![LevelOne logo]

LevelOne

User Manual

WAP-6150

300Mbps Wireless Gigabit PoE Access Point

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FCC Interference Statement

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 radio interference in a commercial environment. This equipment can generate, use and radiate radio frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are necessary to correct the interference.

CE Declaration of Conformity

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022/A1 Class B.

Chapter 1 Introduction

Congratulations on your purchase of this outstanding product: BDP77A-001 WiFi 4G Business Gateway. This device is specifically designed for those who need to have the data, voice, video and file sharing services beyond his home and office. It provides a complete solution for Internet surfing and broadband sharing. Instructions for installing and configuring this product can be found in this manual. Before you install and use this product, please read this manual carefully for fully exploiting the functions of this product.

1.1　Contents List

Items	Description	Contents	Quantity
1	**WAP-6150**		1pce
3	**2.4G WiFi Antenna**		2pce
4	**Power Adapter**		1pce
5	**RJ45 Cable**		1pce
6	**CD**		1pce

1.2 Hardware Installation

1.2.1 WARNING

⚠️ *Attention*	● Do not use the product in high humidity or high temperatures. ● Do not use the same power source for the Product as other equipment. Only use the power adapter that comes with the package. Using a different voltage rating power adaptor may damage the router. ● Do not open or repair the case yourself. If the Product is too hot, turn off the power immediately and have it repaired at a qualified service center. ● Place the Product on a stable surface and avoid using this product and all accessories outdoors.

1.2.2 SYSTEM REQUIREMENTS

Network Requirements	• An Ethernet-based Cable or DSL modem • IEEE 802.11n or 802.11b, g wireless clients • 10/100 Ethernet
Web-based Configuration Utility Requirements	**Computer with the following:** • Windows®, Macintosh, or Linux-based operating system • An installed Ethernet adapter **Browser Requirements:** • Internet Explorer 6.0 or higher • Chrome 2.0 or higher • Firefox 3.0 or higher • Safari 3.0 or higher (with Java 1.3.1 or higher) Windows® Users: Make sure you have the latest version of Java installed. Visit www.java.com to download the latest version.

	Computer with the following:
CD Installation Wizard Requirements	**Computer with the following:** • Windows® 7, Vista®, or XP with Service Pack 2 • An installed Ethernet adapter • CD-ROM drive

1.2.3   Hardware Configuration

Rear View:

WEC Button   Reset Button   LAN Port   LAN(PoE) Port   Power Jack

1.2.4   LED Indicators
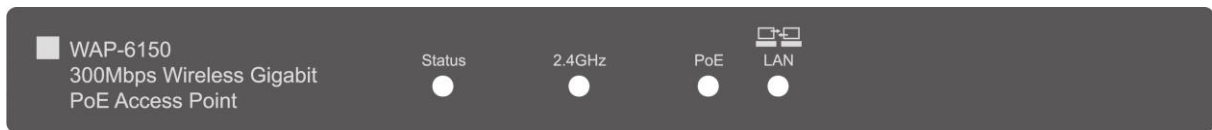
LED	Description
Status	Color: Amber / Green Soild Amber: Device druing power-on process
	Soild Amber: Device druing power-on process
	Soild Green: Completion of power on
	Blinking Amber: Device is crashed and under recovery mode
	Blinking Green: The system is detective, such firmware upgrades fail
	Blink Amber led while pinging IP address of the device.
	Light Off: The device is power-off
2.4GHz	Master Mode: Green in Normal Status
	Slave Mode: Amber in Normal Status
	LED in flash: data packet transferred
PoE	LED in flash: data packet transferred
LAN	LED in flash: data packet transferred

1.2.5 Button Indicators

Button	Description
WEC(Wireless Easy Connection)	The device has to take about 36 sec to change Mode completely. Step1:Press WEC Button about 9~10 seconds (Watch Status LED to flash about 9~10 times) Step2: WiFi LED Dark then release button Step3: Wait for about 25~26 seconds to change Wi-Fi LED Color: The procedure of WiFi LED: Master to Slave : "Green" (9th ~10th sec)　"Dark"(11th~36th sec) "Amber" color Slave to Master: "Amber"(9th ~10th sec)　"Dark" (11th~36^{th}sec) "Green"　color
Negotiate Configuration	Click WEC Button (about 1second) of master AP and any slave AP as one pair simultaneously.
Reset Button	Press (6) sec to reset to factory default settings.

Chapter 2 Getting Started

Please use windows EZ setup utility or Web UI wizard to enter the setup process.

2.1   Easy Setup by Configuring Web UI

You can also browse web UI to configure the device. Firstly you need to launch the Setup Wizard browser first and then the Setup Wizard will guide you step-by-step to finish the basic setup process.

Browse to Activate the Setup Wizard

Type in the IP Address (**http://192.168.1.1**)

Type the default password **'admin'** in the System Password and then click **'login'** button.
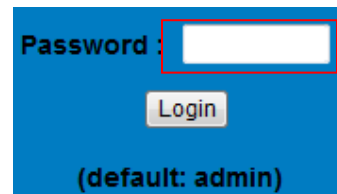
Select **"Wizard"** for basic settings in a simple way.

Or, you can go to **Basic Network / Advanced Network / Applications / System** to setup the configuration by your own selection.

Press **"Next"** to start the Setup Wizard.

