

AAM6030VI-B1

802.11g WLAN 4-port
ADSL Combo Router

User's Manual

Revision 0.1
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Firmware Reference: ASUS-2-10-16.a0_22a

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Revision History

Revision	Date	Changes
Rev 0.1	Sep. 26, 2003	First initial version with firmware "ASUS-2-10-16.a0_22a"

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1 Introduction

Congratulations on becoming the owner of the AAM6030VI 802.11g WLAN (Wireless Local Area Network) 4-port ADSL Combo Router. You will now be able to access the Internet via AAM6030VI's ADSL connection and enjoy the freedom of mobility by its state-of-the-art 802.11g wireless LAN capability.

This User Manual will show you how to set up your AAM6030VI and how to customize its configuration to get the most out of this product.

1.1 Features

- ▶ Built-in ADSL modem in AAM6030VI, which offers up to 8Mbps/1Mbps internet surf speed for Downstream/Upstream, respectively.
- ▶ Support RFC2364 (PPP over ATM), RFC2684/1483 (multiple protocols over ATM), RFC1577 (classical IP over ATM) and RFC2516 (PPP over Ethernet).
- ▶ 4-port Ethernet switch, hardware based 10/100 BaseT, full/half, flow control auto negotiation ; Non-blocking wire speed reception and transmission.
- ▶ Built-in USB port to provide Internet connectivity to your PC.
- ▶ NAT (Network Address Translation) and Firewall functions to provide secure Internet access for your LAN.
- ▶ Configuration program accessible via a web browser, such as Microsoft Internet Explorer. Note that Netscape is not supported.
- ▶ User configuration on interface: RS-232 console, telnet and http.
- ▶ Compliant to IEEE 802.11g draft and IEEE 802.11b Wireless LAN standards.
- ▶ Up to 54Mbps data rate, nearly five times faster than the current 802.11b standard of 11Mbps.
- ▶ Up to 200m coverage, 60% further than current IEEE802.11a network.
- ▶ Enhanced hardware encryption (WEP 64/128, AES OCB & AES CCM) and WPA/802.1x/802.11i to secure your wireless connection.

1.2 System Requirements

In order to use the AAM6030VI 802.11g WLAN 4-port ADSL Combo Router for Internet access, you must have the followings:

- ▶ ADSL service subscription from your ISP.
- ▶ One computer containing an Ethernet 10Base-T/100Base-T network interface card (NIC) or USB (Universal Serial Bus) port.
- ▶ (Optional) A Wireless LAN card on your PC if you want to use state-of-the-art 802.11g WLAN connection the router.
- ▶ For system configuration using the supplied web-based program: a web browser such as Internet Explorer v5.5 or later

1.3 Using this Document

1.3.1 Notational conventions

- ▶ Acronyms are defined the first time they appear in text and in the glossary (Appendix C).
- ▶ For brevity, the AAM6030VI is referred to as "the router."
- ▶ The terms *LAN* and *network* are used interchangeably to refer to a group of Ethernet-connected computers at one site.

1.3.2 Typographical conventions

- ▶ *Italics* are used to identify terms that are defined in the glossary (Appendix C).
- ▶ **Boldface** type text is used for items you select from menus and drop-down lists, and text strings you type when prompted by the program.

1.3.3 Special messages

This document uses the following icons to call your attention to specific instructions or explanations.



Note

Provides clarification or non-essential information on the current topic.



Definition

Explains terms or acronyms that may be unfamiliar to many readers. These terms are also included in the Glossary.



WARNING

Provides messages of high importance, including messages relating to personal safety or system integrity.

1.4 Getting Support

<Add custom support information>

2 Getting to Know AAM6030VI

2.1 Parts List

In addition to this document, your AAM6030VI should come with the following:

- ▶ AAM6030VI 802.11g WLAN 4-port ADSL Combo Router
- ▶ Power adapter
- ▶ Ethernet cable (RJ45, "straight-through" type), Phone cable (RJ-11) and USB cable



Figure 2.1 AAM6030VI 802.11g WLAN 4-port ADSL Combo Router Package Contents

2.2 Front Panel

The front panel contains LED indicators that show the status of the unit.



Figure 2.2 Front Panel LEDs

Table 2.1 Front Panel Label and LEDs

Label	Color	Function
POWER	green	On: Unit is powered on Off: Unit is powered off
STATUS	green	On: ADSL link is established and active Flashing: Trying to create an ADSL connection Off: No ADSL link
LINE	green	Flashing: ADSL data transfer
USB	green	On: USB link is established Flashing: Data transfer at USB connection Off: No USB link
WLAN	green	On: WLAN link is established Flashing: Data transfer at LAN connection Off: No WLAN link
LAN1 ~ 4	green	On: Ethernet link is established Flashing: Data transfer at Ethernet connection Off: No Ethernet link

2.3 Rear Panel

The rear panel contains the ports for the unit's data and power connections.



Figure 2.3 Rear Panel Connections

Table 2.2 Rear Panel Labels and Connectors

Label	Function
LINE	Connect to your ADSL line
Reset/Default	Reset to Default settings
Console	Serial port for console management
LAN1 ~ 4	Connect the router to your PC's Ethernet port, or to the uplink port on your LAN's hub/switch, using the cable provided
USB	USB port
POWER	Connect to the supplied power adapter
Power switch	Power ON/OFF
Antenna	External antenna

3 Getting Started

This Getting Started chapter provides basic instructions for connecting the AAM6030VI to a computer or a LAN and to the Internet via ADSL.

- ▶ Part 1 provides instructions to set up the hardware.
- ▶ Part 2 describes how to configure Internet properties on your computer(s).
- ▶ Part 3 shows you how to access your AAM6030VI.

This Getting Started assumes that you have already subscribed ADSL service with your Internet service provider (ISP). These instructions provide a basic configuration that should be compatible with your home or small office network setup. Refer to the subsequent chapters for additional configuration instructions.

3.1 Connecting the Hardware

In 3.1, you should connect the device to an ADSL line, the power outlet, and your computer or network.



Before you begin, turn the power off for all devices. These include your computer(s), your LAN hub/switch (if applicable), and the AAM6030VI.

Figure 3.1 illustrates the hardware connections. Please follow the steps that follow for specific instructions.

3.1.1 Connect the ADSL line

Connect your ADSL line to the port labeled LINE on the rear panel of the device, and connect the other end of the line to the wall phone jack directly or to the optional POTS splitter.

3.1.2 Connect the computers or a LAN

You may use Ethernet or USB cable to connect your computer directly to AAM6030VI. Note that you should attach one end of the Ethernet cable to one of the ports labeled from LAN1 to LAN4 on the rear panel of the device and connect the other end to the Ethernet port of your computer. Or you can attach one end of the USB cable to the port labeled USB on the rear panel of the device and connect the other end to the USB port of your computer.

If your LAN has more than four computers, you can attach one end of an Ethernet cable to a hub or a switch (probably an uplink port; please refer to the hub or switch documentations for instructions) and the other end to one of the Ethernet ports (labeled LAN) of the AAM6030VI.

If you have 802.11b/g wireless LAN card, you may use the wireless feature without any physically wire connection between your PC and AAM6030VI.

Note that both the crossover or the straight-through Ethernet cable can be used to connect the built-in switch and computers, hubs or switches as the built-in switch is smart enough to make connections with either type of cables.

3.1.3 Attach the power adapter

Connect the AC power adapter to the POWER connector on the back of the device and plug in the adapter to a wall outlet or a power strip.

3.1.4 Turn on your computer

Turn on and boot up your computer(s) and any LAN devices such as hubs or switches.

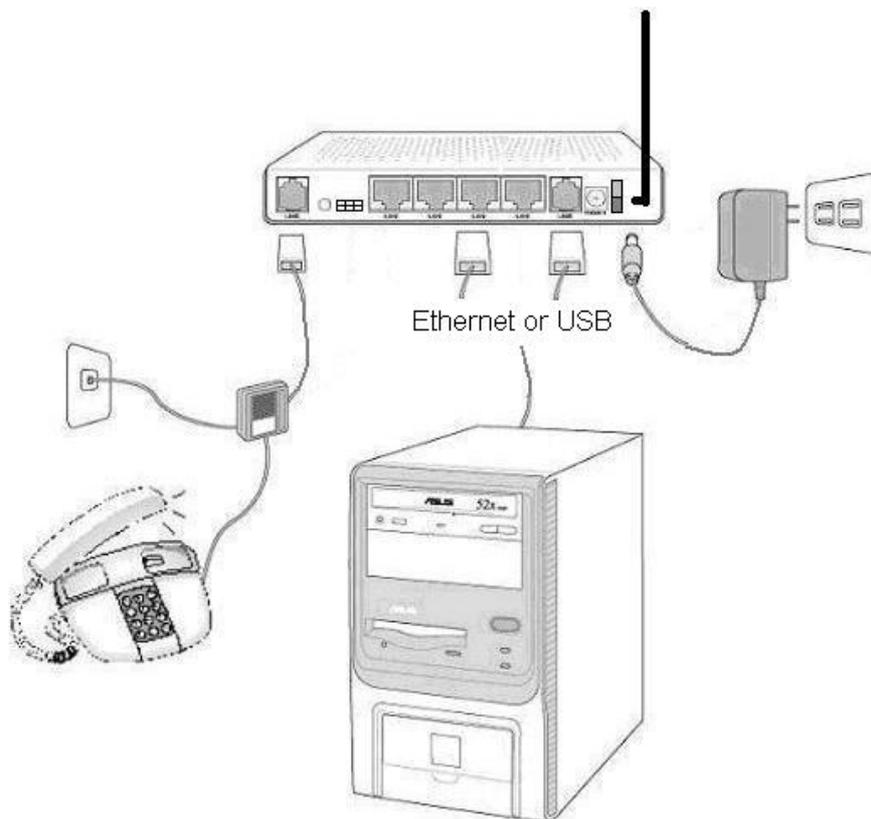


Figure 3.1 Overview of Hardware Connections

You should verify that its LEDs are illuminated as shown in Table 3.1

Table 3.1 LED Indicators

This LED:	...should be:
<i>POWER</i>	Solid green to indicate that the device is turned on. If this light is not on, check if the power adapter is attached to AAM6030VI and if it is plugged into a power source.
<i>STATUS</i>	Solid green to indicate that the device can communicate with your ISP via ADSL or flashing when the device is trying to connect to your ISP.
<i>LINE</i>	Flashing when the device is sending or receiving data over the ADSL connection.
USB	Solid green to indicate that the device can communicate with your PC via USB or flashing when the device is sending or receiving data over USB.
WLAN	
<i>LAN1 ~ 4</i>	Solid green to indicate that the device can communicate with your PC via Ethernet or flashing when the device is sending or receiving data over Ethernet.

If the LEDs illuminate as expected, AAM6030VI hardware is working properly.

3.2 Configuring Your Computers

If you use Ethernet cable to connect your AAM6030VI and PC, you don't need any specific driver installation and you can skip this section 3.2.1. But if you use USB cable under Windows operation system, you should install provided USB driver as soon as you plug the USB cable to your PC. Detail steps are described in 3.2.1 Windows® USB Driver Installation

3.2.1 Windows® USB Driver Installation

1. As soon as you connect the USB cable between your PC and AAM6030VI, your Windows will detect a new hardware and the Wizard will pop-up. Choose “**Install from a list or specific location**” from its menu and then click “**Next**” (Figure 3.2).
- 2.



Figure 3.2 Found New Hardware Wizard

3. Insert the supplied 3.5" floppy diskette into your floppy disk driver and use “**Browse**” to include this location in the search (Figure 3.3 and Figure 3.4).

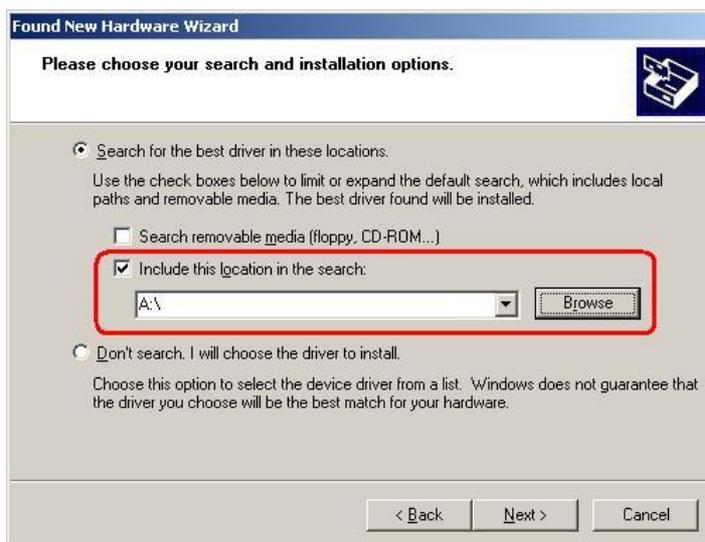


Figure 3.3 New Hardware Installation Options



Figure 3.4 Browse for Folder

- The Windows will ask you to confirm the hardware installation. Choose "**Continue Anyway**" then it will start to install the supplied USB driver to your PC automatically (Figure 3.5 and Figure 3.6).



Figure 3.5 Hardware Installation Confirmation



Figure 3.6 Hardware Installation

- You just need to click "**Finish**" to close the Wizard at the installation complete page (Figure 3.7).

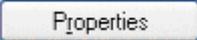


Figure 3.7 Completing the Found New Hardware Wizard

Before you start to access AAM6030VI via Ethernet or USB, you have to configure your PC TCP/IP address to be **192.168.1.x**, where x could be any number between 3 ~ 254, subnet mask is **255.255.255.0**. Your AAM6030VI default IP address is "**192.168.1.1**".

3.2.2 Windows® XP PCs:

- In the Windows task bar, click the **Start** button, and then click **Control Panel**.
- Double-click the **Network Connections** icon. (Figure 3.8)
- In the LAN or High-Speed Internet window, right-click on icon corresponding to your network interface card (NIC) and select **Properties**. (Often this icon is labeled *Local Area Connection*). The **Local Area Connection** dialog box displays with a list of currently installed network items.

