



**COMTREND CORPORATION**

---

# AR-5381u

## ADSL2+ WLAN Router

### User Manual

---

Version A2.0, January 3, 2013

---



---

261056-064

## Preface

This manual provides information related to the installation and operation of this device. The individual reading this manual is presumed to have a basic understanding of telecommunications terminology and concepts.

If you find the product to be inoperable or malfunctioning, please contact technical support for immediate service by email at [INT-support@comtrend.com](mailto:INT-support@comtrend.com)

For product update, new product release, manual revision, or software upgrades, please visit our website at <http://www.comtrend.com>

## Important Safety Instructions

With reference to unpacking, installation, use, and maintenance of your electronic device, the following basic guidelines are recommended:

- Do not use or install this product near water, to avoid fire or shock hazard. For example, near a bathtub, kitchen sink or laundry tub, or near a swimming pool. Also, do not expose the equipment to rain or damp areas (e.g. a wet basement).
- Do not connect the power supply cord on elevated surfaces. Allow it to lie freely. There should be no obstructions in its path and no heavy items should be placed on the cord. In addition, do not walk on, step on, or mistreat the cord.
- Use only the power cord and adapter that are shipped with this device.
- To safeguard the equipment against overheating, make sure that all openings in the unit that offer exposure to air are not blocked.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightening. Also, do not use the telephone to report a gas leak in the vicinity of the leak.
- Never install telephone wiring during stormy weather conditions.

### CAUTION:

- To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.
- Always disconnect all telephone lines from the wall outlet before servicing or disassembling this equipment.

## **WARNING**

- Disconnect the power line from the device before servicing.
- Power supply specifications are clearly stated in [Appendix C - Specifications](#).

## Copyright

Copyright© 2012 Comtrend Corporation. All rights reserved. The information contained herein is proprietary to Comtrend Corporation. No part of this document may be translated, transcribed, reproduced, in any form, or by any means without the prior written consent of Comtrend Corporation.

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>

**NOTE:** This document is subject to change without notice.

## Protect Our Environment



This symbol indicates that when the equipment has reached the end of its useful life, it must be taken to a recycling centre and processed separate from domestic waste.

The cardboard box, the plastic contained in the packaging, and the parts that make up this router can be recycled in accordance with regionally established regulations. Never dispose of this electronic equipment along with your household waste; you may be subject to penalties or sanctions under the law. Instead, please be responsible and ask for disposal instructions from your local government.

# Table of Contents

<b>CHAPTER 1 INTRODUCTION.....</b>	<b>6</b>
1.1 FEATURES .....	6
1.2 APPLICATION .....	7
<b>CHAPTER 2 INSTALLATION.....</b>	<b>8</b>
2.1 HARDWARE SETUP.....	8
2.2 LED INDICATORS .....	11
<b>CHAPTER 3 WEB USER INTERFACE.....</b>	<b>13</b>
3.1 DEFAULT SETTINGS .....	13
3.2 IP CONFIGURATION.....	13
3.3 LOGIN PROCEDURE.....	16
<b>CHAPTER 4 DEVICE INFORMATION.....</b>	<b>18</b>
4.1 WAN .....	19
4.2 STATISTICS.....	20
4.2.1 <i>LAN Statistics</i> .....	20
4.2.2 <i>WAN Service Statistics</i> .....	21
4.2.3 <i>xTM Statistics</i> .....	22
4.2.4 <i>xDSL Statistics</i> .....	23
4.4 ARP.....	28
4.5 DHCP .....	29
4.5.1 <i>DHCPv4</i> .....	29
4.5.1 <i>DHCPv6</i> .....	30
4.6 NAT SESSION .....	31
4.7 IGMP PROXY .....	32
<b>4.8 IPV6.....</b>	<b>33</b>
4.8.1 <i>IPv6 Info</i> .....	33
4.8.2 <i>IPv6 Neighbor</i> .....	34
4.8.2 <i>IPv6 Route</i> .....	35
<b>CHAPTER 5 ADVANCED SETUP.....</b>	<b>36</b>
5.1 LAYER 2 INTERFACE .....	36
5.1.1 <i>ATM Interface</i> .....	36
5.1.2 <i>PTM Interface</i> .....	36
5.1.3 <i>ETH INTERFACE</i> .....	37
5.2 WAN SERVICE .....	38
5.3 LAN .....	39
5.3.1 <i>LAN IPv6 Autoconfig</i> .....	42
5.3.2 <i>Static IP Neighbor</i> .....	45
5.4 AUTO-DETECTION .....	46
5.5 NAT .....	47
5.5.1 <i>Virtual Servers</i> .....	54
5.5.2 <i>Port Triggering</i> .....	56
5.5.3 <i>DMZ Host</i> .....	58
5.5.4 <i>IP Address Map</i> .....	59
5.5.5 <i>IPSEC ALG</i> .....	61
5.5.6 <i>SIP ALG</i> .....	62
5.6 SECURITY .....	63
5.6.1 <i>IP Filtering</i> .....	63
5.6.2 <i>MAC Filtering</i> .....	66
5.7 PARENTAL CONTROL .....	68
5.7.1 <i>Time Restriction</i> .....	68
5.7.2 <i>URL Filter</i> .....	69
5.8 QUALITY OF SERVICE (QoS).....	71
5.8.1 <i>Queue Management Configuration</i> .....	71
5.8.2 <i>Queue Configuration</i> .....	72
5.8.3 <i>QoS Classification</i> .....	74
5.9 ROUTING .....	77

5.9.1	<i>Default Gateway</i> .....	77
5.9.2	<i>Static Route</i> .....	78
5.9.3	<i>Policy Routing</i> .....	79
5.9.4	<i>RIP</i> .....	80
5.10	DNS .....	81
5.10.1	<i>DNS Server</i> .....	81
5.10.2	<i>Dynamic DNS</i> .....	82
5.10.3	<i>DNS Entries</i> .....	84
5.11	DSL.....	85
5.12	UPNP.....	87
5.13	DNS PROXY/RELAY .....	88
5.14	PRINT SERVER .....	89
5.15	DLNA .....	90
5.16	STORAGE SERVICE.....	91
5.17	INTERFACE GROUPING.....	93
5.18	IP TUNNEL.....	96
5.18.1	<i>IPv6inIPv4</i> .....	96
5.18.2	<i>IPv4inIPv6</i> .....	98
5.19	IPSEC .....	100
5.20	CERTIFICATE.....	104
5.20.1	<i>Local</i> .....	104
5.20.2	<i>Trusted CA</i> .....	107
5.21	MULTICAST .....	109
CHAPTER 6 WIRELESS .....		110
6.1	BASIC .....	110
6.2	SECURITY .....	112
6.2.1	<i>WPS</i> .....	115
6.3	MAC FILTER .....	119
6.4	WIRELESS BRIDGE.....	120
6.5	ADVANCED .....	122
6.6	SITE SURVEY .....	125
6.7	STATION INFO .....	126
6.8	WiFi BUTTON.....	127
<b>CHAPTER 7 DIAGNOSTICS.....</b>		<b>128</b>
7.1	DIAGNOSTICS – INDIVIDUAL TESTS .....	128
7.2	FAULT MANAGEMENT.....	129
7.3	UPTIME STATUS .....	130
<b>CHAPTER 8 MANAGEMENT .....</b>		<b>131</b>
8.1	SETTINGS.....	131
8.1.1	<i>Backup Settings</i> .....	131
8.1.2	<i>Update Settings</i> .....	131
8.1.3	<i>Restore Default</i> .....	132
8.2	SYSTEM LOG .....	133
8.3	SNMP AGENT .....	135
8.4	TR-069 CLIENT .....	136
8.5	INTERNET TIME .....	138
8.6	ACCESS CONTROL .....	139
8.6.1	<i>Accounts/Passwords</i> .....	139
8.6.2	<i>Service Access</i> .....	141
8.6.3	<i>IP Address</i> .....	142
8.7	UPDATE SOFTWARE .....	144
8.8	REBOOT.....	145
<b>APPENDIX A - FIREWALL .....</b>		<b>146</b>
<b>APPENDIX B - SPECIFICATIONS.....</b>		<b>148</b>
<b>APPENDIX C - SSH CLIENT .....</b>		<b>150</b>
<b>APPENDIX D - WPS OPERATION.....</b>		<b>151</b>
<b>APPENDIX E - CONNECTION SETUP .....</b>		<b>156</b>



# Chapter 1 Introduction

The AR-5381u is an 802.11n (300Mbps) Wireless ADSL2+ router. AR-5381u has four 10/100 Base-T Ethernet ports, a Wi-Fi Protected Setup (WPS) button and a Wi-Fi switch button, one USB Host, and is backward compatible with existing 802.11b (11Mbps) and 11g (54bps) equipment.

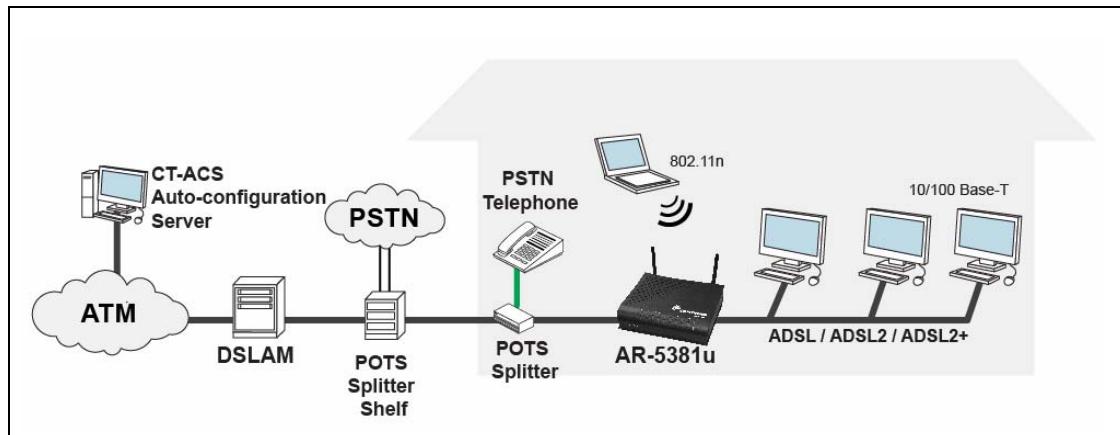
The AR-5381u ADSL2+ router also provides state of the art security features such as 64/128 bit WEP encryption and WPA/WPA2 encryption, Firewall, and VPN pass through. The AR-5381u is designed for both residential and business applications that require wireless and wired connectivity to an ADSL broadband network. The AR-5381u supports up to 16 contiguous virtual connections allowing for multiple simultaneous Internet connections. The AR-5381u is also designed with TR-068 compliant color panel, which eases the installation of the modem and makes it more user-friendly.

## 1.1 Features

- AR-5381u (Annex A)
- 2x2 MIMO wireless system
- Integrated 802.11n AP  
(Backward compatible with 802.11b/g)
- WPA/WPA2 and 802.1x
- Wi-Fi Protected Setup (WPS)
- Wireless Distribution System (WDS) support
- WMM & UPnP
- RADIUS client
- IP/MAC address filtering
- Static route/RIP/RIP v2 routing functions
- Dynamic IP assignment
- TR-068 compliant
- IGMP Proxy
- DHCP Server/Relay/Client
- DNS Proxy
- Auto PVC configuration
- Per-VC packet level QoS
- Up to 16 VCs
- Embedded SNMP agent
- Web-based management
- Supports remote administration, automatic firmware upgrade and configuration
- Configuration backup and restoration
- FTP/TFTP server

## 1.2 Application

The following diagram depicts a typical application of the AR-5381u.



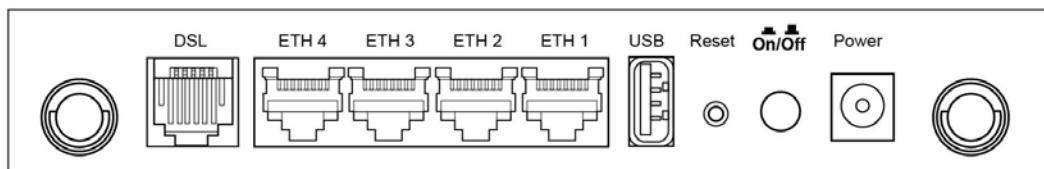
# Chapter 2 Installation

## 2.1 Hardware Setup

Follow the instructions below to complete the hardware setup.

### BACK PANEL

The figure below shows the back panel of the device.



### **ADSL**

Connect to the ADSL port with the ADSL RJ11 cable.

### **Ethernet (LAN) Ports**

You can connect the router to up to four LAN devices using RJ45 cables. The ports are auto-sensing MDI/X and either straight-through or crossover cable can be used.

### **USB Host Port (Type A)**

This port can be used to connect the router to the print server.

### **Power ON**

Press the power button to the OFF position (OUT). Connect the power adapter to the power port. Attach the power adapter to a wall outlet or other AC source. Press the power button to the ON position (IN). If the Power LED displays as expected then the device is ready for setup (see section [2.2 LED Indicators](#)).

**Caution 1:** If the device fails to power up, or it malfunctions, first verify that the power cords are connected securely and then power it on again. If the problem persists, contact technical support.

**Caution 2:** Before servicing or disassembling this equipment, disconnect all power cords and telephone lines from their outlets.

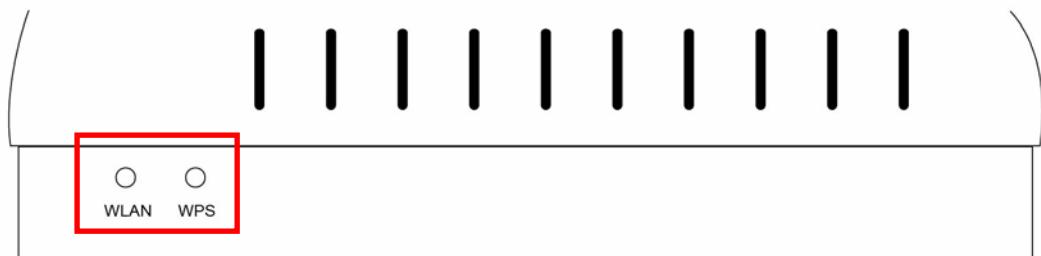
### **Reset Button**

Restore the default parameters of the device by pressing the Reset button for 10 seconds. After the device has rebooted successfully, the front panel should display as expected (see section [2.2 LED Indicators](#) for details).

**NOTE:** If pressed down for more than 60 seconds, the AR-5381u will go into a firmware update state (CFE boot mode). The firmware can then be updated using an Internet browser pointed to the default IP address.

## **FRONT PANEL**

The Wi-Fi & WPS buttons are located on the bottom-left of the front panel, as shown.



### **WiFi Switch**

Press this button to enable/disable the wireless LAN (WLAN).

### **WPS Button**

Press this button to begin searching for WPS clients. These clients must also enable WPS push button mode (see

6.2.1 WPS for instructions).

## 2.2 LED Indicators

The front panel LED indicators are shown below and explained in the following table. This information can be used to check the status of the device and its connections.



LED	Color	Mode	Function
POWER	Green	On	The device is powered up.
		Off	The device is powered down.
		Blink	Upgrade is in process.
ETH 1X-4X	Green	On	POST (Power On Self Test) failure or other malfunction <sup>1</sup> .
		Off	An Ethernet Link is established.
		Blink	An Ethernet Link is not established.
WPS	Green	On	Data transmitting or receiving over Ethernet.
		Off	<ul style="list-style-type: none"> <li>WPS disabled when WPS configured</li> <li>After clients connected to router about 5 minutes, LED is off</li> </ul>
		Blink	The router is searching for WPS clients or WPS un-configured.
Wi-Fi	Green	On	The wireless module is ready. (i.e. installed and enabled).
		Off	The wireless module is not ready. (i.e. either not installed or disabled).
		Blink	Data transmitting or receiving over WLAN.
DSL	Green	On	The DSL Link is established.
		Off	Modem is powered off.
		Blink	<p>DSL attempting sync:</p> <ul style="list-style-type: none"> <li>Flashing at 2 Hz with a 50% duty cycle when trying to detect carrier signal</li> <li>Flashing at 4 Hz with a 50% duty cycle when the carrier has been detected and the modem is trying to train</li> </ul>

INTERNET	Green	On	IP connected and no traffic detected <sup>2</sup> .
		Off	Modem power off or modem in bridged mode.
		Blink	IP connected and IP Traffic is passing thru the device (either direction).
	Red	On	Device attempted to become IP connected and failed (no DHCP response, no PPPoE response, PPPoE authentication failed, no IP address from IPCP, etc.).

<sup>1</sup> A malfunction is any error of internal sequence or state that will prevent the device from connecting to the DSLAM or passing customer data. This may be identified at various times such after power on or during operation through the use of self testing or in operations which result in a unit state that is not expected or should not occur.

<sup>2</sup> IP connected (the device has a WAN IP address from IPCP or DHCP and DSL is up or a static IP address is configured, PPP negotiation has successfully complete – if used – and DSL is up ) and no traffic detected. If the IP or PPPoE session is dropped for any other reason, the light is turned off. The light will turn red when it attempts to reconnect and DHCP or PPPoE fails.

# Chapter 3 Web User Interface

This section describes how to access the device via the web user interface (WUI) using an Internet browser such as Internet Explorer (version 5.0 and later).

## 3.1 Default Settings

The factory default settings of this device are summarized below.

- LAN IP address: 192.168.1.1
- LAN subnet mask: 255.255.255.0
- Administrative access (username: **root** , password: **12345** )
- WIFI access: **enabled**

### Technical Note

During power on, the device initializes all settings to default values. It will then read the configuration profile from the permanent storage section of flash memory. The default attributes are overwritten when identical attributes with different values are configured. The configuration profile in permanent storage can be created via the web user interface or telnet user interface, or other management protocols. The factory default configuration can be restored either by pushing the reset button for more than five seconds until the power indicates LED blinking or by clicking the Restore Default Configuration option in the Restore Settings screen.

## 3.2 IP Configuration

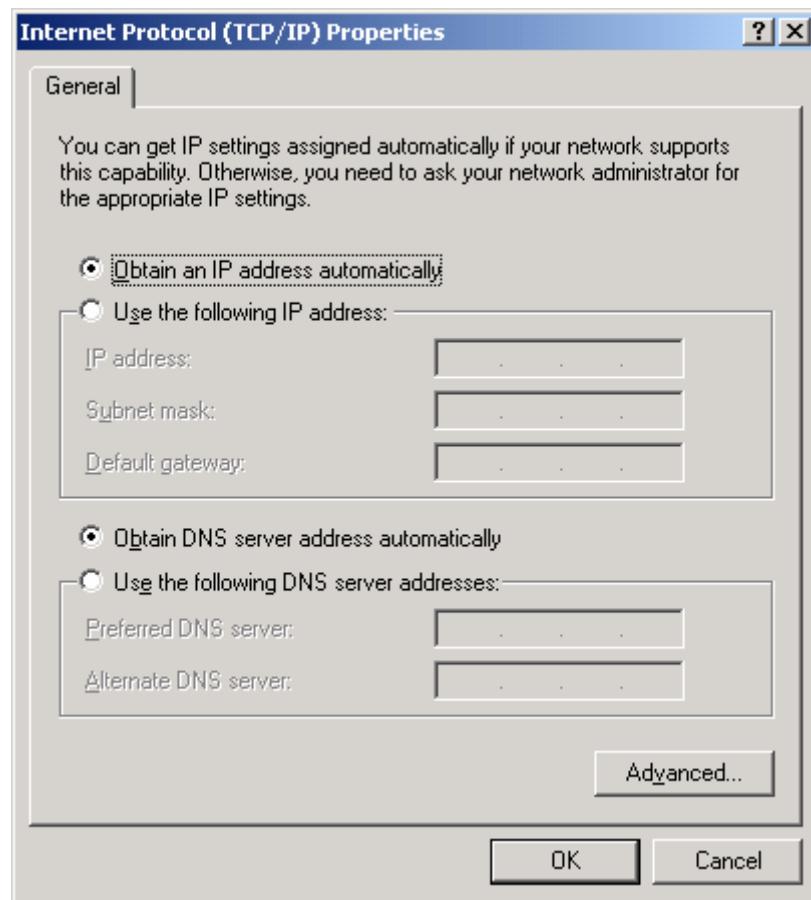
### DHCP MODE

When the AR-5381u-NA2 powers up, the onboard DHCP server will switch on. Basically, the DHCP server issues and reserves IP addresses for LAN devices, such as your PC.

To obtain an IP address from the DHCP server, follow the steps provided below.

**NOTE:** The following procedure assumes you are running Windows XP. However, the general steps involved are similar for most operating systems (OS). Check your OS support documentation for further details.

- STEP 1:** From the Network Connections window, open Local Area Connection (*You may also access this screen by double-clicking the Local Area Connection icon on your taskbar*). Click the **Properties** button.
- STEP 2:** Select Internet Protocol (TCP/IP) **and click the** Properties button.
- STEP 3:** Select Obtain an IP address automatically as shown below.



**STEP 4:** Click **OK** to submit these settings.

If you experience difficulty with DHCP mode, you can try static IP mode instead.

## STATIC IP MODE

In static IP mode, you assign IP settings to your PC manually.

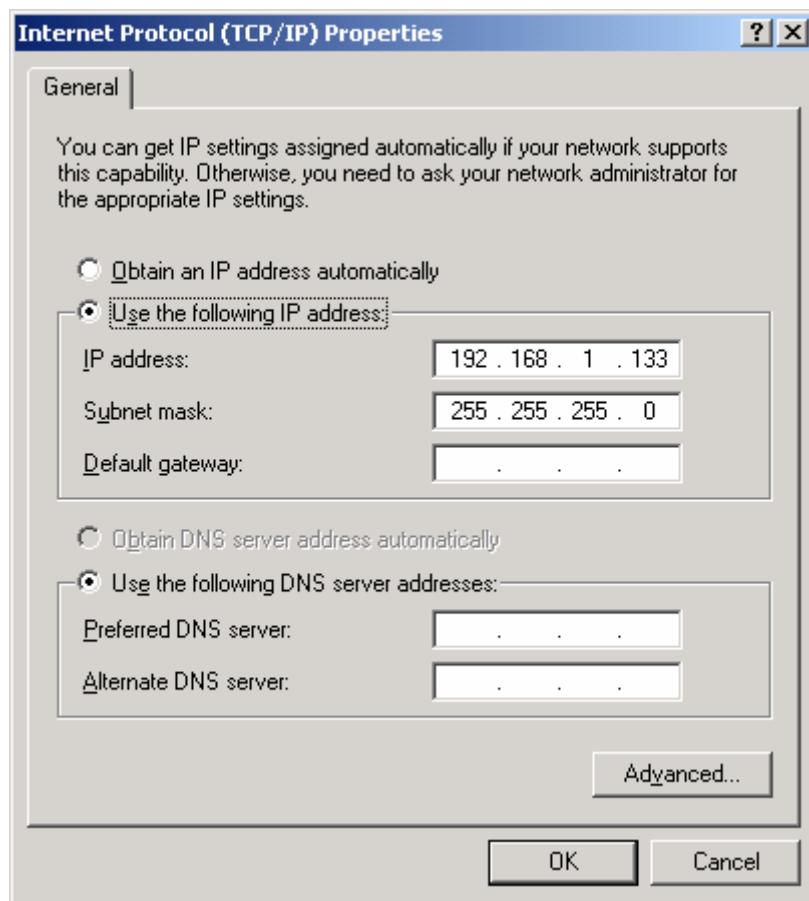
Follow these steps to configure your PC IP address to use subnet 192.168.1.x.

**NOTE:** The following procedure assumes you are running Windows XP. However, the general steps involved are similar for most operating systems (OS). Check your OS support documentation for further details.

**STEP 1:** From the Network Connections window, open Local Area Connection (*You may also access this screen by double-clicking the Local Area Connection icon on your toolbar*). Click the **Properties** button.

**STEP 2:** Select Internet Protocol (TCP/IP) and click the Properties button.

**STEP 3:** Change the IP address to the 192.168.1.x (1<x<255) subnet with subnet mask of 255.255.255.0. The screen should now display as shown below.



**STEP 4:** Click **OK** to submit these settings.

### 3.3 Login Procedure

Perform the following steps to login to the web user interface.

**NOTE:** The default settings can be found in [3.1 Default Settings](#).

**STEP 1:** Start the Internet browser and enter the default IP address for the device in the Web address field. For example, if the default IP address is 192.168.1.1, type <http://192.168.1.1>.

**NOTE:** For local administration (i.e. LAN access), the PC running the browser must be attached to the Ethernet, and not necessarily to the device. For remote access (i.e. WAN), use the IP address shown on the [Chapter 4](#) Device Information screen and login with remote username and password.

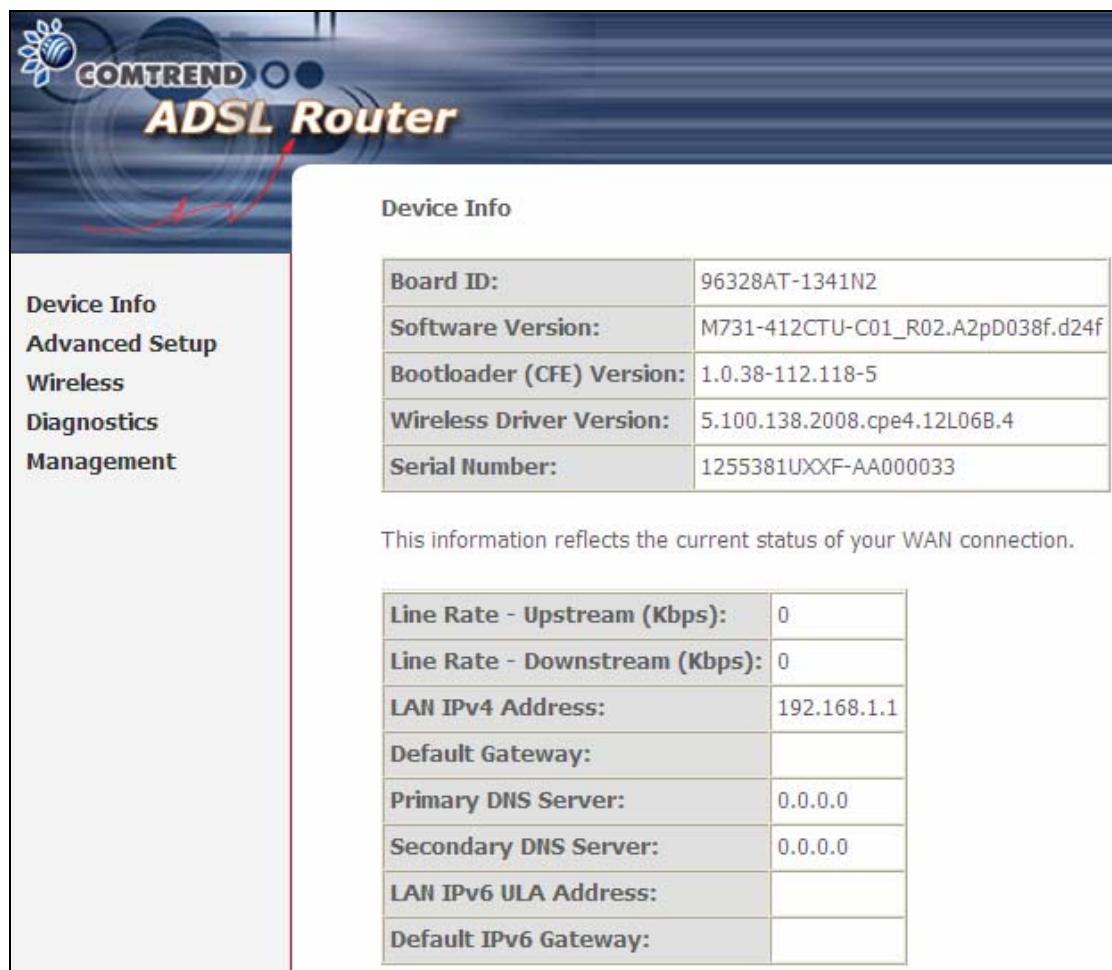
**STEP 2:** A dialog box will appear, such as the one below. Enter the default username and password, as defined in section [3.1 Default Settings](#).



Click **OK** to continue.

**NOTE:** The login password can be changed later (see [8.6.1 Passwords](#)).

**STEP 3:** After successfully logging in for the first time, you will reach this screen.



The screenshot shows the 'Device Info' page of a COMTREND ADSL Router. The left sidebar has links for 'Device Info', 'Advanced Setup', 'Wireless', 'Diagnostics', and 'Management'. The main content area is titled 'Device Info' and contains two tables of information.

<b>Board ID:</b>	96328AT-1341N2
<b>Software Version:</b>	M731-412CTU-C01_R02.A2pD038f.d24f
<b>Bootloader (CFE) Version:</b>	1.0.38-112.118-5
<b>Wireless Driver Version:</b>	5.100.138.2008.cpe4.12L06B.4
<b>Serial Number:</b>	1255381UXXF-AA000033

This information reflects the current status of your WAN connection.

