IEEE 802.11n Wireless LAN 4-port ADSL2+ Router

User's Manual

January 2011

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which
- Consult the dealer or an experienced radio/TV technician for help. the receiver is connected.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of about eight inches (20cm) between the radiator and your body.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter. IEEE802.11b or 802.11g operation of this product in the USA is firmware-limited to channels 1 through 11.

Notice

Changes or modifications to the equipment, which are not approved by the party responsible for compliance could affect the user's authority to operate the equipment. Company has an on-going policy of upgrading its products and it may be possible that information in this document is not up-to-date. Please check with your local distributors for the latest information.

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Revision History

Revision

History

V1

1st Release

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1. Introduction

This full rate ADSL2+ router is an all-in-one Wireless ADSL2+ router for Home and SOHO applications. This gateway are with full-featured ADSL router that provides high-speed Internet access, 4-port Ethernet switch direct connections to individual PCs or local area network with 10/100 Base-T Ethernet and a 300Mbps IEEE802.11n wireless connectivity. WA41R uses advanced ADSL chipset solution with complete set of industry standard features for high-speed Internet access. Also built-in 300 Mbps IEEE802.11n wireless services can provide you easy and convenient way to connect the PCs and Internet. User can enjoy higher quality multimedia and real-time applications such as online gaming, Video-on-Demand, VoIP and other bandwidth consuming services. Also the feature-rich routing functions are seamlessly integrated to ADSL service for existing corporate or home users. This product is made in ISO9001 approved factory and complies with FCC part15 regulations and CE approval.

1.1 Features

High Speed Internet Access

This ADSL router complies with ADSL / ADSL2 / ADSL2+ standards. It can support downstream rates of up to 24Mbps and upstream rates of up to 1Mbps. This ADSL router is compliant with the following standards.

- ANSI T1.413 issue 2
- ITU-T G.992.1 (G.dmt)
- ITU-T G.992.2 (G.lite)
- G.994.1 (G.hs, Multimode)
- ITU-T G.992.3 (ADSL2 G.dmt.bis)
- ITU-T G.992.4 (ADSL2 G.lite.bis)
- ITU-T G.992.5 (ADSL2+; Annex A, B, L & M)
- Reach Extended ADSL (RE ADSL)

Multi-connection protocol support

- Support up to 8 PVCs
- ATM forum uni 3.1/4.0 PVC
- Multi Protocol over AAL5 (RFC1483 / 2684)
- VC and LLC Multiplexing
- PPP over Ethernet (RFC 2516)
- PPP over ATM (RFC 2364)
- Traffic shaping (ATM QoS) UBR, CBR, VBR, VBR-rt, VBR-nrt
- OAM F4 and F5 segment end-to-end loop-back, AIS, and RDI OAM cells
- VPI is 0-255 and VIC is 32-65535

Bridging / Routing support

- Ethernet to ADSL self-learning Transparent Bridging (IEEE 802.1d)
- IP routing-RIPv2 (backward compatible with RIPv1)
- Static IP routing
- Routing (TCP/IP/UDP/ARP/ICMP)
- IP Multicast IGMP v1/v2

IP Management

- NAT (Network Address Translation)
- NAPT (Network Address and Port Translation)
- DHCP Server / Relay / Client (WAN port)
- VPN (IPSec, PPTP, L2TP) Pass-Through
- DNS Proxy
- Dynamic DNS
- UPnP support
- Virtual Server (Port forwarding & DMZ host)

WLAN Network

- Compatible with IEEE 802.11n/b/g
- 64/128 bits WEP Encryption
- WPA-PSK, TKIP / WPA2-AES, PSK
- Supports Quality of Service (QoS), 802.11e, WMM
- MAC Address Filtering

Security

- PPP over PAP (Password Authentication Protocol; RFC1334)
- PPP over CHAP (Challenge Authentication Protocol; RFC1994)
- DOS Protection
- Stateful Packet Inspection (SPI)
- Built-in NAT Firewall
- IP-based Packet filtering
- Password Protected System Management

Web-Based Management

- Web-Based GUI configuration / Management
- CLI (Command Line Interface) via serial interface or Telnet over Ethernet
- Telnet Remote Management

- Firmware upgrade via FTP / TFTP
- SNMP Support
- HTTPS Support
- Built-in Diagnostic Tool
- TR-069 support

Network Address Translation (NAT)

Network Address Translation (NAT) allows the translation of an Internet protocol address used within one network (for example a private IP address used in a local network) to a different IP address known within another network (for example a public IP address used on the Internet).

Universal Plug and Play (UPnP)

Universal Plug and Play is a standard that uses Internet and Web protocols to enable devices such as PCs, peripherals, intelligent appliances, and wireless devices to be plugged into a network and automatically know about each other. This protocol is used to enable simple and robust connectivity among stand-alone devices and PCs.

• Dynamic DNS Support

With Dynamic DNS support, you can have a static hostname alias for a dynamic IP address, allowing the host to be more easily accessible from various locations on the Internet. You must register for this service with a Dynamic DNS client.

DHCP Support

DHCP (Dynamic Host Configuration Protocol) allows individual clients to obtain TCP/IP configuration at start-up from a centralized DHCP server. The ADSL router has built-in DHCP server capability enabled by default. It can assign IP addresses, an IP default gateway and DNS servers to DHCP clients. It can also act as a surrogate DHCP server (DHCP Relay) where it relays IP address assignment from the actual real DHCP server to the clients.

SNMP (Simple Network Management Protocol) Support

It's an easy way to remote control the router via SNMP.

- Multiple PVC (Permanent Virtual Circuits) Support
 - Supports OAM F4/F5 loop-back, AIS and RDI OAM cells.
 - ATM Forum UNI 3.1/4.0 PVC
 - Support up to 8PVCs.

1.2 Package Contents

- One ADSL Router
- One CD-ROM (user's manual)
- One Ethernet Cable (RJ-45)
- One phone cable (RJ-11)
- One power adapter

1.3 System Requirements

- Computers with an installed Ethernet adapter.
- Valid Internet Access account and Ethernet based DSL or Cable modem.
- 10/100Base-T Ethernet cable with RJ-45 connector.
- TCP/IP protocol must be installed on all PCs.
- System with MS Internet Explorer ver. 5.0 or later, or Netscape Navigator ver. 4.7 or later.

1.4 LEDs Indication & Connectors of Wireless Router

Front Panel LEDs Indication

ц	ADSL 💽	$ \begin{array}{c} & \\ 4 & 3 \\ 2 & 0 \\ 2 & 0 \\ 2 & 0 \\ 2 & 0 \\ 2 & 0 \\ 3 & 0 \\ 4 & 0 \\ 2 & 0 \\ 1 $
LED	Light Status	Description
PWR	On	Wireless Router is powered on.
С	Off	Wireless Router is powered off.
ADSL	On	WAN port is successfully connected
	Blinking	Data is being sent or received.
INTERNET	Blinking	Router is transferring data between Internet and
0		router
LAN	On	LAN port is successfully connected.
(1, 2, 3, 4)	Blinking	Data is being sent or received.
WLAN	Slow Blinking	WLAN is successfully connected.
(-) A	Blinking	Data is being sent or received.

Back Panel Connectors



Button/Port	Description
Reset	Reset configurations to default. You would use the reset button only when a
	program error has caused your Wireless AP router to hang. Press the button and
	hold after 6 seconds.
WPS	Click WPS button 1 to 3 seconds while you are connecting a PC of wireless adapter
	with WPS function (you must enable WPS' PBC function).
LAN	Ethernet RJ-45 connector, connect to PC with a RJ-45 Ethernet cable.
(1x, 2x, 3x, 4x)	
ADSL	Ethernet RJ-11 connector, connect to ADSL access device, such as the Cable modem
	or ADSL modem.
PWR	Power connector, connect to the power adapter packaged with the AP router.

1.5 Connect Related Device

1)Connect Router to LINE

Plug the provided **RJ-11 phone cable** into **ADSL port** on the back panel of the router and insert the other end into splitter or wall phone jack.

2)Connect Router to LAN

Plug **RJ-45 Ethernet Cable** into **LAN port** on the back panel of the router and insert the other end of the Ethernet cable on your PC's Ethernet port or switch / hub.

3)Connect Router to Power Adapter

Plug **Power Adapter** to **PWR** port on the back panel of the router and the other end to a power outlet.

Warning: Only use the power adapter is provided from this package, use other power adapter may cause hardware damage

2. PC Configuration

You can connect Wireless LAN ADSL2+ router with PC through either Ethernet cable. You can change the settings via WEB browser.