4. Ensure that the check box to the left of the item labeled **Internet Protocol (TCP/IP)** is checked, and click  (Figure 3.9)

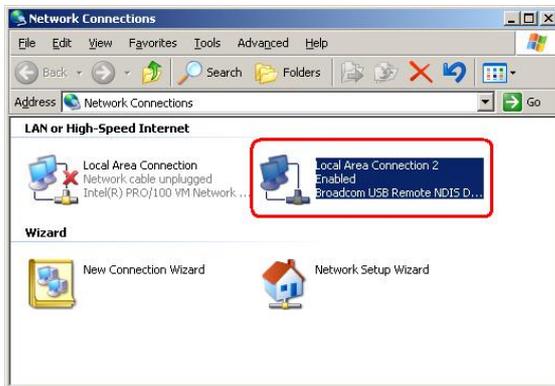


Figure 3.8 Network Connection @ Windows XP

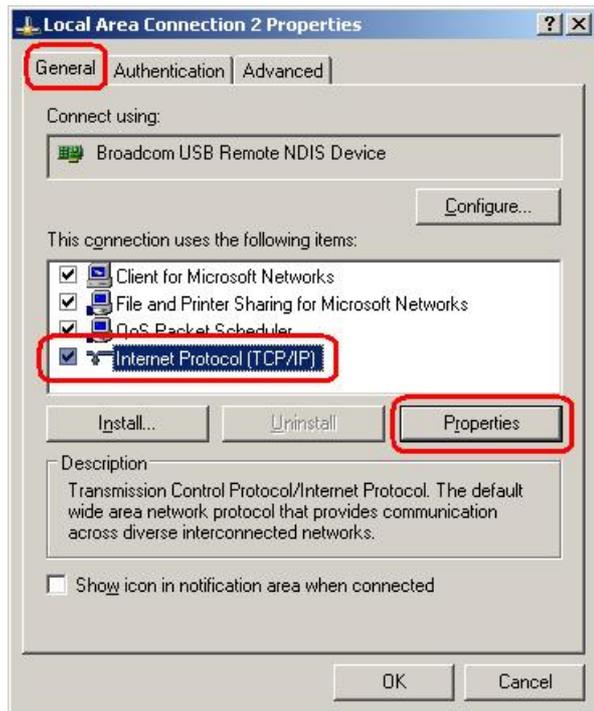


Figure 3.9 Local Area Connection Property @ Windows XP

5. In the **Internet Protocol (TCP/IP) Properties** dialog box, click the radio button labeled **Use the following IP address** and type **192.168.1.x** (**192.168.1.20** is shown in Figure 3.10 as an example) and **255.255.255.0** in the IP address field and Subnet Mask field, respectively.

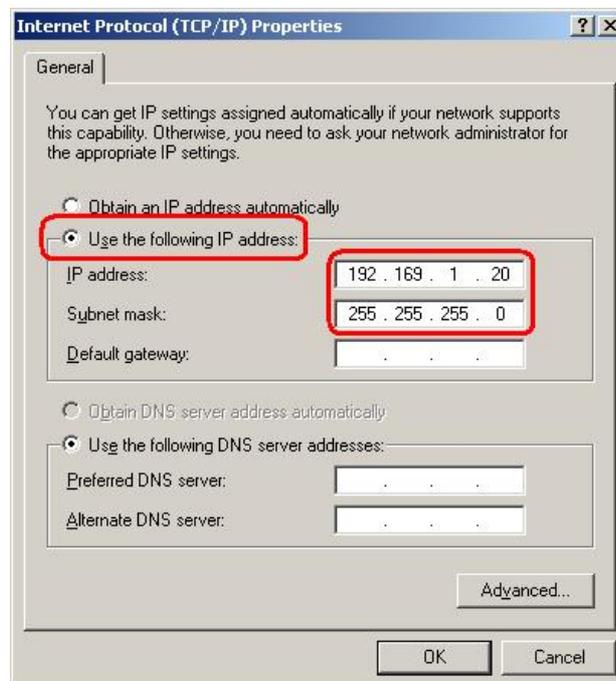
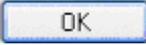


Figure 3.10 TCP/IP Property @ Windows XP

- Click  twice to confirm your changes, and close the **Control Panel**.

3.2.3 Windows® 2000 PCs:

- In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
- Double-click the **Network and Dial-up Connections** icon.
- In the **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then select **Properties**.

The **Local Area Connection Properties** dialog box displays with a list of currently installed network components. If the list includes **Internet Protocol (TCP/IP)**, the protocol has already been enabled, please skip to step 10 directly.

- If **Internet Protocol (TCP/IP)** does not display as an installed component, click

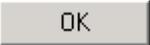
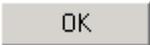


- In the **Select Network Component Type** dialog box, select **Protocol**, and then click



- Select **Internet Protocol (TCP/IP)** in the **Network Protocols** list, and then click .

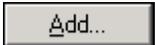
You may be prompted to install files from your Windows 2000 installation CD or other media. Follow the instructions to install the files.

- If prompted, click  to restart your computer with the new settings.
- After restarting your PC, double-click the **Network and Dial-up Connections** icon in the **Control Panel**.
- In **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then select **Properties**.
- In the **Local Area Connection Properties** dialog box, select **Internet Protocol (TCP/IP)**, and then click .
- In the **Internet Protocol (TCP/IP) Properties** dialog box, click the radio button labeled **Use the following IP address** and type **192.168.1.x** and **255.255.255.0** in the IP address field and Subnet Mask field, respectively.
- Click  twice to confirm and save your changes, and then close the **Control Panel**.

3.2.4 Windows® Me PCs

- In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
- Double-click the **Network and Dial-up Connections** icon.
- In the **Network and Dial-up Connections** window, right-click the **Network** icon, and then select **Properties**.

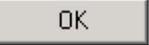
The **Network Properties** dialog box displays with a list of currently installed network components. If the list includes **Internet Protocol (TCP/IP)**, the protocol has already been enabled, please skip to step 11 directly.

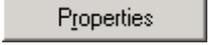
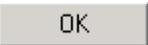
- If **Internet Protocol (TCP/IP)** does not display as an installed component, click .

- In the **Select Network Component Type** dialog box, select **Protocol**, and then click



- Select **Microsoft** in the Manufacturers box.

7. Select **Internet Protocol (TCP/IP)** in the Network Protocols list, and then click .

You may be prompted to install files from your Windows Me installation CD or other media. Follow the instructions to install the files.
8. If prompted, click  to restart your computer with the new settings.
9. After restarting your PC, double-click the **Network and Dial-up Connections** icon in the **Control Panel**.
10. In **Network and Dial-up Connections** window, right-click the **Network** icon, and then select **Properties**.
11. In the **Network Properties** dialog box, select **TCP/IP**, and then click .
12. In the **TCP/IP Settings** dialog box, click the radio button labeled **Use the following IP address** and type **192.168.1.x** and **255.255.255.0** in the IP address field and Subnet Mask field, respectively.
13. Click  twice to confirm and save your changes, and then close the **Control Panel**.

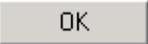
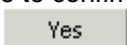
3.2.5 Windows® 95, 98 PCs:

1. In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network** icon.

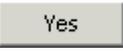
The **Network** dialog box displays with a list of currently installed network components. If the list includes **TCP/IP**, the protocol has already been enabled. Please skip to step 9 directly.
3. If **TCP/IP** does not display as an installed component, click . Then **Select Network Component Type** dialog box will display.
4. Select **Protocol**, and then click .

The **Select Network Protocol** dialog box displays.
5. Click on **Microsoft** in the Manufacturers list box, and then click **TCP/IP** in the Network Protocols list box.
6. Click  to return to the **Network** dialog box, and then click  again.

You may be prompted to install files from your Windows 95/98 installation CD. Follow the instructions to install the files.
7. Click  to restart the PC and complete the TCP/IP installation.
8. After restarting your PC, open the **Control Panel** window, and then click the **Network** icon.
9. Select the network component labeled **TCP/IP**, and then click .

If you have multiple TCP/IP listings, select the listing associated with your network card or adapter.
10. In the **TCP/IP Properties** dialog box, click the **IP Address** tab.
11. Click the radio button labeled **Use the following IP address** and type **192.168.1.x** and **255.255.255.0** in the IP address field and Subnet Mask field, respectively.
12. Click  twice to confirm and save your changes. You will be prompted to restart Windows. Please click  and restart your PC again.

3.2.6 Windows® NT 4.0 workstations:

1. In the Windows NT task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. In the **Control Panel** window, double click the **Network** icon.
3. In the **Network** dialog box, click the **Protocols** tab.
The Protocols tab displays a list of currently installed network protocols. If the list includes **TCP/IP**, the protocol has already been enabled. Please skip to step 9 directly.
4. If **TCP/IP** does not display as an installed component, click .
5. In the **Select Network Protocol** dialog box, select **TCP/IP**, and then click .
You may be prompted to install files from your Windows NT installation CD or other media. Follow the instructions to install the files.
After all files are installed, a window displays to inform you that a TCP/IP service called DHCP can be set up to dynamically assign IP information.
6. Click  to continue, and then click  if prompted to restart your computer.
7. After restarting your PC, open the **Control Panel** window, and then double-click the **Network** icon.
8. In the **Network** dialog box, click the **Protocols** tab.
9. In the **Protocols** tab, select **TCP/IP**, and then click .
10. In the **Microsoft TCP/IP Properties** dialog box, click the radio button labeled **Use the following IP address** and type **192.168.1.x** and **255.255.255.0** in the IP address field and Subnet Mask field, respectively.
11. Click  twice to confirm and save your changes, and then close the **Control Panel**.

3.2.7 Assigning IP to your PC automatically by DHCP

In some cases, you may want to adapt AAM6030VI's DHCP feature (it's only available in router mode) to your PC, you just click the radio button labeled **Obtain an IP address automatically** instead of **Use the following IP address** in above steps.

- ▶ By default, the LAN port IP address of AAM6030VI is assigned as: **192.168.1.1**. (You can change this number, or another number can be assigned by your ISP. See Chapter 6 for more information.)



Your PC must have IP addresses that place them in the same subnet as the AAM6030VI's LAN port. If you manually assign IP information to your AAM6030VI, you can follow the instructions in section "6.2 LAN" to change the LAN port IP address accordingly.

3.3 Login to your AAM6030VI

In this section, you can login to the AAM6030VI's Web page, either by an Ethernet or a USB cable, and start to configure settings and observe some statistics of your Internet connection.

1. Open your Web browser, and type the following URL in the address/location box, and press **<Enter>**:

http://192.168.1.1

This is the predefined IP address for the LAN port on the AAM6030VI.

A login screen displays, as shown in Figure 3.11



Figure 3.11 Login Screen

If you have problem connecting to AAM6030VI, you may want to check if your PC is properly configured within the subnet of AAM6030VI's predefined IP address **192.168.1.1**. Details are described from section 3.2.2 to 3.2.6.

2. Enter your user name and password, and then click  to enter the home page of AAM6030VI. The default user name and password are "admin" and "admin", respectively.



Note

You can change the password at any time (see section 8.4 Local Access on page 50).

The home page of AAM6030VI is shown in Figure 3.12.



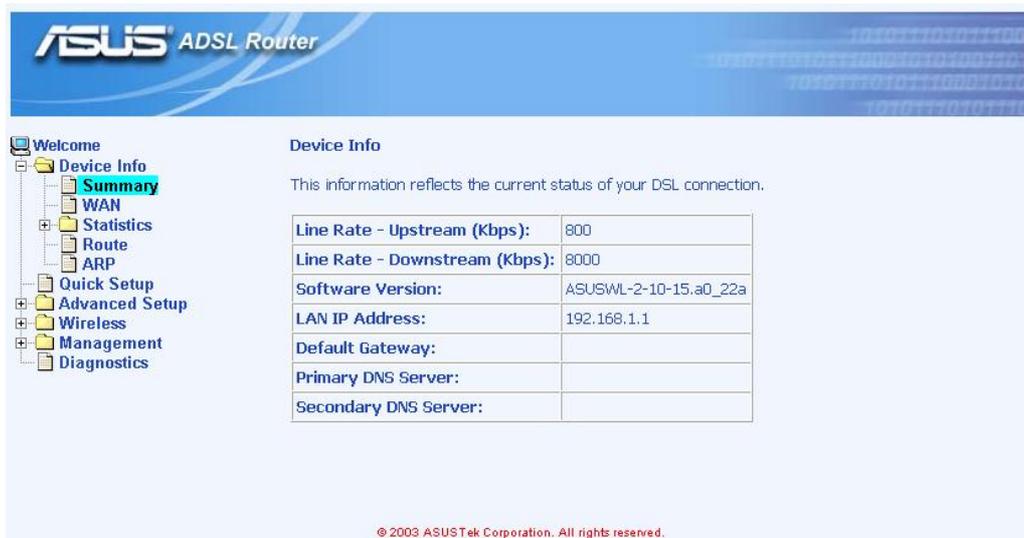
Figure 3.12 AAM6030VI Home Page

4 Device Information

This chapter describes your AAM6030VI system information and configuration summary when you click the "System Info" in the left column.