<b>Line Rate - Upstream (Kbps):</b>	0
<b>Line Rate - Downstream (Kbps):</b>	0
<b>LAN IPv4 Address:</b>	192.168.1.1
<b>Default Gateway:</b>	
<b>Primary DNS Server:</b>	0.0.0.0
<b>Secondary DNS Server:</b>	0.0.0.0
<b>LAN IPv6 ULA Address:</b>	
<b>Default IPv6 Gateway:</b>	

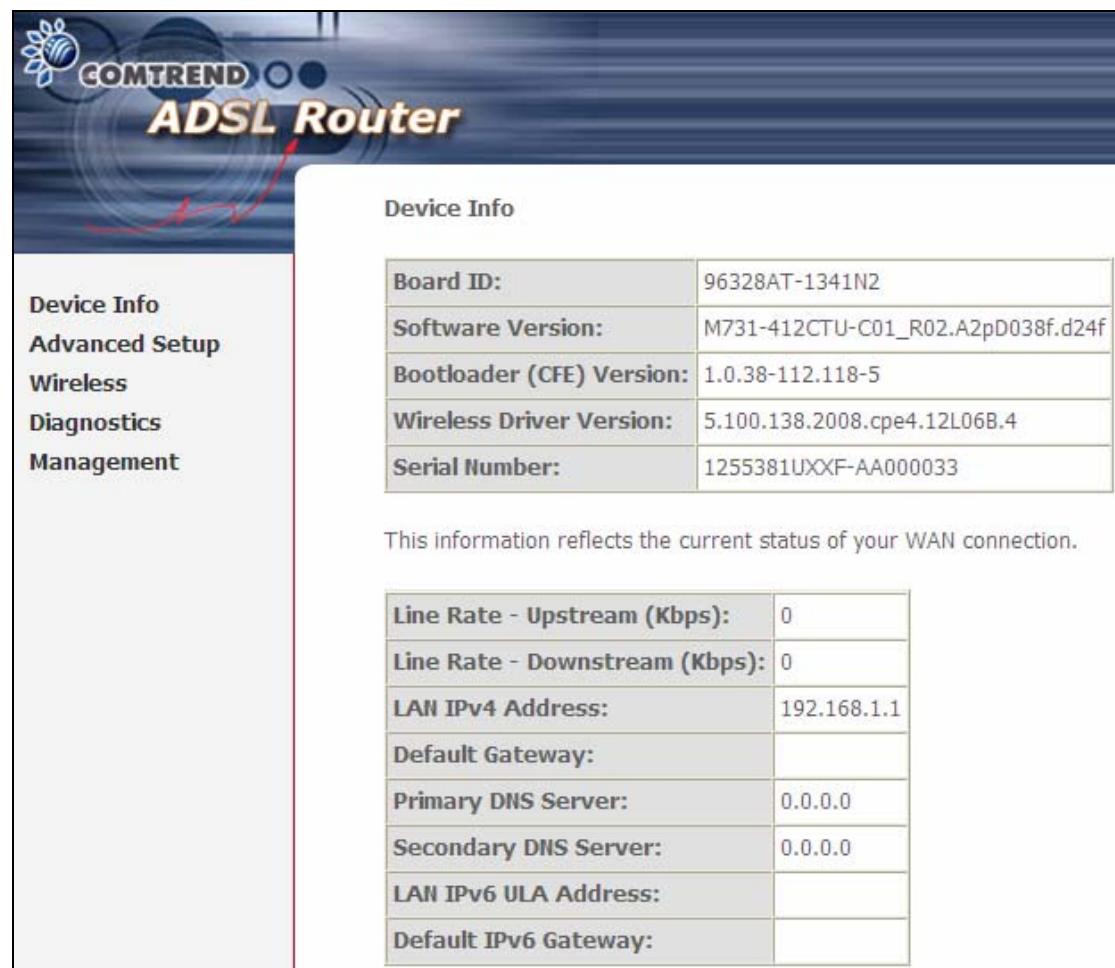
# Chapter 4 Device Information

The web user interface window is divided into two frames, the main menu (at left) and the display screen (on the right). The main menu has several options and selecting each of these options opens a submenu with more selections.

**NOTE:** The menu items shown are based upon the configured connection(s) and user account privileges. For example, if NAT and Firewall are enabled, the main menu will display the NAT and Security submenus. If either is disabled, their corresponding menu(s) will also be disabled.

Device Info is the first selection on the main menu so it will be discussed first. Subsequent chapters will introduce the other main menu options in sequence.

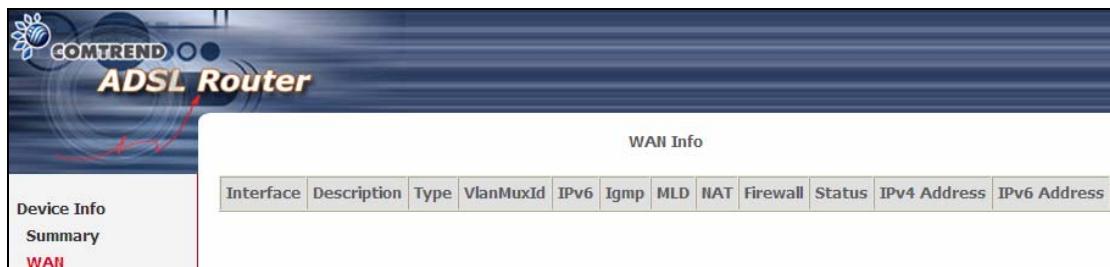
The Device Info Summary screen displays at startup.



This screen shows hardware, software, IP settings and other related information.

## 4.1 WAN

Select WAN from the Device Info submenu to display the configured PVC(s).



Heading	Description
Interface	Name of the interface for WAN
Description	Name of the WAN connection
Type	Shows the connection type
VlanMuxId	Shows 802.1Q VLAN ID
IPv6	Shows WAN IPv6 address
IGMP	Shows Internet Group Management Protocol (IGMP) status
MLD	Shows Multicast Listener Discovery (MLD) status
NAT	Shows Network Address Translation (NAT) status
Firewall	Shows the status of Firewall
Status	Lists the status of DSL link
IPv4 Address	Shows WAN IPv4 address
IPv6 Address	Shows WAN IPv6 address

## 4.2 Statistics

This selection provides LAN, WAN Service, XTM and xDSL statistics.

**NOTE:** These screens are updated automatically every 15 seconds.  
Click **Reset Statistics** to perform a manual update.

### 4.2.1 LAN Statistics

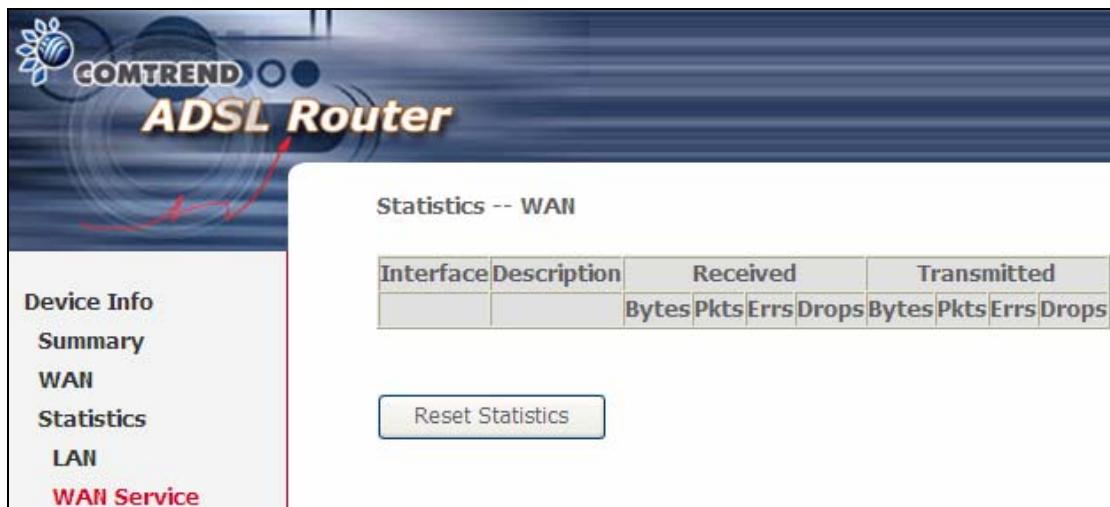
This screen shows data traffic statistics for each LAN interface.

Interface	Received				Transmitted			
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
ENET1	0	0	0	0	1055	6	0	0
ENET2	0	0	0	0	1055	6	0	0
ENET3	139043	902	0	0	542379	1325	0	0
ENET4	0	0	0	0	1055	6	0	0
wl0	0	0	0	0	0	0	0	0

Heading	Description	
Interface	LAN interface(s)	
Received/Transmitted:	- Bytes	Number of Bytes
	- Pkts	Number of Packets
	- Errs	Number of packets with errors
	- Drops	Number of dropped packets

#### 4.2.2 WAN Service Statistics

This screen shows data traffic statistics for each WAN interface.



Statistics -- WAN

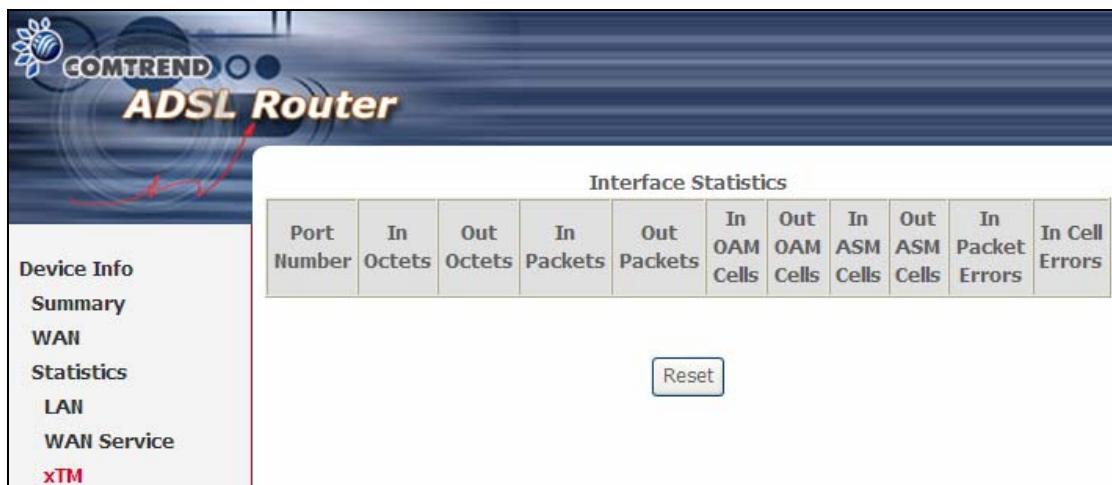
Interface	Description	Received			Transmitted			
		Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs

Reset Statistics

Heading	Description			
Interface	WAN interfaces			
Description	WAN service label			
Received/Transmitted	<ul style="list-style-type: none"><li>- Bytes</li><li>- Pkts</li><li>- Errs</li><li>- Drops</li></ul> <ul style="list-style-type: none"><li>Number of Bytes</li><li>Number of Packets</li><li>Number of packets with errors</li><li>Number of dropped packets</li></ul>			

#### 4.2.3 xTM Statistics

The following figure shows Asynchronous Transfer Mode (xTM) statistics.



The screenshot shows the COMTREND ADSL Router interface. The left sidebar has links for Device Info, Summary, WAN, Statistics, LAN, WAN Service, and xTM. The main area is titled 'Interface Statistics' and contains a table with 11 columns: Port Number, In Octets, Out Octets, In Packets, Out Packets, In OAM Cells, Out OAM Cells, In ASM Cells, Out ASM Cells, In Packet Errors, and In Cell Errors. A 'Reset' button is located below the table.

#### ATM Interface Statistics

Heading	Description
Port Number	ATM PORT (0-3)
In Octets	Number of octets received over the interface
Out Octets	Number of octets transmitted over the interface
In Packets	Number of packets received over the interface
Out Packets	Number of packets transmitted over the interface
In OAM Cells	Number of OAM Cells received over the interface
Out OAM Cells	Number of OAM Cells transmitted over the interface
In ASM Cells	Number of ASM Cells received over the interface
Out ASM Cells	Number of ASM Cells transmitted over the interface
In Packet Errors	Number of packets in Error
In Cell Errors	Number of cells in Error.

#### 4.2.4 xDSL Statistics

The xDSL Statistics screen displays information corresponding to the xDSL type.

##### ADSL

The screenshot shows the 'Statistics -- xDSL' page of the COMTREND ADSL Router. The left sidebar contains navigation links for Device Info, Summary, WAN, Statistics, LAN, WAN Service, xTM, **xDSL** (selected), Route, ARP, DHCP, NAT Session, IGMP Proxy, IPv6, Advanced Setup, Wireless, Diagnostics, and Management. The main content area displays the following data tables:

Mode:	ADSL2+		
Traffic Type:	ATM		
Status:	Up		
Link Power State:	L0		
	Downstream	Upstream	
PhyR Status:	Off	Off	
Line Coding(Trellis):	On	On	
SNR Margin (0.1 dB):	61	63	
Attenuation (0.1 dB):	80	114	
Output Power (0.1 dBm):	104	123	
Attainable Rate (Kbps):	27444	1073	
	Path 0	Path 1	
	Downstream	Upstream	Downstream
Rate (Kbps):	24470	1062	0
			Upstream
MSGc (# of bytes in overhead channel message):	62	14	0
B (# of bytes in Mux Data Frame):	240	13	0
M (# of Mux Data Frames in FEC Data Frame):	1	16	0
T (Mux Data Frames over sync bytes):	3	8	0
R (# of check bytes in FEC Data Frame):	14	10	0
S (ratio of FEC over PMD Data Frame length):	0.3147	6.6857	0.0
L (# of bits in PMD Data Frame):	6482	280	0
D (interleaver depth):	64	8	0
Delay (msec):	5	13	0.0
INP (DMT symbol):	0.50	1.00	0.0
Super Frames:	39368	37483	0
Super Frame Errors:	1	0	0
RS Words:	8030718	377373	0
RS Correctable Errors:	140	0	0
RS Uncorrectable Errors:	34	0	0
HEC Errors:	20	0	0
OCD Errors:	0	0	0
LCD Errors:	0	0	0
Total Cells:	36468359	1576158	0
Data Cells:	112	0	0
Bit Errors:	0	0	0
Total ES:	1	0	
Total SES:	0	0	
Total UAS:	87	87	

Buttons at the bottom: xDSL BER Test, Reset Statistics, Draw Graph.

Click the **Reset Statistics** button to refresh this screen.

Field	Description
Mode	G.Dmt, G.lite, T1.413, ADSL2, ADSL2+,
Traffic Type	Channel type Interleave or Fast

Field	Description
Status	Lists the status of the DSL link
Link Power State	Link output power state.
Line Coding (Trellis)	Trellis On/Off
SNR Margin (0.1 dB)	Signal to Noise Ratio (SNR) margin
Attenuation (0.1 dB)	Estimate of average loop attenuation in the downstream direction.
Output Power (0.1 dBm)	Total upstream output power
Attainable Rate (Kbps)	The sync rate you would obtain.
Rate (Kbps)	Current sync rates downstream/upstream

**In ADSL2+ mode, the following section is inserted.**

MSGc	Number of bytes in overhead channel message
B	Number of bytes in Mux Data Frame
M	Number of Mux Data Frames in FEC Data Frame
T	Mux Data Frames over sync bytes
R	Number of check bytes in FEC Data Frame
S	Ratio of FEC over PMD Data Frame length
L	Number of bits in PMD Data Frame
D	The interleaver depth
Delay	The delay in milliseconds (msec)
INP	DMT symbol

**In G.DMT mode, the following section is inserted.**

K	Number of bytes in DMT frame
R	Number of check bytes in RS code word
S	RS code word size in DMT frame
D	The interleaver depth
Delay	The delay in milliseconds (msec)

OH Frames	Total number of OH frames
OH Frame Errors	Number of OH frames received with errors
RS Words	Total number of Reed-Solomon code errors
RS Correctable Errors	Total Number of RS with correctable errors
RS Uncorrectable Errors	Total Number of RS words with uncorrectable errors

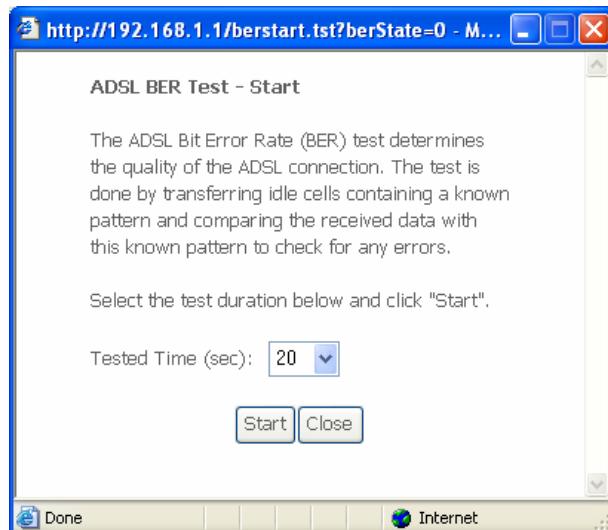
HEC Errors	Total Number of Header Error Checksum errors
OCD Errors	Total Number of Out-of-Cell Delineation errors
LCD Errors	Total number of Loss of Cell Delineation
Total Cells	Total number of ATM cells (including idle + data cells)

Data Cells	Total number of ATM data cells
Bit Errors	Total number of bit errors

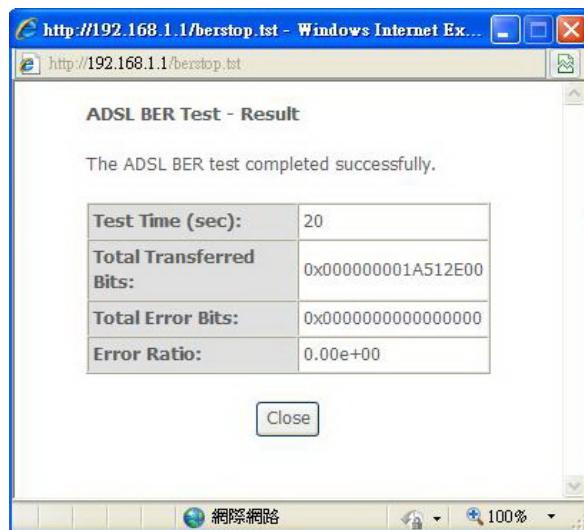
Total ES	Total Number of Errorred Seconds
Total SES	Total Number of Severely Errorred Seconds
Total UAS	Total Number of Unavailable Seconds

### xDSL BER TEST

Click **xDSL BER Test** on the xDSL Statistics screen to test the Bit Error Rate (BER). A small pop-up window will open after the button is pressed, as shown below.

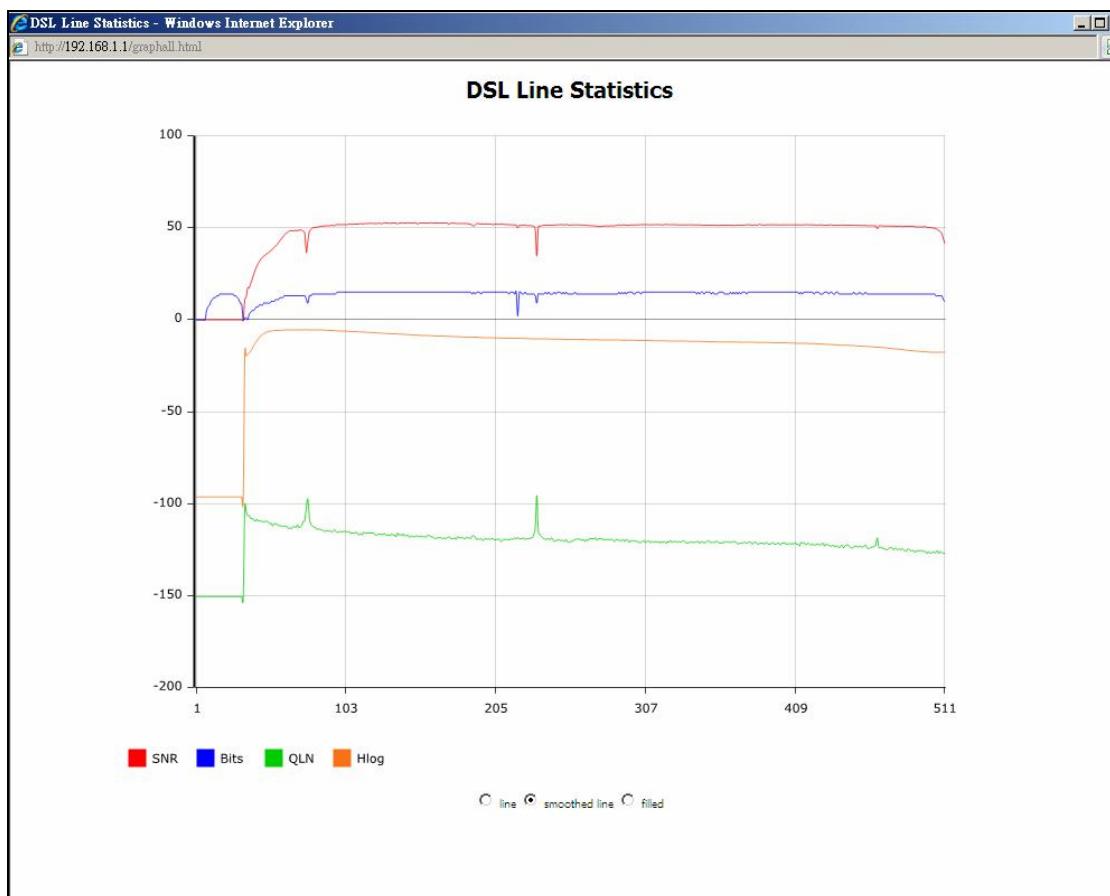


Click **Start** to start the test or click **Close** to cancel the test. After the BER testing is complete, the pop-up window will display as follows.



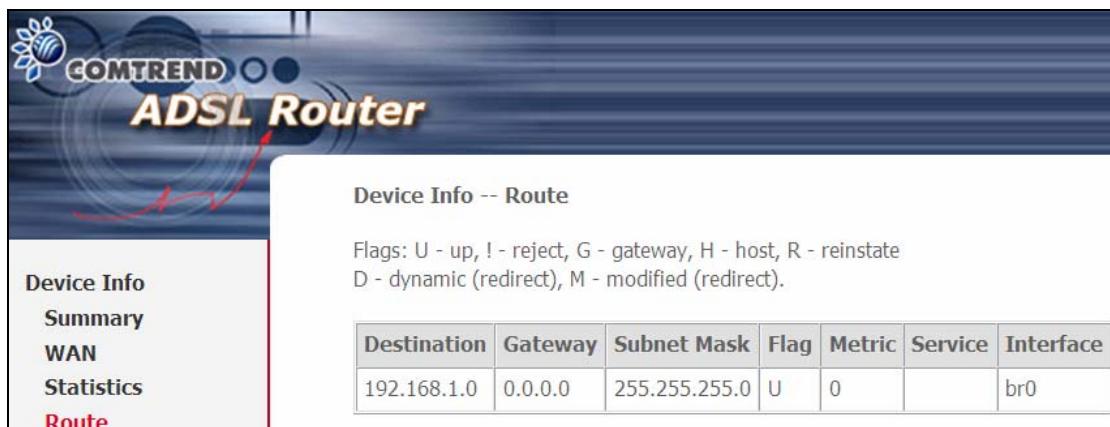
## xDSL GRAPH

Click **Draw Graph** on the xDSL Statistics screen and a pop-up window will display the xDSL bits per tone status, SNR, QLN and Hlog of the current xDSL connection, as shown below.



#### 4.3 Route

Choose **Route** to display the routes that the AR-5381u-NA2 has found.



The screenshot shows the COMTREND ADSL Router web interface. The main title is 'ADSL Router'. On the left, there is a sidebar with links: 'Device Info' (selected), 'Summary', 'WAN', 'Statistics', and 'Route'. The main content area is titled 'Device Info -- Route'. It contains a table with the following data:

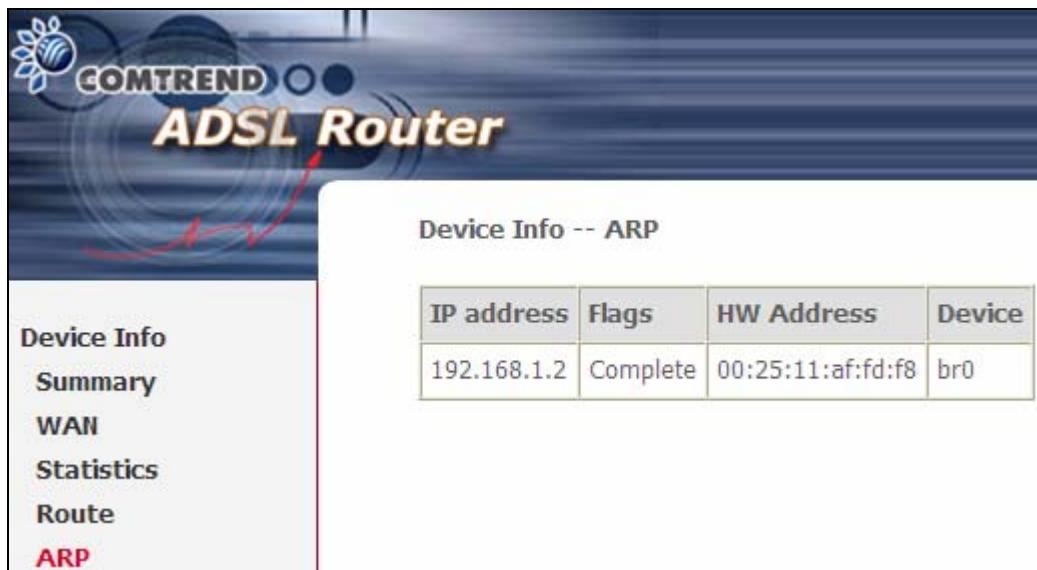
Destination	Gateway	Subnet Mask	Flag	Metric	Service	Interface
192.168.1.0	0.0.0.0	255.255.255.0	U	0		br0

Flags: U - up, ! - reject, G - gateway, H - host, R - reinstate  
D - dynamic (redirect), M - modified (redirect).

Field	Description
Destination	Destination network or destination host
Gateway	Next hub IP address
Subnet Mask	Subnet Mask of Destination
Flag	U: route is up !: reject route G: use gateway H: target is a host R: reinstate route for dynamic routing D: dynamically installed by daemon or redirect M: modified from routing daemon or redirect
Metric	The 'distance' to the target (usually counted in hops). It is not used by recent kernels, but may be needed by routing daemons.
Service	Shows the WAN connection label
Interface	Shows connection interfaces

## 4.4 ARP

Click **ARP** to display the ARP information.



The screenshot shows the COMTREND ADSL Router interface. The main title is "ADSL Router". On the left, a vertical menu bar lists "Device Info", "Summary", "WAN", "Statistics", "Route", and "ARP". The "ARP" option is highlighted with a red arrow pointing to it. The main content area is titled "Device Info -- ARP". It contains a table with four columns: "IP address", "Flags", "HW Address", and "Device". The table data is as follows:

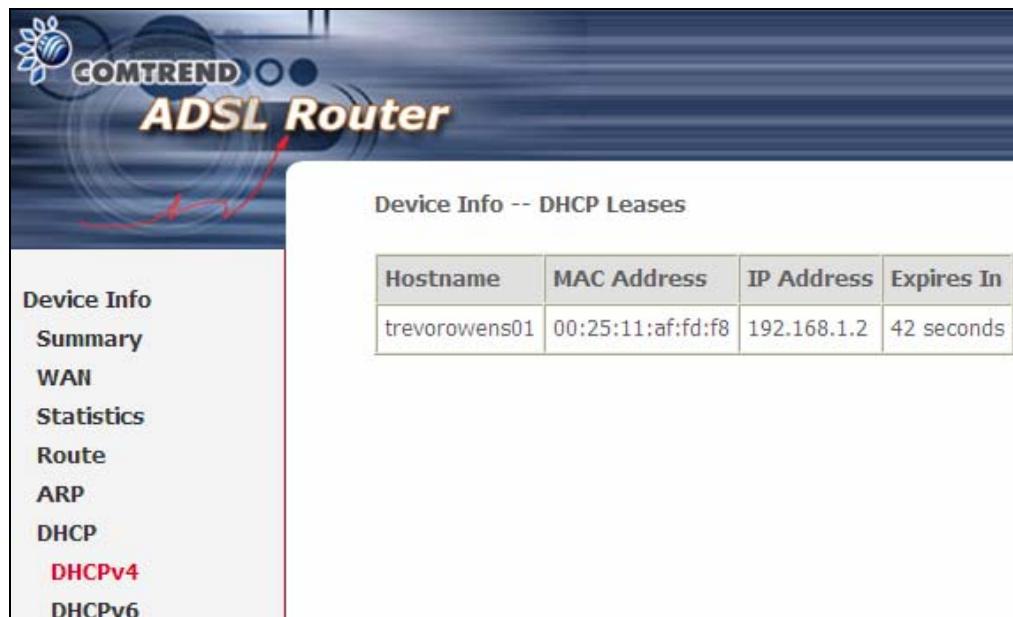
IP address	Flags	HW Address	Device
192.168.1.2	Complete	00:25:11:af:fd:f8	br0

Field	Description
IP address	Shows IP address of host pc
Flags	Complete, Incomplete, Permanent, or Publish
HW Address	Shows the MAC address of host pc
Device	Shows the connection interface

## 4.5 DHCP

### 4.5.1 DHCPv4

Click **DHCPv4** to display all DHCPv4 Leases.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar has a red background and lists the following menu items: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, **DHCPv4** (which is highlighted in red), and DHCPv6. The main content area has a white background and displays a table titled "Device Info -- DHCP Leases". The table has four columns: Hostname, MAC Address, IP Address, and Expires In. The data in the table is as follows:

Hostname	MAC Address	IP Address	Expires In
trevorowens01	00:25:11:af:fd:f8	192.168.1.2	42 seconds

Field	Description
Hostname	Shows the device/host/PC network name
MAC Address	Shows the Ethernet MAC address of the device/host/PC
IP Address	Shows IP address of device/host/PC
Expires In	Shows how much time is left for each DHCP Lease

#### 4.5.1 DHCPv6

Click **DHCPv6** to display all DHCPv6 Leases.