2.1 TCP/IP Networking Setup

Checking TCP/IP Settings for Windows 9x/Me

a) Select "Start → Control Panel → Network", the window below will appear,

Network ? ×				
Configuration Identification Access Control				
The following network components are installed:				
Client for Microsoft Networks				
📃 Microsoft Family Logon				
B Dial-Up Adapter				
SiS 900-Based PCI Fast Ethernet Adapter				
TCP/IP -> Dial-Up Adapter TCP/IP -> SIS 900-Based PCI Fast Ethernet Adapter				
TEP/IE > 515 300-based PCI Past Ethemer Adapter				
Add Remove Properties				
Primary Network Logon:				
Microsoft Family Logon				
Eile and Print Sharing				
Description TCP/IP is the protocol you use to connect to the Internet and wide-area networks.				
OK Cancel				

b) Click "Properties", the window below will appear and then click "IP Address" tab,

Bindings DNS Configuration An IP address can If your network doe your network admin the space below.	Gateway be automa s not autor iistrator for	, tically assi <u>c</u> matically as	onfiguration med to this sign IP add	computer. dresses, ask
An IP address can I If your network doe your network admin	be automa is not autor istrator for	, tically assi <u>c</u> matically as	ned to this sign IP add	computer. dresses, ask
If your network doe your network admin	s not autor iistrator for	matically as	sign IP add	dresses, ask
Obtain an IP a	address au	tomatically		
<u>Specify</u> an IP	address:			
[P Address:				
Subnet Mask	c -			7
				-
			ок	Cancel

- If you decide to use DHCP, select "Obtain an IP address automatically", then click "OK" to confirm your settings. Once you restart your system, Wireless Router will obtain an IP address for this system.
- If you decide to use fixed IP address for your system, select "Specify an IP address", and make sure that IP Address and Subnet Mask are correct.

c) Select "Gateway" tab and enter correct gateway address in "New gateway" field, then click "Add",

TCP/IP Properties			? ×
Bindings DNS Configuration	Advance Gateway Wi	ed NS Configuration	NetBIOS
The first gateway i The address order machines are used	in the list will be		
New gateway:	·]	Add	
_ <u>I</u> nstalled gatewa	ys:	<u>R</u> emove	
	[ОК	Cancel

d) Select "DNS Configuration" tab and make sure select "Enable DNS", enter the DNS address provides from your ISP in the "DNS Server Search Order" field, then click "Add",

TCP/IP Properties		? ×
Bindings DNS Configuration	Advanced Gateway WINS Conf	NetBIOS
© Disable DNS		
Host:	D <u>o</u> main:	
DNS Server Sea		<u>Add</u>
Domain Suffix Se	arch Order	Add
	F	emove
	40	Cancel

Checking TCI/IP Setting for Windows NT4.0

a) Select "Control Panel \rightarrow Network", window below will appear, click "Protocols" tab then select "TCP/IP protocol",

Network			? ×
Identification Se	vices Protocol	Adapters Bir	ndings
<u>N</u> etwork Protoco	ls:		
部 NetBEUI Pro る NWLink IPA る NWLink Net る <mark>TCP/IP Pro</mark>	/SPX Compatible BIOS	e Transport	
<u>A</u> dd	<u>R</u> emove	Properties	∐pdate
area network p		net Protocol. The idee communicatio a.	
		OK	Cancel
	1	12	

b) Click "Properties", window below will appe

Microsoft TCP/IP Propert	ies		? ×
IP Address DNS WINS	Address	DHCP Relay	Routing
An IP address can be aut by a DHCP server. If you ask your network administ the space below.	r network di	bes not have -	a DHCP server,
Ada <u>p</u> ter:			
PCI Fast Ethernet Adapte	ər		_
	es from a DI	HCP server	
	ISS		
[P Address:			
Sybnet Mask:			
Default <u>B</u> ateway:			
			Advanced
	ок	Cancel	Apply

- Select the network card on your system from "Adapter" field.
- If you decide to use IP address from Wireless Router, select "Obtain an IP address from a DHCP server".
- If you decide to use the IP address you are desired, select "Specify an IP address". Make sure enter correct addresses in "IP Address" and "Subnet Mask" fields.
- You must set Wireless Router's IP address as "Default Gateway".

c) To enter DNS address is provided from your ISP. Select "DNS" tab, click "Add" under "DNS Service Search Order" list, then enter DNS Server IP address in "TCP/IP DNS Server" window and click "Add".

Microsoft T0	:Р ЛР Р	roperties		? ×
IP Address	DNS	WINS Address	DHCP Relay	Routing
Domain N	ame Sye	tem (DNS)		
<u>H</u> ost Nam	ie:		Domain	
	rvice Se	arch Order		
				Lpt
				De <u>w</u> n.
Ad	d	Edit	Renove	
ТСРИРТ	INS Se	INF	? ×	
				Liet
DNS	Server:		Add	Down4
			Cancel	
				J
		OK	1	
		OK	Cancel	<u>A</u> pp ly

Checking TCP/IP Settings for Windows 2000

a) Select "Start \rightarrow Control Panel \rightarrow Network and Dial-up Connection" and right click "Local Area Connection" then click "Properties",

Local Area Connection Properties
General
Connect using:
SiS 900-Based PCI Fast Ethernet Adapter
, <u>C</u> onfigure
Components checked are used by this connection:
 Client for Microsoft Networks File and Printer Sharing for Microsoft Networks Internet Protocol (TCP/IP)
Install Uninstall Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Sho <u>w</u> icon in taskbar when connected
OK Cancel

b) Select the "Internet Protocol (TCP/IP)" for the network card on your system, then click "Properties", window below will appear.

Internet Protocol (TCP/IP) Prop	erties 🤶 🔀
General	
	automatically if your network supports d to ask your network administrator for
Obtain an IP address autom	atically
\square^{\bigcirc} Use the following IP address	:
[P address:	· · · ·
S <u>u</u> bnet mask:	
Default gateway:	· · · ·
Obtain DNS server address	automatically
Preferred DNS server:	
Alternate DNS server:	· · ·
	Ad <u>v</u> anced
	OK Cancel

- If you decide to use IP address from Wireless Router, select "Obtain an IP address automatically".
- If you decide to use the IP address you are desired, select "Use the following IP address". Make sure enter correct addresses in "IP Address" and "Subnet Mask" fields.
- You must set Wireless Router's IP address as "Default Gateway".
- If the DNS Server fields are empty, select "Use the following DNS server addresses" and enter the DNS address is provided by your ISP, then click "OK".

Checking TCP/IP Settings for Windows XP

a) Click "Start", select "Control Panel \rightarrow Network Connection" and right click "Local Area Connection" then select "Properties", window below will appear.

🕹 Local Area Connection Properties 🛛 🔹 🛛
General Authentication Advanced
Connect using:
B SiS 900-Based PCI Fast Ethernet Adapter
<u>C</u> onfigure
This connection uses the following items:
 Client for Microsoft Networks File and Printer Sharing for Microsoft Networks
Los Packet Scheduler Trinternet Protocol (TCP/IP)
Install Uninstall Properties
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in notification area when connected
OK Cancel

b) Select "Internet Protocol (TCP/IP)" then click "Properties", window below will appear.

Internet Protocol (TCP/IP) Pro	perties 🛛 🛛 🛛 🔀
General Alternate Configuration	
You can get IP settings assigned au this capability. Otherwise, you need the appropriate IP settings.	
Obtain an IP address automatic	cally
$-\bigcirc$ Use the following IP address: -	
IP address:	
S <u>u</u> bnet mask:	
Default gateway:	
⊙ 0 <u>b</u> tain DNS server address au	tomatically
Use the following DNS server a	addresses:
Preferred DNS server:	
Alternate DNS server:	· · · ·
	Ad <u>v</u> anced
	OK Cancel

- If you decide to use IP address from Wireless Router, select "Obtain an IP address automatically".
- If you decide to use the IP address you are desired, select "Use the following IP address". Make sure enter correct addresses in "IP Address" and "Subnet Mask" fields.
- You must set Wireless Router's IP address as "Default Gateway".
- If the DNS Server fields are empty, select "Use the following DNS server addresses" and enter the DNS address is provided by your ISP, then click "OK".

Checking TCP/IP Settings for Windows Vista

a) Click "Start" \rightarrow "Control Panel \rightarrow "Manage Network Connections" and right click "Local Area Connection" then select "Properties", window below will appear.

tworking Sharir	ַם	
ionnect using:		
🔮 Realtek RT	L8139/810x Family Fast Ethernet	NIC
his connection u	ses the following items:	Configure
	Microsoft Networks	
QoS Pac		
	Printer Sharing for Microsoft Netwo	orke
	TILLEL STIGHTLY TO MICLOSOIL MELW	
	Protocol Version 6 (TCP/IPv6)	onto
🗹 🔺 Internet F		on a
 ✓ A Internet F ✓ Internet F ✓ A Link-Laye 	Protocol Version 6 (TCP/IPv6) Protocol Version 4 (TCP/IPv4) er Topology Discovery Mapper I/C) Driver
 ✓ Internet F ✓ Internet F ✓ Link-Laye 	Protocol Version 6 (TCP/IPv6) Protocol Version 4 (TCP/IPv4)) Driver
 ✓ A Internet F ✓ Internet F ✓ A Link-Laye 	Protocol Version 6 (TCP/IPv6) Protocol Version 4 (TCP/IPv4) er Topology Discovery Mapper I/C) Driver
 ✓ Internet F ✓ Internet F ✓ Internet F ✓ Link-Laye ✓ Link-Laye 	Protocol Version 6 (TCP/IPv6) Protocol Version 4 (TCP/IPv4) er Topology Discovery Mapper I/C er Topology Discovery Responder) Driver
 ✓ ▲ Internet F ✓ ▲ Internet F ✓ ▲ Link-Laye ✓ ▲ Link-Laye ✓ ▲ Link-Laye ✓ ■ L	Protocol Version 6 (TCP/IPv6) Protocol Version 4 (TCP/IPv4) er Topology Discovery Mapper I/C er Topology Discovery Responder	D Driver

b) Select "Internet Protocol (TCP/IP)" then click "Properties", window below will appear.

eneral	Alternate Configurat	tion				
this cap	get IP settings assig ability. Otherwise, yo appropriate IP setting	ou need to a				
<u>o</u> <u>o</u> t	otain an IP address au	utomatically				
O Us	e the following IP add	dress:				
<u>I</u> P ac	ldress:		+)	<u>.</u>	+	
Sybn	et mask:				2	
<u>D</u> efa	ult gateway:		0	0		
() O <u>b</u>	otain DNS server addr	ess automa	tically			
- Us	e the following DNS s	erver addre	sses:			
Prefe	erred DNS server:		21	14	12	
<u>A</u> lter	nate DNS server:	0				
					Ady	anced

- If you decide to use IP address from Wireless Router, select "Obtain an IP address automatically".
- If you decide to use the IP address you are desired, select "Use the following IP address". Make sure enter correct addresses in "IP Address" and "Subnet Mask" fields.
- You must set Wireless Router's IP address as "Default Gateway".
- If the DNS Server fields are empty, select "Use the following DNS server addresses" and enter the DNS address is provided by your ISP, then click "OK".