4.1 Summary

You can get the general status report from the AAM6030VI by clicking the sub-menu "Summary" of "Device Info" (shown in Figure 4.1)



The screenshot shows the ASUS ADSL Router web interface. On the left, a navigation tree is visible with 'Device Info' expanded and 'Summary' selected. The main content area is titled 'Device Info' and contains a table with the following data:

Line Rate - Upstream (Kbps):	800
Line Rate - Downstream (Kbps):	8000
Software Version:	ASUSWL-2-10-15.a0_22a
LAN IP Address:	192.168.1.1
Default Gateway:	
Primary DNS Server:	
Secondary DNS Server:	

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Figure 4.1 Status Summary

4.2 WAN

You can get the WAN status report from AAM6030VI by clicking the sub-menu "WAN" of "Device Info" (shown in Figure 4.2)



The screenshot shows the ASUS ADSL Router web interface. On the left, a navigation tree is visible with 'Device Info' expanded and 'WAN' selected. The main content area is titled 'WAN Info' and contains a table with the following data:

VPI/VCI	Category	PPPoE Service	Service Name	Interface Name	Protocol	State	Status	IP Address
0/35	UBR		br_0_35	nas17	Bridge	Enabled	Up	

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Figure 4.2 WAN Status

4.3 Statistics

4.3.1 LAN Statistics

You can get the LAN status report from AAM6030VI by clicking the sub-menu “LAN” of “Statistics” of “Device Info” (shown in Figure 4.3)



Figure 4.3 LAN Statistics Page

4.3.2 ATM Statistics

You can get the ATM status report from AAM6030VI by clicking the sub-menu “ATM” of “Statistics” of “Device Info” (shown in Figure 4.4)

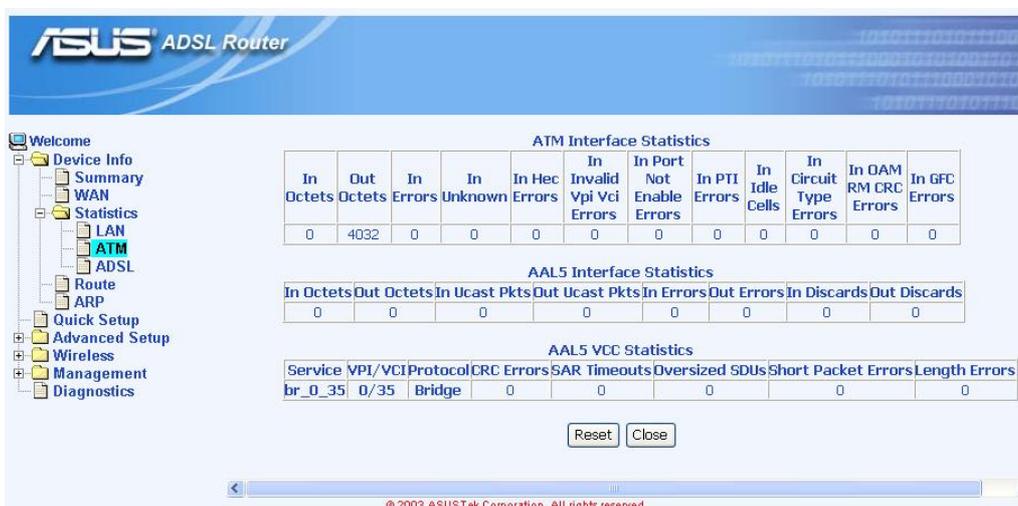


Figure 4.4 ATM Statistics Page

4.3.3 ADSL Statistics

You can get the ADSL status report from AAM6030VI by clicking the sub-menu “ADSL” of “Statistics” of “Device Info” (shown in Figure 4.5)



Figure 4.5 ADSL Statistics Page

4.4 Route

You can get the route status report from AAM6030VI by clicking the sub-menu “Route” of “Device Info” (shown in Figure 4.6)



Figure 4.6 Route Status

4.5 ARP

You can get the ARP status report from AAM6030VI by clicking the sub-menu “ARP” of “Device Info” (shown in Figure 4.7)



Figure 4.7 ARP Status

5 Quick Setup

This chapter will guide you through the steps necessary to configure your AAM6030VI.

1. If you enable the “**DSL Auto-connect**”, the AAM6030VI will detect available VPI/VCI from your ISP. If you don't enable it, please manually input the VPI/VCI, which are assigned by your ISP, and click **Next** (Figure 5.1).

The screenshot shows the 'Quick Setup' page of the ASUS ADSL Router. On the left is a navigation menu with options: Welcome, Device Info, Quick Setup, Advanced Setup, Wireless, Management, and Diagnostics. The main content area is titled 'Quick Setup' and contains the following text: 'This Quick Setup will guide you through the steps necessary to configure your DSL Router.' Below this is the 'ATM PVC Configuration' section, which says 'Select the check box below to enable DSL Auto-connect process.' There is an unchecked checkbox labeled 'DSL Auto-connect'. A note states: 'The Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) are needed for setting up the DSL connection. Do not change VPI and VCI numbers unless your ISP instructs you otherwise.' Below the note are two input fields: 'VPI: 0' and 'VCI: 33'. At the bottom right is a 'Next' button. A copyright notice at the very bottom reads '© 2003 ASUSTek Corporation. All rights reserved.'

Figure 5.1 DSL Auto-connect or Manually VPI/VCI input

2. Choose the proper connection type, like **PPPoA**, **PPPoE**, **MER**, **IPoA** or **Bridging**, and the encapsulation mode (**LLC/SNAP-Bridging** or **VC/MUX**), then click **Next**.

The screenshot shows the 'Connection Type' page of the ASUS ADSL Router. On the left is the same navigation menu as in Figure 5.1. The main content area is titled 'Connection Type' and contains the text: 'Select the type of network protocol and encapsulation mode over the ATM PVC that your ISP has instructed you to use.' Below this are five radio button options: 'PPP over ATM (PPPoA)', 'PPP over Ethernet (PPPoE)', 'MAC Encapsulation Routing (MER)', 'IP over ATM (IPoA)', and 'Bridging'. The 'Bridging' option is selected. Below the radio buttons is the 'Encapsulation Mode' section, which has a dropdown menu currently set to 'LLCSNAP-BRIDGING'. At the bottom right are 'Back' and 'Next' buttons. A copyright notice at the very bottom reads '© 2003 ASUSTek Corporation. All rights reserved.'

Figure 5.2 Choose proper connection type

- Then setup the AAM6030VI's IP address and Subnet Mask for your LAN. (Figure 5.3)



Figure 5.3 Setup IP address and subnet mask

- Setup your wireless connection, it needs the wireless network name (also known as SSID) and you might click the box to enable the data encryption (WEP) option (Figure 5.4). Click

Next

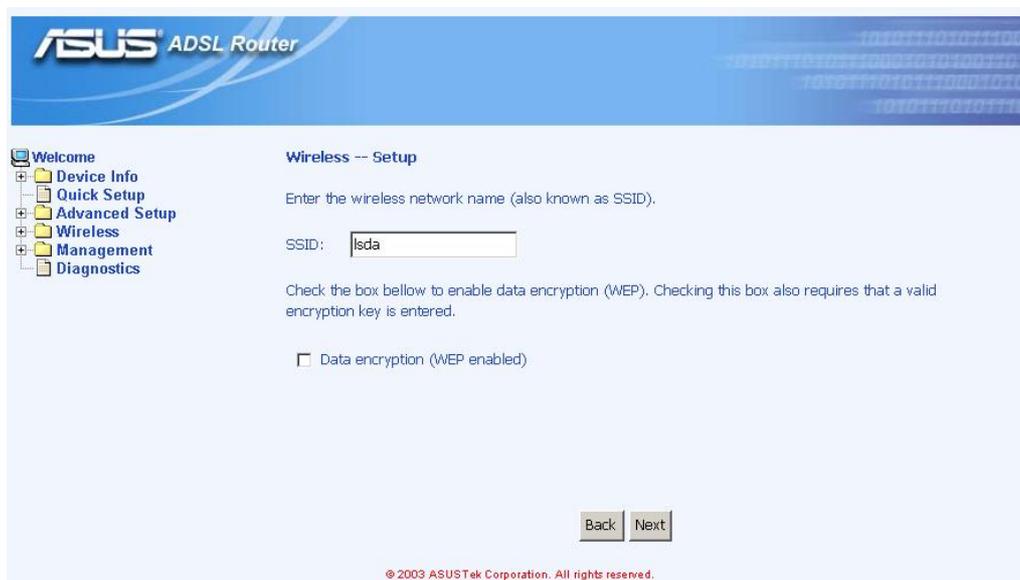


Figure 5.4 Wireless Network Setup

- Finally you will get a network setup summary as shown in Figure 5.5. Click **Finish** then AAM6030VI will reboot automatically (Figure 5.6).

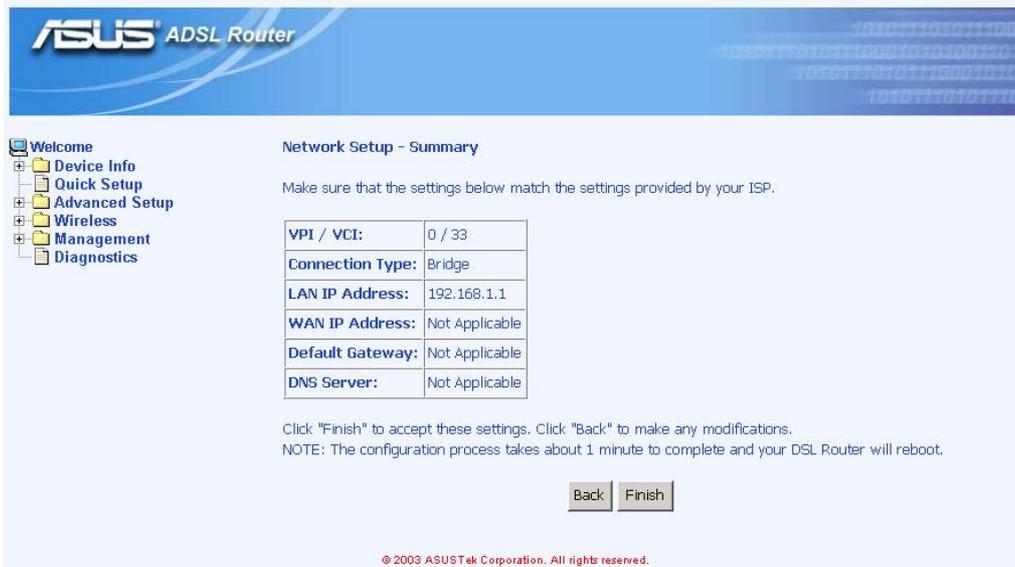


Figure 5.5 Network Setup Summary

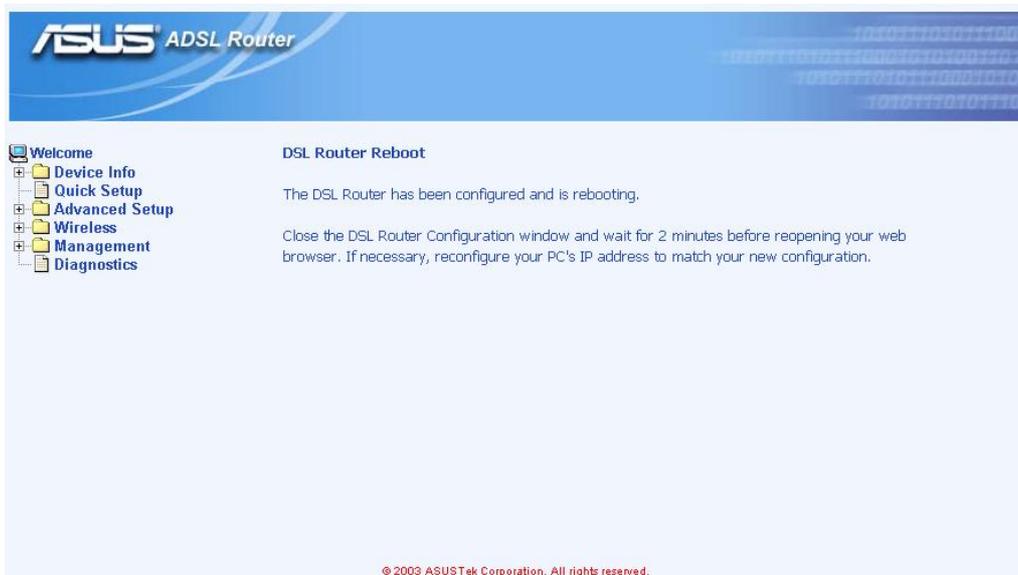


Figure 5.6 DSL Router Reboot

6 Advanced Setup

6.1 WAN

- Click the sub-menu "**WAN**" of "**Advanced Setup**", you may start to configure the WAN port setting. Click **Add**, **Remove** or **Edit** to proceed modification, or just click **Finish** to finish.

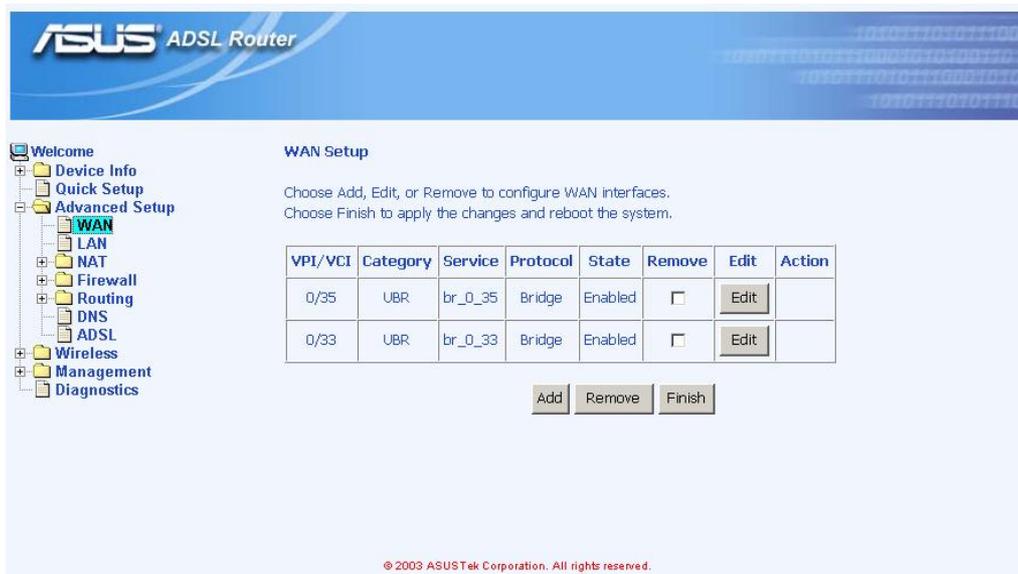


Figure 6.1 WAN Setup

- If you click **Add** or **Edit**, please input the **VPI/VCI** and **Service Category**, which your ISP should have provided to you, and click **Next**.

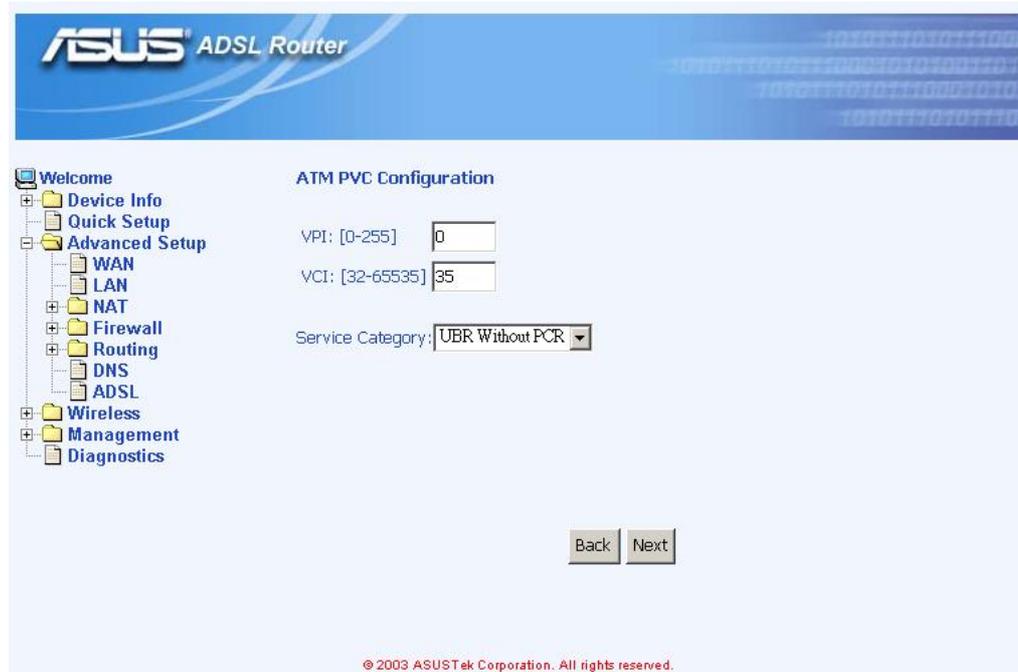


Figure 6.2 ATM PVC Configuration

3. Choose the proper connection type, like **PPPoA**, **PPPoE**, **MER**, **IPoA** or **Bridging**, and the encapsulation mode (**LLC/SNAP-Bridging** or **VC/MUX**), then click **Next**.