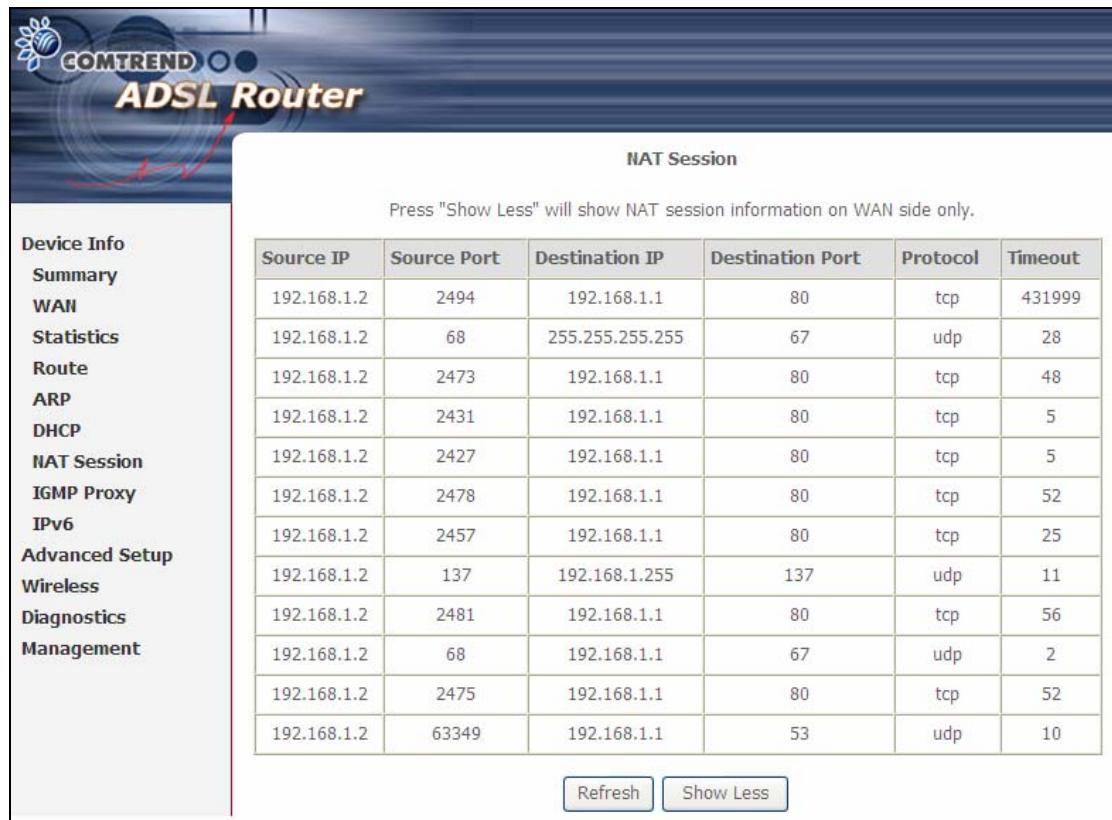


The screenshot shows the COMTREND ADSL Router web interface. The main title is "ADSL Router". On the left, a sidebar titled "Device Info" lists "Summary", "WAN", "Statistics", "Route", "ARP", "DHCP", "DHCPv4", and "DHCPv6". The "DHCPv6" link is highlighted in red. The main content area is titled "Device Info -- DHCPv6 Leases" and contains a table with four columns: "IPv6 Address", "MAC Address", "Duration", and "Expires In".

Field	Description
Hostname	Shows the device/host/PC network name
MAC Address	Shows the Ethernet MAC address of the device/host/PC
IP Address	Shows IP address of device/host/PC
Expires In	Shows how much time is left for each DHCP Lease

## 4.6 NAT Session

Press "Show All" will show all NAT session information.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a navigation menu with the following items: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session (which is highlighted in blue), IGMP Proxy, IPv6, Advanced Setup, Wireless, Diagnostics, and Management. The main content area is titled "NAT Session" and contains a table with 12 rows of data. The table has columns for Source IP, Source Port, Destination IP, Destination Port, Protocol, and Timeout. The data in the table is as follows:

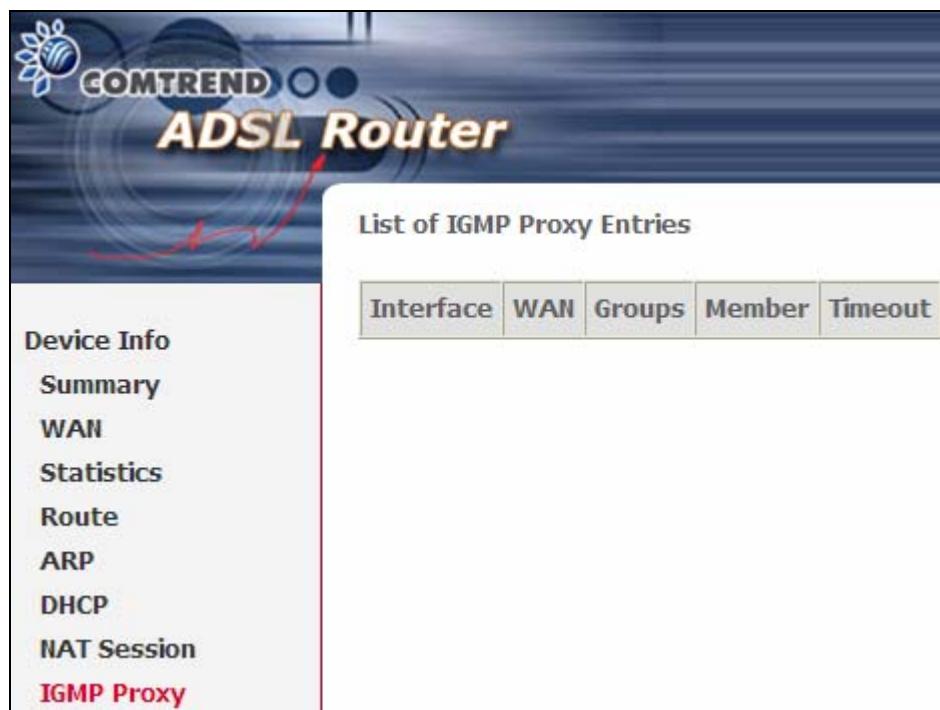
Source IP	Source Port	Destination IP	Destination Port	Protocol	Timeout
192.168.1.2	2494	192.168.1.1	80	tcp	431999
192.168.1.2	68	255.255.255.255	67	udp	28
192.168.1.2	2473	192.168.1.1	80	tcp	48
192.168.1.2	2431	192.168.1.1	80	tcp	5
192.168.1.2	2427	192.168.1.1	80	tcp	5
192.168.1.2	2478	192.168.1.1	80	tcp	52
192.168.1.2	2457	192.168.1.1	80	tcp	25
192.168.1.2	137	192.168.1.255	137	udp	11
192.168.1.2	2481	192.168.1.1	80	tcp	56
192.168.1.2	68	192.168.1.1	67	udp	2
192.168.1.2	2475	192.168.1.1	80	tcp	52
192.168.1.2	63349	192.168.1.1	53	udp	10

Below the table are two buttons: "Refresh" and "Show Less".

Pressing "Show Less" will show NAT session information on the WAN side only.

## 4.7 IGMP Proxy

Displays a list of IGMP Proxy entries.



The screenshot shows a web-based management interface for a GOMTREND ADSL Router. The top header features the GOMTREND logo and the text "ADSL Router". On the left, a vertical menu bar lists several options: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session, and IGMP Proxy. The "IGMP Proxy" option is highlighted in red. The main content area is titled "List of IGMP Proxy Entries" and contains a table with the following columns: Interface, WAN, Groups, Member, and Timeout. The table is currently empty, showing only the column headers.

Interface	WAN	Groups	Member	Timeout

## 4.8 IPv6

### 4.8.1 IPv6 Info

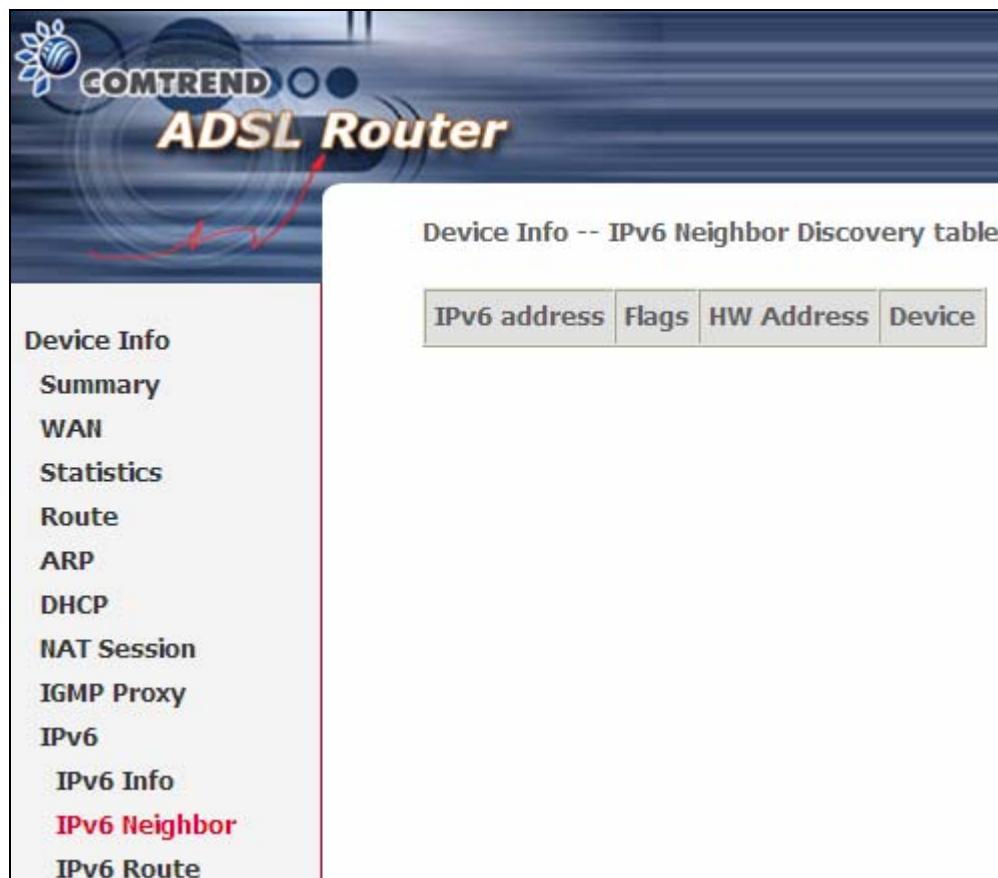


The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a navigation menu with the following items: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session, IGMP Proxy, IPv6, **IPv6 Info** (which is highlighted in red), IPv6 Neighbor, and IPv6 Route. The main content area is titled "IPv6 WAN Connection Info" and contains a table with four columns: Interface, Status, Address, and Prefix. Below this table is a section titled "General Info" with three entries: Device Link-local Address (fe80::bef6:85ff:fe4b:8c61/64), Default IPv6 Gateway (empty), and IPv6 DNS Server (empty). At the bottom of the page is a table with columns "Field" and "Description".

Field	Description
Interface	WAN interface with IPv6 enabled
Status	Connection status of the WAN interface
Address	IPv6 Address of the WAN interface
Prefix	Prefix received/configured on the WAN interface
Device Link-local Address	The CPE's LAN Address
Default IPv6 Gateway	The default WAN IPv6 gateway
IPv6 DNS Server	The IPv6 DNS servers received from the WAN interface / configured manually

## 4.8.2 IPv6 Neighbor

Provides a list of IPv6 devices found in the network.



The screenshot shows the COMTREND ADSL Router web interface. The top banner features the COMTREND logo and the text "ADSL Router". On the left, a vertical menu bar lists various router functions: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session, IGMP Proxy, IPv6, IPv6 Info, **IPv6 Neighbor** (which is highlighted in red), and IPv6 Route. The main content area is titled "Device Info -- IPv6 Neighbor Discovery table". Below the title is a table header with four columns: IPv6 address, Flags, HW Address, and Device. The table body is currently empty, showing only the column headers.

Field	Description
IPv6 Address	Ipv6 address of the device(s) found
Flags	Status of the neighbor device
HW Address	MAC address of the neighbor device
Device	Interface from which the device is located

## 4.8.2 IPv6 Route

Device Info -- IPv6 Route

Destination	Gateway	Metric	Interface
-------------	---------	--------	-----------

Field	Description
Destination	Destination IP Address
Gateway	Gateway address used for destination IP
Metric	Metric specified for gateway
Interface	Interface used for destination IP

# Chapter 5 Advanced Setup

## 5.1 Layer 2 Interface

The ATM interface screen is described here.

### 5.1.1 ATM Interface

Add or remove ATM interface connections here.



Click **Add** to create a new ATM interface (see [Appendix E - Connection Setup](#)).

**NOTE:** Up to 16 ATM interfaces can be created and saved in flash memory.

To remove a connection, select its Remove column radio button and click **Remove**.

### 5.1.2 PTM Interface

Add or remove PTM interface connections here.



Click **Add** to create a new connection (see [Appendix E - Connection Setup](#)). To remove a connection, select its Remove column radio button and click **Remove**.

### 5.1.3 ETH INTERFACE

This screen displays the Ethernet WAN Interface configuration.



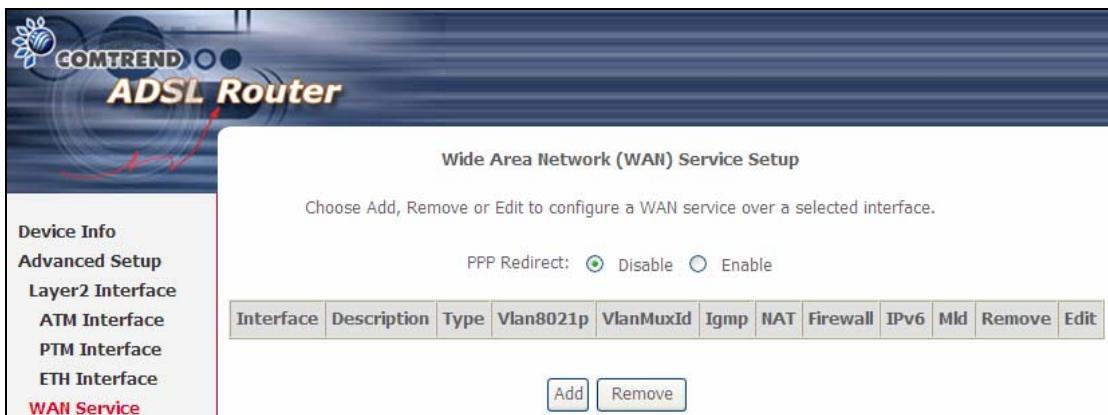
Click **Add** to create a new connection (see [Appendix E - Connection Setup](#)).

**NOTE:** One Ethernet WAN interface can be created and saved in flash memory.

To remove a connection, select its Remove column radio button and click **remove**.

## 5.2 WAN Service

This screen allows for the configuration of WAN interfaces.



Click the **Add** button to create a new connection. For connections on ATM or ETH WAN interfaces see [Appendix E - Connection Setup](#).

**NOTE:** In Default Mode, up to 16 WAN connections can be configured; while VLAN Mux Connection Mode supports up to 16 WAN connections.

To remove a connection, select its Remove column radio button and click **Remove**.

Heading	Description
Interface	Name of the interface for WAN
Description	Name of the WAN connection
Type	Shows the connection type
Vlan8021p	VLAN ID is used for VLAN Tagging (IEEE 802.1Q)
VlanMuxId	Shows 802.1Q VLAN ID
IGMP	Shows Internet Group Management Protocol (IGMP) status
NAT	Shows Network Address Translation (NAT) status
Firewall	Shows the Security status
IPv6	Shows the WAN IPv6 address
MLD	Shows Multicast Listener Discovery (MLD) status
Remove	Select interfaces to remove

To remove a connection, select its Remove column radio button and click **Remove**.

To **Add** a new WAN connection, click the **Add** button and follow the instructions.

**NOTE:** Up to 16 PVC profiles can be configured and saved in flash memory.

## 5.3 LAN

Configure the LAN interface settings and then click **Apply/Save**.

Local Area Network (LAN) Setup

Configure the Broadband Router IP Address and Subnet Mask for LAN interface. GroupName

Device Info  
Advanced Setup  
Layer2 Interface  
WAN Service  
**LAN**  
IPv6 Autoconfig  
Static IP Neighbor  
Auto-Detection  
NAT  
Security  
Parental Control  
Quality of Service  
Routing  
DNS  
DSL  
UPnP  
DNS Proxy/Relay  
Interface Grouping  
IP Tunnel  
IPSec  
Certificate  
Multicast  
Wireless  
Diagnostics  
Management

IP Address: 192.168.1.1  
Subnet Mask: 255.255.255.0

IGMP Snooping mode  
 Standard Mode  
 Blocking Mode

Enable LAN side firewall

Disable DHCP Server  
 Enable DHCP Server  
Start IP Address: 192.168.1.2  
End IP Address: 192.168.1.254  
Leased Time (hour): 24

Setting TFTP Server

Static IP Lease List: (A maximum 32 entries can be configured)  
MAC Address IP Address Remove WOL  
Add Entries Remove Entries

Configure the second IP Address and Subnet Mask for LAN interface

Ethernet Media Type

Port 1: Auto  
Port 2: Auto  
Port 3: Auto  
Port 4: Auto

Consult the field descriptions below for more details.

**GroupName:** Select an Interface Group.

### 1<sup>st</sup> LAN INTERFACE

**IP Address:** Enter the IP address for the LAN port.

**Subnet Mask:** Enter the subnet mask for the LAN port.

**Enable IGMP Snooping:** Enable by ticking the checkbox .

**Standard Mode:** In standard mode, multicast traffic will flood to all bridge ports when no client subscribes to a multicast group – even if IGMP snooping is enabled.

**Blocking Mode:** In blocking mode, the multicast data traffic will be blocked and not flood to all bridge ports when there are no client subscriptions to any multicast group.

**Enable LAN side firewall:** Enable by ticking the checkbox .

**DHCP Server:** To enable DHCP, select **Enable DHCP server** and enter Start and End IP addresses and the Leased Time. This setting configures the router to automatically assign IP, default gateway and DNS server addresses to every PC on your LAN.

**Static IP Lease List:** A maximum of 32 entries can be configured.

MAC Address	IP Address	Remove
<input type="button" value="Add Entries"/>	<input type="button" value="Remove Entries"/>	

To add an entry, enter MAC address and Static IP and then click **Save/Apply**.

**Dhcpd Static IP Lease**

Enter the Mac address and desired IP address then click "Save/Apply" .

MAC Address:	12:34:56:78:90:12
IP Address:	192.168.1.33
<input type="button" value="Save/Apply"/>	

To remove an entry, tick the corresponding checkbox  in the Remove column and then click the **Remove Entries** button, as shown below.

MAC Address	IP Address	Remove
12:34:56:78:90:12	192.168.1.33	<input checked="" type="checkbox"/>
<input type="button" value="Add Entries"/>	<input type="button" value="Remove Entries"/>	

**DHCP Server Relay:** Enable with checkbox  and enter DHCP Server IP address. This allows the Router to relay the DHCP packets to the remote DHCP server. The remote DHCP server will provide the IP address. **This option is hidden if NAT is enabled or when the router is configured with only one Bridge PVC.**

## 2<sup>ND</sup> LAN INTERFACE

To configure a secondary IP address, tick the checkbox  outlined (in RED) below.

<input checked="" type="checkbox"/>	Configure the second IP Address and Subnet Mask for LAN interface
IP Address:	<input type="text"/>
Subnet Mask:	<input type="text"/>

IP Address: Enter the secondary IP address for the LAN port.

Subnet Mask: Enter the secondary subnet mask for the LAN port.

Ethernet Media Type:

Configure auto negotiation, or enforce selected speed and duplex mode for each Ethernet port.

#### Ethernet Media Type

Port 1	<input type="button" value="Auto"/>
Port 2	<input type="button" value="Auto"/>
Port 3	<input type="button" value="Auto"/>
Port 4	<input type="button" value="Auto"/>

Port 4 dropdown menu:

- Auto
- 10Mbps-Half
- 10Mbps-Full
- 100Mbps-Half
- 100Mbps-Full

### 5.3.1 LAN IPv6 Autoconfig

Configure the LAN interface settings and then click **Apply/Save**.

The screenshot shows the COMTREND ADSL Router configuration interface. The left sidebar contains a navigation menu with various settings like Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, IPv6 Autoconfig (which is selected and highlighted in red), Static IP Neighbor, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, Print Server, DLNA, Storage Service, Interface Grouping, IP Tunnel, IPSec, Certificate, Multicast, Wireless, Diagnostics, and Management.

The main content area is titled "IPv6 LAN Auto Configuration". It includes a note: "Note: Stateless DHCPv6 is supported based on the assumption of prefix length less than 64. Interface ID does NOT support ZERO COMPRESSION "::". Please enter the complete information. For example: Please enter "0:0:0:2" instead of "::2".

**LAN IPv6 Link-Local Address Configuration**

EUI-64  
 User Setting  
Interface Identifier:

**Static LAN IPv6 Address Configuration**

Interface Address (prefix length is required):

**IPv6 LAN Applications**

Enable DHCPv6 Server  
 Stateless  
Refresh Time (sec):   
 Stateful  
Start interface ID:   
End interface ID:   
Leased Time (hour):   
Static IP Lease List: (A maximum 32 entries can be configured)  
**MAC Address** **Interface ID** **Remove**  
**Add Entries** **Remove Entries**

Enable SLAAC (RADVD)  
RA interval Min(sec):   
RA interval Max(sec):   
Reachable Time(ms):   
Default Preference:   
 MTU (bytes):   
 Enable Prefix Length Relay  
 Enable Configuration Mode  
 Enable ULA Prefix Advertisement  
 Randomly Generate  
 Statically Configure  
Prefix:   
Preferred Life Time (hour):   
Valid Life Time (hour):

Enable MLD Snooping  
 Standard Mode  
 Blocking Mode

**Save/Apply**

Consult the field descriptions below for more details.

### LAN IPv6 Link-Local Address Configuration

Heading	Description
EUI-64	Use EUI-64 algorithm to calculate link-local address from MAC address
User Setting	Use the Interface Identifier field to define a link-local address

### Static LAN IPv6 Address Configuration

Heading	Description
Interface Address (prefix length is required):	Configure static LAN IPv6 address and subnet prefix length

### IPv6 LAN Applications

Heading	Description
<b>Stateless</b>	Use stateless configuration
Refresh Time (sec):	The information refresh time option specifies how long a client should wait before refreshing information retrieved from DHCPv6
<b>Stateful</b>	Use stateful configuration
Start interface ID:	Start of interface ID to be assigned to dhcipv6 client
End interface ID:	End of interface ID to be assigned to dhcipv6 client
Leased Time (hour):	Lease time for dhcipv6 client to use the assigned IP address

**Static IP Lease List:** A maximum of 32 entries can be configured.

MAC Address	IP Address	Remove
<input type="button" value="Add Entries"/>	<input type="button" value="Remove Entries"/>	

To add an entry, enter MAC address and Static IP and then click **Save/Apply**.

**DHCP Static IP Lease**

Enter the Mac address and Static Interface ID then click "Apply/Save".

MAC Address:	00:11:22:33:44:55
Interface ID:	0:0:0:2
<b>Apply/Save</b>	

To remove an entry, tick the corresponding checkbox  in the Remove column and then click the **Remove Entries** button, as shown below.

Static IP Lease List: (A maximum 32 entries can be configured)

MAC Address	Interface ID	Remove
00:11:22:33:44:55	0:0:0:2	<input checked="" type="checkbox"/>
		<b>Remove Entries</b>

Heading	Description
<b>Enable RADVD</b>	Enable use of router advertisement daemon
RA interval Min(sec):	Minimum time to send router advertisement
RA interval Max(sec):	Maximum time to send router advertisement
Reachable Time(ms):	The time, in milliseconds that a neighbor is reachable after receiving reachability confirmation
Default Preference:	Preference level associated with the default router
MTU (bytes):	MTU value used in router advertisement messages to insure that all nodes on a link use the same MTU value
Enable Prefix Length Relay	Use prefix length receive from WAN interface
Enable Configuration Mode	Manually configure prefix, prefix length, preferred lifetime and valid lifetime used in router advertisement
Enable ULA Prefix Advertisement	Allow RADVD to advertise Unique Local Address Prefix
Randomly Generate	Use a Randomly Generated Prefix
Statically Configure Prefix	Specify the prefix to be used
Statically Configure	The prefix to be used
Preferred Life Time (hour)	The preferred life time for this prefix
Valid Life Time (hour)	The valid life time for this prefix
Enable MLD Snooping	Enable/disable IPv6 multicast forward to LAN ports

### 5.3.2 Static IP Neighbor



Click the Add button to display the following.



Heading	Description
IP Version	The IP version used for the neighbor device
IP Address	Define the IP Address for the neighbor device
MAC Address	The MAC Address of the neighbor device
Associated Interface	The interface where the neighbor device is located

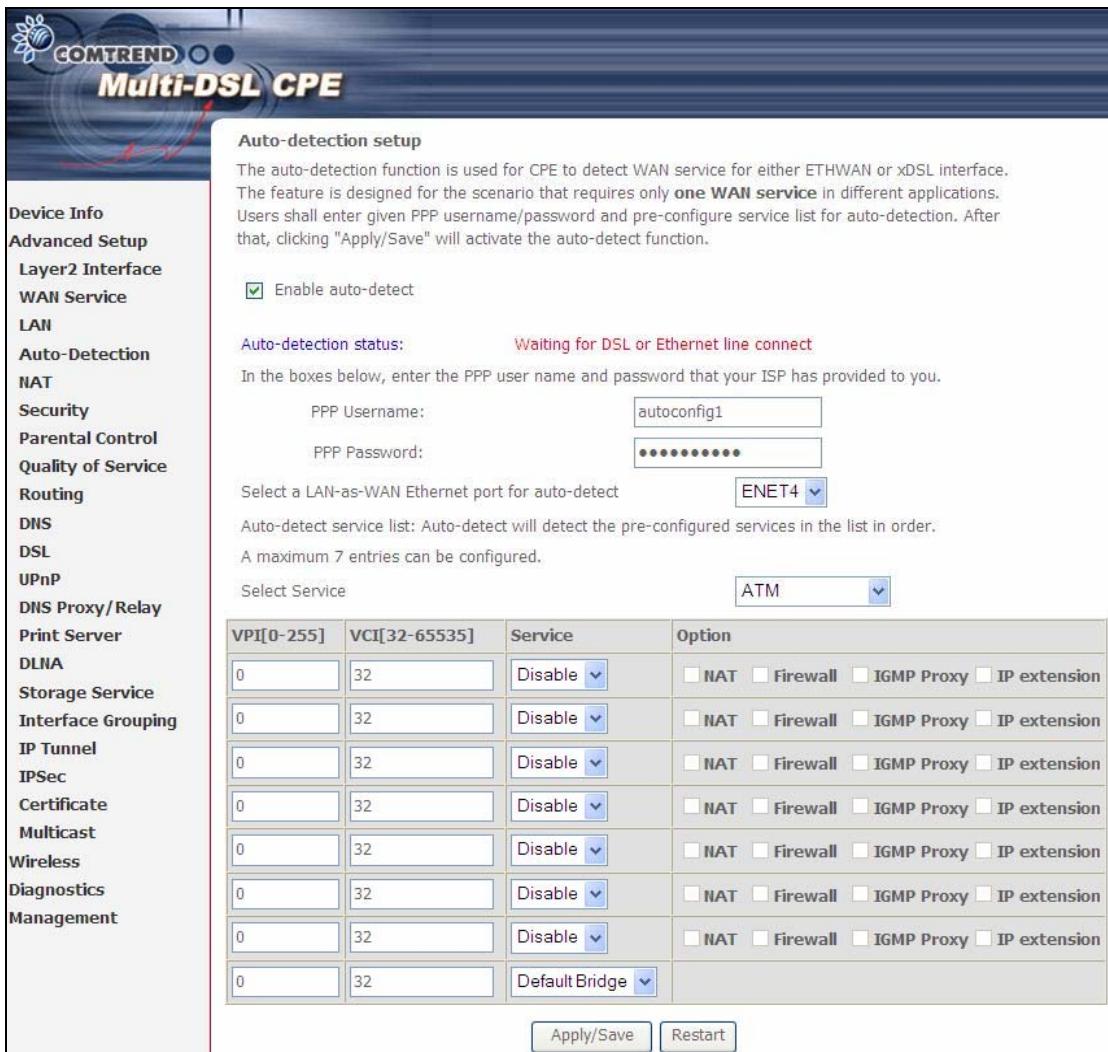
## 5.4 Auto-Detection

The auto-detection function is used for CPE to detect WAN service for either EHWAN or xDSL interface. The feature is designed for the scenario that requires only **one WAN service** in different applications.



The screenshot shows the COMTREND ADSL Router's Auto-detection setup page. The left sidebar includes options like Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection (which is selected and highlighted in red), NAT, and Security. The main content area is titled 'Auto-detection setup' and contains a brief description of the feature. A checkbox labeled 'Enable auto-detect' is present. At the bottom are 'Apply/Save' and 'Restart' buttons.