Checking TCP/IP Settings for Windows 7

a) Click "Start" → "Control Panel" → Double-click Network and Sharing Center icon → Select
"Local Area Connection #". (Local network your ADSL hooked up with) → Select "Properties"
→ Select "Internet Protocol Version 4 (TCP/IPv4)" then click "Properties"

	I Area Connection 2 Properties	
etwor	rking Sharing	
Conn	ect using:	
P	Realtek USB Remote NDIS Device	
		nfigure
This o	connection uses the following items:	
•	nt for Microsoft Networks	
	QoS Packet Scheduler	
	📑 File and Printer Sharing for Microsoft Networks	6
_	 Internet Protocol Version 6 (TCP/IPv6) 	
	Internet Protocol Version 4 (TCP/IPv4)	
	 Link-Layer Topology Discovery Mapper I/O Di Link-Layer Topology Discovery Responder 	nver
Ŀ	Link-Layer Topology Discovery hesponder	
-	Install Uninstall Pro	operties
Des	scription	
	ansmission Control Protocol/Internet Protocol. The	
	de area network protocol that provides communica ross diverse interconnected networks.	ation
au	TOSS diverse interconnected networks.	
	ОК	Cano

Configure IP address Automatically:

b) Select "Obtain an IP address automatically" and "Obtain DNS server address automatically" Click "OK" to finish the configuration.

eneral Alternate Configuration				
You can get IP settings assigned autom this capability. Otherwise, you need to				
for the appropriate IP settings.	_			
Obtain an IP address automatical	χ.			
Use the following IP address:				
<u>I</u> P address:				
Sybnet mask:				
Default gateway:		· . · ·		
Obtain DNS server address autom				
Use the following DNS server add	resses:			
Preferred DNS server:	•			_
<u>A</u> lternate DNS server:		•		
Validate settings upon exit			Adu	anced
_ ·			AUV	anceu
	_	ОК		Cancel

Configure IP Address Manually:

c) Select "Use the following IP address" and "Use the following DNS server addresses".

Internet Protocol Version 4 (TCP/IPv4	4) Properties
General	
You can get IP settings assigned aut this capability. Otherwise, you need for the appropriate IP settings.	
 Obtain an IP address automatic Use the following IP address: 	cally
IP address:	192.168.1.10
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.1
Obtain DNS server address aut	tomatically
Output the following DNS server a	ddresses:
Preferred DNS server:	195.68.1.1
Alternate DNS server:	• • •
Validate settings upon exit	Ad <u>v</u> anced
	OK Cancel

IP address: Fill in IP address 192.168.1.x (x is a number between 2 to 254). Subnet mask: Default value is 255.255.255.0. Default gateway: Default value is 192.168.1.1.

Preferred DNS server: Fill in preferred DNS server IP address.

Alternate DNS server: Fill in alternate DNS server IP address.

- If you decide to use IP address from Wireless Router, select "Obtain an IP address automatically".
- If you decide to use the IP address you are desired, select "Use the following IP address".
 Make sure enter correct addresses in "IP Address" and "Subnet Mask" fields.
- You must set Wireless Router's IP address as "Default Gateway".
- If the DNS Server fields are empty, select "Use the following DNS server addresses" and enter the DNS address is provided by your ISP, then click "OK".

You can use ping command under DOS prompt to check if you have setup TCP/IP protocol correctly and if your computer has successfully connected to this router.

1) Type ping 192.168.1.1 under DOS prompt and the following messages will appear:

Command Prompt	x
Microsoft Windows [Version 6.1.7100] Copyright <c> 2009 Microsoft Corporation. All rights reserved.</c>	
C:\Users\GIGA ping 192.168.1.1	
Pinging 192.168.1.1 with 32 bytes of data: Reply from 192.168.1.1: bytes=32 time=1ms TTL=64 Reply from 192.168.1.1: bytes=32 time=1ms TTL=64 Reply from 192.168.1.1: bytes=32 time=1ms TTL=64 Reply from 192.168.1.1: bytes=32 time=1ms TTL=64	
Ping statistics for 192.168.1.1: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 1ms, Average = 1ms	
C:\Users\GIGA>_	
	-

If the communication link between your computer and router is not setup correctly, after you type ping 192.168.1.1 under DOS prompt following messages will appear:

Pinging 192.168.1.1 with 32 bytes of data:

Request timed out.

Request timed out.

Request timed out.

This failure might be caused by cable issue or something wrong in configuration procedure.

3. Configure Wireless Router via Web Based Utility

Wireless LAN ADSL2+ Router supports a Web-based (HTML) GUI to allow users to configure Router setting via Web browser.

3.1 Login

- 1) Launch the Web browser.
- 2) Enter the default IP address http://192.168.1.1



Entry of the username and password will be displayed. Enter the default login
 User Name and Password as admin and admin.

Windows Security
The server 192.168.1.1 at requires a username and password. Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
admin
OK Cancel

The main webpage will be displayed as below:



3.2 Status

This page displays the ADSL router's current status and settings. Click "**Refresh**" button to update the status.



3.3 LAN

This page shows the current setting or LAN interface. You can set IP address and subnet mask for LAN interface in this page.

🍘 ADSL Router Webserver - Window	rs Internet Explorer		x
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Site contents: Status Wireless WAN Services Advance Diagnostic Admin Statistics	the setting for IP address Interface Name: IP Address: Subnet Mask:	igure the LAN interface of your ADSL Router. Here you may change es, subnet mask, etc br0 192.168.1.1 255.255.255.0	
	IGMP Snooping: Ethernet to Wireless Blocking:	 Disabled Enabled Disabled Enabled 	
	Apply Changes		
		Genternet Protected Mode: On € 100%	▼

IP Address -- The IP Address which your LAN hosts use to identify the device's LAN port.

Subnet Mask -- LAN Subnet mask.

Apply Change -- Click to save the setting to the configuration. New parameters will take effect after save into flash memory and reboot the system.

3.4 Wireless

3.4.1 Basic Settings

This page is used to configure the parameters for wireless LAN clients who may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.

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Site contents: Status LAN Wireless Basic Settings Advanced Settings		sic Settings onfigure the parameters for wireless LAN clients which may conne re you may change wireless encryption settings as well as wireless	
Security Access Control WPS MBSSID Services Advance Diagnostic Admin Statistics	Disable Wireles Band:		
	Band: Mode:	2.4 GHz (B+G+N) ▼	
	SSID:		
		CANTV8FE4	
	Channel Width: Conntrol Sideband:	40MHZ ▼ Upper ▼	
	Channel Number:		
	Radio Power (mW):	5 • 60 mW •	
	Associated Clients:	Show Active Clients	
	Apply Changes		

Band: This is the range of frequencies the gateway will use to communicate with your wireless devices. As you're looking for products in stores or on the Internet, you might notice that you can choose equipment that supports six different wireless networking technologies: 2.4 GHz(B), 2.4 GHz(G), 2.4 GHz(B+G), 2.4 GHz(N), 2.4 GHz(G+N), and 2.4 GHz(B+G+N).

Mode: Default set to AP mode.

SSID: Specify the network name. Each Wireless LAN network uses a unique Network Name to identify the network. This name is called the Service Set Identifier (SSID). When you set up your wireless adapter, you specify the SSID. If you want to connect to an existing network, you must use the make up your own name and use it on each computer. The name can be up to 20 characters long and contain letters and numbers.

Channel Width: There have 2 options – 20MHZ and 40 MHZ

Control Sideband: Specify if the extension channel should be in the Upper or Lower sideband.

Channel Number: Sets the channel on which the gateway operates.

Radio Power (mW): A milliwatt (mW) is also a unit of power. To put it simply, a milliwatt is 1/1,000 of a watt. The reason you need to be concerned with milliwatts is because most of the 802.11 equipment that you will be using transmits at power levels between 1 and 100

mW

Associated Clients: This table shows MAC address, transmission, reception packet counters and encrypted status for each associated wireless clients.

3.4.2 Advanced Settings

These settings are only for more technically advanced users who have a sufficient knowledge about wireless LAN. These settings should not be changed unless you know what effect the change will have on your Access Point.