Figure 6.3 Choose proper connection type

4. If you want to disable this service, remove “v” by click the icon.

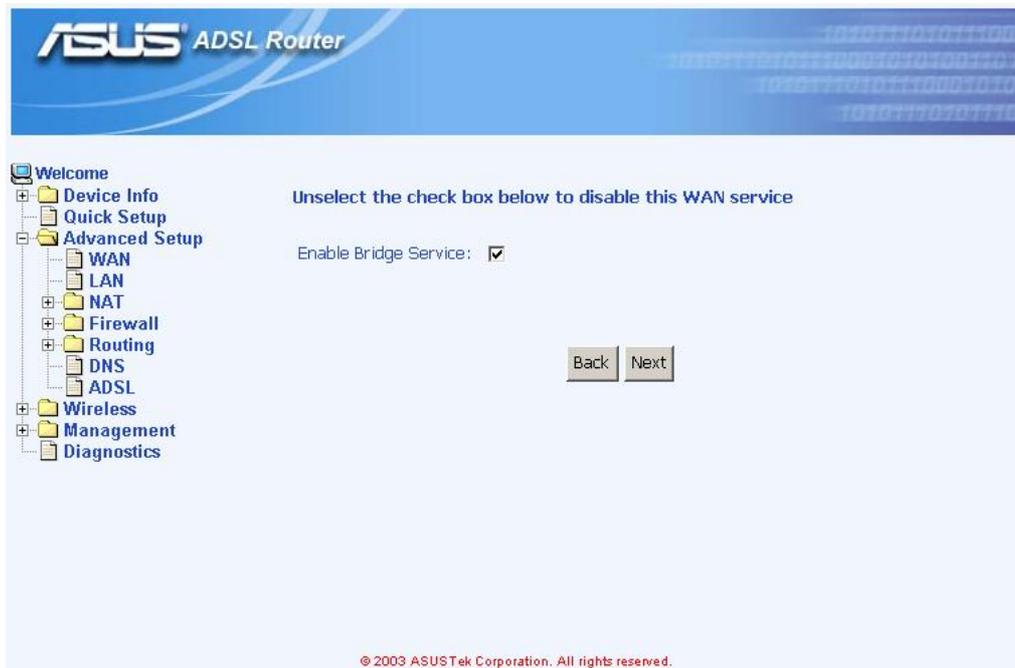


Figure 6.4 WAN Service Disabling

5. You will get the WAN Setup Summary and please click **Apply** to make it effective. If there is anything wrong, you may click **Back** to previous pages and modify

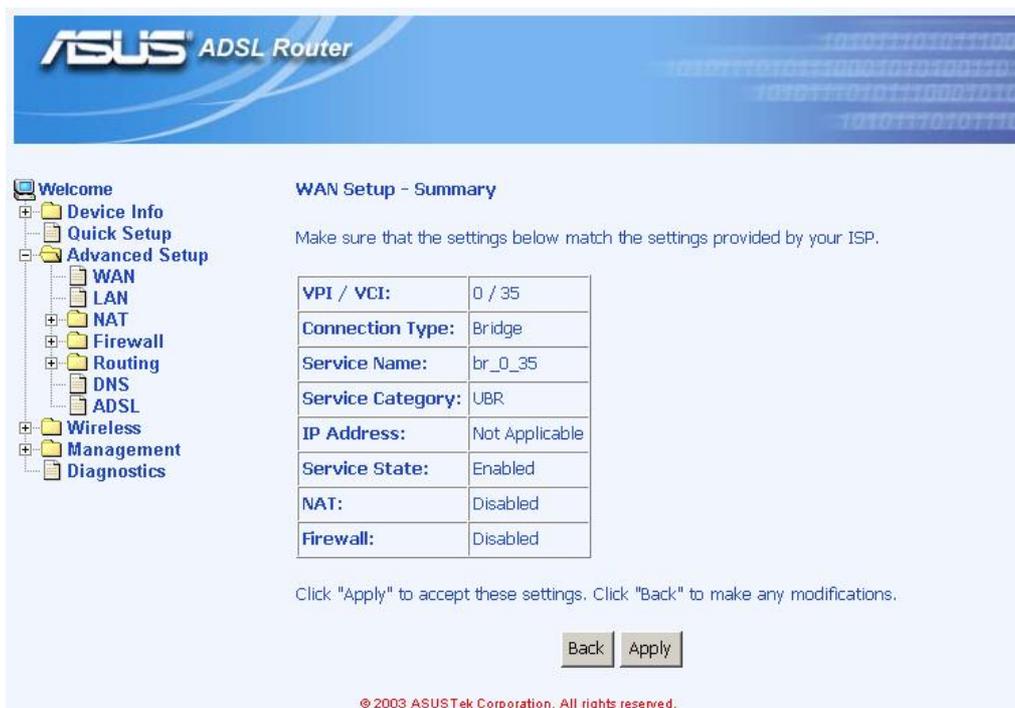


Figure 6.5 WAN Setup Summary

6. Now, you'd complete the WAN setup and you might add more services or remove unwanted items. Click **Finish** then AAM6030VI will reboot automatically.



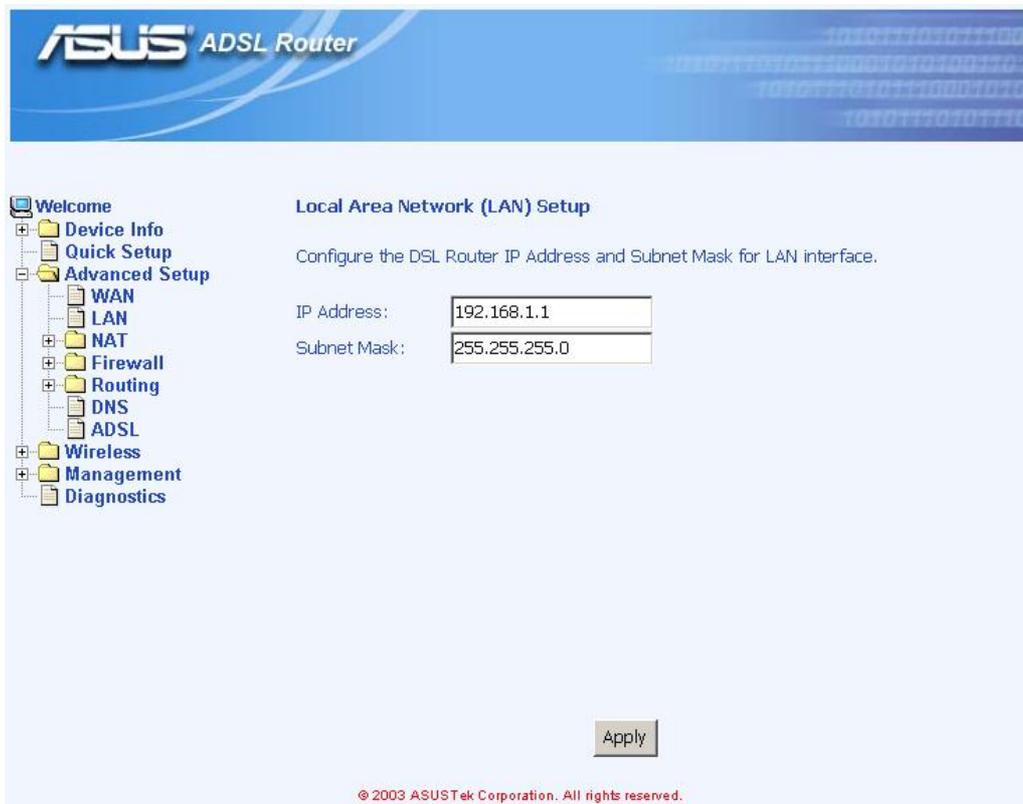
Figure 6.6 WAN Setup Result

6.2 LAN

- Click the sub-menu "LAN" of "Advanced Setup", you may start to configure the LAN port setting. If there is WAN setting at all, you will see two additional options: "Enable DHCP Server on the LAN" and "Configure the second IP Address and Subnet Mask for LAN interface". These parameters are detail described in Table 6.1.

Table 6.1 LAN Setup Parameters

Setting	Description
<i>IP Address</i>	The LAN IP address of AAM6030VI. This IP is used by your computers to identify AAM6030VI's LAN port. Note that the public IP address assigned to you by your ISP is not your LAN IP address. The public IP address identifies the WAN port on AAM6030VI to the Internet.
<i>Subnet Mask</i>	The LAN subnet mask identifies which parts of the LAN IP Address refer to your network as a whole and which parts refer specifically to nodes on the network. Your device is pre-configured with a default subnet mask of 255.255.255.0.
Enable DHCP Server on the LAN	
<i>Start IP Address</i>	The lowest IP addresses in the DHCP address pool.
<i>End IP Address</i>	The highest IP addresses in the DHCP address pool.
<i>Lease Time</i>	The amount of time the assigned address will be used by a device connected on the LAN.
Configure the second IP Address and Subnet Mask for LAN interface	
<i>IP Address</i>	The second LAN IP address of AAM6030VI.
<i>Subnet Mask</i>	The second LAN subnet mask identifies which parts of the LAN IP Address refer to your network as a whole and which parts refer specifically to nodes on the network.

**Figure 6.7 LAN Setup**

2. Click to make these parameters effective.

6.3 NAT

Click the sub-menu "NAT" of "Advanced Setup", you may start to configure the NAT features below:

1. Virtual Servers: You may click **Add** to select proper service names, like **Telnet, DNS, IPSec, POP3, FTP & Web** etc., and related Protocol (**TCP/UDP, TCP or UDP**), external/internal port and Internal server IP address (Figure 6.8 and 6.9). Click **Apply** to make these parameters effective.



Figure 6.8 NAT Virtual Server Page 1



Figure 6.9 NAT Virtual Server Page 2

2. Port Triggering: You may click **Add** to enter the application name, incoming protocol, incoming port range, outgoing protocol, outgoing port range and click **Apply** to forward IP packets for this application to the specified ports (Figure 6.10 and 6.11).



Figure 6.10 NAT Port Triggering Page 1



Figure 6.11 NAT Port Triggering Page 2

- DMZ host: AAM6030VI will forward IP packets from the WAN that do not belong to any of the applications configured in the Virtual Servers table (part 1 "Virtual Server" of this section) to the DMZ host computer. You can:

- ◆ Enter the computer's IP address and click to activate the DMZ host.
- ◆ Clear the IP address field and click to deactivate the DMZ host.

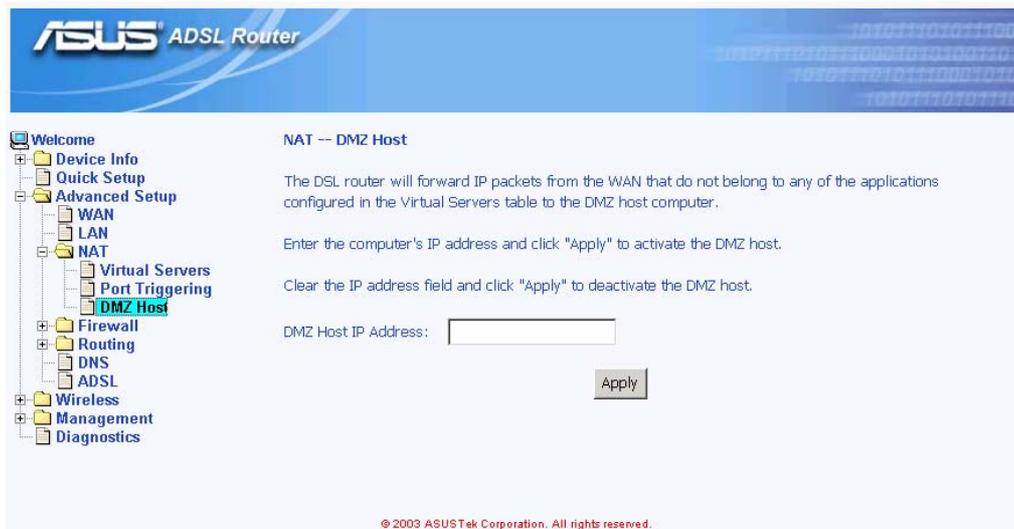


Figure 6.12 NAT DMZ Host Setup

6.4 Firewall

6.4.1 Outgoing Port Filter

With Outgoing Port Filter, you can specify protocol(s) and related port(s), which will be blocked from sending packets to the Internet.

Click **Add** and then you can select the protocol (**TCP/UDP**, **TCP** or **UDP**) and enter single port or the range of network port numbers and click **Apply** to prevent network traffic sent to these ports from being forwarded to the Internet.



Figure 6.13 Firewall Port Filter Page 1

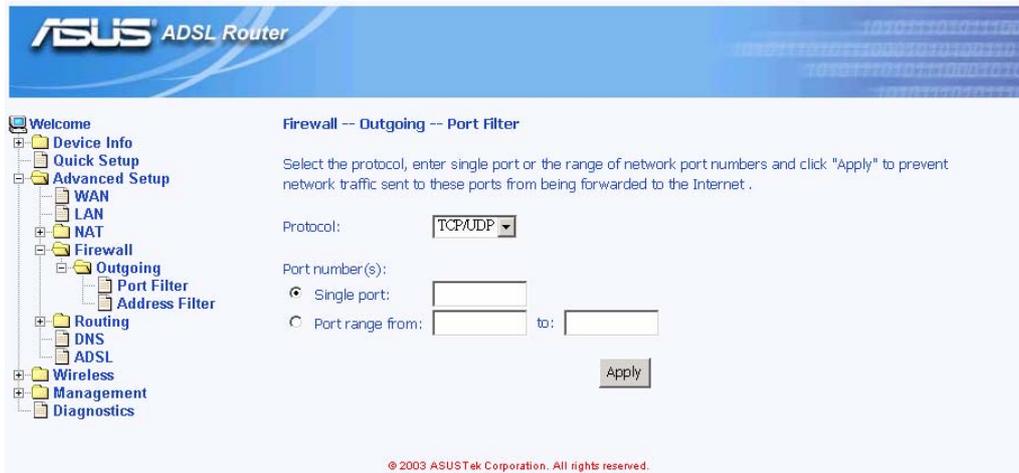


Figure 6.14 Firewall Port Filter Page 2

6.4.2 Outgoing Address Filter

With Outgoing Address Filter, you can specify one or more PCs' IP Address, which will be blocked from sending packets to the Internet.