Tick the Checkbox to display the following.



The screenshot shows the COMTREND Multi-DSL CPE's Auto-detection setup page. The left sidebar includes options like Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection (selected and highlighted in red), NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, Print Server, DLNA, Storage Service, Interface Grouping, IP Tunnel, IPSec, Certificate, Multicast, Wireless, Diagnostics, and Management. The main content area is titled 'Auto-detection setup' and contains a description. A checked checkbox 'Enable auto-detect' is shown. Below it, 'Auto-detection status' is listed as 'Waiting for DSL or Ethernet line connect'. A note says to enter PPP username and password. A table for 'Select Service' lists 8 rows with columns for VPI[0-255], VCI[32-65535], Service (dropdown), and Option (checkboxes for NAT, Firewall, IGMP Proxy, IP extension). At the bottom are 'Apply/Save' and 'Restart' buttons.

Enter the given PPP username/password and pre-configure service list for auto-detection. After that, clicking "Apply/Save" will activate the auto-detect function.

## 5.5 NAT

To display this option, NAT must be enabled in at least one PVC shown on the [Chapter 5 Advanced Setup](#)

#### 4.5.1 DHCPv6

Click **DHCPv6** to display all DHCPv6 Leases.

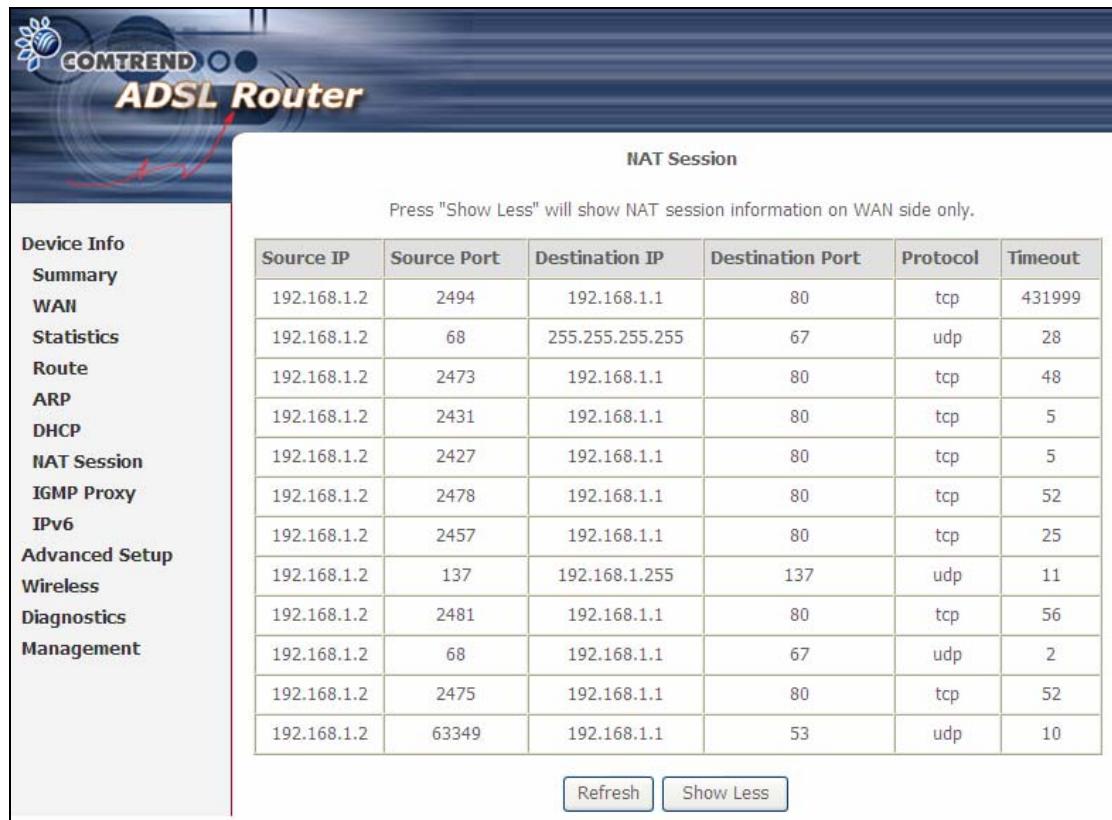


The screenshot shows the COMTREND ADSL Router web interface. The main title is "ADSL Router". On the left, a sidebar titled "Device Info" lists "Summary", "WAN", "Statistics", "Route", "ARP", "DHCP", "DHCPv4", and "DHCPv6". The "DHCPv6" link is highlighted in red. The main content area is titled "Device Info -- DHCPv6 Leases" and contains a table with four columns: "IPv6 Address", "MAC Address", "Duration", and "Expires In".

Field	Description
Hostname	Shows the device/host/PC network name
MAC Address	Shows the Ethernet MAC address of the device/host/PC
IP Address	Shows IP address of device/host/PC
Expires In	Shows how much time is left for each DHCP Lease

## 4.6 NAT Session

Press "Show All" will show all NAT session information.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a navigation menu with the following items: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session (which is currently selected and highlighted in blue), IGMP Proxy, IPv6, Advanced Setup, Wireless, Diagnostics, and Management. The main content area is titled "NAT Session" and contains a table with 12 rows of data. The table has columns for Source IP, Source Port, Destination IP, Destination Port, Protocol, and Timeout. The data in the table is as follows:

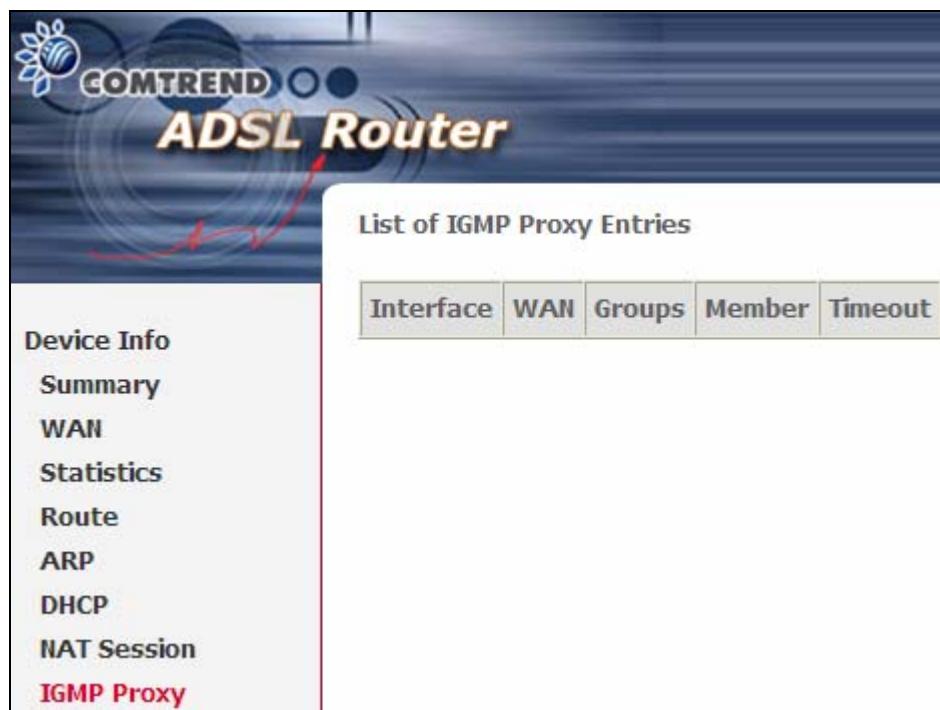
Source IP	Source Port	Destination IP	Destination Port	Protocol	Timeout
192.168.1.2	2494	192.168.1.1	80	tcp	431999
192.168.1.2	68	255.255.255.255	67	udp	28
192.168.1.2	2473	192.168.1.1	80	tcp	48
192.168.1.2	2431	192.168.1.1	80	tcp	5
192.168.1.2	2427	192.168.1.1	80	tcp	5
192.168.1.2	2478	192.168.1.1	80	tcp	52
192.168.1.2	2457	192.168.1.1	80	tcp	25
192.168.1.2	137	192.168.1.255	137	udp	11
192.168.1.2	2481	192.168.1.1	80	tcp	56
192.168.1.2	68	192.168.1.1	67	udp	2
192.168.1.2	2475	192.168.1.1	80	tcp	52
192.168.1.2	63349	192.168.1.1	53	udp	10

Below the table are two buttons: "Refresh" and "Show Less".

Pressing "Show Less" will show NAT session information on the WAN side only.

## 4.7 IGMP Proxy

Displays a list of IGMP Proxy entries.

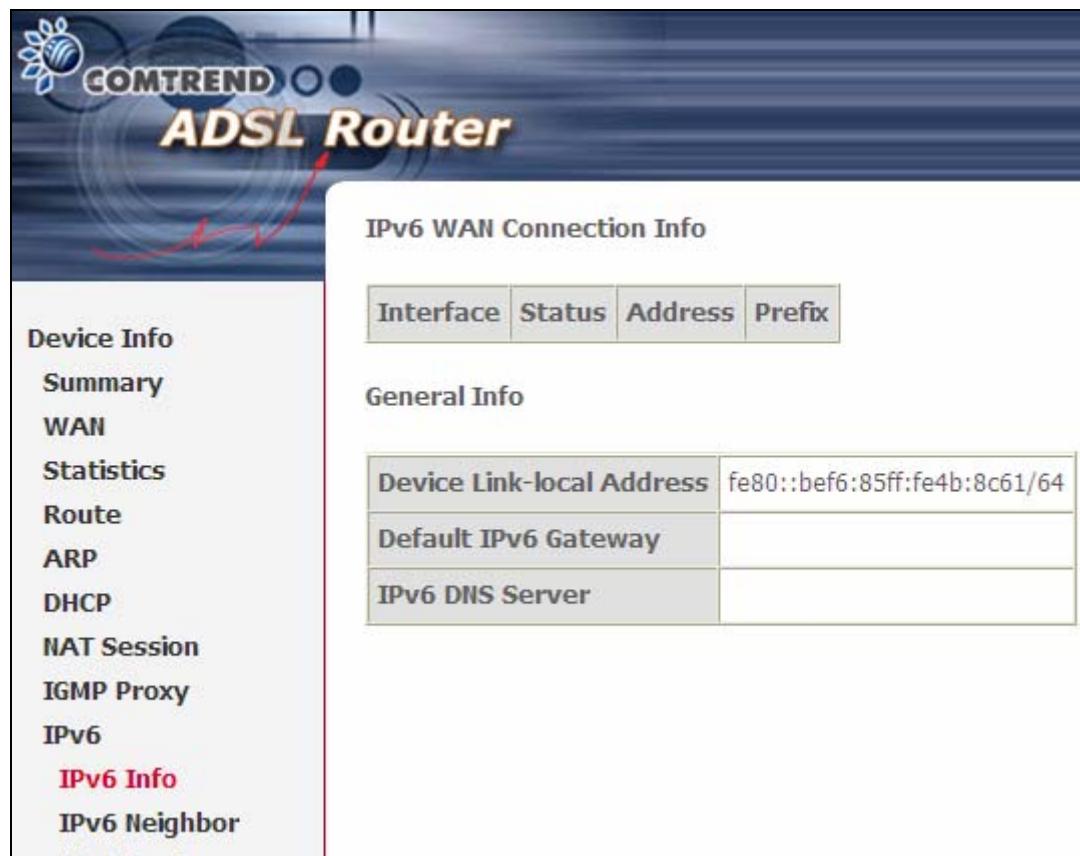


The screenshot shows a web-based management interface for a GOMTREND ADSL Router. The top header features the GOMTREND logo and the text "ADSL Router". On the left, a vertical menu bar lists several options: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session, and IGMP Proxy. The "IGMP Proxy" option is highlighted in red. The main content area is titled "List of IGMP Proxy Entries" and contains a table with the following columns: Interface, WAN, Groups, Member, and Timeout. The table is currently empty, showing only the column headers.

Interface	WAN	Groups	Member	Timeout

## 4.8 IPv6

### 4.8.1 IPv6 Info



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a navigation menu with the following items: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session, IGMP Proxy, IPv6, **IPv6 Info** (which is highlighted in red), IPv6 Neighbor, and IPv6 Route. The main content area is titled "IPv6 WAN Connection Info" and contains a table with four columns: Interface, Status, Address, and Prefix. Below this table is a section titled "General Info" with three entries: Device Link-local Address (fe80::bef6:85ff:fe4b:8c61/64), Default IPv6 Gateway (empty), and IPv6 DNS Server (empty). At the bottom of the page is a table with columns "Field" and "Description".

Field	Description
Interface	WAN interface with IPv6 enabled
Status	Connection status of the WAN interface
Address	IPv6 Address of the WAN interface
Prefix	Prefix received/configured on the WAN interface
Device Link-local Address	The CPE's LAN Address
Default IPv6 Gateway	The default WAN IPv6 gateway
IPv6 DNS Server	The IPv6 DNS servers received from the WAN interface / configured manually

## 4.8.2 IPv6 Neighbor

Provides a list of IPv6 devices found in the network.



The screenshot shows the COMTREND ADSL Router web interface. The top banner features the COMTREND logo and the text "ADSL Router". On the left, a vertical menu bar lists various router functions: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, NAT Session, IGMP Proxy, IPv6, IPv6 Info, **IPv6 Neighbor** (which is highlighted in red), and IPv6 Route. The main content area is titled "Device Info -- IPv6 Neighbor Discovery table". Below the title is a table header with four columns: IPv6 address, Flags, HW Address, and Device. The table body is currently empty, showing only the header row.

Field	Description
IPv6 Address	Ipv6 address of the device(s) found
Flags	Status of the neighbor device
HW Address	MAC address of the neighbor device
Device	Interface from which the device is located

## 4.8.2 IPv6 Route

Device Info -- IPv6 Route

Destination	Gateway	Metric	Interface
-------------	---------	--------	-----------

Field	Description
Destination	Destination IP Address
Gateway	Gateway address used for destination IP
Metric	Metric specified for gateway
Interface	Interface used for destination IP

- . NAT is not an available option in Bridge mode.

### 5.5.1 Virtual Servers

Virtual Servers allow you to direct incoming traffic from the WAN side (identified by Protocol and External port) to the internal server with private IP addresses on the LAN side. The Internal port is required only if the external port needs to be converted to a different port number used by the server on the LAN side. A maximum of 32 entries can be configured.

**NAT -- Virtual Servers Setup**

Virtual Server allows you to direct incoming traffic from WAN side (identified by Protocol and External port) to the Internal server with private IP address on the LAN side. The Internal port is required only if the external port needs to be converted to a different port number used by the server on the LAN side. A maximum 32 entries can be configured.

Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	WAN Interface	NAT Loopback	Remove
-------------	---------------------	-------------------	----------	---------------------	-------------------	-------------------	---------------	--------------	--------

To add a Virtual Server, click **Add**. The following will be displayed.

**NAT -- Virtual Servers**

Select the service name, and enter the server IP address and click "Apply/Save" to forward IP packets for this service to the specified server. **NOTE: The "Internal Port End" cannot be modified directly. Normally, it is set to the same value as "External Port End". However, if you modify "Internal Port Start", then "Internal Port End" will be set to the same value as "Internal Port Start".**

Remaining number of entries that can be configured:32

Use Interface: pppoe\_0\_0\_35/ppp0.1

Service Name:

Select a Service: Select One

Custom Service: [input field]

**Apply/Save**

External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End
		TCP		
		TCP		
		TCP		

**Apply/Save**

Consult the table below for field and header descriptions.

Field/Header	Description
Use Interface	Select a WAN interface from the drop-down box.
Select a Service <b>Or</b> Custom Service	User should select the service from the list. <b>Or</b> User can enter the name of their choice.
Server IP Address	Enter the IP address for the server.
External Port Start	Enter the starting external port number (when you select Custom Server). When a service is selected, the port ranges are automatically configured.
External Port End	Enter the ending external port number (when you select Custom Server). When a service is selected, the port ranges are automatically configured.
Protocol	TCP, TCP/UDP, or UDP.
Internal Port Start	Enter the internal port starting number (when you select Custom Server). When a service is selected the port ranges are automatically configured
Internal Port End	Enter the internal port ending number (when you select Custom Server). When a service is selected, the port ranges are automatically configured.

## 5.5.2 Port Triggering

Some applications require that specific ports in the firewall be opened for access by the remote parties. Port Triggers dynamically 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the 'Open Ports'. A maximum 32 entries can be configured.

**NAT -- Port Triggering Setup**

Some applications require that specific ports in the Router's firewall be opened for access by the remote parties. Port Trigger dynamically opens up the 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the 'Open Ports'. A maximum 32 entries can be configured.

Application Name	Trigger		Open		WAN Interface	Remove		
	Protocol	Port Range		Protocol			Port Range	
		Start	End				Start	End

To add a Trigger Port, click **Add**. The following will be displayed.

**NAT -- Port Triggering**

Some applications such as games, video conferencing, remote access applications and others require that specific ports in the Router's firewall be opened for access by the applications. You can configure the port settings from this screen by selecting an existing application or creating your own (Custom application)and click "Save/Apply" to add it. Remaining number of entries that can be configured:32

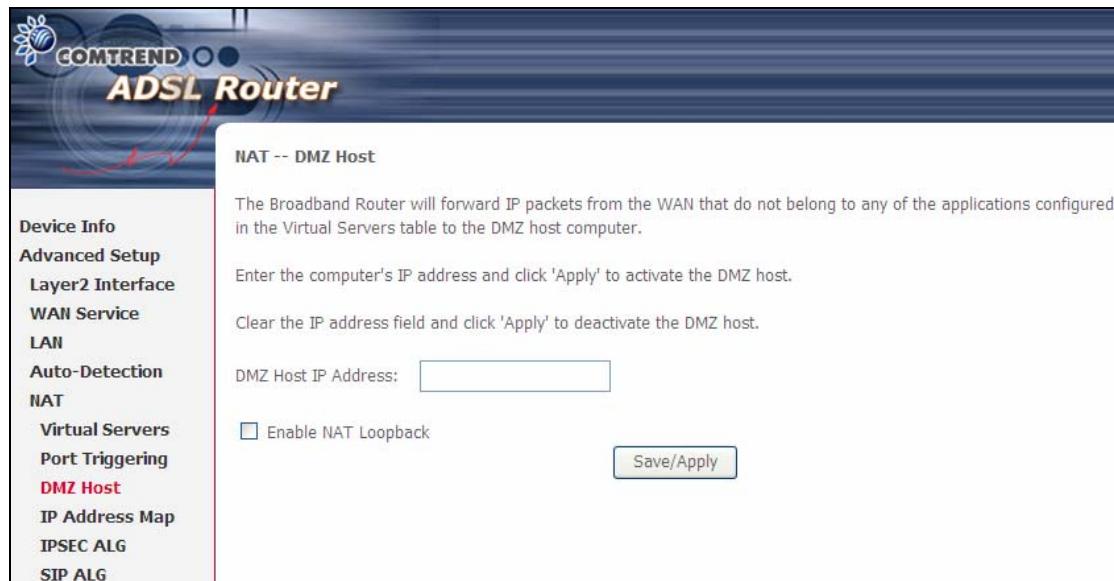
Trigger Port Start	Trigger Port End	Trigger Protocol	Open Port Start	Open Port End	Open Protocol
		TCP			TCP
		TCP			TCP
		TCP			TCP

Consult the table below for field and header descriptions.

Field/Header	Description
Use Interface	Select a WAN interface from the drop-down box.
Select an Application <b>Or</b> Custom Application	User should select the application from the list. <b>Or</b> User can enter the name of their choice.
Trigger Port Start	Enter the starting trigger port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Trigger Port End	Enter the ending trigger port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Trigger Protocol	TCP, TCP/UDP, or UDP.
Open Port Start	Enter the starting open port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Open Port End	Enter the ending open port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Open Protocol	TCP, TCP/UDP, or UDP.

### 5.5.3 DMZ Host

The DSL router will forward IP packets from the WAN that do not belong to any of the applications configured in the Virtual Servers table to the DMZ host computer.



To **Activate** the DMZ host, enter the DMZ host IP address and click **Save/Apply**.

To **Deactivate** the DMZ host, clear the IP address field and click **Save/Apply**.

### 5.5.4 IP Address Map

Mapping Local IP (LAN IP) to some specified Public IP (WAN IP).



Consult the table below for field and header descriptions.

Field/Header	Description
Rule	The number of the rule
Type	Mapping type from local to public.
Local Start IP	The beginning of the local IP
Local End IP	The ending of the local IP
Public Start IP	The beginning of the public IP
Public End IP	The ending of the public IP
Remove	Remove this rule

Click the Add button to display the following screen.

**NAT -- IP Address Mapping Setup**  
Remaining number of entries that can be configured:32

Server Name:

Select a Service: **One to One**

Local Start IP	Local End IP	Public Start IP	Public End IP
	0.0.0.0		0.0.0.0

**Save/Apply**

Select a Service, then click the Save/Apply button.

**One to One:** mapping one local IP to a specific public IP

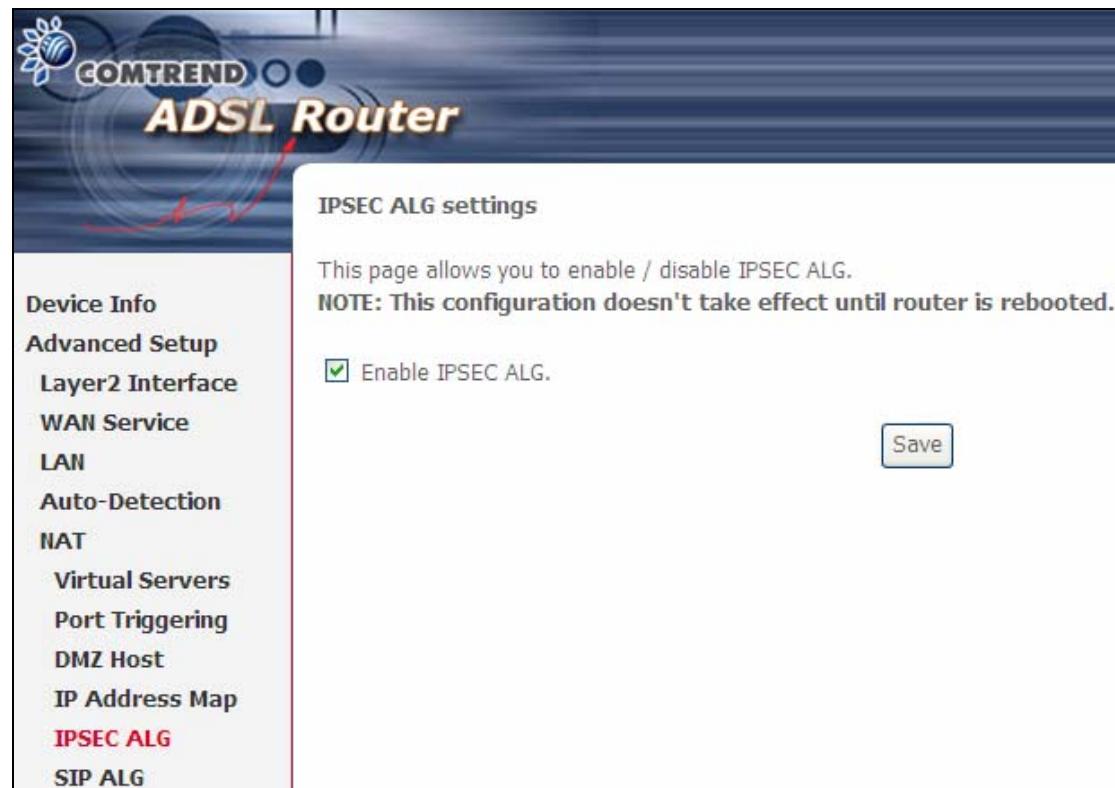
**Many to One:** mapping a range of local IP to a specific public IP

**Many to Many(Overload):** mapping a range of local IP to a different range of public IP

**Many to Many(No Overload):** mapping a range of local IP to a same range of public IP

### 5.5.5 IPSEC ALG

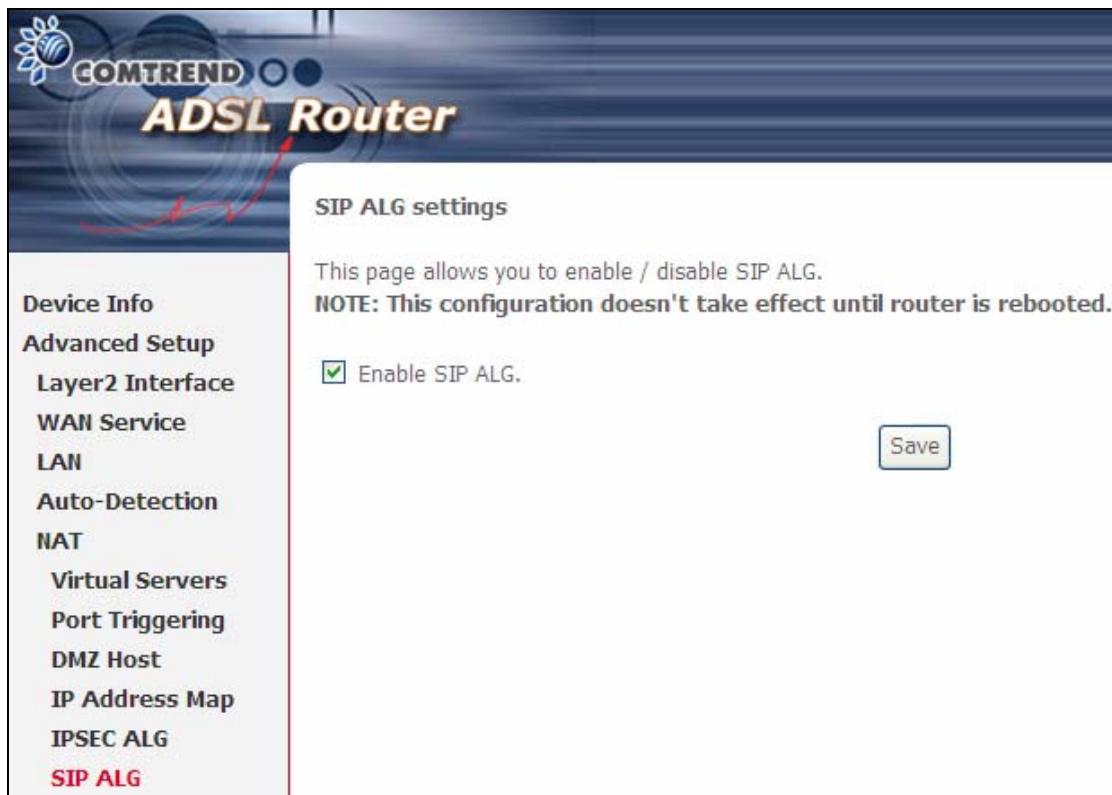
IPSEC ALG provides multiple VPN passthrough connection support, allowing different clients on LAN side to establish a secured IP Connection to the WAN server.



To enable IPSEC ALG, tick the checkbox and click the Save button.

### 5.5.6 SIP ALG

This page allows you to enable / disable SIP ALG.



The screenshot shows the COMTREND ADSL Router's configuration interface. The left sidebar lists various settings: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Virtual Servers, Port Triggering, DMZ Host, IP Address Map, IPSEC ALG, and SIP ALG. The SIP ALG option is highlighted in red. The main content area is titled "SIP ALG settings" and contains the following text: "This page allows you to enable / disable SIP ALG. NOTE: This configuration doesn't take effect until router is rebooted." Below this is a checkbox labeled "Enable SIP ALG." with a checked status. A "Save" button is located in the bottom right corner of the main content area.

## 5.6 Security

To display this function, you must enable the firewall feature in WAN Setup. For detailed descriptions, with examples, please consult [Appendix A - Firewall](#).

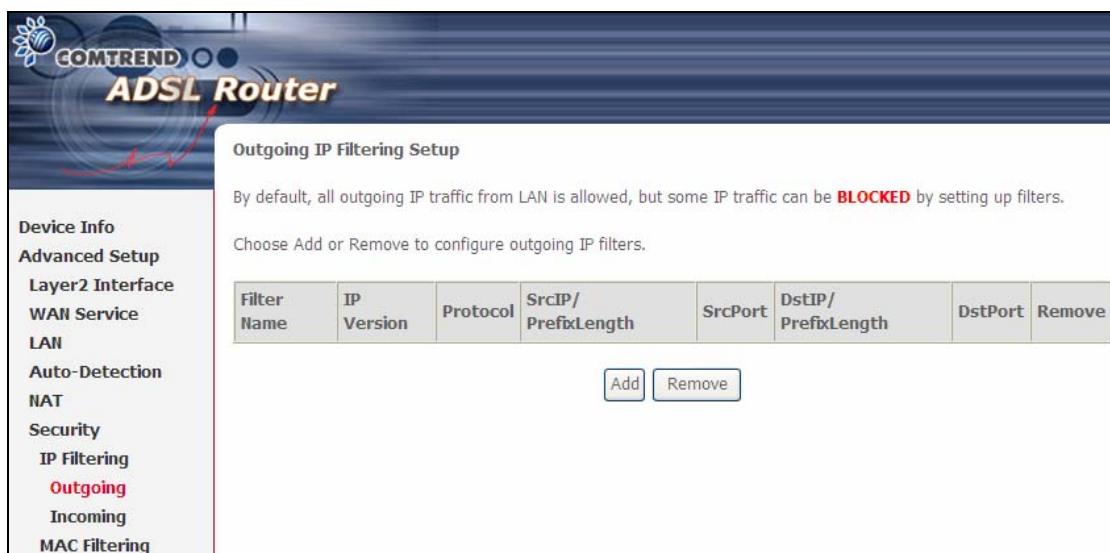
### 5.6.1 IP Filtering

This screen sets filter rules that limit IP traffic (Outgoing/Incoming). Multiple filter rules can be set and each applies at least one limiting condition. For individual IP packets to pass the filter all conditions must be fulfilled.

