# Draft 802.11n Wireless Broadband Router

## **User's Manual**

November 2009

#### 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

V1

History <sup>1st</sup> Release

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## 1. Introduction

This Wireless Broadband Router is a draft 802.11n compliant device that provide faster and farther range than 802.11g while backward compatible with 802.11g and 802.11b devices. This Router uses advanced broadband router chipset and wireless LAN chipset solution let you enjoy high-speed Wired and Wireless connection. Simply connect this device to a Cable or DSL modem and then you can share your high-speed Internet access with multiple PCs at your home. It creates a secure Wired and Wireless network for you to share photos, files, video, music, printer and network storage. This device also supports the latest wireless security features such as WEP, WPA, WPA2 and WPS to prevent from unauthorized access.



#### 1.1 Features

- Compliant with IEEE 802.11n draft 2.0 standard
- Backward compatible with IEEE 802.11b/g
- Supports NAT, NAPT, DHCP Server/Client
- Supports VPN pass through IPSec, PPTP, L2TP
- Supports Virtual Server / Port Trigger
- Supports Virtual DMZ Host, DNS Proxy, DDNS, UPnP
- Supports 64/128-bit WEP Data Encryption
- Supports WPA / WPA2 / WPS / 802.1x Authentication
- Supports WDS (Wireless Distribution System) mode
- Supports Quality of Service (QoS) WMM
- Supports MAC Filter, Client Filter, URL/IP Filter
- Supports Hacker Pattern Detection
- Supports Auto-crossover (MDI/MID-X) function
- Supports software upgrade through Web
- Friendly web-based GUI Configuration and Management

#### **1.2 Package Contents**

- One Wireless AP Router with 1 antennas
- One External Power Adapter
- One CD-ROM (user's manual)
- One RJ-45 Ethernet Cable

#### **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 <u>Front Panel LEDs Indication</u>



LED	Light Status	Description	
PWR	On	Wireless Router is powered on.	
	Off	Wireless Router is powered off.	
Status	On	Wireless Router is hung.	
	Blinking	Wireless Router is up and ready.	
LAN	On	LAN port is successfully connected.	
(1, 2, 3, 4)	Blinking	Data is being sent or received.	
WAN	On	WAN port is successfully connected	
	Blinking	Data is being sent or received.	
WLAN	Slow Blinking	WLAN is successfully connected.	
LINK/ACT	Blinking	Data is being sent or received.	

#### **Back Panel Connectors**

			$\Box$		0	0	$\bigcirc$
1	2	3	4	WAN	Reset	WPS	PWR

Button/Port	Description
Reset	Reset configurations to default. You would use the reset button only when
	a program error has caused your 11n AP router to hang. Press the button
	and hold for 10 seconds.
WPS	Click WPS button about 2-3 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)	
WAN	Ethernet RJ-45 connector, connect to WAN 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 Installation Instruction**

- 1) Power off 802.11n AP Router and DSL/Cable modem.
- 2) Connect computer to the LAN port on the Wireless Router with Ethernet cable.
- Connect the DSL or Cable modem to the WAN port on the Wireless Router with Ethernet cable.
- 4) Power on DSL or Cable modem first, then connect power adapter to the power jack on the rear panel of Wireless Router and plug the power cable into an outlet.
- 5) Check LEDs.
  - a) Once power on Wireless Router, Power LED should be on.
  - b) LAN LED should be on for each active LAN connection.
  - c) The WAN LED should be on when the DSL or cable modem is connected.

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

## 2. PC Configuration

To communicate and configure 802.11n AP router, the PC on your LAN must install TCP/IP protocol. Make sure the TCP/IP protocol of the PC is configured for Obtain IP address from DHCP and is connected to LAN (Ethernet) port of the AP router. In doing so, the PC obtains an IP address of 192.168.1.1 from 802.11n AP router.

The 802.11n AP router assumes an IP address of 192.168.1.1 without network connectivity. This IP address is used for communicating with the 802.11n AP router via the web UI or Telnet, with the PC connected to the LAN port.

The 802.11n AP router assumes a DHCP IP address on the WAN side if connected to the network. In this case user can communicate with the same IP address 192.168.1.1 with PC connected to the LAN port. PC in the network can communicate with the DHCP IP address allocated to 802.11n router.

#### 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 ?X
Configuration Identification Access Control
I he following network components are installed:
Elient for Microsoft Networks
📇 Microsoft Family Logon
■ Juai-Up Adapter
TCP/IP -> Dial-Un Adapter
TCP/IP -> SiS 900-Based PCI Fast Ethernet 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,

TCP/IP Properties				? ×
Bindings DNS Configuration	Adva Gateway	nced   WINS Confi	Ni ouration	etBIOS ) IP Address )
An IP address can If your network doe your network admir the space below.	be automati es not autom histrator for a	cally assigned atically assign n address, ar	d to this c n IP addro nd then ty	omputer. esses, ask ipe it in
C Constitute UD	address auto	matically		
Speciry an IP	address:			
[P Address:				
S <u>u</u> bnet Masł	k:			
		OK		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	Adv Gateway	anced WINS Confi	N guration	etBIOS IP Address
The first gateway in The address order machines are used	n the Installe in the list wi I.	ed Gateway lis Il be the order	t will be t in which	he default. these
New gateway:	•	Add		
_ Installed gateway	ys:	Hemov	/8	
		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	Adv. Gateway	anced WINS C	Ne Ne	BIOS IP Address
	•			
Host:		D <u>o</u> mair	11	
UNS Server Sea	rch Urder —		Add <u>R</u> emove	
Domain Suffix Se	sarch Order ·		Add	
			ОК	Cancel

#### Checking TCI/IP Setting for Windows NT4.0

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



b) Click "Properties", window below will appear.

Microsoft TCP/IP Properties
IP Address DNS WINS Address DHCP Relay Routing
An IP address can be automatically assigned to this network card by a DHCP server. If your network does not have a DHCP server, ask your network administrator for an address, and then type it in the space below.
Ada <u>p</u> ter
PCI Fast Ethernet Adapter
O Obtain an IP address from a DHCP server
O Specity an IP address
[P Address:
Subnet Mask:
Default <u>G</u> ateway:
<u>Advanced</u>
OK 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 TCP/IP P	roperties		? ×
IP Address DNS	WINS Address	DHCP Relay 🗍 R	louting
Domain Name Sye	tem (DNS)		
<u>H</u> ost Name:		Domain	
DNS <u>S</u> ervice Se	arch Order		
			Let
			Do <u>w</u> n↓
Add	Edit	Henove	
TCP/IP DNS Se	iver	? ×	
DNS Server:	Г	Add	Upt
		Cancel	Down↓
	OK	Cancel	Apply

## Checking TCP/IP Settings for Windows 2000

a) Select "Start → Control Panel → 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:
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. Show 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) Properties	? ×
General	
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.	
Obtain an IP address automatically	
O Use the following IP address:	-
[P address:	
Sybnet mask:	
Default gateway:	
Obtain DNS server address automatically	
C Use the following DNS server addresses:	- I
Preferred DNS server:	
Alternate DNS server:	
Ad <u>v</u> anced	
OK Can	cel

- 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 → 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
This connection uses the following items:
<ul> <li>Client for Microsoft Networks</li> <li>File and Printer Sharing for Microsoft Networks</li> <li>QoS Packet Scheduler</li> <li>Thternet Protocol (TCP/IP)</li> </ul>
Install Uninstall Properties
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Sho <u>w</u> 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) Prop	erties 🛛 🛛 🛛 🔀
General Alternate Configuration	
You can get IP settings assigned aut this capability. Otherwise, you need to the appropriate IP settings.	omatically if your network supports o ask your network administrator for
Obtain an IP address automatic	ally
Use the following IP address: -	
LP address:	· · · · · ·
S <u>u</u> bnet mask:	
Default gateway:	
⊙ 0 <u>b</u> tain DNS server address auto	omatically
OUse the following DNS server a	ddresses:
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" → "Control Panel → "Manage Network Connections" and right click "Local Area Connection" then select "Properties", window below will appear.