Click **Add** and then you can enter the IP address and click **Apply** to prevent the PC with this IP address from accessing the Internet.



Figure 6.15 Firewall Address Filter Page 1

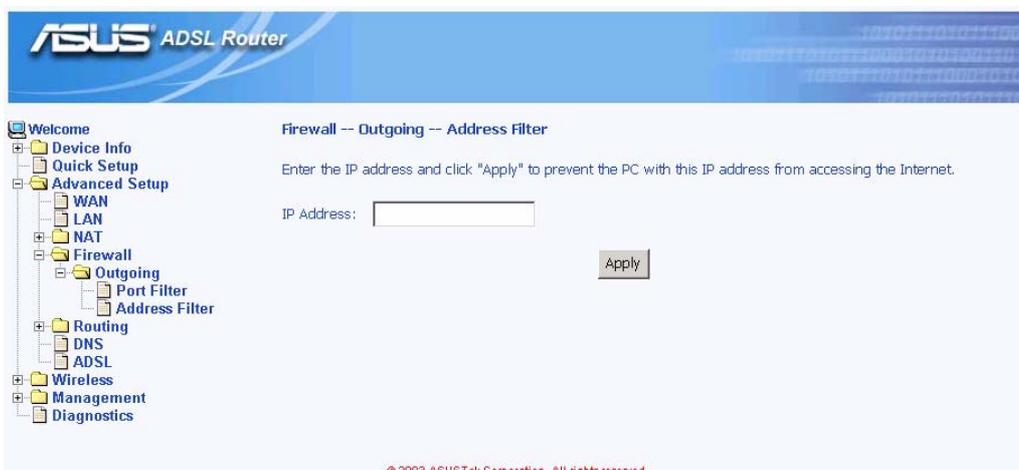


Figure 6.16 Firewall Address Filter Page 2

6.5 Routing

6.5.1 Static Route

You may see the static route table when you click the sub-menu “**Static Route**” of “**Routing**” of “**Advanced Setup**”

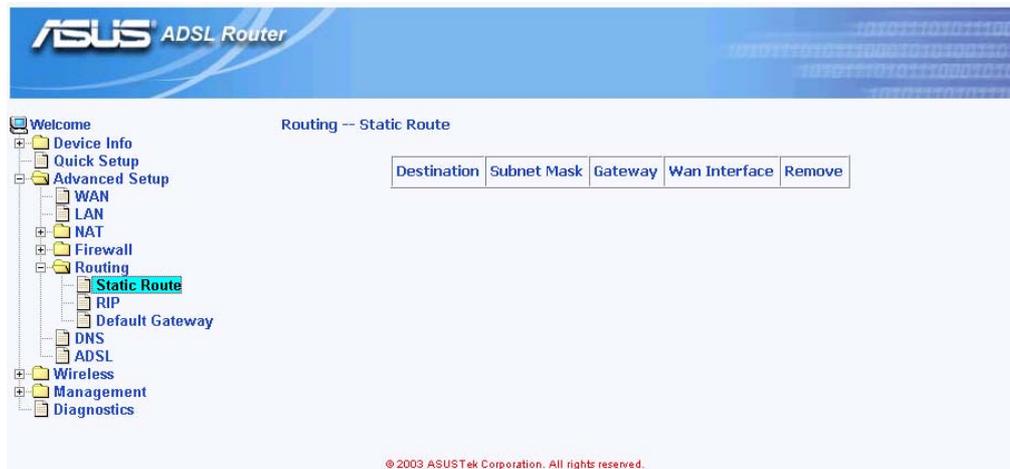


Figure 6.17 Static Route

6.5.2 RIP

You may configure the Route Information Protocol (RIP) for your LAN by clicking the sub-menu “**RIP**” of “**Routing**” of “**Advanced Setup**”.



Figure 6.18 RIP Setup

6.5.3 Default Gateway

If Enable Automatic Assigned Default Gateway checkbox is selected, this router will accept the first received default gateway assignment from one of the PPPoA, PPPoE or MER/DHCP enabled PVC(s). If the checkbox is not selected, enter the static default gateway AND/OR a WAN interface. Click **Apply** to save it.

NOTE: If changing the Automatic Assigned Default Gateway from unselected to selected, you must reboot the router to get the automatic assigned default gateway.

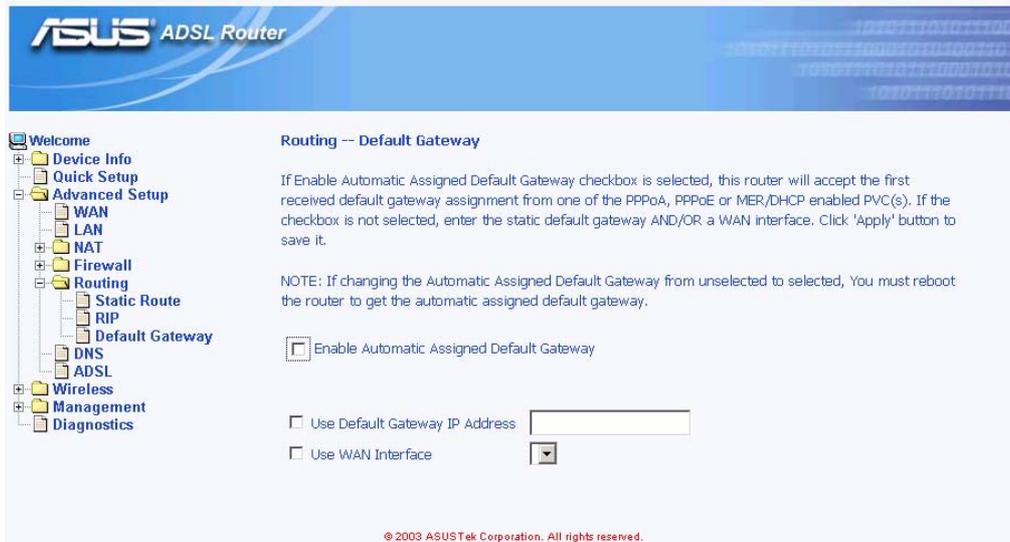


Figure 6.19 Default Gateway Setup

6.6 DNS

Domain Name System (DNS) servers map the user-friendly domain names that users type into their Web browsers (e.g., "yahoo.com") to the equivalent numerical IP addresses that are used for Internet routing.

When a PC user types a domain name into a browser, the PC must first send a request to a DNS server to obtain the equivalent IP address. The DNS server will attempt to look up the domain name in its own database, and will communicate with higher-level DNS servers when the name cannot be found locally. When the address is found, it is sent back to the requesting PC and is referenced in IP packets for the remainder of the communication.

If Enable Automatic Assigned DNS checkbox is selected, this router 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, enter the primary and optional secondary DNS server IP addresses. Click to save it.

NOTE: If changing from unselected Automatic Assigned DNS to selected Automatic Assigned DNS, You must reboot the router to get the automatic assigned DNS addresses

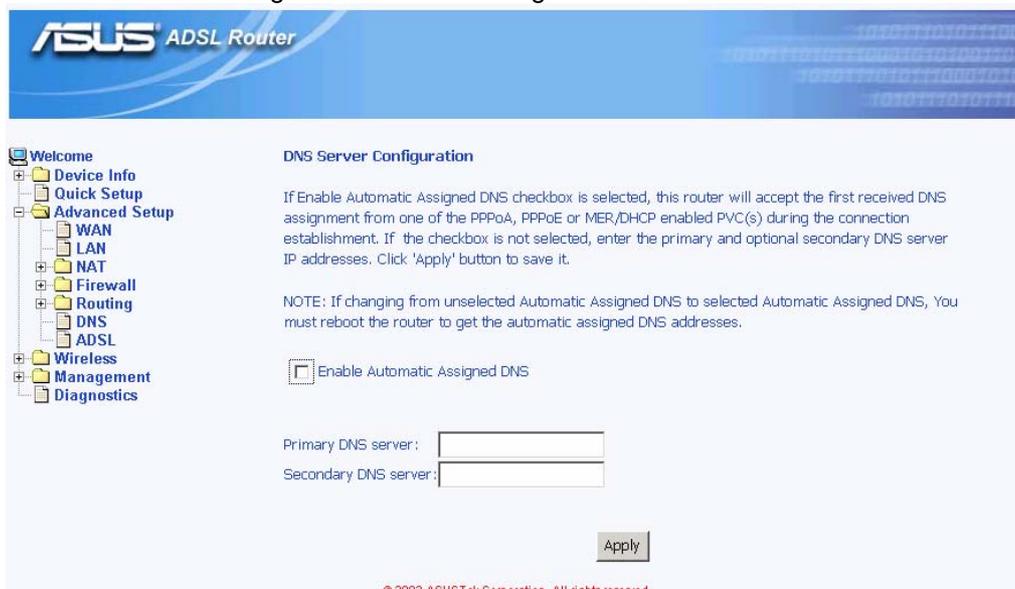


Figure 6.20 DNS Server Configuration

6.7 ADSL

6.7.1 ADSL Setting

There are several ADSL setting parameters available on AAM6030VI listed below (Figure 6.21):

- ▶ ADSL line modulation: **Auto Mode**, **G.DMT/G.Lite**, **T1.413**, **G.DMT** and **G.Lite**.
- ▶ Phone line pair: Inner or Outer pair of RJ11 connector
- ▶ Trellis coding: On or OFF
- ▶ SNR value setting (in HEX)

You may click to save it or click to configure other advanced parameters.



Figure 6.21 ADSL Setup

6.7.2 ADSL Advanced Setting

You also may choose the test mode and individual tone settings in this Advanced Setting (Figure 6.22 and 6.23), but any change on these are not recommend.



Do not modify these parameters since they might result in a connection failure or performance degrade unless you really know what you are doing.

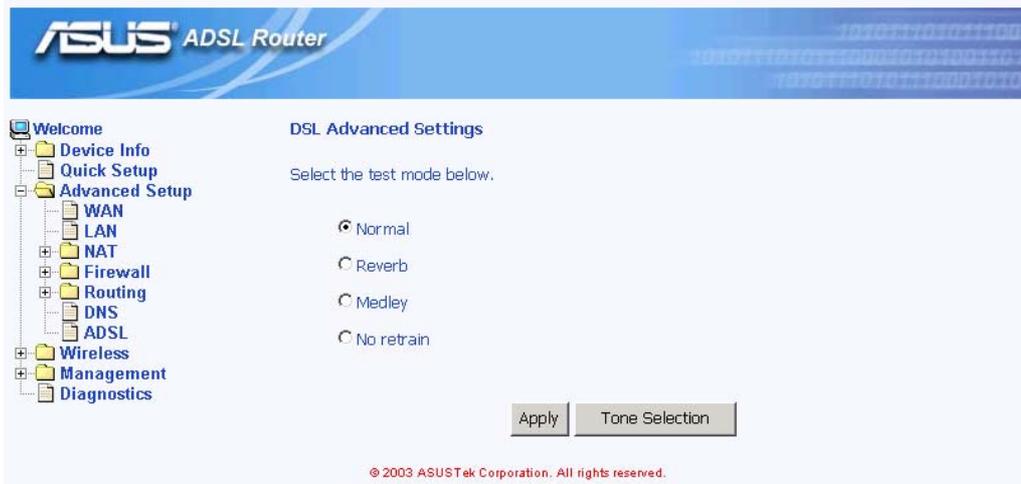


Figure 6.22 ADSL Advanced Settings

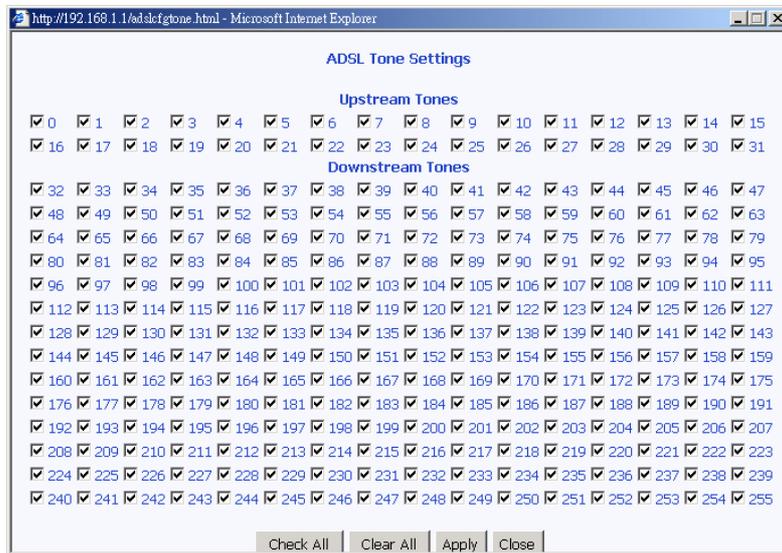


Figure 6.23 ADSL Tone Settings

7 Wireless

The chapter contains wireless connection configuration instructions for wireless access.

7.1 Basic

By clicking the sub-menu “**Basic**” of “**Wireless**”, you may configure the basic features of the wireless LAN interface. You can enable or disable the wireless LAN interface, hide the network from active scans. It’s a must to set the wireless network name (also known as SSID) and restrict the channel set based on country requirements after you enable the wireless LAN.

Click  to make these settings effective.