**NOTE:** This function is not available when in bridge mode. Instead, [5.6.2 MAC Filtering](#) performs a similar function.

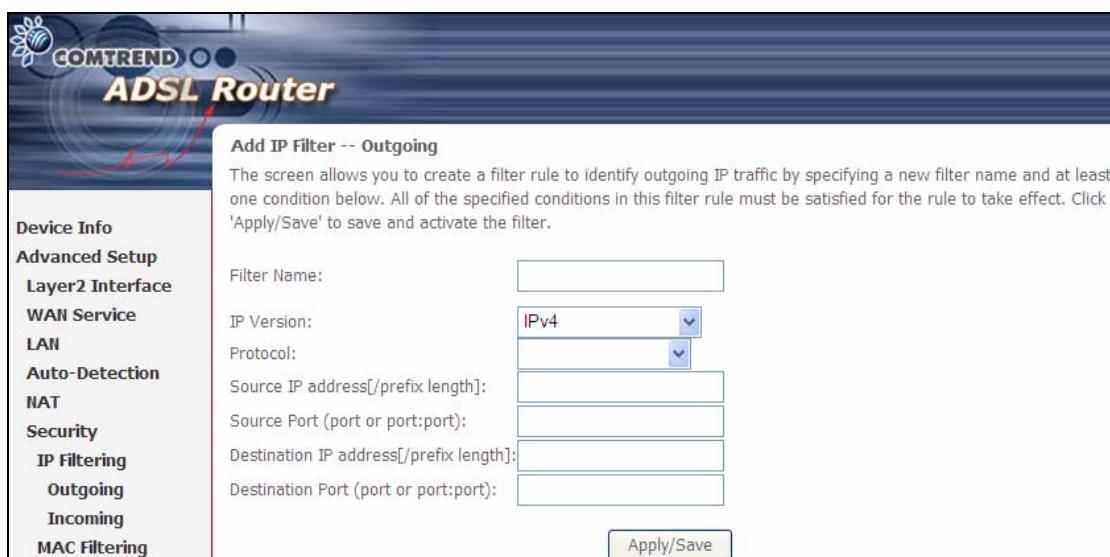
#### OUTGOING IP FILTER

By default, all outgoing IP traffic is allowed, but IP traffic can be blocked with filters.



The screenshot shows the 'Outgoing IP Filtering Setup' page. The left sidebar menu includes 'Device Info', 'Advanced Setup', 'Layer2 Interface', 'WAN Service', 'LAN', 'Auto-Detection', 'NAT', 'Security', 'IP Filtering' (which is selected and highlighted in red), 'Outgoing' (which is also highlighted in red), 'Incoming', and 'MAC Filtering'. The main content area has a sub-header 'Outgoing IP Filtering Setup' and a note: 'By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.' It says 'Choose Add or Remove to configure outgoing IP filters.' Below this is a table with columns: Filter Name, IP Version, Protocol, SrcIP/PrefixLength, SrcPort, DstIP/PrefixLength, DstPort, and Remove. At the bottom of the table are 'Add' and 'Remove' buttons.

To add a filter (to block some outgoing IP traffic), click the **Add** button. On the following screen, enter your filter criteria and then click **Apply/Save**.



The screenshot shows the 'Add IP Filter -- Outgoing' page. The left sidebar menu is the same as the previous page. The main content area has a sub-header 'Add IP Filter -- Outgoing' and a note: 'The screen allows you to create a filter rule to identify outgoing IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the filter.' It has fields for 'Filter Name' (a text input box), 'IP Version' (a dropdown menu set to 'IPv4'), 'Protocol' (a dropdown menu), 'Source IP address[/prefix length]' (a text input box), 'Source Port (port or port:port)' (a text input box), 'Destination IP address[/prefix length]' (a text input box), and 'Destination Port (port or port:port)' (a text input box). At the bottom is an 'Apply/Save' button.

Consult the table below for field descriptions.

Field	Description
Filter Name	The filter rule label.
IP Version	IPv4 selected by default.
Protocol	TCP, TCP/UDP, UDP, or ICMP.
Source IP address	Enter source IP address.
Source Port (port or port:port)	Enter source port number or range.
Destination IP address	Enter destination IP address.
Destination Port (port or port:port)	Enter destination port number or range.

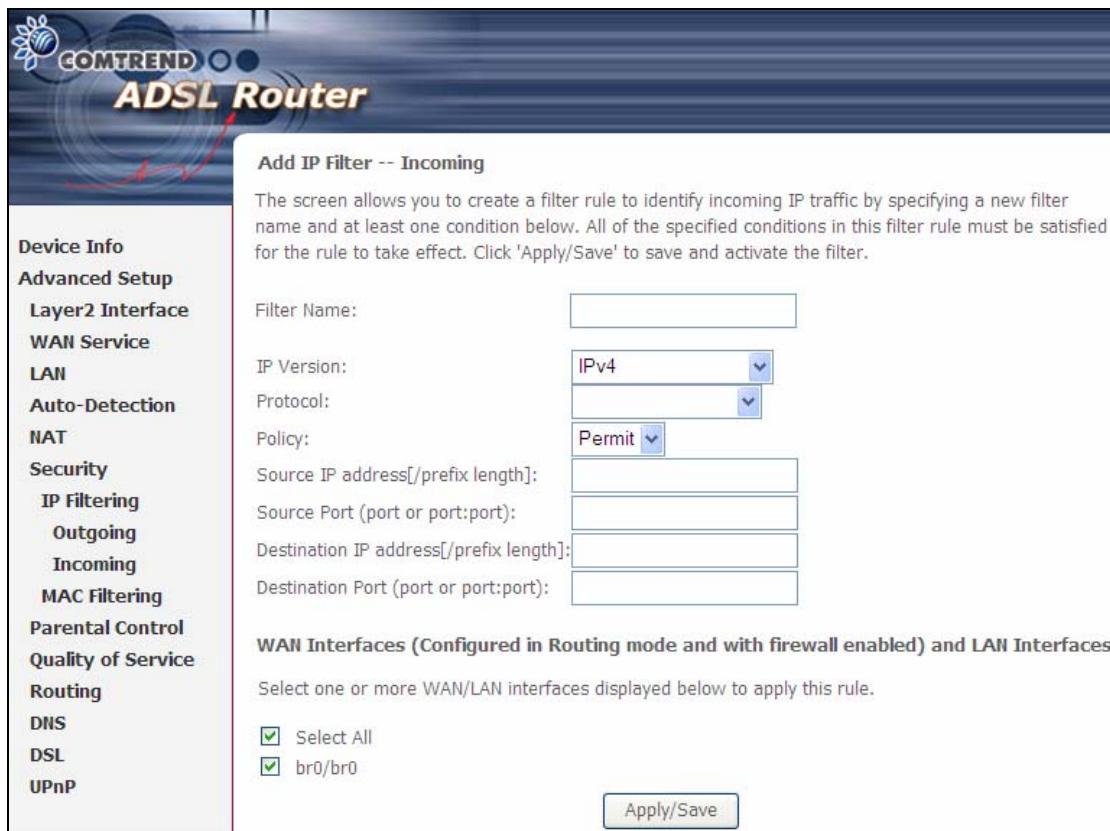
## INCOMING IP FILTER

By default, all incoming IP traffic is blocked, but IP traffic can be allowed with filters.



To add a filter (to allow incoming IP traffic), click the **Add** button.

On the following screen, enter your filter criteria and then click **Apply/Save**.



The screenshot shows the Comtrend ADSL Router's configuration interface. The left sidebar contains a navigation menu with the following items: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, IP Filtering (selected), Outgoing, Incoming, MAC Filtering, Parental Control, Quality of Service, Routing, DNS, DSL, and UPnP. The main content area is titled "Add IP Filter -- Incoming". It includes a descriptive text block, several configuration fields, and a section for selecting WAN and LAN interfaces.

**Add IP Filter -- Incoming**

The screen allows you to create a filter rule to identify incoming IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the filter.

Filter Name:

IP Version:

Protocol:

Policy:

Source IP address[/prefix length]:

Source Port (port or port:port):

Destination IP address[/prefix length]:

Destination Port (port or port:port):

**WAN Interfaces (Configured in Routing mode and with firewall enabled) and LAN Interfaces**

Select one or more WAN/LAN interfaces displayed below to apply this rule.

Select All  
 br0/br0

Consult the table below for field descriptions.

Field	Description
Filter Name	The filter rule label
IP Version	IPv4 selected by default.
Protocol	TCP, TCP/UDP, UDP, or ICMP.
Policy	Permit/Drop packets specified by the firewall rule.
Source IP address	Enter source IP address.
Source Port (port or port:port)	Enter source port number or range.
Destination IP address	Enter destination IP address.
Destination Port (port or port:port)	Enter destination port number or range.

At the bottom of this screen, select the WAN and LAN Interfaces to which the filter rule will apply. You may select all or just a subset. WAN interfaces in bridge mode or without firewall enabled are not available.

## 5.6.2 MAC Filtering

**NOTE:** This option is only available in bridge mode. Other modes use [5.6.1 IP Filtering](#) to perform a similar function.

Each network device has a unique 48-bit MAC address. This can be used to filter (block or forward) packets based on the originating device. MAC filtering policy and rules for the AR-5381u can be set according to the following procedure.

The MAC Filtering Global Policy is defined as follows. **FORWARDED** means that all MAC layer frames will be **FORWARDED** except those matching the MAC filter rules. **BLOCKED** means that all MAC layer frames will be **BLOCKED** except those matching the MAC filter rules. The default MAC Filtering Global policy is **FORWARDED**. It can be changed by clicking the **Change Policy** button.

MAC Filtering Setup

MAC Filtering is only effective on WAN services configured in Bridge mode. **FORWARDED** means that all MAC layer frames will be **FORWARDED** except those matching with any of the specified rules in the following table. **BLOCKED** means that all MAC layer frames will be **BLOCKED** except those matching with any of the specified rules in the following table.

MAC Filtering Policy For Each Interface:

**WARNING: Changing from one policy to another of an interface will cause all defined rules for that interface to be REMOVED AUTOMATICALLY! You will need to create new rules for the new policy.**

Interface	Policy	Change
atm0.2	<b>FORWARD</b>	<input type="checkbox"/>

**Change Policy**

Choose Add or Remove to configure MAC filtering rules.

Interface	Protocol	Destination MAC	Source MAC	Frame Direction	Remove
-----------	----------	-----------------	------------	-----------------	--------

**Add** **Remove**

Choose **Add** or **Remove** to configure MAC filtering rules. The following screen will appear when you click **Add**. Create a filter to identify the MAC layer frames by specifying at least one condition below. If multiple conditions are specified, all of them must be met. Click **Save/Apply** to save and activate the filter rule.



The image shows the Comtrend ADSL Router's web-based configuration interface. The title bar reads "COMTREND ADSL Router". On the left, a vertical menu bar lists several options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, IP Filtering, MAC Filtering, Parental Control, and Quality of Service. The "MAC Filtering" option is currently selected and highlighted with a red box. The main content area is titled "Add MAC Filter" and contains the following fields:

- Protocol Type: A dropdown menu.
- Destination MAC Address: An input field.
- Source MAC Address: An input field.
- Frame Direction: A dropdown menu set to "LAN<=>WAN".
- WAN Interfaces (Configured in Bridge mode only): A dropdown menu set to "br\_0\_0\_35/atm0.2".
- Save/Apply: A button at the bottom right.

A note at the top of the main content area states: "Create a filter to identify the MAC layer frames by specifying at least one condition below. If multiple conditions are specified, all of them take effect. Click "Apply" to save and activate the filter."

Consult the table below for detailed field descriptions.

Field	Description
Protocol Type	PPPoE, IPv4, IPv6, AppleTalk, IPX, NetBEUI, IGMP
Destination MAC Address	Defines the destination MAC address
Source MAC Address	Defines the source MAC address
Frame Direction	Select the incoming/outgoing packet interface
WAN Interfaces	Applies the filter to the selected bridge interface.

## 5.7 Parental Control

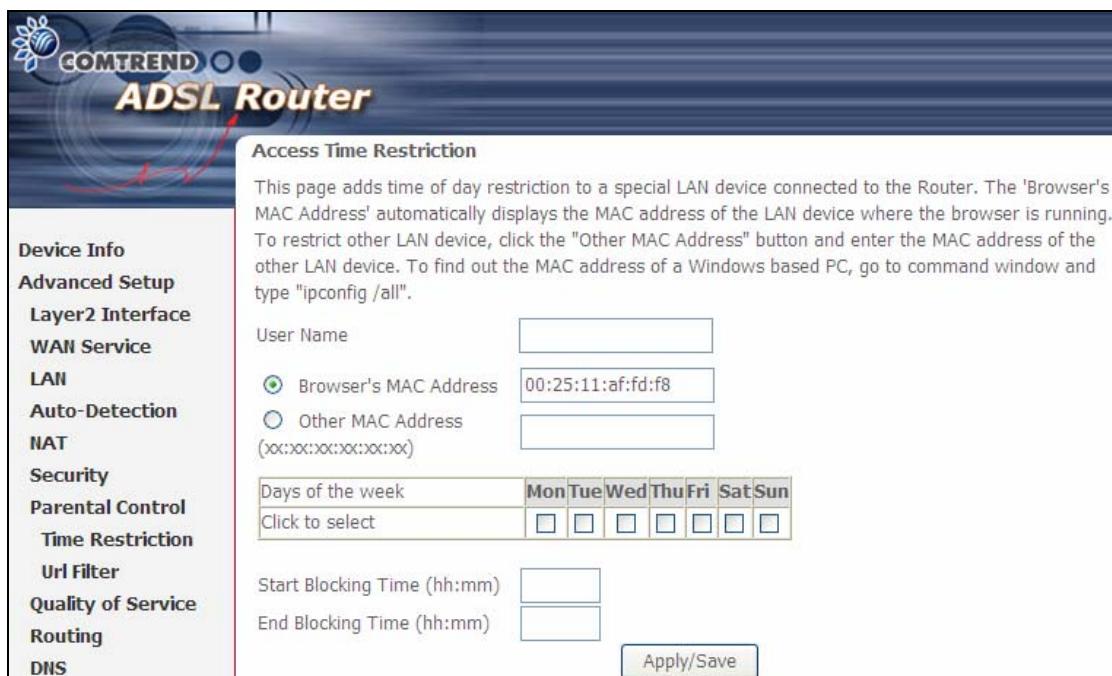
This selection provides WAN access control functionality.

### 5.7.1 Time Restriction

This feature restricts access from a LAN device to an outside network through the device on selected days at certain times. Make sure to activate the Internet Time server synchronization as described in [8.5 Internet Time](#), so that the scheduled times match your local time.



Click **Add** to display the following screen.



See below for field descriptions. Click **Apply/Save** to add a time restriction.

**User Name:** A user-defined label for this restriction.  
**Browser's MAC Address:** MAC address of the PC running the browser.  
**Other MAC Address:** MAC address of another LAN device.  
**Days of the Week:** The days the restrictions apply.  
**Start Blocking Time:** The time the restrictions start.  
**End Blocking Time:** The time the restrictions end.

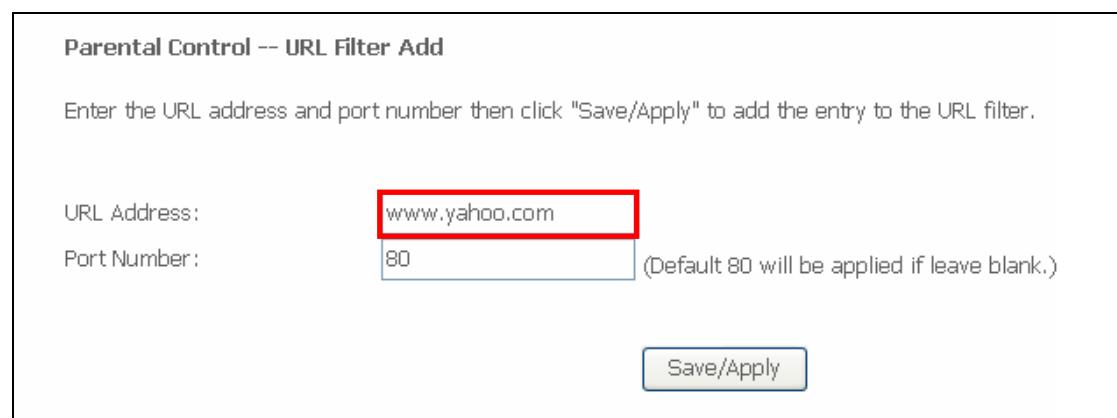
### 5.7.2 URL Filter

This screen allows for the creation of a filter rule for access rights to websites based on their URL address and port number.



The screenshot shows the 'URL Filter' configuration page of a COMTREND ADSL Router. The left sidebar lists various setup options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Time Restriction, and Url Filter. The 'Url Filter' option is currently selected and highlighted in red. The main content area has a header: 'URL Filter -- Please select the list type first then configure the list entries. Maximum 100 entries can be configured.' Below this, there are two radio buttons for 'URL List Type': 'Exclude' (unchecked) and 'Include' (checked). To the right of these buttons are three buttons: 'Address', 'Port', and 'Remove'. Below these buttons are 'Add' and 'Remove' buttons. The 'Address' input field contains the URL 'www.yahoo.com', which is also highlighted with a red box. The 'Port' input field contains the value '80'. A note next to the port field states: '(Default 80 will be applied if leave blank.)'.

Select URL List Type: Exclude or Include. Then click **Add** to display the following screen.



The screenshot shows the 'Parental Control -- URL Filter Add' configuration page. The page title is 'Parental Control -- URL Filter Add'. A note at the top says: 'Enter the URL address and port number then click "Save/Apply" to add the entry to the URL filter.' Below this, there are two input fields: 'URL Address:' containing 'www.yahoo.com' (highlighted with a red box) and 'Port Number:' containing '80'. A note next to the port field says: '(Default 80 will be applied if leave blank.)'. At the bottom is a 'Save/Apply' button.

Enter the URL address and port number then click **Save/Apply** to add the entry to the URL filter. URL Addresses begin with "www", as shown in this example.

URL Filter -- Please select the list type first then configure the list entries. Maximum 100 entries can be configured.

URL List Type:  Exclude  Include

Address	Port	Remove
www.yahoo.com	80	<input type="button" value=""/>

A maximum of 100 entries can be added to the URL Filter list.

Tick the **Exclude** radio button to deny access to the websites listed.

Tick the **Include** radio button to restrict access to only those listed websites.

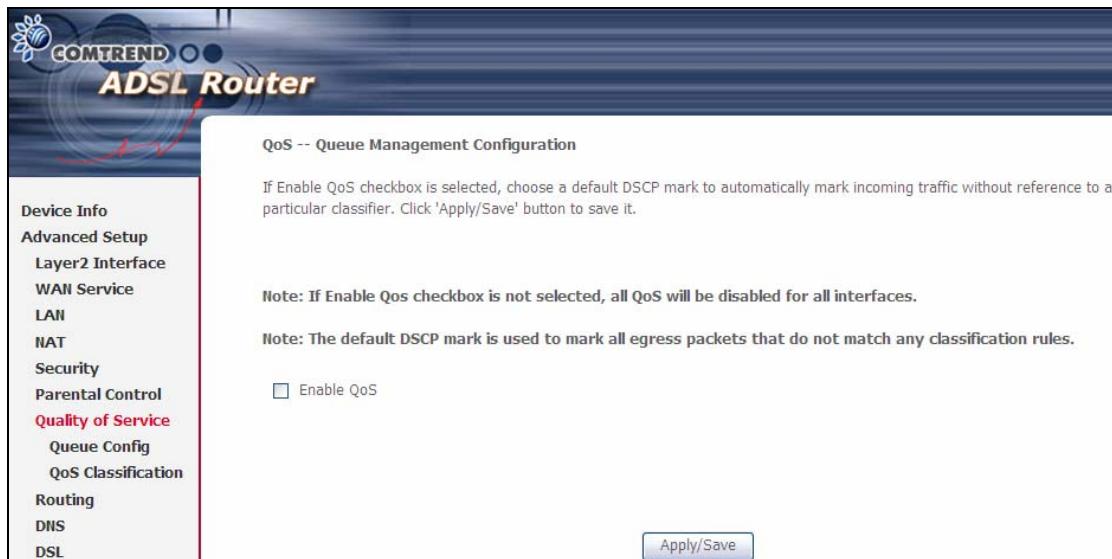
## 5.8 Quality of Service (QoS)

**NOTE:** QoS must be enabled in at least one PVC to display this option.  
(See [Appendix E - Connection Setup](#) for detailed PVC setup instructions).

### 5.8.1 Queue Management Configuration

To Enable QoS tick the checkbox  and select a Default DSCP Mark.

Click **Apply/Save** to activate QoS.



**QoS** and **DSCP Mark** are defined as follows:

**Quality of Service (QoS):** This provides different priority to different users or data flows, or guarantees a certain level of performance to a data flow in accordance with requests from Queue Prioritization.

**Default Differentiated Services Code Point (DSCP) Mark:** This specifies the per hop behavior for a given flow of packets in the Internet Protocol (IP) header that do not match any other QoS rule.

## 5.8.2 Queue Configuration

This function follows the Differentiated Services rule of IP QoS. You can create a new Queue entry by clicking the **Add** button. Enable and assign an interface and precedence on the next screen. Click **Save/Reboot** on this screen to activate it.

**QoS Queue Setup**

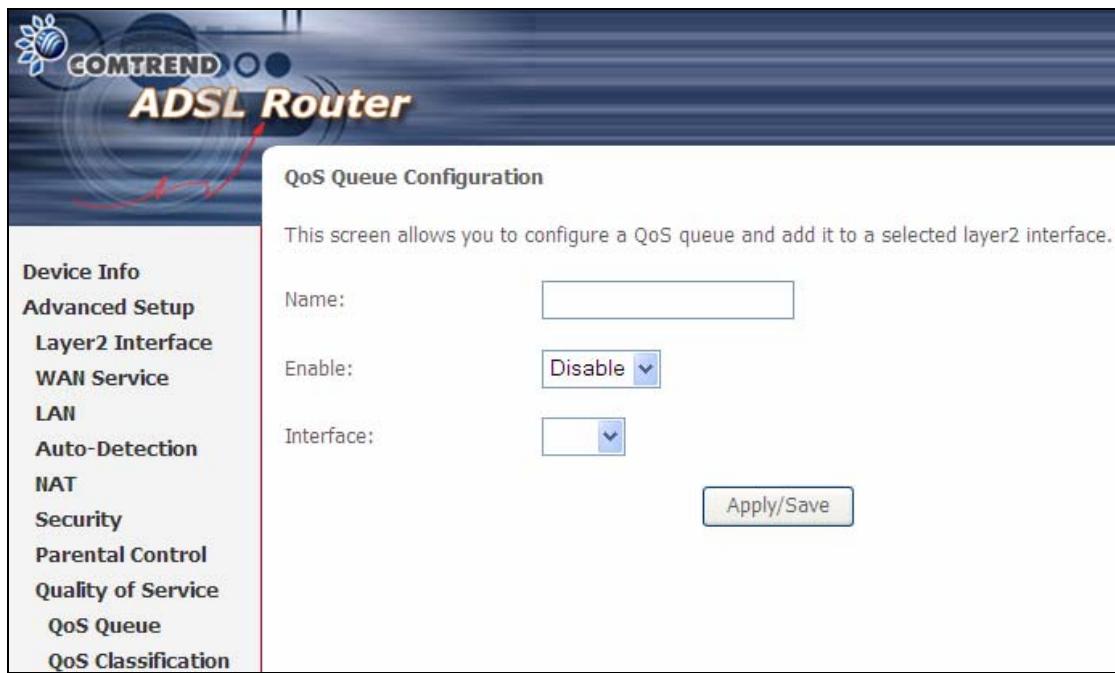
In ATM mode, maximum 16 queues can be configured.  
In PTM mode, maximum 8 queues can be configured.  
For each Ethernet interface, maximum 4 queues can be configured.  
To add a queue, click the **Add** button.  
To remove queues, check their remove-checkboxes, then click the **Remove** button.  
The **Enable** button will scan through every queues in the table. Queues with enable-checkbox checked will be enabled. Queues with enable-checkbox un-checked will be disabled.  
The enable-checkbox also shows status of the queue after page reload.  
Note that if WMM function is disabled in Wireless Page, queues related to wireless will not take effects.

**The QoS function has been disabled. Queues would not take effects.**

Name	Key	Interface	Qid	Prec/Alg/Wght	DSL Latency	PTM Priority	Enable	Remove
WMM Voice Priority	1	wl0	1	1/SP			Enabled	
WMM Voice Priority	2	wl0	2	2/SP			Enabled	
WMM Video Priority	3	wl0	3	3/SP			Enabled	
WMM Video Priority	4	wl0	4	4/SP			Enabled	
WMM Best Effort	5	wl0	5	5/SP			Enabled	
WMM Background	6	wl0	6	6/SP			Enabled	
WMM Background	7	wl0	7	7/SP			Enabled	
WMM Best Effort	8	wl0	8	8/SP			Enabled	

**Add** **Enable** **Remove**

Click **Enable** to activate the QoS Queue. Click **Add** to display the following screen.



The image shows a screenshot of the COMTREND ADSL Router's QoS Queue Configuration interface. The header features the COMTREND logo and the text "ADSL Router". On the left, a vertical menu lists various settings: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, QoS Queue (which is selected and highlighted in blue), and QoS Classification. The main content area is titled "QoS Queue Configuration" and contains the following fields: "Name:" with an empty input field, "Enable:" with a dropdown menu set to "Disable", and "Interface:" with a dropdown menu. A "Apply/Save" button is located at the bottom right of the configuration panel.

**Name:** Identifier for this Queue entry.

**Enable:** Enable/Disable the Queue entry.

**Interface:** Assign the entry to a specific network interface (QoS enabled).

### 5.8.3 QoS Classification

The network traffic classes are listed in the following table.

QoS Classification Setup -- maximum 32 rules can be configured.

To add a rule, click the **Add** button.  
To remove rules, check their remove-checkboxes, then click the **Remove** button.  
The **Enable** button will scan through every rules in the table. Rules with enable-checkbox checked will be enabled. Rules with enable-checkbox un-checked will be disabled.  
The enable-checkbox also shows status of the rule after page reload.  
If you disable WMM function in Wireless Page, classification related to wireless will not take effects.

The QoS function has been disabled. Classification rules would not take effects.

CLASSIFICATION CRITERIA										CLASSIFICATION RESULTS							
Class Name	Order	Class Intf	Ether Type	SrcMAC/ Mask	DstMAC/ Mask	SrcIP/ PrefixLength	DstIP/ PrefixLength	Proto	SrcPort	DstPort	DSCP Check	802.1P Check	Queue Key	DSCP Mark	802.1P Mark	Enable	Remove
<b>Add</b> <b>Enable</b> <b>Remove</b>																	

Click **Add** to configure a network traffic class rule and **Enable** to activate it. To delete an entry from the list, click **Remove**.

This screen creates a traffic class rule to classify the upstream traffic, assign queuing priority and optionally overwrite the IP header DSCP byte. A rule consists of a class name and at least one logical condition. All the conditions specified in the rule must be satisfied for it to take effect.

**COMTREND**  **ADSL Router**

**Add Network Traffic Class Rule**

This screen creates a traffic class rule to classify the ingress traffic into a priority queue and optionally mark the DSCP or Ethernet priority of the packet. Click 'Apply/Save' to save and activate the rule.

<b>Device Info</b>	Traffic Class Name: <input type="text"/>
<b>Advanced Setup</b>	Rule Order: <input type="text" value="Last"/>
<b>Layer2 Interface</b>	Rule Status: <input type="text" value="Disable"/>
<b>WAN Service</b>	
<b>LAN</b>	
<b>Auto-Detection</b>	
<b>NAT</b>	
<b>Security</b>	
<b>Parental Control</b>	
<b>Quality of Service</b>	
<b>QoS Queue</b>	
<b>QoS Classification</b>	
<b>Routing</b>	
<b>DNS</b>	
<b>DSL</b>	
<b>UPnP</b>	
<b>DNS Proxy/Relay</b>	
<b>Interface Grouping</b>	
<b>IP Tunnel</b>	
<b>IPSec</b>	
<b>Certificate</b>	
<b>Multicast</b>	
<b>Wireless</b>	
<b>Diagnostics</b>	
<b>Management</b>	

**Specify Classification Criteria** (A blank criterion indicates it is not used for classification.)

Class Interface: <input type="text" value="LAN"/>	Ether Type: <input type="text"/>
Source MAC Address: <input type="text"/>	Source MAC Mask: <input type="text"/>
Destination MAC Address: <input type="text"/>	Destination MAC Mask: <input type="text"/>

**Specify Classification Results** (A blank value indicates no operation.)

Specify Class Queue (Required): <input type="text"/>	- Packets classified into a queue that exit through an interface for which the queue is not specified to exist, will instead egress to the default queue on the interface.
Mark Differentiated Service Code Point (DSCP): <input type="text"/>	
Mark 802.1p priority: <input type="text"/>	- Class non-vlan packets egress to a non-vlan interface will be tagged with VID 0 and the class rule p-bits. - Class vlan packets egress to a non-vlan interface will have the packet p-bits re-marked by the class rule p-bits. No additional vlan tag is added. - Class non-vlan packets egress to a vlan interface will be tagged with the interface VID and the class rule p-bits. - Class vlan packets egress to a vlan interface will be additionally tagged with the packet VID, and the class rule p-bits.

