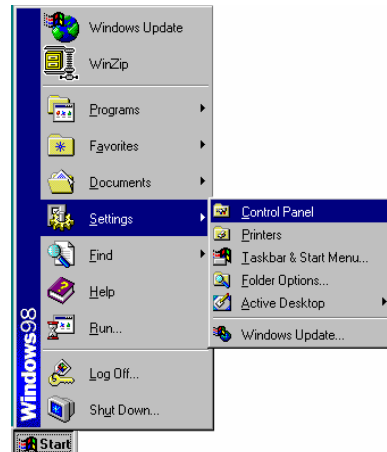
2. Double-click the **Network** icon.

3. The **Network** window appears. On the **Configuration** tab, check out the list of installed network components.

    Option 1: If there is **no** TCP/IP protocol, click **Add**.

    Option 2: If you have TCP/IP protocol, skip to Step 6.

    Your network interface card.

    Check out if TCP/IP for your NIC is installed or not.
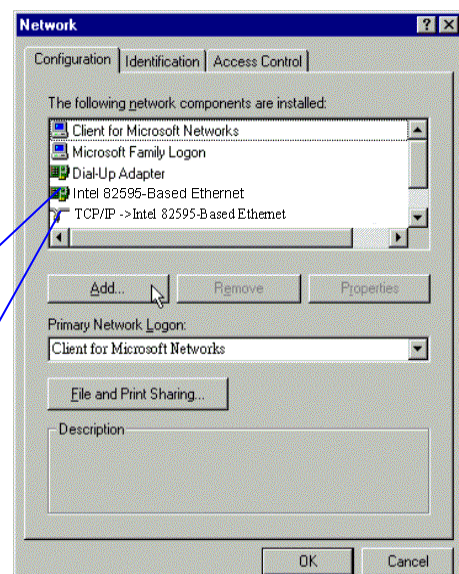
4. Highlight **Protocol** and click **Add**.
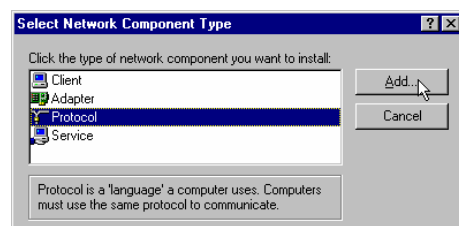
5. Highlight **Microsoft** on the left side of the windows, and select **TCP/IP** on the right side. Then click **OK**.

6. While returning to **Network** window, highlight **TCP/IP** protocol for your NIC and click **Properties**.

7. On **IP Address** tab:
Enable **Obtain an IP address automatically** and click OK.
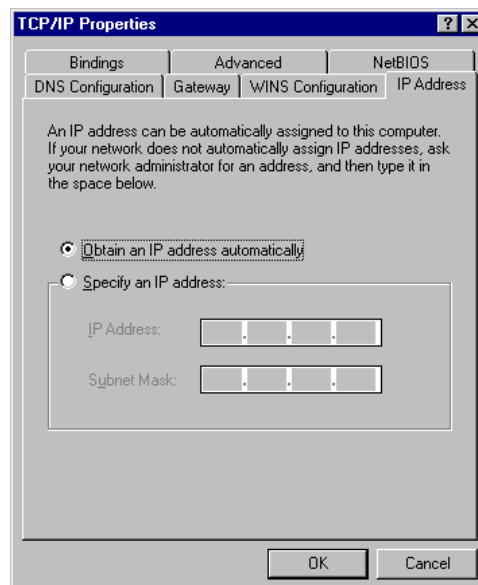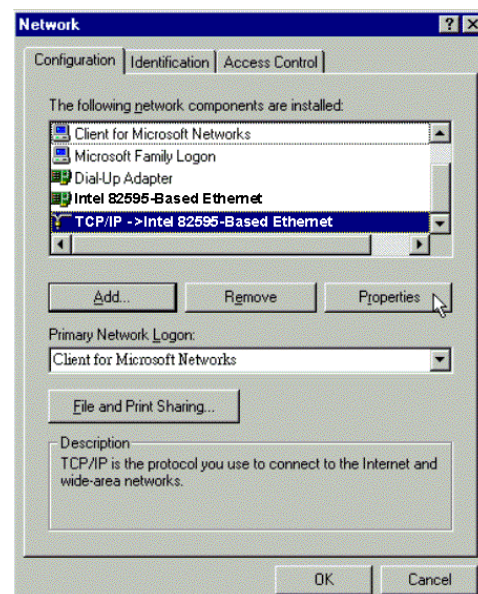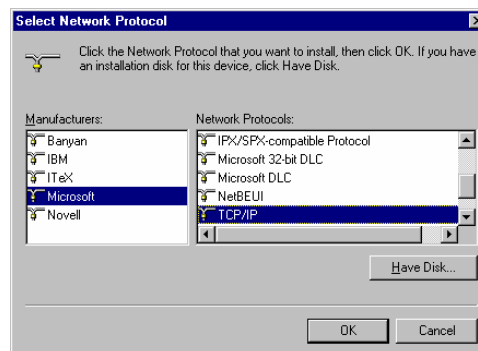
8. While returning to the **Network** window, click **OK**.
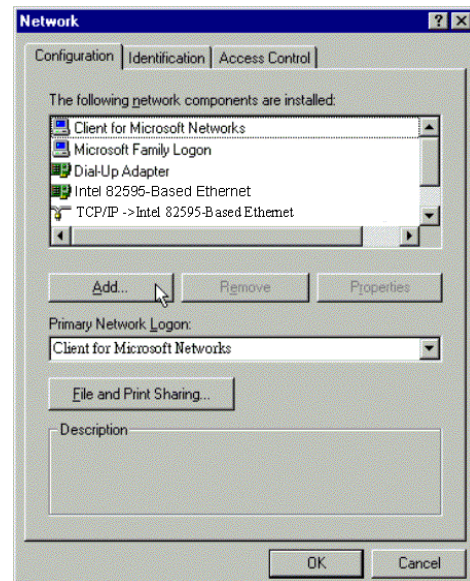
9. Wait for Windows when copying files.

10. When prompted with the **System Settings Change** dialog box, click **Yes** to restart your computer.
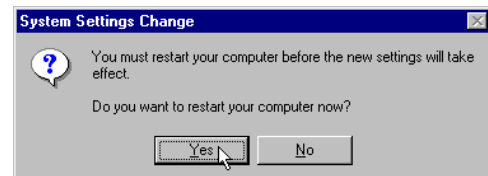
For Windows NT

1. Click **Start**, point to **Settings**, and then click **Control Panel**.
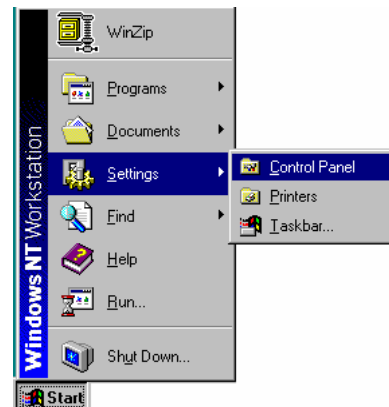
2. Double-click the **Network** icon.
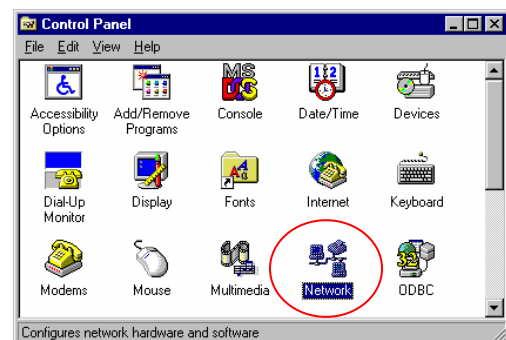
3. The **Network** window appears. On the **Protocols** tab, check out the list of installed network components.
Option 1: If there is **no** TCP/IP Protocol, click **Add**.
Option 2: If you have TCP/IP Protocol installed, skip to Step 7.
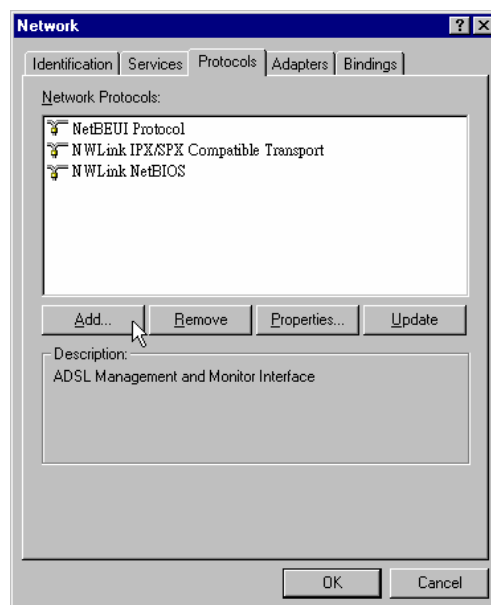
4. Highlight **TCP/IP Protocol** and click **OK**.
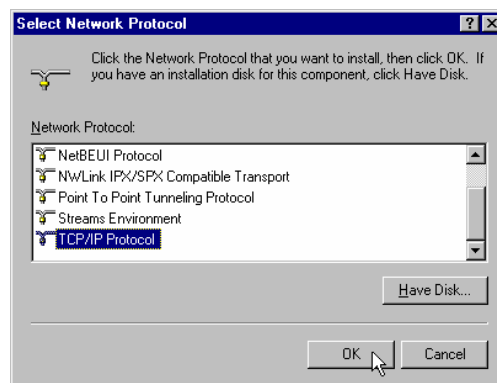
5. Insert the Windows NT CD into your CD-ROM drive and type the location of the CD. Then click **Continue**.
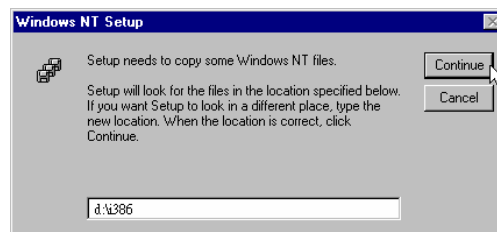
6. When returning to the **Network** window. Open the **Protocols** tab, then select **TCP/IP Protocol** and click **Properties**.
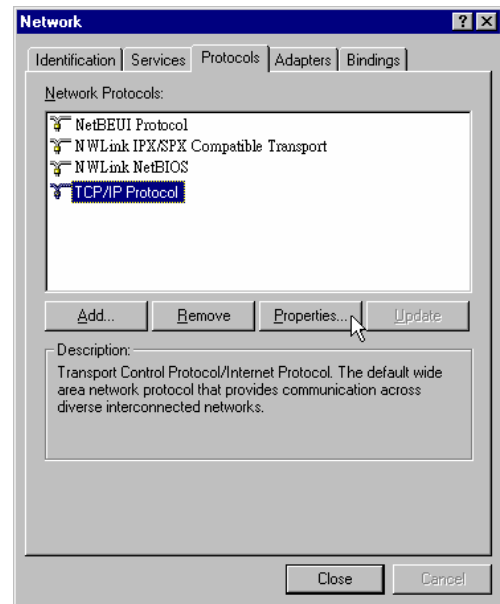
7. Enable **Obtain an IP address from a DHCP server** and click **OK**.
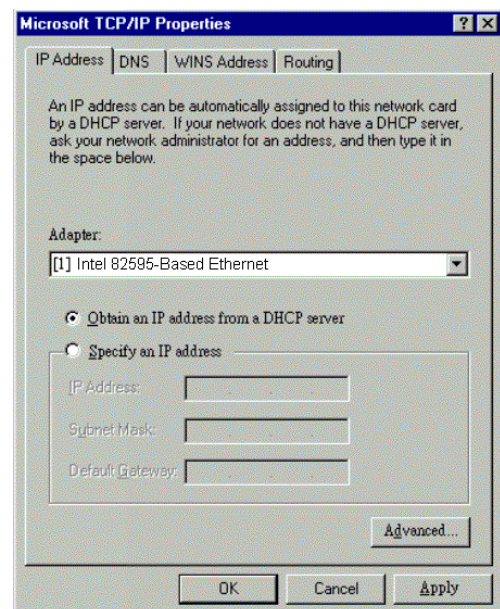
8. When prompted with the message below, click **Yes** to continue.
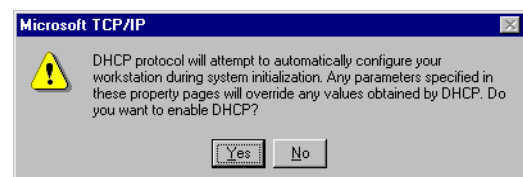
9.   When returning to **Network** window, click **Close**.
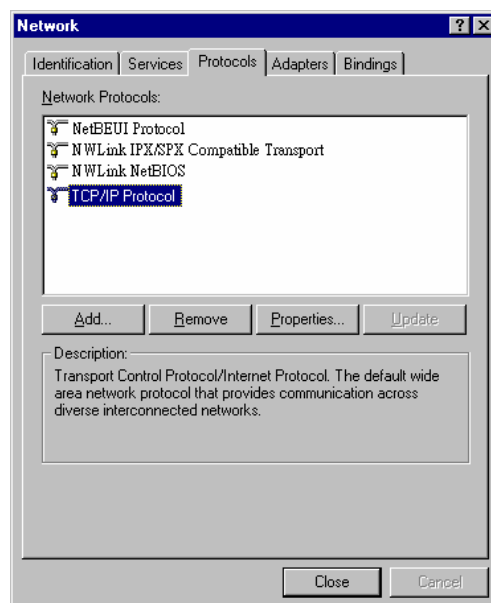
10. When prompted with **Network Settings Change** dialog box, click **Yes** to restart your computer.
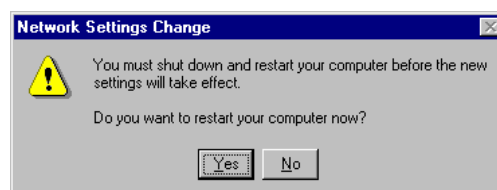
For Windows 2000

1.   From the **Start** menu, point to **Settings** and then click **Network and Dial-up Connections**.
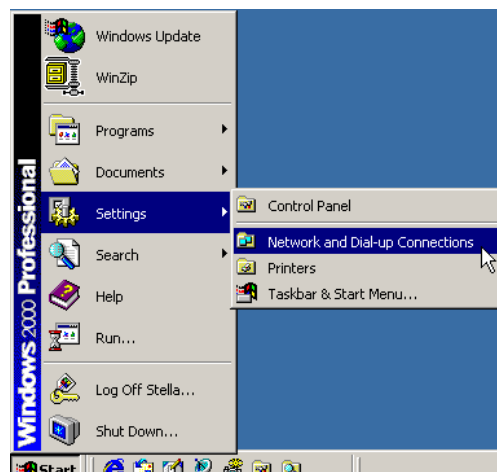
2.   Right-click the **Local Area Connection** icon and then click **Properties**.
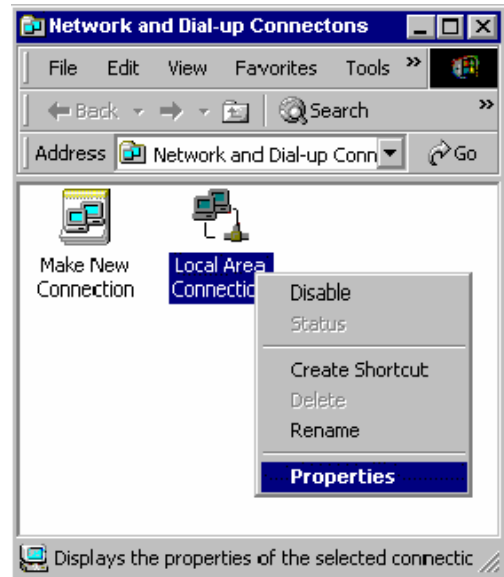
3.   On the **General** tab, check out the list of installed network components.
      Option 1: If there is **no** TCP/IP Protocol, click **Install**.

      Option 2: If you have TCP/IP Protocol, skip to Step 6.

4.   Highlight **Protocol** and then click **Add**.

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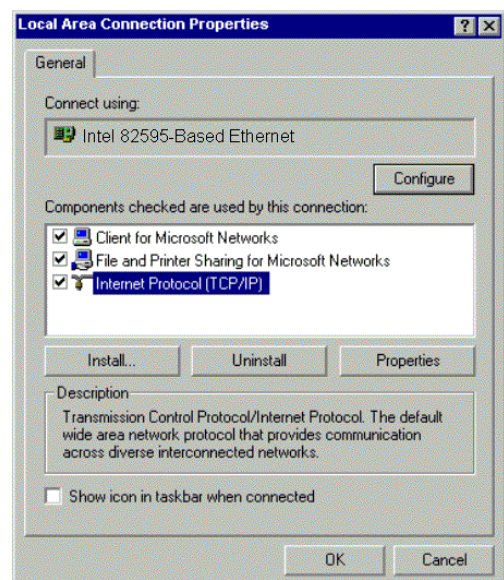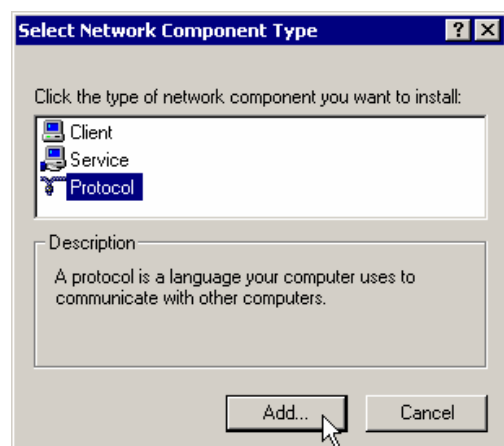
5. Click **Internet Protocol (TCP/IP)** and then click OK.
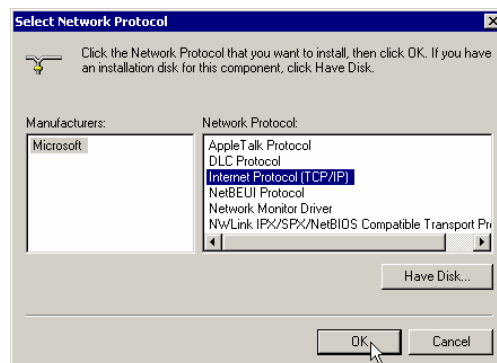
6. When returning to the **Local Area Connection Properties** window, highlight **Internet Protocol (TCP/IP)** and then click **Properties.**
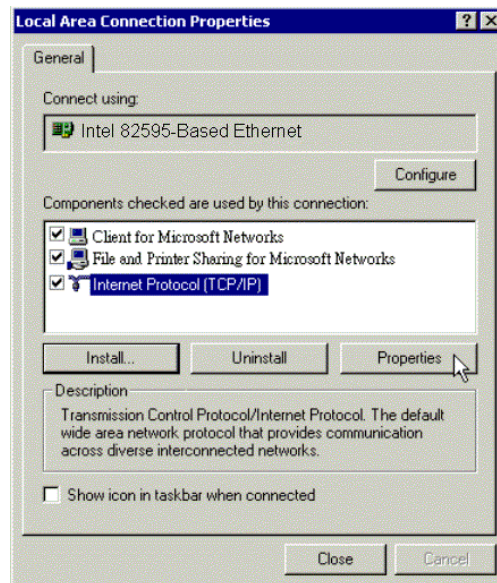
7. Under the **General** tab, enable **Obtain an IP address automatically**. Then click **OK**.
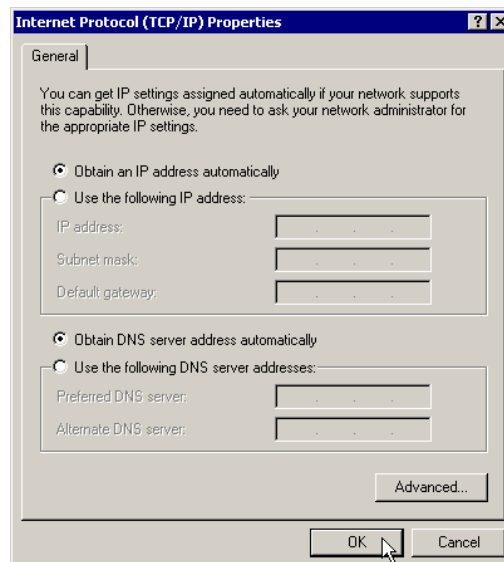
For Windows XP

1. Open the **Start** menu, point to **Control Panel** and click it.

2. Double click the **Network Connection.**

3. Right click **Local Area Connection** and then click **Properties**.
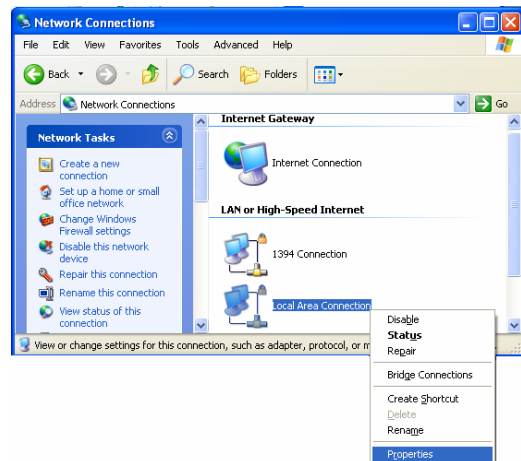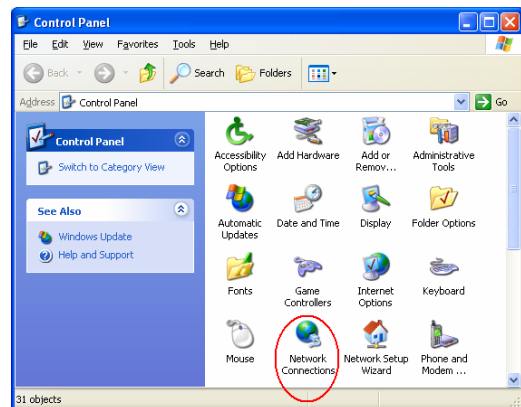
4. On the **General** tab, check out the list of installed network components.

   Option 1: If there is **no** TCP/IP Protocol, click **Install**.

   Option 2: If you have TCP/IP Protocol, skip to Step 7.

If there is **no TCP/IP** protocol installed on your PC, press **Install** to continue.
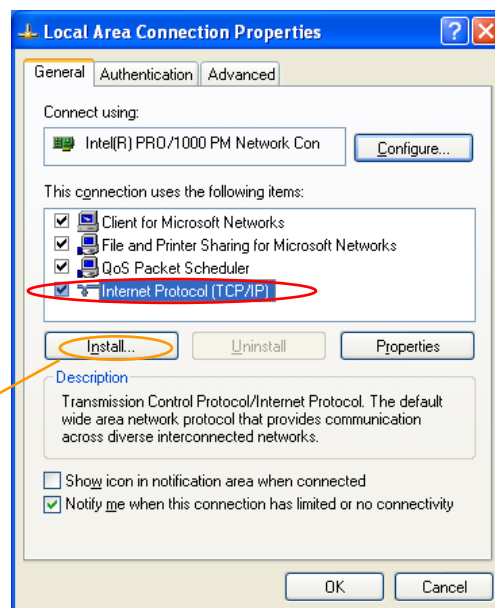
5. Highlight **Protocol** and then click **Add**.
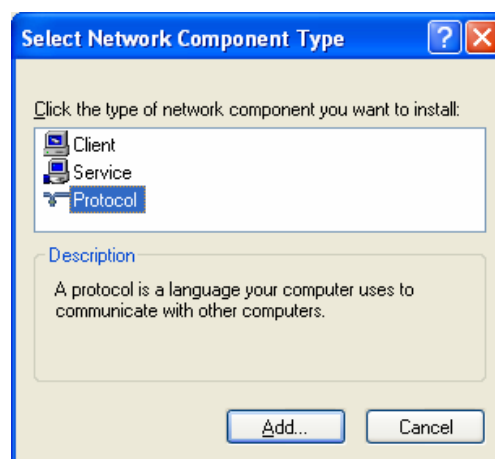
6. Click **Internet Protocol(TCP/IP)** and then click **OK**.
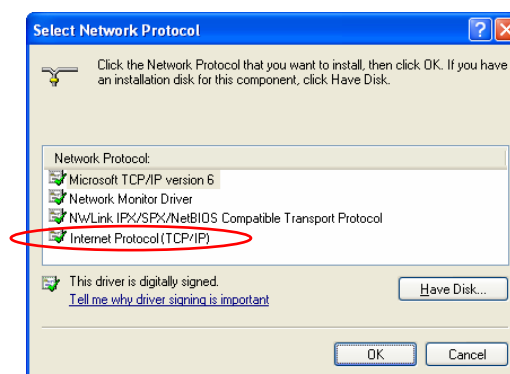
7. When it returns to the **General Tab** on the **Local Area Connection Properties** window, highlight **Internet Protocol (TCP/IP)** and then click **Properties**.
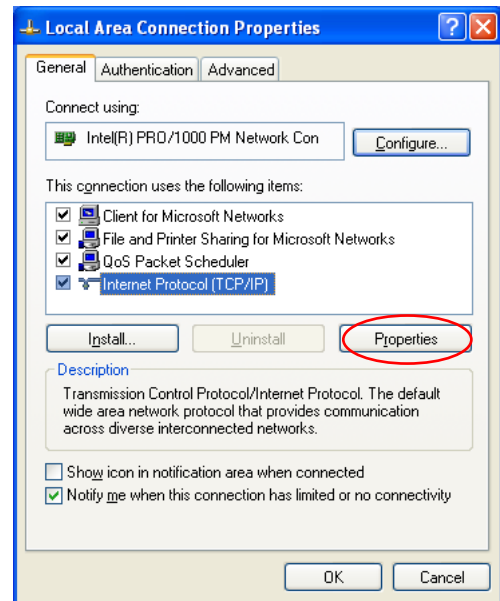
8. Under the **General** tab, select **Obtain an IP address automatically**, and **Obtain DNS server address automatically**. Then click **Ok**.
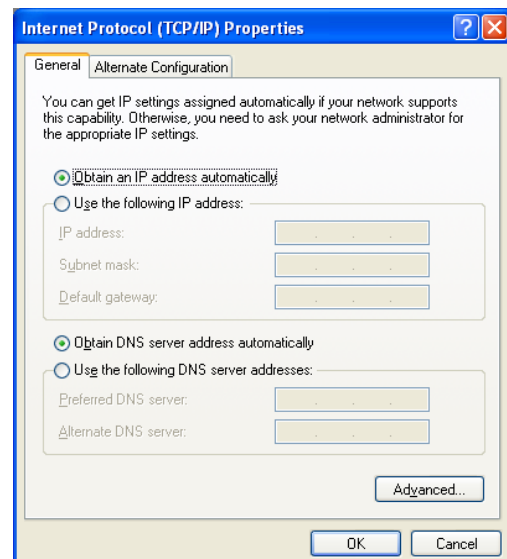
For Windows Vista

1. Open the **Start** menu, point to **Control Panel** and click it.
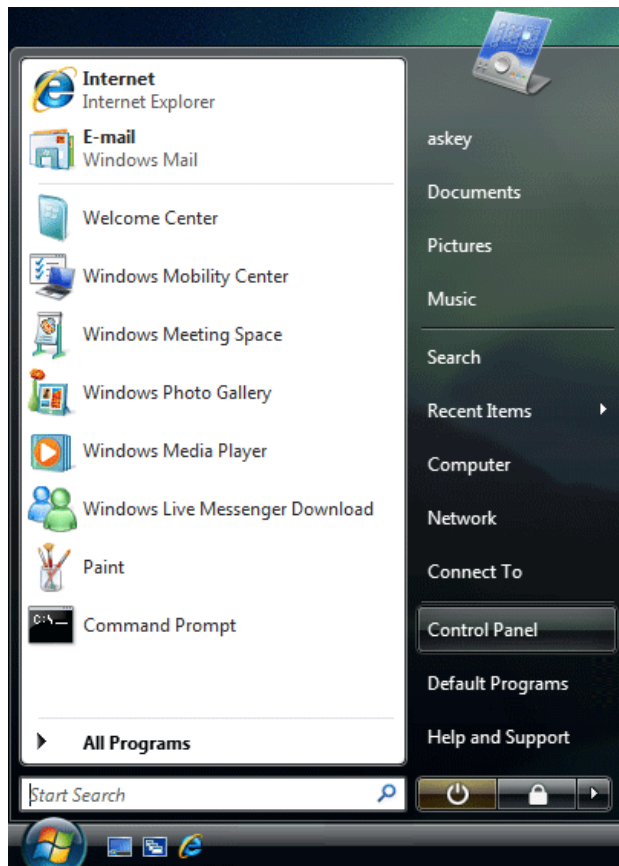
2. Click **Network and Internet.**
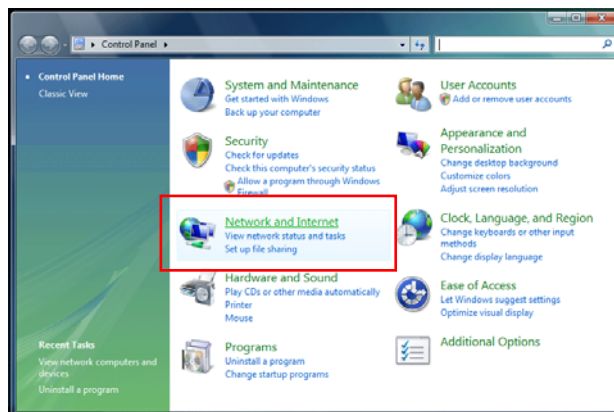
3. Select **Network and Sharing Center**.
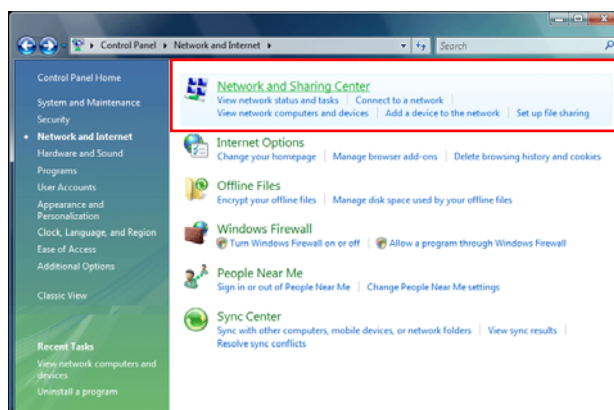
4. Click **Manage Network Connection** on the left side.
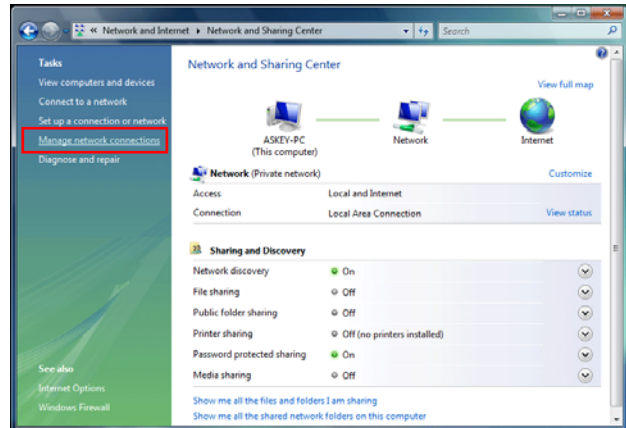
5. Right click **Local Area Connection** and select **Properties**.
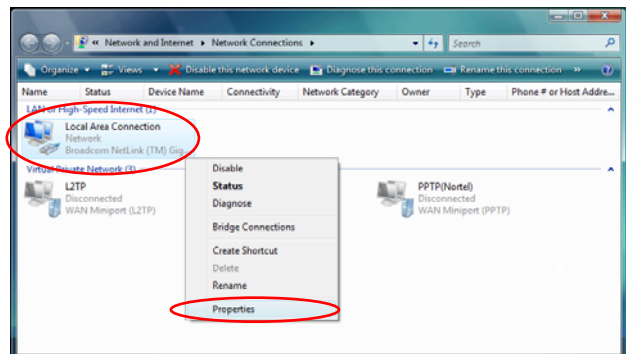
6. On the **Networking** tab, you will find Internet Protocol Version 6 and Version 4. Contact your ISP to confirm which one will be used. (We take TCP/IPv4 for example here.)