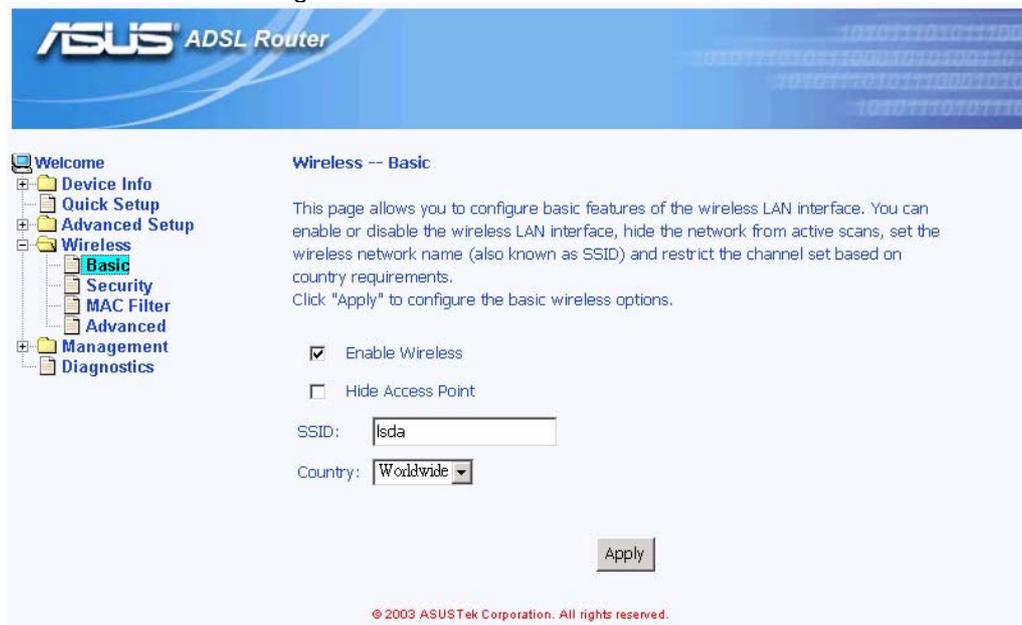


Figure 7.1 Wireless Basic Page

7.2 Security

By clicking the sub-menu “**Security**” of “**Wireless**”, you may configure the security features of the wireless LAN interface. You can enable or disable data encryption (WEP), specify whether a network key is required to authenticate to this wireless network and specify the encryption strength. Checking either of the boxes below also requires that valid encryption keys are configured.

Click  to make the configuration effective.



Figure 7.2 Wireless Security Page 1

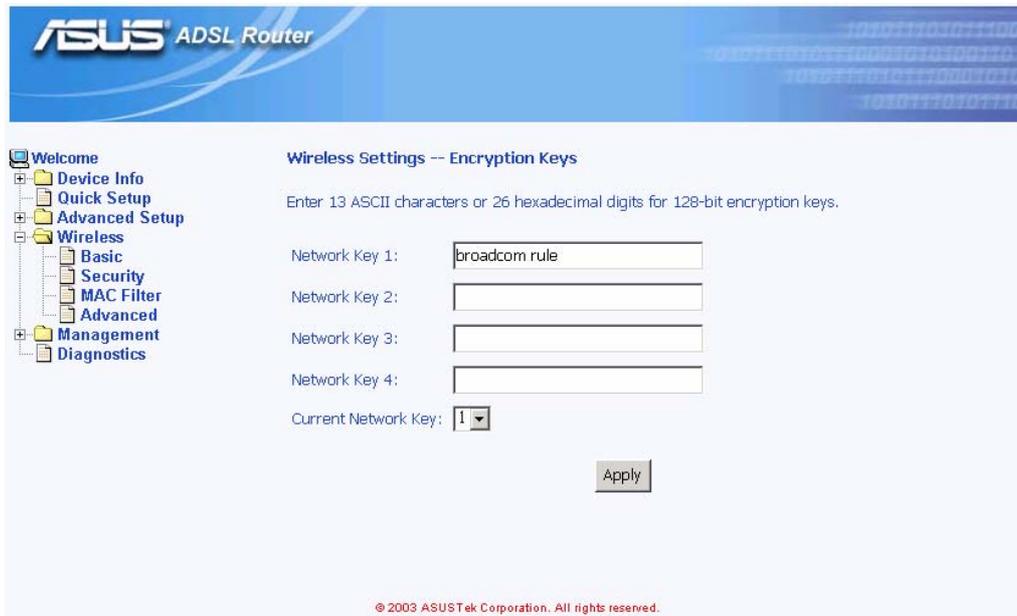


Figure 7.3 Wireless Security Page 2

7.3 MAC Filter

By clicking the sub-menu “**MAC Filter**” of “**Wireless**”, you may choose the restrict modes: **Off**, **Allow** or **Deny**. And you may add or remove the MAC address to the wireless MAC address filters.

Click  to make them effective.



Figure 7.4 Wireless MAC filter page 1

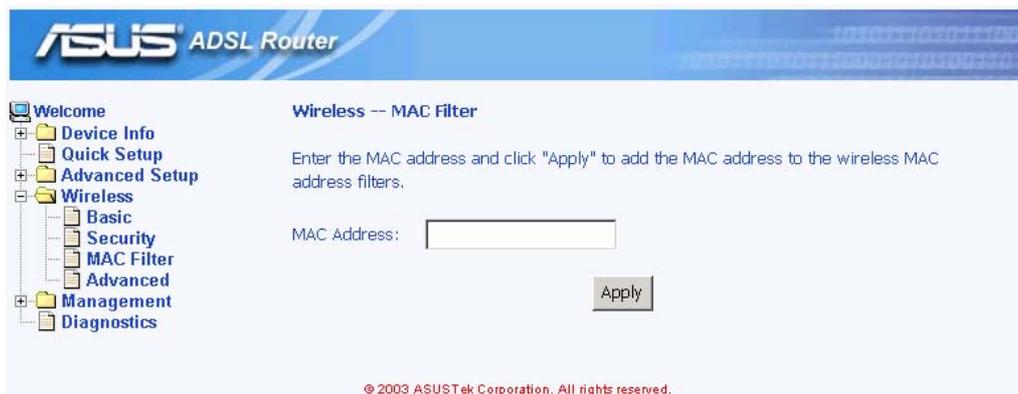


Figure 7.5 Wireless MAC filter page 2

7.4 Advanced

By clicking the sub-menu “**Advanced**” of “**Wireless**”, you may configure the advanced features of the wireless LAN interface. You can

- select a particular channel on which to operate
- force the transmission rate to a particular speed
- set the fragmentation threshold
- set the RTS threshold
- set the wakeup interval for clients in power-save mode
- set the beacon interval for the access point
- set whether short or long preambles are used.

Click to make them effective.

The screenshot displays the ASUS ADSL Router web interface. At the top left, the ASUS logo and 'ADSL Router' are visible. A navigation menu on the left includes: Welcome, Device Info, Quick Setup, Advanced Setup, Wireless (selected), Basic, Security, MAC Filter, Advanced Management, and Diagnostics. The main content area is titled 'Wireless -- Advanced'. It contains a descriptive paragraph: 'This page allows you to configure advanced features of the wireless LAN interface. You can select a particular channel on which to operate, force the transmission rate to a particular speed, set the fragmentation threshold, set the RTS threshold, set the wakeup interval for clients in power-save mode, set the beacon interval for the access point and set whether short or long preambles are used. Click "Apply" to configure the advanced wireless options.' Below this text are several configuration fields: Channel (dropdown menu set to 6), Rate (dropdown menu set to Auto), Basic Rate (dropdown menu set to Default), Fragmentation Threshold (text input field with 2346), RTS Threshold (text input field with 2347), DTIM Interval (text input field with 3), Beacon Interval (text input field with 100), 54g™ Mode (dropdown menu set to 54g Auto), and 54g Protection (dropdown menu set to Auto). An 'Apply' button is located at the bottom right of the configuration area. At the bottom of the page, a copyright notice reads: '© 2003 ASUSTek Corporation. All rights reserved.'

Figure 7.6 Advanced Setup

8 Management

The chapter contains management instructions for access privilege and software upgrade.

8.1 System Log

By clicking the sub-menu “**System Log**” of “**Management**”, you may see the System Log Dialog page such that you may view or configure the log file.



Figure 8.1 System Log Page

System Log

Date/Time	Facility	Severity	Message
1st day 00:00:21	user	crit	klogd: ADSL link up, fast, us=800, ds=8000.
1st day 00:00:21	user	crit	klogd: ADSL G.992 message exchange.
1st day 00:00:16	user	crit	klogd: ADSL G.992 channel analysis.
1st day 00:00:15	user	crit	klogd: eth0 Link UP.
1st day 00:00:15	user	crit	klogd: ADSL G.992 started.
1st day 00:00:15	user	crit	klogd: ADSL G.994 training.
1st day 00:00:15	syslog	emerg	BCM96345 started: BusyBox v0.60.4 (2003.08.14-06:44+0000)

Refresh Close

Figure 8.2 View Current System Log

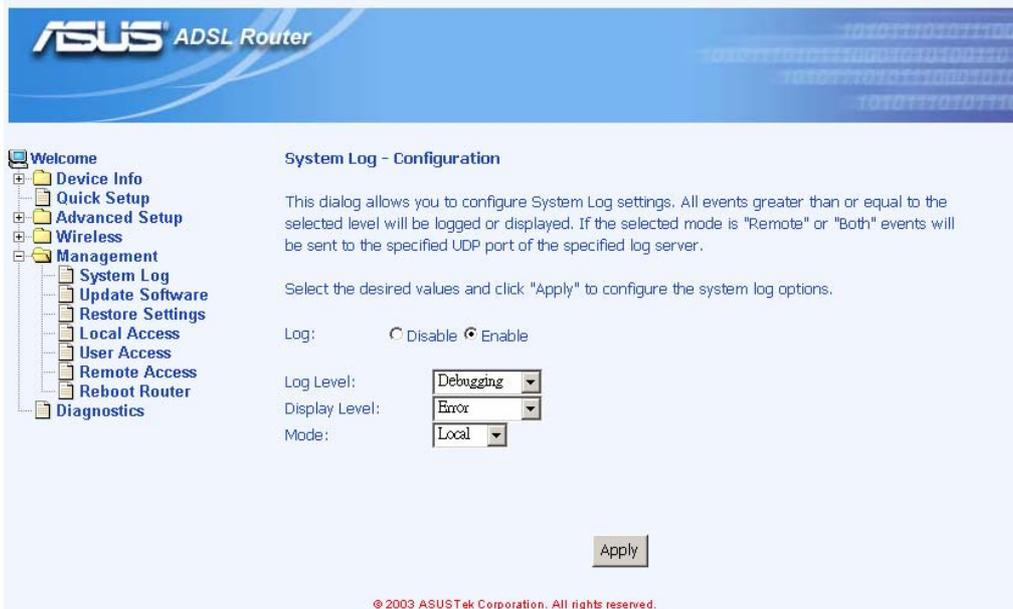


Figure 8.3 System Log Configuration

8.2 Update Software

You may update the AAM6030VI's software by clicking the sub-menu **"Update Software"** of **"Management"**, you may choose the proper file location to update your AAM6030VI accordingly and it will reboot automatically.

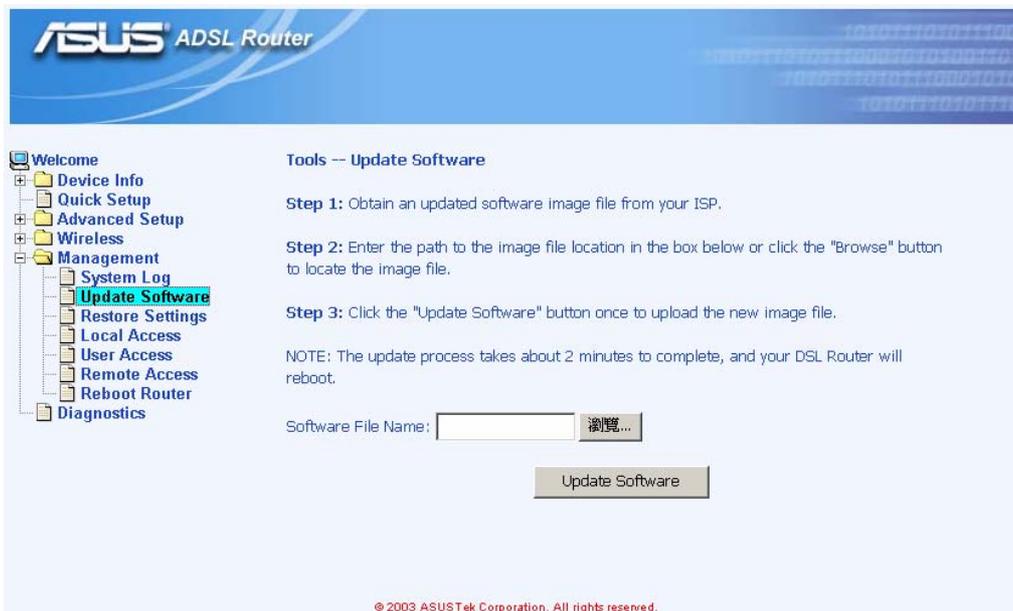


Figure 8.4 Update Software Page

8.3 Restore Settings

You may restore AAM6030VI's default settings by clicking the sub-menu **"Restore Settings"** of **"Management"**, it will restore and reboot automatically after clicking .

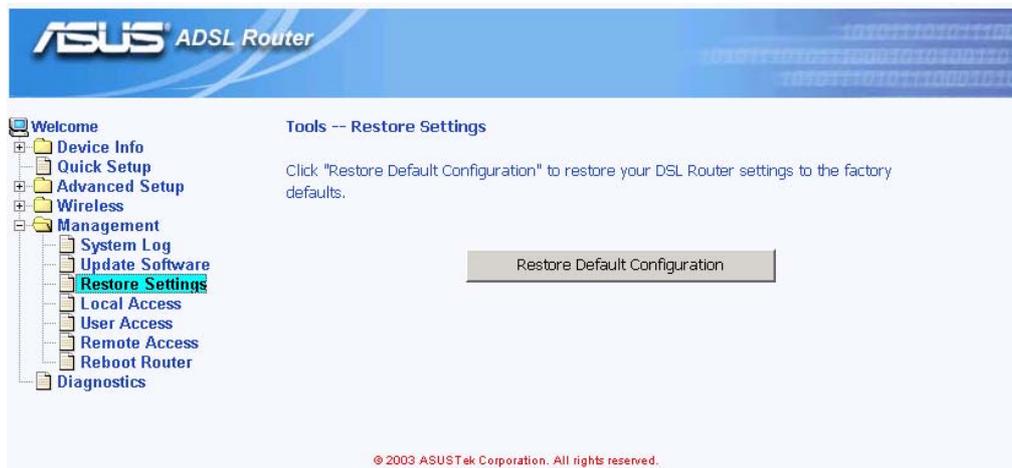


Figure 8.5 Restore Settings

8.4 Local Access

User name "admin" (system administrator) has unrestricted access to change and view configuration of your AAM6030VI. You may change its password by clicking the sub-menu **"Local Access"** of **"Management"**, enter the password for user name "admin" twice and click .



Figure 8.6 Local Access Setup

8.5 User Access

User name "user" (general user) can access to AAM6030VI to view configuration and statistics, and update the router's software. You may change its password by clicking the sub-menu **"Local Access"** of **"Management"**, enter the password for user name "user" twice and click .