Configure with the Setup Wizard
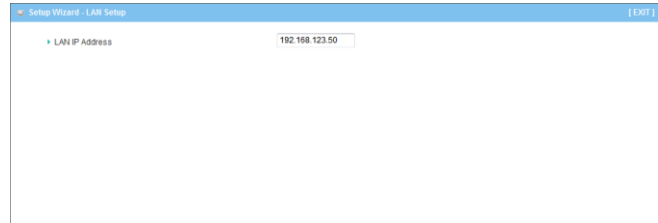
Step 1

You can change the password of administrator here.

Step 2
Entry LAN IP Address.
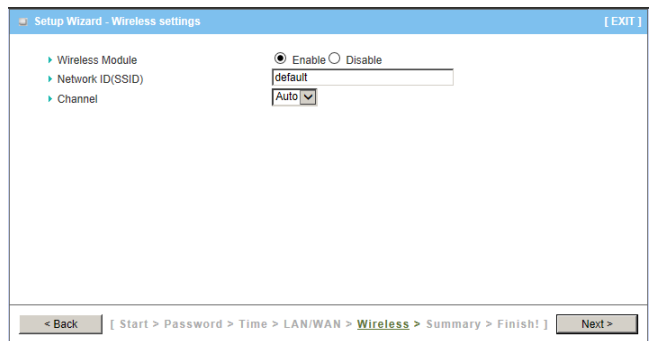
Step 3-1
Wireless setting.
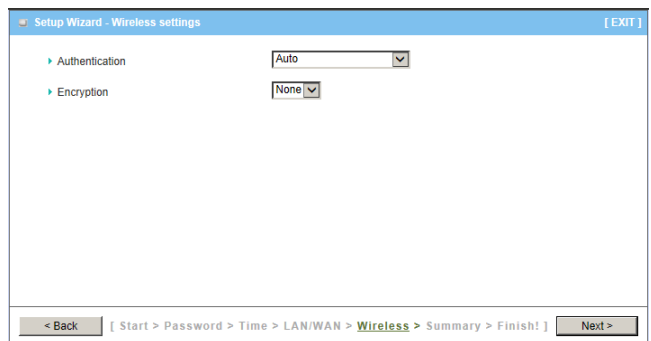
Step 3-2
Wireless authentication and
encryption.
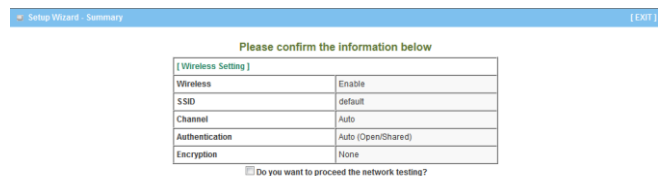
Step 4
Check the information again.

Step 5

System is applying the setting.
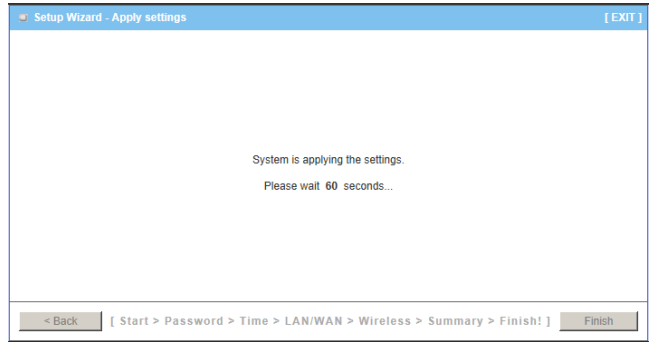
Step 6

Click finish to complete it.
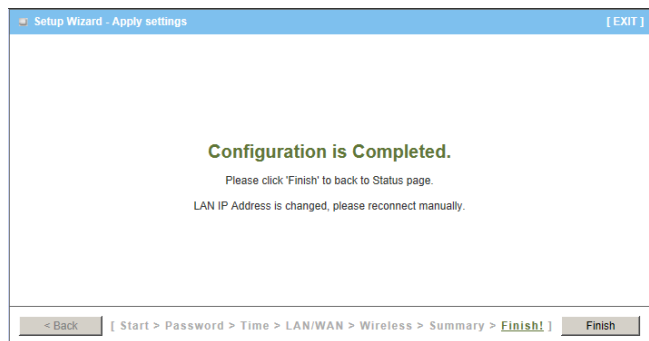
2.2   Use WEC Button to Setup Wireless Profiles

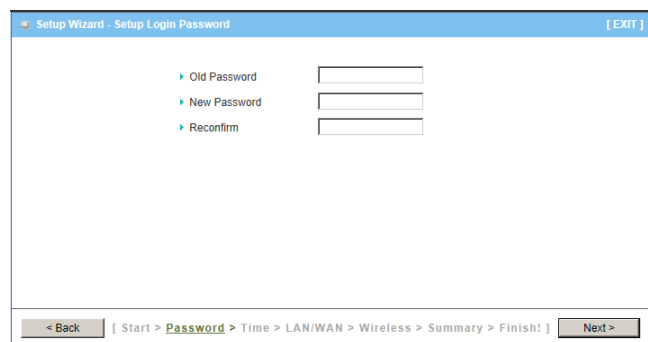WEC Button is Wireless Easy Connection. There are 2 purposes for this Button.

One is to switch AP into Master or Slave Mode.