Dankala DTI	9120/010, E b, E+ B	hamat NIC
	8139/810X Family Fast Et	
		Configure
This connection use	es the following items:	
Client for N	/licrosoft Networks	
QoS Pack	et Scheduler	
🗹 🛃 File and Pr	inter Sharing for Microsoft	Networks
M 📥 Internet Pr	otocol Version 6 (TCP/IP	v6)
Internet Pr	otocol Version 4 (TCP/IP)	v4)
M A Link mun		Der I/O Driver
<ul> <li>Link-Layer</li> <li>Link-Layer</li> </ul>	Topology Discovery Map	ponder
<ul> <li>✓ ▲ Link-Layer</li> <li>✓ ▲ Link-Layer</li> </ul>	Topology Discovery Res	ponder
<ul> <li>✓ ▲ Link-Layer</li> <li>✓ ▲ Link-Layer</li> <li>Install</li> </ul>	Uninstall	ponder P <u>r</u> operties
<ul> <li>✓ ▲ Link-Layer</li> <li>✓ ▲ Link-Layer</li> <li>Install</li> <li>Description</li> </ul>	Uninstall	Properties
Link-Layer     L	Uninstall	Properties tocol. The default
✓	Uninstall	Properties

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

General	Alternate Configuration					
You car this cap for the	n get IP settings assigned ability. Otherwise, you ne appropriate IP settings.	automatic eed to ask	ally if your i	your n networ	etwork k admin	supports iistrator
o Ol	otain an IP address autom	natically				
	e the following IP address	s:				
IP ac	ldress:	l.	÷	<u>.</u>		
S <u>u</u> br	iet mask:		5			
Defa	ult gateway;	Ū.	C.	<u>а</u> .		
O O	tain DNS server address	automatica	ally			
O Us	e the following DNS serve	er addresse	es:			
Prefe	erred DNS server:	Ū.	21	141	14	
<u>A</u> lter	nate DNS server:					
					Ad <u>v</u>	anced
				OK		Canc

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

Local Area Connection 2 Properties
Networking Sharing
Connect using:
Realtek USB Remote NDIS Device
Configure This connection uses the following items:
<ul> <li>Client for Microsoft Networks</li> <li>QoS Packet Scheduler</li> <li>File and Printer Sharing for Microsoft Networks</li> <li>Internet Protocol Version 6 (TCP/IPv6)</li> <li>Internet Protocol Version 4 (TCP/IPv4)</li> <li>Internet Protocol Version 4 (TCP/IPv4)</li> <li>Ink-Layer Topology Discovery Mapper I/O Driver</li> <li>Ink-Layer Topology Discovery Responder</li> </ul>
Install Uninstall Properties
Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
OK Cancel

## Configure IP address Automatically:

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

Alternate Configuration				
You can get IP settings assigned autom his capability. Otherwise, you need to or the appropriate IP settings.	natically if ask your i	your n networ	etwork s k admini	supports strator
Obtain an IP address automatical	Y.			
Use the following IP address:				
IP address:				
S <u>u</u> bnet mask:				
Default gateway:				
Obtain DNS server address autom	atically			
Use the following DNS server add	resses:			
Preferred DNS server:				
<u>A</u> lternate DNS server:	•		0	
Validate settings upon exit			Adva	anced
	_			

#### Configure IP Address Manually:

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

Internet Protocol Version 4 (TCP/IPv4)	) Properties
General	
You can get IP settings assigned autor this capability. Otherwise, you need to for the appropriate IP settings.	omatically if your network supports to ask your network administrator ally
Output Description (Output Description)	
IP address:	192.168.1.10
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.1
Obtain DNS server address auto	omatically
O Use the following DNS server ad	dresses:
Preferred DNS server:	195.68.1.1
<u>A</u> lternate 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
Microsoft Windows [Version 6.1.7100] Copyright (c) 2009 Microsoft Corporation. All rights reserved.
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

The Wireless Router implements a Web server allowing user configure this device via the web based Utility. This Utility provides comprehensive system management scheme, including system configuration, performance monitoring, system maintenance and administration.

## 3.1 Access Web Based Configuration Utility

To access the Web-Based Configuration Utility, you have to launch your Internet Browser. (MS IE 6.0 or later, Netscape Navigator 4.7 or later).

**Step1:** Enter Wireless Router's default IP address as <u>http://192.168.1.1</u> in the Address field then press Enter.

Home Page - Windows Internet Explorer		
○ ▼	🝷 🔄 🗙 灯 Live Search	+ م
🚖 Favorites 🛛 🚔 🍘 Suggested Sites 🔻 💋 Web Slice Gallery 👻		
O Connecting	🟠 🔻 🔊 👻 🚍 🖶 👻 Page 🕶	Safety 🔻 Tools 🔻 🔞 🔻

**Step2:** Login dialog box will appear, enter **admin** as Administrator Name and **1234** as default Administrator Password, and then click **"OK"** to access Configuration Utility.

Windows Security	×		
The server 192.1	.68.1.1 at WebServer 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       ••••       Remember my credentials		
	OK Cancel		

Step3: After log in, you can see the Main menu as below.



#### 3.2 Operation Mode

In this option, you can configure the operation mode which suitable for your environment. The default setting is **Gateway**. There have three modes is provided:

-- Gateway: The first Ethernet port is treated as WAN port. The other Ethernet ports and the wireless interface are bridge together and are treated as LAN ports.

🏉 Wireless Router WebServer - W	Vindows Internet Explorer - [Working Offline]	
G →  Attp://192.168.1	1.1/home.asp 🔹 😽 🔀 Live Search	• ۹
🖕 Favorites 🛛 🖕 🏉 Suggeste	ed Sites 🔻 🔊 Web Slice Gallery 🔫	
Wireless Router WebServer	🛐 🔻 🔝 👻 🖃 👘 👻 <u>P</u> age 🔻 Safety 🕶 T <u>o</u> c	ols 🕶 🔞 🕶
open all   close all	Operation Mode Configuration	
Wireless 11N Router	You may configure the operation mode suitable for you environment.	
Quick start Thernet Settings Thernet Settings Thermall Thermall Thermall	Gateway: The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.	
	NAT Enable -	
	Apply Cancel	
Done	🐲 🕒 😜 Internet   Protected Mode: On 🏻 🏤 🔻 🔍 1	00% <del>-</del> "4

## 3.3 Quick Start

Quick Start will help you setup Wireless 11n Router quickly. There have five types of WAN Connections: Static (Fixed IP), DHCP (Auto Config), PPPoE (ADSL), PPTP, and L2TP.

Wireless Router WebServer - W	Vindows Internet Explorer 1.1/home.asp	▼ ⊗ 4 × I Live Search		
☆ Favorites	ed Sites 👻 🍘 Web Slice Ga	llery ▼		
Wireless Router WebServer		🟠 🔻 🖾 👻 🖃 🖶 👻 <u>P</u> age 🕶 <u>S</u> afety 🕶 T <u>o</u> ols 🕶 🔞		
open all   <u>close all</u> Wireless 11N Router	Quick Start	setup Wireless 11N Router quickly.		
Quick start	WAN Connection Type:	Lise static in address to access Network your ISP will		
	<ul> <li>STATIC (fixed IP)</li> <li>DHCP (Auto config)</li> </ul>	provide a static ip address. Automic get an ip address from your ISP.		
	O PPPoE (ADSL)	PPPoE is an common connection type used for xDSL.		
	© L2TP Layer 2 Tunneling Protocol can support multi- protocol Virtual Privat Networks(VPN).			
	PPP Tunneling Protocol can support multi-protocol Virtual Private Network(VPN).			
		Next		
Done		Genternet   Protected Mode: On € 100% ▼		

#### 3.4 Internet Settings

The Internet Settings contains the following sections:

- ◎ WAN ◎LAN
- ⊘ VPN Passthrough ⊘DNS
- DHCP Clients
   Advanced Routing

#### 3.4.1 WAN

The WAN port is the connection of the 802.11n AP Router module to existing broadband device such as Cable modem or ADSL CPE. Click **WAN** on Internet Setting, below screen will prompt for WAN setting.