Authentication Type: There has 3 types – Open System, Shared Key, and Auto

Fragment Threshold: Fragmentation Threshold sets the frame size of incoming messages (ranging from 256 to 2346 bytes) used as fragmentation boundary. If the frame size is too big, the heavy interference affects transmission reliability. If the frame size is too small, it decreases transmission efficiency. Default setting is 2346.

RTS Threshold: Lower the signal RTS (Request To Send) to promote the transmission efficiency in condition of noisy environment or too many clients. Default setting is 2347.

Beacon Interval: Beacon Interval means the period of time between one beacon and the next one. The default value is 100 (the unit is millisecond, or 1/1000 second). Lower the Beacon Interval to improve transmission performance in unstable environment or for

roaming clients, but it will be power consuming.

Data Rate: Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, it's not necessary to change this value unless you know what will happen after change the value. [Auto] is recommended to maximize performance.

Preamble type: Preamble is the first sub field of PPDU, which is the appropriate frame format for transmission to PHY (Physical layer). There are two options, Short Preamble and Long Preamble.

Short GI: Using a short (400ns) guard interval can increase throughput. However, it can also increase error rate in some installations, due to increased sensitivity to radio-frequency reflections

3.4.3 Security

This page allows you setup the wireless security. Turn on WEP or WPA by using Encryption Keys could prevent any unauthorized access to your wireless network.

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🚝 Site contents:	Wireless Security	Setun				
Status	whereas security	Secup				
	This page allows you setup the wi could prevent any unauthorized ac	reless security. Turn on WEP or WPA by using Encryption access to your wireless network.	Keys			
Basic Settings		-				
Security	SSID TYPE:	◎ Root ◎ VAP0 ◎ VAP1 ◎ VAP2 ◎ VAP3				
Access Control	Encryption: None -	Set WEP Key				
MBSSID	Use 802.1x Authentication	WEP 64bits WEP 128bits				
WAN Services	WPA Authentication Mode:	Enterprise (RADIUS) Personal (Pre-Shared Key)				
Advance	Pre-Shared Key Format:	Passphrase v				
Diagnostic	Pre-Shared Key:					
Statistics		Port: 1812				
	Authentication Server:	IP address: 0.0.0.0				
		Password:				
	Note: When encryption WEP is se	elected, vou must set WEP kev value.				
	Apply Changes					
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Encryption: There have 4 encryption options – WEP, WAP (TKIP), WPA2(AES), and WPA2 Mixed.

WPA authentication mode: WPA operates in either WPA-PSK mode (Pre-Shared Key or

WPA-Personal) or WPA-802.1x mode (RADIUS or WPA-Enterprise). In the Personal mode, a pre-shared key or passphrase is used for authentication. In the Enterprise mode, which is more difficult to configure, the 802.1 x RADIUS servers and an Extensible Authentication Protocol (EAP) are used for authentication.

Pre-Shared Key Format: select Passphrase mode or Hex mode for the Pre-Shared Key.Pre-Shared Key: Enter the Pre-Shared via using the Passphrase mode or Hex mode.Authentication RADIUS server: fill the port, IP address and the password of the RADIUS server.

3.4.4 Access Control

If you know choose "Allowed Listed" from Wireless Access Control mode, only chose clients whose wireless MAC address are in the access control list will be able to connect to your Access Point. When "Deny Listed" is selected, these wireless clients on the list will not be able to connect the AP.

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Site contents:	Wireless Access Control	
Status LAN	If you choose 'Allowed Listed', only those clients whose wireless MAC addresses are in the	
Wireless Basic Settings	access control list will be able to connect to your Access Point. When Deny Listed is selected, these wireless clients on the list will not be able to connect the Access Point.	
Advanced Settings	selected, mese whereas cherics on the last will not be able to connect the Access 1 olint.	
Security	Wireless Access Control Mode: Disable - Apply Changes	
WPS MBSSID		
WAN	MAC Address: (ex. 00E086710502)	
Services	(ex. 00E060/10302)	
Diagnostic	Add Reset	
Statistics		
	Current Access Control List:	
	MAC Address Select	
	Delete Selected Delete All	
Done	😜 Internet Protected Mode: On 🦓 🔻 🤇	🔍 100% 🔻 🔐

3.4.5 WPS

This page allows you to change the setting for WPS (Wi-Fi Protected Setup). Using this feature could let your wireless client automatically synchronize its setting and connect to the

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 Site contents: Status LAN Wireless Basic Settings Advanced Settings Security Access Control WPS MBSSID WAN Services Advance Diagnostic Admin Statistics Wireless Client PIN Number: Start PIN 	onnect to the

In PIN method (PIN-Personal Identification Number), When your 11n router acts as a Registrar, your must enter "Self-PIN Number" on WPS configuration section, this Enrollee PIN code should be provided by the Enrollee. If your 11n router acts as an Enrollee, in WPS configuration section, the "Regenerate PIN" will automatically generate for you. The purpose of PIN code is to provide the security key to Registrar (AP/Server). Therefore, WPS (Wi-Fi Protected Setup) can be established completely.

In PBC Method (PBC-Push Button Communication), while the AP router acts as Registrar or Enrollee, and click "Start PBC" button, the WPS (Wi-Fi Protected Setup) will establish the connection automatically.

3.4.6 MBSSID

This page allows you to setup wireless multiple BSSID configuration. The Base Service Set Identifier (BSSID) is typically the MAC address if the radio. This Wireless LAN ADSL2+ Router also supports multiple BSSIDs (MBSSID) on a single AP.



3.5 WAN

There are three sub-menus for WAN configuration: Channel Config, ATM Settings, and ADSL Settings.

3.5.1 Channel Configuration

ADSL router comes with 8 ATM Permanent Virtual Channels (PVCs) at the most. There are mainly three operations for each of the PVC channels: add, delete, and modify. And there are several channel modes to be selected for each PVC channel. For each of the channel modes, the setting is quite different accordingly.

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ita contanta:							
ite contents: Status	WAN Con	figuration					
LAN	This page is used to	configure the para	meters for the channel oper	ation modes of your AD	SL Modem/Router.		
Wireless	1 360 10 4004 10						
Channel Config	VPI: 0 VO	- T .	Encapsulation: ()	LC OVC Mur	Channel Med	1483 Bridged 👻	
ATM Settings	Enable NAPT:	.1:	Admin Status: @ H		Channel Mode	: 1405 bildged +	
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l Diagnostic I Admin	PPP Settings:	User Name:		Password:			
Statistics	TTT Settings.						
		Туре:	Continuous	 Idle Time (min): 			
	WAN IP Settings:	Type:	Fixed IP DHCP				
	iniziti bettingot	Local IP Address:		Remote IP Addres	s.		
			·				
		Subnet Mask:		Unnumbered			
		Default Route:	Disable	Enable			
	Add Modify						
	Modily						
	Current ATM VC 1	able:					
	Select Inf Mode	VPI VCI Encap NAI	PT IGMP IP IP Re	emote IP Subnet Mask	User Name DRom	ute Status Actions	
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	100 0/1403	0 00 110	U I			e 🥙 📖	

Add -- Click Add to complete the channel setup and add this PVC channel into configuration. Modify -- Select an existing PVC channel by clicking the radio button at the Select column of the Current ATM VC Table before we can modify the PVC channel. After selecting a PVC channel, we can modify the channel configuration at this page. Click Modify to complete the channel modification and apply to the configuration.

Delete -- Select an existing PVC channel to be deleted by clicking the radio button at the Select column of the **Current ATM VC Table**. Click **Delet**e to delete this PVC channel from configuration.

3.5.2 ATM Settings

This page is for ATM PVC QoS parameters setting. The DSL device supports 4 QoS modes – *CBR*, *rt-VBR*, *nrt-VBR*, and *UBR*.

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Site contents: ATM Settings Status LAN Wireless This page is used to configure the parameters for the ATM of your ADSL Router. Here you may change the setting for VPI, VCI, QoS etc WAN Channel Config ATM Settings Services Advance PCR: Diagnostic Admin Statistics Apply Changes Undo Current ATM VC Table:	🚖 Favorites 🛛 🚖 🔊 Suggested Sit	es 👻 💋 Web Slice Galle	ry 🔻			
Status LAN Wireless WAN Channel Config ATM Settings ADSL Settings Services Advance Diagnostic Admin Statistics Current ATM VC Table:	ADSL Router Webserver		🏠 👻	🔊 🔹 🖶 🝷 <u>P</u> a	age ▼ <u>S</u> afety ▼ T <u>o</u> ols ▼	•9
Select VPI VCI QoS PCR CDVT SCR MBS • 5 35 UBR 6000 0 Done • • • • • • •	 Status LAN Wireless WAN Channel Config ATM Settings ADSL Settings Services Advance Diagnostic Admin Statistics 	This page is used to co may change the setting VPI: VCI: PCR: CDV Apply Changes Current ATM VC Tabl Select VPI	e: VCI QoS VBR VCI, QoS	BR v SCR: MBS PCR CDVT 6000 0	:	

VPI -- Virtual Path Identifier. This is read-only field and is selected on the Select column in the Current ATM VC Table.

VCI -- Virtual Channel Identifier. This is read-only field and is selected on the Select column in the Current ATM VC Table. The VCI, together with VPI, is used to identify the next destination of a cell as it passes through to the ATM switch.