However, Main purpose of Slave AP is to get Wireless profile of Master AP to extend connective distance w/o login configured Web.
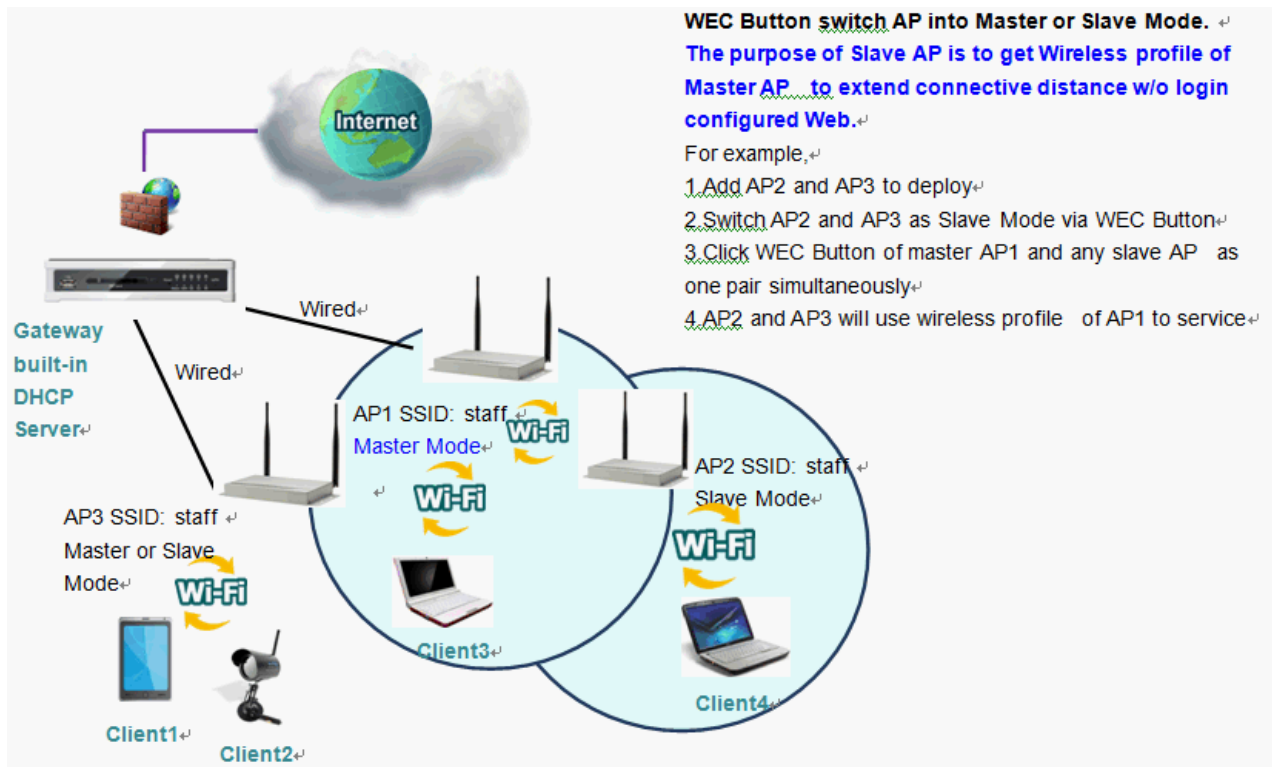
Access Point is in Master Mode

When Access Point is Master Mode, LED of 2.4G is Green.

Generally speaking, the settings of Master AP can work in your Network environment.

※**Device Network IP Address depend as current Settings.**

Access Point is in Slave Mode

When Access Point is Slave Mode, LED of 2.4G is Amber.

New deployed or reset-to-default Access points have to configure Wireless setting so that can work current network environment.

※**Device Network IP Address is DHCP Client in Slave Mode.**

Please check if DHCP Server exists in your Network Environment.

If Not, please change to Master Mode after getting Wireless Profiles, it will be Default IP "Static IP".(Due to New deployed or reset-to-default Access point**.)**

Configure Slave AP via WEC Button

Step 1

Check 2.4GHz LED of Access Point which acts as Master Mode. It should be Green. If not, please use WEC button to switch into Master Mode.

Step 2

Check 2.4GHz LED of Access Point which acts as Slave Mode. It should be Amber. If not, please use WEC button to switch into Slave Mode.

Step 3

Click WEC Button (about 1second) of master AP and any slave AP as one pair simultaneously