🥖 Wireless Router WebServer - W	indows Internet Explorer						
😋 🔾 🗢 🙋 http://192.168.1	<b>.1</b> /home.asp	🕶 🖄 😽 🗙	Live Search	+ م			
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<b>Wireless Router WebServer</b>		🙆 <b>-</b> 6	N → 🖃 🖶 → P	age ▼ <u>S</u> afety ▼ T <u>o</u> ols ▼ @ ▼			
open all   close all	Wide Area Netv	vork (WAN) S	ettings				
Wireless 11N Router Operation Mode Quick start	You may choose differen configure parameters ac	t connection type suit cording to the selecte	able for your environr d connection type.	nent. Besides, you may also			
Internet Settings	WAN Connection	WAN Connection Type: STATIC (fixed IP)					
- LAN	Static Mode			Use a static IP			
OHCP Clients      VPN Passthrough	IP Address	0.0.0.0		provider gives a static IP			
DNS	Subnet Mask	255.255.255.0		Internet services.			
Wireless Settings	Default Gateway	0.0.0		MAC address of WAN.  If you use Cable Modem			
E Administration	Primary DNS Server	0.0.0.0		you must input it. You can			
	Secondary DNS Server			Address button to copy			
	MTU	1500	(576-1500)	Ethernet Card installed by vour ISP and replace the			
	MAC Clone			WAN MAC address with			
	Enabled	Disable 👻		this MAC address.			
	Apply	Cano	cel				
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This AP Router supports 5 methods of obtaining the WAN IP Address:

-- **Static IP (fixed IP)**: Use static IP address to access Network. Your ISP will provide a static IP address.

- -- DHCP (Auto Config): Automatic gets IP address from your ISP.
- -- PPPoE (ADSL): PPPoE is an common connection type used for xDSL.
- -- **PPTP**: PPP Tunneling Protocol can support multi-protocol Virtual Private Network (VPN).
- -- L2TP: Layer 2 Tunneling Protocol can support multi-protocol Virtual Private Networks (VPN)

## 3.4.2 LAN

You may enable/disable networking functions and configure the parameters as your need.

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	Local Area Ne	twork (LAN) Settings				
	You may enable/disable	e networking functions and configure the	eir parameters as your wish.			
Wireless 11N Router  Operation Mode	rea may enablerateable	in the second	n parametere de jour men.			
Quick start	LAN Sofup					
WAN		100 100 1 1	<ul> <li>The router IP address to I AN. The factory fault setting is</li> </ul>			
	IP Address	192.168.1.1	192.168.1.1.You can change it			
DHCP Clients	Subnet Mask	255.255.255.0	according to your requirements.			
DNS	MAC Address	00:0C:43:30:52:88	- TCP/IP protocol cotting			
Advanced Routing	DHCP Type	Server 🔻	include IP address, subnet			
🛅 Wireless Settings 🛅 Firewall	DHCP Domain Name	11N_Router	mask ,gateway and DNS server. It is not very easy to Config TCP/IP protocol correctly for all computers in			
Administration	Start IP Address	192.168.1.100				
	End IP Address	192.168.1.250	your Lan. Fortunately, the DHCP server provide this			
	DHCP Subnet Mask	255.255.255.0	fuction.If you employ this DHCP server function you can			
	Lease Time	86400	automatically.			
	Statically Assigned	MAC:	<ul> <li>Internet Group Management Protocol (IGMP) proxy can be used to</li> </ul>			
	Statically Assigned	MAC:	implement multicast routing. It works by IGMP frame forwarding from ISP to gateway client			
	Statically Assigned	MAC:	UPnP (Universal Plug and Play) allows automatic discovery and configuration of			
	LLTD	Disable 🔻	equipment attached to your			
	IGMP Proxy	Disable 👻	Windows ME, XP, or later. It			
	UPNP	Enable -	networking equipment,			
	Apply	Cancel	software and peripherals of the over 400 vendors that cooperate in the Plug and Play forum.			

**IP Address:** The router IP address to LAN. The factory default setting is **192.168.1.1.** You can change it according to your requirements.

Subnet Mask: The LAN net-mask. Default: 255.255.255.0

**DHCP Type:** Select **Disable** to disable this Router to distribute IP address. Select **Server** to enable this Router to distribute IP addresses (DHCP server). And the following field will be activated for you to enter this starting IP address.

Start IP address: Specify the starting IP address of the IP address pool. Default Start IP: 192.168.1.100.

End IP address: Specify the ending IP address of the IP address pool. Default End IP: 192.168.1.250.

**Lease Time:** Specify the time duration for which the settings will be in effect. Default: **86400** seconds.

LLTD: Default: Disable.

**IGMP Proxy (Internet Group Management Protocol):** IGMP proxy can be used to implement multicast routing. It works by IGMP frame forwarding from ISP to gateway client. Default: **Disable.** 

**UPnP** (Universal Plug and Play): UPuP is architecture for pervasive peer-to-peer network connectivity of PCs and intelligent devices or appliances, particularly within the home. UPnP builds on Internet standards and technologies, such as TCP/IP, HTTP, and XML, to enable these devices automatically connect with one another and work together to make networking – particularly home networking – possible for more people. UPnP allows automatic discovery and configuration of equipment attached to your LAN, UPnP is support Windows Me, XP or later. It provides compatibility with networking equipment, software and peripherals of the over 400 vendors that cooperate in the Play and Play forum. Default: **Disable.** 

#### 3.4.3 DHCP Clients

DHCP client computers connected to the device will have their information displayed in the DHCP Client List table. The table will show the MAC Address, IP Address and Expired in of the DHCP lease for each client computer.

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open all   close all	DHCP Clier	nt List			
Given Wireless 11N Router	You could monitor	DHCP clients here.			
Quick start	DHCP Clients				The     DHCP client
WAN	Hostname	MAC Address	IP Address	Expires in	list allows
LAN	GIGA-PC	00:0F:EA:64:C8:E6	192.168.1.100	23:29:06	you to see which clients
VPN Passthrough					are connected to
DNS					the Router
⊕ ⊕ Wireless Settings					address,
🕀 💼 Firewall					host name,
🗄 📋 Administration					address.
Done		😜 Ir	ternet   Protected Mode: O	n	🖓 🔻 🍳 100% 👻

MAC Address: Shows the client MAC address information.

IP address: Shows the client IP address information.

Expires in: Shows the expired time of the client.

## 3.4.4 VPN Passthrough

VPN passthrough configurations including: L2TP, IPSec, and PPTP passthrough.

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open all close all	VPN Passt	hrough		
Wireless 11N Router	VPN passthrought	t configurations including: L	2TP, IPSec, and PPTP passthrough.	
Quick start Internet Settings WAN	VPN Pass Through	Enable -	<ul> <li>L2TP is an extension to the Point-to- Point Protocol, which is an important component for VPNs. VPNs allow users</li> </ul>	
LAN     DHCP Clients     VPN Passtbrough	IPSec Passthrough	Enable -	and telecommuters to connect to their corporate intranets or extranets.	
DNS Advanced Routing	PPTP Passthrough	Cancel	<ul> <li>IPSec is a framework for a set of protocols for security at the network or packet processing layer of network verification.</li> </ul>	
Administration			<ul> <li>PPTP is a protocol that allows corporations to extend their own corporate network through private "tunnels" over the public Internet. Enable/Disable this protocol verification.</li> </ul>	
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**L2TP Passthrough:** L2TP is an extension to the Point-to-Point Protocol, which is an important component for VPNs. VPNs allow users and telecommuters to connect to their corporate intranets or extranets.