Select **Internet Protocol Version 4 (TCP/IPv4)** and press **Properties.**
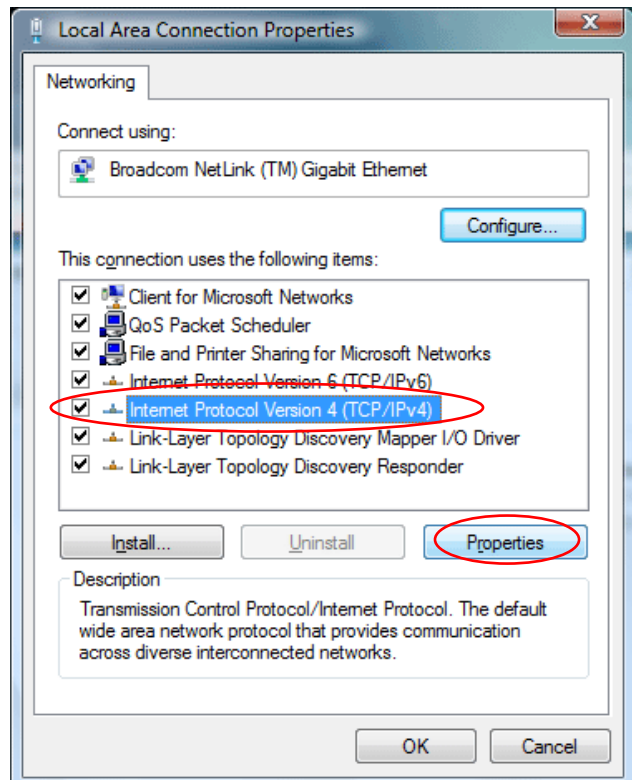
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7. Under the **General** tab, select **Obtain an IP address automatically**, and **Obtain DNS server address automatically**. Then click **Ok** to exit.
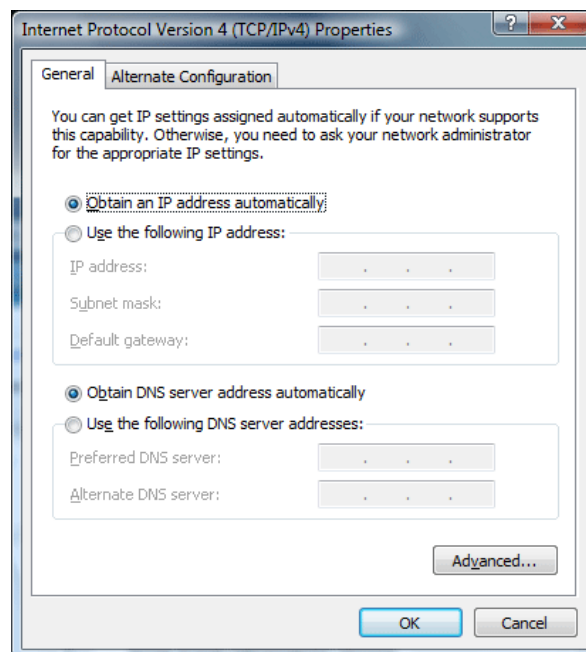
Renewing IP Address on Client PC

After the Wireless IAD gets on line, there is a chance that your PC does not renew its IP address and thus causes the PC not able to access the Internet. To solve this problem, please follow the procedures below to renew PC's IP address.

For Windows 98/ME

1. Select **Run** from the **Start** menu.
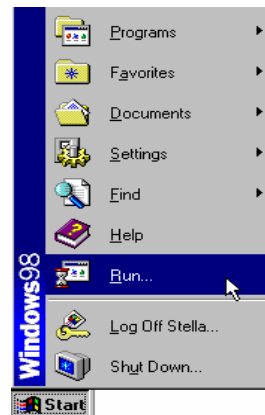
2. Type **winipcfg** in the text box and click **OK**.
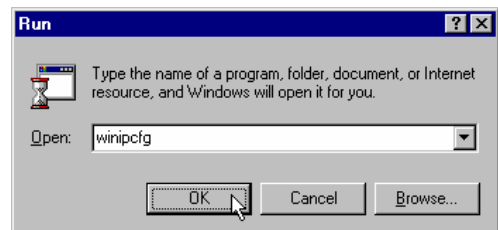
3. When the figure below appears, click **Release** to let go of the address and then click the **Renew** button to obtain a new IP address.
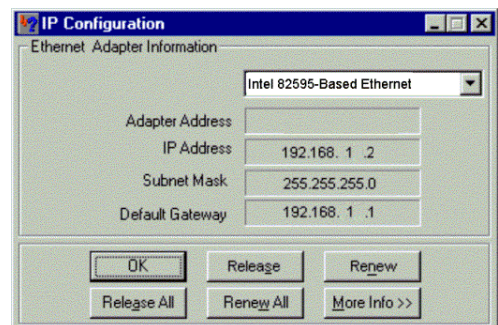
For Windows NT/2000/XP

1. Open the **Start** menu, and click **Run...** on this menu.
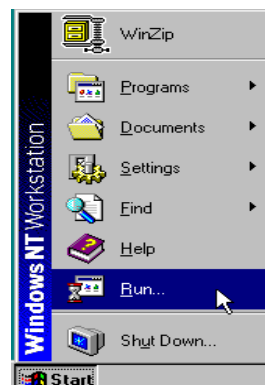
2. Type **cmd** in the text box that appears and click **OK**. Then you will see the command prompt window.

✧ Another way to open the command prompt:
From **Start** menu, point to **Programs**, select **Accessories,** and then click **Command Prompt**.

3. Type **ipconfig** at the command prompt window and press **Enter** to view the computer's IP information from DHCP server.

4. If the computer is holding a current IP address, type **ipconfig /release** to let go of the address, then type **ipconfig /renew** to obtain a new one.

Released IP Address
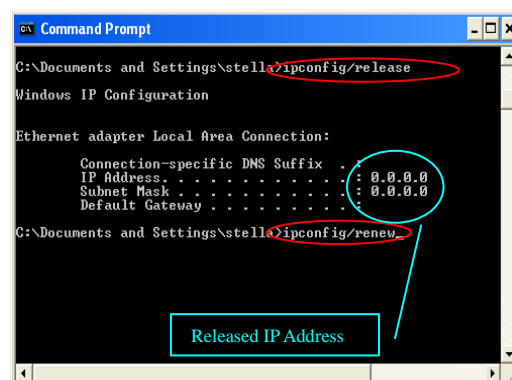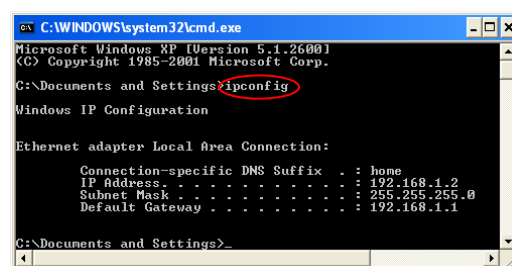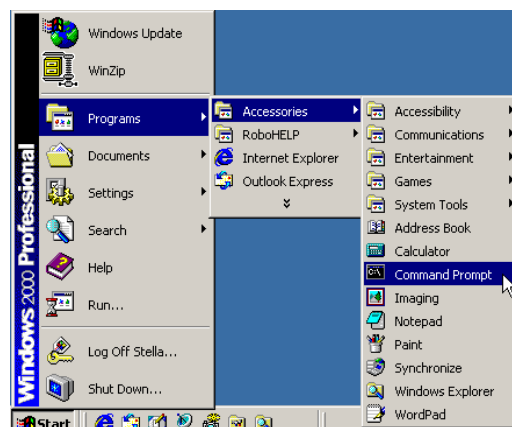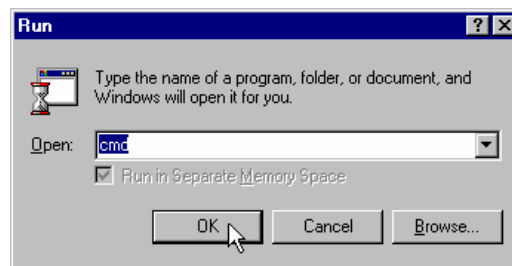
For Windows Vista

1. Open the **Start** menu, and type **cmd** in the text box then click **OK**.
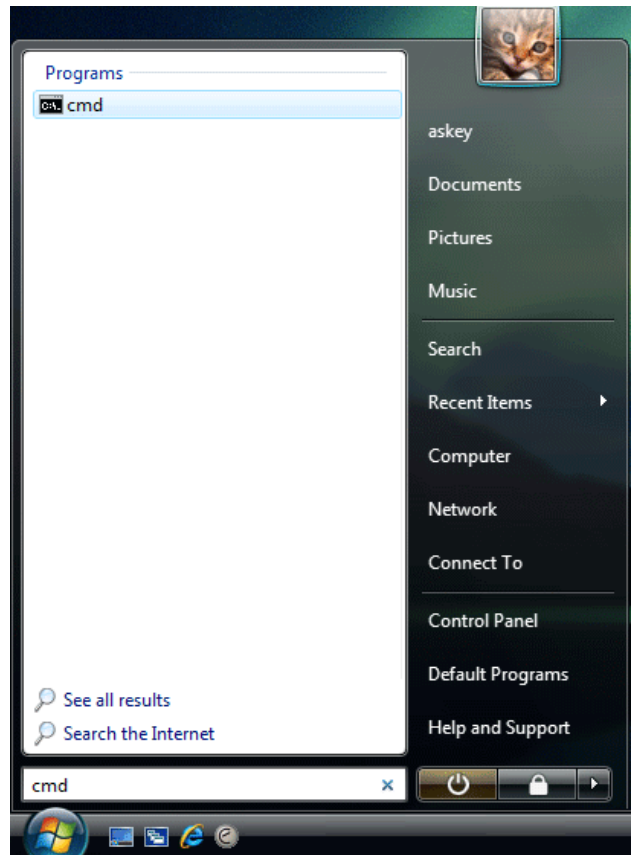
2. The command prompt window will appear.
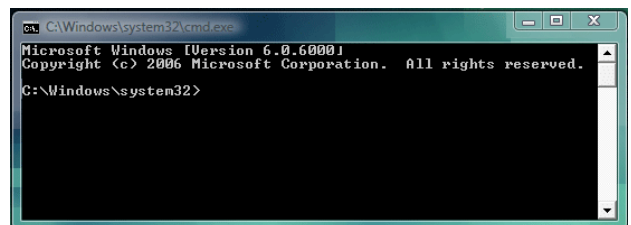
3. Type **ipconfig** at the command window and press **Enter** to view the computer's IP information from DHCP server.
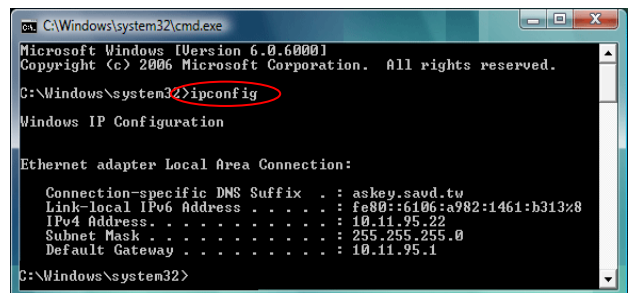
4. If the computer is holding a current IP address, type **ipconfig /release** to let go of the address, then type **ipconfig /renew** to obtain a new one.
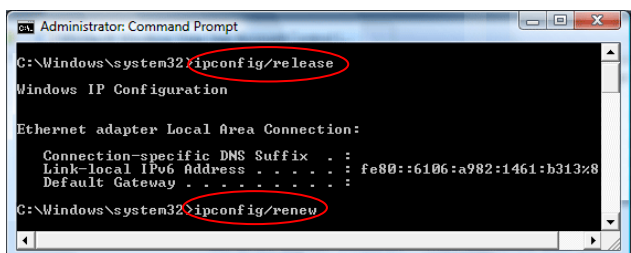
Note:

If you cannot release the IP address successfully and see the message "**The requested operation requires elevation**," please go to the **Start** menu and right click **Command Prompt**, then set **Run as administrator**.

Press **Continue** when a dialog asking for permission to continue prompts.

After then, repeat the above instruction to release and renew the IP address.
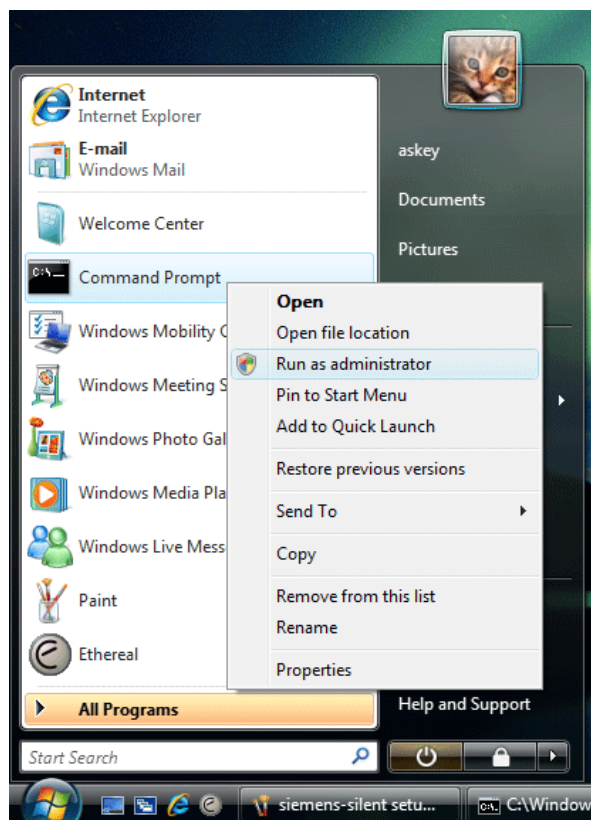
Chapter 3: Accessing the Internet

This chapter aims to help you access the Internet in a quick and convenient way. If you need more detailed information for web configuration, please refer to the next chapter for the advanced configuration.

Before configuring the Wireless IAD, you must decide whether to configure the Wireless IAD as a bridge or as a router. This chapter presents some deployment examples for your reference. Each mode includes its general configure procedures. For more detailed information about web configuration, refer to "Web Configuration".

□ PPP over ATM (PPPoA)

□ PPP over Ethernet (PPPoE)

□ Numbered IP over ATM (IPoA)

□ Numbered IP over ATM (IPoA) + NAT

□ Unnumbered IP over ATM (IPoA)

□ Unnumbered IP over ATM (IPoA) + NAT

□ Bridge Mode

□ MER (Bridge Mode + NAT)

To ensure your PC accessing the Internet successfully, please check the following first.

□ A network interface card is installed on your PC.

□ The Wireless IAD is solidly connected with your computer.

□ The TCP/IP protocol has been installed and the IP address setting is to obtain IP address automatically.

When all above preparations are ready, you can open the Browser and type "**192.168.1.1**" into the URL box and start to make the web configuration for different connection modes.

This chapter is going to introduce the function of each connection mode and the basic configuring steps that you have to do. If you do not follow the configuring steps for using these connection modes, you might get some connection problems and cannot connect to the Internet well.

PPP over ATM (PPPoA) Mode
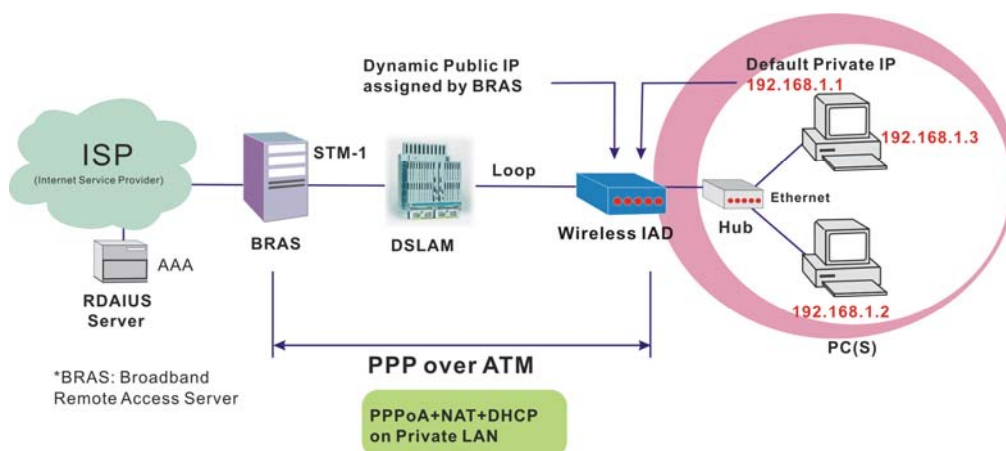
Description:

In this deployment environment, the PPPoA session is between the ADSL WAN interface and BRAS. The Wireless IAD gets a public IP address from BRAS when connecting to DSLAM. The multiple client PCs will get private IP address from the DHCP server enabled on private LAN. The enabled NAT mechanism will translate the IP information for clients to access the Internet.

Configuration:

1. Start your browser and type **192.168.1.1** as the address to access ADSL web-based manager.

2. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.:
    VPI – *0*
    VCI – *38*
    Click the **Next** button.

3. On the **Configure Internet Connection – Connection Type** page, select **PPP over ATM (PPPoA)** then click the **Next** button.

4. On the **WAN IP Settings** page, select **Obtain an IP address automatically** and check **Enable NAT** box. Click **Next**.

5. On the **PPP Username and Password** page, enter the PPP username and password that you got from your ISP. Select **Always on** or select **Dial on Demand** and key in the inactivity timeout value. (The default value is 20 minutes.) Then click **Next**.

6. On the **Configure LAN side Settings** page, key in the IP address and subnet mask for your LAN, e.g.:
    Primary IP address: *192.168.1.1*
    Subnet Mask: *255.255.255.0*
    Check **DHCP Server on** box. And key in the start and end IP address, e.g.:
    Start IP Address: *192.168.1.2*
    End IP Address: *192.168.1.254*
    Then enter the leased time (the default is 1 day), and click **Next**.

7. Check the network information on **This Internet Connection – Summary** page. Make sure the settings match the information provided by your ISP. Click **Finish**.

PPP over Ethernet (PPPoE) Mode
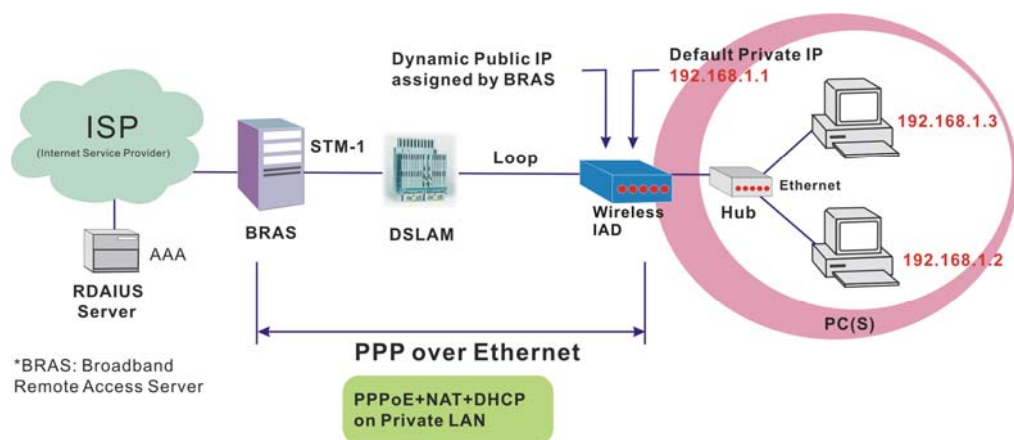
Description:

In this deployment environment, the PPPoE session is between the ADSL WAN interface and BRAS. The Wireless IAD gets a public IP address from BRAS when connecting to DSLAM. The multiple client PCs will get private IP address from the DHCP server enabled on private LAN. The enabled NAT mechanism will translate the IP information for clients to access the Internet.

Configuration:

1. Start your browser and type **192.168.1.1** in the URL box to access ADSL web-based manager.

2. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.:
    VPI – *0*
    VCI – *39*
    Click the **Next** button.

3. On the **Configure Internet Connection – Connection Type** page, select **PPP over Ethernet (PPPoE)** then click the **Next** button.

4. On the **WAN IP Settings** page, select **Obtain an IP address automatically** and check **Enable NAT** box. Click **Next**.

5. On the **PPP Username and Password** page, enter the PPP username and password that you got from your ISP. Select **Always on** or select **Dial on Demand** and key in the inactivity timeout value. (The default value is 20 minutes.) Then click **Next**.

6. On the **Configure LAN side Settings** page, key in the IP address and subnet mask for your LAN, e.g.:
    Primary IP address: *192.168.1.1*
    Subnet Mask: *255.255.255.0*
    Check **DHCP Server on** box. And key in the start and end IP address, e.g.:
    Start IP Address: *192.168.1.2*
    End IP Address: *192.168.1.254*
    Then enter the leased time (the default is 1 day), and click **Next**.

7. Check the network information on **This Internet Connection – Summary** page. Make sure the settings match the information provided by your ISP. Click **Finish**.

Numbered IP over ATM (IPoA)
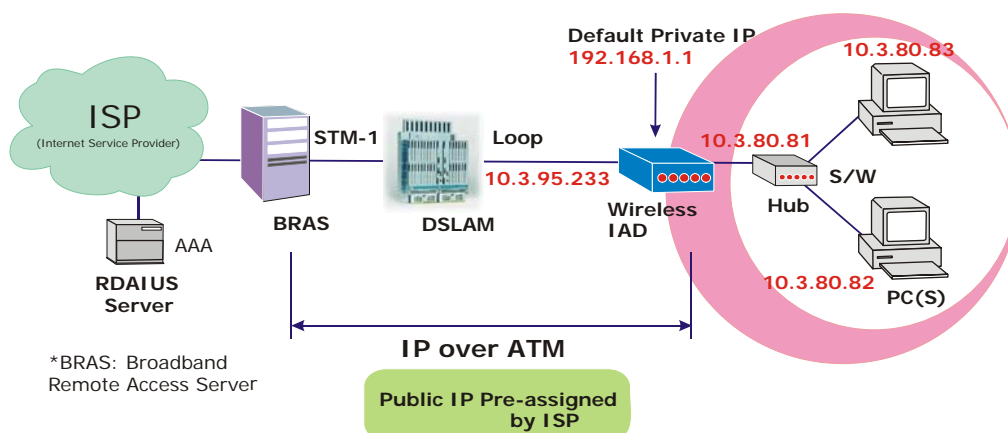
Description:

If you apply for multiple IP addresses from your ISP, you can assign these public IP addresses to the Wireless IAD and public server, e.g., Web or FTP server. Typically the first IP is network address, the second is used as the IAD IP address and the last one is for subnet broadcasting. Other remaining IP addresses can be assigned to PCs on the LAN.

The following example uses the LAN IP address ranging from *10.3.80.81* to *10.3.80.86* and the subnet mask for LAN is *255.255.255.248*. The WAN IP address is *10.3.95.233*, and the subnet mask for WAN is *255.255.255.248*.

Configuration:

1. Start your browser and type **192.168.1.1** in the URL box to access ADSL web-based manager.

2. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.:
   VPI – *0*
   VCI – *32*
   Click the **Next** button.

3. On the **Configure Internet Connection – Connection Type** page, select **IP over ATM (IPoA)** then click **Next**.

4. On the **WAN IP Settings** page, select **Use the following IP address** and **Use the following DNS Server Address**, then key in the information that your ISP offered, e.g.:
   WAN IP Address: *10.3.95.233*
   WAN Subnet Mask: *255.255.255.248*
   Primary DNS server: *168.95.1.1*
   Secondary DNS server: *168.95.192.1*
   Uncheck **Enable NAT** and click **Next**.

5. On the **Configure LAN side Settings** page, key in the information for your LAN, e.g.,
   Primary IP Address: *192.168.1.1*
   Subnet mask: *255.255.255.0*
   Start IP Address: *192.168.1.2*
   End IP Address: *192.168.1.254*

6. Check **Configure the second IP Address and Subnet Mask for LAN Interface** and enter the information needed.
Secondary IP Address: *10.3.80.81*
Subnet mask: *255.255.255.248*
Click **Next**.

7. Check the network information on the **Summary** page. Make sure the settings match the settings provided by your ISP. Click **Finish**.

8. Refer to the TCP/IP properties, specify an IP Address, and fill in other information needed, e.g.:
IP Address: *10.3.80.82*
Subnet Mask: *255.255.255.248*
Gateway: *10.3.80.81*
Preferred DNS server: *168.95.1.1*

9. Now the IAD is well-configured. You can access the Internet.

Numbered IP over ATM (IPoA)+NAT
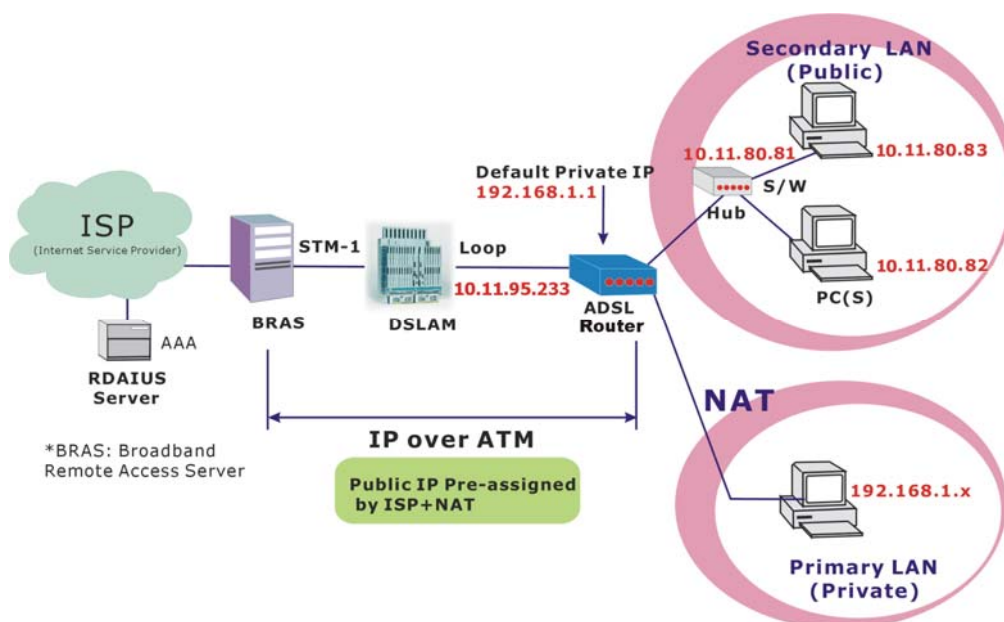
Description:

In this deployment environment, we make up a private IP network of 192.168.1.1. NAT function is enabled (on the IAD or use another NAT box connected to hub) to support multiple clients to access the IAD and some public servers (WWW, FTP).

If you apply for multiple IP addresses from your ISP, you can assign these public IP addresses to the Wireless IAD and public server, e.g., Web or FTP server. Typically the first IP is network address, the second is used as IAD IP address and the last one is subnet broadcasting. Other remaining IP addresses can be assigned to PCs on the LAN.

The following example uses the IP address ranging from *10.3.80.81* to *10.3.80.86* and the subnet mask is *255.255.255.248*.

Configuration:

1. Start your browser and type **192.168.1.1** in the URL box to access ADSL web-based manager.

2. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.:
    VPI – *0*
    VCI – *32*
    Click the **Next** button.

3. On the **Configure Internet Connection – Connection Type** page, select **IP over ATM (IPoA)** then click **Next**.

4. On the **WAN IP Settings** page, select **Use the following IP address** and **Use the following DNS Server Address**, then key in the information that your ISP offered, e.g.:
    WAN IP Address: *10.3.80.81*
    WAN Subnet Mask: *255.255.255.248*
    Primary DNS server: *168.95.1.1*
    Secondary DNS server: *168.95.192.1*

5. Check the **Enable NAT** box. And click **Next**.

6. On the **Configure LAN side Settings** page, key in the information for your LAN, e.g.,
   Primary IP Address: *192.168.1.1*
   Subnet mask: *255.255.255.0*
   Start IP Address: *192.168.1.2*
   End IP Address: *192.168.1.254*

7. Check the network information. Make sure the settings match the settings provided by ISP. Click **Finish**.

8. Now the IAD is well configured. You can access into Internet.

Unnumbered IP over ATM (IPoA)

Description:

If you apply for multiple IP addresses from your ISP, you can assign these public IP addresses to the Wireless IAD and public server, e.g., Web or FTP server. Typically the first IP is network address, the second is used as IAD IP address and the last one is subnet broadcasting. Other remaining IP addresses can be assigned to PCs on the LAN.

The following example uses the IP address ranging from 10.3.80.81 to 10.3.80.86 and the subnet mask is 255.255.255.248. In such circumstance, we do not assign any WAN IP.

Configuration:

1. Start your browser and type **192.168.1.1** in the URL box to access ADSL web-based manager.

2. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.:
    VPI – *0*
    VCI – *32*
    Click the **Next** button.

3. On the **Configure Internet Connection – Connection Type** page, select **IP over ATM (IPoA)** then click **Next**.

4. On the **WAN IP Settings** page, select **None** for WAN IP address settings. Then, select **Use the following DNS Server Address** and key in the information that your ISP offered, e.g.:
    Primary DNS server: *168.95.1.1*
    Secondary DNS server: *168.95.192.1*
    Uncheck **Enable NAT** and click **Next**.

5. On the **Configure LAN side Settings** page, key in the information for your LAN, e.g.,
    Primary IP Address: *192.168.1.1*
    Subnet mask: *255.255.255.0*
    Start IP Address: *192.168.1.2*
    End IP Address: *192.168.1.254*

6. Check **Configure the second IP Address and Subnet Mask for LAN Interface** and enter the information needed, e.g.,
    Secondary IP Address: *10.3.80.81*
    Subnet mask: *255.255.255.248*
    Check **DHCP Server Off** and click **Next**.

7. Check the network information on the **Summary** page. Make sure the settings match the settings provided by your ISP. Click **Finish**.

8. Refer to the TCP/IP properties, specify an IP Address, and fill in other information needed, e.g.:
IP Address: *10.3.80.82*
Subnet Mask: *255.255.255.248*
Gateway: *10.3.80.81*
Preferred DNS server: *168.95.1.1*

9. Now the IAD is well-configured. You can access the Internet.

Unnumbered IP over ATM (IPoA)+NAT
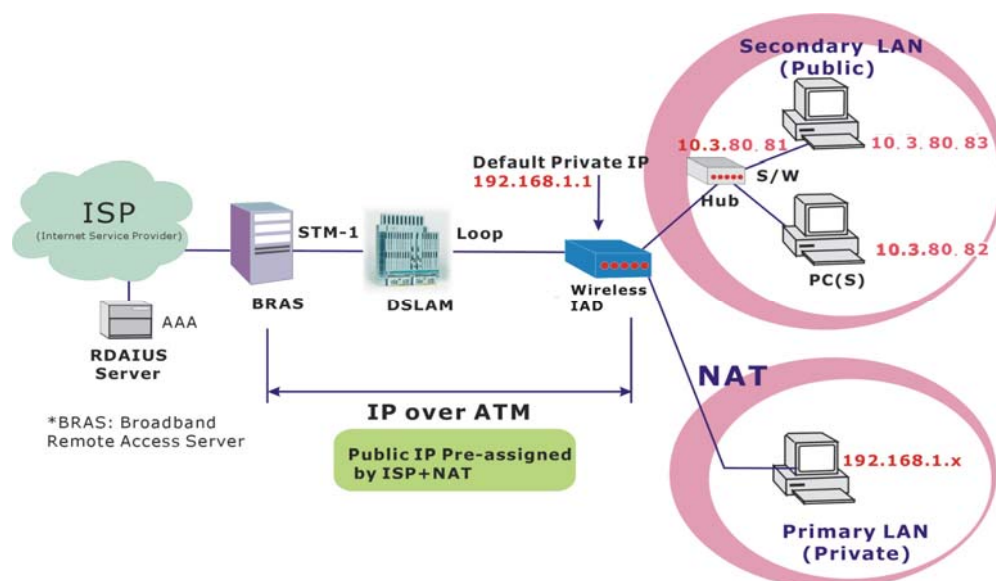
Description:

If you apply for multiple IP addresses from your ISP, you can assign these public IP addresses to the IAD and public server, e.g., Web or FTP server. Typically the first IP is network address, the second is used as the IAD IP address and the last one is subnet broadcasting. Other remaining IP addresses can be assigned to PCs on the LAN.

The following example uses the IP address ranging from 10.3.80.81 to 10.3.80.86 and the subnet mask is 255.255.255.248. In such circumstance, we enable NAT function but not assign any WAN IP.

Configuration:

1. Start your browser and type **192.168.1.1** in the URL box to access ADSL web-based manager.

2. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.:
    VPI – *0*
    VCI – *32*
    Click the **Next** button.

3. On the **Configure Internet Connection – Connection Type** page, select **IP over ATM (IPoA)** then click **Next**.

4. On the **WAN IP Settings** page, select **None** for WAN IP address settings. Then, select **Use the following DNS Server Address** and key in the information that your ISP offered, e.g.:
    Primary DNS server: *168.95.1.1*
    Secondary DNS server: *168.95.192.1*

5. Check the **Enable NAT** box. And click **Next**.

6. On the **Configure LAN side Settings** page, key in the information for your LAN, e.g.,
    Primary IP Address: *192.168.1.1*
    Subnet mask: *255.255.255.0*
    Start IP Address: *192.168.1.2*
    End IP Address: *192.168.1.254*

7.   Check **Configure the second IP Address and Subnet Mask for LAN
     Interface** and enter the information needed, e.g.,
     Secondary IP Address: *10.3.80.81*
     Subnet mask: *255.255.255.248*
     Click **Next**.

8.   Check the network information on the **Summary** page. Make sure the contents
     match the settings provided by your ISP. Click **Finish**.