QoS -- Quality of Server, a characteristic of data transmission that measures how accurately and how quickly a message or data is transferred from a source host to a destination host over a network. The four QoS options are:

- UBR (Unspecified Bit Rate): When UBR is selected, the SCR and MBS fields are disabled.

- *CBR* (Constant Bit Rate): When CBR is selected, the SCR and MBS fields are disabled.

nrt-VBR (non-real-time Variable Bit Rate): When nrt-VBR is selected, the SCR and MBS fields are enabled.

- rt-VBR (real-time Variable Bit Rate): When rt-VBR is selected, the SCR and MBS fields are enabled.

PCR -- Peak Cell Rate, measured in cells/sec., is the cell rate which the source may never exceed.

SCR -- Sustained Cell Rate, measured in cells/sec., is the average cell rate over the duration of the connection.

MBS -- Maximum Burst Size, a traffic parameter that specifies the maximum number of cells that can be transmitted at the peak cell rate.

Apply Changes -- Set new PVC OoS mode for the selected PVC. New parameters will take effect after save into flash memory and reboot the system. See section "Admin" for save details.

Undo -- Discard your settings.

3.5.3 ADSL Settings

The ADSL Settings page allows you to select any combination of DSL training modes.

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Site contents:	ADSL Settin	gs	
Status		8	
Wireless	Adsl Settings.		
wan			
Channel Config	ADSL modulation:	(Note: Only Annex A supports G. Lite)	
ADSL Settings		G.Lite	
		G.Dmt	
Advance		T 1.413	
Diagnostic		ADSL2	
Statistics		✓ ADSL2+	
	AnnexL Option:	(Note: Only ADSL 2 supports AnnexL)	
		Enabled	
	AnnexM Option:	(Note: Only ADSL 2/2+ support AnnexM)	
	ADGL Completion	Enabled	
	ADSL Capability:	☑ Bitswap Enable	
		SRA Enable	
	ADSL Tone:	SKA Enable	
	ADSE TORE.	Tone Mask	
	Apply Changes		
Done		😜 Internet Protected Mode: On	👍 🕶 🔍 100% 👻 🔡

ADSL modulation -- Choose preferred xdsl standard protocols.

- -- G.lite : G.992.2 Annex A
- -- G.dmt : G.992.1 Annex A
- -- T1.413 : T1.413 issue #2
- -- ADSL2 : G.992.3 Annex A
- -- ADSL2+ : G.992.5 Annex A

AnnexL Option -- Enable/Disable ADSL2/ADSL2+ Annex L capability

AnnexM Option -- Enable/Disable ADSL2/ADSL2+ Annex M capability.

ADSL Capability -- "Bitswap Enable": Enable/Disable bitswap capability.

"SRA Enable": Enable/Disable SRA (seamless rate adaptation) capability.

Tone Mask -- Choose tones to be masked. Masked tones will not carry any data.

Apply Changes -- Click to save the setting to the configuration and the modem will be retrained.

3.6 Service

There are three sub-menus for Service configuration: DHCP Settings, DNS, Firewall, UPnP, and RIP.

3.6.1 DHCP

This page is used to configure [DHCP Relay] and [DHCP Server].

[DHCP Server]

By default, the device is configured as a DHCP server, with a predefined IP address pool of 192.168.1.2 through 192.168.1.100 (subnet mask 255.255.255.0).

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Site contents: Status LAN Wireless WAN Services DHCP Settings DNS Firewall IGMP Proxy RIP Advance Diagnostic Admin Statistics	DHCP Setting This page be used to config DHCP Mode: None C DHCP Server Enable the DHCP Server if y address pools available to b hosts on your network as th LAN IP Address: 192.168.1. IP Pool Range: Max Lease Time: Domain Name: Gateway Address: Apply Changes	DHCP Relay DHCP Relay ou are using this nosts on your LA ney request Inten 1 Subnet Mask: 192.168.1.2 86400 domain.name 192.168.1.1 MAC-Base	DHCP Server device as a DHCP ser N. The device distribu- net access. 255.255.255.0 - 192.168.1.100 seconds (-1 indicates e e Assignment	Show Cli s an infinite lease	ent
Done		身 Internet Prote	cted Mode: On		🔍 100% 🔻 🔡

IP Pool Range -- Specify the lowest and highest addresses in the pool.

Max Lease Time -- The Lease Time is the amount of time that a network user is allowed to maintain a network connection to the device using the current dynamic IP address. At the

end of the Lease Time, the lease is either renewed or a new IP is issued by the DHCP server. The amount of time is in units of seconds. The default value is 86400 seconds (1 day). The value -1 stands for the infinite lease.

Domain Name -- A user-friendly name that refers to the group of hosts (subnet) that will be assigned addresses from this pool.

Apply Changes -- Set new DHCP server configuration. New parameters will take effect after save into flash memory and reboot the system.

Undo – Discard your changes.

[DHCP Relay]

Some ISPs perform the DHCP server function for their customers' home/small office network. In this case, you can configure this device to act as a DHCP relay agent. When a host on your network requests Internet access, the device contacts your ISP to obtain the IP configuration, and then forward that information to the host. You should set the DHCP mode after you configure the DHCP relay.



DHCP Mode -- Specify the IP address of your ISP's DHCP server. Requests for IP information from your LAN will be passed to the default gateway, which should route the request appropriately.

Apply Changes -- Click to save the setting to the configuration.
3.6.2 DNS

There are two submenus for the DNS Configuration: [DNS Server] and [Dynamic DNS].

[DNS Server]

This page is used to select the way to obtain the IP addresses of the DNS servers.

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ADSL Router Webserver		✓ <u>Safety</u> ▼ Tools ▼ ② ▼
	NS Configuration his page is used to configure the DNS server IP addresses for DNS Relation Attain DNS Automatically Set DNS Manually DNS 1: DNS 2: DNS 3: Apply Changes Reset Selected	ıy.
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Attain DNS Automatically -- Select this item if you want to use the DNS servers obtained by the WAN interface via the auto-configuration mechanism.

Set DNS Manually -- Select this item to configure up to three DNS IP addresses.

Apply Changes -- Set new DNS relay configuration. New parameters will take effect after save into flash memory and reboot the system.

[Dynamic DNS]

Each time your device connects to the Internet, your ISP assigns a different IP address to your device. In order for you or other users to access your device from the WAN-side, you need to manually track the IP that is currently used. The Dynamic DNS feature allows you to register your device with a DNS server and access your device each time using the same host name. The Dynamic DNS page allows you to enable/disable the Dynamic DNS feature.

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e contents: Status AN Wireless WAN Exervices DICP Settings DNS DNS DNS Firewall Firewall	This page is used to co	nfigure the Dynamic DNS to configure Dynamic DN DynDNS.org V	address from DynDNS.org	, or TZO. Here			
UPnP RIP	Username:						
Advance Diagnostic	Password:						
Admin Statistics	TZO Settings:						
	Email:						
	Key:						
	Add Modify F Dynamic DDNS Table Select	Remove	Hostname	Usem	ame	Service	_

DDNS provider -- There are two DDNS providers to be selected in order to register your device with: DynDNS and TZO. A charge may occur depends on the service you select.

Hostname -- Domain name to be registered with the DDNS server

User Name -- User-name assigned by the DDNS service provider.

Password -- Password assigned by the DDNS service provider.

Email -- Enter Email for TZO settings.

Key -- Enter key for TZO settings.

Add -- Click Add to add this registration into the configuration.

Remove -- Select an existing DDNS registration by clicking the radio button at the Select column of the Dynamic DNS Table. Click Remove button to remove the selected registration from the configuration.

3.6.3 Firewall

Firewall contains several features that are used to deny or allow traffic from passing through the device.

3.6.3.1 IP/Port Filtering

The IP/Port filtering feature allows you to deny/allow specific services or applications in the forwarding path.

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Site contents: Status LAN Wireless WAN Services DHCP Settings DNS Firewall MAC Filtering MAC Filtering Port Forwarding DAT URL Blocking DM2	IP/Port Filtering Entries in this table are used to restrict certain types of data packets through the Gateway. Use of such filters can be helpful in securing or restricting your local network. Outgoing Default Action Deny Allow Incoming Default Action Deny Allow Direction: Outgoing Protocol: TCP Rule Action Deny Allow Source IP Address: Subnet Mask: Port: Add
DMZ BIGMP Proxy	Current Filter Table:
	Select Direction Protocol Src Address Src Port Dst Address Port Action
UPnP	

Outgoing Default Action -- Specify the default action on the LAN to WAN forwarding path.

Incoming Default Action -- Specify the default action on the WAN to LAN forwarding path.

Apply Changes -- Click to save the setting of default actions to the configuration.

Direction -- Traffic forwarding direction.

Protocol -- There are 3 options available: TCP, UDP and ICMP.

Rule Action -- Deny or allow traffic when matching this rule.

Source IP Address -- The source IP address assigned to the traffic on which filtering is applied.

Source Subnet Mask -- Subnet-mask of the source IP.

Source Port -- Starting and ending source port numbers.

Destination IP Address -- The destination IP address assigned to the traffic on which filtering is applied.

Destination Subnet Mask -- Subnet-mask of the destination IP.