**IPSec Passthrough:** IPSec is a framework for a set of protocols for security at the network or packet processing layer of network verification.

**PPTP Passthrough:** PPTP is a protocol that allows corporations to extend their own corporate network through private "tunnels" over the public Internet. Enable/Disable this protocol verification.

#### 3.4.5 DNS

Domain Name Servers are used to map an IP address to search domain name, your ISP may provide the IP address for one or more domain name servers.

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open all   close all	WAN DNS Set	tings			
Wireless 11N Router Operation Mode Quick start	Domain Name Servers porvide the IP address	are used to map an IP add for one or more domain na	Iress to search domain name,yo me servers.	our isp may	
E G WAN	DNS Settings		Domain Name Servers are used to man an IP address to the equivalent		
	DNS Proxy	Enable -	domain name(e.g.www.china	com). Your	
DHCP Clients	Use Static DNS	Disable 🔻	or more domain name server	s.	
DNS	Primary DNS Server	0.0.0.0			
Wireless Settings	Secondary DNS Server		]		
E ← Firewall Administration	Apply	Cancel			
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**DNS Proxy:** Enable/Disable this Wireless Router DNS.

Use Static DNS: Specify the DNS server. Default is Disable.

Primary DNS Server: Enter the IP address of the Primary DNS Server provided by your ISP. Secondary DNS Server: Enter the IP address of the Secondary DNS Server provided by your ISP.

#### 3.4.6 Advanced Routing

Static routes are special routes that the network administrator manually enters into the router configuration. The route table allows the user to configure and define all the static routes supported by the router. You may add and remote custom Internet routing rules, and/or enable dynamic routing exchange protocol here.

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open all close all	S	tatic Routin	g Settings							
Wireless 11N Router	Yo	u may add and rem	ote custom Intern	et routing	rules, a	nd/or ena	ble dynam	nic routing exchange protocol here.		
Quick start 	Add	a routing rule						The routing table display the current routing information in system.		
WAN	Des	tination					A static route is a pre-determined pathway that network information			
DHCP Clients	Ran	ige	Host 👻	Host •				must travel to reach a specific host or network.		
VPN Passthrough     DNS	Gat	eway								
Advanced Routing	Inte	rface	LAN	LAN 🔻						
E Firewall	Con	nment								
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								_		
	Cur	rent Routing table	in the system:							
	No.	Destination	Netmask	Gateway	Metric	Interface	Commen	ot		
		255.255.255.255	255.255.255.255	0.0.0.0	0	LAN (br0)				
	2	192.168.1.0	255.255.255.0	0.0.0.0	0	LAN (br0)		_		
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#### <Add a routing rule>

**Destination:** Defines the base IP address (Network Number) that will be compared with the destination IP address (after an AND with NetMask) to see if this is the target route.

Range: select the range from drop down list

**Gateway:** Enter IP address of the next hop router that will be used to route traffic for this route. If this route is local (defines the locally connected hosts and Type = Host) then this IP address MUST be the IP Address of the router.

Interface: Select the interface mode from drop down list.

**Comment:** Enter the comment for this static route.

<Current Routing table in the system>

To see the detail settings of current routing information in the system.

#### 3.5 Wireless Settings

The wireless settings can be quickly configured as a wireless access point for roaming client by setting the access identifier and channel number. It also supports data encryption and client filtering. The Wireless Settings contains the following sections:

◎Basic	OAdvanced	⊚Security	⊚WDS
⊚WPS		⊚Site Survey	

#### 3.5.1 Basic

This function allows you to define SSID, and Channel for the wireless connection. These parameters are used for the wireless stations to connect to the Access Point. Click **Basic** 

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Wireless Router WebServer		🖞 🔹 🔊 🗉	□ → Page ▼ Safety ▼ Tools ▼
open all   close all	Basic Wireless Settir	igs	
Wireless 11N Router  Operation Mode  Quick start	You could configure the minimum Access Point can be set simply wit	number of Wireless settings for communication, such h only the minimum setting items.	as Network Name (SSID) and Channel. The
Internet Settings	Wireless Network		Channel:The radio channel for wireless
Basic	Radio On/Off	RADIO OFF	connection operation.
Advanced	Network Mode	11b/g/n mixed mode 👻	
WDS	Network Name(SSID)	Default_11N	
WPS	Broadcast Network Name (SSID)	💿 Enable 🔘 Disable	]
Site Survey	BSSID	00:0C:43:30:52:88	_
Firewall	Frequency (Channel)	2437MHz (Channel 6) 🔻	
	High Throughput (HT) Physical Mod	1	
	Operating Mode	Mixed Mode	
	Channel BandWidth	20	]
	Guard Interval	💿 Long 💿 Auto	
	MCS	Auto 👻	
	Reverse Direction Grant(RDG)	🔘 Disable 🔘 Enable	
	Aggregation MSDU(A-MSDU)	🖲 Disable 🔘 Enable	
	Apply	Cancel	
			-
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#### Setting on Wireless Settings, below screen will prompt for Basic Setting.

#### [Wireless Network]

Radio On/Off: Enable/Disable the Wireless radio feature. Default setting is Radio OFF.

**Network Mode:** Choose a mode from the pull-down menu. Make sure that you have the equipment you need. As you're looking for products in stores or on the Internet, you might notice that you can choose equipment that supports five different wireless networking technologies: **802.11b/g/n Mixed**, **802.11b/g Mixed**, **802.11b**, **802.11g**, and **802.11n** 

**Network Name (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. Default name is **Default\_11N**.

**Broadcast Network Name (SSID): Enable**- This wireless AP will broadcast its SSID to station. **Disable**- This wireless AP will not broadcast its SSIF to stations. If stations ant to connect to this wireless AP, this AP's SSID should be known in advance to make a connection. **BSSID:** MAC address of this wireless router.

**Frequency:** The radio channel for wireless connection operation. Select **1~13** or **AutoSelect** from the pull-down menu.

#### [HT Physical Mode]

**Operation Mode: Mixed mode operation –** In this mode, both the MIMO-OFDM system and the legacy systems shall co-exist. The MIMO system should have the capability to generate legacy packets for the legacy system and high throughout packets for MIMO-OFDM systems. So, the burst structure should be decodable to legacy systems and should provide better performance to MIMO-systems. **Green Field mode operation –** This mode is similar to mixed mode where the transmission happens only between the MIMO-OFDM systems in the presence of legacy receivers. However, the MIMO-OFDM packets transmitted in this ode will have only MIMO specific preambles and no legacy format preambles are present.

Channel Bandwidth: Specify the channel bandwidth. Select 20 or 20/40, default setting is **20/40**.

**Guard Interval:** Guard-Interval is used to reduce interference of multi-path channel. Longer guard periods allow more distant echoes to be tolerated. However, longer guard intervals reduce the channel efficiency

**MCS**: The Modulation and Coding Scheme (MCS) is a value that determines the modulation, coding and number of spatial channels. Select the MCS from the pull-down menu 0~15, 32 or Auto. Default: **Auto**.

**Reverse Direction Grant (RDG):** Enable/Disable RDG function. Reverse Direction Grant (RDG) essentially speeds up data transmission between clients and their wireless access point/router by allowing other wireless workstations to send/receive data simultaneously without contending for shared medium.

**Aggregation MSDUA (A-MSDU):** A-MSDU increases the maximum frame transmission size from 2,304 bytes to almost 8k bytes (7935 to be exact) while A-MPDU allows up to 64k bytes.