**Apply/Save**

<b>Field</b>	<b>Description</b>
Traffic Class Name	Enter a name for the traffic class.
Rule Order	Last is the only option.
Rule Status	Disable or enable the rule.
<b>Classification Criteria</b>	
Class Interface	Select an interface (i.e. Local, eth0-4, wlo)
Ether Type	Set the Ethernet type (e.g. IP, ARP, IPv6).
Source MAC Address	A packet belongs to SET-1, if a binary-AND of its source MAC address with the Source MAC Mask is equal to the binary-AND of the Source MAC Mask and this field.
Source MAC Mask	This is the mask used to decide how many bits are checked in Source MAC Address.

Field	Description
Destination MAC Address	A packet belongs to SET-1 then the result that the Destination MAC Address of its header binary-AND to the Destination MAC Mask must equal to the result that this field binary-AND to the Destination MAC Mask.
Destination MAC Mask	This is the mask used to decide how many bits are checked in Destination MAC Address.
<b>Classification Results</b>	
Specify Class Queue	Select corresponding queue to deliver outgoing traffic.
Mark Differentiated Service Code Point	The selected Code Point gives the corresponding priority to packets that satisfy the rule.
Mark 802.1p Priority	Select between 0-7. Lower values have higher priority.

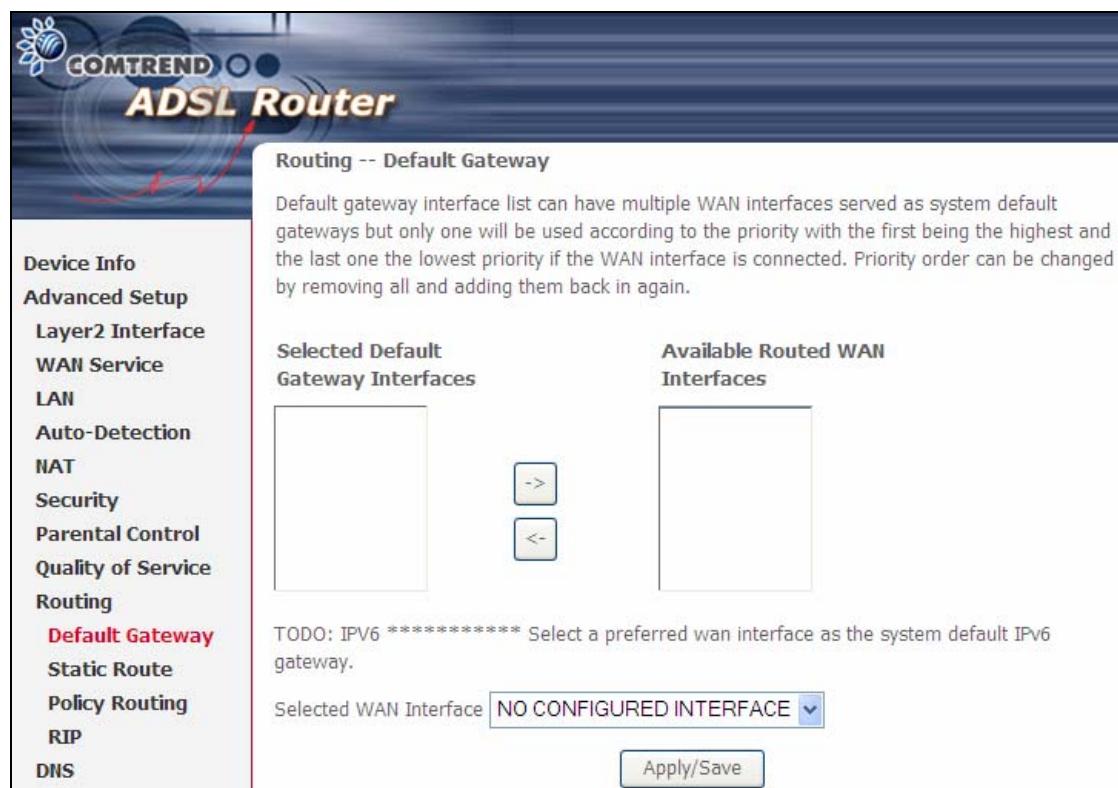
## 5.9 Routing

These following routing functions are accessed from this menu:  
**Default Gateway, Static Route, Policy Routing** and **RIP**.

**NOTE:** In bridge mode, the **RIP** menu option is hidden while the other menu options are shown but ineffective.

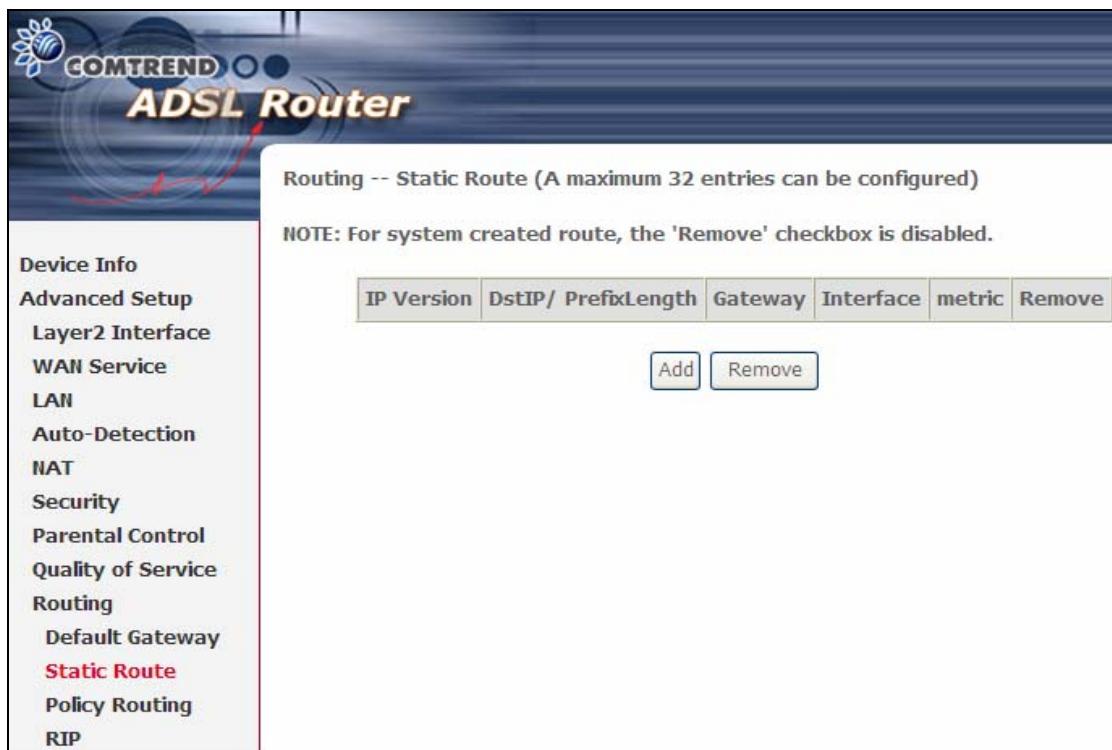
### 5.9.1 Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the highest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

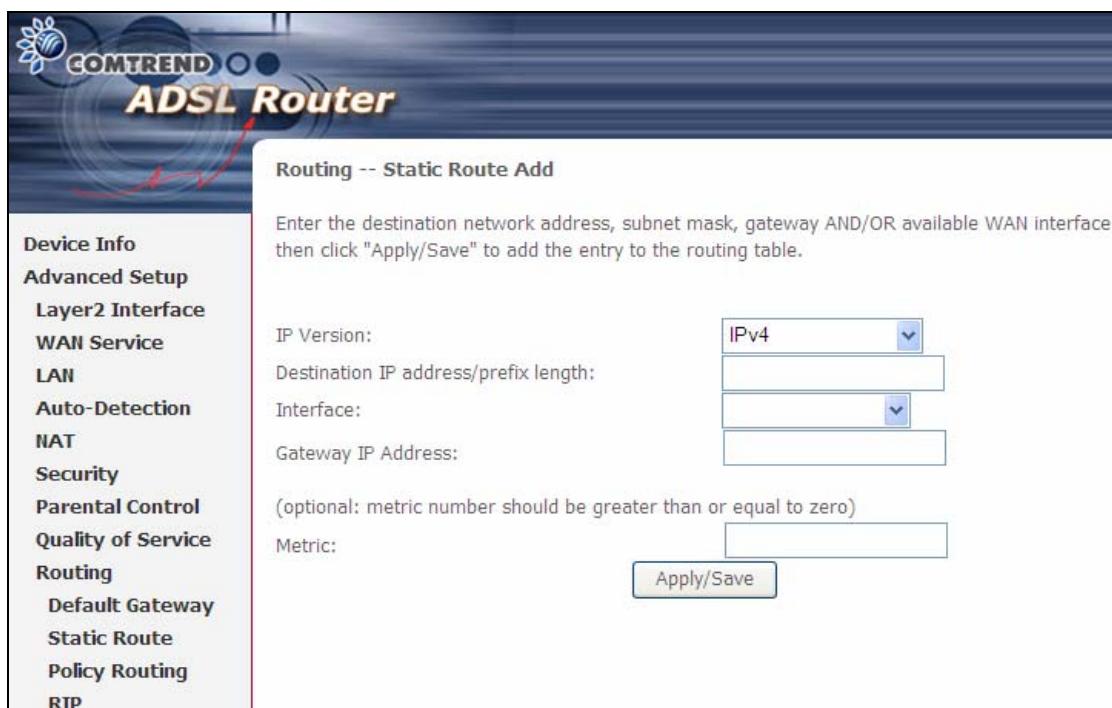


## 5.9.2 Static Route

This option allows for the configuration of static routes by destination IP. Click **Add** to create a static route or click **Remove** to delete a static route.



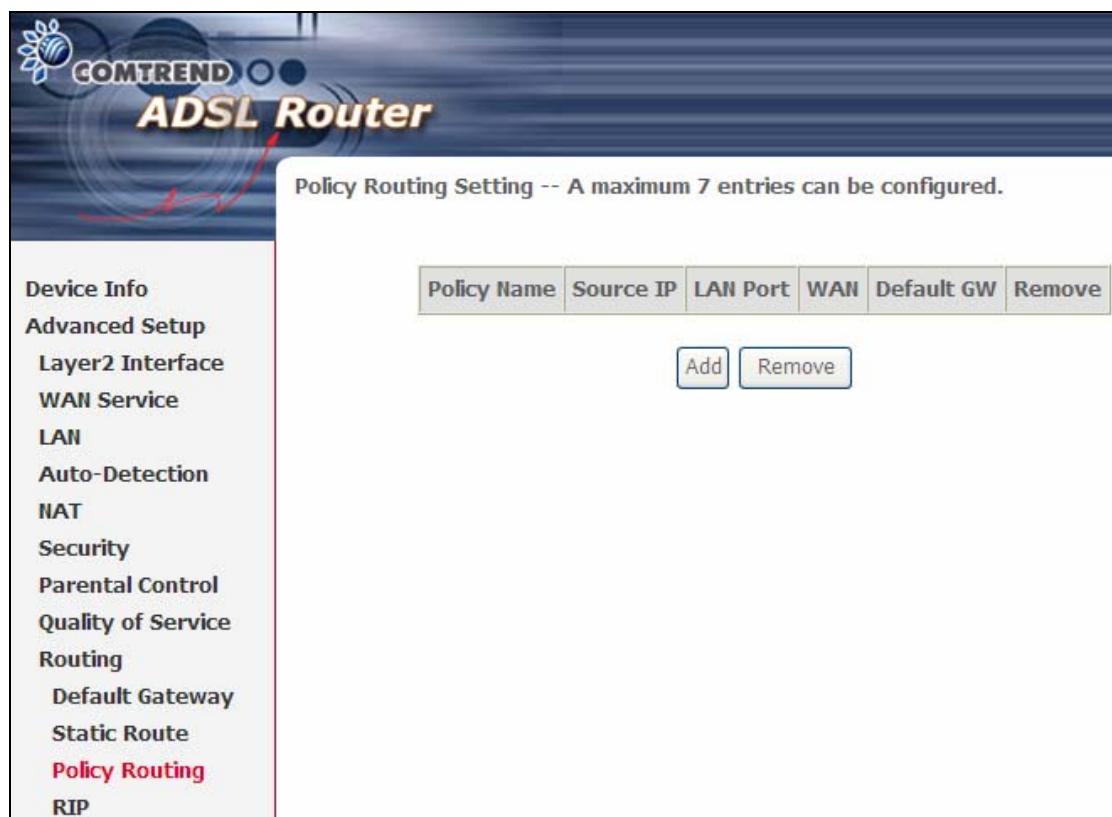
After clicking **Add** the following screen will display.



Input the Destination IP Address, select the interface type, Input the Gateway IP, (and the Metric number if required). Then, click **Apply/Save** to add an entry to the routing table.

### 5.9.3 Policy Routing

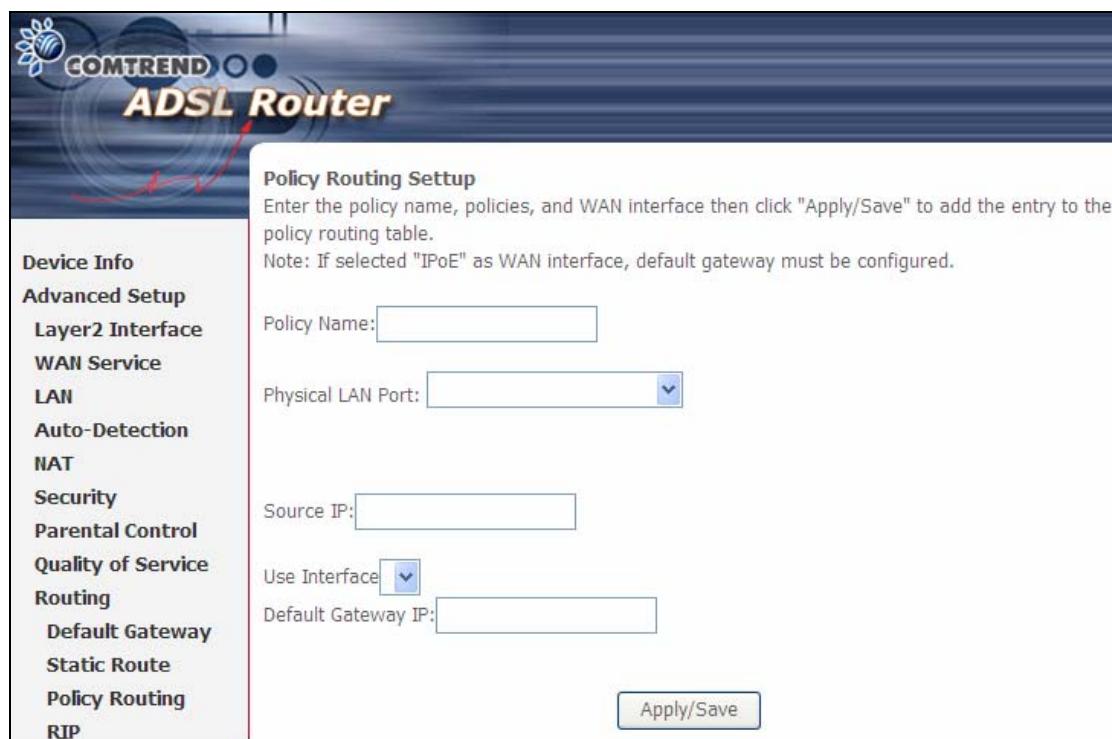
This option allows for the configuration of static routes by policy. Click **Add** to create a routing policy or **Remove** to delete one.



Policy Name	Source IP	LAN Port	WAN	Default GW	Remove

Add    Remove

On the following screen, complete the form and click **Apply/Save** to create a policy.



Policy Routing Setup  
Enter the policy name, policies, and WAN interface then click "Apply/Save" to add the entry to the policy routing table.  
Note: If selected "IPoE" as WAN interface, default gateway must be configured.

Policy Name:

Physical LAN Port:

Source IP:

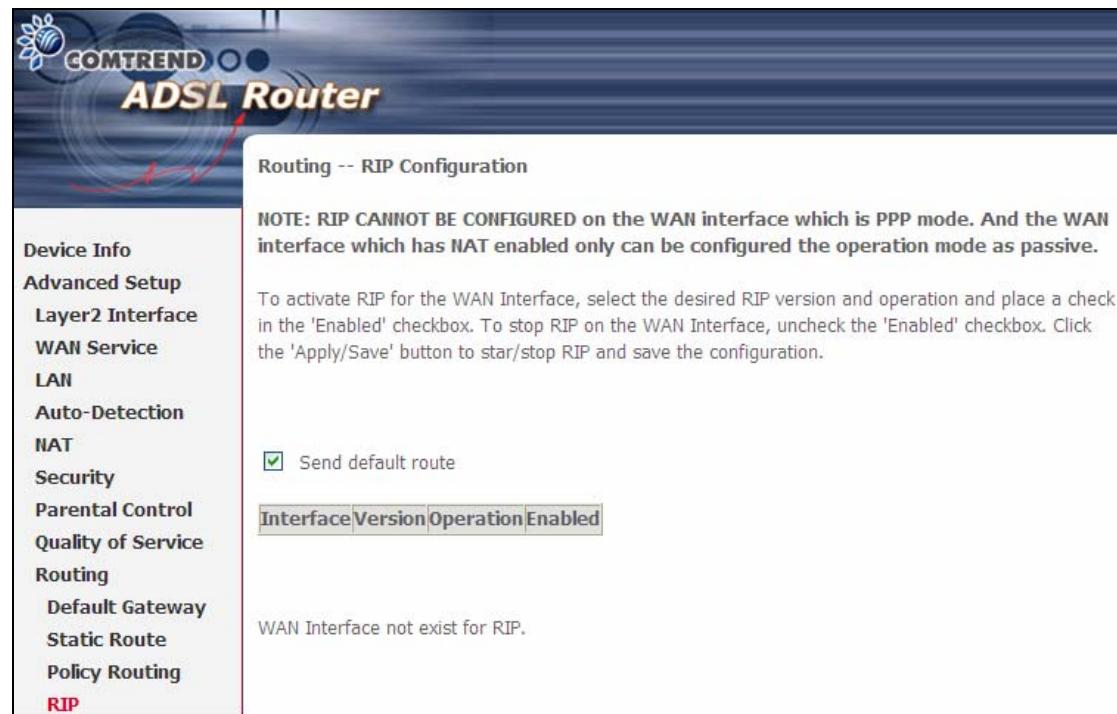
Use Interface

Default Gateway IP:

Apply/Save

## 5.9.4 RIP

To activate RIP, configure the RIP version/operation mode and select the **Enabled** checkbox  for at least one WAN interface before clicking **Save/Apply**.



**ROUTING -- RIP Configuration**

**NOTE:** RIP CANNOT BE CONFIGURED on the WAN interface which is PPP mode. And the WAN interface which has NAT enabled only can be configured the operation mode as passive.

To activate RIP for the WAN Interface, select the desired RIP version and operation and place a check in the 'Enabled' checkbox. To stop RIP on the WAN Interface, uncheck the 'Enabled' checkbox. Click the 'Apply/Save' button to star/stop RIP and save the configuration.

Send default route

Interface	Version	Operation	Enabled
-----------	---------	-----------	---------

WAN Interface not exist for RIP.

## 5.10 DNS

### 5.10.1 DNS Server

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.

**DNS Server Interfaces** can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the highest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

**DNS Server Configuration**

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.

**DNS Server Interfaces** can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the highest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Select DNS Server Interface from available WAN interfaces:

Selected DNS Server Interfaces

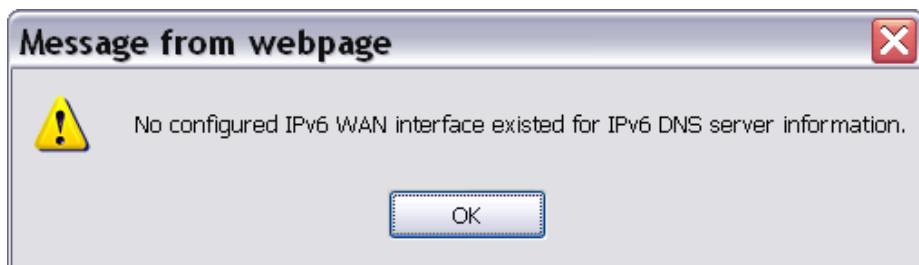
Available WAN Interfaces

Use the following Static DNS IP address:

Primary DNS server: [ ]

Secondary DNS server: [ ]

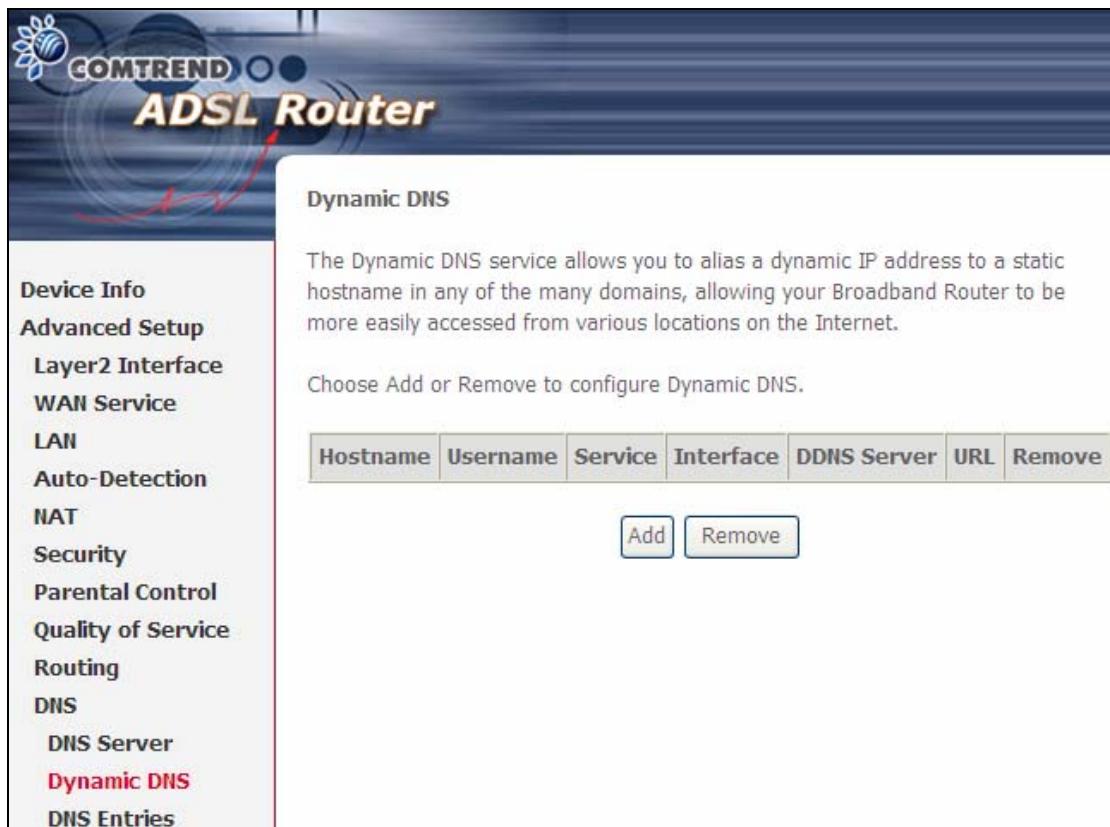
Apply/Save



If no IPv6 WAN interface is configured, a warning message system will pop up when accessing DNS Server.

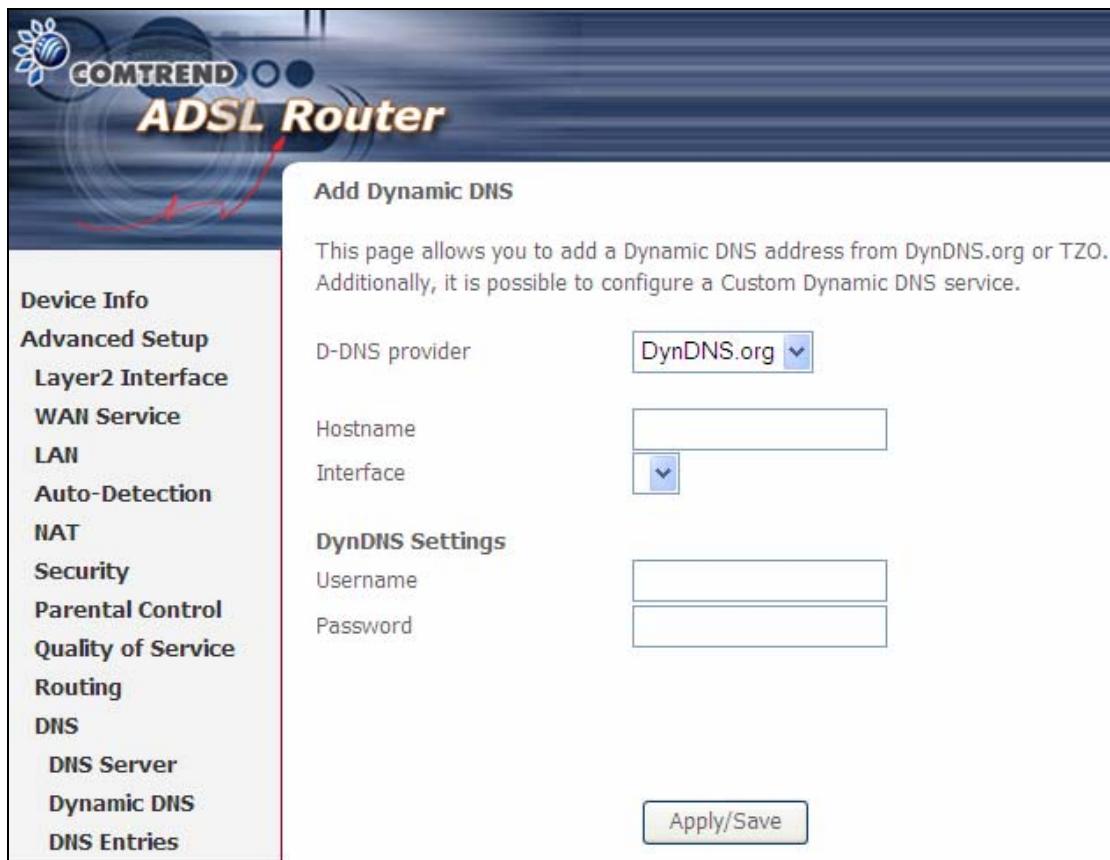
### 5.10.2 Dynamic DNS

The Dynamic DNS service allows you to map a dynamic IP address to a static hostname in any of many domains, allowing the AR-5381u to be more easily accessed from various locations on the Internet.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a list of configuration options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DNS Server, Dynamic DNS (which is highlighted in red), and DNS Entries. The main content area is titled "Dynamic DNS" and contains the following text: "The Dynamic DNS service allows you to alias a dynamic IP address to a static hostname in any of the many domains, allowing your Broadband Router to be more easily accessed from various locations on the Internet." Below this text is a note: "Choose Add or Remove to configure Dynamic DNS." A table header with the following columns is shown: Hostname, Username, Service, Interface, DDNS Server, URL, and Remove. At the bottom of the table area are two buttons: "Add" and "Remove".

To add a dynamic DNS service, click **Add**. The following screen will display.



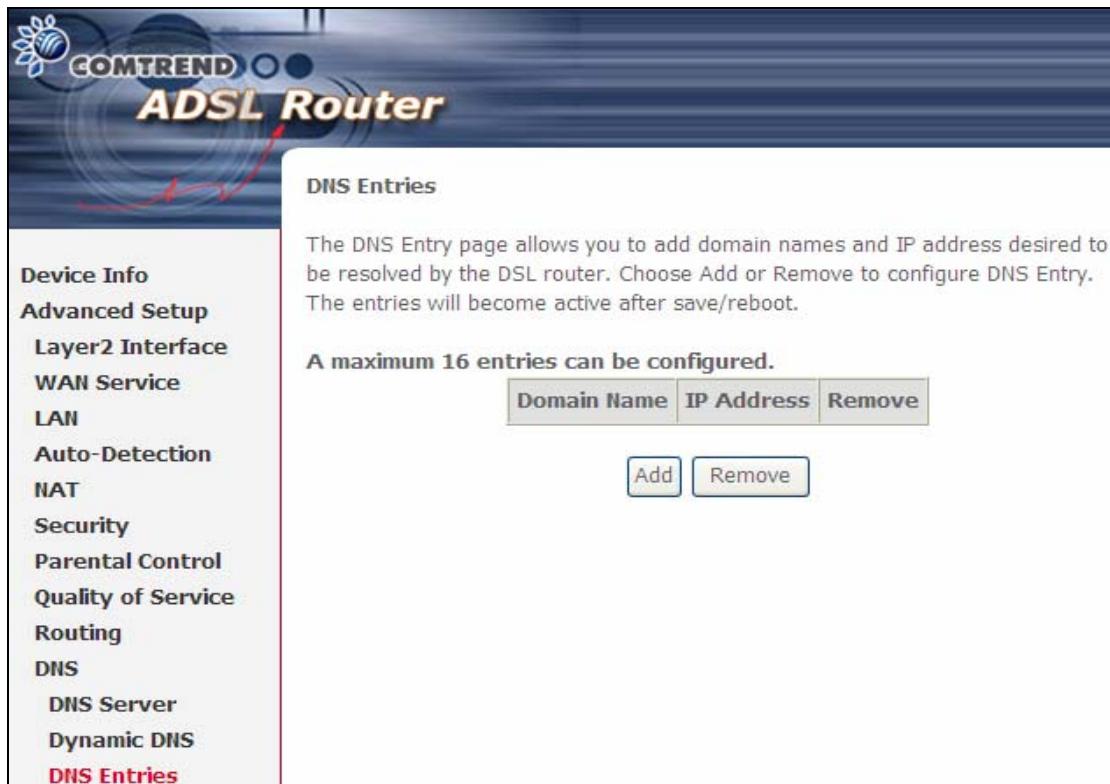
The image shows the Comtrend ADSL Router's web-based configuration interface. The left sidebar contains a navigation menu with the following items: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DNS Server, Dynamic DNS (which is highlighted in green), and DNS Entries. The main content area is titled 'Add Dynamic DNS'. It includes a brief description: 'This page allows you to add a Dynamic DNS address from DynDNS.org or TZO. Additionally, it is possible to configure a Custom Dynamic DNS service.' Below this, there are fields for 'D-DNS provider' (set to 'DynDNS.org'), 'Hostname' (input field), 'Interface' (dropdown menu), 'DynDNS Settings' (grouped under a heading), 'Username' (input field), and 'Password' (input field). At the bottom right is a 'Apply/Save' button.