Step 4

WiFi LED of Master and Slave AP will flash and Negotiate WiFi Profile Configuration. This Process will finish within 30~60 sec. Then WiFi LED will be Solid.
※If Negotiation failed or Master or Slave AP don't existed, WiFi LED will Flash 2 min then will be Solid. Please try again
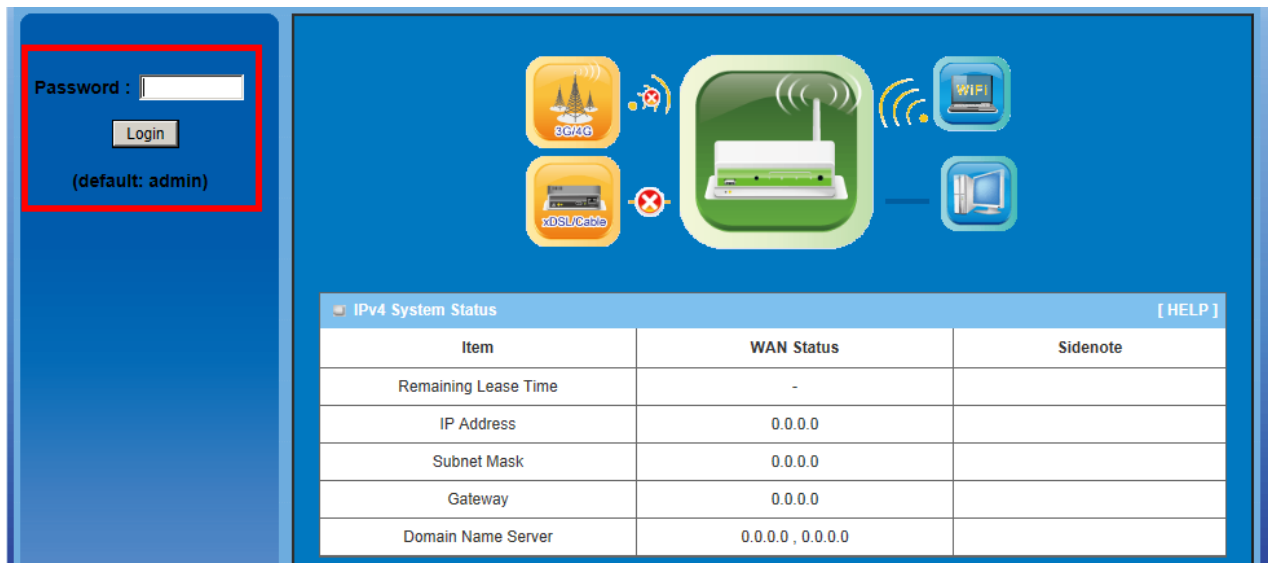
Chapter 3 Making Configurations

Whenever you want to configure your network or this device, you can access the Configuration Menu by opening the web-browser and typing in the IP Address of the device. The default IP Address is: **192.168.1.1.** In the configuration section you may want to check the connection status of the router, to do Basic or Advanced Network setup or to check the system status. These task buttons can be easily found in the cover page of the UI (User Interface).

Enter the default password **"admin"** in the System Password and then click **'login'** button.

Afterwards, you can go **Wizard, Basic Network, Advanced Network, Application or System** respectively on left hand side of web page.

Note: *You can see the Connection Status screen below after you logged in.*

Note : *You can see all the status of this device in the 'Status' main menu section.*

3.1　Basic Network

You can enter Basic Network for **Ethernet LAN and Wireless** settings as the icon here shown
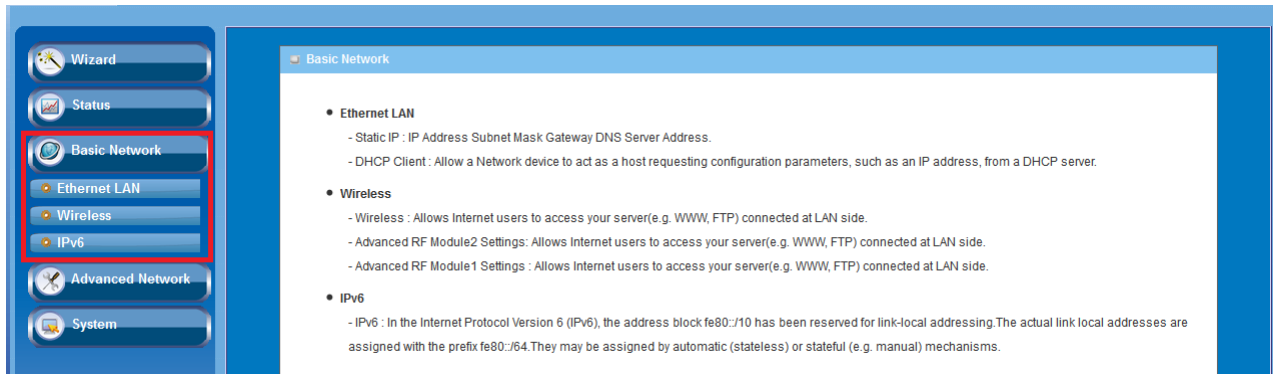
3.1.1　Ethernet LAN

This device supports two types as Follows:

Static IP: Allow a device to act as a Static host. If you need Static host and please entry IP Address.

DHCP: Allow a device to act as a host requesting configuration parameters, such as an IP address from a DHCP server.

Note: Please check if there is DHCP server in your Network, first.
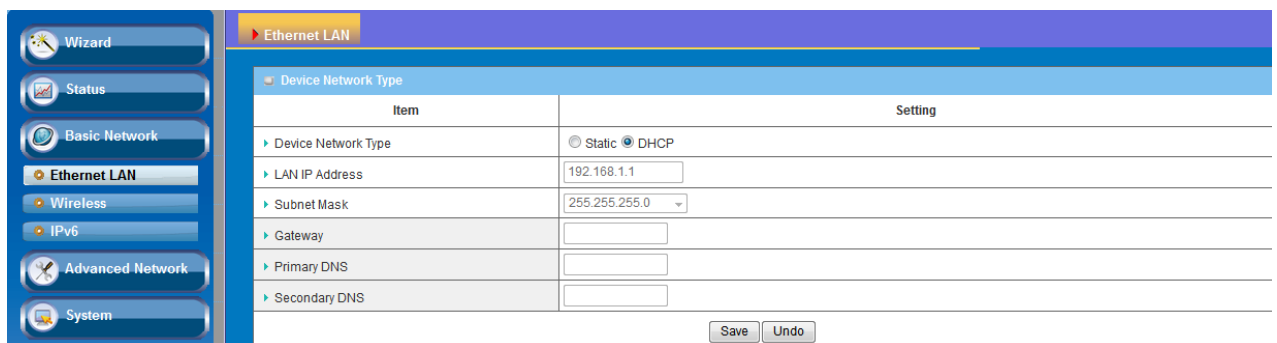
3.1.2   Wireless

Wireless settings allow you to set the WLAN (WiFi) configuration items. When the wireless configuration is done your WiFi LAN is ready to support your local WiFi devices such as your laptop PC, wireless printer and some portable wireless devices.