9.   Now the IAD is well-configured. You can access the Internet.

Bridge Mode
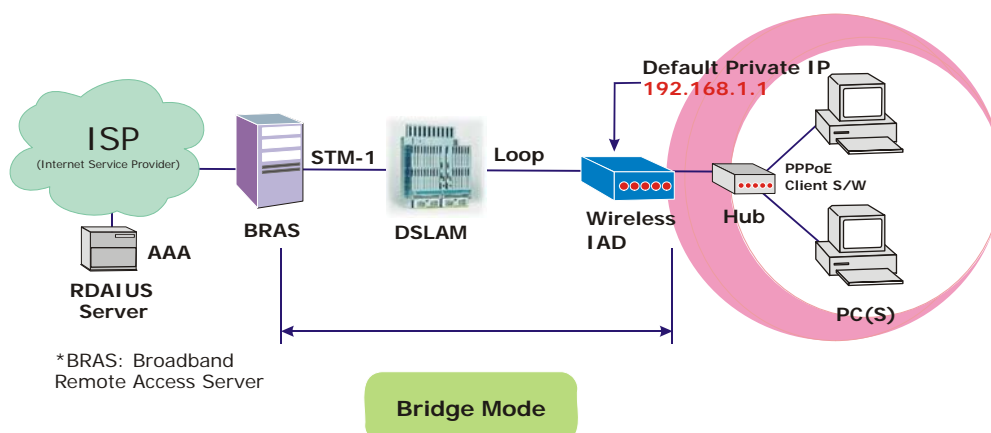
Description:

In this example, the Wireless IAD acts as a bridge which bridging the PC IP addresses from LAN to WAN. The PC IP address can be a static public address that is pre-assigned by the ISP or a dynamic public address that is assigned by the ISP DHCP server, or an IP address received from PPPoE software.

Therefore, it does not require a public IP address. It only has a default private IP address (192.168.1.1) for management purpose.

Configuration:

1. Choose a client PC and set the IP as 192.168.1.x (x is between 2 and 254) and the gateway as *192.168.1.1*.

2. Start your browser and type **192.168.1.1** in the URL box to access ADSL web-based manager.

3. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.,
    VPI – *0*
    VCI – *35*
    Then click the **Next** button.

4. On the **Configure Internet Connection – Connection Type** page, select **Bridging** then click the **Next** button.

5. On the **WAN IP Settings** page, select **None** for WAN IP address settings.

6. On the **Configure LAN side Settings** page, enter the IP address and subnet mask for your LAN, e.g.:
    Primary IP address: *192.168.1.1*
    Subnet Mask: *255.255.255.0*
    Choose **DHCP Server Off** and click **Next**.

7. Check the network information on the **Summary** page. Make sure the contents match the settings provided by your ISP. Click **Finish**.

8. Refer to the TCP/IP properties, specify an IP Address, and fill in other information needed, e.g.:
    IP Address: *10.3.86.81*
    Subnet Mask: *255.255.255.248*
    Gateway: *10.3.86.1*
    Preferred DNS server: *168.95.1.1*

9. Click **OK**. Now the IAD is well-configured. You can access to the Internet.
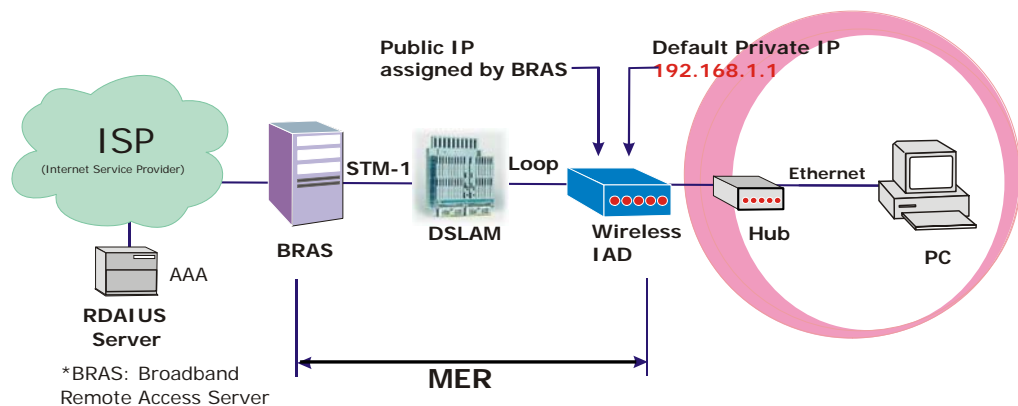
MER

Description:

In this deployment environment, we make up a private IP network of 192.168.1.1. NAT function is enabled to support multiple clients to access to Internet.

In this example, the Wireless IAD acts as a NAT device which translates a private IP address into a public address. Therefore multiple users can share with one public IP address to access the Internet through this IAD. The public address can be a static public address that is pre-assigned by ISP or a dynamic public address that is assigned by the ISP DHCP server.

Configuration:

1. Start your browser and type **192.168.1.1** in the URL box to access ADSL web-based manager.

2. Go to **Quick Start – Quick Setup**. Uncheck **Auto Scan Internet Connection (PVC)**. Key in the **VCI** and **VPI** value, e.g.,
    VPI – *0*
    VCI – *37*
    Then click the **Next** button.

3. On the **Configure Internet Connection – Connection Type** page, select **Bridging** and then click the **Next** button.

4. On the **WAN IP Settings** page, select **Obtain an IP address automatically**; then, select **Obtain DNS server address automatically**.

5. Check **Enable NAT**. Then click **Next**.

6. On the **Configure LAN side Settings** page, key in the IP address and subnet mask for your LAN. Check **DHCP Server On** box, and enter the start and end points, e.g.:
    Primary IP address: *192.168.1.1*
    Subnet Mask: *255.255.255.0*
    Start IP Address: *192.168.1.2*
    End IP Address: *192.168.1.254*
    Then key in the leased time that you want. And click **Next**

7. Check the network information on the **Summary** page. Make sure the contents match the settings provided by your ISP. Click **Finish**.

8. Now the IAD is well-configured. You can access the Internet.

Chapter 4: Web Configuration

Some users might want to set specific configuration for the router such as firewall, data transmission rate…, and so on. This chapter will provide you advanced information of the web pages for the router for your reference.

Using Web-Based Manager

After properly configuring you host PC, please proceed as follows:

1. Start your web browser and type **192.168.1.1,** the private IP address of the wireless IAD, in the URL field.

2. After connecting to the device, you will be prompted to enter username and password. By default, both the username and the password are **admin**. An example under Windows XP is shown as the left figure.

If you login successfully, the main page will appear. From now on, the Wireless IAD acts as a web server sending HTML pages/forms on your request. You can fill in these pages/forms and apply them to the Wireless IAD.

Outline of Web Manager

To configure the web page, please use **admin** as the username and the password. The main screen will be shown as below.
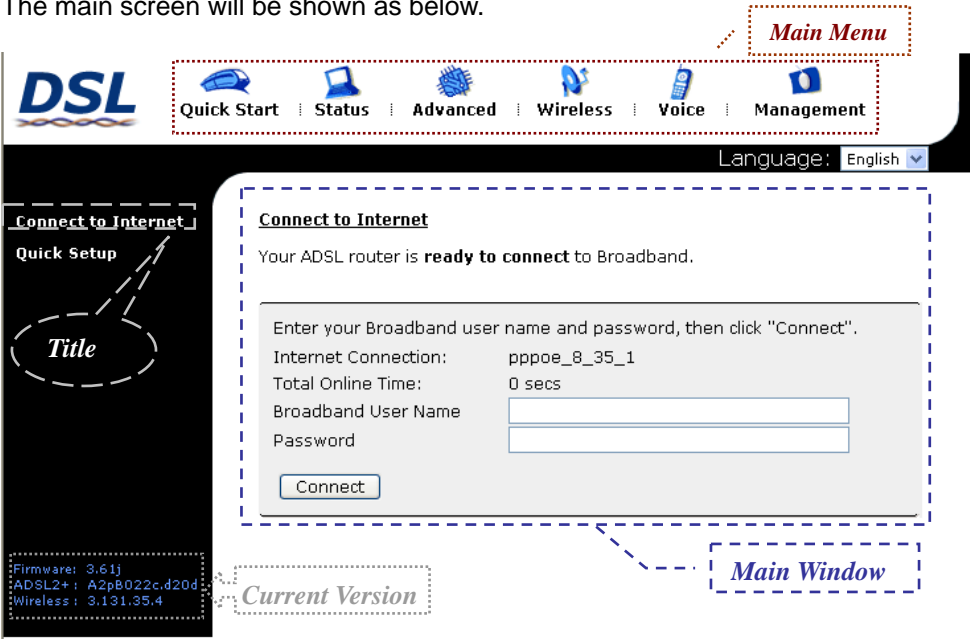
Title: The title of this management interface.

Main Menu: Including Quick Start, Status, Advanced, Wireless, Voice, and Management.

Main Window: The current workspace of the web manager, containing configuration or status information.

Current Version: Here provides the version info for firmware, ADSL2+, and Wireless.

To Have the New Settings Take Effect

After selecting or adjusting the settings according to your needs, your customizations will be saved to the flash memory before you restart the IAD. And only after rebooting the IAD, your customizations may take effect.

Language

On the top to the right of this web page, it provides a drop-down menu for you to choose a proper language. (However, we only offer English at present.)

Quick Start

The pages under the Quick Start menu provide user a quick way to set up the IAD. If you do not know much about the router, you can use the Quick Start pages to adjust basic settings to activate your IAD.

Connect to Internet

This is a quick way to connect to the Internet by using PPPoE interface, please click **Connect to Internet** to open the web page.

Enter the user name and password (that you get from the ISP) for your Wireless IAD and click **Connect**.

The system will connect automatically, and then you can access the Internet.

Connect to Internet

Your ADSL router is **ready to connect** to Broadband.

Enter your Broadband user name and password, then click "Connect".

Internet Connection: pppoe_8_35_1
Total Online Time: 0 secs
Broadband User Name
Password

Connect

Quick Setup

The quick setup wizard will guide you to configure this IAD through some specific steps. Yet different connection interface will lead to different setting pages. Refer to the following pages for detailed information.

Auto Scan Internet Connection (PVC):
If there is no any PVC configured in your IAD, you can check this item. Otherwise, please uncheck this box.

VPI (Virtual Path Identifier):
Identifies the virtual path between endpoints in an ATM network. The valid range is from 0 to 255. To enter the setting, please refer to the setting that the ISP offered.

VCI (Virtual Channel Identifier):
Identifies the virtual channel endpoints in an ATM network. The valid range is from 32 to 65535 (1 to 31 is reserved for well-known protocols). To enter the setting, please refer to the setting that the ISP gave you.

After entering the VPI/VCI value, please click **Next** for the following step.

Quick Setup

This Quick Setup will guide you through the steps necessary to configure your ADSL router.

Select the check box below to scan the Internet connection automatically. It is recommended that there is no any PVC configured in your ADSL router before performing auto-scanning connection.

☐ Auto Scan Internet Connection (PVC)

Configure Internet Connection -- ATM PVC

Please enter VPI and VCI numbers for the Internet connection which is provided by your ISP.

VPI: 8   (0-255)
VCI: 35   (32-65535)

All original settings will be replaced by new settings after you finish these steps.

Next >

Connection Type

The system provides several protocols for you to choose. Your ISP will offer you the most suitable settings of the protocol. Before you set this page, please refer to the protocol that your ISP offered.

After clicking on the **Next** button from the VPI/VCI web page, the following screen will appear. Please choose the connection type and encapsulation mode that you want to use and click **Next** for next page.

For instance, PPP over Ethernet (PPPoE) is selected in this demonstrative figure.

PPP over ATM/ PPP over Ethernet

If the connection type you choose is **PPP over ATM** or **PPP over Ethernet**, please refer to the following information.

According to the ISP's configuration on the server, you can choose PPPoE or PPPoA modes.

Choose **PPPoA** or **PPPoE** and click **Next**.

On this screen, you have to make the settings for WAN IP. To get the IP address automatically, click the **Obtain an IP address automatically** radio button. Or click **Use the following IP address** button and enter the IP address for WAN interface.

Check **Enable NAT** if you need.

MTU:
It means the maximum size of the packet that transmitted in the network. The packet of the data greater than the value set here will be divided into several packets for transmitting.

Type the value into the field of **MTU**. The default setting for PPPoE is 1492; while for PPPoA is 1500.

Click **Next** for the next procedure.

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PPP Username & **PPP Password:**
Key in the username and password that you received from your ISP. (e.g., *askey4/askey4*)

Always On:
Select this item to make the connection active all the time.

Dial on Demand:
Select this item to make a connection automatically while in demand. Enter the timeout to cut off the network connection if there is no activity for this IAD.

Manually Connect:
Select this item to make a connection by pressing the **Connect** hyperlink on the **Advanced Setup – Internet – Connections** web page.

Please fill in the data requested on the **Configure LAN side Settings** page.

Primary IP Address & **Subnet Mask:**
Key in the information that offered by your ISP for the LAN connection.

Configure the secondary IP Address and Subnet Mask:
Check this box to set up a secondary IP Address to connect to your IAD if they are not included in the range that DHCP server accepts. See the next figure for the secondary IP address and subnet mask.

Secondary IP Address & **Subnet Mask:**
Key in the second IP address and the subnet mask received from the ISP for your LAN connection.

MTU: (refer to the WAN section)
The default **MTU** value for **LAN side Settings** is 1500. You may modify it if necessary.

DHCP Server On:
Check this item if DHCP service is needed on the LAN side. The IAD will assign IP address and gateway address for each of your PCs.

Start IP Address & **End IP Address:**
Enter the information needed.

Lease Time:
Key in the duration for the time. The default is 1day.

DHCP Server Off:
Check this item if DHCP service is not needed on the LAN.

On this web page, the primary IP address and subnet mask will be shown on it. You can modify them if needed.

Key in all the necessary settings and click **Next** for the coming page.

You can check the contents on the **Summary** page.

If you find anything incorrect, click **Back** to modify the settings.

If everything is OK, click **Finish** to accept these settings.

This Internet Connection -- Summary

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

Internet (WAN) Configuration:

VPI / VCI	0 / 39
Connection Type	PPPoE LLC/SNAP, Always On, QoS On
NAT	Enabled
WAN IP Address	Automatically Assigned
Default Gateway	Automatically Assigned
DNS Server	Automatically Assigned

LAN Configuration:

Primary LAN IP	192.168.1.1 / 255.255.255.0
Secondary LAN IP	0.0.0.0 / 255.255.255.255
DHCP Server	On 192.168.1.2 ~ 192.168.1.254
DHCP Lease Time	1 days 0 hours 0 minutes

Click "Finish" to accept these settings, and reboot the system.
Click "Back" to make any modifications.

`< Back`   `Finish`

Now, the system will reboot to activate the new settings that you have set in this section.

Please wait for 2 minutes before restarting the IAD.

Reboot ADSL Router

The ADSL router has been configured and is rebooting.

Close the ADSL router Configuration window and wait for 2 minutes before reopening your web browser. If necessary, reconfigure your PC's IP address to match your new configuration.

IP over ATM

If the type you have to choose is IP over ATM, please refer to the following information.

IPoA is an alternative of LAN emulation. It allows TCP/IP network to access ATM network and uses ATM quality of service's features.

Choose **IPoA** and click **Next.**

Configure Internet Connection - Connection Type

Select the protocol and encapsulation type with the ATM PVC that your ISP has instructed you to use.

Protocol:
- ○ PPP over ATM (PPPoA)
- ○ PPP over Ethernet (PPPoE)
- ⦿ IP over ATM (IPoA)
- ○ Bridging

Encapsulation Type: LLC/SNAP ⌄

[< Back] [Next >]

None:
If it is not necessary to set the WAN IP address, please click this button.

Obtain an IP address automatically:
Click this button to allow the system to get an IP address automatically.

WAN IP Address & **WAN Subnet Mask:**
If you choose **Use the following IP address**, you have to enter the IP address and subnet mask information that you received from the ISP for the WAN interface.

Obtain DNS server address automatically:
Only when you select **Obtain an IP address automatically** that this option is available. You may click this button to allow the system to get DNS server address automatically.

Use the following DNS server addresses:
Select this item to set the DNS server addresses manually, type the information provided by your ISP in the following **Primary DNS** and **Secondary DNS server** entries, e.g. *168.95.1.1* and *168.95.192.1*.

Click **Enable NAT** if you want.

Configure Internet Connection - WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.

- ○ None
- ⦿ Obtain an IP address automatically
- ○ Use the following IP address:
  - WAN IP Address: [   ]
  - WAN Subnet Mask: [   ]
- ○ Obtain DNS server address automatically
- ⦿ Use the following DNS server addresses:
  - Primary DNS server: [   ]
  - Secondary DNS server: [   ]

☑ Enable NAT

[< Back] [Next >]

After setting up the WAN IP and DNS server information, click **Next** to open the following page.

On the **Configure LAN side Settings** page; you have to fill in the data requested.

Primary IP Address & **Subnet Mask:** Key in the information offered by your ISP for the LAN connection, e.g., *192.168.1.1* for primary IP address and *255.255.255.0* for subnet mask.

MTU: (Please refer to the PPPoA/ PPPoE section.) The default **MTU** setting is 1500. You may modify it if necessary.

Configure the secondary IP Address and Subnet Mask: Check this box to set up a secondary IP address to connect to your IAD if they are not included in the range that DHCP server accepts. You have to key in the information received from your ISP for the LAN connection, e.g., the secondary IP is *10.3.80.81* and the mask is *255.255.255.248* in the example illustrated in the figure.

DHCP Server On: Check this item if DHCP service is needed on the LAN side. The IAD will assign IP address and gateway address for each of your PCs.

Start IP Address & **End IP Address:** Enter the information needed.

Lease Time: Key in the duration for the time. The default is *1 day*.

DHCP Server Off: Check this item if DHCP service is not needed on the LAN.

You can check the settings on the **Summary** page.

If you find anything incorrect, click **Back** to modify the settings.

If everything is OK, click **Finish** to accept these settings.

And the following page will appear.

Now, the system will reboot to activate the new settings that you have set in this section.

Please wait for 2 minutes before restarting the IAD.

Configure LAN side Settings

Enter the ADSL router IP address and subnet mask for LAN interface and then enable DHCP server on LAN interface to provide IP address settings for your computers.

Primary IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0

☐ Configure secondary IP address and subnet mask

MTU: 1500 (default: 1500)

◉ DHCP Server On   Start IP: 192.168.1.2
                    End IP: 192.168.1.254
                    Lease Time: 1 days 0 hours 0 minutes

○ DHCP Server Off

[< Back] [Next >]

The primary IP address and subnet mask will be shown on it. You can modify them if needed.

Configure LAN side Settings

Enter the ADSL router IP address and subnet mask for LAN interface and then enable DHCP server on LAN interface to provide IP address settings for your computers.

Primary IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0

☑ Configure secondary IP address and subnet mask

Secondary IP Address: 10.3.80.81
Subnet Mask: 255.255.255.248

MTU: 1500 (default: 1500)

◉ DHCP Server On   Start IP: 192.168.1.2
                    End IP: 192.168.1.254
                    Lease Time: 1 days 0 hours 0 minutes

○ DHCP Server Off

[< Back] [Next >]

Key in all the necessary settings. Click **Next** for the coming page.

This Internet Connection -- Summary

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

Internet (WAN) Configuration:

VPI / VCI	0 / 32
Connection Type	IPoA LLC/SNAP, QoS On
NAT	Enabled
WAN IP Address	Automatically Assigned
Default Gateway	Automatically Assigned
DNS Server	Automatically Assigned

LAN Configuration:

Primary LAN IP	192.168.1.1 / 255.255.255.0
Secondary LAN IP	10.3.80.81 / 255.255.255.248
DHCP Server	On 192.168.1.2 ~ 192.168.1.254
DHCP Lease Time	1 days 0 hours 0 minutes

Click "Finish" to accept these settings, and reboot the system.
Click "Back" to make any modifications.

[< Back] [Finish]

Reboot ADSL Router

The ADSL router has been configured and is rebooting.

Close the ADSL router Configuration window and wait for 2 minutes before reopening your web browser. If necessary, reconfigure your PC's IP address to match your new configuration.

Bridging

If the mode you choose is **Bridging (**or **MER)**, please refer to the following information.

The bridging mode can configure your IAD to send and receive packets between LAN and WAN interfaces. The WAN interface is ATM PVC; the LAN interface can be Ethernet, USB, or Wireless.

Choose **Bridging** and click **Next**.

None:
If it is not necessary to set the WAN IP address, please click this button. In our example, we select this item.

Obtain an IP address automatically: Click this button to allow the system to get an IP address automatically.

WAN IP Address, WAN Subnet Mask, and **Default Gateway:** When choosing **Use the following IP address**, you have to key in the IP address, the subnet mask, and the default gateway provided by your ISP for the WAN interface.

While you choose to obtain the IP address automatically or use specific IP address, you have to decide whether to select **Obtain DNS server address automatically** or **Use the following DNS server address** and enter the information provided by you ISP.

You may check **Enable NAT** if necessary.

Press **Next** to continue.

Primary IP Address & **Subnet Mask:** Key in the IP address and the subnet mask that provided by your ISP for LAN interface. The primary IP address and subnet mask for our example are *192.168.1.1* and *255.255.255.0*, respectively.

MTU: Please refer to PPPoA/ PPPoE.

DHCP Server On:
Check this item if DHCP service is needed on the LAN. The IAD will assign IP address and gateway address for each of your PCs. If you enable this function, you have to enter the information for **Start IP, End IP** and **Lease Time.** The default value for lease time is one day.

The default setting is none, shown as the figure above. While selecting **Obtain an IP address automatically** or **Use the following IP address**, the DNS setting appears, shown as the figure below.

DHCP Server Off:
Check this item if DHCP service is not needed on the LAN. We choose this item in our example.

You can check the settings on the **Summary** page now.

If you find anything incorrect, click **Back** to modify the settings.

If everything is OK, click **Finish** to accept these settings.

And the following page will appear.

Now, the system will reboot to activate the new settings that you have done in this section.

Please wait for 2 minutes before restarting the IAD.

This Internet Connection -- Summary

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

Internet (WAN) Configuration:

VPI / VCI	0 / 35
Connection Type	Bridge LLC/SNAP, QoS On

LAN Configuration:

Primary LAN IP	192.168.1.1 / 255.255.255.0
Secondary LAN IP	0.0.0.0 / 255.255.255.255
DHCP Server	Off

Click "Finish" to accept these settings, and reboot the system.
Click "Back" to make any modifications.

< Back   Finish

Reboot ADSL Router

The ADSL router has been configured and is rebooting.

Close the ADSL router Configuration window and wait for 2 minutes before reopening your web browser. If necessary, reconfigure your PC's IP address to match your new configuration.

Status

Overview

This page displays the current status for the ADSL connection, including the System Up Time, ADSL speed, LAN IP address, default gateway, DNS server, firmware version, boot loader version, ADSL driver version, wireless BSSID, Ethernet MAC address, and so on. The system status will be different according to the settings that you configured in the web pages.

Device Information

This information reflects the current status of your ADSL router.

System Up Time	00:00:19:22
ADSL Speed (DS/US)	7616/832 Kbps
LAN IP Address	192.168.1.1
Default Gateway	10.11.95.233
Primary DNS server	168.95.1.1
Secondary DNS server	168.95.192.1

Firmware Version	3.61j
Boot Loader Version	1.0.37-6.8.4
ADSL Driver Version	A2pB022c.d20d
Wireless Driver Version	3.131.35.4.cpe1.0 (Wireless is enabled)
Wireless BSSID	00:16:E3:2A:1B:87
Ethernet MAC Address	00:90:96:FF:BB:AA
USB MAC Address	00:90:96:FF:BB:AB
Memory Size	8MB Flash / 32MB SDRAM

ADSL Line

This page shows all information for ADSL.

For knowing the quality of the ADSL connection, please click **ADSL BER Test** button to have advanced information.

Click More Information hyperlink to show more detailed information about ADSL Line Status.

ADSL Line Status

Current ADSL line status is displayed as the below.

Line Mode	G.DMT	Line State	Show Time
Latency Type	Interleave	Line Up Time	00:00:20:31
Line Coding	Trellis On	Line Up Count	1

Statistics	Downstream	Upstream
Line Rate	7616 Kbps	832 Kbps
Attainable Line Rate	11360 Kbps	1220 Kbps
Noise Margin	21.6 dB	14.0 dB
Line Attenuation	2.0 dB	2.0 dB
Output Power	11.9 dBm	7.8 dBm

More Information »

ADSL BER Test

ADSL BER Test

This test determines the quality of the ADSL connection. It is done by transferring idle cells containing a known pattern and comparing the received data with this known pattern to check for errors.

http://192.168.1.1/berstart.tst?berState=0 - Microsoft...

ADSL BER Test - Start

The ADSL Bit Error Rate (BER) test determines the quality of the ADSL connection. The test is done by transferring idle cells containing a known pattern and comparing the received data with this known pattern to check for any errors.

Select the test duration below and click "Start".

Tested Time (sec): 20

Start   Close

After selecting the test duration time and click **Start**, the following dialog appears to tell you the test is running. You can stop the test by clicking **Stop** or close this dialog window by pressing **Close**.

http://192.168.1.1/berrun.tst?berTime=20 - Microsof...

ADSL BER Test - Running

The ADSL BER test is in progress. The connection speed is 7616 Kbps. The test will run for 20 seconds.

Click "Stop" to terminate the test.

Stop   Close
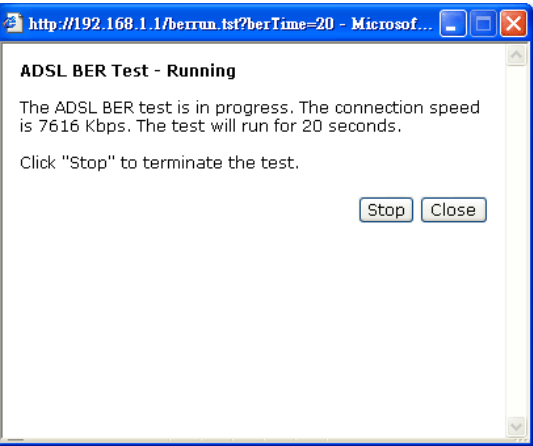
When the test is over, the result will be shown on the following dialog window for your reference. Click **Close** to close this window.

http://192.168.1.1/berstop.tst - Microsoft Internet Ex...

ADSL BER Test - Result

The ADSL BER test completed successfully.

Tested Time	20
Total Transferred Bits	137950464
Total Error Bits	0
Error Ratio	0.00e+00

Close
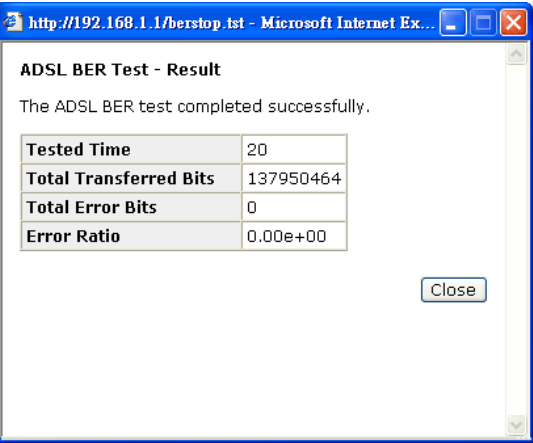
Internet Connection

This page displays the connection information for your wireless IAD, such as the PVC name, VPI/VCI value, service category, protocol, invoking NAT and QoS or not, IP address, linking status, and so on.

Internet Connection

Current Internet connections are listed below.

PVC Name	VPI/VCI	Category	Protocol	NAT	QoS	WAN IP Address	Status / Online Time
pppoe_0_39_1	0/39	UBR	PPPoE LLC/SNAP	On	On	10.3.65.10	Up 00:00:16:52

Traffic Statistics

This table shows the records of data going through the LAN and WAN interfaces. For each interface, cumulative totals are displayed for **Received** and **Transmitted**.

You may click **Reset** to reset the amount.

Traffic Statistics

The statistics of user data going through your ADSL router are listed below.

Interface	Received				Transmitted			
	Bytes	Packets	Errors	Drops	Bytes	Packets	Errors	Drops
Ethernet	165648	965	0	0	657446	1018	0	0
USB	0	0	0	0	0	0	0	0
Wireless	0	0	0	0	369	3	0	0
WAN	631200	919	0	0	174528	873	0	0

[Reset]

DHCP Table

This table shows all DHCP clients who get their IP addresses from your Wireless IAD. For each DHCP client, it shows the **Host Name**, **MAC Address**, **IP Address** and the **Lease Time**.

DHCP Table

Those devices which get their IP addresses from your DSL Router are listed below.

Host Name	MAC Address	IP Address	Lease Time
CN	00:C1:26:0A:69:2B	192.168.1.2	00:23:55:31

Wireless Clients

This table shows the MAC address for all of the wireless LAN clients currently associated to your Wireless IAD.

Wireless Clients Table

All of wireless LAN clients currently associated to your ADSL router are listed below.

NOTE: The list below might include wireless clients which are no longer connected to your ADSL router. You need to wait for a few seconds for the list to be fully updated.

MAC Address	On-line Time

Routing Table

This table shows the routing rules that your IAD uses.

Routing Table

All of current routing rules in your ADSL router are listed below.

Destination	Netmask	Gateway	Interface	Metric
10.3.95.233	255.255.255.255	0.0.0.0	pppoe_0_39_1	0
192.168.1.0	255.255.255.0	0.0.0.0	br0	0
0.0.0.0	0.0.0.0	10.3.95.233	pppoe_0_39_1	0

ARP Table

This table shows the IP address record for IP-to-Physical translation in your IAD.

ARP Table

The IP-to-Physical address translation entries recorded in your ADSL router are listed below.

IP address	Physical Address	Interface	Type
192.168.1.2	00:C1:26:0A:69:2B	br0	Dynamic

Advanced Setup

Local Network – IP Address

This page is the same as you can see on the **Configure LAN side Settings** page while running the **Quick Setup**. It allows you to set IP Address and Subnet Mask values for LAN interface.

Primary IP Address:
Key in the first IP address that you received from your ISP for the LAN connection.

Subnet Mask:
Key in the subnet mask that you received from your ISP for the LAN connection.

Host Name:
List the host name of this device.

Domain Name:
List the name of the domain.

Configure the second IP Address and Subnet Mask:
Check this box to enter another set of IP Address and Subnet Mask to connect to your IAD if they are not included in the range that DHCP server accepts.

After checking this box, the secondary IP address and subnet mask entries will show up, as shown in the right figure.

Secondary IP Address & **Subnet Mask:** Enter the information provided by your ISP for your LAN connection.

MTU:
It means the maximum size of the packet that transmitted in the network. The packet of the data greater than the number set here will be divided into several packets for transmitting. Type the value into the field of **MTU**. The default setting is 1500.

Apply:
Click this button to activate the settings listed above.

LAN IP Address Configuration

Enter the ADSL router IP address and subnet mask for LAN interface.

Primary IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0
Host Name: RTA1046VW
Domain Name: home

☐ Configure secondary IP address and subnet mask.

MTU: 1500 (Default: 1500)

[Apply] [Cancel] New settings only take effect after your ADSL router is rebooted. If necessary, reconfigure your PC's IP address to match new settings.

LAN IP Address Configuration

Enter the ADSL router IP address and subnet mask for LAN interface.

Primary IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0
Host Name: RTA1046VW
Domain Name: home

☑ Configure secondary IP address and subnet mask.

Secondary IP Address:
Subnet Mask:

MTU: 1500 (Default: 1500)

[Apply] [Cancel] New settings only take effect after your ADSL router is rebooted. If necessary, reconfigure your PC's IP address to match new settings.

Local Network – DHCP Server

This allows you to set DHCP server on LAN interface.

DHCP Server On:
Check this item if DHCP service is needed on the LAN. The IAD will assign IP address and gateway address for each of your PCs.

You have to key in **Start IP Address, End IP Address,** and **Lease Time.** The default lease time is 1day.

DHCP Server Configuration

Enabling DHCP Server on LAN interface can provide the proper IP address settings to your computer.

⊙ DHCP Server On   Start IP: 192.168.1.2
                        End IP: 192.168.1.254
                        Lease
                        Time: 1   days 0   hours 0   minutes
                        [Reserved IP Address List]

○ Relay On   Relay to Server IP: 192.168.1.2

○ Server and Relay Off

[Apply] [Cancel] New settings only take effect after the router is rebooted. If necessary, reconfigure your PC's IP address to match new settings.

Relay On:
Click this button to have a relay setting. And type the Server IP in the IP field.

When the DHCP server is served by another device rather than the IAD itself, you can relay to that specific server and enter the IP address of it, as *10.3.95.2* in our example.

Server and Relay Off:
Check this item if DHCP service isn't needed on the LAN.

DHCP Server Configuration

Enabling DHCP Server on LAN interface can provide the proper IP address settings to your computer.