#### 3.5.2 Advanced

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 changes will have on your AP router. Click **Advanced** on Wireless Settings, below screen will prompt for Advanced Setting.

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pen all   close all	Advanced wireles	ss Settings	
Wireless 11N Router  Deration Mode  Quick start	Use the Advanced Setup page Basic Setup page, such as Be	e to make detailed settings for the Wireless. Advar eacon Interval, Control Tx Rates and Basic Data R	nced Setup includes items that are not available from th ates.
Internet Settings	Advanced Wireless		RTS Threshold:Lower the signal RTS (Request 1
Basic	Beacon Interval	100 ms (range 20 - 999, default 100)	Send) to promote the transmission efficiency in condition of noisy environment or too many clients.
	Data Beacon Rate (DTIM)	1 ms (range 1 - 255, default 1)	
	Fragment Threshold	2346 (range 256 - 2346, default 2346)	
	RTS Threshold	2347 (range 1 - 2347, default 2347)	
∃- 🛅 Firewall ∃- 🦳 Administration	Short Preamble	© Enable 🖲 Disable	
	Short Slot	🖲 Enable 🔘 Disable	
	Tx Burst	Enable O Disable	
	Pkt_Aggregate	🖲 Enable 🔘 Disable	
	Country Code	FR (France)	
	Wi-Fi Multimedia		
	WMM Capable	Enable O Disable	
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	Multicast-to-Unicast Converte	۲.	
	Multicast-to-Unicast	Enable O Disable	
	Appl	( Cancel	

#### [Advanced Wireless]

**Beacon Interval:** Beacon Interval is the amount of time between beacon transmissions. Before a station enters power save mode, the station needs the beacon interval to know when to wake up to receive the beacon. Range 20-999, default is **100**.

**Data Beacon Rate (DTIM):** The DTIM period indicates how many beacon frames can transmit before another DTIM is transmitted. Range from 1-255, default setting is **1**.

**Fragment Threshold:** Fragmentation mechanism is used for improving the efficiency when high traffic flows along in the wireless network. If the 802.11g MIMO Wireless Router often transmit large files in wireless network, you can enter new Fragment Threshold value to split the packet. The value can be set from 256 to 2346. The default value is **2346**.

**RTS Threshold:** RTS stands for "**Request to Send**". This parameter controls what size data packet the low level RF protocol issues to an RTS packet. RTS Threshold is a mechanism implemented to prevent the "Hidden Node" problem. If the "Hidden Node" problem is an issue, please specify the packet size. The RTS mechanism will be activated if the data size exceeds the value you set. The default is **2347**.

**Short Preamble:** Select Disable or Enable this function, default setting is Disable. A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter.

**Short Slot:** When short slot is Enable, the wireless device uses the short slot time only when all clients associated to the 802.11g, 2.4-GHz radio supports short slot time. Short slot time is an 802.11g-only feature and does not apply to 802.11a radios.

Tx Burst: Enable the transmitted time slot can increase transmission throughput.

**Pkt\_Aggregate:** The parameter can be used to increase the delivered bandwidth in community networks including fixed and mobile stations.

**Country Code:** Select your local Country code for pull-down menu. For Safety (FCC or CE rule) reason, please don't change this default setting.

#### [Wi-Fi Multimedia]

WMM prioritizes traffic according to four Access Categories (AC) - voice, video, best effort, and background. However, it does not provide guaranteed throughput. It is suitable for simple applications that require QoS, such as Voice over IP (VoIP) on Wi-Fi phones.

WMM Capable: Enable/Disable the Wi-Fi Multimedia (WMM) support.

**APSD Capable:** Enable/Disable the APSD support.

WMM Parameters: Click "WMM Configuration" to setup the WMM function.

#### 3.5.3 Security

This function allows you setup the wireless security. Setup the wireless security and encryption to prevent from unauthorized access and monitoring.

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open all   close all	Wireless Security/Enc	ryption Settings	
Wireless 11N Router	Setup the wireless security and encry	ption to prevent from unauthorized access and monitoring.	
Quick start	"Default_11N"		Access Plicy: In Accept Plicy, Router only accept
Wireless Settings     Basic	Security Mode	Disable -	Plicy,Router will reject clients with MAC address in the
- Advanced			not.
- WDS	Access Policy		
- WPS	Policy	Disable 🔻	
Site Survey	Add a station Mac:		
Firewall     Administration	Appl	y Cancel	
		😜 Internet   Pro	otected Mode: On 🛛 🖓 👻 🔍 100% 👻

Security Mode: This function allows you setup the wireless security. Enable security mode could prevent any unauthorized access to your wireless network. [*Open*: If your wireless router is using "**Open**" authentication, then the wireless adapter will need to set to the same authentication type. *Shared*: Shared key is when both the sender and the recipient share a secret key. *WPA*, *WPA-PSK*, *WPA2*, *WPA2-PSK*, *WPA-PSK/WPA2-PSK*, *and WPA1/WPA2*: WPA-PSK offers two encryption methods, TKIP and AES. Select the type of algorithm, TKIP or AES and then enter a WPA Shared Key of 8~64 characters in the WPA Pre-shared key field.] Encryption Type: For Open & Shared authentication mode, the selection of encryption type

are **None** and **WEP**. For **WPA**, **WPA2**, **WPA-PSK**, **and WPA2-PSK** authentication mode, the encryption type supports both TKIP and **AES**.

**WPA Pre-shared Key:** This is the shared secret between AP and STA, For **WPA-PSK and WPA2-PSK** authentication mode, this field must be filled with character longer than 8 and less then 64 lengths.

**WEP Key:** Only valid when using WEP encryption algorithm. The key must match with the AP's Key. There are several formats to enter the keys.

-- Hexadecimal (128bits): 26 Hex characters (0-9, a-f)

-- ASCII (128bits): 13 ASCII characters.

WPA Algorithms: Select TKIP, AES, TKIP/AES for the WPA Algorithms.

**WPA Key Renewal Interval:** This field specifies the interval (in seconds) after which a WPA group key is changed.

**Enable Pre-Authentication:** The two most important features beyond WPA to become standardized through 802.11i/WPA2 are: pre-authentication, which enables secure fast roaming without noticeable signal latency.

**RADIUS Server:** RADIUS is an authentication, authorization and accounting client-server protocol. The client is a Network Access Server that desires to authenticate its links. The server is a server that has access to a user database with authentication information.

**IP Address:** The IP address of the RADIUS server for 802.1X wireless authentication and dynamic WEP key derivation. Enter the RADIUS Server's IP address provided by your ISP.

**Port:** The UDP port number for connection to the RADIUS server. Enter the RADIUS Server's port number provided by your ISP. The default is **1812**.

Shared Secret (Connection Secret): Enter the password that the router shares with the RADIUS Server.

Access Policy: In Accept Policy, Router only accepts clients with MAC address in the list. In Reject Policy, Router will reject clients with MAC address in the list.

#### 3.5.4 WDS

Wireless Distribution System (WDS) is a system that enables the wireless interconnection of access points in an IEEE 802.11 network.

WDS is another way for AP router to join an existing Wi-Fi network. The WDS feature is normally used in large, open areas where pulling a wire is restricted or not cost effective and in residential circumstances. User can use this feature to build up a large wireless network in a large space like airports, hotels and schools...etc. This feature is also useful when users want to bridge networks between buildings where it is impossible to deploy network cable connections between these buildings.

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Wireless 11N Router	Wireless Distributio	on System Settings		
Guick start     Guick sta	Wireless Distribution BSSID WDS Mode	n System(WDS) 00:0C:43:30:52:88 Disable	Wireless Distribution System (WDS) is a syst that enables the wireless interconnection of acc points in an IEEE 802.11 network.	tem :ess
Security WPS Station List Site Survey Firewall Administration		Apply Cancel		
			😜 Internet   Protected Mode: On 🛛 🖓 👻 🧌	💐 100% 🔻

#### There are 3 modes of WDS:

(1) Lazy – Automatic detection of WDS peers: when a LAN user searches for a network, AP router will attempt to connect to WDS devices in its vicinity.