Item	Setting
▶ Wireless Module	☑ Enable
▶ Wireless Operation Mode	WDS Hybrid Mode ▾
▶ Lazy Mode	☑ Enable
▶ Green AP	☐ Enable
▶ AP Number	AP 1 ▾ ☑ Enable
▶ Network ID(SSID)	LevelOne
▶ SSID Broadcast	☑ Enable
▶ VLAN ID	☐ Enable 3 (3~4094)
▶ Max Supported Stations	☐ Enable (1~16)
▶ Channel	Auto ▾
▶ Wireless Mode	B/G/N mixed ▾
▶ Bandwidth	Auto ▾
▶ Authentication	Open ▾
▶ 802.1X	☐ Enable
▶ Encryption	None ▾

RF Module1   ▶ Advanced RF Module1 Settings

Wireless Setting   [HELP]

Save   Undo   WPS Setup...   Wireless Client List...

3.1.3.1   Wireless Setup

There are several wireless operation modes provided by this device. They are: "**AP Only Mode**", "**WDS Hybrid Mode**", "**WDS Only Mode**", and "**Universal Repeater Mode**". You can choose the expected mode and configure the device manually.

Besides manually configuration the devices to be deployed one by one, you can also configure your devices via the simple WEC configuration approach

as stated in last Chapter. By default, the Master AP is set to the WDS-hybrid Mode, and the Slave APs are set to the Universal Repeater mode. You just have to manually configure the Master AP via the web UI configuration, and use the WEC process for the rest Slave APs.

3.1.3.1.1   AP Only Mode

When acting as an access point, this device connects all the wireless stations to a wired network.

1. **Wireless Module:** Enable the wireless function.
2. **Wireless Operation Mode:** Choose "**AP Only Mode**" from the list.
3. **Green AP:** Enable the Green AP function to reduce the power consumption when there is no wireless traffic.
4. **AP Number:** This device supports up to 8 SSIDs at the same time for you to manage your wireless networks. You can select AP1 ~ AP8 and configure each wireless network individually.
5. **Network ID (SSID):** Network ID is used for identifying a Wireless LAN. Client stations can roam freely over this device and other Access Points that have the same Network ID. The factory default SSID is "default", you can change it to a meaningful identifier for the wireless users to easy find it out.
6. **SSID Broadcast:** By default, the SSID Broadcast setting is "Enable", and the device will broadcast beacons that have some information, including SSID, to the air, so that wireless clients can know how many AP devices by scanning the network. Therefore, if this setting is configured as "Disable", you can hide the wireless network from been scanned by wireless clients. Those who know the SSID can manually specify the SSID on their client device to connect the hidden

wireless network.

7. **VLAN ID:** This device supports mapping of a SSID to a certain VLAN ID to separate workgroups across wireless and wired domains. By default, it is not enables. If you enabled this function, you have to specify a VLAN ID for the wireless network.

8. **Max Supported Stations:** You can specify the number of maximum stations that can associate to the SSID simultaneously.

9. **Channel:** The radio channel number. The permissible channels depend on the Regulatory Domain. The factory default setting is auto channel selection. It's recommended to choose a channel that is not used in your environment to reduce radio interference.

10. **Wireless Mode:** The RF1 module supports 802.11b/g/n modes. You can also choose "N only", "G/N mixed" or "B/G/N mixed". The factory default setting is "B/G/N mixed".

11. **Bandwidth:** The default setting for Bandwidth is "Auto". You can change it to "20MHz" with care if some clients are suffering from the connectivity problem in higher bandwidth setting.

12. **Authentication & Encryption:** You may select one of the following authentications to secure your wireless network: Open (include 802.1x), Shared, Auto, WPA-PSK, WPA, WPA2-PSK, WPA2, WPA-PSK/WPA2-PSK, or WPA /WPA2.

   ● **Open**

   Open system authentication simply consists of two communications. The first is an authentication request by the client that contains the station ID (typically the MAC address). This is followed by an authentication response from the AP containing a success or failure message. An example of when a failure may occur is if the client's MAC address is explicitly excluded in the AP's configuration.

   In this mode you can also enable the 802.1x feature if you have another RADIUS server for user authentication. You need to input IP address, port, shared key of RADIUS server here.

▸ 802.1X	☑ Enable
▸ RADIUS Server IP	0.0.0.0
▸ RADIUS port	1812
▸ RADIUS Shared Key	

   In this mode, you can only choose "None" or "WEP" in the encryption field.

   ● **Shared**

Shared key authentication relies on the fact that both stations taking part in the authentication process have the same "shared" key or passphrase. The shared key is manually set on both the client station and the AP. Three types of shared key authentication are available today for home or small office WLAN environments.

● **Auto**

The gateway will select appropriate authentication method (Open or Shared) according to the WiFi client's request automatically.