○ DHCP Server On   Start IP: 192.168.1.2
                        End IP: 192.168.1.254
                        Lease
                        Time: 1   days 0   hours 0   minutes
                        [Reserved IP Address List]

⊙ Relay On   Relay to Server IP: 10.3.95.2

○ Server and Relay Off

[Apply] [Cancel] New settings only take effect after the router is rebooted. If necessary, reconfigure your PC's IP address to match new settings.

Apply:
Click this button to activate the settings listed above.

You can reserve one specific IP address for a certain PC for particular purpose. Simply add a mapping entry of MAC address & IP address for that PC by pressing the **Reserved IP Address List** button. The window as the one shown in the right column will appear.

http://192.168.1.1/viewdhcprelist.html - Microsoft Internet Explo...

Reserved IP Address List

You can reserve one specific IP address for a certain PC by adding the mapping entry between MAC address and IP address.

MAC Address	IP Address	Delete

[Add] [Close]

Click the **Add** button to open another dialog window, shown as the right. On **PC's MAC Address** and **Assigned IP Address** boxes, please type the correct information according to your need and click **Apply**.

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

Add a new reserved IP address entry

PC's MAC Address:
(e.g.,00:90:96:01:2A:3B)
Assigned IP Address:
(e.g.,192.168.1.2)

[< Back] [Apply]

The information added will be shown on the window right away, as the right figure illustrates. That is, the specified address will be reserved and not be assigned by DHCP for other computer(s).

You may click **Add** button to add another set or click **Close** to exit.
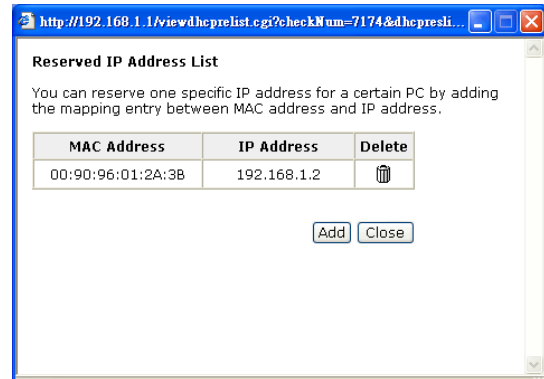
Local Network – UPnP

The UPnP is only available for Windows XP. If you are not a Windows XP user, you may ignore this page.

Enabling the UPnP IGD and NAT traversal function allows the users to perform more applications behind NAT without additional configuration settings or ALG support on your IAD.

You can enable the UPnP function through this web page by checking **Enable UPnP** and press **Apply**.

Local Network – IGMP Snooping

Traditionally, IP packets are transmitted in one of either two ways - Unicast (1 sender to 1 recipient) or Broadcast (1 sender to everyone on the network). Multicast delivers IP packets to just a group of hosts on the network.

Without IGMP snooping, multicast traffic is treated in the same manner as broadcast traffic, that is, it is forwarded to all ports. With IGMP snooping, multicast traffic of a group is only forwarded to ports that have members of that group. IGMP snooping generates no additional network traffic, allowing you to significantly reduce multicast traffic passing through your switch.

The figure below shows a simple network connected via the wireless IAD. There are four Ethernet clients, one using USB, and two wireless clients.
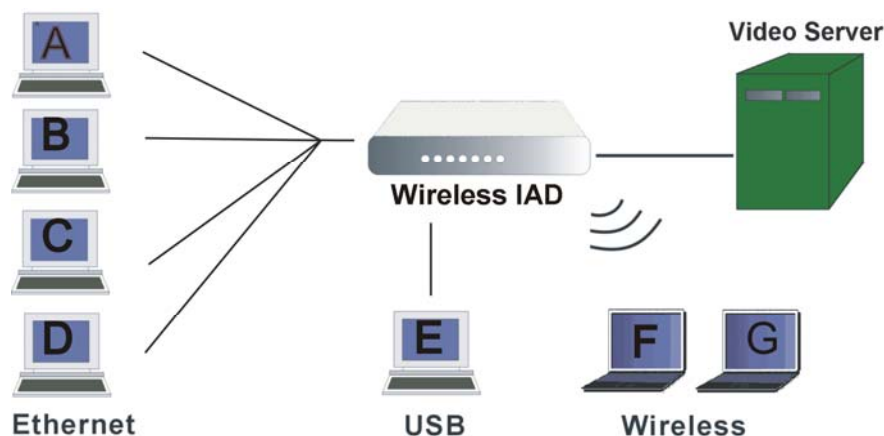
Now suppose the video server is the multicast transmitter and host A and D are multicast receivers. If we do not turn on the IGMP snooping function, the IAD will forward the multicast traffic to all hosts on all interfaces and consequently block and

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interrupt the traffic of USB and wireless users, shown as the following figure.
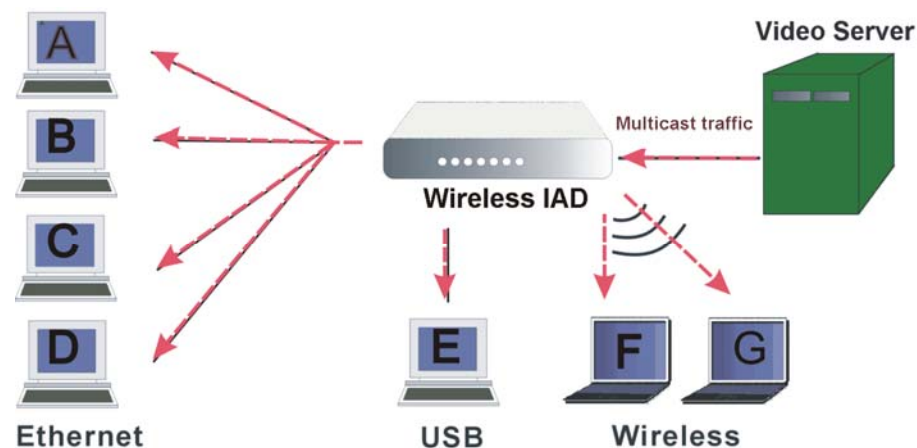
When IGMP snooping is invoked, it makes the system aware to establish the best path for multicast service to save LAN bandwidth. Refer the figure below, just as desired, only host A and D will actually receive multicast traffic when IGMP snooping is enabled.
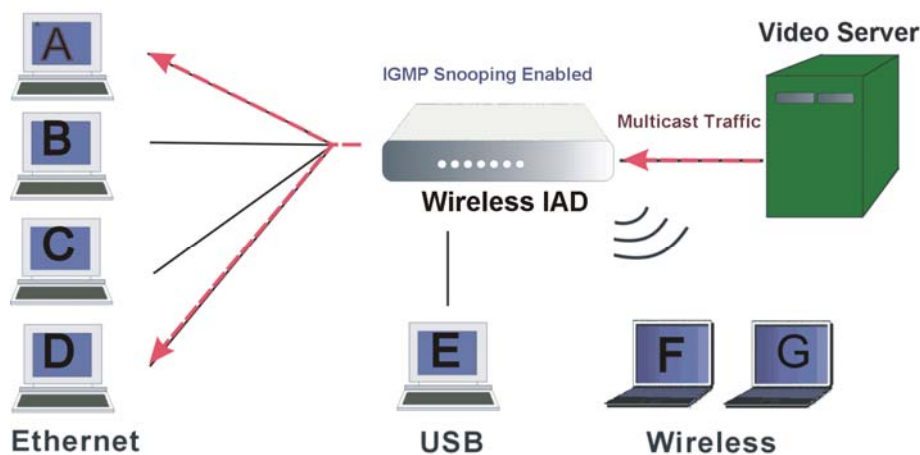
While IGMP snooping is enabled, the IGMP packets will be monitored, the membership information will be recorded and processed, and the multicast traffic will only be forwarded to those LAN interfaces, such as Ethernet, Wireless, and USB, which are bonded to the subscribed multicast groups. Thus it helps to save the bandwidth and helps the devices to perform more effectively.

Check **Enable IGMP Snooping** and click **Apply** to invoke this function.

When IGMP Snooping is enabled, you can check the box below to filter out multicast packets which will be sent to your local network if no user plays multimedia movies.

If the PVC you're using is NAT enabled, remember to turn on the IGMP Proxy at the same time. Please refer to **Internet – IGMP Proxy** for more information.

Note that the IGMP proxy must be enabled first. If the IGMP Snooping function is not available as shown in the following figure, you have to enable the IGMP Proxy first.

Internet – Connections

To set WAN settings for each service, please open **Advanced – Internet**. This page allows you to edit, to remove, or to add WAN settings.

If you click the <u>Connect</u> hyperlink under the **PVC Name** item, the system will connect to WAN automatically. If the WAN connection is OK, you can check the detailed information directly.

You can add new PVC(s) by clicking the **Add** button, edit the settings for the present PVC by clicking 📝 in the **Edit** column, or delete the existing PVC by pressing 🗑 icon.

Internet Connection Configuration

Choose Add or Edit to configure Internet connection.
Choose Finish to apply the changes and reboot the system.

PVC Name	VPI/VCI	Category	Protocol	NAT	QoS	WAN IP Address	MTU	Edit
pppoe_0_39_1 Connect ⚠	0/39	UBR	PPPoE LLC/SNAP	On	On	Auto assigned	1492	📝 🗑

The Internet connection is NOT active if PVC name is marked with (?). You need to click "Finish" to apply changes and reboot the system for activating this PVC.

[Add] [Finish]

Adding a New One

To add a new WAN connection, please click the **Add** button. The following screen appears.

VPI (Virtual Path Identifier): Identifies the virtual path between endpoints in an ATM network. The valid range is from 0 to 255. Please refer to the value that your ISP provides.

Configure Internet Connection -- ATM PVC

Please enter VPI and VCI numbers for the Internet connection which is provided by your ISP.

VPI: 8 (0-255)
VCI: 35 (32-65535)

Service Category: UBR Without PCR ▾

[< Back] [Next >]

VCI (Virtual Channel Identifier): Identifies the virtual channel endpoints in an ATM network. The valid range is from 32 to 65535 (1 to 31 is reserved for well-known protocols). Please refer to the value that your ISP provides.

Service Category: It decides the size and rate for the packets of the data in different service type. There are five categories provided here for your selection, shown as the drop-down menu in the right column.

Configure Internet Connection -- ATM PVC

Please enter VPI and VCI numbers for the Internet connection which is provided by your ISP.

VPI: 8 (0-255)
VCI: 35 (32-65535)

Service Category: UBR Without PCR ▾
UBR Without PCR
UBR With PCR
CBR
Non Realtime VBR
Realtime VBR

[< Back] [Next >]

If you select **UBR with PCR** or **CBR**, you have to offer the value for the peak cell rate.

If you choose **Non Realtime VBR**, or **Realtime VBR**, you have to key in the value for the peak cell rate, sustainable cell rate, and maximum burst size.

As you can see in the right figure, the range for **Peak Cell Rate** is from 1 to 2500; the value for **Sustainable Cell Rate** ranges from 1 to 2499 and must be smaller than Peak Cell Rate, and the range for **Maximum Burst Size** is from 1 to 1000000.

Configure Internet Connection -- ATM PVC

Please enter VPI and VCI numbers for the Internet connection which is provided by your ISP.

VPI: 8 (0-255)
VCI: 35 (32-65535)

Service Category: Non Realtime VBR ▾

Peak Cell Rate: 0 cell/s(1-2500)
Sustainable Cell Rate: 0 cell/s(1-2499)
Maximum Burst Size: 0 cells(1-1000000)

[< Back] [Next >]

After pressing **Next**, you will see the web page listed as the right one. Choose the protocol that you would like to use.

Please refer to **Quick Setup** for more information if you don't know how to set the configuration.

Enable QoS:
Check this item to enable IP QoS for a PVC. It can improve performance for selected classes of applications. For more details please refer to **Advanced/Quality of Service** section.

If you choose **PPPoE** (or **Bridging**), you will see the option for **802.1Q VLAN Tagging**.

802.1Q VLAN Tagging:
802.1Q-compliant switch ports can be configured to transmit tagged or untagged frames. A tag field containing VLAN (and/or 802.1p priority) information can be inserted into an Ethernet frame. If a port has an 802.1Q-compliant device attached (such as another switch), these tagged frames can carry VLAN membership information between switches, thus letting a VLAN span multiple switches. However, it is important for network administrators to ensure ports with non-802.1Q-compliant devices attached are configured to transmit untagged frames. Many NICs for PCs and printers are not 802.1Q-compliant. If they receive a tagged frame, they will not understand the VLAN tag and will drop the frame. Also, the maximum legal Ethernet frame size for tagged frames was increased in 802.1Q (and its companion, 802.3ac) from 1,518 to 1,522 bytes.

After checking **Enable 802.1Q VLAN Tagging**, you will have to enter a **VLAN ID**, as shown in the figure.

VLAN ID:
The VLAN Identifier is a 12 bit field. It uniquely identifies the VLAN to which the frame belongs to and can have a value between 0 and 4095.

Click **Next** to continue.

Configure Internet Connection - Connection Type

Select the protocol and encapsulation type with the ATM PVC that your ISP has instructed you to use.

Protocol:
- PPP over ATM (PPPoA)
- ● PPP over Ethernet (PPPoE)
- IP over ATM (IPoA)
- Bridging

Encapsulation Type: LLC/SNAP

☑ Enable QoS

Enabling IP QoS for a PVC can improve performance for selected classes of applications. Please assign the priorities for various applications from the Advanced...|Quality of Service menu. Be aware that IP QoS also consumes system resources, the number of created PVCs will be reduced consequently.

☐ Enable 802.1Q VLAN Tagging

< Back   Next >

Configure Internet Connection - Connection Type

Select the protocol and encapsulation type with the ATM PVC that your ISP has instructed you to use.

Protocol:
- PPP over ATM (PPPoA)
- ● PPP over Ethernet (PPPoE)
- IP over ATM (IPoA)
- Bridging

Encapsulation Type: LLC/SNAP

☑ Enable QoS

Enabling IP QoS for a PVC can improve performance for selected classes of applications. Please assign the priorities for various applications from the Advanced...|Quality of Service menu. Be aware that IP QoS also consumes system resources, the number of created PVCs will be reduced consequently.

☑ Enable 802.1Q VLAN Tagging

VLAN ID: 0   (range: 0 ~ 4095)

< Back   Next >

Notice that 802.1Q VLAN Tagging function can only be invoked under PPPoE and Bridging Mode; the system will not provide this option while setting PPPoA or IPoA mode.

The **WAN IP settings** page will differ slightly according to the protocol that you choose. The graphic is the one that you will see if you choose the **PPPoE** mode in the previous step. You can select **Enable NAT** or change the **MTU** value according to your needs.

Add Default Route:
Check this item to add a default route.

The next figure following the WAN IP Settings in the PPPoE mode is shown at the right. You may refer to the **Quick Setup** for further information.

If you choose **IP over ATM** from the **Connection Type** web page, you will get a web page as the figure.

You may refer to **Quick Start – Connection Type – IPoA** section for more information.

Add Default Route:
Check this item to add a default IPoA route.

For example, after rebooting your wireless IAD, the default route will be shown on the **Routing Table** under **Status** menu, you may check it.

If you choose **Bridging** from the **Connection Type** web page, you will get a web page as the figure listed at the right side.

Please refer to **Quick Setup** for more information.

After configuring the WAN IP Setting page, press Next, and then you will see the Summary page.

Check the information displayed here.

Enable this Internet Connection: Check the box to enable this internet connection or uncheck it to disable this setting. You may change this setting by press the Modify icon on the Advanced – Internet Connection Configuration page and click Next until the summary page is displayed.

Configure Internet Connection - WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.

- Obtain an IP address automatically
- Use the following IP address:
  WAN IP Address: 0.0.0.0

☑ Enable NAT

☑ Add Default Route

MTU: 1492 (default: 1492)

< Back   Next >

Configure Internet Connection - PPP User Name and Password

In order to establish the Internet connection, please enter PPP user name and password that your ISP has provided.

PPP User Name :
PPP Password:

Session established by:
- Always On
- Dial on Demand
  Disconnect if no activity for 20 minutes
- Manually Connect
  Disconnect if no activity for 20 minutes

< Back   Next >

Configure Internet Connection - WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.

- None
- Obtain an IP address automatically
- Use the following IP address:
  WAN IP Address: 10.11.95.233
  WAN Subnet Mask: 255.255.255.248

- Obtain DNS server address automatically
- Use the following DNS server addresses:
  Primary DNS server: 168.95.1.1
  Secondary DNS server:

☑ Enable NAT

☑ Add Default Route

< Back   Next >

Routing Table

All of current routing rules in your ADSL router are listed below.

Destination	Netmask	Gateway	Interface	Metric
10.3.95.233	255.255.255.255	0.0.0.0	pppoe_0_39_1	0
10.3.95.232	255.255.255.248	0.0.0.0	ipoa_0_32	0
192.168.1.0	255.255.255.0	0.0.0.0	br0	0
0.0.0.0	0.0.0.0	0.0.0.0	ipoa_0_32	1

Configure Internet Connection - WAN IP Setting

Enter information provided to you by your ISP to configure the WAN IP settings.

- None
- Obtain an IP address automatically
- Use the following IP address:
  WAN IP Address:
  WAN Subnet Mask:
  Default Gateway:

< Back   Next >

This Internet Connection -- Summary

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

☑ Enable this Internet Connection

Internet (WAN) Configuration:

VPI / VCI	0 / 38
Service Category	UBR
Connection Type	PPPoA VC MUX, Always On, QoS On
NAT	Enabled
WAN IP Address	Automatically Assigned
Default Gateway	Automatically Assigned
DNS Server	Automatically Assigned

Click "Apply" to accept these settings.
Click "Back" to make any modifications.

< Back   Apply

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Internet – DNS Server

If **Enable Automatic Assigned DNS** checkbox is selected, this IAD will accept the **first** received DNS assignment from one of the PPPoA, PPPoE or MER/DHCP enabled PVC(s) during the connection establishment. If the checkbox is not selected, it is necessary for you to enter the primary and optional secondary DNS server IP addresses. Finish your setting and click the **Apply** button to save it and invoke it.

Enable Automatic Assigned DNS:
Check this box to enable this function, or uncheck this box to disable it. The default setting is checked. When this function is disabled, you have to offer the **Primary DNS server** and **Secondary DNS server**.

If you are satisfied with the settings, click **Apply**.

DNS Server Configuration

If Enable Automatic Assigned DNS checkbox is selected, this router will accept the first received DNS assignment from the PPPoA, PPPoE or MER/DHCP enabled PVC(s) during the connection establishment. If the checkbox is not selected, enter the primary and optional secondary DNS server IP addresses. Click "Apply" to save it.

☐ Enable Automatic Assigned DNS

Primary DNS server: 168.95.1.1
Secondary DNS server:

[Apply] [Cancel] If changing from unselected Automatic Assigned DNS to selected Automatic Assigned DNS, You must reboot the router to get the automatic assigned DNS addresses.

Internet – IGMP Proxy

The Internet Group Management Protocol (IGMP) is an Internet protocol that provides a way for an Internet computer to report its multicast group membership to adjacent routers.
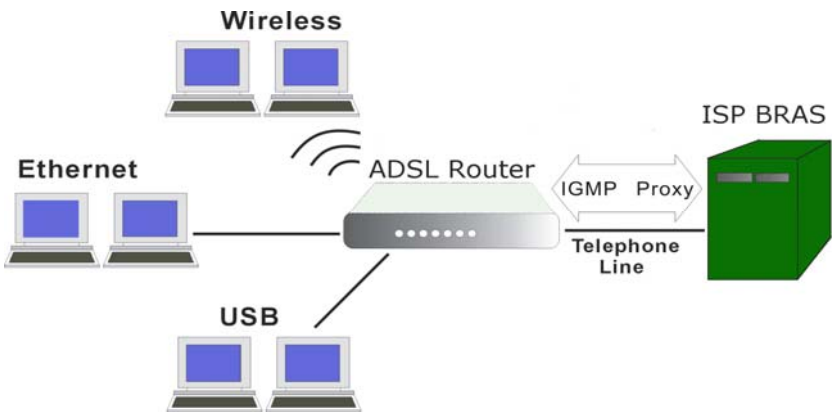
The hosts interact with the system through the exchange of IGMP messages. When you want to configure IGMP proxy, the system will interact with other routers through the exchange of IGMP messages. However, when acting as the proxy, the system performs the host portion of the IGMP task as follows:

➢ When being queried, the system will send membership reports to the group.

➢ When one of the hosts joins a multicast address group which none of other hosts belongs to, the system will send unsolicited membership reports to that group.

➢ When the last host in a particular multicast group leaves the group, the system will send a leave group membership report to the router's group.

Internet Connection:
This field displays the internet connection(s) set in this IAD.

IGMP Proxy Enabled:
Check this box to enable this function or uncheck this box to disable this function.

After finish the settings, click **Apply**.

IGMP Proxy Configuration

Enabling IGMP proxy function can allow the users on your local network to play the multimedia (video or audio) which sent from the servers on the Internet.

Internet Connection	IGMP Proxy Enabled
pppoe_0_39_1	☑

[Apply] [Cancel]

Internet – ADSL

Enable ADSL Port:
Check this box to enable this function. It simply invokes the line mode that you choose here for the IAD.

Select the support of line modes:
There are several selections, and you may select them according to the line modes supported by your ISP and your needs.

Capability Enabled:
Two items are provided here for you to choose.

Bitswap:
It is a mandatory receiver initiated feature to maintain the operating conditions of the modem during changing environment conditions. It reallocates the data bits and power among the allowed carriers without modification of the higher layer control parameters in the ATU. After a bit swapping reconfiguration, the total data rate and the data rate on each latency path is unchanged. Check this box to enable the function. If not, uncheck this box to close the function.

Seamless Rate Adaptation:
It enables the ADSL2/ ADSL2+ Router to change the data rate of the connection while in operation without any service interruption or bit errors. Check this box to enable the function. If not, uncheck this box to close the function.

ADSL Settings

☑ Enable ADSL Port

Select the support of line modes: ☑ G.dmt   ☑ G.lite   ☑ T1.413
☑ ADSL2   ☑ READSL2 ☑ ADSL2+
☐ Annex M

Capability Enabled: ☑ Bitswap   ☐ Seamless Rate Adaptation

[Apply] [Cancel]

IP Routing – Static Route

The table shows all static route status and allows you to add new static IP route or delete static route. A Static IP Routing is a manually defined path, which determines the data transmitting route. If your local network is composed of multiple subnets, you may want to specify a routing path to the routing table.

Destination Network Address:
Display the IP address that the data packets are to be sent.

Netmask, Gateway, WAN Interface:
Display the subnet mask, gateway, and WAN interface information that the transmitting data will pass through.

Delete:
Allow you to remove the static route settings.

This page shows all the routing table of data packets going through your IAD.

Adding a New One

To add a static route, please click **Add**. Type the destination network address, subnet mask and gateway that you received from the ISP and click **Apply**.

Destination IP Address:
The destination IP address of the network indicates where data packets are to be sent. You may specify an IP, type 0.0.0.0, or leave it blank.

Netmask:
Enter the Netmask that you got from the ISP, type 0.0.0.0, or leave it blank.

Gateway IP Address:
Check it to forward packets to the specific gateway. Enter the gateway IP address that you want to use.

WAN Interface:
Click this button to forward packets to a specific WAN interface. Choose one from the drop-down menu.

For example, type *192.168.1.1* in the field of the gateway IP address and leave the destination network blank.

Click **Apply** to view the routing result.

If you have added an **IPoA PVC** from **Advanced- Internet Connections** webpage, you can forward packets to it now. Just select it from the **WAN Interface** drop down menu.

Click **Apply** to save the setting.

You will see the result shown as the right figure.

If you don't want the static route that you created, please click the 🗑 icon in the **Delete** column from the table.

A dialog window will appear to confirm your action. Click **OK** to remove the static route, or click **Cancel** to keep the setting.

Example – Static Route

Here provides you an example of Static Route.
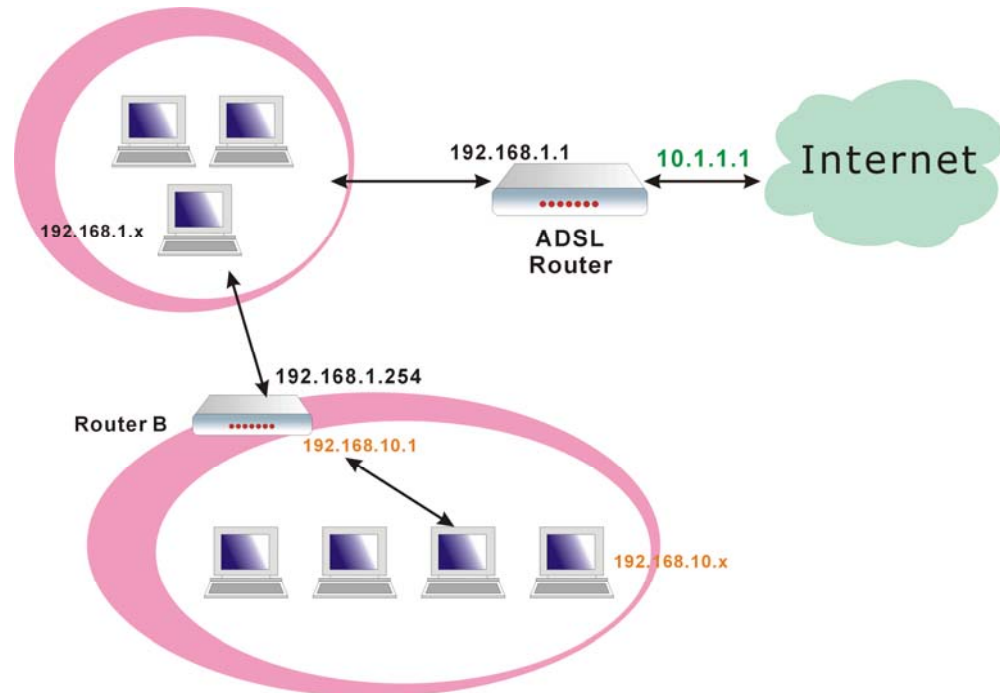
For the LAN shown above, if the PC in the subnet of 192.168.1.x wants to access the PC in the subnet of 192.168.10.x, we can set a static route in the device, in which the destination is the PC in the subnet 192.168.10.x and the gateway is router B. The setting would be as follows:

Destination: 192.168.10.0
Netmask: 255.255.255.0   (Standard Class C)
Gateway: 192.168.1.254   (Router B)

IP Routing – Dynamic Routing

Routing Information Protocol (RIP) is utilized by means of exchanging routing information between routers. It helps the routers to determine optimal routes. This page allows you to enable/disable this function.

RIP Version:
It incorporates the RIP information when receiving and broadcasting the RIP packets. From the drop down menu, select a RIP version to be accepted, **_1, 2_** or **both**.

Operation:
There are two modes for you to choose, Active and Passive. Select **Active** for transmitting and receiving data, or select **Passive** for receiving data only.

Enabled:
Check **Enabled** to enable the RIP function on different interface. Otherwise, disable this function.

Click **Apply** to invoke the settings set here.

Virtual Server – Port Forwarding

The Router implements NAT to make your entire local network appear as a single machine to the Internet. The typical situation is that you have local servers for different services and you want to make them publicly accessible. With NAT applied, it will translate the internal IP addresses of these servers to a single IP address that is unique on the Internet. NAT function not only eliminates the need for multiple public IP addresses but also provides a measure of security for your LAN.

When the router receives an incoming IP packet requesting for accessing your local server, the router will recognize the service type according to the port number in this packet (e.g., port 80 indicates HTTP service and port 21 indicates FTP service). By specifying the port number, the router knows which service should be forwarded to the local IP address that you specified.

After setting the virtual server, you should modify the filter rule about the port and service information which you set on the virtual server. Because the firewall protects the router by the filter rule, you should update the filter rule after you set up the virtual server.

Virtual Server function allows you to make servers on your LAN accessible to Internet users. Normally, Internet users would not be able to access a server on your LAN because:

☐ Your server does not have a valid external IP Address.

☐ Attempts to connect to devices on your LAN are blocked by the firewall in this device.

The Virtual Server feature solves these problems and allows Internet users to connect to your servers, as illustrated below:
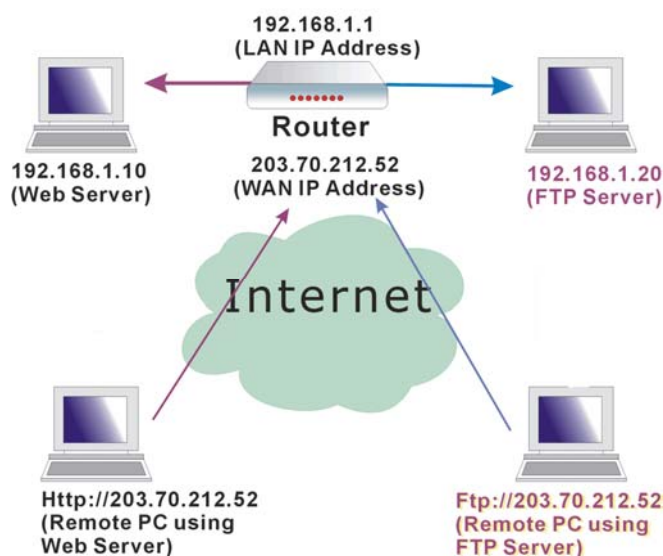
IP Address seen by Internet Users

Once configured, anyone on the Internet can connect to your Virtual Servers.

Please note that, in the above picture, both Internet users are connecting to the same IP address, but using different protocols, such as *Http://203.70.212.52* and *Ftp://203.70.212.52*.

To Internet users, all virtual servers on your LAN have the same IP Address. This IP Address is allocated by your ISP. This address should be static, rather than dynamic, to make it easier for Internet users to connect to your Servers. However, you can use Dynamic DNS feature to allow users to connect to your virtual servers by using a URL, instead of an IP address.

IP addresses can be automatically redirected to local servers configured with private IP addresses. In other words, depending on the requested service (TCP/UDP port number), the router redirects the external service request to the appropriate server (located at another internal IP address).

Add New Port Forwarding

To set a virtual server, please open the **Virtual Server** item from the **Advanced** setup menu.

To add a new Port Forwarding, please click **Add** from the **Port Forwarding** web page.

Pre-defined:
Choose one of the service types from the first drop-down list, such as Audio/Video, Games, and so on. In the second drop-down list, choose the name of the application that you want to use with the type that you select in the first list.

For example, if you choose *Audio/Video* in the first field, the corresponding contents of the second field would be like the drop-down list shown as the following figure.

User defined:
Type a new service name for building a customized service for specific purpose.

There are three lines that you can enter settings into on this page. If you need more lines, just apply the settings and then add a new port forwarding rule.

From Internet Host IP Address:
Select the initial place for port forwarding. If you choose **SINGLE**, a box will appear for you to fill in the IP address for the specific host. And, if you choose **SUBNET**, the boxes for IP address and Netmask will appear for you to fill in the IP address and subnet mask for the specific subnet.

Forward to Internal Host IP Address:
Key in the address for the host used as the destination that information will be forwarded to.

For example, select the predefined application name *Audio/Video – Media Player 7*, set from *ALL* internet host IP addresses, and forward to *192.168.1.200*. Click **Apply**. Be sure to reboot your IAD for these changes to take effect.

The result will be displayed as the following figure.

If you do not want the server that you created, check the **Delete** box of that application and click the **Delete** button to discard it.

Or if you want to add another one, click **Add** to add a new one.

Virtual Server – Port Triggering

When the wireless IAD detects outbound traffic on a specific port, it will set up the port forwarding rules temporarily on the port ranges that you specify to allow inbound traffic. It is supposed to increase the support for Internet gaming, video conferencing, and Internet telephony due to the applications require multiple connection.

To add a new port triggering rule, click **Add** to open this web page. Then choose an application name from the **Pre-defined** list box.

The system provides 9 items for you to choose.

You may also define by yourself, just type the name into the field of **User defined**.

Click **Apply** to complete the setting.

If you select *AIM Talk*, the result page will be like the demo figure in the right column.

You may delete the application by checking the delete box and pressing **Delete**.

Virtual Server – DMZ Host

In computer networks, a DMZ (demilitarized zone) is a computer host or small network inserted as a "neutral zone" between a company's private network and the outside public network. It prevents outside users from getting direct access to a server that has company data. A DMZ is an optional and more secure approach to a firewall and effectively acts as a proxy server as well.

To close the function of DMZ Host, please click **Discarded**.

To activate a DMZ host, please click **Forwarded to the DMZ host** radio button, and enter the IP Address of DMZ host.

Click **Apply**.

DMZ Host

A DMZ host is a computer on your local network that can be accessed from the Internet regardless of port forwarding and firewall settings.

Those IP packets from the Internet that do NOT belong to any applications configured in the port forwarding table will be:

◉ Discarded
◯ Forwarded to the DMZ host
    IP address of DMZ host: [_____]

[Apply] [Cancel]

Once this feature is enabled, you must specify an IP address. It allows unrestricted 2-way communication between the specified IP address and other Internet users or Servers.

☐   This allows almost any application to be used on the specified IP address.

☐   The specified IP address will receive all "Unknown" connections and data.