(2) Bridge – AP router will function as a wireless bridge, merely forwarding traffic between access points, and will not respond to wireless requests. In fact, they become wireless bridges while configured in this manner. Only a small number of access points on the market have bridge functionality, which typically adds significant cost to the equipment. The WDS peers must be manually stated and wireless stations will not be able to connect to AP router. You can see from below diagram that clients do not associate to bridges, but rather, bridges are used to link two or more wired segments together wirelessly.



(3) Repeater – AP router will act as a repeater, interconnecting between access points. WDS peers can be determined by auto-detected ("*Lazy*" mode). In repeater mode, access points have the ability to provide a wireless upstream link into the wired network rather than the normal wired link. As you can see the below diagram, one access point serves as the Restricted access point and the other serves as a wireless repeater.



The access point in repeater mode connects to clients as an access point and connects to the upstream restricted access point as a client itself. Using an access point in Repeater mode is not suggested unless absolutely necessary because cells around each access point in the scenario must overlap by minimum of 50%. This configuration drastically reduces the range at which clients can connect to the repeater access point. Additionally, the repeater access point is communicating with the client as well as the upstream access point over the wireless link, reducing throughput on the wireless segment. Users attached to the repeater access point will likely experience low throughput and high latencies in the scenario. It is typical for wired Ethernet port to be disabled while in repeater mode.

#### 3.5.5 WPS

You could setup security easily by choosing PIN or PBC method to do Wi-Fi protected setup.

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Wireless Router WebServer			🟠 🕶 🗟 👻 📑 🖶 💌 🛔	2age ▼ Safety ▼ Tools ▼ 🕢 ▼
open all   close all	Wi-Fi Prote	cted Setup		
Wireless 11N Router Quick start Quick start Basic Advanced Sccurity WDS Station List Site Survey Basic Advanced Station List Site Survey Administration	You could setup s WPS Config WPS: Apply	ecurity easily by choosing PIN or PBC method to	WI-FI Protected Setup.     WI-FI Protected Set     and secure establishm     network, created by the     launched on January 8	up (WPS) is a standard for easy nent of a wireless home a Wi-Fi Alliance and officially , 2007.
Done			Internet   Protected Mode: On	🖓 🔻 🍕 100% 👻 💡

Wi-Fi Protected Setup was designed to ease setup of security enabled WiFi networks in the home and small office environment. It supports methods that are familiar to most consumers to

configure a network and enable security, like pushing a button (PBC method) or entering a PIN code (PIN method). The new system, which will be incorporated in Windows Vista, will work with computers, gateways peripherals, and consumer electronics.

You would initiate a WPS mode on gateway and then enter a simple sequence of digits (like a PIN code) or press a button, use a similarly easy method to start a secure key exchange to retrieve the WPA/WPA2 key.

This function allows you to change the setting for WPS (Wi-Fi Protected Setup). WPS can help your wireless client earlier automatically connect to the Access Point.

WPS Config	
WPS:	Enable -
Apply	
WPS Progress	
WPS mode	● PIN ◎ PBC
PIN	
Apply	
WPS Summary	
WPS Current Status:	Idle
WPS Configured:	No
WPS SSID:	Default_11N
WPS Auth Mode:	Open
WPS Encryp Type:	None
WPS Default Key Index:	1
WPS Key(ASCII)	
AP PIN:	31668569 Generate
Reset OOB	
[	
WPS Status	
WSC:Idle	
4	

#### [WPS Summary]

From this section, you can view the current WPS status, Configured, SSID, Auth mode, Encrypt Type, Default Key Index, WPS Key, and AP PIN information.

Reset OOB: Click this button to rest the settings.

#### [WPS Progress]

WPS Mode: Specify the AP router acts as a Registrar or an Enrollee.

In PIN method (PIN-Personal Identification Number), When your 11n router acts as a Registrar, your must enter "Add Enrollee PIN code" on WPS config section, this Enrollee PIN code should be provided by the Enrollee. If your 11n router acts as a Enrollee, in WPS config section, the "PIN code of this AP" 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 WPS Config**" button, the WPS (Wi-Fi Protected Setup) will establish the connection automatically.

PIN: Enter the PIN code from the registrar or enrollee.

WPS Status: Here shows the current status of the WPS function.

### 3.5.6 Station list

In this section, you can monitor stations which associated to this AP.

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<i>€</i> Wireless Router WebServer				👌 🔹 🔊	- 🖃 🦷	) <b>▼</b> <u>P</u>	age 🔻	<u>S</u> afety ▼	T <u>o</u> ols ▼	•9
open all   close all	Station List									
Wireless 11N Router	You could monitor stati	ons wh	ich associ	iated to this AP h	ere.					
Quick start	Wireless Network									
🖃 🔄 Wireless Settings	MAC Address	Aid	PSM	MimoPS	MCS	BW	SGI	STBC		
Advanced     Security     WDS     Station List     Site Survey     Firewall										
Done			😝 Inte	ernet   Protected	Mode: On			- G	€ 100%	•

## 3.5.7 Site Survey

Site Survey page shows information of AP nearby.

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open all   <u>close all</u>	Station Site Survey			
Wireless 11N Router	Site survey page shows informatio	n of APs nearby.		
Quick start     Internet Settings     G    Wireless Settings	Site Survey			
Basic Advanced Security	ra0 Ch SSID 9 10 MD514UN FTD Server	get_site_survey: BSSID 00:0c:43:41:46:26 00:0c:43:28:90:00	Security Sigan WPA1PSKWPA2PSK/TKIPAES 10 WDA1PSKWPA2PSK/TKIPAES 20	.(%)W-Mode 11b/g/
WDS WPS Station List	15 WROTAVA_TIT_DETVET	00.00.40.20.00.00	MERTEDAMERZEDA, INITALS 20	11D/g/
■ ☐ Firewall ■ ☐ Administration				
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#### 3.6 Firewall

 The Firewall contains the following sections:

  $\bigcirc$ MAC/IP/Port Filtering
  $\bigcirc$ Port Forwarding
  $\bigcirc$ DMZ
  $\bigcirc$ System Security Setting
  $\bigcirc$ Content Filtering
  $\bigcirc$ Port Trigger

#### 3.6.1 MAC/IP/Port Filtering Settings

You can setup firewall rules to protect your network from virus, worm and malicious activity on the internet. Filters are used to deny or allow LAN computers from access the Internet. Within the local area network, the unit can be setup to deny Internet access to computers using the assigned IP or MAC addresses. The unit can also block users from accessing restricted web site.

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open all   close all	MAC/IP/Port Filte	ring Setting	S						
Wireless 11N Router	You may setup firewall rules	s to protect your netw	ork from virus,w	vorm and	d malici	ious activity	y on the Internet.		
Quick start	MAC/IP/Port Filter Settings				_		MAC Address: The MAC address of	the computer	
Wireless Settings	MAC/IP/Port Filtering	Disable 🔻	•				in the LAN (Local Area Network) fill her Enter the MAC address of LAN port, e.g	e to filter out it. J.	
	Filter Type Selection	Mac Filte	er 🔘 IP/Port Fil	ilter			00:00:27:88:81:18		
Port Forwarding     DMZ	MAC address		Fo	ormat{XX	:XX:XX:	XX:XX:XX}			
System Security	Action	Drop 👻					-		
Content Filtering	Comment						-		
	(The maximum rule count is 3	(2.)							
	Apply Reset								
							-		
	Current MAC/IP/Port filtering	rules in system:							
	No. MAC Dest IP Address	Source IP Address Protocol	Dest Port Range R	ource Port Range	Action	Comment			
		Others would be	accepted						
	Delete Selected	Reset							
					<b>e</b>	Internet   Pr	rotected Mode: On 🛛 🖓 🕚	• 🔍 100% 👻 🔡	

**MAC/IP/Port Filtering:** Enable this function, all list from the filtering will be deny the internet access.

**MAC Address:** The MAC address of the computer in the LAN (Local Area Network) to be used in the MAC filter table. Enter the MAC address of LAN port, e.g. 00:00:27:88:81:18

Dest IP Address: The IP address that will be denied to access.