Consult the table below for field descriptions.

Field	Description
D-DNS provider	Select a dynamic DNS provider from the list
Hostname	Enter the name of the dynamic DNS server
Interface	Select the interface from the list
Username	Enter the username of the dynamic DNS server
Password	Enter the password of the dynamic DNS server

### 5.10.3 DNS Entries

The DNS Entry page allows you to add domain names and IP address desired to be resolved by the DSL router.



The DNS Entry page allows you to add domain names and IP address desired to be resolved by the DSL router. Choose Add or Remove to configure DNS Entry. The entries will become active after save/reboot.

A maximum 16 entries can be configured.

Domain Name	IP Address	Remove
-------------	------------	--------

Add Remove

Choose Add or Remove to configure DNS Entry. The entries will become active after save/reboot.



Enter the domain name and IP address that needs to be resolved locally, and click 'Add Entry.'

Domain Name	IP Address
-------------	------------

Add Entry

Enter the domain name and IP address that needs to be resolved locally, and click the **Add Entry** button.

## 5.11 DSL

The DSL Settings screen allows for the selection of DSL modulation modes. For optimum performance, the modes selected should match those of your ISP.

**DSL Settings**

Select the modulation below.

G.Dmt Enabled  
 G.lite Enabled  
 T1.413 Enabled  
 ADSL2 Enabled  
 AnnexL Enabled  
 ADSL2+ Enabled  
 AnnexM Enabled

Select the phone line pair below.

Inner pair  
 Outer pair

Capability

Bitswap Enable  
 SRA Enable

Select DSL LED behavior

Normal(TR-68 compliant)  
 Off

G.997.1 EOC xTU-R Serial Number

Equipment Serial Number  
 Equipment MAC Address

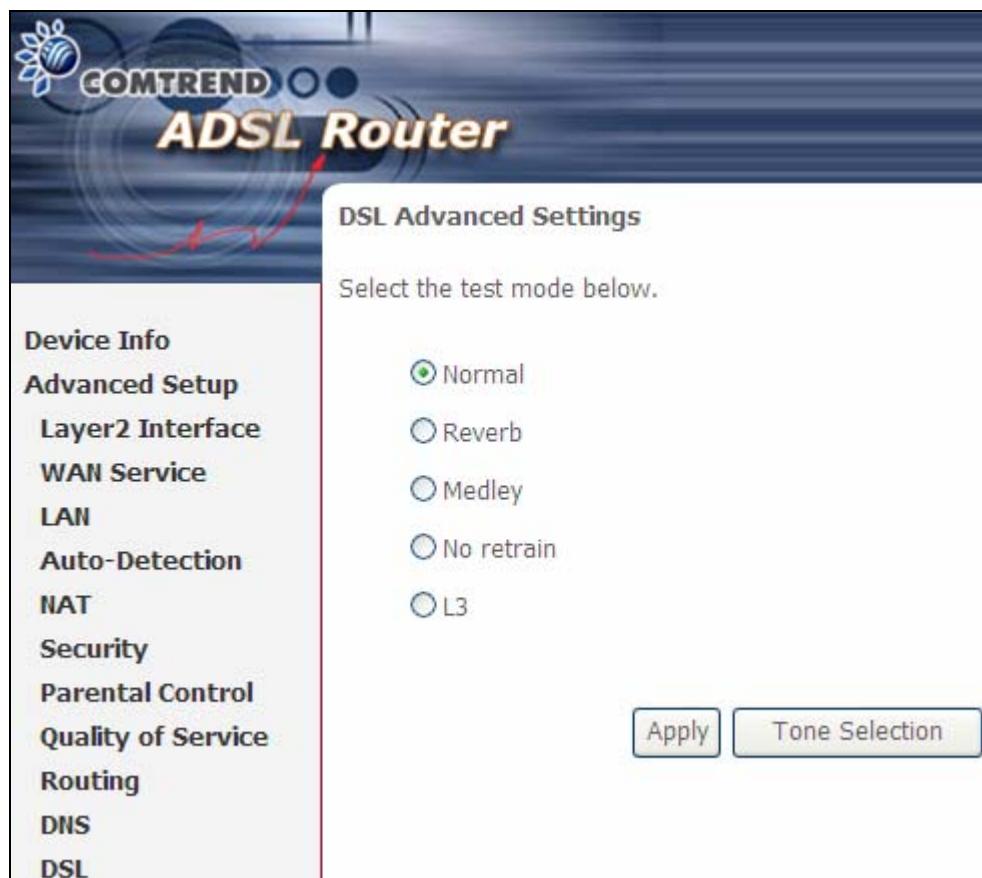
**Apply/Save** **Advanced Settings**

DSL Mode	Data Transmission Rate - Mbps (Megabits per second)	
G.Dmt	Downstream: 12 Mbps	Upstream: 1.3 Mbps
G.lite	Downstream: 4 Mbps	Upstream: 0.5 Mbps
T1.413	Downstream: 8 Mbps	Upstream: 1.0 Mbps
ADSL2	Downstream: 12 Mbps	Upstream: 1.0 Mbps
AnnexL	Supports longer loops but with reduced transmission rates	
ADSL2+	Downstream: 24 Mbps	Upstream: 1.0 Mbps
AnnexM	Downstream: 24 Mbps	Upstream: 3.5 Mbps
Options	Description	
Inner/Outer Pair	Select the inner or outer pins of the twisted pair (RJ11 cable)	
Bitswap Enable	Enables adaptive handshaking functionality	

DSL Mode	Data Transmission Rate - Mbps (Megabits per second)
SRA Enable	Enables Seamless Rate Adaptation (SRA)
DSL LED behavior	Normal (TR-68 compliant) – DSL LED blink/on/off following TR-68 standard Off – always turn off DSL LED
G997.1 EOC xTU-R Serial Number	Select Equipment Serial Number or Equipment MAC Address to use router's serial number or MAC address in ADSL EOC messages

### Advanced DSL Settings

Click **Advanced Settings** to reveal additional options. On the following screen you can select a test mode or modify tones by clicking **Tone Selection**. Click **Apply** to implement these settings and return to the previous screen.



On this screen you select the tones you want activated, then click **Apply** and **Close**.

http://192.168.1.1/adslcfgtone.html - Windows Internet Explorer

http://192.168.1.1/adslcfgtone.html

ADSL Tone Settings

Upstream Tones	
<input checked="" type="checkbox"/> 0	<input checked="" type="checkbox"/> 1
<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 3
<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/> 5
<input checked="" type="checkbox"/> 6	<input checked="" type="checkbox"/> 7
<input checked="" type="checkbox"/> 8	<input checked="" type="checkbox"/> 9
<input checked="" type="checkbox"/> 10	<input checked="" type="checkbox"/> 11
<input checked="" type="checkbox"/> 12	<input checked="" type="checkbox"/> 13
<input checked="" type="checkbox"/> 14	<input checked="" type="checkbox"/> 15
<input checked="" type="checkbox"/> 16	<input checked="" type="checkbox"/> 17
<input checked="" type="checkbox"/> 18	<input checked="" type="checkbox"/> 19
<input checked="" type="checkbox"/> 20	<input checked="" type="checkbox"/> 21
<input checked="" type="checkbox"/> 22	<input checked="" type="checkbox"/> 23
<input checked="" type="checkbox"/> 24	<input checked="" type="checkbox"/> 25
<input checked="" type="checkbox"/> 26	<input checked="" type="checkbox"/> 27
<input checked="" type="checkbox"/> 28	<input checked="" type="checkbox"/> 29
<input checked="" type="checkbox"/> 30	<input checked="" type="checkbox"/> 31

Downstream Tones	
<input checked="" type="checkbox"/> 32	<input checked="" type="checkbox"/> 33
<input checked="" type="checkbox"/> 34	<input checked="" type="checkbox"/> 35
<input checked="" type="checkbox"/> 36	<input checked="" type="checkbox"/> 37
<input checked="" type="checkbox"/> 38	<input checked="" type="checkbox"/> 39
<input checked="" type="checkbox"/> 40	<input checked="" type="checkbox"/> 41
<input checked="" type="checkbox"/> 42	<input checked="" type="checkbox"/> 43
<input checked="" type="checkbox"/> 44	<input checked="" type="checkbox"/> 45
<input checked="" type="checkbox"/> 46	<input checked="" type="checkbox"/> 47
<input checked="" type="checkbox"/> 48	<input checked="" type="checkbox"/> 49
<input checked="" type="checkbox"/> 50	<input checked="" type="checkbox"/> 51
<input checked="" type="checkbox"/> 52	<input checked="" type="checkbox"/> 53
<input checked="" type="checkbox"/> 54	<input checked="" type="checkbox"/> 55
<input checked="" type="checkbox"/> 56	<input checked="" type="checkbox"/> 57
<input checked="" type="checkbox"/> 58	<input checked="" type="checkbox"/> 59
<input checked="" type="checkbox"/> 60	<input checked="" type="checkbox"/> 61
<input checked="" type="checkbox"/> 62	<input checked="" type="checkbox"/> 63
<input checked="" type="checkbox"/> 64	<input checked="" type="checkbox"/> 65
<input checked="" type="checkbox"/> 66	<input checked="" type="checkbox"/> 67
<input checked="" type="checkbox"/> 68	<input checked="" type="checkbox"/> 69
<input checked="" type="checkbox"/> 70	<input checked="" type="checkbox"/> 71
<input checked="" type="checkbox"/> 72	<input checked="" type="checkbox"/> 73
<input checked="" type="checkbox"/> 74	<input checked="" type="checkbox"/> 75
<input checked="" type="checkbox"/> 76	<input checked="" type="checkbox"/> 77
<input checked="" type="checkbox"/> 78	<input checked="" type="checkbox"/> 79
<input checked="" type="checkbox"/> 80	<input checked="" type="checkbox"/> 81
<input checked="" type="checkbox"/> 82	<input checked="" type="checkbox"/> 83
<input checked="" type="checkbox"/> 84	<input checked="" type="checkbox"/> 85
<input checked="" type="checkbox"/> 86	<input checked="" type="checkbox"/> 87
<input checked="" type="checkbox"/> 88	<input checked="" type="checkbox"/> 89
<input checked="" type="checkbox"/> 90	<input checked="" type="checkbox"/> 91
<input checked="" type="checkbox"/> 92	<input checked="" type="checkbox"/> 93
<input checked="" type="checkbox"/> 94	<input checked="" type="checkbox"/> 95
<input checked="" type="checkbox"/> 96	<input checked="" type="checkbox"/> 97
<input checked="" type="checkbox"/> 98	<input checked="" type="checkbox"/> 99
<input checked="" type="checkbox"/> 100	<input checked="" type="checkbox"/> 101
<input checked="" type="checkbox"/> 102	<input checked="" type="checkbox"/> 103
<input checked="" type="checkbox"/> 104	<input checked="" type="checkbox"/> 105
<input checked="" type="checkbox"/> 106	<input checked="" type="checkbox"/> 107
<input checked="" type="checkbox"/> 108	<input checked="" type="checkbox"/> 109
<input checked="" type="checkbox"/> 109	<input checked="" type="checkbox"/> 110
<input checked="" type="checkbox"/> 111	
<input checked="" type="checkbox"/> 112	<input checked="" type="checkbox"/> 113
<input checked="" type="checkbox"/> 114	<input checked="" type="checkbox"/> 115
<input checked="" type="checkbox"/> 116	<input checked="" type="checkbox"/> 117
<input checked="" type="checkbox"/> 118	<input checked="" type="checkbox"/> 119
<input checked="" type="checkbox"/> 120	<input checked="" type="checkbox"/> 121
<input checked="" type="checkbox"/> 122	<input checked="" type="checkbox"/> 123
<input checked="" type="checkbox"/> 124	<input checked="" type="checkbox"/> 125
<input checked="" type="checkbox"/> 126	<input checked="" type="checkbox"/> 127
<input checked="" type="checkbox"/> 128	<input checked="" type="checkbox"/> 129
<input checked="" type="checkbox"/> 130	<input checked="" type="checkbox"/> 131
<input checked="" type="checkbox"/> 132	<input checked="" type="checkbox"/> 133
<input checked="" type="checkbox"/> 134	<input checked="" type="checkbox"/> 135
<input checked="" type="checkbox"/> 136	<input checked="" type="checkbox"/> 137
<input checked="" type="checkbox"/> 138	<input checked="" type="checkbox"/> 139
<input checked="" type="checkbox"/> 140	<input checked="" type="checkbox"/> 141
<input checked="" type="checkbox"/> 142	<input checked="" type="checkbox"/> 143
<input checked="" type="checkbox"/> 144	<input checked="" type="checkbox"/> 145
<input checked="" type="checkbox"/> 146	<input checked="" type="checkbox"/> 147
<input checked="" type="checkbox"/> 148	<input checked="" type="checkbox"/> 149
<input checked="" type="checkbox"/> 150	<input checked="" type="checkbox"/> 151
<input checked="" type="checkbox"/> 152	<input checked="" type="checkbox"/> 153
<input checked="" type="checkbox"/> 154	<input checked="" type="checkbox"/> 155
<input checked="" type="checkbox"/> 155	<input checked="" type="checkbox"/> 156
<input checked="" type="checkbox"/> 156	<input checked="" type="checkbox"/> 157
<input checked="" type="checkbox"/> 157	<input checked="" type="checkbox"/> 158
<input checked="" type="checkbox"/> 158	<input checked="" type="checkbox"/> 159
<input checked="" type="checkbox"/> 160	<input checked="" type="checkbox"/> 161
<input checked="" type="checkbox"/> 162	<input checked="" type="checkbox"/> 163
<input checked="" type="checkbox"/> 164	<input checked="" type="checkbox"/> 165
<input checked="" type="checkbox"/> 165	<input checked="" type="checkbox"/> 166
<input checked="" type="checkbox"/> 167	<input checked="" type="checkbox"/> 168
<input checked="" type="checkbox"/> 168	<input checked="" type="checkbox"/> 169
<input checked="" type="checkbox"/> 170	<input checked="" type="checkbox"/> 171
<input checked="" type="checkbox"/> 171	<input checked="" type="checkbox"/> 172
<input checked="" type="checkbox"/> 172	<input checked="" type="checkbox"/> 173
<input checked="" type="checkbox"/> 173	<input checked="" type="checkbox"/> 174
<input checked="" type="checkbox"/> 174	<input checked="" type="checkbox"/> 175
<input checked="" type="checkbox"/> 175	
<input checked="" type="checkbox"/> 176	<input checked="" type="checkbox"/> 177
<input checked="" type="checkbox"/> 177	<input checked="" type="checkbox"/> 178
<input checked="" type="checkbox"/> 178	<input checked="" type="checkbox"/> 179
<input checked="" type="checkbox"/> 180	<input checked="" type="checkbox"/> 181
<input checked="" type="checkbox"/> 181	<input checked="" type="checkbox"/> 182
<input checked="" type="checkbox"/> 182	<input checked="" type="checkbox"/> 183
<input checked="" type="checkbox"/> 183	<input checked="" type="checkbox"/> 184
<input checked="" type="checkbox"/> 184	<input checked="" type="checkbox"/> 185
<input checked="" type="checkbox"/> 185	<input checked="" type="checkbox"/> 186
<input checked="" type="checkbox"/> 186	<input checked="" type="checkbox"/> 187
<input checked="" type="checkbox"/> 187	<input checked="" type="checkbox"/> 188
<input checked="" type="checkbox"/> 188	<input checked="" type="checkbox"/> 189
<input checked="" type="checkbox"/> 189	<input checked="" type="checkbox"/> 190
<input checked="" type="checkbox"/> 190	<input checked="" type="checkbox"/> 191
<input checked="" type="checkbox"/> 191	
<input checked="" type="checkbox"/> 192	<input checked="" type="checkbox"/> 193
<input checked="" type="checkbox"/> 193	<input checked="" type="checkbox"/> 194
<input checked="" type="checkbox"/> 194	<input checked="" type="checkbox"/> 195
<input checked="" type="checkbox"/> 195	<input checked="" type="checkbox"/> 196
<input checked="" type="checkbox"/> 196	<input checked="" type="checkbox"/> 197
<input checked="" type="checkbox"/> 197	<input checked="" type="checkbox"/> 198
<input checked="" type="checkbox"/> 198	<input checked="" type="checkbox"/> 199
<input checked="" type="checkbox"/> 199	<input checked="" type="checkbox"/> 200
<input checked="" type="checkbox"/> 200	<input checked="" type="checkbox"/> 201
<input checked="" type="checkbox"/> 201	<input checked="" type="checkbox"/> 202
<input checked="" type="checkbox"/> 202	<input checked="" type="checkbox"/> 203
<input checked="" type="checkbox"/> 203	<input checked="" type="checkbox"/> 204
<input checked="" type="checkbox"/> 204	<input checked="" type="checkbox"/> 205
<input checked="" type="checkbox"/> 205	<input checked="" type="checkbox"/> 206
<input checked="" type="checkbox"/> 206	<input checked="" type="checkbox"/> 207
<input checked="" type="checkbox"/> 207	
<input checked="" type="checkbox"/> 208	<input checked="" type="checkbox"/> 209
<input checked="" type="checkbox"/> 209	<input checked="" type="checkbox"/> 210
<input checked="" type="checkbox"/> 210	<input checked="" type="checkbox"/> 211
<input checked="" type="checkbox"/> 211	<input checked="" type="checkbox"/> 212
<input checked="" type="checkbox"/> 212	<input checked="" type="checkbox"/> 213
<input checked="" type="checkbox"/> 213	<input checked="" type="checkbox"/> 214
<input checked="" type="checkbox"/> 214	<input checked="" type="checkbox"/> 215
<input checked="" type="checkbox"/> 215	<input checked="" type="checkbox"/> 216
<input checked="" type="checkbox"/> 216	<input checked="" type="checkbox"/> 217
<input checked="" type="checkbox"/> 217	<input checked="" type="checkbox"/> 218
<input checked="" type="checkbox"/> 218	<input checked="" type="checkbox"/> 219
<input checked="" type="checkbox"/> 219	<input checked="" type="checkbox"/> 220
<input checked="" type="checkbox"/> 220	<input checked="" type="checkbox"/> 221
<input checked="" type="checkbox"/> 221	<input checked="" type="checkbox"/> 222
<input checked="" type="checkbox"/> 222	<input checked="" type="checkbox"/> 223
<input checked="" type="checkbox"/> 223	
<input checked="" type="checkbox"/> 224	<input checked="" type="checkbox"/> 225
<input checked="" type="checkbox"/> 225	<input checked="" type="checkbox"/> 226
<input checked="" type="checkbox"/> 226	<input checked="" type="checkbox"/> 227
<input checked="" type="checkbox"/> 227	<input checked="" type="checkbox"/> 228
<input checked="" type="checkbox"/> 228	<input checked="" type="checkbox"/> 229
<input checked="" type="checkbox"/> 229	<input checked="" type="checkbox"/> 230
<input checked="" type="checkbox"/> 230	<input checked="" type="checkbox"/> 231
<input checked="" type="checkbox"/> 231	<input checked="" type="checkbox"/> 232
<input checked="" type="checkbox"/> 232	<input checked="" type="checkbox"/> 233
<input checked="" type="checkbox"/> 233	<input checked="" type="checkbox"/> 234
<input checked="" type="checkbox"/> 234	<input checked="" type="checkbox"/> 235
<input checked="" type="checkbox"/> 235	<input checked="" type="checkbox"/> 236
<input checked="" type="checkbox"/> 236	<input checked="" type="checkbox"/> 237
<input checked="" type="checkbox"/> 237	<input checked="" type="checkbox"/> 238
<input checked="" type="checkbox"/> 238	<input checked="" type="checkbox"/> 239
<input checked="" type="checkbox"/> 239	
<input checked="" type="checkbox"/> 240	<input checked="" type="checkbox"/> 241
<input checked="" type="checkbox"/> 241	<input checked="" type="checkbox"/> 242
<input checked="" type="checkbox"/> 242	<input checked="" type="checkbox"/> 243
<input checked="" type="checkbox"/> 243	<input checked="" type="checkbox"/> 244
<input checked="" type="checkbox"/> 244	<input checked="" type="checkbox"/> 245
<input checked="" type="checkbox"/> 245	<input checked="" type="checkbox"/> 246
<input checked="" type="checkbox"/> 246	<input checked="" type="checkbox"/> 247
<input checked="" type="checkbox"/> 247	<input checked="" type="checkbox"/> 248
<input checked="" type="checkbox"/> 248	<input checked="" type="checkbox"/> 249
<input checked="" type="checkbox"/> 249	<input checked="" type="checkbox"/> 250
<input checked="" type="checkbox"/> 250	<input checked="" type="checkbox"/> 251
<input checked="" type="checkbox"/> 251	<input checked="" type="checkbox"/> 252
<input checked="" type="checkbox"/> 252	<input checked="" type="checkbox"/> 253
<input checked="" type="checkbox"/> 253	<input checked="" type="checkbox"/> 254
<input checked="" type="checkbox"/> 254	<input checked="" type="checkbox"/> 255

Done | Internet | 105% |

## 5.12 UPnP

Select the checkbox  provided and click **Apply/Save** to enable UPnP protocol.

COMTREND ADSL Router

UPnP Configuration

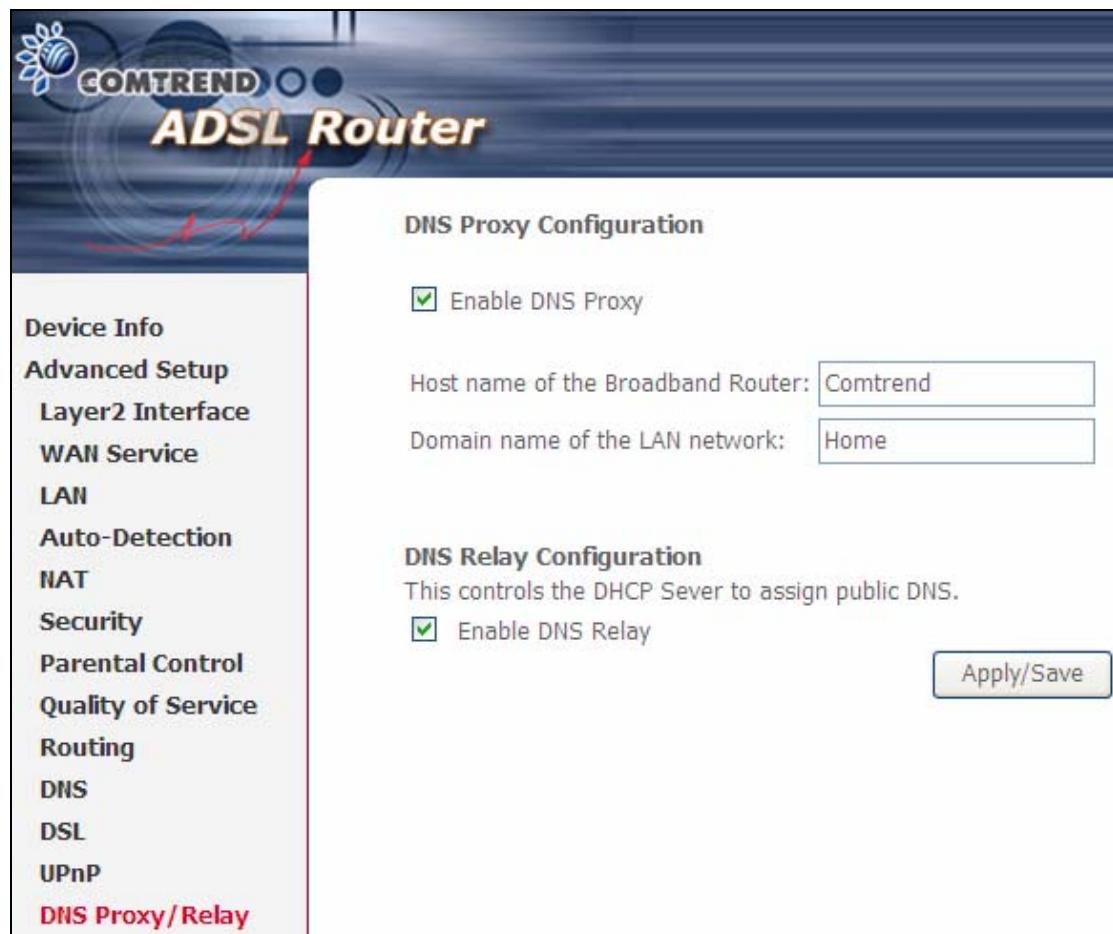
NOTE: UPnP is activated only when there is a live WAN service with NAT enabled.

Enable UPnP

Device Info  
Advanced Setup  
Layer2 Interface  
WAN Service  
LAN  
Auto-Detection  
NAT  
Security  
Parental Control  
Quality of Service  
Routing  
DNS  
DSL  
UPnP

## 5.13 DNS Proxy/Relay

DNS proxy receives DNS queries and forwards DNS queries to the Internet. After the CPE gets answers from the DNS server, it replies to the LAN clients. Configure DNS proxy with the default setting, when the PC gets an IP via DHCP, the domain name, Home, will be added to PC's DNS Suffix Search List, and the PC can access route with "Comtrend.Home".

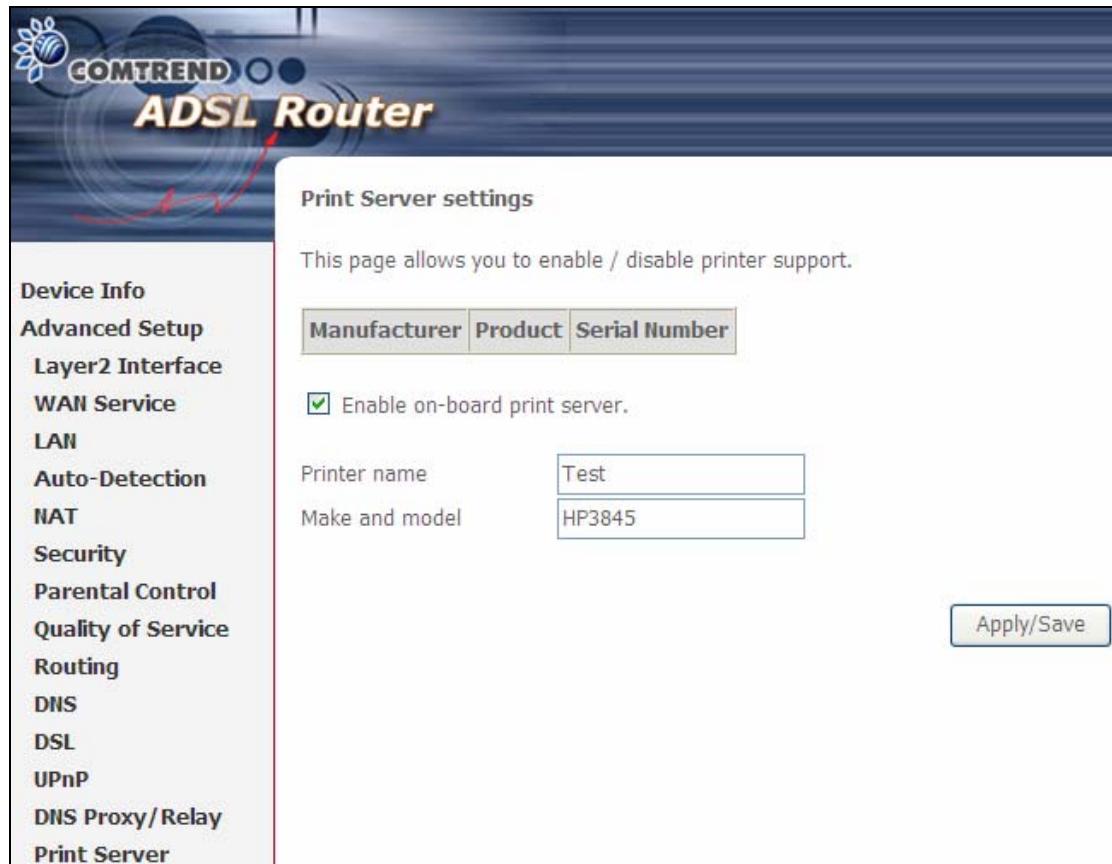


### DNS Relay

When DNS Relay is enabled, the router will play a role as DNS server that send request to ISP DNS server and cache the information for later access. When DNS relay is disabled, the computer will pull information from ISP DNS server.