☐   The DMZ feature only works when the NAT function is enabled.

Virtual Server – Dynamic DNS

The Dynamic DNS (Domain Name System) combines both functions of DNS and DHCP to map a dynamic IP to a fixed domain name. This page allows you to access the virtual servers with a domain name and password.

Dynamic DNS:
Select **Enable** to enable Dynamic DNS; select **Disabled** to disable this function.

Dynamic DNS Provider:
Choose a provider (*DynDNS.org, TZO.com, ChangeIP.com,* or *No-IP.com*) from the drop-down list.

Internet Connection:
Select the interface from the drop-down list that you want to use for this function.

User Name:
Type the user name that you registered with the provider.

Password:
Type the password that you registered with the provider.

HostName.DomainName:
Key in the domain name or host name that you registered. You can use letters and dash for naming, yet other characters are not allowed to use for preventing from making troubles.

Status:
It displays current status.

When the setting is finished, click **Apply** to invoke them, or click **Cancel** if you want to discard the settings.

Dynamic DNS Configuration

This page allows you to provide Internet users with a name (instead of an IP address) to access your virtual servers. This ADSL router supports dynamic DNS service provided by the provider 'http://www.dyndns.org', 'http://www.tzo.com', 'http://www.changeip.com' or 'http://www.no-ip.com'. Please register this service at these providers first.

Dynamic DNS: ○ Disabled ⦿ Enabled

Dynamic DNS Provider: DynDNS.org
Internet Connection: pppoe_0_39_1
User Name:
Password:
HostName.DomainName:
Status:

[Apply] [Cancel]

Virtual Server – Static DNS

This page allows you to configure DNS mapping between Domain name and IP address for your local hosts. In case you want to access the local servers with domain names from the local network, you can configure the mapping information on the page.

HostName.DomainName:
Key in the domain name that you registered at the provider. You can use letters and dash for naming, yet other characters are not allowed to use for preventing from making troubles.

IP Address:
Key in the IP address for the domain name to map.

Click **Apply** to upload your setting.

Static DNS Configuration

This page allows you to configure DNS mapping between name and IP address for your local hosts. In case if you want to access those local servers with name from local network, you can configure the mapping below.

HostName.DomainName		IP Address
RTA1046VW.home	mapped to	192.168.1.1
	mapped to	
	mapped to	
	mapped to	
	mapped to	
	mapped to	
	mapped to	
	mapped to	

More Mapping ≫

[Apply] [Cancel]

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NAT ALG Configuration

The need for IP address translation arises when a network's internal IP addresses cannot be used outside the network either for security reasons or because they are invalid for use outside the network. Use of NAT (Network Address Translation) devices allows local hosts on such private networks to transparently access the external global Internet and enables access to selective local hosts from the outside.

ALG (Application Level Gateway) is a security component that augments a firewall or NAT employed in a computer network. ALG allows legitimate application data to pass through the security checks of the firewall that would have otherwise restricted the traffic for not meeting its filter criteria. ALG application specific translation agents allow an application on a host in one address realm to connect to its counterpart running on a host in different realm transparently. An ALG may interact with NAT to set up state, use NAT state information, modify application specific payload and perform whatever else is necessary to get the application running across disparate address realms.

Enable VPN ALG:
VPN ALG allows two or more simultaneous VPN connections through this IAD. The default setting for VPN ALG is enabled.

Enable SIP ALG:
SIP ALG allows two or more simultaneous VoIP phone calls made by VoIP clients through this IAD. The default setting for SIP ALG is enabled.

Transparent use of SIP-based devices in a NAT scenario requires that modifications be made to the SIP messages. These modifications are performed by the ALG.

A **SIP ALG** provides functionality to allow VoIP traffic to pass both from the private to public and public to private side of the firewall when using Network Address Translation (NAT). The **SIP-ALG** inspects and modifies SIP traffic to allow SIP traffic to pass through the firewall so that person-to-person SIP sessions may be established.

Click **Apply** to upload your setting.

NAT ALG Configuration

☑ Enable VPN ALG
    VPN ALG allows two or more simultaneous VPN connections through this router.

☑ Enable SIP ALG
    SIP ALG allows two or more simultaneous VoIP phone calls made by VoIP clients through this router.

[Apply] [Cancel]

Firewall

The firewall is a kind of software that interrupts the data between the Internet and your computer. It is the TCP/IP equivalent of a security gate at the entrance to your company. All data must pass through it, and the firewall (functions as a security guard) will allow only authorized data to be passed into the LAN.

What the firewall can do? It can:
- □ deny or permit any packet from passing through explicitly
- □ distinguish between various interfaces and match on the following fields:
  - ◆ source and destination IP address
  - ◆ port

To keep track of the performance of IP Filter, a logging device is used. The device supports logging of the TCP/UDP and IP packet headers and the first 129 bytes of the packet (including headers) whenever a packet is successfully **passed** through or **blocked**, and whenever a packet matches a rule being setup for suspicious packets.

An example for firewall setup:
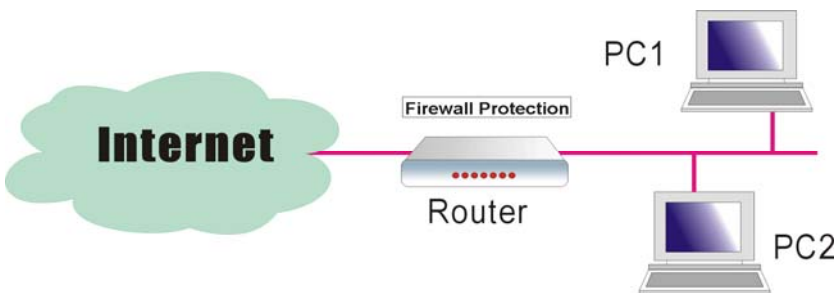
This picture shows the most common and easiest way to employ the firewall. Basically, you can install a packet-filtering router at the Internet gateway and then configures the filter rule in the router to block or filter protocols and addresses. The systems behind the router usually have a direct access to the Internet; however some dangerous services such as NIS and NFS are usually blocked.

For the security of your router, set the firewall is an important issue.

Firewall – Bridge Filtering

The bridge filtering mechanism provides a way for the users to define rules to allow/deny packets through the bridge based on source MAC address and/or destination MAC address. When bridge filtering is enabled, each packet is examined against the each defined filter rules sequentially, and when a matched is determined, the packets will be blocked.

This page allows you to define the bridge packet filtering rules to block those redundant packets with specific protocols and MAC addresses.

Choose **Disabled** to disable the bridge filtering function. Click **Enabled** to monitor and block redundant packets.

Bridge Filtering

This page allows you to specify the bridge pacgket filtering rules to block those redundant packets with specific protocols and MAC addresses.

Bridge packet filtering function is only available for the Internet connections of bridging mode.

Bridge Filtering:	⦿ Disabled ◯ Enabled	Apply Cancel

To initiate the Bridge Filtering rules, select the **Enabled** radio button and click **Apply**.

Click **Add** to configure a new bridge filtering rule.

Note that the **Add** option is available only when there is a bridge mode PVC on this device.

Bridge Filtering

This page allows you to specify the bridge pacgket filtering rules to block those redundant packets with specific protocols and MAC addresses.

Bridge packet filtering function is only available for the Internet connections of bridging mode.

Bridge Filtering:	◯ Disabled ⦿ Enabled	Apply Cancel

Traffic Direction	Internet Connection	Protocol	Source MAC addr	Dest MAC addr	Allow	Delete

Add

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Select traffic direction from the drop down menu, and check the network interface which you want this rule to apply on. Then, choose a protocol and define the source or destination MAC address which you want to control.

Add New Bridge Packet Filtering Rule

Those packets which are matched with the rule created below will be blocked.

Traffic Direction: Outbound ▾ from local network to Internet
Internet Connection this filtering rule applies on: ☑ br_0_35

Protocol: PPPoE ▾

Source MAC Address: [____]
Destination MAC Address: [____]

(e.g., 00:90:96:01:2A:C3)

If the rule with source or destination MAC address is "00:00:00:00:00:00" or empty, it can be applied to all related traffic without checking source or destination MAC address.

< Back | Apply

There are three options for traffic direction: **Outbound** means from local network to Internet; **Inbound** means from Internet to local network; **Bi-direction** includes both directions.

Traffic Direction: Outbound ▾
Outbound
Inbound
Bi-direction

The protocols that you can choose is listed as the right figure shows. Select one proper protocol for this bridge filtering rule.

Protocol: PPPoE ▾
PPPoE
IPv4
IPv6
AppleTalk
IPX
NetBEUI
IGMP

For example, if we choose Outbound, check br_0_35, select PPPoE as protocol, and enter 00:90:96:01:2A:C3 into the Source MAC Address field, then after clicking Apply, we will see the result as shown in the right.

You can use **Add** or **Delete** button to maintain the bridge filtering rules.

Bridge Filtering

This page allows you to specify the bridge pagcket filtering rules to block those redundant packets with specific protocols and MAC addresses.

Bridge packet filtering function is only available for the Internet connections of bridging mode.

Bridge Filtering: ○ Disabled ● Enabled   Apply | Cancel

Traffic Direction	Internet Connection	Protocol	Source MAC addr	Dest MAC addr	Allow	Delete
Outbound	br_0_35	PPPoE	00:90:96:01:2a:c3	00:00:00:00:00:00	🚫	☐

Select All ☐

Add | Delete

Firewall – IP Filtering

This page allows you to specify the IP packet filtering rules to prevent the services accessed from the Internet hosts or limit the Internet access for local hosts.

Choose **Disabled** to disable the firewall function. Click **Enabled** to invoke the settings that you set in this web page.

IP Filtering

This page allows you to specify the IP packet filtering rules to prevent the services accessed from the Internet hosts or limit the Internet access for local hosts.

IP Filtering: ● Disabled ○ Enabled   Apply | Cancel

To initiate the IP Filtering, select the **Enabled** radio button and click **Apply**.

Select the direction to filter packets:
Inbound means the data is transferred from outside onto your computer. Outbound means the data is transferred from your computer onto outside through Internet. Please choose **Outbound traffic** or **Inbound traffic** as the direction for filtering packets.

Click **Add** to add a new IP Filtering rule.

IP Filtering

This page allows you to specify the IP packet filtering rules to prevent the services accessed from the Internet hosts or limit the Internet access for local hosts.

IP Filtering: ○ Disabled ● Enabled   Apply | Cancel

Select the direction to filter packets: ● Outbound traffic ○ Inbound traffic

Protocol	Source IP addr	Dest IP addr	Port Range Start	Port Range End	Allow	Edit

Add

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This page provides some settings for you to adjust for adding a new outbound IP Filtering.

Allow Traffic:
Choose **No** to stop the data transmission, **Yes** to permit the data pass through.

Protocol:
Here provides several default policies for security levels for you to choose. If you don't want to use the predefined setting, you can use **User Defined** to set a customized protocol according to the necessity.

When you choose **User Defined** setting, you have to enter a port number in the "as" field.

Source/Destination IP address:
To specify IP address to allow or deny data transmission, please pull down the drop-down menu to choose a proper one.

The setting **All** means that all the IP addressed in the network are allowed or denied to pass through in Internet. If you choose **Single**, you will have to key in the specific IP address as the start/end point to let the IAD identify for granting or denying passing through.
If you choose **Subnet**, you will have to enter the specific IP address and Netmask as the start/end point to let the IAD identify for granting or denying passing through.

Port Range:
The port range is from 0 to 65535. Please key in the start point and end point for the IP Filtering.

After finish the settings, click **Apply**.

Here provides an example shown in the right column. Select *TCP* as the **Protocol** type, and make the **Source and Destination IP address** to include *All*, then type *0* and *65535* as the **start and end port**.

A new IP filtering setting for Outbound traffic is created in the web page. To edit the setting, please click ✎... to get into the editing page. To delete the setting, click 🗑 to erase it. To set another IP filtering, click **Add** again.

IP Filtering
This page allows you to specify the IP packet filtering rules to prevent the services accessed from the Internet hosts or limit the Internet access for local hosts.

IP Filtering: ○ Disabled   ⊙ Enabled   [Apply] [Cancel]

Select the direction to filter packets: ⊙ Outbound traffic   ○ Inbound traffic

| Protocol | Source IP addr | Dest IP addr | Port Range | | Allow | Edit |
			Start	End		
TCP	ALL	ALL	0	65535	✔	✎ 🗑

[Add]

To add a new Inbound IP Filtering, click **Inbound traffic** in the item of **Select the direction to filter packets** on the **IP Filtering** page**.** Use the same way to add a new one as stated above.

IP Filtering
This page allows you to specify the IP packet filtering rules to prevent the services accessed from the Internet hosts or limit the Internet access for local hosts.

IP Filtering: ○ Disabled   ⊙ Enabled   [Apply] [Cancel]

Select the direction to filter packets: ○ Outbound traffic   ⊙ Inbound traffic

| Protocol | Source IP addr | Dest IP addr | Port Range | | Allow | Edit |
			Start	End		

[Add]

Quality of Service

QoS (Quality of Service) is an industry-wide initiative to provide preferential treatment to certain subsets of data, enabling that data to traverse the Internet or intranet with higher quality transmission service.

There have been two generations of quality of service architectures in the Internet. The interpretation of the *Type of Service Octet* in the Internet Protocol header varies between these two generations.

The First generation: Precedence and type of service bits

The refined definition of the initial *Type of Service Octet* looks like this:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Precedence			Type of Service Field				

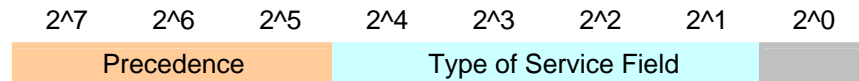**The Second generation: Differentiated services code point**

The *Differentiated Service Code Point* is a selector for router's per-hop behaviors (PHB). As a selector, there is no implication that a numerically greater DSCP implies a better network service. RFC2474 redefined the *Type of Service Octet* to be:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Differentiated Services Code Point						ECT	CE
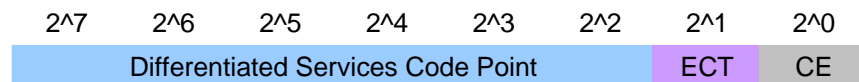
The fields *ECT* and *CE* are nothing to do with quality of service. They are spare bits in the IP header used by Explicit Congestion Notification. As can be seen, the *DSCP* totally overlaps the old *Precedence* field. So if values of *DSCP* are carefully chosen then backward compatibility can be achieved. This leads to the notions of "class", each class being the group of DSCP with the same *Precedence* value. Values within a class would offer similar network services but with slight differences. Classes were initially defined as:

DSCP	Precedence	Purpose
0	0	Best effort
8	1	Class 1
16	2	Class 2
24	3	Class 3
32	4	Class 4
40	5	Express forwarding
48	6	Control
56	7	Control

Now, DSCP is what we are using for the QoS configuration on this device.

Among the classes you will see on the webpage, the **BE** (*Best Effort*) class possesses no guaranteed rates; the **CS** (*Class Selector*) values enable backward compatibility with the older IP-Precedence scheme ranges 0~7; the **EF** (*Expedited Forwarding*) class is a low-loss, low-latency, low-jitter, assured-bandwidth, end-to-end service; **AF** (*Assured Forwarding*) provides for the delivery of IP packets in four independently forwarded AF classes, AF1x through AF4x. Within each AF class, an IP packet can be assigned one of three different levels of drop precedence. This class is used when a service (application) requires a high probability of packets being forwarded, so long as the aggregate traffic from each site does not exceed the subscribed information rate (profile). Each of the four AF classes allocates a certain amount of forwarding resources, such as buffer space and bandwidth in each network node. When congestion occurs, the drop precedence of a packet determines the relative importance of the packet within the AF class.

You can start to configure the Bridge QoS/IP QoS rules on the **Quality of Service** webpage for your IAD.

Quality of Service – Bridge QoS

To classify the upstream traffic by assigning the transmission priority for different users' data, please use Bridge QoS to prioritize the data transmission.

The Bridge QoS allows you to set the settings based on layer two bridge packets.

Traffic Class Name:
Key in a name as the traffic class for identification.

802.1p Priority:
Each incoming packet will be mapped to a specific priority level, so that these levels may be acted on individually to deliver traffic differentiation. Please choose the number (from *0* to *7*, low to high priority) for the 802.1p Priority.

Traffic Priority:
There are three options – *Low, Medium,* and *High* that you can choose. The IAD will arrange the precedence for the traffic according to the traffic priority setting here.

As for the settings for the DSCP value and the WAN 802.1p value of the upstream packets, they will be seen on the WAN side.

DiffServ Class (DSCP):
DiffServ is a computer networking architecture that specifies a simple, scalable and coarse-grained mechanism for classifying, managing network traffic and providing QoS (quality of service) guarantees on modern IP networks. DiffServ can, for example, be used to provide low-latency, guaranteed service to critical network traffic such as voice or video while providing simple best-effort traffic guarantees to non-critical services such as web traffic or file transfers.

The higher position the item appears, the smaller DSCP value it is (i.e., *BE* is the lowest while *CS7* is the highest). The corresponding DSCP value in the IP header of the upstream packets will be overwritten by the selected value. The default setting is *No change*.

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WAN 802.1p:
If 802.1p is enabled on Internet connection, WAN 802.1p value of the upstream packets can be overwritten by the selected value. You may select a priority from the drop-down menu.

If you set the **LAN 802.1p Priority** *0* as the **traffic condition**, choose *Low traffic priority* for this rule, set **DSCP** as BE, and **WAN 802.1p** as *no change*, after clicking **Apply**, you will get the result as the figure in the right column.

Thus when the users' data matches the traffic condition, the transmission will get a low traffic priority.

You may check the **Delete** box and press **Delete** to discard it, or click **Add** to create more.

Quality of Service – IP QoS

To classify the upstream traffic by assigning the transmission priority of the data for different users, please use IP QoS to prioritize the data transmission.

The IP QoS allows you to set the settings based on layer three IP packets.

To add a new IP QoS setting, press **Add** in the page of **Quality of Service – IP QoS**, a page same as the right side will appear.

Traffic Class Name:
Type a name as the traffic class for identification.

LAN Ports which traffic come from:
The IP QoS rules will be applied on the LAN ports you checked here. The default setting includes all ports.

Source MAC Address& MAC Mask/ Destination MAC Address& MAC Mask:
Key in the specific MAC Address or MAC Mask of the devices which you want the QoS rule to be applied to, or simply leave it blank to include all.

Protocol:
Choose a proper interface for this function. If you don't know how to select, simply use the default one.

Source IP/ Subnet Mask/ Port:
Key in the **source IP address** (ex.: *192.168.1.0*) and **subnet mask** (ex.: *255.255.255.0*) for the application (ex.: FTP, HTTP, and so on) that you want to invoke the QoS traffic rule. You may simply enter the **source port**, ranging from *0* to *65535*, as the traffic condition.

Destination IP/ Subnet Mask/ Port:
Enter the **destination IP address** (ex.: *168.95.1.88*) and **subnet mask** (ex.:*255.255.255.0*) for the application that you want to invoke the QoS traffic rule. Or simply enter the **destination port** for the traffic condition; it ranges from *1* to *65535*.

Source IP Address:		Subnet Mask:	
Source Port (Start-End):	-		
Destination IP Address:		Subnet Mask:	
Destination Port(Start-End):	-		

Traffic Priority/ DiffServ Class (DSCP)/ WAN 802.1p:
Please refer to the Bridge QoS section**.**

After finishing the settings, click **Apply**, the new QoS setting will be shown as the example.

According to the example, we set four rules for IP QoS. In traffic *A*, we set the **destination port** as *1-1024*, and the traffic priority is *low*; in traffic *B*, the **source port** is from *201* to *8000*, and the priority is *medium*; in traffic *C*, when the **source IP** is *192.168.1.0*, subnet mask is *255.255.255.0*, the traffic priority is *high*; in traffic *D*, when the traffic is heading to *168.95.1.88*, the priority is *high*.

To delete the rules you set, simply click the check button below **Delete** item and click **Delete** button.

Assign Priority for this Traffic Rule

Traffic Priority:	Low
DiffServ Class (DSCP):	No Change	The corresponding DSCP value in the IP header of the upstream packets will be overwritten by selected value.
WAN 802.1p:	No Change	The WAN 802.1p value of the upstream packets can be overwritten by selected value.

IP QoS

This page allows you to classify the upstream traffic (to the Internet) by assigning the transmission priority for various user data. IP QoS function prioritizes the data transmission based on layer 3 IP packets.

Traffic Name	Traffic Priority				Traffic Conditions					Delete
	Priority	DiffServ Class	WAN 802.1p	LAN Ports	Source MAC	Destination MAC	Protocol	Source IP Source Port	Dest IP Dest Port	
A	Low	No Change	No Change	Ethernet, USB, Wireless	All	All	TCP/UDP	All / All	All / 1-1024	☐
B	Medium	No Change	No Change	Ethernet, USB, Wireless	All	All	TCP/UDP	All / 201-8000	All / All	☐
C	High	No Change	No Change	Ethernet, USB, Wireless	All	All	TCP/UDP	192.168.1.0/ 255.255.255.0 / All	All / All	☐
D	High	No Change	No Change	Ethernet, USB, Wireless	All	All	TCP/UDP	All / All	168.95.1.88 / All	☐

Select All ☐
[Add] [Delete]

According to our example, the IP QoS configuration can be illustrated by the following figure.
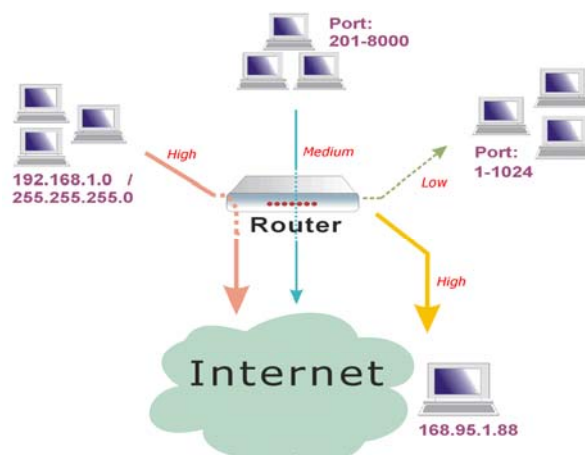
While there are many PCs getting online, the PCs using *port 201-8000* to access the internet will have **medium** traffic priority, the PCs carrying *192.168.1.x/ 255.255.255.0* as IP address will have **high** traffic priority. In addition, PCs heading to *port 1-1024* will have a **low** priority, while the PCs accessing *168.95.1.88* will have a **high** priority.

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Port Mapping

This page allows you to configure various **port mapping groups** which contains specific Internet connections and LAN ports. The user data will be only transmitted and received among the interfaces in the group.

Virtual LAN Function on Ethernet: If you click **Disabled**, the LAN ports for Ethernet ports will only be shown as an Ethernet interface.

After applying **Enabled**, the LAN ports will be viewed as four separated ports shown on the status chart like the second figure.

Normally, this function only needed when more than two PVCs are available, for example, if we have two PVCs, one uses PPPoE and the other uses Bridge mode, we may want to group certain connection to a specific port, especially when some devices may consume higher bandwidth.

In our following demonstration, we have two PVCs; they are *pppoe_0_39_1*and *br_0_35.*

Click **Add** to create a new port mapping group.

Group Name: Give a unique name here. The word length must not be over the length of the field. In our example, *bridge*.

Available Interfaces: The available interfaces (such as Ethernet, USB, wireless, etc.) will be displayed in the left side box. When you choose it and click **Add**, it will be transferred into the **Grouped Interfaces** at the right side box. Yet, if you want to remove the interface from the current group, it will be returned back to the Default group (left side box) after you click Remove.

Now we are going to map USB, Wireless, and the first Ethernet port together with the bridge mode PVC. Click *br_0_35* and press **Add** button, then use the same way to add USB, Wireless, and Ethernet1 to grouped interfaces. The four items are moved to the right box now.

When the setting is done, click **Apply**.

Now we can check the result of the port mapping configuration. We have a default group, in which PPPoE mode will be applied through Ethernet port 2, 3, and 4, and we have another group named bridge, in which the bridge mode will be applied on USB, Wireless, and Ethernet port1.

You may click ✎ to edit the created group, press 🗑 to delete it, or click **Add** to create another group.

The following relationship figure illustrates the port mapping configuration.
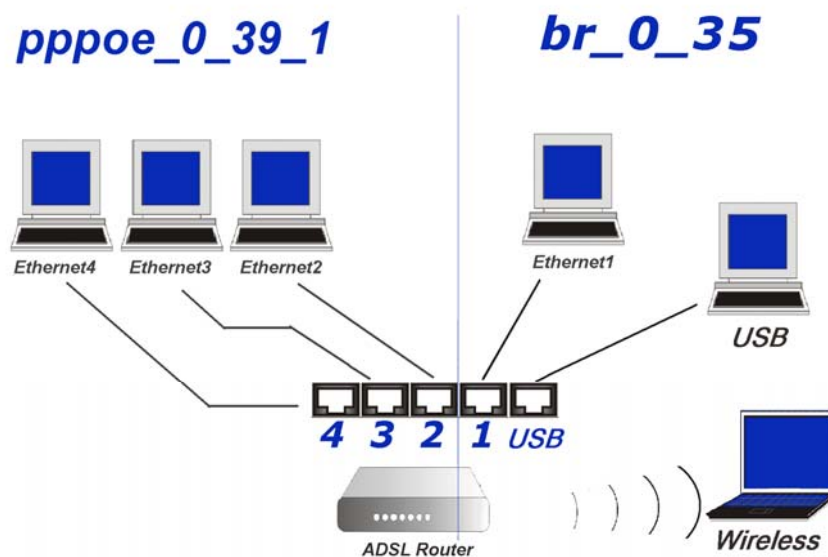
Under this configuration, any devices that is connected to USB, Wireless, or Ethernet port 1 will connect to the internet through the bridge mode PVC **br_0_35**, while the PCs using Ethernet port 2, 3, and 4 will access the internet by the PPPoE connection **pppoe_0_39_1**.

Wireless

This page allows you to configure the wireless function on you IAD. You may setup the settings for security, access control, and repeater features for the device.

Basic Settings

To set the basic configuration for the wireless features, please open Basic item from the Wireless menu.

Enable Wireless Network:
Click this check box to enable the wireless network function.

Wireless Main/Guest Network Name (SSID):
This device supports multiple wireless networks. The system will detect the Main SSID of your router and displayed in this field for your reference.

The SSID is the identification characters of a router. The default words will be shown on this page. If you do not check "Hidden SSID" item, the router will periodically broadcasts its SSID to allow the wireless clients within the range to recognize its presence. This can create a security hole since any wireless clients which got the broadcast might associate to your system.

Please note that if you want to communicate, all wireless clients should use the same SSID with the router or access point.

Two SSIDs are supported. One SSID can be used for main wireless network and the other SSID can be used for guest wireless network. Two wireless networks can be configured in different wireless security level.

Hide Wireless Main/Guest Network:
Check the box to hide the Main/Guest SSID of this AP (access point). Thus, other people in the network cannot find the Main/Guest SSID of this device.

Channel:
The frequency in which the radio links are about to be established. Select one channel that you want from the drop down list.

The administrator of network has to search available channels and assign one as the communication channel. All the other clients that match the SSID and pass security authentication can access this device and will use the same channel set here.

Wireless Basic Settings

This page allows you to configure basic features of wireless LAN interface. You can enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and select the working channel. Click "Apply" to configure the wireless basic options.

☑ Enable Wireless Network

Wireless Main Network Name (SSID): RTA1046VW-2A1B87 (☐ Hide Wireless Main Network)

Wireless Guest Network Name (SSID): [   ] (☐ Hide Wireless Guest Network)

Channel: 11 ▼ (☐ Select Best Quality Channel Automatically)

Transmission Mode: mixed mode ▼

Transmission Rate: Auto ▼

Multicast Rate: Auto ▼

Turbo Mode: ⦿ Disabled ○ Enabled

Wireless User Isolation: Off ▼

[Apply] [Cancel]

Transmission Mode:
It decides the mode of data transmission. Choose the one that you want to use from the drop-down menu. There are **802.11b only**, **802.11g only** and **Mixed Mode** provided here.

Transmission Rate:
It decides the speed of data transmission. Choose any one of it by using the drop-down menu. This setting will change by the transmission mode that you set above. The transmission rate settings under **802.11b only** include 1, 2, 5.5, 11Mbps and Auto. The transmission rates for **802.11g** settings include 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54Mbps and Auto. As for **mixed mode**, only Auto is available.

Multicast Rate:
When the multicast transmitting traffics are large, the transmission will be delayed in some way. If you want to speed up the rate, modify from the drop-down list.

For example, you may select *802.11g only* as the **transmission mode**, and select high **multicast rate** like *54 Mbps*.

Turbo Mode:
When it is enabled, the data transmission will be faster for this device. Check **Enabled** to invoke this function for speeding up the transmission, or check **Disabled** to close this function.

Wireless User Isolation:
To make the communication between the clients, please choose Off. To cut the communication between the clients, please choose On.

Click **Apply** to invoke the settings.

Security

To configure security features for the Wireless interface, please open **Security** item from **Wireless** menu. This web page offers eight authentication protocols for you to secure your data while connecting to networks. There are nine selections including 64-bit and 128-bit WEP, 802.1X, WPA, WPA-PSK, WPA2, WPA2-PSK, mixed WPA2/WPA, and mixed WPA2/WPA-PSK. Different item leads to different web page settings. Please read the following information carefully.

Select Wireless Network:
Select the wireless network which you want to configure the security settings from the drop down list.

Wireless Security:
The **Disabled** item offers you the less protection for wireless communication. If you choose **Disabled**, the Encryption Keys will not be shown on this page.

There are nine wireless security modes for you to select.

For 64-Bit WEP/ 128-Bit WEP

Wireless Security:
Select the WEP mode for the security function; there are two options**, 64-bit** and **128-bit**. Before being transmitted, the data will be encrypted using the encryption key. For example, if you set 64-bit in this field, then the receiving station must be set to use 64 Bit Encryption, and have the same Key value at the same time; otherwise, it will not be able to decrypt the data.

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Wireless Security

This page allow you to protect your wireless network by specifying WEP, 802.1x, WPA, or WPA2 wireless security. Before setting up security, ensure that your wireless adaptors support the same type of security. Most support WEP, but not all support WPA, WPA2, or 802.1x.

Select Wireless Network: RTA1046VW-2A1B87

Wireless Security: 128-bit WEP

Authentication Type: Open System

Encryption Keys

Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys.

Format:
- Hexadecimal digits (0-9, A-F, and a-f are valid)
- ASCII characters (any printable characters are valid except: & < , \ )

Key1:
Key2:
Key3:
Key4:

Default Transmission Key: 1

Apply   Cancel   After enabling security and clicking Apply, you will lose the connection with your wireless ADSL router. You should now set-up security on your wireless adapters in order to re-establish the connection.

Authentication Type:
The ADSL Router supports two authentication types: **Open System** and **Shared key**. This should be considered with the WEP (Wired Equivalent Privacy) mechanism.

Authentication Type: Open System
Open System
Shared Key

Open System means that it allows any client to authenticate and attempt to communicate with a bridge. The client can only communicate if its WEP keys match the router's WEP keys.

Shared Key means that a bridge or router will send an unencrypted text string to any client attempting to communicate with the router. The client requesting authentication encrypts the text and sends back to the router. Both unencrypted and encrypted can be monitored, yet it leaves the bridge open to be attacked by any intruder if he calculates the WEP key by comparing the text strings. That is why shared key authentication can be less secure than open authentication.

Format:
Choose the form of encryption key. You have to select either **Hexadecimal digits** or **ASCII characters** and type the keys on the fields of Key 1 to Key 4.

Format:
- Hexadecimal digits (0-9, A-F, and a-f are valid)
- ASCII characters (any printable characters are valid except: & < , \ )

Key1:
Key2:
Key3:
Key4:

Default Transmission Key: 1

Key 1 to 4:
Fill out the WEP keys according to the key length. For **64-bit** WEP mode, the content you can type is *5* characters or *10* hexadecimal digits; for **128-bit** WEP, the content you can type is *13* characters or *26* hexadecimal digits.

Default Transmission Key:
Select one of the keys that you set on the Key boxes as default key.

Click **Apply** for activation when the settings are done.

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For 802.1X Wireless Network
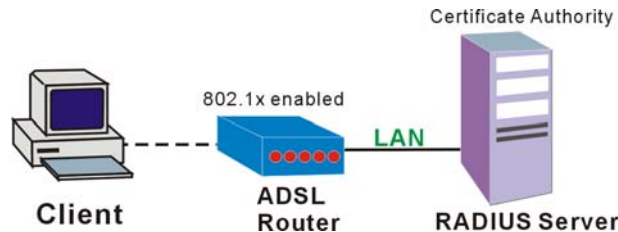
When a wireless client requests to access a network, it is required to be authenticated by a central authentication server (RADIUS Server). Only an authenticated user can be granted by the network access and thereby those unauthorized will be blocked.

Wireless Security:
Choose **802.1x** as the authentication protocol, your data transmission between the router and the clients will be protected with the settings that you set in this web page.