● **WPA-PSK**

Select Encryption mode and enter the Pre-share Key. You can fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the pre-share key.

● **WPA**

Select Encryption mode and enter RADIUS Server related information. You have to specify the IP address, and port number for the RADIUS Server, and then fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the shared key. The key value is shared by the RADIUS server and this router. This key value must be consistent with the key value in the RADIUS server. The available encryption modes are "TKIP", "AES", or "TKIP/AES".

● **WPA2-PSK**

Select Encryption mode and enter the Pre-share Key. You can fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the pre-share key.

● **WPA2**

Select Encryption mode and enter RADIUS Server related information. You have to specify the IP address, and port number for the RADIUS Server, and then fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the shared key. The key value is shared by the RADIUS server and this router. This key value must be consistent with the key value in the RADIUS server. The available encryption modes are "TKIP", "AES", or "TKIP/AES".

● **WPA-PSK/WPA2-PSK**

Select Encryption mode and enter the Pre-share Key. You can fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the pre-share key.

● **WPA/WPA2**

If some of wireless clients can only support WPA, but most of them can support WPA2. You can choose this option to support both of them. Select Encryption mode and enter RADIUS Server related information. You have to

specify the IP address, and port number for the RADIUS Server, and then fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the shared key. The key value is shared by the RADIUS server and this router. This key value must be consistent with the key value in the RADIUS server.

Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.1.3.1.2   WDS Hybrid Mode

This mode makes device act as a wireless bridge but also have AP function. While acting as a wireless Bridge, Wireless Router 1 and Wireless Router 2 can communicate with each other through wireless interface (with WDS). Thus All Stations can communicate each other and are able to access Internet if Wireless Router 1 has the Internet connection.

.

1. **Lazy Mode:** This device support the Lazy Mode to automatically learn the MAC address of WDS peers, you don't have to input other peer AP's MAC address. However, not all the APs can be set to enable the Lazy mode simultaneously; at least there must be one AP with all the WDS peers' MAC address filled.

2. **Green AP:** Enable the Green AP function to reduce the power consumption when there is no wireless traffic.

3. **AP Number:** This device supports up to 8 SSIDs at the same time for you to manage your wireless networks. You can select AP1 ~ AP8 and configure each wireless network individually.

4. **Network ID (SSID):** Network ID is used for identifying a Wireless LAN. Client stations can roam freely over this device and other Access Points that have the same Network ID. The factory default SSID is "default", you can change it to a meaningful identifier for the wireless users to easy find it out.

5. **SSID Broadcast:** By default, the SSID Broadcast setting is "Enable", and the device will broadcast beacons that have some information, including SSID, to the air, so that wireless clients can know how many AP devices by scanning the

network. Therefore, if this setting is configured as "Disable", you can hide the wireless network from been scanned by wireless clients. Those who know the SSID can manually specify the SSID on their client device to connect the hidden wireless network.

6. **VLAN ID:** This device supports mapping of a SSID to a certain VLAN ID to separate workgroups across wireless and wired domains. By default, it is not enables. If you enabled this function, you have to specify a VLAN ID for the wireless network.

7. **Max Supported Stations:** You can specify the number of maximum stations that can associate to the SSID simultaneously.

8. **Channel:** The radio channel number. The permissible channels depend on the Regulatory Domain. The factory default setting is auto channel selection. It's recommended to choose a channel that is not used in your environment to reduce radio interference

9. **Wireless Mode:** The RF1 module supports 802.11b/g/n modes. You can also choose "N only", "G/N mixed" or "B/G/N mixed". The factory default setting is "B/G/N mixed".

10. **Bandwidth:** The default setting for Bandwidth is "Auto". You can change it to "20MHz" with care if some clients are suffering from the connectivity problem in higher bandwidth setting.

11. **Authentication & Encryption:** You may select one of the following authentications to secure your wireless network: Open (include 802.1x), Shared, Auto, WPA-PSK, and WPA2-PSK.

- **Open**

    Open system authentication simply consists of two communications. The first is an authentication request by the client that contains the station ID (typically the MAC address). This is followed by an authentication response from the AP containing a success or failure message. An example of when a failure may occur is if the client's MAC address is explicitly excluded in the AP's configuration.

    In this mode you can also enable the 802.1x feature if you have another RADIUS server for user authentication. You need to input IP address, port, shared key of RADIUS server here.

▸ 802.1X	☑ Enable
▸ RADIUS Server IP	0.0.0.0
▸ RADIUS port	1812
▸ RADIUS Shared Key	

    In this mode, you can only choose "None" or "WEP" in the encryption field.

- **Shared**

  Shared key authentication relies on the fact that both stations taking part in the authentication process have the same "shared" key or passphrase. The shared key is manually set on both the client station and the AP. Three types of shared key authentication are available today for home or small office WLAN environments.

- **Auto**

  The gateway will select appropriate authentication method (Open or Shared) according to the WiFi client's request automatically.

- **WPA-PSK**

  Select Encryption mode and enter the Pre-share Key. You can fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the pre-share key.

- **WPA2-PSK**

  Select Encryption mode and enter the Pre-share Key. You can fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the pre-share key.

12. **Remote AP MAC 1 ~ Remote AP MAC 4:** If you do not enable the Lazy mode, you have to enter the wireless MAC address for each WDS peer one by one.

Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.1.3.1.3   WDS Only Mode

WDS (Wireless Distributed System) function let APs acts as a wireless LAN bridge. All stations associated with WDS APs could see each other and roam through APs without changing WiFi configurations. You can use this feature to build up a large wireless network in a large space like airports, hotels and schools …etc.

1. **Lazy Mode:** This device support the Lazy Mode to automatically learn the MAC address of WDS peers, you don't have to input other peer AP's MAC address. However, not all the APs can be set to enable the Lazy mode simultaneously; at least there must be one AP with all the WDS peers' MAC address filled.
2. **Green AP:** Enable the Green AP function to reduce the power consumption when there is no wireless traffic.
3. **Channel:** The radio channel number. The permissible channels depend on the Regulatory Domain. The factory default setting is auto channel selection. It's

recommended to choose a channel that is not used in your environment to reduce radio interference

4. **Wireless Mode:** The RF1 module supports 802.11b/g/n modes. You can also choose "N only", "G/N mixed" or "B/G/N mixed". The factory default setting is "B/G/N mixed".

5. **Bandwidth:** The default setting for Bandwidth is "Auto". You can change it to "20MHz" with care if some clients are suffering from the connectivity problem in higher bandwidth setting.

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- **Open**

   Open system authentication simply consists of two communications. The first is an authentication request by the client that contains the station ID (typically the MAC address). This is followed by an authentication response from the AP containing a success or failure message. An example of when a failure may occur is if the client's MAC address is explicitly excluded in the AP's configuration.

   In this mode you can also enable the 802.1x feature if you have another RADIUS server for user authentication. You need to input IP address, port, shared key of RADIUS server here.

▸ 802.1X	☑ Enable
▸ RADIUS Server IP	0.0.0.0
▸ RADIUS port	1812
▸ RADIUS Shared Key	

   In this mode, you can only choose "None" or "WEP" in the encryption field.

- **Shared**

   Shared key authentication relies on the fact that both stations taking part in the authentication process have the same "shared" key or passphrase. The shared key is manually set on both the client station and the AP. Three types of shared key authentication are available today for home or small office WLAN environments.

- **Auto**

   The gateway will select appropriate authentication method (Open or Shared) according to the WiFi client's request automatically.

- **WPA-PSK**

   Select Encryption mode and enter the Pre-share Key. You can fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the

pre-share key.
- **WPA2-PSK**

  Select Encryption mode and enter the Pre-share Key. You can fill in 64 hexadecimal (0, 1, 2…8, 9, A, B…F) digits, or 8 to 63 ASCII characters as the pre-share key.
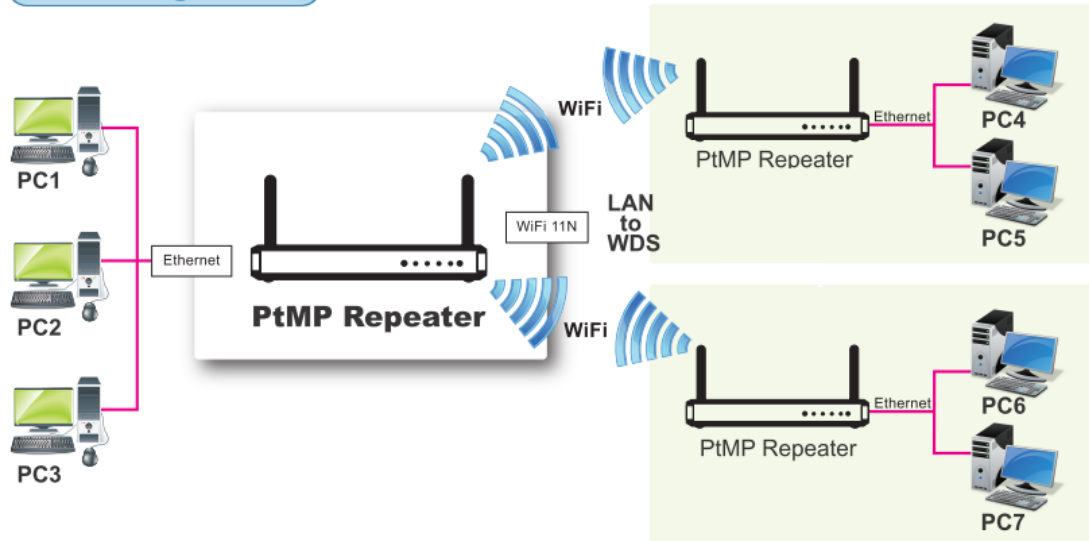
7. **Remote AP MAC 1 ~ Remote AP MAC 4:** If you do not enable the Lazy mode, you have to enter the wireless MAC address for each WDS peer one by one.

Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.1.3.1.4 Universal Repeater Mode