## 5.14 Print Server

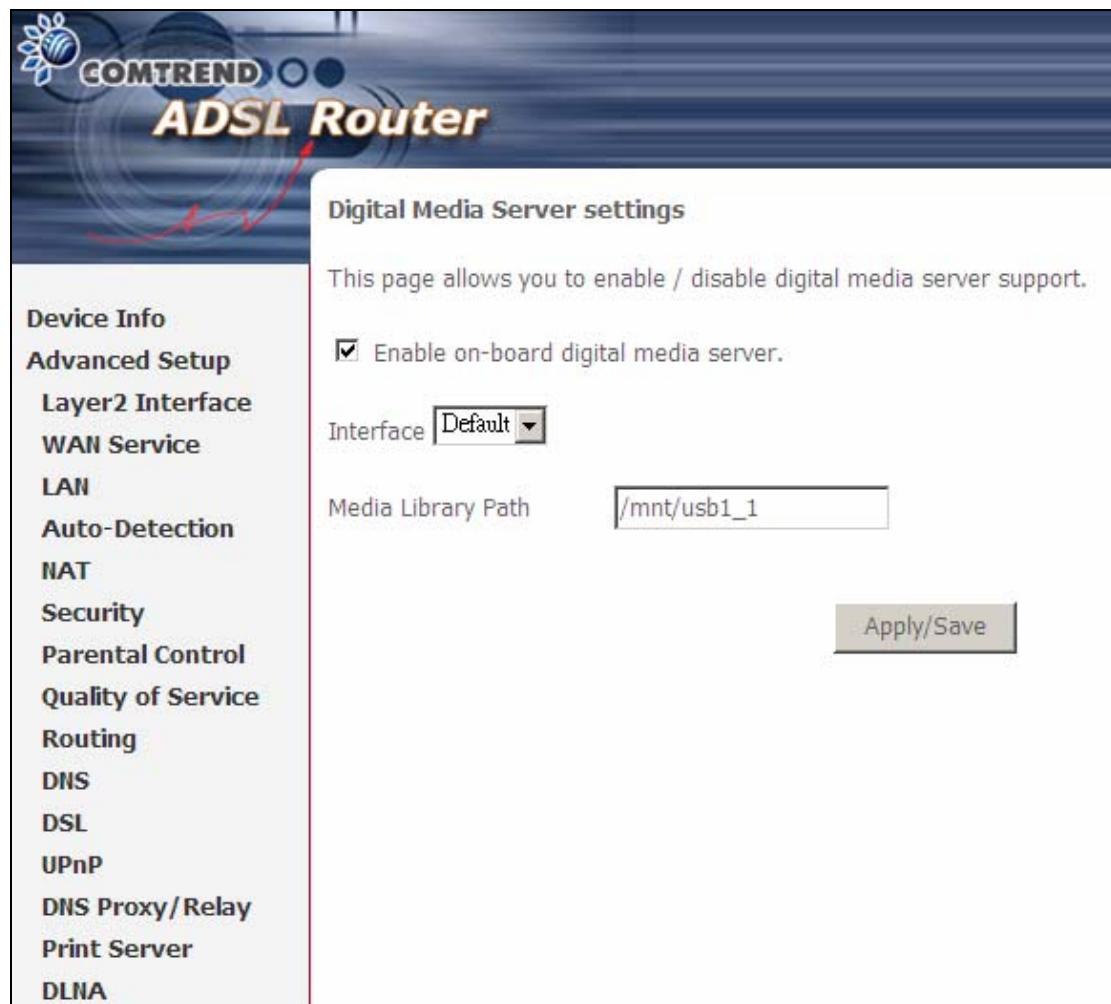
The AR-5381u can provide printer support through an optional USB2.0 host port. If your device has this port, refer to [Appendix F - Printer Server](#) for detailed setup instructions.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a list of configuration options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, and Print Server. The 'Print Server' option is selected and highlighted with a red border. The main content area is titled 'Print Server settings' and contains the following information: 'This page allows you to enable / disable printer support.' Below this is a table with three columns: 'Manufacturer', 'Product', and 'Serial Number'. The 'Product' column is currently selected and highlighted with a red border. A checkbox labeled 'Enable on-board print server.' is checked. To the right of the checkbox are two input fields: 'Printer name' containing 'Test' and 'Make and model' containing 'HP3845'. In the bottom right corner of the content area is a blue 'Apply/Save' button.

## 5.15 DLNA

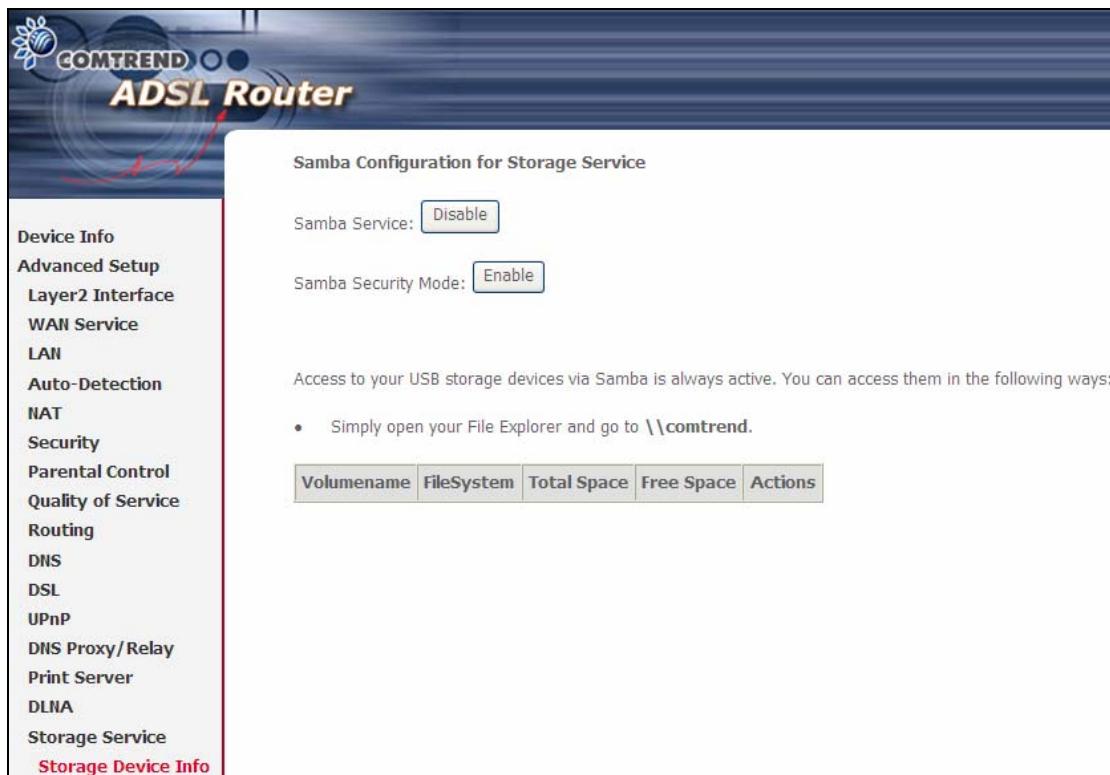
Enabling DLNA allows users to share digital media, like pictures, music and video, to other LAN devices from the digital media server.



The screenshot shows the COMTREND ADSL Router's web-based configuration interface. The left sidebar contains a list of various configuration options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, Print Server, and DLNA. The 'DLNA' option is highlighted. The main content area is titled 'Digital Media Server settings' and contains the following information: 'This page allows you to enable / disable digital media server support.' A checked checkbox labeled 'Enable on-board digital media server.' is present. Below it is a dropdown menu labeled 'Interface' with 'Default' selected. To the right of the interface dropdown is a text input field containing the path '/mnt/usb1\_1'. At the bottom right of the form is a 'Apply/Save' button.

## 5.16 Storage Service

Enabling Samba service allows the user to share files on the storage device. Different levels of user access can be configured after samba security mode is enabled. This page also displays storage devices attached to USB host.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a list of configuration options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, Print Server, DLNA, Storage Service, and Storage Device Info. The 'Storage Service' option is selected and highlighted in red. The main content area is titled 'Samba Configuration for Storage Service'. It features two buttons: 'Samba Service: '. Below these buttons is a note: 'Access to your USB storage devices via Samba is always active. You can access them in the following ways:'. A bulleted list follows: '• Simply open your File Explorer and go to \\comtrend.' Below this is a table with the following columns: Volumename, FileSystem, Total Space, Free Space, and Actions. The table currently contains one row with the values: 'usb1\_1', 'fat', '30517 MB', '19419 MB', and a button labeled 'Safely remove'.

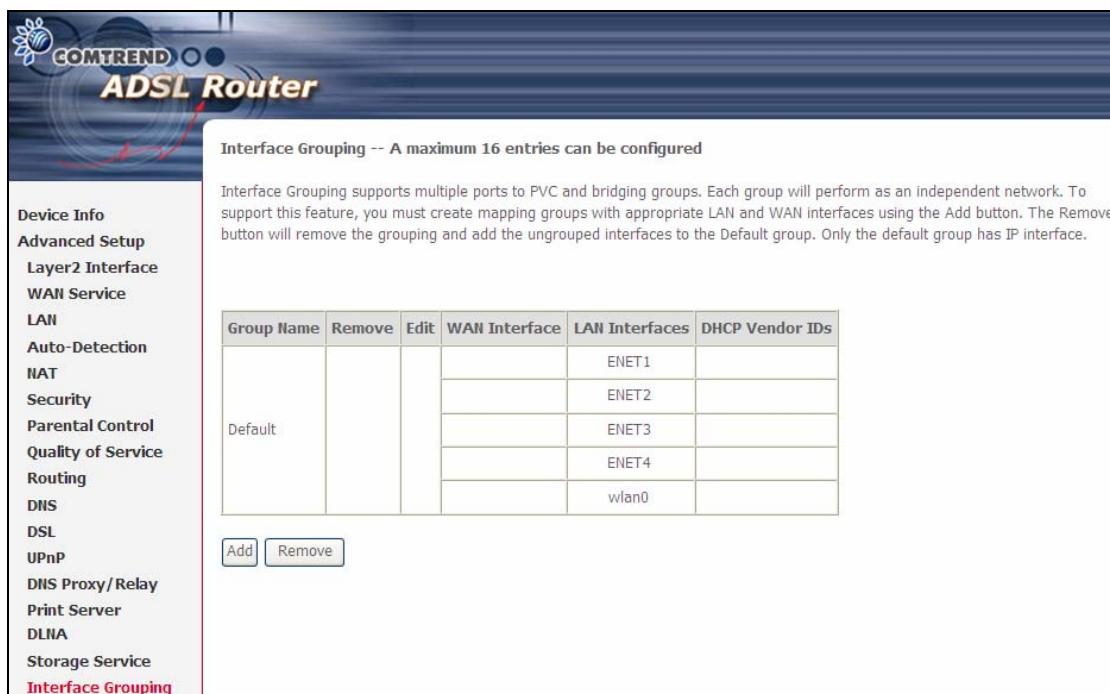
Display after storage device attached (for your reference).

Volumename	FileSystem	Total Space	Free Space	Actions
usb1_1	fat	30517 MB	19419 MB	<input type="button" value="Safely remove"/>



## 5.17 Interface Grouping

Interface Grouping supports multiple ports to PVC and bridging groups. Each group performs as an independent network. To use this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the **Add** button. The **Remove** button removes mapping groups, returning the ungrouped interfaces to the Default group. Only the default group has an IP interface.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a list of configuration options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, Print Server, DLNA, Storage Service, and Interface Grouping. The 'Interface Grouping' option is highlighted in red. The main content area has a title 'Interface Grouping -- A maximum 16 entries can be configured'. Below this is a descriptive text block. A table lists the grouped interfaces. At the bottom of the table are 'Add' and 'Remove' buttons.

Group Name	Remove	Edit	WAN Interface	LAN Interfaces	DHCP Vendor IDs
Default				ENET1	
				ENET2	
				ENET3	
				ENET4	
				wlan0	

**Add** **Remove**

To add an Interface Group, click the **Add** button. The following screen will appear. It lists the available and grouped interfaces. Follow the instructions shown onscreen.

**COMTREND** **ADSL Router**

**Interface grouping Configuration**

To create a new interface group:

1. Enter the Group name and the group name must be unique and select either 2. (dynamic) or 3. (static) below:
2. If you like to automatically add LAN clients to a WAN Interface in the new group add the DHCP vendor ID string. By configuring a DHCP vendor ID string any DHCP client request with the specified vendor ID (DHCP option 60) will be denied an IP address from the local DHCP server.
3. Select interfaces from the available interface list and add it to the grouped interface list using the arrow buttons to create the required mapping of the ports. **Note that these clients may obtain public IP addresses**
4. Click Apply/Save button to make the changes effective immediately

**IMPORTANT** If a vendor ID is configured for a specific client device, please REBOOT the client device attached to the modem to allow it to obtain an appropriate IP address.

Group Name:

<b>Grouped WAN Interfaces</b> <div style="border: 1px solid #ccc; padding: 5px; height: 100px; width: 150px;"></div> <div style="text-align: right; margin-top: 5px;"> <input type="button" value="-&gt;"/> <input type="button" value="&lt;-"/> </div>	<b>Available WAN Interfaces</b> <div style="border: 1px solid #ccc; padding: 5px; height: 100px; width: 150px;"></div>
--	---

<b>Grouped LAN Interfaces</b> <div style="border: 1px solid #ccc; padding: 5px; height: 100px; width: 150px;"></div> <div style="text-align: right; margin-top: 5px;"> <input type="button" value="-&gt;"/> <input type="button" value="&lt;-"/> </div>	<b>Available LAN Interfaces</b> <div style="border: 1px solid #ccc; padding: 5px; height: 100px; width: 150px;"> <p>ENET1 ENET2 ENET3 ENET4 wlan0</p> </div>
--	---

**Automatically Add Clients With the following DHCP Vendor IDs**

### **Automatically Add Clients With Following DHCP Vendor IDs:**

Add support to automatically map LAN interfaces to PVC's using DHCP vendor ID (option 60). The local DHCP server will decline and send the requests to a remote DHCP server by mapping the appropriate LAN interface. This will be turned on when Interface Grouping is enabled.

For example, imagine there are 4 PVCs (0/33, 0/36, 0/37, 0/38). VPI/VCI=0/33 is for PPPoE while the other PVCs are for IP set-top box (video). The LAN interfaces are ENET1, ENET2, ENET3, and ENET4.

The Interface Grouping configuration will be:

1. Default: ENET1, ENET2, ENET3, and ENET4.
2. Video: nas\_0\_36, nas\_0\_37, and nas\_0\_38. The DHCP vendor ID is "Video".

If the onboard DHCP server is running on "Default" and the remote DHCP server is running on PVC 0/36 (i.e. for set-top box use only). LAN side clients can get IP addresses from the CPE's DHCP server and access the Internet via PPPoE (0/33).

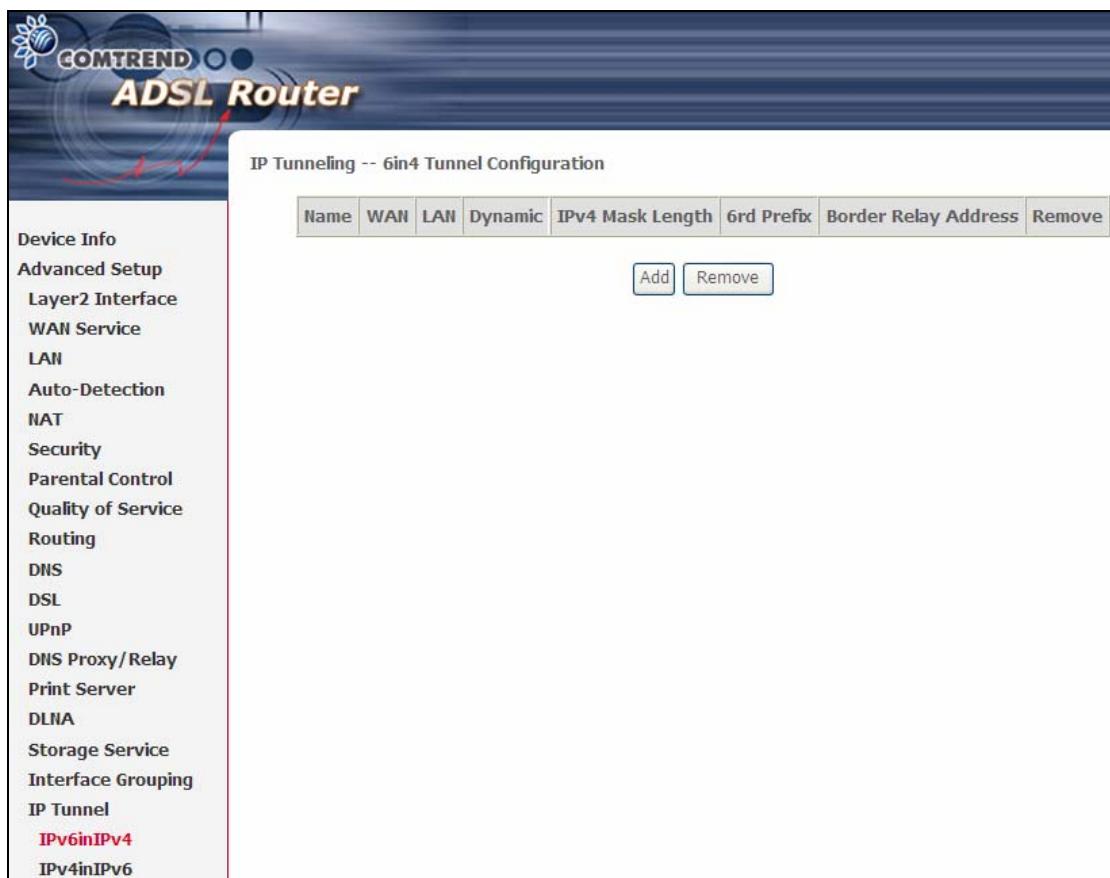
If a set-top box is connected to ENET1 and sends a DHCP request with vendor ID "Video", the local DHCP server will forward this request to the remote DHCP server. The Interface Grouping configuration will automatically change to the following:

1. Default: ENET2, ENET3, and ENET4
2. Video: nas\_0\_36, nas\_0\_37, nas\_0\_38, and ENET1.

## 5.18 IP Tunnel

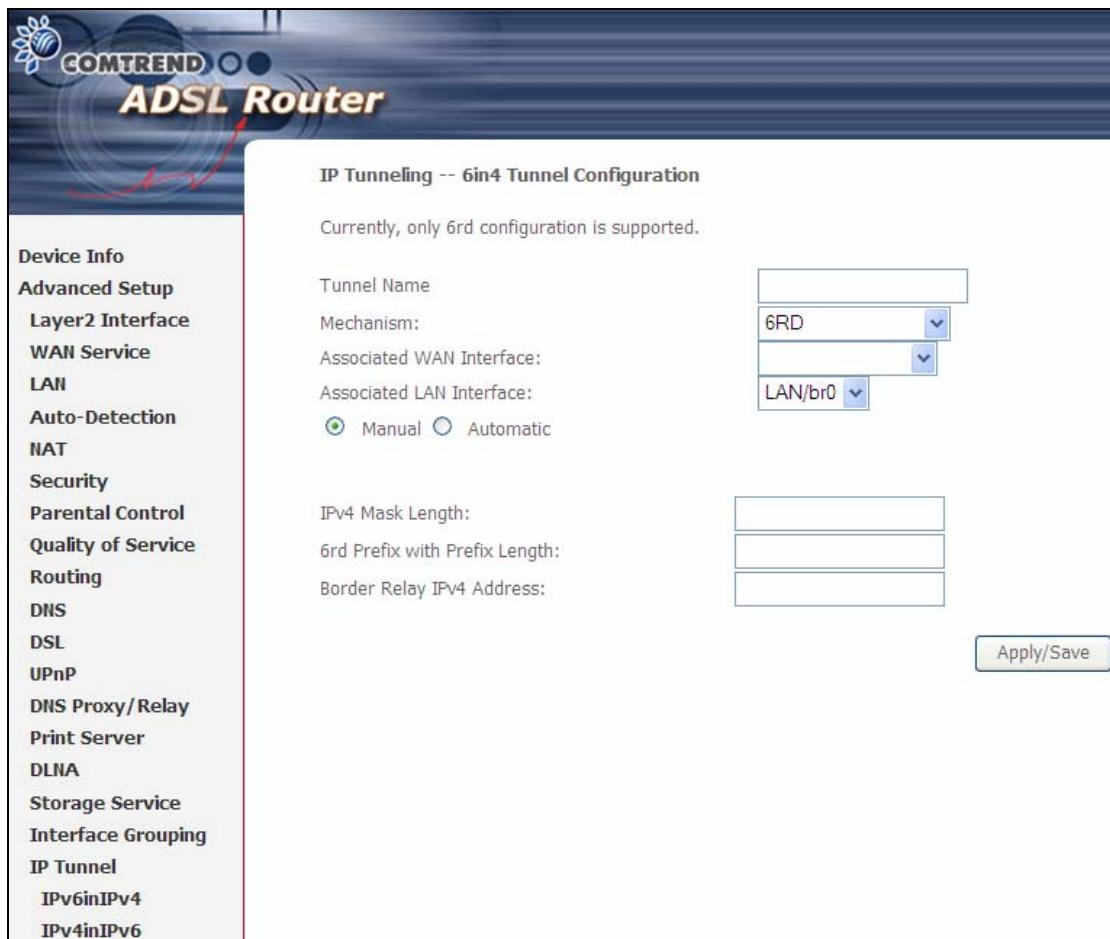
### 5.18.1 IPv6inIPv4

Configure 6in4 tunneling to encapsulate IPv6 traffic over explicitly-configured IPv4 links.



The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a navigation menu with the following items: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, Print Server, DLNA, Storage Service, Interface Grouping, IP Tunnel, **IPv6inIPv4** (which is highlighted in red), and IPv4inIPv6. The main content area is titled "IP Tunneling -- 6in4 Tunnel Configuration". It features a table with columns: Name, WAN, LAN, Dynamic, IPv4 Mask Length, 6rd Prefix, Border Relay Address, and Remove. Below the table are "Add" and "Remove" buttons. The "Add" button is highlighted with a blue border.

Click the **Add** button to display the following.

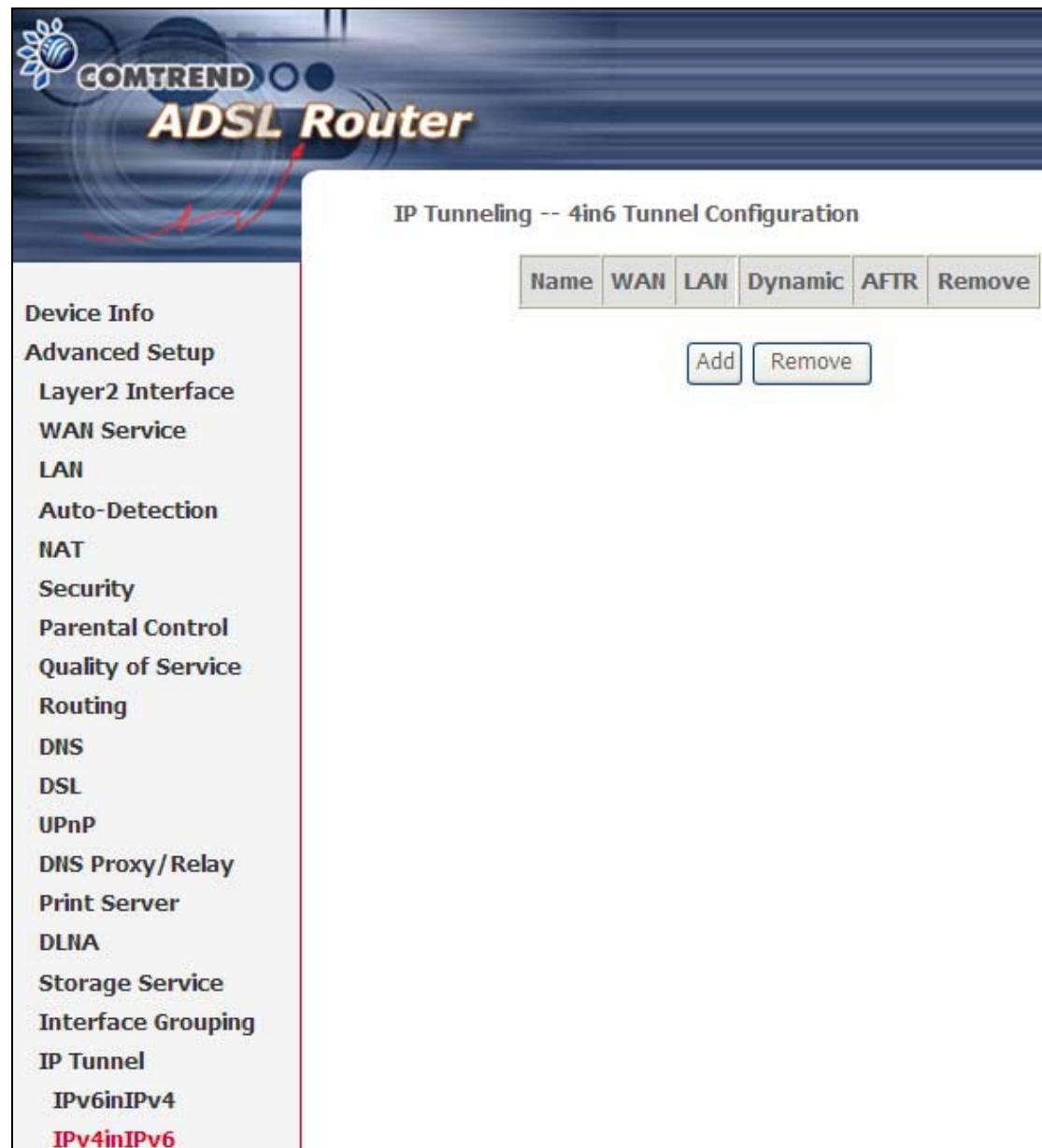


The image shows a screenshot of the COMTREND ADSL Router's IP Tunneling configuration interface. The left sidebar contains a list of various configuration options. The main panel is titled "IP Tunneling -- 6in4 Tunnel Configuration" and displays fields for setting up a 6in4 tunnel. The fields include "Tunnel Name" (set to "6RD"), "Mechanism" (set to "6RD"), "Associated WAN Interface" (set to "LAN/br0"), "Associated LAN Interface" (set to "LAN/br0" with "Manual" selected), and "IPv4 Mask Length", "6rd Prefix with Prefix Length", and "Border Relay IPv4 Address" (all three fields are empty). An "Apply/Save" button is located at the bottom right of the main panel.

Options	Description
Tunnel Name	Input a name for the tunnel
Mechanism	Mechanism used by the tunnel deployment
Associated WAN Interface	Select the WAN interface to be used by the tunnel
Associated LAN Interface	Select the LAN interface to be included in the tunnel
Manual/Automatic	Select automatic for point-to-multipoint tunneling / manual for point-to-point tunneling
IPv4 Mask Length	The subnet mask length used for the IPv4 interface
6rd Prefix with Prefix Length	Prefix and prefix length used for the IPv6 interface
Border Relay IPv4 Address	Input the IPv4 address of the other device

## 5.18.2 IPv4inIPv6

Configure 4in6 tunneling to encapsulate IPv4 traffic over an IPv6-only environment.



Click the **Add** button to display the following.

**COMTREND** **ADSL Router**

**IP Tunneling -- 4in6 Tunnel Configuration**

Currently, only DS-Lite configuration is supported.

Tunnel Name:

Mechanism:

Associated WAN Interface:

Associated LAN Interface:

Manual  Automatic

AFTR:

**Device Info**  
**Advanced Setup**  
**Layer2 Interface**  
**WAN Service**  
**LAN**  
**Auto-Detection**  
**NAT**  
**Security**  
**Parental Control**  
**Quality of Service**  
**Routing**  
**DNS**  
**DSL**  
**UPnP**  
**DNS Proxy/Relay**  
**Print Server**  
**DLNA**  
**Storage Service**  
**Interface Grouping**  
**IP Tunnel**  
**IPv6inIPv4**  
**IPv4inIPv6**

Options	Description
Tunnel Name	Input a name for the tunnel
Mechanism	Mechanism used by the tunnel deployment
Associated WAN Interface	Select the WAN interface to be used by the tunnel
Associated LAN Interface	Select the LAN interface to be included in the tunnel
Manual/Automatic	Select automatic for point-to-multipoint tunneling / manual for point-to-point tunneling
AFTR	Address of Address Family Translation Router

## 5.19 IPSec

You can add, edit or remove IPSec tunnel mode connections from this page.

The screenshot shows the COMTREND ADSL Router web interface. The left sidebar contains a list of configuration options: Device Info, Advanced Setup, Layer2 Interface, WAN Service, LAN, Auto-Detection, NAT, Security, Parental Control, Quality of Service, Routing, DNS, DSL, UPnP, DNS Proxy/Relay, Print Server, DLNA, Storage Service, Interface Grouping, IP Tunnel, IPv6inIPv4, IPv4inIPv6, and IPSec. The main content area is titled 'IPSec Tunnel Mode Connections' and contains the sub-instruction 'Add, remove or enable/disable IPSec tunnel connections from this page.' Below this is a table with the following columns: Connection Name, Remote Gateway, Local Addresses, Remote Addresses, and Remove. At the bottom of the table are two buttons: 'Add New Connection' and 'Remove'.

Click **Add New Connection** to add a new IPSec termination rule.

The following screen will display.