RADIUS Server IP Address:
RADIUS Server is a protocol for carrying authentication, authorization, and configuration information between a Network Access Server which desires to authenticate its links and a shared Authentication Server. Please enter the IP Address for the RADIUS Server.

RADIUS UDP Port:
Port *1812* is the reserved RADIUS-authentication port described in RFC 2138. Earlier AP (RADIUS clients) use port 1945. The default value will be shown on this box. You can keep and use it.

RADIUS Shared Secret:
A shared secret is like a password, which is used between RADIUS Server and the specific AP (RADIUS client) to verify identity. Both RADIUS Server and the AP (RADIUS client) must use the same shared secret for successful communication. Enter the words for the share secret.

After finishing the settings, click **Apply** for activation.

Example for 802.1x environment Configuration
You will need the following components for establishing an 802.1x environment in your network.
☐ Windows 2000/2003/NT Server: RADIUS server equipped with "Internet Authentication Service". Certificate Services installed.
☐ AP (Router): connected to Windows 2000 Advanced Server through the LAN port with DHCP server and 802.1x enabled.
☐ 802.1x client: a WLAN card supporting WEP.
☐ Authentication Mechanism.

For WPA (Wi-Fi Protected Access)

The **WPA (WiFi-Protected Access)** authentication is suitable for enterprises. It must be used in conjunction with an authentication server such as RADIUS to provide centralized access control and management. It can provide stronger encryption and authentication solution than none WPA modes.

Wireless Security

This page allow you to protect your wireless network by specifying WEP, 802.1x, WPA, or WPA2 wireless security. Before setting up security, ensure that your wireless adaptors support the same type of security. Most support WEP, but not all support WPA, WPA2, or 802.1x.

Select Wireless Network: RTA1046VW-2A1B87

Wireless Security: WPA

Data Encryption: TKIP

WPA Group Rekey Interval: 0   seconds

RADIUS Server IP Address: 0.0.0.0

RADIUS UDP Port: 1812

RADIUS Shared Secret:

Apply   Cancel   After enabling security and clicking Apply, you will lose the connection with your wireless ADSL router. You should now set-up security on your wireless adapters in order to re-establish the connection.

Data Encryption:
Select the data encryption method for the WPA mode. There are three types that you can choose, **TKIP, AES, TKIP+AES**.

Data Encryption: TKIP
                      TKIP
                      AES
                      TKIP+AES

TKIP (Temporary Key Integrity Protocol) takes the original master key only as a starting point and derives its encryption keys mathematically from this master key. Then it regularly changes and rotates the encryption keys so that the same encryption key will never be used twice.

AES (Advanced Encryption Standard) provides security between client workstations operating in ad hoc mode. It uses a mathematical ciphering algorithm that employs variable key sizes of 128, 192 or 256 bits.

TKIP+AES combine the features and functions of TKIP and AES.

WPA Group Rekey Interval:
Enter the time for the WPA group rekey interval. The unit is second. With increasing rekey interval, user bandwidth requirement is reduced.

RADIUS Server IP Address, RADIUS UDP Port, and **RADIUS Shared Secret:**
Please refer to the elucidation in the previous **802.1x** section.

After finishing the settings, click **Apply** for activation.

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For WPA-PSK; WPA2-PSK; Mixed WPA2/WPA-PSK

WPA-PSK (WPA-Pre-Shared Key) is useful for small places without authentication servers such as the network at home. It allows the use of manually-entered keys or passwords and is designed to be easily set up for home users.

Data Encryption:
Select the encryption type for the WPA mode. There are three types that you can choose, **TKIP, AES, TKIP+AES**. (For more information please refer to **WPA** section.)

Format:
Choose the form of encryption key. You have to select either **Hexadecimal digits** or **ASCII characters** and type the keys on the fields of Pre-Share Key.

Pre-Share Key:
Please enter the key between 8 and 63 characters, or 64 hexadecimal digits. Only the devices with a matching key that you set here can join this network.

WPA Group Rekey Interval:
Enter the time for the WAP group rekey interval. The unit is second. With increasing rekey interval, user bandwidth requirement is reduced.

After finished settings, click **Apply** for activation.

Wireless Security

This page allow you to protect your wireless network by specifying WEP, 802.1x, WPA, or WPA2 wireless security. Before setting up security, ensure that your wireless adaptors support the same type of security. Most support WEP, but not all support WPA, WPA2, or 802.1x.

Select Wireless Network: RTA1046VW-2A1B87

Wireless Security: WPA-PSK

Data Encryption: TKIP

WPA Pre-Shared Key

Enter the key to be between 8 and 63 ASCII characters, or 64 hexadecimal digits

Format:
○ Hexadecimal digits (0-9,A-F,and a-f are valid)
⊙ ASCII characters (any printable characters are valid except: & < , \ )

Pre-Shared Key:

WPA Group Rekey Interval: 0 seconds

[Apply] [Cancel] After enabling security and clicking Apply, you will lose the connection with your wireless ADSL router. You should now set-up security on your wireless adapters in order to re-establish the connection.

For WPA-2; Mixed WPA2/WPA

Wireless Security:
The **WPA2** is suitable for enterprises. It must be used in conjunction with an authentication server such as RADIUS to provide centralized access control and management. It can provide stronger encryption and authentication solution than other WPA mode.

Data Encryption:
Select the encryption type for the WPA2 mode. There are three types that you can choose, **TKIP, AES, TKIP+AES**. **(**For detailed information please refer to **WPA** section.)

WPA2 Pre-authentication:
The wireless client that has associated with one AP (router A) can do the authentication with another AP (router B) in advance. If the client roams to AP (B), it can associate with AP (B) quickly. Please click **Enabled** to activate this function.

Network Re-auth Interval:
When a wireless client has associated with the AP for a period of time longer than the setting here, it would be disconnected and the authentication will be executed again. The default value is *36000*, you may modify it.

WPA Group Rekey Interval:
Enter the time for the WPA group rekey interval. The unit is second. With increasing rekey interval, user bandwidth requirement is reduced.

RADIUS Server IP Address, RADIUS UDP Port, and **RADIUS Shared Secret:**
Please refer to the elucidation in the previous **802.1x** section.

When the settings are finished, click **Apply** for activation.

Wireless Security

This page allow you to protect your wireless network by specifying WEP, 802.1x, WPA, or WPA2 wireless security. Before setting up security, ensure that your wireless adaptors support the same type of security. Most support WEP, but not all support WPA, WPA2, or 802.1x.

Select Wireless Network: RTA1046VW-2A1B87

Wireless Security: WPA2

Data Encryption: AES

WPA2 Pre-authentication: ⦿ Disabled   ◯ Enabled

Network Re-auth Interval: 36000   seconds

WPA Group Rekey Interval: 0   seconds

RADIUS Server IP Address: 0.0.0.0

RADIUS UDP Port: 1812

RADIUS Shared Secret:

Apply   Cancel   After enabling security and clicking Apply, you will lose the connection with your wireless ADSL router. You should now set-up security on your wireless adapters in order to re-establish the connection.

Access Control

The web page allows you to enable the wireless MAC control configuration.

Access Control:
Click **Off** to disable this function. Click **On in Allow mode** to allow the devices using matched MAC address to link to the AP. And click **On in Deny mode** to disturb the listed wireless MAC address to access the AP.

View Access Control List:
Click this button to view the wireless access control list and to add a new MAC address.

The Wireless Access Control List dialog allows you to add a new MAC address and view current MAC addresses that you had added.

To add a new MAC address to your wireless MAC address filter, click on the **Add** button.
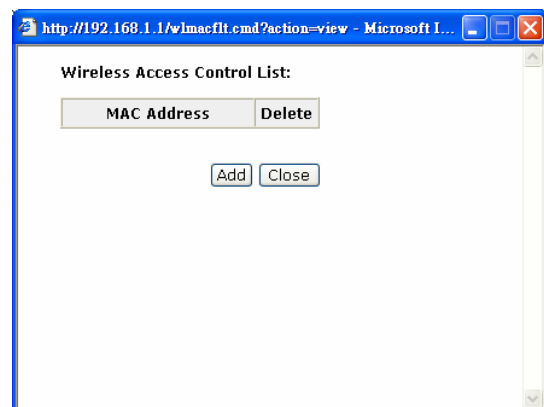
MAC Address of Wireless adaptor:
Key in the MAC Address to be filtered. And click **Apply**.
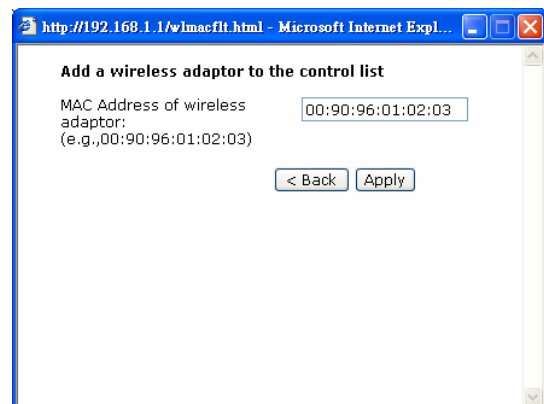
The result of the added MAC address will be shown on the table.

If you want to delete the added MAC address, simply click the delete button 🗑 , a dialog box will be prompted to confirm the deleting. Click **Yes**, and then the selected one will be erased.

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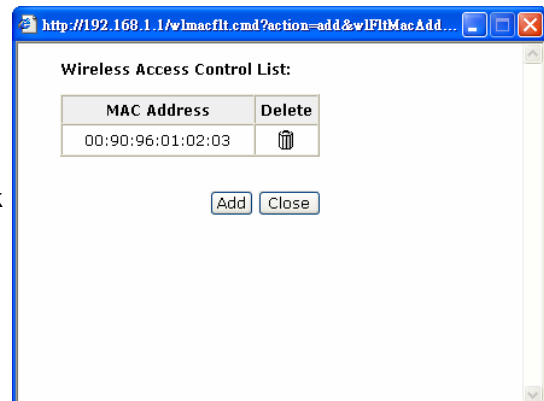
Repeater

A **repeater** is an electronic device that receives a weak or low-level signal and retransmits it at a higher level or higher power, so that the signal can cover longer distances without degradation.

The example figure illustrates the releationship among the repeaters and the clients. In this example, client A, B, and C can access AP-A, but client D and E cannot. In this case, AP-B extends the coverage erea of AP-A, thus allows client D and E to receive the signal smoothly.
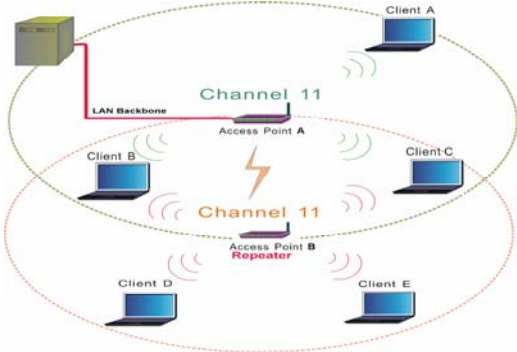
The web page allows you to configure the wireless distribution system for the wireless network.

AP Mode:
Choose an AP mode that you would like to use.

Search Other Repeaters:
You can configure other routers as your repeater by setting up repeater feature mutually. Click the **Scan Now** button to search other repeater in the wireless network automatically. The result will be shown on the chart.

Note: To configure the repeater function among routers, they must use the same **channel**, **SSID** and **WEP key**, so that they may work as repeaters for each other.

If you select **Manual** for **Search Other Repeaters**, you will need to type the MAC address for wireless repeaters in the boxes of **MAC Address of Remote Wireless Repeaters**.

The right figure shows an example result of executing the function of auto-searching repeaters.

You may select the routers (which use the same channel as yours) from the table and configure the same SSID and WEP key with the one you chose, so that the routers can function as repeaters for each other to extend the coverage area.

When you finish the settings, please click **Apply** to invoke them.

Voice over IP

VoIP (Voice over IP) is a voice service provided by the ISP or VSP (Voice Service Provider). It compresses the voice signal into data package and transfers the data through the IP network. That is, it is a telecommunications service of sounds by the open Internet. With the Internet, it not only offers real-time sound service, but also it can connect to anywhere in the world. It allows users to carry out remote conversation without passing PSTN.

VoIP provides you with a new way to gain more from your broadband connection - simply hook up your phone to the telephone adapter and create a service similar to an additional phone line.

What is the advantage of VoIP?

➢ It can save your money on phone bills.

➢ The equipment is cheaper than other telecom devices.

➢ It uses current IP network.

Hardware Connection for using VoIP

Below shows a brief hardware connection for executing VoIP function.
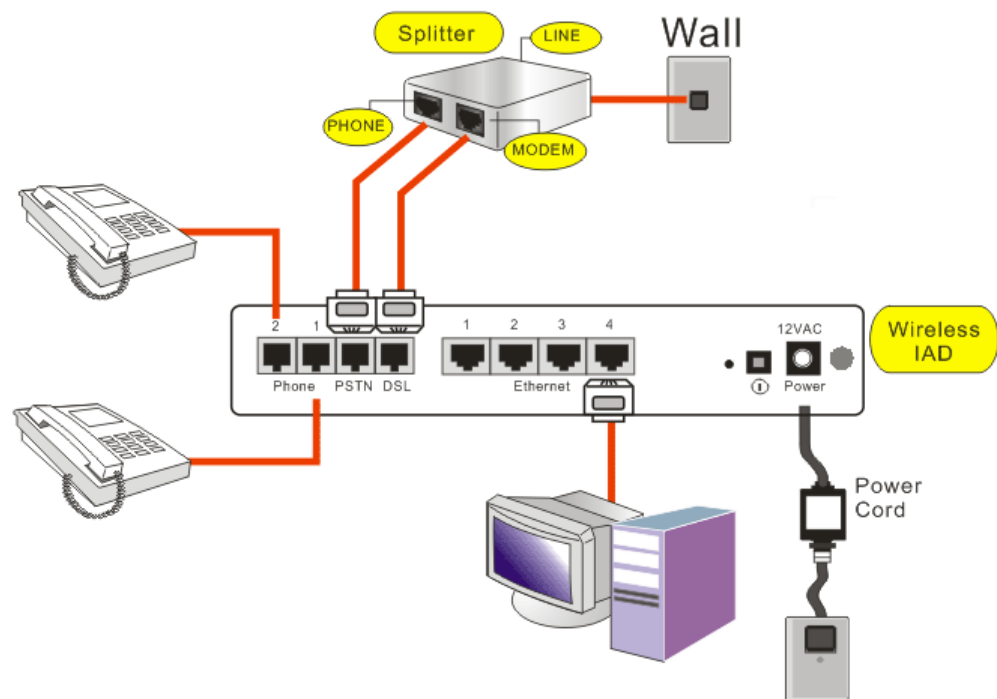
1. Connect a telephone handset (or fax machine) to the Phone1 port and another telephone handset to Phone2 port (optional) on the wireless IAD separately by using phone cables.

2. Use a phone cable to connect PSTN port on the wireless IAD to the Phone port on the splitter.

3. Use a phone cable to connect DSL port on the wireless IAD to the Modem port on the splitter.

4. Connect the telephone line from the wall outlet to the Line port of the splitter.

Note: Microfilter/splitters can be purchased separately. To use the VoIP service without a microfilter/splitter connect the DSL port directly to the telephone wall outlet. However, with this configuration you cannot use the RTA1046VW for PSTN calls (conventional telephone service).

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SIP

SIP (Session Initiation Protocol) is a signaling protocol for Internet conferencing, telephony, presence, events notification and instant messaging.

Besides the combination with other internet technology, such as HTTP, SMTOP, RTSP, etc., and the communication service of integrating audio and other multimedia like Instant Messaging and Presence service, it can be used to build the network telephone.

SIP Basic

Below is a typical network diagram from the wireless IAD to your ISP and VoIP service provider
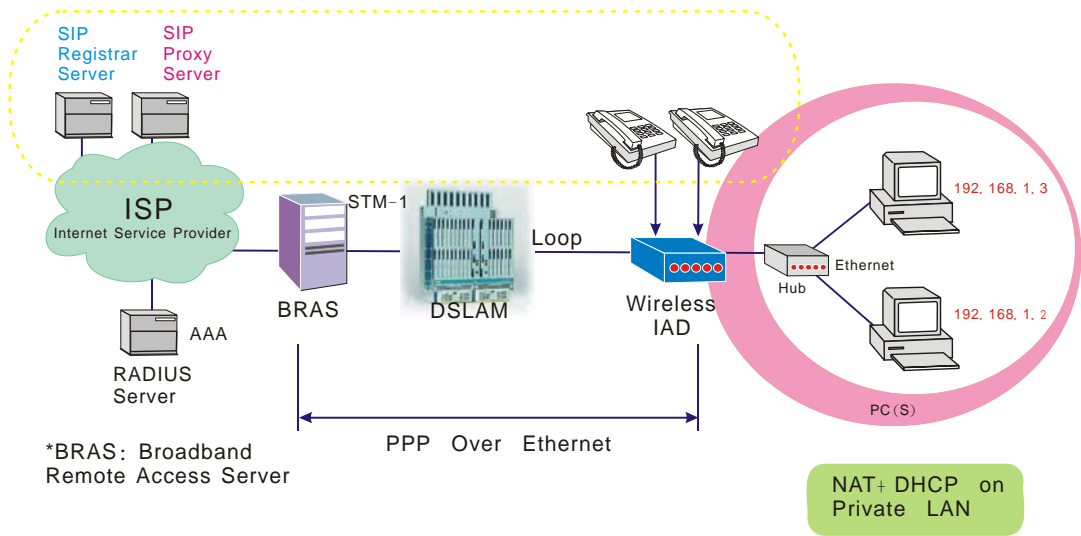
You may configure the SIP basic settings for your IAD through this webpage. Most of the settings needed here are information provided by your ISP.

Interface:
Choose the interface that you want to use for the VoIP function from the drop down menu.

SIP Transport Protocol:
There are two protocols (**UDP** and **TCP**) that you can choose for the router. Choose a proper one to be used. Default is UDP.

VoIP Service Provider:
You can choose the VoIP service provider from the drop-down list for the predefined settings, or choose **Others** and offer the necessary information below manually.

SIP Transport Port:
Key in the port number for the SIP proxy server provided by your ISP. The default port here is *5060*.

SIP Transport Port: 5060

SIP Registrar Address:
Enter the **IP address** or **Domain name** for the SIP Registrar Address.

Port:
Key in the port number for the SIP Registrar server provide by your ISP. The default is *5060*.

SIP Registrar Address: Port: 5060

Registrar:
It is a server that accepts REGISTER requests and places the information it receives in those requests into the location service for the domain it handles.

SIP Outbound Proxy:
Type the **IP address** or **Domain Name** of the SIP proxy server into the field.

Port:
Key in the port number for the SIP proxy server. The default is *5060*.

SIP Outbound Proxy: Port: 5060

Outbound Proxy:
It receives requests from a client, even though it may not be the server resolved by the Request-URI. Typically, a UA (user agent) is manually configured with an outbound proxy, or can learn about one through auto-configuration protocols.

SIP Proxy Server Address:
Enter the **IP address** or **Domain Name** of the SIP proxy server.

Port:
Key in the port number for the SIP proxy server. The default is *5060*.

SIP Proxy Server Address: Port: 5060

Proxy Server:
Primarily it plays the role of routing. That means its job is to ensure that a request is sent to another entity "closer" to the targeted user. Proxies are also useful for enforcing policy (for example, making sure a user is allowed to make a call). A proxy interprets, and, if necessary, rewrites specific parts of a request message before forwarding it.

Registration Information:
Please enter the phone number (received from the ISP) that you want to connect through this device in a specific network group. And key in the user names and passwords for the phone1 and phone2 (optional).

After finished settings, click **Apply** for activation.

Registration Information

Phone	Phone Number	Caller Name	User Name	Password
1	1234567	Jack	Eve	••••
2				

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SIP Extension

More advanced functions are provided here, these are optional settings. Please check what you need for the Wireless IAD settings.

Encode SIP option with the User Agent:
It means the device name will be conveyed with the packets transmitted to other places.

The SIP request and response messages sent by the IAD will be encoded with the device name of the user agent.

SIP Extension Settings

☐ Encode SIP option with the user agent: RTA1046VW
☑ Encode SIP URI with user=phone parameter
☑ SIP Register with Expired Time: 3600 seconds (range: 30 ~ 86400)
☑ SIP Session Timer: 1800 seconds (This value must not be less than Min-SE value.)
☑ SIP Min-SE value: 180 seconds (minimum: 90 seconds)
☐ Do Not Send My Phone Number
☐ Subscribe Voice Mail Service
☐ Enable Voice Activity Detection

Send Telephone Events via Voice Codec

Inter-Digit Timeout Value: 5 seconds (range: 3 ~ 120)
Dial Timer: 4 seconds (range: 2 ~ 120)

[Apply] [Cancel]

Encode SIP URI with user=phone parameter:
A SIP URI can identify a communication resource. It contains sufficient information to initiate and maintain a communication session with the resource.

☑ Encode SIP URI with user=phone parameter

Select it if you want the parameter of user=phone information to be conveyed with the SIP request and response messages sent by the IAD.

SIP Register with Expire Time:
When the registered users are working online, after passing **half** of the expired time, the IAD will register for them automatically.

☑ SIP Register with expire time: 3600 seconds (range: 30 ~ 86400)

Please check this item and enter the expired time for the SIP register. The range is from *30* to *86400*. If you do not want to invoke this setting, simply leave it unchecked.

SIP Session Timer Value:
The time that you set here means that after passing **half** of the SIP session timer (e.g., *900* seconds if we enter *1800* here); the IAD will invite the connection again.

☑ SIP Session Timer: 1800 seconds (This value must not be less than Min-SE value.)

Key in the number of the timer value. The default setting is **1800** seconds, which means after 900 seconds, the IAD will send a message and connect to the opposite side to ensure the connection. Be aware that the value you type here cannot be less than the Min-SE value. The unit is second.

SIP Min-SE value:
As implied in the name, the value you type here is the minimum value for the session timer. The default value is **180** seconds.

☑ SIP Min-SE value: 180   seconds (minimum: 90 seconds)

Do NOT send My Phone Number:
This item allows the caller's ID or name not to be sent to the receiver. Check the box to enable this function.

☐ DO not send my phone number

Subscribe voice mail service:
Check this box to subscribe voice mail service if your VoIP service provider offers this service.

☐ Subscribe voice mail service
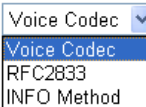
Enable Voice Activity Detection:
While communicting via VoIP, there will be silent period when we are not talking; thus, by using this VAD feature, silence packets can be disabled and the silent period can be utilized to transmit traffic other than voice. Check it to invoke this function.

☐ Enable Voice Activity Detection

Send telephone events via:
There are three ways for you to send the telephone events. Choose one (**Voice Codec** (Inbound), **RFC2833**, **INFO Method**) according to the information provided by your ISP for sending the events.

Send telephone events via   Voice Codec ▾
Voice Codec
RFC2833
INFO Method
[Apply]

Inter-digit timeout value:
When dialing phone number, if the pause between dialing two digits up to the timeout value set here, the call will be terminated.

Inter-digit timeout value: 5   seconds (range: 3 ~ 120)
Dial Timer: 4   seconds (range: 2 ~ 120)

Dial Timer:
When the dialed phone number correctly meets the dial plan, the call demand will be sent out by the setting time.
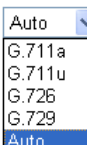
Audio Codec

It is a computer program that compresses/decompresses digital audio data according to a given audio file format or streaming audio format.

Preferred Audio Codec:
There are six options for you to choose. Each one represents different compression function for the audio data. Select one to match your requirement according to the information provided by your ISP. If you choose **Auto**, the system will choose a proper one for you. It is recommended to choose *Auto* if you don't know how to select.

After finished settings, click **Apply** for activation.

Audio Codec Configuration

Preferred Audio Codec: Auto ▾
G.711a
G.711u
G.726
G.729
Auto
[Apply] [Cancel]

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PSTN Control

PSTN means Public Switched Telephone Network. It is one kind of telephone system which uses the copper cable to transmit analog sound. PSTN is also known as POTS (Plain Old Telephone System).

This page allows you to change the prefix digits to dial one PSTN phone call. If your device is on the PSTN mode, it is not necessary for you to set the prefix digits for the PSTN phone calls.

Conditions for the PSTN

The following conditions indicate that the VoIP phone has been changed to PSTN mode:

● while the IAD is powered off

● while the IAD cannot register with or reach the SIP Server

● while user dials prefix digits

● while user dials PSTN phone numbers including emergency call (FXO function, refer to the section of "Definition of FXS and FXO")

● while PSTN call incoming

Conditions for the VoIP

The following conditions indicate that the VoIP phone has been changed to VoIP mode:

● while PSTN call terminated

● while SIP sever is reachable and is registered successfully

> **Note:** Only *Phone 1 port* can act as a PSTN relay. So if the wireless IAD loses power only Phone1 can make calls using your landline telephone company

The page on the right side is the web page for PSTN control settings.

PSTN Control Settings

This page allows you to configure the tone/ring signals for specific country and change the prefix digits in order to dial one PSTN phone call.

Select Tone/Ring Signals for : [North America ▾]

To dial one PSTN phone call under VOIP mode, you can dial the prefix digits first then phone number. If your device is on the PSTN mode, you don't need to dial the prefix digits for PSTN phone calls.

Prefix digits to dial PSTN phone call: [*00#] (maximum: 4 digits)

To dial one PSTN phone call, you also can configure PSTN phone numbers below in advance. The valid characters can be any digits (from 0 to 9) and special characters (e.g., *, #, X) where X represents any digits.

PSTN Phone Number	PSTN Phone Number	PSTN Phone Number	PSTN Phone Number

[Apply] [Cancel]

Select Tone/Ring Signals for:
Different places have different tone/ring signals. You have to make sure the location of the receiver and choose a proper one. Simply use the drop-down list to select.

Select Tone/Ring Signals for : North America

North America
General Europe
United Kingdom
Netherlands
France
Switzerland
Sweden
Belgium
Finland
Germany
Italy
Brazil
Denmark
Hungary
Chile
New Zealand
Australia
TR57

Prefix digits to dial PSTN phone call:
The digits that you type here must be dialed before the phone number for a PSTN phone call. The maximum setting is 4 digits.

To dial one PSTN phone call under VOIP mode, you can dial the prefix digits first then phone number. If your device is on the PSTN mode, you don't need to dial the prefix digits for PSTN phone calls.

Prefix digits to dial PSTN phone call: *00# (maximum: 4 digits)

Be aware that only Phone1 possesses the function of PSTN Relay. So the prefix digits only have effect on Phone1.

Because the Phone1 and Phone2 ports on this device possess the function of FXO, you can set the PSTN phone number in these fields.

To dial one PSTN phone call, you also can configure PSTN phone numbers below in advance. The valid characters can be any digits (from 0 to 9) and special characters (e.g., *, #, X) where X represents any digits.

PSTN Phone Number	PSTN Phone Number	PSTN Phone Number	PSTN Phone Number

The numbers you type here can be dialed directly through PSTN without dialing prefix digits. Therefore, it is convenient for you to set **emergency** telephone number here, such as 110, 119, 911, 166, and any other important and useful phone numbers.

For more detailed information of FXO, please refer to the following section.

Definitions of FXS and FXO

FXS (Foreign eXchange Subscriber) interface delivers POTS service from the local phone company and connects to subscriber equipment (e.g., phone, fax, modem.. and so on). That is, an FXS interface will point to the subscriber directly. An FXS interface can provide primary service of dial tone, battery current and ring voltage to a subscriber device.

FXO (Foreign eXchange Office) interface receives POTS service, from a central CO of PSTN. That is, an FXO interface will point to the Telco office directly. An FXO interface can provide primary service of on-hook/off-hook indication to the Telco network device.

The following illustration shows the hardware connection for the FXS and FXO interfaces.
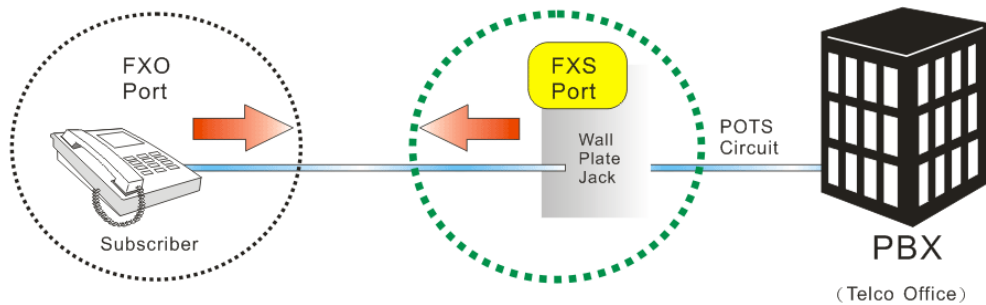
Call procedure of FXS-FXO

The call procedure for FXS and FXO differs for each other. Refer to the following for reference.

For the side of FXS:	For the side of FXO:
• Initiating a call by Presenting ring voltage over the line to the attached FXO device. (Notice that the FXS device cannot pass dialed digits.)	• Initiating a call by Going off-hook to seize the telephone line and Dialing the dual-tone multi-frequency (DTMF) digits that can identify the destination to be called.
• Receiving a call by Detecting the line that has been seized (the attached telephone-FXO device-has gone off hook) *and* Receiving dual-tone multi-frequency (DTMF) digits indicating how the call should be routed.	• Receiving a call by Detecting the ring voltage supplied by the FAX device *and* Going off-hook to answer the call.

Notice that the FXS devices will supply DC power to the line.

Connection Diagram for the Application of FXS-FXO

● General VoIP Call
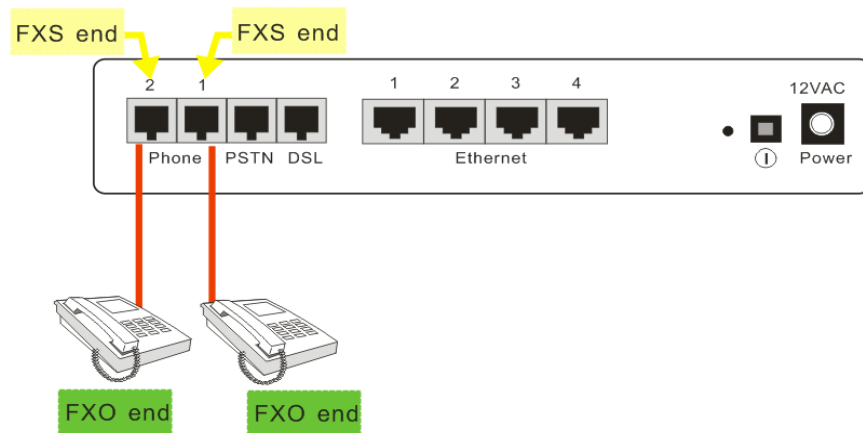
● VoIP Call with Prefix Digits
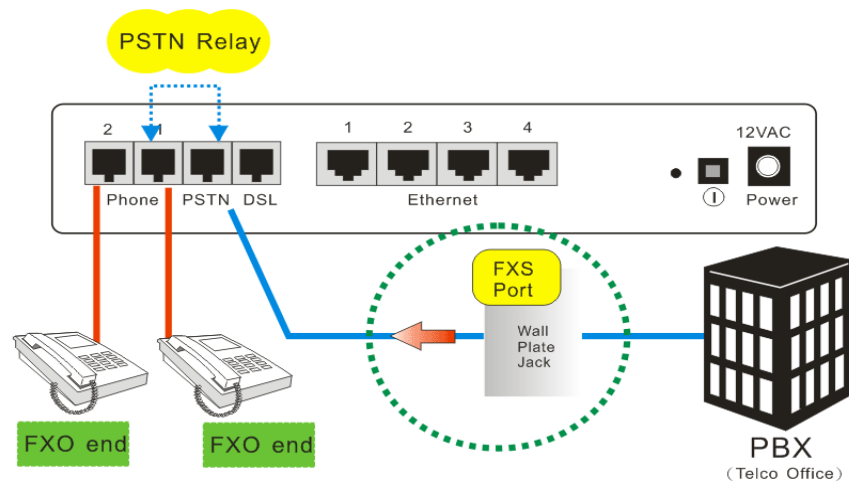
● VoIP Call that fits dial plan

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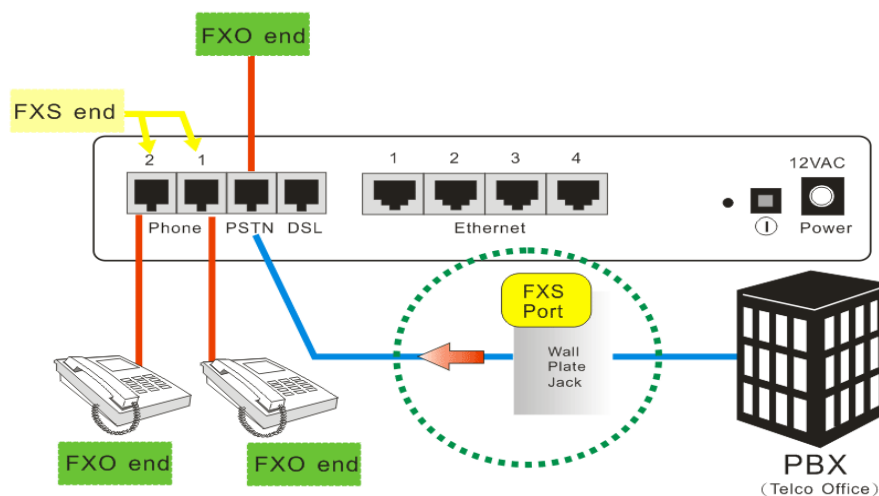
Call Log

This page shows the log information for the call. There are three items that you can choose for viewing details in the list below. They are **Outgoing Calls**, **Incoming Calls** and **Missed Incoming Calls**.