Source IP Address: The IP address that will be denied access to the Internet.

**Protocol:** This is the protocol type that will be used with the Port that will be blocked.

**Destination Port Range:** The single port or port range that will be denied to access. If no port is specified, all ports will be denied access.

**Source Port Range:** The single port or port range that will be denied access to the Internet. If no port is specified, all ports will be denied access.

### 3.6.2 Port Forwarding

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open all   close all Wireless 11N Router Operation Mode	Virtual Server S	Settings rvers to provide services on Internet.		
Quick start Quick start Wireless Settings Port Forwarding DMZ Ontent Filtering Port Trigger Administration	Virtual Server Settings Virtual Server Settings IP Address Port Range Protocol Comment (The maximum rule count i Apply Reset Current Virtual Servers in No. IP Address Delete Selected	Disable       Image       TCP&UDP       Image       Protocol       Comment       Reset	This is the Internet Protocol type Iii TCP,UDP,TCP and UDP	:e
Done		😜 Internet   Prot	ected Mode: On 🛛 🖓 🔻	€ 100% ▼

You may setup virtual servers to provide service on internet.

Virtual Server Setting: Enable/Disable the port forward.

**IP Address**: This is the port number on the WAN side that will be used to access the application. You may define a single port or a range of ports. You can use a comma to add multiple ports or port ranges.

**Port Range:** This is the port used to forward the application. It can be either a single port or a range of ports. For the TCP and UDP services enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.

**Protocol:** Select the protocol (TCP, UDP, or TCP & UDP) used to the remote system or service.

**Comment:** You may key in a description for the IP address.

#### 3.6.3 DMZ

You may setup a De-Militarized Zone (DMZ) to separate internet network and internet.

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Wireless Router WebServer			6	▼ 🛐 ▼ 🖃 🖶 ▼ <u>P</u> age ▼	<u>S</u> afety ▼ T <u>o</u> ols ▼ 🕢 ▼
open all   <u>close all</u>	DMZ Settings				
Vireless 11N Router Operation Mode Quick start Mireless Settings Firewall MC/IP/Port Filtering System Security Content Filtering Port Trigger Administration	You may setup a De-militar          DMZ Settings         DMZ Settings         DMZ IP Address         Apply	ized Zone(DMZ) to separate i	nternal network	<ul> <li>Enter the IP address of a p.</li> <li>LAN that will receive all the pa the WAN port/Public IP addres</li> </ul>	articular host in your ckets originally going to s above.
Done			身 Internet   Pro	otected Mode: On	🖓 🔻 🔍 100% 🔻 💡

**DMZ Setting:** If the DMZ Host Function is enabled, it means that you set up DMZ host at a particular computer to be exposed to the Internet so that some applications/software, especially Internet/Online game can have two-way connections. Select Enable or Disable from the pull-down menu.

**DMZ IP Address:** Enter the IP address of a particular host in your LAN that will receive all the packets originally going to the WAN port/Public IP address above. **Note:** You need to give your LAN PC clients a fixed/static IP address for DMZ to work properly.

#### 3.6.4 System Security Settings

You may configure the system firewall to protect AP/Router itself from attacking.

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open all   close all Vireless 11N Router Operation Mode Quick start Firewall MAC/IP/Port Filtering Port Forwarding DMZ Content Filtering Port Trigger Administration	System Security You may configure the syst Remote management Remote management (via W Ping form WAN Filter Ping form WAN Filter Stateful Packet Inspection SPI Firewall Apply Reset	r Settings em firewall to protect itself fr (AN) Disable • 8080 Disable • (SPI) Enable •	om attacking. (1-65535)	Stateful Inspection:Tracks tr ensure that inbound packets w user.	ne transaction to rere requested by the
Done			🌏 Internet   Prot	tected Mode: On	🖓 🔻 🍕 100% 🔻 🔡

Remote management: Let User could management router's web from WAN specify TCP port. Ping form WAN Filter: Let Router WAN IP address could reply PING package.

**Stateful Inspection:** Tracks the transaction to ensure that inbound packets were requested by the user.

## 3.6.5 Content Filtering

You can setup content filter to restrict the improper content access.

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Wireless Router WebServer	Content Filter Settings         You can setup Content Filter to restrict the improper content access.         Webs Content Filter         Filters:       Proxy       Java       ActiveX         Apply       Reset       Reset       Multiple         URL Filter Settings         Current Webs URL Filters:         No       URL         Delete       Reset         Add       Reset	<ul> <li>▶ N ▼ □ ⊕ ▼ Page ▼ Safety ▼ Tools ▼</li> <li>Pilter URL : Blocks HTTP requests containing specify URL string. Example: cgi-bin</li> </ul>	•
Done	Webs Host Filter Settings         Current Website Host Filters:         No       Host(Keyword)         Delete       Reset         Add a Host(keyword) Filter:       Keyword         Add       Reset	ernet   Protected Mode: On	

**Content Filter Setting:** There have three options for this filter – Proxy, Java, and ActiveX. When those options are checked, the content filter will deny computer from access to the internet by contented those options.

- -- Filter Proxy: Blocks HTTP requests containing the (Host:) string.
- -- Filter Java Applets: Blocks HTTP requests containing a URL ending in (.js) or (.class).
- -- Filter ActiveX: Blocks HTTP requests containing a URL ending in (.ocx) or (.cab).

**Web URL Filter Setting:** With security reason, the URL Filter provides the enterprise to manage and restrict employee access to non-business or undesirable content on the Internet. URL Filter is a web solution that blocks web-sites access according the URL Filter String no

matter the URL string is found full or partial matched with a keyword.

-- Filter URL: Blocks HTTP requests containing specify URL string. Example: cgi-bin

-- Filter HOST: Blocks HTTP requests containing specify HOST string. Example: www.xxx.com

**Web Host Filter Settings:** Web Host Filter is a web solution that blocks web-sites access according the Web Host name or partial matched with a keyword.

#### 3.6.6 Port Trigger

Some applications require multiple connections, such as Internet gaming, video conferencing, Internet telephony and others. If you need to run applications that require multiple connections, specify the port normally associated with an application in the "**Trigger Port**" field, select the protocol type as TCP or UDP, then enter the public ports associated with the trigger port to open them for inbound traffic.

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open all close all	Port Trigger Ser	vice				
Wireless 11N Router	You may configure the syste	em to trigger specia	I packeg des	tion port and	1 according the trigger finish p	ort transfer.
Quick start	Port Trigger Service				Informantion Area	
Wireless Settings	Port Trigger Setting	Disable 🔻				
MAC/IP/Port Filtering	Trigger Port					
Port Forwarding	Trigger Protocol	TCP 👻				
System Security	Public Port Range	-				
Port Trigger	Trig open protocol	TCP&UDP -				
⊡ Administration	Comment					
	(The maximum rule count is 3	<i>(</i> 2.)				
	Apply Reset					
	Teiner contain in Correct of					
	No. Outgoing Trigger Port Protoco	i Incoming Port	Public Protocol	Comment		
	Delete Select Res	set				
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**Port Trigger Setting:** After Enable the Port Trigger, it allows a host machine to dynamically and automatically forward a specific port back to itself. Port triggering opens an incoming port(public port) when your computer is using a specified outgoing port(trigger port) for specific traffic.