Destination Port -- Starting and ending destination port numbers.

Delete Selected -- Delete selected filtering rules from the filter table. You can click the checkbox at the Select column to select the filtering rule.

Delete All -- Delete all filtering rules from the filter table.

3.6.3.2 MAC Filtering

The MAC filtering feature allows you to define rules to allow or deny frames through the device based on source MAC address, destination MAC address, and traffic direction.

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ADSL Router Webserver		/▼ T <u>o</u> ols ▼ @▼
 Site contents: Status LAN Wireless WAN Services DHCP Settings DNS Firewall IP/Port Filtering MAC Filtering Domain Blocking DMZ IGMP Proxy UPnP RIP Advance Diagnostic Admin Statistics 	MAC Filtering Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network. Outgoing Default Action Deny Allow Incoming Default Action Deny Allow Incoming Default Action Deny Allow Direction: Outgoing Rule Action Deny Direction: Outgoing Rule Action Deny Allow Agply Changes Direction: Outgoing Rule Action Destination MAC Address: Add Current Filter Table: Select Direction Delete Selected Delete All	
Done	😜 Internet Protected Mode: On 🛛 🐴	 € 100%

Outgoing Default Action -- Specify the default action on the LAN to WAN bridging/forwarding path.

Incoming Default Action -- Specify the default action on the WAN to LAN bridging/forwarding path.

Apply Changes -- Click to save the setting of default actions to the configuration.

Direction -- Traffic bridging/forwarding direction.

Rule Action -- Deny or allow traffic when matching this rule.

Source MAC Address -- The source MAC address. It must be xxxxxxxxx format. Blanks can be used in the MAC address space and are considered as don't care.

Destination MAC Address -- The destination MAC address. It must be xxxxxxxxx format. Blanks can be used in the MAC address space and are considered as don't care.

Delete Selected -- Delete selected filtering rules from the filter table. You can click the checkbox at the Select column to select the filtering rule.

Delete All -- Delete all filtering rules from the filter table.

3.6.3.3 Port Forwarding

Firewall keeps unwanted traffic from the Internet away from your LAN computers. Add a

Port Forwarding entry will create a tunnel through your firewall so that the computers on the Internet can communicate to one of the computers on your LAN on a single port.

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Site contents: Status LAN Wirreless DHCP Settings DHCP Settings DNS Firewall IP/Port Filtering Port Forwarding Domain Blocking DOMZ URL Blocking Domain Blocking DATA VANA Statistics	Port Forwarding Entries in this table allow you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind your Cateway's NAT firewall. Port Forwarding: Disable Enable Apply Changes Port Forwarding: Disable Enable Apply Changes Portocol: Both Comment: Image: Comment: Image: Comment: Local IP Address: Local Port: Image: Comment: Image:	• 8,100%	
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Port Forwarding -- Check this item to enable or disable the port-forwarding feature.

Protocol -- There are 3 options available: TCP, UDP and Both.

Local IP Address -- IP address of your local server that will be accessed by Internet.

Local Port -- The destination port number that is made open for this application on the LAN-side.

Remote IP Address -- The source IP address from which the incoming traffic is allowed. Leave blank for all.

Public Port -- The destination port number that is made open for this application on the WAN-side

Interface -- Select the WAN interface on which the port-forwarding rule is to be applied.

Apply Changes -- Click to save the rule entry to the configuration.

Delete Selected -- Delete the selected port forwarding rules from the forwarding table. You can click the checkbox at the Select column to select the forwarding rule.

Delete All -- Delete all forwarding rules from the forwarding table.

3.6.3.4 URL Blocking

This page is used to configure the Blocked FQDN (such as tw.yahoo.com) and filtered keyword. Here you can add/delete FQDN and filtered keyword.

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Site contents: Status LAN Wireless WAN Services DHCP Settings DHCP Settings DHCP Settings Firewall Firewall Firewall DAC Filtering DAC Filteri	URL Blocking Conf This page is used to configure the Bic keyword. Here you can add/delete FQ URL Blocking: Disable FQDN: Add URL Blocking Table: Select FQDN Delete Selected Delet Keyword: Ac Select Filtering Table: Select Filtered Keyword Delete Selected Delet	te All	hoo.com) and filtered			

URL Blocking -- Check this item to enable or disable the URL Blocking feature.

Apply Changes -- Click to save the rule entry to the configuration.

FQDN -- Enter URL link which you want to filter in this section; and then click Add to save the change.

Delete Selected -- Delete the selected URL Blocking rules from the table. You can click the checkbox at the Select column to select the blocking rule.

Delete All -- Delete all URL blocking rules from the table.

Keyword -- Entry the keyword which you want to filter in this section; and then click Add to save the change.

Delete Selected -- Delete the selected Keyword Filtering rules from the table. You can click the checkbox at the Select column to select the filtering rule.

Delete All -- Delete all Keyword Filtering rules from the table.

3.6.3.5 Domain Blocking

This page is used to configure the Blocked domain. Here you can add/delete the block domain.

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Status LAN Wireless WAN Services DHCP Settings DHCP Settings Firewall IP/Port Filtering MAC Filtering	Domain:	le © Enable	a can add/delete the blocked Apply Changes	
Port Forwarding URL Blocking Domain Blocking Di Domain Blocking Di DMZ Di GMP Proxy UPnP UPnP DI DP	Select Doma	m lete All		

Domain Blocking -- Check this item to enable or disable the Domain Blocking feature.

Apply Changes -- Click to save the rule entry to the configuration.

Domain -- A user-friendly name that refers to the group of hosts (subnet) that will be blocked.

Delete Selected -- Delete the selected Domain Blocking rules from the table. You can click the checkbox at the Select column to select the filtering rule.

Delete All -- Delete all Domain Blocking rules from the table.

3.6.3.6 DMZ

A DMZ (Demilitarized Zone) allows a single computer on your LAN to expose ALL of its ports to the Internet. Enter the IP address of that computer as a DMZ (Demilitarized Zone) host with unrestricted Internet access. When doing this, the DMZ host is no longer behind the firewall.

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Site contents: Status LAN Wireless WAN Services DHCP Settings DNS Firewall Firewall Firewall DNC Filtering DNC Filtering Statistics	access to its local private:	d to provide Internet services without sacrificing unauthorized twork. Typically, the DMZ host contains devices accessible to o (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS

DMZ Host -- Check this item to enable the DMZ feature.

DMZ Host IP Address -- IP address of the local host. This feature sets a local host to be exposed to the Internet.

Apply Changes -- Click to save the setting to the configuration.

3.6.4 IGMP Proxy

IGMP proxy enables the system to issue IGMP host messages on behalf of hosts that the system discovered through standard IGMP interfaces. The system acts as a proxy for its hosts when you enable it by doing the follows:

- -- Enable IGMP on WAN interface (upstream), which connects to a router running IGMP.
- -- Enable IGMP on LAN interface (downstream), which connects to its hosts.

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Site contents: Status ULAN Wireless UHCP Settings DHCP Settings DHCP Settings Firewall GMP Proxy UPAP Advance Diagnostic Admin Statistics	system discovered through standard hosts when you enable it by doing th . Enable IGMP proxy on WAN interfa	sue IGMP host messages on behalf of hosts that the IGMP interfaces. The system acts as a proxy for its ace follows: ace (upstream), which connects to a router running IGMP. wnstream), which connects to its hosts.	
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3.6.5 UPnP

The DSL device supports a control point for Universal Plug and Play (UPnP) version 1.0, and supports two key features: NAT Traversal and Device Identification. This feature requires one active WAN interface. In addition, the host should support this feature. In the presence of multiple WAN interfaces, select an interface on which the incoming traffic is present.

With NAT Traversal, when an UPnP command is received to open ports in NAT, the application translates the request into system commands to open the ports in NAT and the firewall. The interface to open the ports on is given to UPnP when it starts up and is part of the configuration of the application.

For Device Identification, the application will send a description of the DSL device as a control point back to the host making the request.

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Advance Diagnostic Admin Statistics			

UPnP -- Enable/disable UPnP feature.

WAN Interface -- Select WAN interface that will use UPnP from the drop-down lists. **Apply Changes** -- Click to save the setting to the system configuration.

3.6.6 RIP

RIP is an Internet protocol you can set up to share routing table information with other routing devices on your LAN, at your ISP's location, or on remote networks connected to your network via the ADSL line.

Most small home or office networks do not need to use RIP; they have only one router, such as the ADSL Router, and one path to an ISP. In these cases, there is no need to share routes, because all Internet data from the network is sent to the same ISP gateway.

You may want to configure RIP if any of the following circumstances apply to your network:

 Your home network setup includes an additional router or RIP-enabled PC (other than the ADSL Router). The ADSL Router and the router will need to communicate via RIP to share their routing tables.

- Your network connects via the ADSL line to a remote network, such as a corporate network. In order for your LAN to learn the routes used within your corporate network, they should both be configured with RIP.

- Your ISP requests that you run RIP for communication with devices on their network.

RIP -- Enable/disable RIP feature.

Apply Changes -- Click to save the setting of this setting block to the system configuration **Interface** -- The name of the interface on which you want to enable RIP.

Receive Mode -- Indicate the RIP version in which information must be passed to the DSL device in order for it to be accepted into its routing table.

Send Mode -- Indicate the RIP version this interface will use when it sends its route information to other devices.