To see either one of them, simple click the radio button of that item. Then, the corresponding information will be shown on the list below the selected item.

Notes: Call logs for landline (PSTN) calls will only be shown when your landline has caller ID service subscription.

Call Log

Display the call log of ⦿ Outgoing Calls ○ Incoming Calls ○ Missed Incoming Calls

Call	Phone Number	Time
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Call Log

Display the call log of ○ Outgoing Calls ⦿ Incoming Calls ○ Missed Incoming Calls

Call	Phone Number	Caller Name	Time
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Call Log

Display the call log of ○ Outgoing Calls ○ Incoming Calls ⦿ Missed Incoming Calls

Call	Phone Number	Caller Name	Time
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Example for Call Features

The figures below shows the call features for this model:

Note: The availability of these call features is dependent on your VoIP Service Provider

Call Transfer

1	User 1 calls User 2
2	User 2 answers
3	User 2 hits hook/flash button to transfer call
4	User 2 hears dial tone and dials User 3
5	User 3 answers
6	User 2 hangs up to transfer call
7	User 1 and 3 are now in a call together
8	User 1 hangs up
9	User 3 hangs up
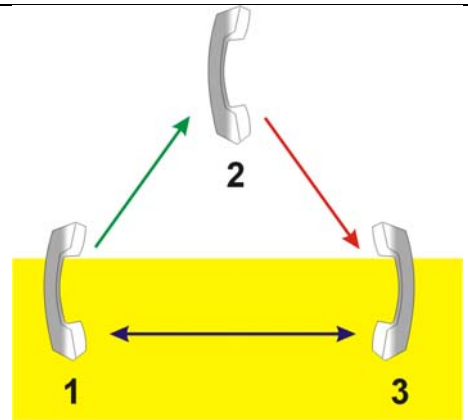
Call Waiting

1	User 2 calls User 3
2	User 3 phone is ringing
3	User 2 and 3 are talking
4	User 1 dials User 2
5	User 2 hears call waiting tone
6	User 2 hits hook/flash button to change calls
7	User 3 holds the phone and waits
8	User 2 and User 1 are talking
9	User 1 Hangs up
10	User 2 hits hook/flash button to pick up the call of user 3 again
11	User 2 and 3 are talking again
12	User 3 hangs up
13	User 2 hangs up
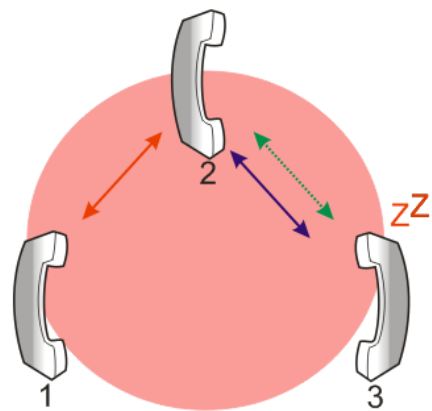
3-Ways Conference Call

1	User 1 calls User 2
2	User 1 and User 2 in Call, User 1 hits hook/flash button to make 3-way call
3	User 1 hear dial tone and dials User 3
4	User 3 answers
5	User 1 and 3 in call. User 1 hits flash/hook button again to connect all 3 parties
6	User 1, 2 and 3 in 3-way call.
7	User 2 hangs up
8	User 1 and 3 back in 2-way call
9	User 3 hangs up
10	User 1 hangs up

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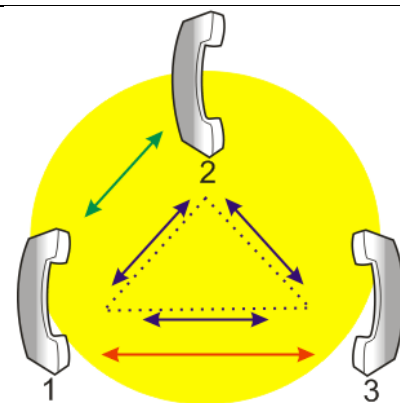
Management

Diagnostics

To check the linking status for the network and your computer, a diagnostic test can guide you to detect the network problem. The testing items are listed and examined one by one. If the previous one is failed, than the items following that one will be failed, too. Use this diagnostic test to detect the connectivity mistakes whenever linking problem occurs.

Press **Run Diagnostic Tests** on the **Diagnostic Tests** page.

Diagnostic Tests
This ADSL router is capable of testing your ADSL connection.

Select the Internet Connection: pppoe_0_39_1 ▾   [Run Diagnostic Tests]

The Result would be shown on the same page.

For the item which passes through the diagnostics, a "**PASS**" will be displayed on the right side of that item.

If not, a "**FAIL**" will be presented there.

If there is no device using that port, a "**DOWN**" will be displayed.

Press the **Help** link to know what the result (Pass, Fail) represents for.

Diagnostic Tests
This ADSL router is capable of testing your ADSL connection.

Select the Internet Connection: pppoe_0_39_1 ▾   [Run Diagnostic Tests]

Test the connection to your local network

Test your Ethernet Connection:	PASS	Help
Test your USB Connection:	DOWN	Help
Test your Wireless Connection:	PASS	Help

Test the connection to your ADSL service provider

Test ADSL Synchronization:	PASS	Help
Test ATM OAM F5 segment ping:	PASS	Help
Test ATM OAM F5 end-to-end ping:	PASS	Help
Test ATM OAM F4 segment ping:	FAIL	Help
Test ATM OAM F4 end-to-end ping:	FAIL	Help

Test the connection to your Internet service provider

Test PPP server connection:	PASS	Help
Test authentication with ISP:	PASS	Help
Test the assigned IP address:	PASS	Help
Ping default gateway:	PASS	Help
Ping primary Domain Name Server:	PASS	Help

Take the **Help** link of **ADSL Synchronization** for example.

It not only explains the situation for Pass and Fail, but offers the troubleshooting procedures for you to follow.

Press **Back** to return.

ADSL Synchronization Test

| **Pass:** | Indicates that the ADSL router has detected a ADSL signal from the telephone company. |
| **Fail:** | Indicates that the ADSL router does not detect a signal from the telephone company's ADSL network. The ADSL LED will continue to flash green. |

If the test fails, follow the troubleshooting procedures listed below and rerun the diagnostics tests.

Troubleshooting:

1. Make sure your phone line is plugged into the router.

2. After turning on your ADSL router, wait for at least one minute to establish a connection. Run the diagnostic tests again by clicking "Rerun Diagnostic Tests" at the bottom of this page.

3. Make sure there is no ADSL micro filter on the phone cord connecting the ADSL router to the wall jack.

4. Make sure you are using the phone cord that was supplied with your ADSL router or another similar phone cord with four copper wires visible in the plug.

5. If your ADSL has been functioning properly for a long period of time and you suddenly are experiencing this problem, there may be a problem with the ADSL network. You may need to wait from 30 minutes to a couple of hours, and if you still do not have a solid ADSL LED on your router, call Technical Support.

6. Turn off the power to the ADSL router, wait 10 seconds and turn it back on. Wait at least one minute and if the ADSL LED on the router remains a solid color, close your Web browser and restart it.

[< Back]

Contact ISP Technical Support if you have tried all of the above and still are experiencing a fail condition.

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Management Accounts

This page allows you to change the user name and password for accessing your wireless IAD.

For the **Admin Account**, the default setting for both username and password are **admin**. If you want to change the username and the password, please modify the **User Name** and **New Password**, and then retype the new password in the **Confirm** field for confirmation. Then click **Apply**.

To create a user account, you may setup a username and password under **User Account** on the same page.

Note that the new user can merely access the **Quick Start** and **Status** page.

Admin Account

Admin account has unrestricted access to change and view configuration of your ADSL router.

User Name: admin
New Password:
Confirm New Password:

[Apply] [Cancel]

User Account

Using the user account can configure most common functions and view statistics of your ADSL router.

User Name: user
New Password:
Confirm New Password:

[Apply] [Cancel]

Management Control – From Remote

There are six interfaces for the remote access. Please choose from them if you want to enable the remote access control.

Select the Internet Connect:
Select one connection item from the drop-down list to enable the function.

Web Browser:
Check this box if you want to have remote control through HTTP. The default port number is 8080. Modify the port whenever you want.

Telnet:
Check this box if you want to have remote control through telnet.

FTP:
Choose this box if you want to have remote control through FTP.

TFTP:
Choose this box if you want to have remote control through TFTP.

Secure Shell (SSH):
Choose this box if you want to have remote control through SSH.

Ping:
Choose this box if you want to have remote control through ping command under DOS prompt.

Remote Management Control

Enable remote access to let an expert, e.g. helpdesk, configure your ADSL router remotely.

Select the Internet Connection: pppoe_0_39_1

To allow remote access to your router via

☐ Web Browser
   Web server port on WAN interface: 8080
☐ Telnet   ☐ FTP
☐ TFTP   ☐ Secure Shell (SSH)
☐ PING
   If enabling remote access to your router via PING, all Internet hosts can ping to your router.

[Authorized Host IP Address List] [Apply] [Cancel]

Authorized Host IP Address List:
Decide whether all internet hosts can access your IAD or only authorized internet hosts can access. Click **Apply** to save your setting.
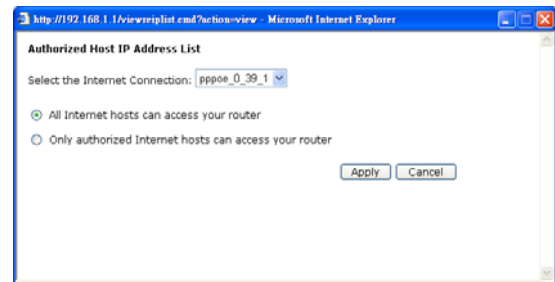
Management Control – From Local

You can allow local access to your router via the checked interfaces.

Authorized Host IP Address List:
Refer to Remote Management Control.

Click **Apply** to activate your settings or click **Cancel** to retain the original settings.

TR-069 Client Configuration

TR-069 is a CPE WAN Management Protocol (CWMP) intended for communication between Customer Premise Equipment (CPE) and an Auto-Configuration Server (ACS). It defines a mechanism that encompasses secure auto configuration of a CPE, and also incorporates other CPE management functions into an integrated framework.

Using TR-069 the CPE can get in contact with the ACS and establish the configuration automatically. Accordingly other service functions can be provided. TR-069 is the current standard for activation of CPE in the range of DSL broadband market.

ACS: Auto-Configuration Server
CPE: Customer Premise Equipment
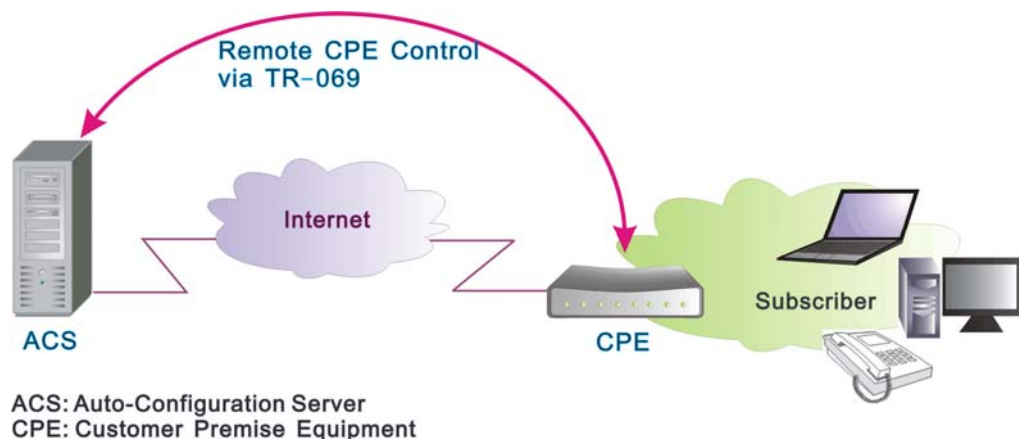
Compliant with DSL's Forum's TR-069 Remote Management Specification, the wireless IAD is highly manageable with the default ACS for auto-configuration, dynamic service provisioning, firmware updates, status and performance monitoring, and diagnostics to a collection of routers. By these provision value-added services, the wireless IAD with TR-069 helps DSL service provider reduce operation effort as well as enhance customer satisfaction.

Normally, users do not have to modify the settings here. If you do not know how to set up, you can just accept the factory default settings on this page or contact your ISP.

Connect to ACS:
Choose to connect to ACS with or without SSL (Secure Socket Layer) protocol according to your ISP.

If the ACS URL starts with **http://**, choose *without SSL* mode; if it begins with **https://**, select *with SSL*.

ACS URL Address:
Key in the Auto-Configuration Server URL Address provided by the ISP, e.g., http://10.11.95.124:8082/askey/ACSServer without SSL or https://10.11.95.124:8443/askey/ACSServer with SSL.

ACS User Name/ ACS Password:
When connecting to ACS, this device must have correct user name and password for authentication. Key in the information provided by the ISP.

When the content of ACS URL Address, User Name, and Password match the ACS authorization, the IAD will send an online report to ACS.

Connection Request User Name/Password:
If the ACS wants to communicate with the device, it will have to offer the matching Connection Request User Name and Password. When the device sends the report to ACS for the first time, it will contain information for this.

Periodic Transmission of Inform Request:
If this function is enabled, the CPE will frequently report to ACS the status after a period of time set here. The default setting is **300** seconds, and the ISP can modify the value. Generally, users do not have to change the settings here.

If this function is disabled, the CPE will only report once when the connection between ACS and the device has been set up.

Identify the Validation of Certificate from ACS
When using SSL protocol to connect to ACS, a trusted CA and synchronic time setting with the server are used to identify the validation of the Certificate sent from ACS.

When choosing **with SSL** for **Connect to ACS**, you will see a paragraph appear on the bottom of the window (as shown in the right column).

TR-069 Client Configuration

TR-069, a CPE WAN Management Protocol, allows the Auto-Configuration Server (ACS) to perform the auto-provisioning of settings, firmware updates, status and performance monitoring, and diagnostics to a collection of ADSL routers.

Connect to ACS: ⦿ without SSL ◯ with SSL
ACS URL Address: http:// 10.11.95.124:8082/as

ACS User Name: 009096-RTA1046VW-FFBBAA
ACS Password: •••••
Used to authenticate this device when making a connection to ACS

Connection Request User Name: 009096-RTA1046VW-FFBBAA
Connection Request Password: •••••
Used to authenticate an ACS making a Connection Request to this device

Periodic Transmission of Inform Request: ⦿ Disabled ◯ Enabled

[Apply] [Cancel]

TR-069 Client Configuration

TR-069, a CPE WAN Management Protocol, allows the Auto-Configuration Server (ACS) to perform the auto-provisioning of settings, firmware updates, status and performance monitoring, and diagnostics to a collection of ADSL routers.

Connect to ACS: ◯ without SSL ⦿ with SSL
ACS URL Address: https:// 10.11.95.124:8443/as

ACS User Name: 009096-RTA1046VW-FFBBAA
ACS Password: •••••
Used to authenticate this device when making a connection to ACS

Connection Request User Name: 009096-RTA1046VW-FFBBAA
Connection Request Password: •••••
Used to authenticate an ACS making a Connection Request to this device

Periodic Transmission of Inform Request: ◯ Disabled ⦿ Enabled
Transmission Interval of Inform Request: 300 seconds

Identify the Validation of Certificate from ACS:

Trusted CA (Certificate Authority) Certificate and correct current time are used to identify the validation of the Certificate which is sent from ACS during SSL connection. You can import the Trusted CA Certificates through the Trusted CA Certificates window and enable the Internet time function from the Management...Internet Time menu.

[Apply] [Cancel]

Periodic Transmission of Inform Request: ◯ Disabled ⦿ Enabled
Transmission Interval of Inform Request: 300 seconds

Identify the Validation of Certificate from ACS:

Trusted CA (Certificate Authority) Certificate and correct current time are used to identify the validation of the Certificate which is sent from ACS during SSL connection. You can import the Trusted CA Certificates through the Trusted CA Certificates window and enable the Internet time function from the Management...Internet Time menu.

Press **Trusted CA Certificates** to Import Certificate obtained from your ISP, a window (as shown in the figure) will be prompted for you to import certificate.

Note: The certificate may have been imported in this device already, please check with your ISP.
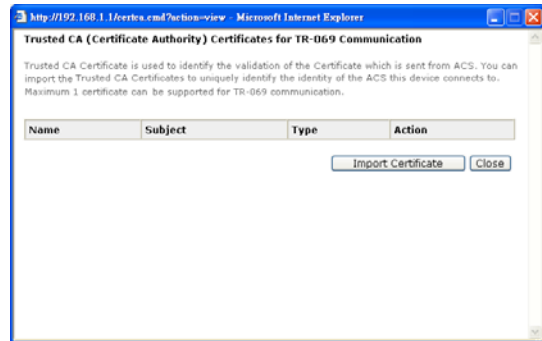
To synchronize your time with the server, go to **Management->Internet Time** to adjust the setting. Configure to set time by **Time Server**, and make sure the time zone is the same as the server's.

(Please refer to the next section for detailed information about Internet Time.)

Internet Time

The clock of the IAD must synchronize with global Internet time. The time you set in the screen will be adapted to system log.

Update Now:
Click this button to refresh the current time.

Set Time by (Time Server or Manual):
The default setting is **Manual**. Select this one, and set the start time by typing the date and the time manually to help the IAD perform tasks.

If you select **Time Server**, the system will set time automatically.

Primary Time Server/ Secondary Time Server:
You may select the preferred time server from the drop-down list. The time will be adjusted by the time server.

Time Zone:
Choose the time zone of your location.

Apply:
Save the data on the screen and apply the data after restarting the IAD.

Cancel:
Discard the new configuration and reserve the original settings.

Internet Time

To synchronize your router with other network devices, you can set its time manually or with an Internet time server.

| Current time: | 2006/01/01, 01:39 | Update Now |

Set Time by: ○ Time Server ◉ Manual

Time: Year 2006 Month 1 Day 1
Hour 1 Minute 39

Time Zone: (GMT+08:00) Taipei

Apply Cancel

Internet Time

To synchronize your router with other network devices, you can set its time manually or with an Internet time server.

| Current time: | 2006/01/01, 01:39 | Update Now |

Set Time by: ◉ Time Server ○ Manual
Primary Time Server: time.windows.com
Secondary Time Server: time.nist.gov
Time Zone: (GMT+08:00) Taipei

Apply Cancel

System Log

As shown on the web page, you can view the system log and configure system log whenever you want.

To view the system log, you must configure system log first. Press **Configure System Log** to start.

System Log

The System Log dialog allows you to view the System Log and configure the System Log options.

Click "View System Log" to view the System Log.

Click "Configure System Log" to configure the System Log options.

[View System Log] [Configure System Log]

Configuring System Log

You can **enable** or **disable** the log function, and choose **log level**, **display level** and proper **mode** as you like. Then click **Apply** to invoke the settings or press **Cancel** to discard them.

System Log Configuration

This dialog allows you to configure System Log settings. All events greater than or equal to the selected level will be logged or displayed. If the selected mode is "Remote" or "Both" events will be sent to the specified UDP port of the specified log server.

Select the desired values and click "Apply" to configure the system log options.

Log: ⊙ Disabled   ○ Enabled

Log Level: Debugging ▾

Display Level: Error ▾

Mode: Local ▾

[Apply] [Cancel]

There are 8 types of **log level** and **display level** for you to choose.

Log Level: Debugging ▾
Emergency
Alert
Critical
Error
Warning
Notice
Informational
Debugging

Log Level:
This function enables you to decide how detailed the messages will be stored. Set a proper level according to your needs. The default Log Level is **Debugging**.

The **Debugging** Level logs all messages to the file, while the **Emergency** Level logs fatal messages only. The lower the item is, the more detailed information it provides; i.e., *debugging* level stores the most detailed information.

Owing to the limitation of the storage on the wireless IAD, the former information will be erased and replaced by the latest message automatically when the buffer is overflowed.

Display Level:
For the convenience of the users, the display level can function as a filter. It decides the level for the messages to exhibit when the user wants to view the logs on the local side. For example, for a programmer or engineer, he/she may want to know about *debugging or informational* level message; for general users, they may only need or want to learn about *error, critical, alert, or emergency* messages only. The default Display Level is **Error**.

Display Level: Error ▾
Emergency
Alert
Critical
Error
Warning
Notice
Informational
Debugging

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Therefore, when the log level is "Debugging" and the display level is "Error", the CPE logs the most detailed message but shows error level data only.

Mode:
You can choose where to store the logs; the options include **Local**, **Remote** and **Both**. *Local* means the CPE, i.e., the wireless IAD. *Remote* means the log server you specified to forward the log information to. The default mode is **Local**.

If you choose **Remote** or **Both**, you have to specify the **Server IP Address** and **UDP Port**, and all the events will be sent to the specified UDP port of the specified log server.

Note:
Display Level only filters for the *local* side. All the messages will be displayed on the remote Log Server.

Example

Suppose we are going to record the system logs on both the wireless IAD and the Server bearing IP address *10.11.95.2*, the procedures below illustrate the situation:

System Log Configuration

1. Choose **Enabled** Log.

2. Select *Debugging* as the **Log Level**, and *Error* as the **Display Level**. (Or select other level according to your needs.)

3. Set the **Mode** as *Both,* key in the **Server IP Address** as *10.11.95.2*, and leave the **Server UDP Port** as the default value *514*.

4. Press **Apply** to invoke the settings.

Viewing System Log – Remote Side (Server)

To view the system log on the Log Server (*10.11.95.2*), a log viewing tool must be installed.

1. Download the **Kiwi Syslog Daemon** from **Kiwi Enterprises**.

   ✦ Kiwi Syslog Daemon is a freeware Syslog Daemon for Windows. It receives, logs, displays and forwards Syslog messages from hosts such as routers, switches, and any other syslog enabled device. You can choose other logger tools; here, we use Kiwi for example.

   Download the tool from the Kiwi Enterprises website.

2. Install the Kiwi Syslog server software on the PC (*10.11.95.2*).

3. Open the **Kiwi Syslog Daemon** application. You will get to a screen shown as follows.
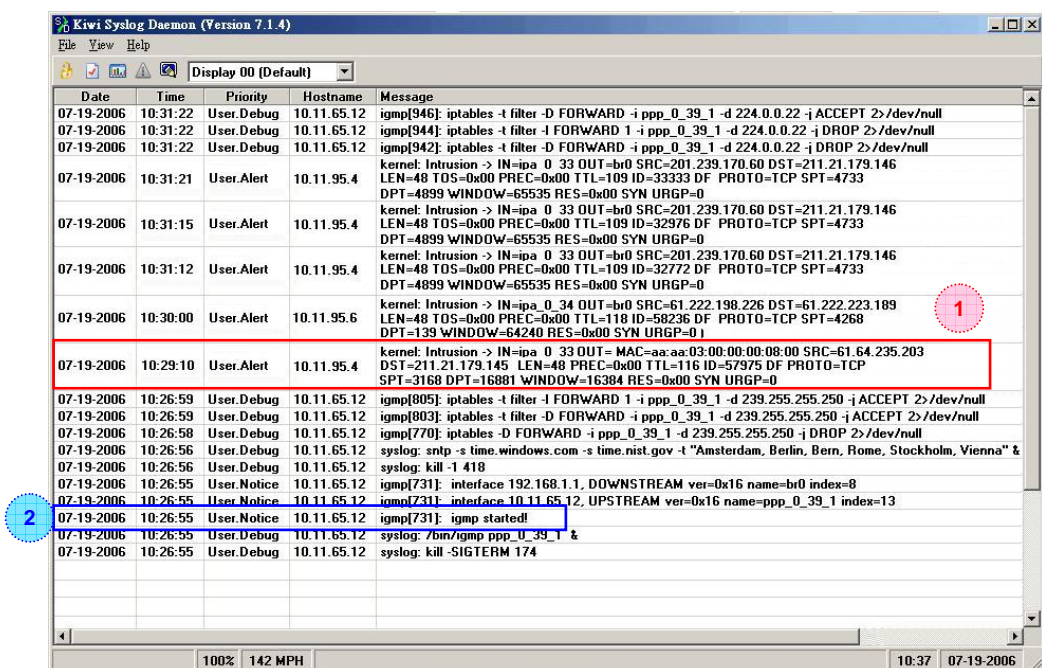
The **Date** and **Time** record the logging time. The **Priority** field shows the log level, the **Hostname** exhibits the position of the host, and the **Message** column displays the process the description of it－before the colon is the name of the process and after the colon is the elaboration for that process.

For example, message 1 shows *alert* level information which is a kernel process containing detailed intrusion information; message 2 displays *notice* level information which is an IGMP process exhibiting that the IGMP function had been started.

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Viewing System Log – Local Side (Wireless IAD)

For viewing the system log on local side, click the **View System Log** button on the webpage for system log configuration.

System Log

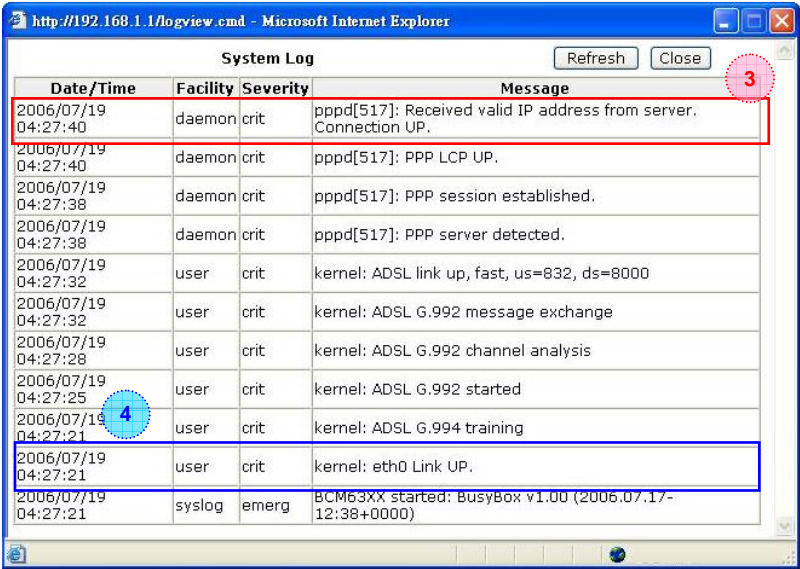The System Log dialog allows you to view the System Log and configure the System Log options.

Click "View System Log" to view the System Log.

Click "Configure System Log" to configure the System Log options.

[View System Log]   [Configure System Log]

The system log record on the IAD will be displayed on a screen shown as below.

The **Date/Time** records the logging time, and the Facility field distinguishes different classes of system log message. The **Severity** field shows the log level, and the **Message** column displays the process and the description of it－the name of the process appears before the colon and the elaboration for that process after the colon.

For example, message 3 shows *critical* level information which is a *pppd* (PPP daemon) process showing that a valid IP address had been received from server, and connection is up; message 4 is a kernel process belonging to *critical* level information which reveals that the Ethernet 0 link is up.

You can press **Refresh** to update the log files or press **Close** to close the window.

Note that the earlier messages may be automatically replaced by the updated information when the buffer is overflowed on the IAD.

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Backup Config

To backup your settings of the wireless IAD, you can use **Backup Config** web page to save the configuration.

Backup Configuration

Use to save your ADSL router's current settings into the computer.

[Backup]

Restore Configuration

Use to reset your ADSL router with settings previously saved on the computer.

Backup File: [_____] [Browse...]

[Restore]

Click **Backup** button and the warning window will be prompted. Click **OK** to continue the backup procedure.

Microsoft Internet Explorer

⚠ The router's configuration is going to be saved to your computer. Please don't turn off this router !

[OK]

The system will ask your command about the next procedure. Click **Save** to backup.

File Download

Do you want to open or save this file?

Name: backupsettings.xml
Type: XML Document
From: 192.168.1.1

[Open] [Save] [Cancel]

While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

You may change the file name and choose a place to save the backup file.

Save As

Save in: backup

backupsettings

File name: backupsettings
Save as type: XML Document

[Save]
[Cancel]

And when you want to restore the settings in the future, simply open **Backup Config** web page and use **Browse** button to locate the file.

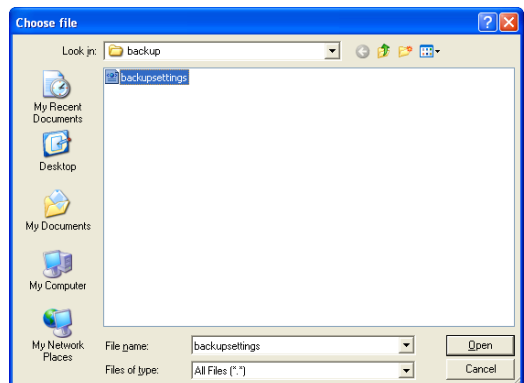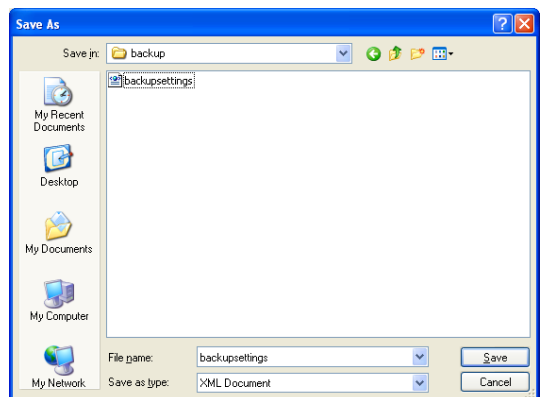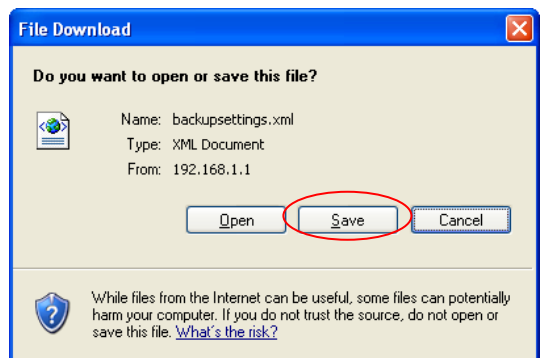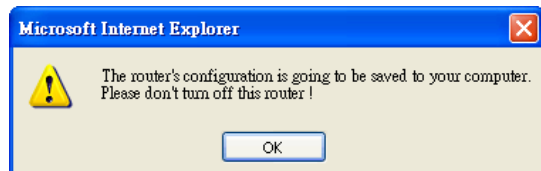Choose file

Look in: backup

backupsettings

File name: backupsettings
Files of type: All Files (*.*)

[Open]
[Cancel]

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After opening the backup file, click **Restore**.

Update Firmware

If you have to or want to upgrade the firmware for this IAD, you can open the **Update Firmware** web page and choose the correct file by pressing **Browse**. Then click the **Update Firmware** button.

The system will execute the update procedure automatically.

Note: The IAD must not turn off during firmware updates.

When it is finished, the system will tell you the update is successfully.

Reset Router

To make the settings that you set for this IAD take effect, please open the **Reset Router** web page and click the **Reboot** button to invoke all settings.

You can restore your web pages with default settings. Simply check **Reset to factory default settings** and click **Reboot**.

UPnP for XP

Universal plug and play (UPnP) is architecture for pervasive peer to peer network connectivity of intelligent appliances and PCs of all form factors. It is designed to bring easy-to-use, flexible, standards-based connectivity to ad-hoc or unmanaged networks whether in the home, in a small business, public places, or attached to the Internet.

Only **Windows XP** supports UPnP function.

Please follow the steps below for installing UPnP components.