Figure 8.7 User Access Setup

8.6 Remote Access

You may enable or disable this remote access feature by clicking the sub-menu “**Remote Access**” of “**Management**”. User name “support” is for ISP technician to access your DSL Router for maintenance and diagnostics, enter the password for user name “support” twice and click .



Figure 8.8 Remote Access Setup

8.7 Reboot Router

You may reboot AAM6030VI by clicking the sub-menu “**Reboot Access**” of “**Management**”. Just click to reboot.

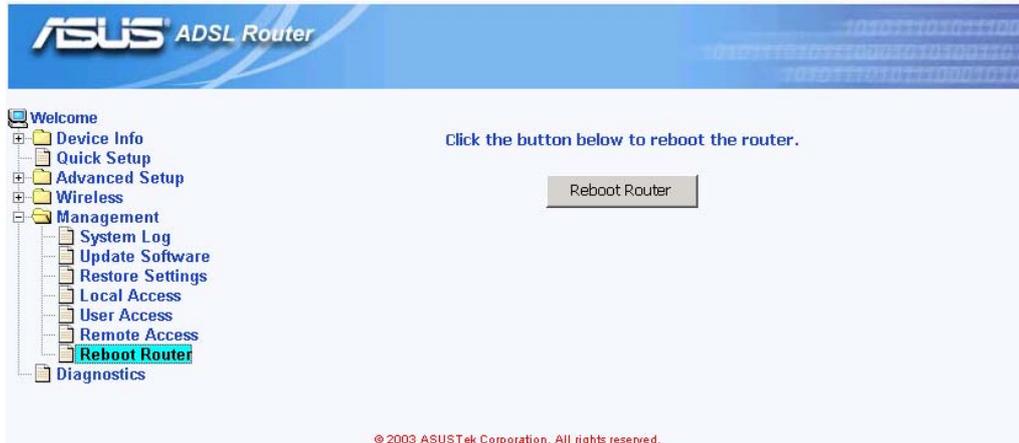


Figure 8.9 Reboot the Router

9 Diagnostic

This chapter shows the diagnostic report of AAM6030VI (Figure 9.1), which you might know

- The connection status of the router to your Ethernet, USB and Wireless
- The ADSL connection status of the router to your ISP and related OAM information.

You may click or to rerun the diagnostic tests.

ASUS ADSL Router

br_0_35 Diagnostics

Your modem is capable of testing your DSL connection. The individual tests are listed below. If a test displays a fail status, click "Rerun Diagnostic Tests" at the bottom of this page to make sure the fail status is consistent. If the test continues to fail, click "Help" and follow the troubleshooting procedures.

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 DSL service provider

Test ADSL Synchronization:	PASS	Help
Test ATM OAM F5 segment ping:	FAIL	Help
Test ATM OAM F5 end-to-end ping:	FAIL	Help

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Figure 9.1 Diagnostics Page

A IP Addresses, Network Masks, and Subnets

A.1 IP Addresses



Note

This section pertains only to IP addresses for IPv4 (version 4 of the Internet Protocol). IPv6 addresses are not covered.

This section assumes basic knowledge of binary numbers, bits, and bytes. For details on this subject, see Appendix A.

IP addresses, the Internet's version of telephone numbers, are used to identify individual nodes (computers or devices) on the Internet. Every IP address contains four numbers, each from 0 to 255 and separated by dots (periods), e.g. 20.56.0.211. These numbers are called, from left to right, field1, field2, field3, and field4.

This style of writing IP addresses as decimal numbers separated by dots is called *dotted decimal notation*. The IP address 20.56.0.211 is read "twenty dot fifty-six dot zero dot two-eleven."

A.1.1 Structure of an IP address

IP addresses have a hierarchical design similar to that of telephone numbers. For example, a 7-digit telephone number starts with a 3-digit prefix that identifies a group of thousands of telephone lines, and ends with four digits that identify one specific line in that group.

Similarly, IP addresses contain two kinds of information.

- ▶ *Network ID*
Identifies a particular network within the Internet or intranet
- ▶ *Host ID*
Identifies a particular computer or device on the network

The first part of every IP address contains the network ID, and the rest of the address contains the host ID. The length of the network ID depends on the network's *class* (see following section). Table A.1 shows the structure of an IP address.

Table A.1. IP Address structure

	Field1	Field2	Field3	Field4
Class A	Network ID	Host ID		
Class B	Network ID		Host ID	
Class C	Network ID			Host ID

Here are some examples of valid IP addresses:

Class A: 10.30.6.125 (network = 10, host = 30.6.125)

Class B: 129.88.16.49 (network = 129.88, host = 16.49)

Class C: 192.60.201.11 (network = 192.60.201, host = 11)

A.1.2 Network classes

The three commonly used network classes are A, B, and C. (There is also a class D but it has a special use beyond the scope of this discussion.) These classes have different uses and characteristics.

Class A networks are the Internet's largest networks, each with room for over 16 million hosts. Up to 126 of these huge networks can exist, for a total of over 2 billion hosts. Because of their huge size, these networks are used for WANs and by organizations at the infrastructure level of the Internet, such as your ISP.

Class B networks are smaller but still quite large, each able to hold over 65,000 hosts. There can be up to 16,384 class B networks in existence. A class B network might be appropriate for a large organization such as a business or government agency.

Class C networks are the smallest, only able to hold 254 hosts at most, but the total possible number of class C networks exceeds 2 million (2,097,152 to be exact). LANs connected to the Internet are usually class C networks.

Some important notes regarding IP addresses:

- ▶ The class can be determined easily from field1:

field1 = 1-126:	Class A
field1 = 128-191:	Class B
field1 = 192-223:	Class C

 (field1 values not shown are reserved for special uses)
- ▶ A host ID can have any value except all fields set to 0 or all fields set to 255, as those values are reserved for special uses.

A.2 Subnet masks



A mask looks like a regular IP address, but contains a pattern of bits that tells what parts of an IP address are the network ID and what parts are the host ID: bits set to 1 mean "this bit is part of the network ID" and bits set to 0 mean "this bit is part of the host ID."

Subnet masks are used to define *subnets* (what you get after dividing a network into smaller pieces). A subnet's network ID is created by "borrowing" one or more bits from the host ID portion of the address. The subnet mask identifies these host ID bits.

For example, consider a class C network 192.168.1. To split this into two subnets, you would use the subnet mask:

255.255.255.128

It's easier to see what's happening if we write this in binary:

11111111. 11111111. 11111111.10000000

As with any class C address, all of the bits in field1 through field 3 are part of the network ID, but note how the mask specifies that the first bit in field 4 is also included. Since this extra bit has only two values (0 and 1), this means there are two subnets. Each subnet uses the remaining 7 bits in field4 for its host IDs, which range from 0 to 127 (instead of the usual 0 to 255 for a class C address).

Similarly, to split a class C network into four subnets, the mask is:

255.255.255.192 or 11111111. 11111111. 11111111.11000000

The two extra bits in field4 can have four values (00, 01, 10, 11), so there are four subnets. Each subnet uses the remaining six bits in field4 for its host IDs, ranging from 0 to 63.



Sometimes a subnet mask does not specify any additional network ID bits, and thus no subnets. Such a mask is called a default subnet mask. These masks are:

Class A:	255.0.0.0
Class B:	255.255.0.0
Class C:	255.255.255.0

These are called default because they are used when a network is initially configured, at which time it has no subnets.

B Troubleshooting

This appendix suggests solutions for problems you may encounter in installing or using the SL-6000 / SL-6300, and provides instructions for using several IP utilities to diagnose problems.

Contact Customer Support if these suggestions do not resolve the problem.

Problem	Troubleshooting Suggestion
LEDs	
Power LED does not illuminate after product is turned on.	Verify that you are using the power adapter provided with the device and that it is securely connected to the AAM6030VI and a wall socket/power strip.
LINK WAN LED does not illuminate after Ethernet cable is attached.	Verify that an Ethernet cable like the one provided is securely connected to the Ethernet port of your ADSL or cable modem and the WAN port of SL-6000 / SL-6300. Make sure that your ADSL or cable modem is powered on. Wait 30 seconds to allow AAM6030VI to negotiate a connection with your broadband modem.
LINK LAN LED does not illuminate after Ethernet cable is attached.	Verify that the Ethernet cable is securely connected to your LAN hub or PC and to the SL-6000 / SL-6300. Make sure the PC and/or hub is turned on. Verify that your cable is sufficient for your network requirements. A 100 Mbit/sec network (100BaseTx) should use cables labeled Cat 5. 10Mbit/sec cables may tolerate lower quality cables.
Internet Access	
PC cannot access Internet	Use the ping utility, discussed in the following section, to check whether your PC can communicate with the SL-6000 / SL-6300's LAN IP address (by default 192.168.1.1). If it cannot, check the Ethernet cabling. If you statically assigned a private IP address to the computer, (not a registered public address), verify the following: <ul style="list-style-type: none"> • Check that the gateway IP address on the computer is your public IP address (see the Getting Started chapter, Part 2 for instructions on viewing the IP information.) If it is not, correct the address or configure the PC to receive IP information automatically. • Verify with your ISP that the DNS server specified for the PC is valid. Correct the address or configure the PC to receive this information automatically. • Verify that a Network Address Translation rule has been defined on the AAM6030VI to translate the private address to your public IP address. The assigned IP address must be within the range specified in the NAT rules. Or, configure the PC to accept an address assigned by another device (see the Getting Started, Part 2). The default configuration includes a NAT rule for all dynamically assigned addresses within a predefined pool
PCs cannot display web pages on the Internet.	Verify that the DNS server specified on the PCs is correct for your ISP, as discussed in the item above. You can use the ping utility, discussed in the following section, to test connectivity with your ISP's DNS server.

Problem	Troubleshooting Suggestion
Configuration Manager Program	
<i>You forgot/lost your Configuration Manager user ID or password.</i>	If you have not changed the password from the default, try using "admin" as both the user ID and password. Otherwise, you can reset the device to the default configuration by pressing the Reset button on the rear panel of AAM6030VI three times. WARNING: Resetting the device removes any custom settings and returns all settings to their default values.
<i>Cannot access the Configuration Manager program from your browser.</i>	Use the ping utility, discussed in the following section, to check whether your PC can communicate with the SL-6000 / SL-6300's LAN IP address (by default 192.168.1.1). If it cannot, check the Ethernet cabling. Verify that you are using Internet Explorer v5.5 or later. Netscape is not supported. Support for Javascript® must be enabled in your browser. Support for Java® may also be required. Verify that the PC's IP address is defined as being on the same subnet as the IP address assigned to the LAN port on the SL-6000 / SL-6300.
<i>Changes to Configuration Manager are not being retained.</i>	Be sure to click on  button to save any changes.

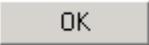
B.1 Diagnosing Problem using IP Utilities

B.1.1 ping

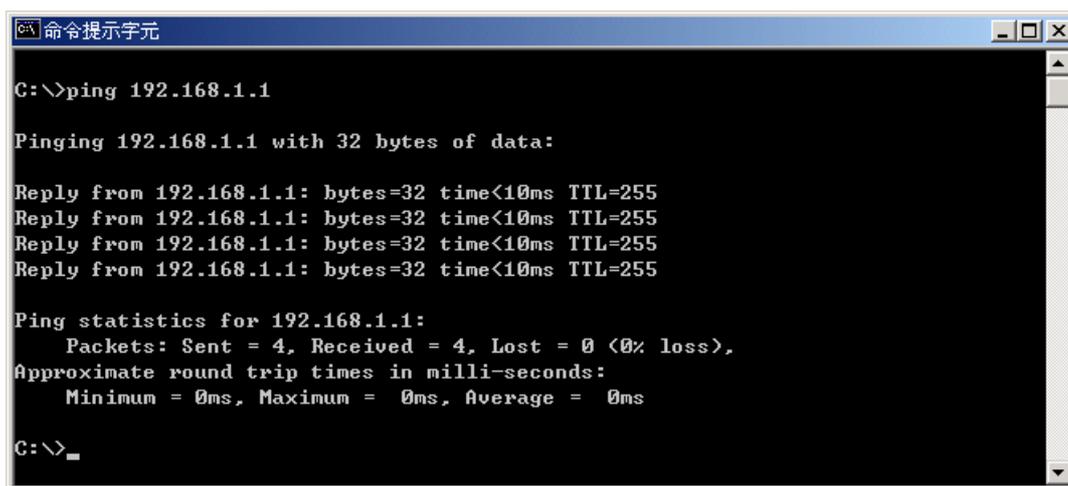
Ping is a command you can use to check whether your PC can recognize other computers on your network and the Internet. A ping command sends a message to the computer you specify. If the computer receives the message, it sends messages in reply. To use it, you must know the IP address of the computer with which you are trying to communicate.

On Windows-based computers, you can execute a ping command from the Start menu. Click the Start button, and then click Run. In the Open text box, type a statement such as the following:

ping 192.168.1.1

Click . You can substitute any private IP address on your LAN or a public IP address for an Internet site, if known.