Add -- Add a RIP entry and the new RIP entry will be display in the table

Delete Selected -- Delete a selected RIP entry. The RIP entry can be selected on the Select column of the RIP Config Table.

Delete All -- Delete all RIP rules from the table.

3.7 Advance

3.7.1 ARP Table

This table shows a list of learned MAC address.



3.7.2 Bridging

You can enable/disable Spanning Tree Protocol and set MAC address aging time in this page.



Ageing Time -- Set the Ethernet address ageing time, in seconds. After [Ageing Time] seconds of not having seen a frame coming from a certain address, the bridge will time out (delete) that address from Forwarding DataBase(fdb).

802.1d Spanning Tree -- Enable/disable the spanning tree protocol

Apply Changes -- Save this bridge configuration. New configuration will take effect after saving into flash memory and rebooting the system.

Show MACs -- List MAC address in forwarding table.

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Bridge	Forwarding Da	tabase 1 at	ble	
This table sh	ows a list of learned MAC add	resses for this bridge	e.	
				1
Port No	MAC Address	Is Local?	Ageing Timer	
1	00-0f-ea-64-c8-e6	no	0.01	
	01-00-5e-00-00-fc	yes		
1	01-00-3e-00-00-IC	905		
1	00-06-4f-6f-8f-e4	yes		
1 1 Refresh		-		
1 1 Refresh	00-06-4f-6f-8f-e4	-		
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I I Refresh	00-06-4f-6f-8f-e4	-		

3.7.3 Routing

The Routing page enables you to define specific route for your Internet and network data. Most users do not need to define routes. On a typical small home or office LAN, the existing routes that set up the default gateways for your LAN hosts and for the DSL device provide the most appropriate path for all your Internet traffic.

- On your LAN hosts, a default gateway directs all Internet traffic to the LAN port(s) on the DSL device. Your LAN hosts know their default gateway either because you assigned it to them when you modified your TCP/IP properties, or because you configured them to receive the information dynamically from a server whenever they access the Internet.

- On the DSL device itself, a default gateway is defined to direct all outbound Internet traffic to a route at your ISP. The default gateway is assigned either automatically by your ISP whenever the device negotiates an Internet access, or manually by user to setup through the configuration.

You may need to define routes if your home setup includes two or more networks or subnets, if you connect to two or more ISP services, or if you connect to a remote corporate LAN.

ADSL Router Webserver - Windows Internet Explorer ADSL Router Webserver - Windows Internet Explorer ADSL Router Webserver Favorites Suggested Sites Web Site Callery ADSL Router Webserver Routing Configuration This page is used to configure the routing information. Here you can add delete IP routes. NAM Status LAN Wrifeless WAN Services Advance ARP table Bridging Routing SNMP Port Mapping Port Mapping Port Mapping Port Mapping Port Mapping Diagnostic Advann Statistics Diagnostic Advann Statistics Dote Deter State Destination Subnet Mask NextHop Metric IF Dote Dore Internet Protected Mode: On Automatic Subnet Mask NextHop Metric IF					
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Tothe and the second se	Status Status Vireless WaN Services Advance Bridging Bridging SNMP Port Mapping Port Mapping Port Mapping Di Port Souce Didgnostic Diagnostic Admin	This page is used to configure th Enable: Destination: Subnet Mask: Next Hop: Metric: Interface: Add Route Update Static Route Table:	e routing information. Here	Show Routes	

Enable -- Check to enable the selected route or route to be added.

Destination -- The network IP address of the subnet. The destination can be specified as the IP address of a subnet or a specific host in the subnet. It can also be specified as all zeros to indicate that this route should be used for all destinations for which no other route is defined (this is the route that creates the default gateway).

Subnet Mask -- The network mask for the destination subnet. The default gateway uses a mask of 0.0.0.0.

Next Hop -- The IP address of the next hop through which traffic will flow towards the destination subnet.

Metric -- Defines the number of hops between network nodes that data packets travel. The default value is 0, which means that the subnet is directly one hop away on the local LAN network.

Interface -- The WAN interface for a static routing subnet is to be applied.

Add Route -- Add a user-defined destination route.

Update -- Update the selected destination route on the Static Route Table.

Delete Selected -- Delete a selected destination route on the Static Route Table.

Show Routes -- Click this button to view the DSL device's routing table.

3.7.4 SNMP

Simple Network Management Protocol (SNMP) is a troubleshooting and management protocol that uses the UDP protocol on port 161 to communicate between clients and

SNMP -- Enable/disable RIP feature.

System Description -- System descriptions of the DSL device.

System Contact -- Contact person and/or contact information for the DSL device.

System Name -- An administratively assigned name for the DSL device.

System Location -- The physical locations of the DSL device.

System Object ID -- Vendor object identifier. The vendor's authoritative identifications of the network management sub-system contained in the entity.

Trap IP Address -- Destination IP address of the SNMP trap.

Community name (read-only) – Name of the read-only community. This read-only community allows read operation to all objects in the MIB.

Community name (write-only) -- Name of the write-only community. This write-only community allows write operation to the objects defines as read-writable in the MIB.

Apply Changes -- Save SNMP configuration. New configuration will take effect after saving into flash memory and rebooting the system.

3.7.5 Port Mapping

To manipulate a mapping group:

- (1) Select a group from the table
- (2) Select interfaces from the available/grouped interface list and add it to the grouped/available interface list using the arrow buttons to manipulate the required

mapping of the ports.

((3)	Click	"Appl	/ Changes"	button	to	save	the	change	es
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3.7.6 IP QoS

The DSL device provides a control mechanism that can provide different priority to different users or data flows. The QoS is enforced by the QoS rules in the QoS table. A QoS rule contains two configuration blocks: *Traffic Classification* and *Action*. The *Traffic Classification* enables you to classify packets on the basis of various fields in the packet and perhaps the physical ingress port. The *Action* enables you to assign the strictly priority level for and mark some fields in the packet that matches the Traffic Classification rule. You can configure any or all field as needed in these two QoS blocks for a QoS rule.

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	LAN Wireless WAN Services Advance Advance Advance Suffer Souting Suffer Port Mapping Classification Classification Classification Cos Queue Remote Access Others Diagnostic Admin	Configuration of classification table for IPQoS. IP QoS: Disabled Enabled Default QoS: IP Pred Apply Changes Specify Traffic Classification Rules Source IP: Netmask: Port: Port: Portocol: Physical Port: Solitation Results Port: Classification Results IP.Pred_Mark: <

IP QoS -- Enable/disable the IP QoS function.

Source IP -- The IP address of the traffic source.

Source Netmask --The source IP netmask. This field is required if the source IP has been entered.

Source Port -- The source port of the selected protocol. You cannot configure this field without entering the protocol first.

Destination IP -- The IP address of the traffic destination.

Destination Netmask -- The destination IP netmask. This field is required if the destination IP has been entered.

Destination Port -- The destination port of the selected protocol. You cannot configure this field without entering the protocol first.

Protocol -- The selections are TCP, UDP, ICMP and the blank for none. This field is required if the source port or destination port has been entered.

Physical Port -- The incoming ports. The selections include LAN ports, wireless port, and the blank for not applicable.

Outbound Priority -- The priority level for the traffic that matches this classification rule. The possible selections are (in the descending priority): p0, p1, p2, p3.

Precedence -- Select this field to mark the IP precedence bits in the packet that match this

classification rule.

TOS (Type of Service) -- Select this field to mark the IP TOS bits in the packet that match this classification rule.

802.1p -- Select this field to mark the 3-bit user-priority field in the 802.1p header of the packet that match this classification rule. Note that this 802.1p marking is workable on a given PVC channel only if the VLAN tag is enabled in this PVC channel.

[QoS Quese]

This page displays the list of QoS Queue Configuration.

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3.7.7 Remote Access

The Remote Access function can secure remote host access to your DSL device from LAN and WLAN interfaces for some services provided by the DSL device.

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Services	Service Name	LAN	WAN	WAN Port	
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- Bouting	FTP			21	
SNMP Port Mapping	TFTP				
- P QoS	HTTP	\checkmark		80	
Remote Access	SNMP	\checkmark	\checkmark		
Diagnostic Admin	PING	\checkmark			
	Apply Changes				
	Apply changes				
Statistics	Apply Changes				

LAN -- Check/un-check the services on the LAN column to allow/un-allow the services access from LAN side; and "WAN".

WAN -- Check/un-check the services on the WAN column to allow/un-allow the services access from WAN side.

WAN Port -- This field allows the user to specify the port of the corresponding service. Take the HTTP service for example; when it is changed to 8080, the HTTP server address for the WAN side is http://dsl_addr:8080, where the dsl_addr is the WAN side IP address of the DSL device.

3.7.8 Others

Here you can set some other advanced settings

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IP Pass through -- The available interfaces are listed. You have to select one for advanced configuration.

Lease Time -- The Lease Time is the amount of time that a network user is allowed to maintain a network connection to the device using the current IP address.

Allow LAN access – Check this option to enable the LAN access

3.8 Diagnostic

The DSL device supports some useful diagnostic tools.