1. Click on the **Start** menu, point to **Settings** and click on **Control Panel**.

2. Select **Add or Remove Programs > Add/Remove Windows Components** to open **Windows Components Wizard** dialog box.

3. Select **Networking Services** and click **Details.** Click the **UPNP User Interface** check box.

4. Click **Ok**. The system will install UPnP components automatically.
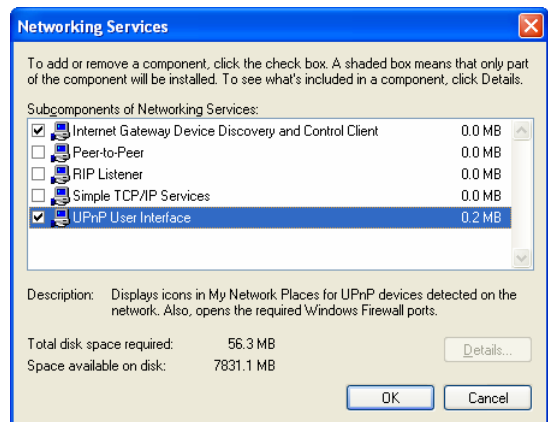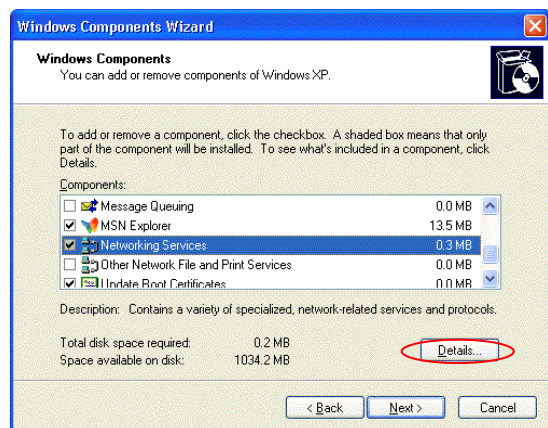
5. After finishing the installation, go to **My Network Places**. You will find an icon (e.g., Wireless IAD) for UPnP function.

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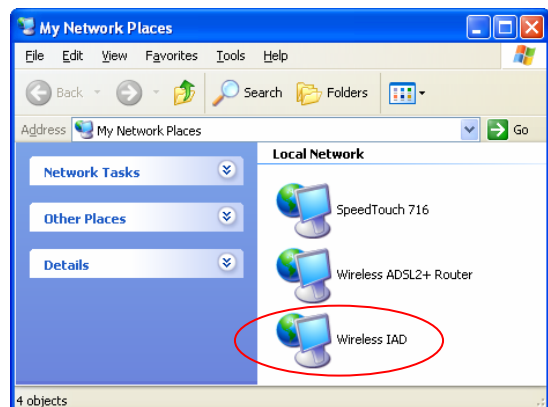
6. Double click on the icon, and the IAD will open a web page via the port for UPnP function. The IE address will be directed to the IP address for the configuration main page as shown in the graphic.
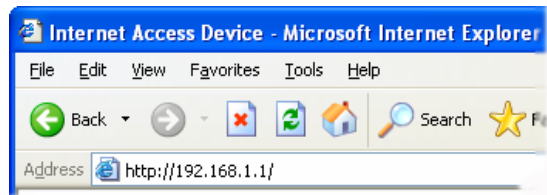
7. After entering the user name and password, you may access the IAD through the webpage.

8. Now, the NAT traversal function has already been provided. The IAD will create a new virtual server automatically when the IAD detects that some internet applications is running on the PC.

Chapter 5: Troubleshooting

If the suggested solutions in this section do not resolve your issue, contact your system administrator or Internet service provider.

Problems with LAN

PCs on the LAN cannot get IP addresses from the Wireless IAD.

The chances are that the interface used as DHCP server is modified and the client PCs do not renew IP addresses.

If your DHCP server is enabled on Private IP Address previously and you modify the interface to Public IP Address, the client PCs should renew IP addresses.

The PC on the LAN cannot access the Web page of the Wireless IAD.

Check that your PC is on the same subnet with the IAD.

Problems with WAN

You cannot access the Internet.

☐ Check the physical connection between the IAD and the LAN.

If the LAN LED on the front panel is off or keeps blinking, there may be problem on the cable connecting to the IAD.

Ping the IP address of the IAD at the DOS prompt, e.g., ping 192.168.1.1. If the following response occurs:

Reply from 192.168.1.1: bytes=32 time=100ms TTL=253

Then the connection between the IAD and the network is OK.

If you get a failed ping with the response of:

Request timed out

Then the connection is fail. Check the cable between the IAD and the network.

☐ Check the DNS setting of the IAD.

At the DOS prompt, ping the IP addresses of the DNS provided by your ISP. For example, if your DNS IP is 168.95.1.1, then ping 168.95.1.1. If the following response occurs:

Reply from 168.95.1.1: bytes=32 time=100ms TTL=253

Then the connection to the DNS is OK.

If you get a failed ping with the response of:

Request timed out

Then the DNS is not reachable. Check your DNS setting on the IAD.

Problems with Upgrading

The following lists the error messages that you may see during upgrading and the action to take.

□ **Error message**: All the ADSL LEDs light up and cannot light off as usual.

Possible cause: When users are executing firmware upgrade and saving settings to the IAD, the power for the IAD is lost for some unknown reasons, the normal web page for the IAD might be damaged. After power on your IAD, the LEDs might not work normally.

Boot Loader, Version 1.0.37-5.5.05

This device is currently running on the boot loader.

Update Firmware

Step 1: Obtain an updated firmware image file from your ISP.
Step 2: Enter the path to the image file location in the box below or click "Browse" to locate the image file.
Step 3: Click "Update Firmware" once to upload the new image file.

NOTE: The update process takes about 2 minutes to complete, and your DSL Router will reboot.

New Firmware File Name: [_____] Browse.

Update Firmware

Action: Setup you PC with a static IP address, such as 192.168.1.2, and then access the IAD's web page by entering http://192.168.1.1. Then update the firmware again.

□ **Error Message**: Image uploading failed. The selected file contains an illegal image.

Possible cause: The firmware file format is invalid.

Action: Check to see whether the file format is correct; otherwise download a firmware file with correct format.

□ **Error Message**: Image uploading failed. The system is out of memory.

Possible cause: It may be caused by the lack of memory.

Action: Reboot your IAD and perform the upgrade task again.

□ **Error Message**: Image uploading failed. No image file was selected.

Possible cause: You did not select a file correctly.

Action: Download a compatible firmware from the web.

Chapter 6: Glossary

ARP (Address Resolution Protocol)
ARP is a TCP/IP protocol for mapping an IP address to a physical machine address that is recognized in the local network, such as an Ethernet address.

A host wishing to obtain a physical address broadcasts an ARP request onto the TCP/IP network. The host on the network that has the IP address in the request then replies with its physical hardware address.

Inverse ARP (In-ARP), on the other hand, is used by a host to discover its IP address. In this case, the host broadcasts its physical address and a RARP server replies with the host's IP address.

DHCP (Dynamic Host Configuration Protocol)
When operates as a DHCP server, the ADSL Router assign IP addresses to the client PCs on the LAN. The client PCs "leases" these Private IP addresses for a user-defined amount of time. After the lease time expires, the private IP address is made available for assigning to other network devices.

The DHCP IP address can be a single, fixed public IP address, an ISP assigned public IP address, or a private IP address.

If you enable DHCP server on a private IP address, a public IP address will have to be assigned to the NAT IP address, and NAT has to be enabled so that the DHCP IP address can be translated into a public IP address. By this, the client PCs are able to access the Internet.

DSCP - Differentiated Services (DiffServ) Code Point
A Differentiated Services (DiffServ) Code Point is a marker in the header of each IP packet that prompts network routers to apply differentiated grades of service to various packet streams. It is specified by the DiffServ policy proposed by the IETF (Internet Engineering Task Force). This allows Internet and other IP-based network service providers to offer different levels of service to customers.

LAN (Local Area Network) & WAN (Wide Area Network)
A LAN is a computer network limited to the immediate area, usually the same building or floor of a building. A WAN, on the other hand, is an outside connection to another network or the Internet.

The Ethernet side of the ADSL Router is called the LAN port. It is a twisted-pair Ethernet 10Base-T interface. A hub can be connected to the LAN port. More than one computers, such as server or printer, can be connected through this hub to the ADSL Router and composes a LAN.

The DSL port of the ADSL Router composes the WAN interface, which supports PPP or RFC 1483 connecting to another remote DSL device.

NAT (Network Address Translation) IP Address
NAT is an Internet standard that translates a private IP within one network to a public IP address, either a static or dynamic one. NAT provides a type of firewall by hiding internal IP addresses. It also enables a company to use more internal IP addresses.

If the IP addresses given by your ISP are not enough for each PC on the LAN and the ADSL Router, you need to use NAT. With NAT, you make up a private IP network for the LAN and assign an IP address from that network to each PC. One of some public addresses is configured and mapped to a private workstation address when accesses are made through the gateway to a public network.

For example, the ADSL Router is assigned with the public IP address of 168.111.2.1. With NAT enabled, it creates a Virtual LAN. Each PC on the Virtual LAN is assigned with a private IP address with default value of 192.168.2.2 to 192.168.2.254. These PCs are not accessible by the outside world but they can communicate with the outside world through the public IP 168.111.2.1.

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Private IP Address

Private IP addresses are also LAN IP addresses, but are considered "illegal" IP addresses to the Internet. They are private to an enterprise while still permitting full network layer connectivity between all hosts inside an enterprise as well as all public hosts of different enterprises.

The ADSL Router uses private IP addresses by assigning them to the LAN that cannot be directly accessed by the Internet or remote server. To access the Internet, private network should have an agent to translate the private IP address to public IP address.

Public IP Address

Public IP addresses are LAN IP addresses that can be considered "legal" for the Internet, because they can be recognized and accessed by any device on the other side of the DSL connection. In most cases they are allocated by your ISP.

If you are given a range of fixed IP addresses, then one can be assigned to the router and the others to network devices on the LAN, such as computer workstations, ftp servers, and web servers.

PVC (Permanent Virtual Circuit)

A PVC is a logical point-to-point circuit between customer sites. PVCs are low-delay circuits because routing decisions do not need to be made along the way. Permanent means that the circuit is preprogrammed by the carrier as a path through the network. It does not need to be set up or turned down for each session.

RIP (Routing Information Protocol)

RIP is a routing protocol that uses the distance-vector routing algorithms to calculate least-hops routes to a destination. It is used on the Internet and is common in the NetWare environment. It exchanges routing information with other routers. It includes V1, V2 and V1&V2, which controls the sending and receiving of RIP packets over Ethernet.

UDP (User Datagram Protocol)

UDP is a connectionless transport service that dispenses with the reliability services provided by TCP. UDP gives applications a direct interface with IP and the ability to address a particular application process running on a host via a port number without setting up a connection session.

Virtual Server

You can designate virtual servers, e.g., a FTP, web, telnet or mail server, on your local network and make them accessible to the outside world. A virtual server means that it is not a dedicated server -- that is, the entire computer is not dedicated to running on the public network but in the private network.

VPI (Virtual Path Identifier) & VCI (Virtual Channel Identifier)

A VPI is a 8-bit field while VCI is a 16-bit field in the ATM cell header. A VPI identifies a link formed by a virtual path and a VCI identifies a channel within a virtual path. In this way, the cells belonging to the same connection can be distinguished. A unique and separate VPI/VCI identifier is assigned in advance to indicate which type of cell is following, unassigned cells, physical layer OAM cells, metasignaling channel or a generic broadcast signaling channel. Your ISP should supply you with the values.

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Appendix A: Specifications

Interface	- One RJ-11 port for ADSL connection - One RJ-11 port (FXO port) for connecting to PSTN line - Two RJ-11 ports (FXS ports) for VoIP phone calls - Four RJ-45 ports for IEEE 802.3/802.3u 10/100 Base-T auto-sensing and auto-crossover Ethernet connection - One USB client port compliant to USB 1.1 - Hidden mini-PCI interface for IEEE 802.11g (2.4 GHz) wireless LAN connection - One hidden button for restoration of factory default settings
Regulatory Approvals and Compliance	EMC: FCC part 15 Class B, CE Telecom: FCC part 68 Safety: UL, CB, LVD
Power Requirement and Operation Environment Requirement	Power Adaptor: Input 120±10 or 230±10 VAC; Output 12 VAC, 1.5A Power Consumption: less than 15 Watt Ambient Temperature: 0 to 40°C (32 to 96°F) Relative Humidity: 20% to 90% (non-condensing)
Physical	PCB: 192 mm x 138 mm Housing: 220 mm (L) x 155 mm (W) x 40 mm (H) Weight: 528g

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Appendix B: Client Setup for 802.1x, WPA, and WPA-PSK

Retreiving Client Certificate

☐ This step is only required if you intend to authenticate with EAP/TLS.

While there are many ways you may receive a certificate from your Certificate Authority, the example here is to show you how to retrieve your certificate from a Microsoft Certificate Services server via its easy web interface.

1. Please connect the client to a network that doesn't require port authentictaion.

2. Open up Microsoft Explorer, connect to your CA via the url **http://yourserver/certsrv** (see your local administrator if it has been changed from the default).

   For example, if the Microsoft Certificate Service server uses the IP address 192.168.0.2, then we have to key in *http://192.168.0.2/certsrv* on the url box.

3. You will be asked to log in, use your domain credentials. (e.g., *ABC*)

4. Make sure that **Request a certificate** is selected, and click **Next.**
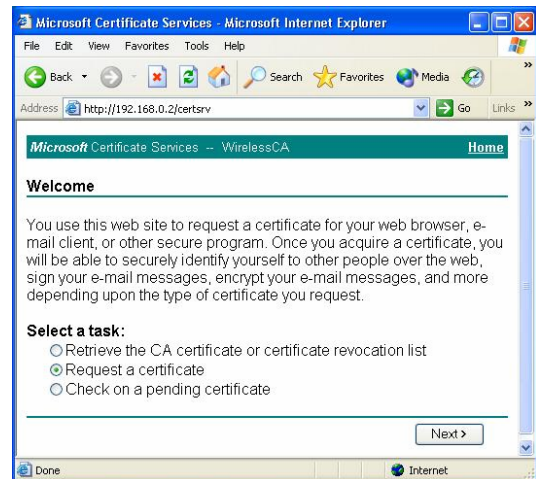
5. Select **User Certificate**, then **Next**.
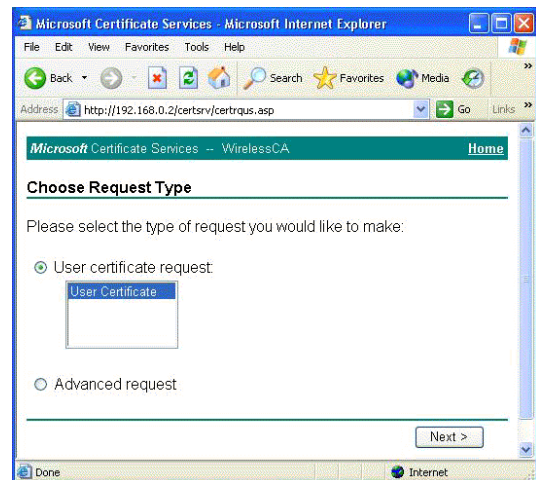
6. Click **Submit** in the following step.
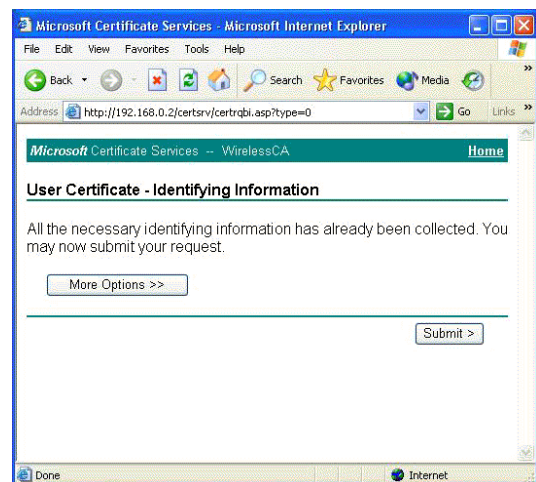
7. You may retrieve your certificate by clicking **Install this certificate.**
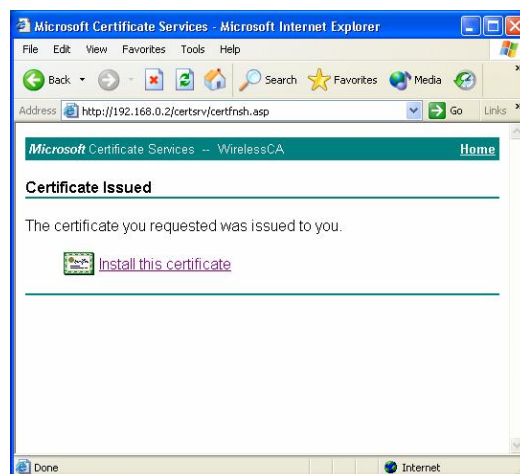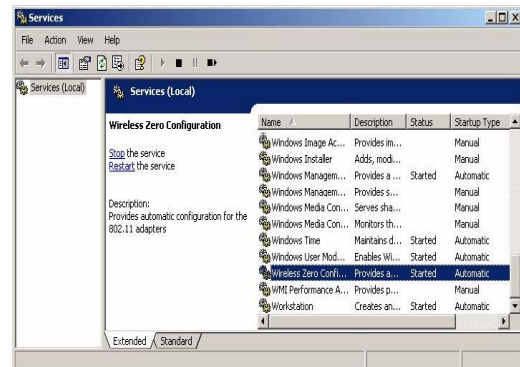

8. You'll receive a confirmation message about accepting the certificate, click **Yes**

Enabling 802.1x Authentication and Security

1. Click **Run** from the **Start** menu. Type *services.msc* and click **OK**.

2. Scroll to the bottom of the list. Double click on the **Wireless Zero Configuration** service and verify that it is set to *Automatic* and that it is *Started.* Click **OK** to continue.

3. Click the **Start** button, select **Control Panel**, then **Network Connections.**

4. Right click on your wireless network card and select **Properties**. Click on the **Wireless Networks** tab.

5. Click **Add** to continue.
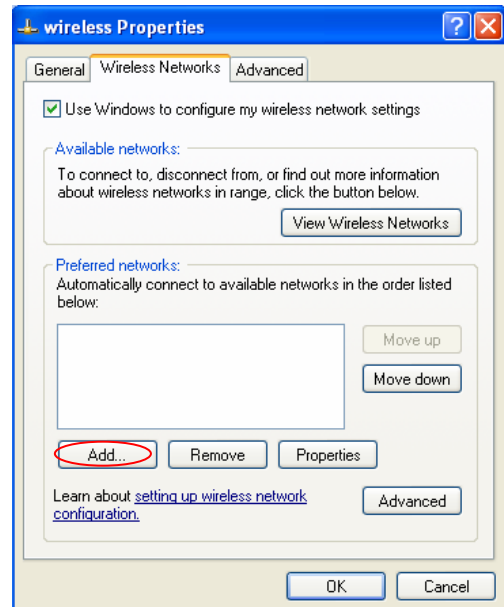
6. Select the **Association** Tab, and enter the SSID of the AP. (e.g., *Please*)

7. Set *Open* as the **Network Authentication** from the drop down menu, and *WEP* for **Data encryption**.

8. Click **OK**, and then select the **Authentication Tab**.
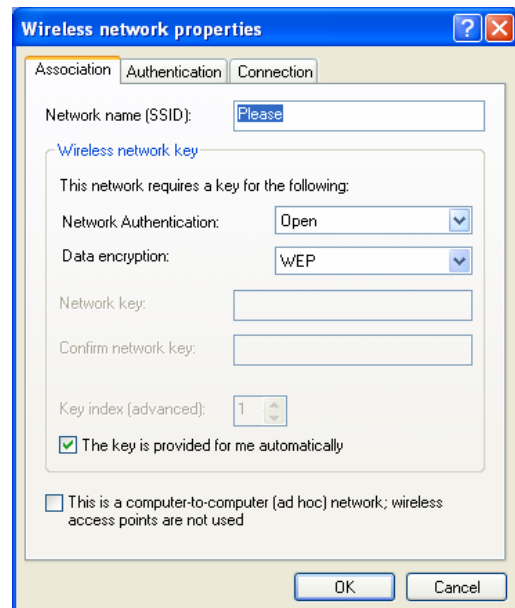
9.   Ensure that **Enable network access control using IEEE 802.1X** is selected, and **Smart Card or other Certificate** is selected from the EAP type.

10. Click **Properties** under **EAP type**.
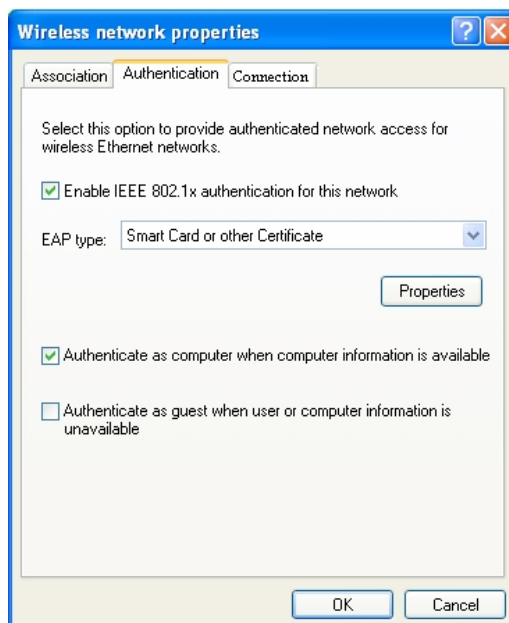
11. You can choose whether to use one of your certificates you have loaded on the computer, or use a smart card for access.

In our example, *Use a certificate on this computer* option is chose and *Use simple certificate selection (Recommended)* is checked.

12. Check the **Validate server certificate** check box if server certificate validation is required.

13. In the **Trusted Root Certification Authorities** field, check the check box beside the name of the certificate authority from which the server certificate was downloaded. (e.g., *askey.savd.tw*)

Note that if you leave all check boxes unchecked, you will be prompted to accept a connection to the root certification authority during the authentication process.
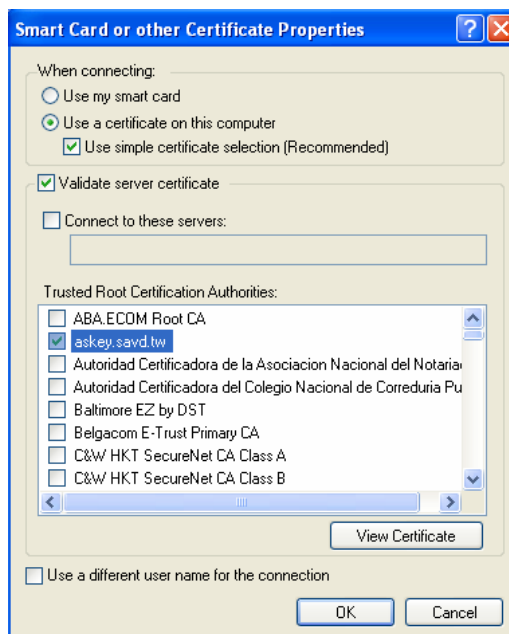
14. Click **OK** twice to close the dialogs until return to **Wireless Networks** tab of **wireless properties**. Now we can see the wireless network which we have just set up being displayed on the **Prefered networks**.
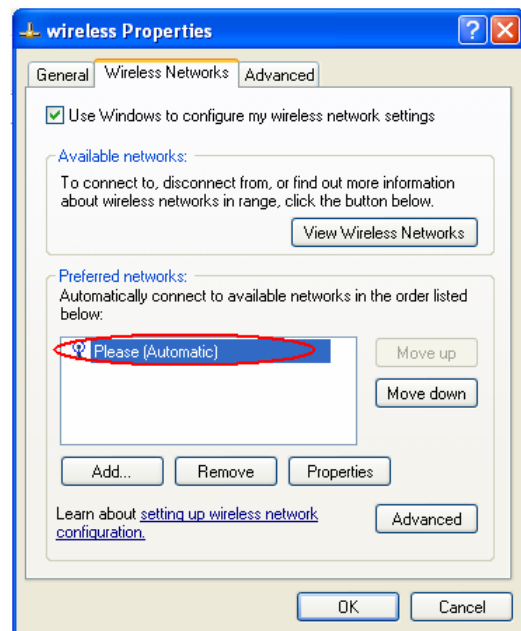
15. Click **OK** to save your settings. The configuration is complete
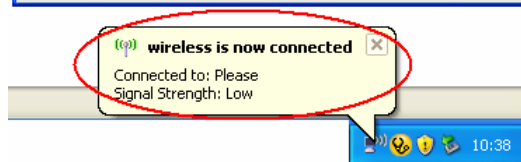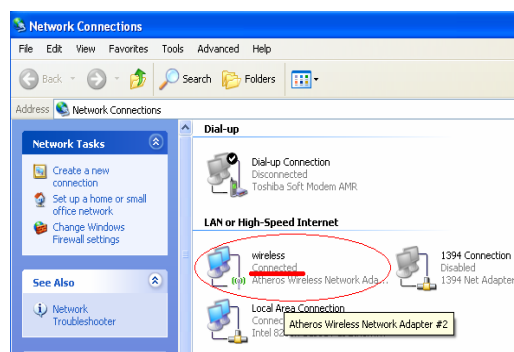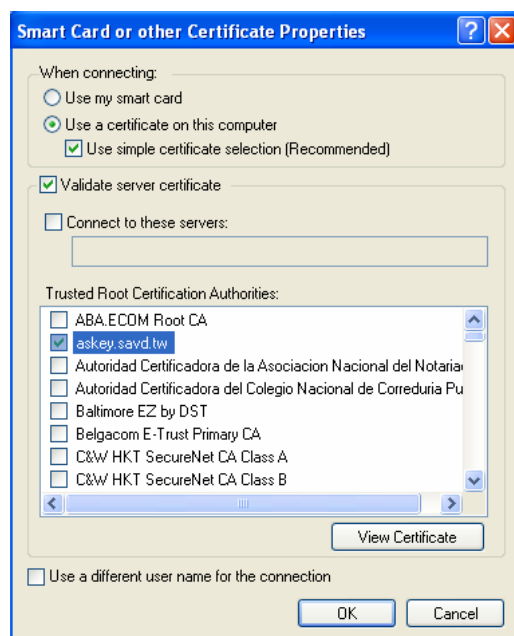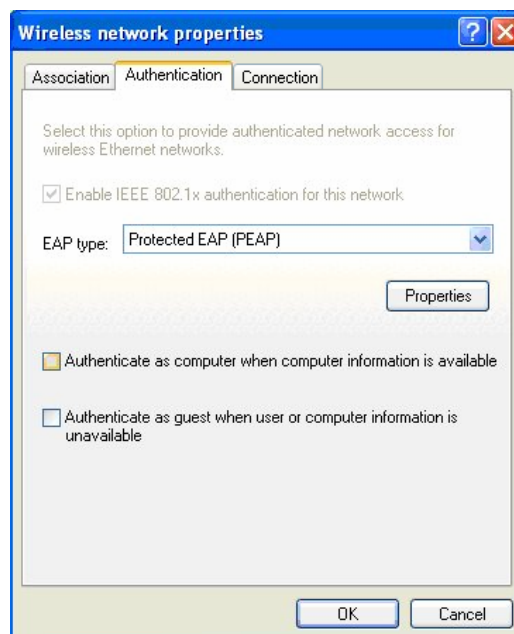
Enabling WPA Authentication and Security

The first four steps are the same as the setting for 802.1x authentication, please refer to the previous part.

5. Select the **Association** Tab, and enter the SSID of the AP. (e.g., *Please*)

6. Choose *WPA* from the drop down menu for the **Network Authentication**, and *TKIP* for **Data encryption**.

7. Click **OK**, and then select the **Authentication Tab**.

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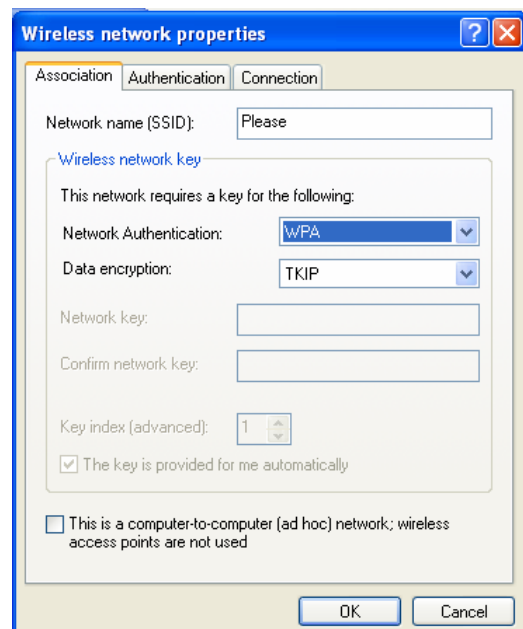
8. The **Enable network access control using IEEE 802.1X** is selected by default, and **Protected EAP (PEAP)** is selected from the EAP type.

9. Click **Properties** under **EAP type**.

10. Choose **Use a certificate on this computer** option and select **Use simple certificate selection (Recommended)**.

11. Check the **Validate server certificate** check box if server certificate validation is required

12. In the **Trusted Root Certification Authorities** field, check the check box beside the name of the certificate authority from which the server certificate was downloaded. (e.g., *askey.savd.tw*)

   Note that if you leave all check boxes unchecked, you will be prompted to accept a connection to the root certification authority during the authentication process.

13. Click **OK** three times to close the dialogs and save all the settings until return to **Network Connections.**

14. Now the configuration for WPA authentication is completed. And you may start to use the wireless device.

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Enabling WPA-PSK Authentication and Security

1. Click the **Start** button, select **Control Panel**, then **Network Connections.**

2. Right click on your wireless network card and select **Properties**. Click on the **Wireless Networks** tab.

3. Click **Add** to continue.

4. Select the **Association** Tab, and enter the SSID of the AP. (e.g., *Please*)

5. Choose *WPA-PSK* for the **Network Authentication** and *TKIP* for **Data encryption**.

6. Enter **Network key** twice to access the AP.

7. Click **OK** to save the settings and return to the **Wireless Networks** tab on **Wireless Properties**.

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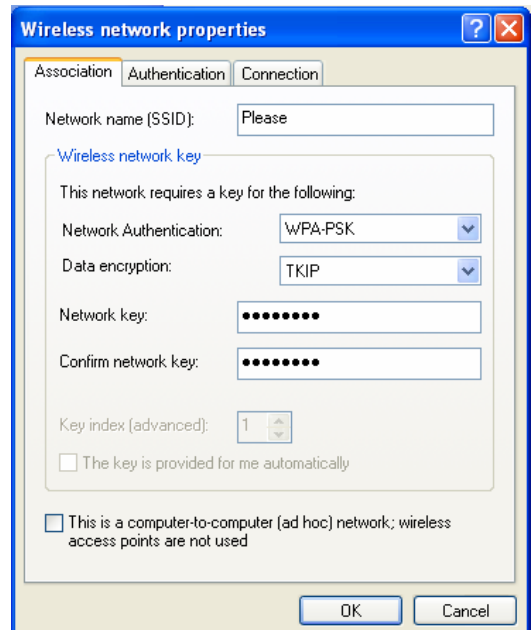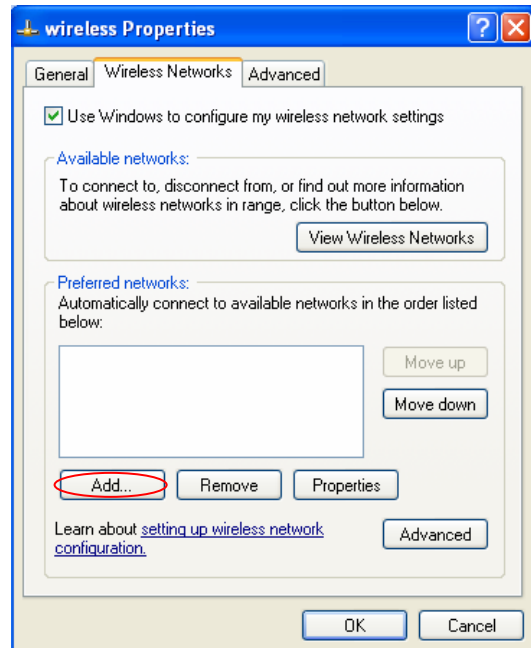
8. The Network with WPA-PSK authentication has been set up, and is displayed in the preferred networks field.
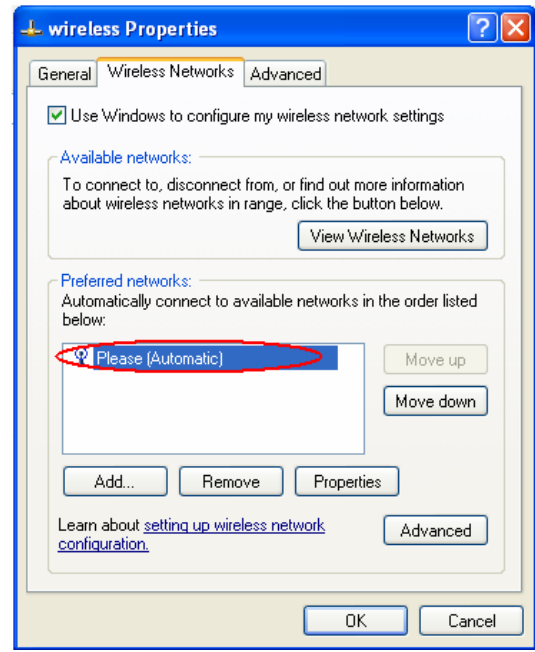
9. Now the configuration for WPA-PSK authentication is completed.