**Trigger Port:** This is the port used to trigger the application. It can be either a single port or a range of ports.

**Trigger Protocol:** This is the protocol used to trigger the special application.

Public Port Range: This is the port number on the WAN side that will be used to access the

application. You may define a single port or a range of ports. You can use a comma to add multiple ports or port ranges.

Trig open protocol: This is the protocol used for the special application.

## 3.7 Administration

The Administration contains the following sections:

DDNS
 Upload Firmware
 Setting Management

©Statistics ©System Log

Administration
Status
Logout

## 3.7.1 DDNS Setting

DDNS allows you to create a hostname that points to your home or office IP address, providing and easy-to-remember URL for quick access.

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open all   close all	Dynamic DNS Manage	mnet	
Wireless 11N Router	DDNS allows you to create a hostnam	e that points to your home or office IP address, providing an	1 easy-to-remember URL for quick access.
Internet Settings	DDNS Settings		The account using to authentication or login to     DDN0 account using to authentication or login to
Wireless Settings     Firewall	Dynamic DNS Provider	None	DDNS provider.
Administration	Account		
NTP setting	Password		
Administration     Upload Firmware	DDNS Host Name		
Settings Management     Status     Status     Statistics     System Log     Logout	Apply	Cancel	
		Internet   Prot	ected Mode: On 🌱 🖓 🕶 🕄 100% 👻 🚽

**Dynamic DNS providers:** It provide a software client program that automates the discovery and registration of client's public IP addresses

Account: The account using to authentication or login to DDNS provider.

Password: The password using to authentication or login to DDNS provider.

**DDNS Host Name:** Host Name field, you have to enter the fully qualified name of you dynamic domain (e.g. myhostname.example.org).

## 3.7.2 NTP Setting

User could change Network Time Protocol (NTP) for time synchronization needs.

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open all   close all	Network Time Prot	ocol Management	
Wireless 11N Router	User could change Network Tim	e Protocol (NTP) for time synchronization needs.	
Quick start     Internet Settings	NTP Settings		The server which provide the
⊕ ⊕ ⊕ Gireless Settings ⊕ ⊕ ⊕ Firewall	Current Time	Sat Jan 1 01:34:45 UTC 2001 Sync with host	time synchronization service.
Administration	Time Zone:	(GMT-11:00) Midway Island, Samoa 🔹	
DDNS setting     Administration     Upload Firmware     Settings Management	NTP Server	ex: time.nist.gov ntp0.broad.mit.edu time.stdtime.gov.tw	
Status Statistics	NTP synchronization(hours)	24	
System Log		Apply Cancel	-
Done		Internet   Protected Mode: On	🖓 🔻 🔍 100% 👻 🔡

Current Time: Show router's current time.

**Time Zone:** Time zone is a region of the earth that has uniform standard time, usually referred to as the local time. By convention, time zones compute their local time as an offset from UTC (see also Greenwich Mean Time). Local time is UTC plus the current time zone offset for the considered location.

**NTP Server:** The server which provide the time synchronization service.

### 3.7.3 Administration

You may configure administrator account and password in here.

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open all   close all	System Manage	ment				
Given Wireless 11N Router	User may configure admini	istrator account and pas	ssword			
Quick start	Adminstrator Settings			User could change user name     and password to login web	change user name to login web.	
Wireless Settings     Firewall	Account	admin	]			
Administration	Password	••••	]			
NTP setting     Administration     Upload Firmware     Settings Management     Status     Status     Statistics     System Log     Logout	Apply	Cance	1			
Done		😜 Internet	Protected Mode: O	n	A 100%     Control     Contro     Contro     Control     Control     Control     Control     C	•

## 3.7.4 Upgrade Firmware

Firmware is the main software image, which the AP Router needs to perform all tasks in real time. Firmware upgrades are required for adding new features or to resolves bugs. It takes about 1 minute to upload/upgrade flash and be patient please.

Caution: A corrupted image will hang up the system.

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open all   close all	Upgrade Firmware			
Wireless 11N Router Operation Mode	Upgrade the Wireless 11n Router firmware to obtain new functionality. It takes about 1 minute to upload upgrade flash and be patient please. Caution! A corrupted image will hang up the system.			
⊡ ⊡ Internet Settings ⊡ ⊡ Wireless Settings	Update Firmware			
🗄 🛅 Firewall	Location: Browse			
DDNS setting	Apply			
NTP setting     Administration				
Upload Firmware				
Settings Management				
Statistics				
Logout				
Done	Solution (Sector Contraction (Sector Contraction)) Sector (Sector Contraction) Sector (Sector (Sector Contraction) Sector (Sector			

#### 3.7.5 Setting Management

You might save system settings by exporting them to configuration file, restore them by import the file, or reset them to factory default.

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open all   <u>close all</u>	Settings Management	
Wireless 11N Router  Operation Mode  Quick start  Quick start  Advinistration  Advinistration  DDNS setting  Advinistration  Upload Firmware  Status  Status  System Log  Logout	You might save system settings by exporting them to a configuration file, restore them by importing the file, or reset them to factory default.	
	Export Settings	
	Export Button Export	
	Import Settings	
	Settings file location Browse Import Cancel	
	Load Factory Defaults	
	Load Default Button Load Default	
	Reboot Router	
	Reboot Router Button Reboot	
Done	Sinternet   Protected Mode: On 🖓 🔻 🔍 100%	<b>▼</b> i

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#### 3.7.6 Status

In this section, you can look at the status of this wireless 11n Router, such as System Info, Internet Configurations, and Local Network...etc.



## 3.7.7 Statistics

In this section, you can look at the statistics of this wireless 11n Router, such as Memory statistics, WAN/LAN's Rx & Tx packets...etc

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Generalian	WAN/LAN	2404 KB	
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	WAN Tx packets:	606	
	LAN Rx packets:	10699	
	LAN Rx bytes:	1090819	
Logout	LAN Tx bytes:	4350370	
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## 3.7.8 System Log

This 802.11n Router supports sending system log (sending UDP packets and keeping log messages in Log Server. Click **Refresh** on **Administration**, below screen will prompt for System Log information

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Wireless 11N Router Operation Mode Quick start Internet Settings	Syslog: Refresh Clear	ш
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Settings Management Status Statistics Statistics System Logi	Jan 1 00:00:23 Router user.warn kernel: Determined physical RAM map: Jan 1 00:00:23 Router user.warn kernel: memory: 01000000 @ 00000000 (usable) Jan 1 00:00:23 Router user.debug kernel: On node 0 totalpages: 4096 Jan 1 00:00:23 Router user.debug kernel: DMA zone: 32 pages used for memmap Jan 1 00:00:23 Router user.debug kernel: DMA zone: 4064 pages, LIFO batch:0 Jan 1 00:00:23 Router user.debug kernel: Normal zone: 0 pages used for memmap Jan 1 00:00:23 Router user.debug kernel: Normal zone: 0 pages used for memmap Jan 1 00:00:23 Router user.debug kernel: Normal zone: 0 pages used for memmap Jan 1 00:00:23 Router user.debug kernel: Soft and the second	Ŧ
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## 3.7.9 Logout

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open all   close all You have Logout successfully				
<ul> <li>Wireless 11N Router</li> <li>Operation Mode</li> <li>Quick start</li> <li>Internet Settings</li> <li>Wireless Settings</li> <li>Firewall</li> <li>Administration</li> <li>DDNS setting</li> <li>NTP setting</li> <li>Administration</li> <li>Upload Firmware</li> <li>Settings Management</li> <li>Status</li> <li>Statistics</li> <li>System Log</li> <li>Logouti</li> </ul>				
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Click "Logout" to exit Wireless 11n router configuration page.