3.8.1 Ping

Once you have your DSL device configured, it is a good idea to make sure you can ping the network. A ping command sends a message to the host you specify. If the host receives the message, it sends messages in reply. To use it, you must know the IP address of the host you are trying to communicate with and enter the IP address in the Host Address field. Click Go! To start the ping command, the ping result will then be shown in this page

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Done	😜 Internet Protected Mode: On 🦓 👻 🔍 100% 👻 🔡

Host Address -- The IP address you want to ping.

3.8.2 ATM Loopback

In order to isolate the ATM interface problems, you can use ATM OAM loopback cells to verify connectivity between VP/VC endpoints, as well as segment endpoints within the VP/VC. ATM uses F4 and F5 cell flows as follows:

- F4: used in VPs

- F5: used in VCs

An ATM connection consists of a group of points. This OAM implementation provides management for the following points:

– Connection endpoint: the end of a VP/VC connection where the ATM cell are terminated

- Segment endpoint: the end of a connection segment.

This page allows you to use ATM ping, which generates F5 segment and end-to-end loop-back cells to test the reach-ability of a segment endpoint or a connection endpoint.

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 Site contents: Status LAN Wireless WAN Services Advance Diagnostic Ping ATM Loopback ADSL Diagnostic Test Admin Statistics 	OAM Fault Management - Connectivity Verification Connectivity verification is supported by the use of the OAM loopback capability for both and VC connections. This page is used to perform the VCC loopback function to check the connectivity of the VCC. Select PVC: @ 5/35 Flow Type: @ F5 Segment @ F5 End-to-End Loopback Location ID: FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	3
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Select PVC -- Select the PVC channel you want to do the loop-back diagnostic.

Flow Type -- The ATM OAM flow type. The selection can be F5 Segment or F5 End-to-End. **Loopback Location ID** -- The loopback location ID is the field for the loop-back cell. The default value is all Fs to indicate the endpoint of the segment or connection.

3.8.3 ADSL

This page shows the ADSL diagnostic result. Click Start button to start the ADSL diagnostic.

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3.8.4 Diagnostic Test

The Diagnostic Test page shows the test results for the connectivity of the physical layer and protocol layer for both LAN and WAN sides.



Select the Internet Connection -- The available WAN side interfaces are listed. You have to select one for the WAN side diagnostic.

3.9 Admin

3.9.1 Commit/Reboot

Whenever you use the Web configuration to change system settings, the changes are initially placed in temporary storage. These changes will be lost if the device is reset or turn off. To save your change for future use, you can use the commit function

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Commit and Reboot -- Whenever you use the web console to change system settings, the changes are initially placed in temporary storage. To save your changes for future use, you can use the Commit/Reboot function. This function saves your changes from RAM to flash memory and reboot the system.

IMPORTANT! Do not turn off your modem or press the Reset button while this procedure is in progress.

3.9.2 Backup/Restore

This page allows you to backup and restore your configuration into and from file in your host.

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Site contents: Status LAN Wireless WAN Services Advance Diagnostic Admin Commit/Reboot Backup/Restore Password Upgrade Firmware ACL Config Time Zone TR-069 Config Statistics	Backup/Restore Settings This page allows you to backup current settings to a file or restore the settings from the file which was saved previously. Besides, you could reset the current configuration to factory default. Save Settings to File: Save Dead Settings from File: Browse Upload Reset Reset Reset Settings to Default:	
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3.9.3 Password

The first time you log into the system, you use the default password. There are two-level logins: admin and user. The admin and user password configuration allows you to change the password for administrator and user.

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 Site contents: Status LAN Wireless WAN Services Advance Diagnostic Admin Commit/Reboot Backup/Restore Password Upgrade Firmware ACL Config Time Zone TrR-069 Config Statistics 	Password Setup This page is used to set the account to access the web server of ADSL Route name and password will disable the protection. User Name: admin • Old Password: New Password: Confirmed Password: Apply Changes Reset	ter. Empty user

User Name -- Selection of user levels are: admin and user.

Old Password -- Enter the old password for this selected login.

New Password -- Enter the new password here.

Confirmed Password -- Enter the new password here again to confirm.

3.9.4 Upgrade Firmware

To upgrade the firmware for the DSL device:

- Click the Browse button to select the firmware file.
- Confirm your selection.
- Click the Upload button to start upgrading.

IMPORTANT! Do not turn off your DSL device or press the Reset button while this procedure is in progress.

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3.9.5 ACL Configuration

The Access Control List (ACL) is a list of permissions attached to the DSL device. The list specifies who is allowed to access this device. If ACL is enabled, all hosts cannot access this device except for the hosts with IP address in the ACL table.

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 Site contents: Status LAN Wireless WAN Services Advance Diagnostic Admin Commit/Reboot Backup/Restore Backup/Restore Password Upgrade Firmware ACL Config Time Zone TR-069 Config Statistics 	these IP address tha ACL Capability: Enable: Interface: IP Address: Subnet Mask: ACL Table:	configure the IP Address for Access Control List. If ACL is enabled, just tin the ACL Table can access CPE. Here you can add/delete IP Address. Disable Enable Apply Changes Add tate Interface IP Address	
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ACL Capability -- Enable/disable the ACL function

Enable -- Check to enable this ACL entry

Interface -- Select the interface domain: LAN or WAN

IP Address -- Enter the IP address that allows access to this device.

Subnet Mask -- Enter the Subnet Mask that allows access to this device.

3.9.6 Time Zone

Simple Network Timing Protocol (SNTP) is a protocol used to synchronize the system time to the public SNTP servers. The DSL device supports SNTP client functionality in compliance with IETF RFC2030. SNTP client functioning in daemon mode which issues sending client requests to the configured SNTP server addresses periodically can configure the system clock in the DSL device.

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 Site contents: Status LAN Wireless WAN Services Advance Diagnostic Admin Commit/Reboot Backup/Restore Password Upgrade Firmware ACL Config Time Zone TR-069 Config Statistics 	Time Zone Setting You can maintain the system time by synchronizing with a public time server over the Internet. Current Time : Yr 2000 Mon 1 Day 1 Hr 0 Mn 18 Sec 52 Time Zone Select : (GMT+08:00)Beijing, Chongqing, Hong Kong, Urumqi Enable SNTP client update SNTP server : 203.117.180.36 - Asia Pacific * 220.130.158.52 (Manual Setting) Apply Change Refresh	-

Current Time -- The current time of the specified time zone. You can set the current time by yourself or configured by SNTP.

Time Zone -- Select time zone in which the DSL device resides.

Enable SNTP client update -- Enable the SNTP client to update the system clock.

SNTP server -- The IP address or the host name of the SNTP server. You can select from the list or set it manually.

3.9.7 TR-069 Configuration

TR-069 is CPE Management Protocol from WAN side [**CPE WAN Management Protocol** (**CWMP**)], intended for communication between a CPE and Auto-Configuration Server (ACS). The CPE WAN Management Protocol defines a mechanism that encompasses secure auto-configuration of a CPE, and also incorporates other CPE management functions into a common framework.

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Upgrade Firmware ACL Config	Periodic Inform Enable:	Disabled Imabled	
Time Zone	Periodic Inform Interval:	300	
Statistics	Connection Request: User Name:		
	Password: Path:	/tr069	
	Port:	7547	
	Apply Changes	Undo	
	Certificat Management:		
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	CA Certificat:	Browse Upload	
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[ACS]

URL -- URL of the auto configuration server (ACS) provided by the ISP

User Name -- Entry the User name for ACS which is provided by ISP.

Password -- Entry the password for ACS which is provided by ISP.

Periodic Inform Enable -- Enable/disables the RG to connect to the ACS periodically. If you enable this feature, you should enter a value in the Periodic Inform Interval field.

Periodic Inform Interval -- This field is enabled only when the Periodic Inform Enabled field is checked. It defines the amount of time (in seconds) between a successful connection with an ACS server and a new attempt to connect to an ACS server. A recommended value is 86400 seconds (1 day).

[Connection Request]

User Name -- Key in the User name for ADSL router.

Password -- Key in the password for ADSL router.

Path -- The path for connection request. Default is "/tr069".

Port -- The port for connection request. Default is "7547".

[Certificate Management]

CPE Certificate Password -- The password is for CPE certificate.

CPE Certificate -- Browse CPE certificate which is provided by ISP server. The CPE may use online certificate enrollment with the CA associated with the ACS. The CPE must be provided with the information needed to contact this CA.

CA Certificate -- Browse CA certificate which is provided by ISP server.

3.10 Statistics

The DSL device shows the different layer of network statistics information

3.10.1 Interface

You can view statistics on the processing of IP packets on the networking interfaces. You will not typically need to view this data, but you may find it helpful when working with your ISP to diagnose network and Internet data transmission problems.

To display updated statistics showing any new data since you opened this page, click Refresh.



3.10.2 ADSL

This page shows the ADSL line statistic information.

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			Downstream	Upstream
	SNR Margin (dB)		0.0	0.0
	Attenuation (dB)		0.0	0.0
	Output Power (dBm)		0.0	0.0
	Attainable Rate (Kbps)		0	0
	Rate (Kbps)		0	0
	K (number of bytes in DMT fra	ume)	,	•
	R (number of check bytes in R	· ·		
	S (RS code word size in DMT f	frame)		
	D (interleaver depth)			
	Delay (msec)			
	FEC		0	0
	CRC		0	0
	Total ES		0	0
	Total SES		0	0
	Total UAS		0	0