If the target computer receives the message, a Command Prompt window displays like that shown in Figure B.1.



```
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<10ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Figure B.1. Using the ping Utility

If the target computer cannot be located, you will receive the message “Request timed out.”

Using the ping command, you can test whether the path to the AAM6030VI is working (using the preconfigured default LAN IP address 192.168.1.1) or another address you assigned.

You can also test whether access to the Internet is working by typing an external address, such as that for www.yahoo.com (216.115.108.243). If you do not know the IP address of a particular Internet location, you can use the nslookup command, as explained in the following section.

From most other IP-enabled operating systems, you can execute the same command at a command prompt or through a system administration utility.

B.1.2 nslookup

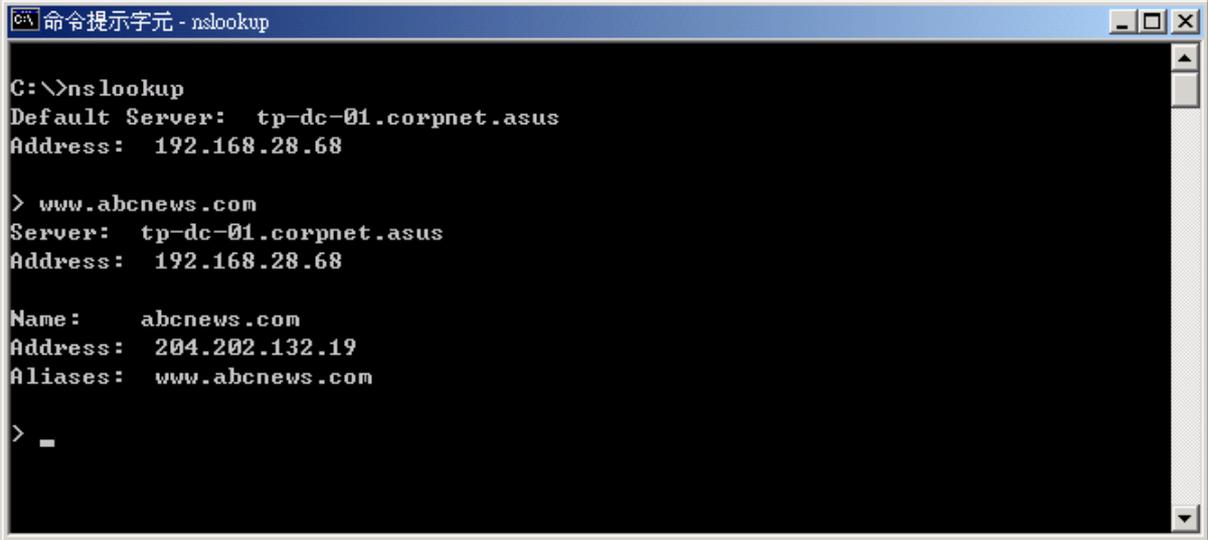
You can use the nslookup command to determine the IP address associated with an Internet site name. You specify the common name, and the nslookup command looks up the name on your DNS server (usually located with your ISP). If that name is not an entry in your ISP's DNS table, the request is then referred to another higher-level server, and so on, until the entry is found. The server then returns the associated IP address.

On Windows-based computers, you can execute the nslookup command from the Start menu. Click the Start button, and then click Run. In the Open text box, type the following:

nslookup

Click . A Command Prompt window displays with a bracket prompt (>). At the prompt, type the name of the Internet address you are interested in, such as www.absnews.com.

The window will display the associate IP address, if known, as shown in Figure B.2.



```
C:\>nslookup
Default Server:  tp-dc-01.corpnet.asus
Address:  192.168.28.68

> www.abcnews.com
Server:  tp-dc-01.corpnet.asus
Address:  192.168.28.68

Name:    abcnews.com
Address:  204.202.132.19
Aliases: www.abcnews.com

> _
```

Figure B.2. Using the nslookup Utility

There may be several addresses associated with an Internet name. This is common for web sites that receive heavy traffic; they use multiple, redundant servers to carry the same information.

To exit from the nslookup utility, type **exit** and press **<Enter>** at the command prompt.

C Glossary

- 10BASE-T** A designation for the type of wiring used by Ethernet networks with a data rate of 10 Mbps. Also known as Category 3 (CAT 3) wiring. *See also data rate, Ethernet.*
- 100BASE-T** A designation for the type of wiring used by Ethernet networks with a data rate of 100 Mbps. Also known as Category 5 (CAT 5) wiring. *See also data rate, Ethernet.*
- ADSL** Asymmetric Digital Subscriber Line
The most commonly deployed "flavor" of DSL for home users. The term asymmetrical refers to its unequal data rates for downloading and uploading (the download rate is higher than the upload rate). The asymmetrical rates benefit home users because they typically download much more data from the Internet than they upload.
- analog** **ATM authenticate** To verify a user's identity, such as by prompting for a password.
- binary** The "base two" system of numbers, that uses only two digits, 0 and 1, to represent all numbers. In binary, the number 1 is written as 1, 2 as 10, 3 as 11, 4 as 100, etc. Although expressed as decimal numbers for convenience, IP addresses in actual use are binary numbers; e.g., the IP address 209.191.4.240 is 11010001.10111111.00000100.11110000 in binary. *See also bit, IP address, network mask.*
- bit** Short for "binary digit," a bit is a number that can have two values, 0 or 1. *See also binary.*
- bps** bits per second
- broadband** A telecommunications technology that can send different types of data over the same medium. DSL is a broadband technology.
- broadcast** To send data to all computers on a network.
- DHCP** Dynamic Host Configuration Protocol
DHCP automates address assignment and management. When a computer connects to the LAN, DHCP assigns it an IP address from a shared pool of IP addresses; after a specified time limit, DHCP returns the address to the pool.
- DHCP relay** Dynamic Host Configuration Protocol relay
A DHCP relay is a computer that forwards DHCP data between computers that request IP addresses and the DHCP server that assigns the addresses. Each of the SL-6000 / SL-6300's interfaces can be configured as a DHCP relay. *See DHCP.*
- DHCP server** Dynamic Host Configuration Protocol server
A DHCP server is a computer that is responsible for assigning IP addresses to the computers on a LAN. *See DHCP.*
- DNS** Domain Name System
The DNS maps domain names into IP addresses. DNS information is distributed hierarchically throughout the Internet among computers called DNS servers. When you start to access a web site, a DNS server looks up the requested domain name to find its corresponding IP address. If the DNS server cannot find the IP address, it communicates with higher-level DNS servers to determine the IP address. *See also domain name.*
- domain name** A domain name is a user-friendly name used in place of its associated IP address. For example, www.globespan.net is the domain name associated with IP address 209.191.4.240. Domain names must be unique; their assignment is controlled by the Internet Corporation for Assigned Names and Numbers (ICANN). Domain names are a key element of URLs, which identify a specific file at a web site, e.g., http://www.globespan.net/index.html. *See also DNS.*

download	To transfer data in the downstream direction, i.e., from the Internet to the user.
DSL	Digital Subscriber Line A technology that allows both digital data and analog voice signals to travel over existing copper telephone lines.
Ethernet	The most commonly installed computer network technology, usually using twisted pair wiring. Ethernet data rates are 10 Mbps and 100 Mbps. <i>See also 10BASE-T, 100BASE-T, twisted pair.</i>
filtering	To screen out selected types of data, based on filtering rules. Filtering can be applied in one direction (upstream or downstream), or in both directions.
filtering rule	A rule that specifies what kinds of data the a routing device will accept and/or reject. Filtering rules are defined to operate on an interface (or multiple interfaces) and in a particular direction (upstream, downstream, or both).
firewall	Any method of protecting a computer or LAN connected to the Internet from intrusion or attack from the outside. Some firewall protection can be provided by packet filtering and Network Address Translation services.
FTP	File Transfer Protocol A program used to transfer files between computers connected to the Internet. Common uses include uploading new or updated files to a web server, and downloading files from a web server.
GGP	Gateway to Gateway Protocol. An Internet protocol that specifies how gateway routers communicate with each other.
hop	When you send data through the Internet, it is sent first from your computer to a router, and then from one router to another until it finally reaches a router that is directly connected to the recipient. Each individual "leg" of the data's journey is called a hop.
hop count	The number of hops that data has taken on its route to its destination. Alternatively, the maximum number of hops that a packet is allowed to take before being discarded (<i>see also TTL</i>).
host	A device (usually a computer) connected to a network.
HTTP	Hyper-Text Transfer Protocol HTTP is the main protocol used to transfer data from web sites so that it can be displayed by web browsers. <i>See also web browser, web site.</i>
ICMP	Internet Control Message Protocol An Internet protocol used to report errors and other network-related information. The ping command makes use of ICMP.
IGMP	Internet Group Management Protocol An Internet protocol that enables a computer to share information about its membership in multicast groups with adjacent routers. A multicast group of computers is one whose members have designated as interested in receiving specific content from the others. Multicasting to an IGMP group can be used to simultaneously update the address books of a group of mobile computer users or to send company newsletters to a distribution list.
Internet	The global collection of interconnected networks used for both private and business communications.
intranet	A private, company-internal network that looks like part of the Internet (users access information using web browsers), but is accessible only by employees.
IP	<i>See TCP/IP.</i>
IP address	Internet Protocol address The address of a host (computer) on the Internet, consisting of four numbers, each from 0 to 255, separated by periods, e.g., 209.191.4.240. An IP address consists of a <i>network ID</i> that identifies the particular network the host belongs to, and a

host ID uniquely identifying the host itself on that network. A network mask is used to define the network ID and the host ID. Because IP addresses are difficult to remember, they usually have an associated domain name that can be specified instead. *See also domain name, network mask.*

ISP	Internet Service Provider A company that provides Internet access to its customers, usually for a fee.
LAN	Local Area Network A network limited to a small geographic area, such as a home, office, or small building.
LED	Light Emitting Diode An electronic light-emitting device. The indicator lights on the front of the AAM6030VI are LEDs.
MAC address	Media Access Control address The permanent hardware address of a device, assigned by its manufacturer. MAC addresses are expressed as six pairs of characters.
mask	<i>See network mask.</i>
Mbps	Abbreviation for Megabits per second, or one million bits per second. Network data rates are often expressed in Mbps.
NAT	Network Address Translation A service performed by many routers that translates your network's publicly known IP address into a <i>private</i> IP address for each computer on your LAN. Only your router and your LAN know these addresses; the outside world sees only the public IP address when talking to a computer on your LAN.
NAT rule	A defined method for translating between public and private IP addresses on your LAN.
network	A group of computers that are connected together, allowing them to communicate with each other and share resources, such as software, files, etc. A network can be small, such as a <i>LAN</i> , or very large, such as the <i>Internet</i> .
network mask	A network mask is a sequence of bits applied to an IP address to select the network ID while ignoring the host ID. Bits set to 1 mean "select this bit" while bits set to 0 mean "ignore this bit." For example, if the network mask 255.255.255.0 is applied to the IP address 100.10.50.1, the network ID is 100.10.50, and the host ID is 1. <i>See also binary, IP address, subnet, "IP Addresses Explained" section.</i>
NIC	Network Interface Card An adapter card that plugs into your computer and provides the physical interface to your network cabling, which for Ethernet NICs is typically an RJ-45 connector. <i>See Ethernet, RJ-45.</i>
packet	Data transmitted on a network consists of units called packets. Each packet contains a payload (the data), plus overhead information such as where it came from (source address) and where it should go (destination address).
ping	Packet Internet (or Inter-Network) Groper A program used to verify whether the host associated with an IP address is online. It can also be used to reveal the IP address for a given domain name.
port	A physical access point to a device such as a computer or router, through which data flows into and out of the device
POTS	Plain Old Telephone Service The basic service providing standard single line telephones, telephone line and access to the public switched network.
PPP	Point-to-Point Protocol A protocol for serial data transmission that is used to carry IP (and other protocol)

data between your ISP and your computer. The WAN interface on the AAM6030VI uses two forms of PPP called PPPoA and PPPoE. *See also PPPoA, PPPoE.*

PPPoE	Point-to-Point Protocol over Ethernet One of the two types of PPP interfaces you can define for a Virtual Circuit (VC), the other type being PPPoA. You can define one or more PPPoE interfaces per VC.
protocol	A set of rules governing the transmission of data. In order for a data transmission to work, both ends of the connection have to follow the rules of the protocol.
remote	In a physically separate location. For example, an employee away on travel who logs in to the company's intranet is a remote user.
RIP	Routing Information Protocol The original TCP/IP routing protocol. There are two versions of RIP: version I and version II.
RJ-11	Registered Jack Standard-11 The standard plug used to connect telephones, fax machines, modems, etc. to a telephone jack. It is a 6-pin connector usually containing four wires.
RJ-45	Registered Jack Standard-45 The 8-pin plug used in transmitting data over phone lines. Ethernet cabling usually uses this type of connector.
routing	Forwarding data between your network and the Internet on the most efficient route, based on the data's destination IP address and current network conditions. A device that performs routing is called a router.
rule	<i>See filtering rule, NAT rule.</i>
SDNS	Secondary Domain Name System (server) A DNS server that can be used if the primary DSN server is not available. <i>See DNS.</i>
SNMP	Simple Network Management Protocol The TCP/IP protocol used for network management.
subnet	A subnet is a portion of a network. The subnet is distinguished from the larger network by a <i>subnet mask</i> which selects some of the computers of the network and excludes all others. The subnet's computers remain physically connected to the rest of the parent network, but they are treated as though they were on a separate network. <i>See also network mask.</i>
subnet mask	A mask that defines a subnet. <i>See also network mask.</i>
TCP	<i>See TCP/IP.</i>
TCP/IP	Transmission Control Protocol/Internet Protocol The basic protocols used on the Internet. TCP is responsible for dividing data up into packets for delivery and reassembling them at the destination, while IP is responsible for delivering the packets from source to destination. When TCP and IP are bundled with higher-level applications such as HTTP, FTP, Telnet, etc., TCP/IP refers to this whole suite of protocols.
Telnet	An interactive, character-based program used to access a remote computer. While HTTP (the web protocol) and FTP only allow you to download files from a remote computer, Telnet allows you to log into and use a computer from a remote location.
TFTP	Trivial File Transfer Protocol A protocol for file transfers, TFTP is easier to use than File Transfer Protocol (FTP) but not as capable or secure.
TTL	Time To Live A field in an IP packet that limits the life span of that packet. Originally meant as a time duration, the TTL is usually represented instead as a maximum hop count;

each router that receives a packet decrements this field by one. When the TTL reaches zero, the packet is discarded.

- twisted pair** The ordinary copper telephone wiring long used by telephone companies. It contains one or more wire pairs twisted together to reduce inductance and noise. Each telephone line uses one pair. In homes, it is most often installed with two pairs. For Ethernet LANs, a higher grade called Category 3 (CAT 3) is used for 10BASE-T networks, and an even higher grade called Category 5 (CAT 5) is used for 100BASE-T networks. *See also 10BASE-T, 100BASE-T, Ethernet.*
- upstream** The direction of data transmission from the user to the Internet.
- WAN** Wide Area Network
Any network spread over a large geographical area, such as a country or continent. With respect to the SL-6000 / SL-6300, WAN refers to the Internet.
- Web browser** A software program that uses Hyper-Text Transfer Protocol (HTTP) to download information from (and upload to) web sites, and displays the information, which may consist of text, graphic images, audio, or video, to the user. Web browsers use Hyper-Text Transfer Protocol (HTTP). Popular web browsers include Netscape Navigator and Microsoft Internet Explorer. *See also HTTP, web site, WWW.*
- Web page** A web site file typically containing text, graphics and hyperlinks (cross-references) to the other pages on that web site, as well as to pages on other web sites. When a user accesses a web site, the first page that is displayed is called the *home page*. *See also hyperlink, web site.*
- Web site** A computer on the Internet that distributes information to (and gets information from) remote users through web browsers. A web site typically consists of web pages that contain text, graphics, and hyperlinks. *See also hyperlink, web page.*
- WWW** World Wide Web
Also called *(the) Web*. Collective term for all web sites anywhere in the world that can be accessed via the Internet