Universal Repeater is a technology used to extend wireless coverage. It provides the function to act as Adapter (Client) and AP at the same time and can use this function to connect to a Root AP and use AP (SSID name must be the same as that of Root AP) function to service all wireless stations within its coverage. All the stations within the coverage of this access point can be bridged to the Root AP.
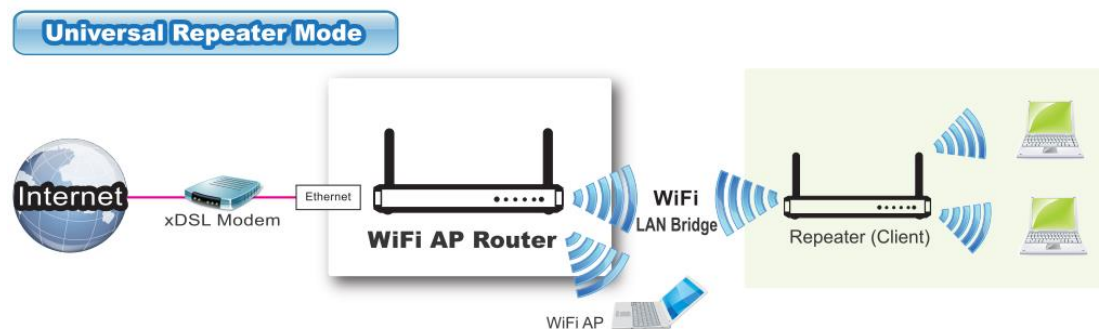
Item	Setting
▶ Wireless Module	☑ Enable
▶ Wireless Operation Mode	Universal Repeater ▾
▶ Green AP	☐ Enable
▶ Network ID(SSID)	LevelOne
▶ Destination AP MAC	
▶ WEC Config Status	UNCONFIGURED [Release]
▶ SSID Broadcast	☑ Enable
▶ VLAN ID	☐ Enable 3 (3~4094)
▶ Max Supported Stations	☐ Enable (1~16)
▶ Channel	Auto ▾
▶ Bandwidth	Auto ▾
▶ Authentication	Open ▾
▶ Encryption	None ▾

[Save] [Undo] [WPS Setup...] [Wireless Client List...] [Scan]

1. **Green AP:** Enable the Green AP function to reduce the power consumption when there is no wireless traffic.

2. **Network ID (SSID):** Network ID is used for identifying a Wireless LAN. Client stations can roam freely over this device and other Access Points that have the same Network ID. The factory default SSID is "default", you have to change it to the same SSID of the peer AP to be associated under the Universal Repeater Mode.

3. **Destination AP MAC:** Besides to have the same SSID of the peer AP to be associated under the Universal Repeater mode, you also have to specify the MAC address of the peer AP to avoid making wrong connection with other AP that has the same SSID.

4. **SSID Broadcast:** By default, the SSID Broadcast setting is "Enable", and the device will broadcast beacons that have some information, including SSID, to the air, so that wireless clients can know how many AP devices by scanning the network. Therefore, if this setting is configured as "Disable", you can hide the wireless network from been scanned by wireless clients. Those who know the SSID can manually specify the SSID on their client device to connect the hidden wireless network.

5. **VLAN ID:** This device supports mapping of a SSID to a certain VLAN ID to separate the workgroups across wireless and wired domains. By default, it is not enables. If you enabled this function, you have to specify a VLAN ID for the wireless network.

6. **Max Supported Stations:** You can specify the number of maximum stations that can associate to the SSID simultaneously.

7. **Channel:** The radio channel number. The permissible channels depend on the Regulatory Domain. The factory default setting is auto channel selection. It's recommended to choose a channel that is not used in your environment to reduce radio interference

8. **Bandwidth:** The default setting for Bandwidth is "Auto". You can change it to "20MHz" with care if some clients are suffering from the connectivity problem in higher bandwidth setting.

9. **Authentication & Encryption:** You may select one of the following authentications to secure your wireless network: Open, Shared, Auto, WPA-PSK, and WPA2-PSK.

Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.1.3.2   Advanced Wireless Setup
This device provides advanced wireless setup for professional user to optimize the wireless performance under the specific installation environment.

3.1.3.2.1   Advanced RF Module1 Settings

Item	Setting
Regulatory Domain	US (1-11)
Beacon Interval	100 (msec, range:1~1000)
Transmit Power	100%
RTS Threshold	2347 (1~2347)
Fragmentation	2346 (256~2346)
DTIM Interval	3 range (1~255)
WMM Capable	☑ Enable
WLAN Partition	☐
AP Isolation :	Off
TX Rates	Best

1. **Beacon interval**: Beacons are packets sent by a wireless router to synchronize wireless devices.

2. **Transmit Power**: Normally the wireless transmission power operates at 100% out power specification of this device. You can lower down the power ratio to prevent transmissions from reaching beyond your corporate/home office or designated wireless area.

3. **RTS Threshold:** If an excessive number of wireless packet collision occurred, the wireless performance will be affected. It can be improved by adjusting the RTS/CTS (Request to Send/Clear to Send) threshold value.

4. **Fragmentation**: Wireless frames can be divided into smaller units (fragments) to improve performance in the presence of RF interference and at the limits of RF coverage.

5. **DTIM interval**: A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages. When the wireless router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value.

6. **WMM Capable:** WMM can help control latency and jitter when transmitting multimedia content over a wireless connection.

7. **WLAN Partition:** You can check the WLAN Partition function to separate the wireless clients associated to the same VAP. The wireless clients can't communicate each other, but they can access the internet and other Ethernet LAN devices

8. **AP Isolation:** If you enabled multiple VAPs in this device, you can further decide

whether the wireless clients associated to different VAPs can access to each other or not. When you enabled the AP Isolation function, Each VAP is isolated to the others consequently.

9. **TX Rate:** For WiFi transmit rate, you can choose "Best" for auto-adjustment according to WiFi signal quality in your environment, or you can fix it in certain TX rate. Please note the WiFi connection may be dropped if you fix at a higher date rate but in a noisy (poor RF signal quality) environment.

10. Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.1.3   IPv6

The growth of the Internet has created a need for more addresses than are possible with IPv4. **IPv6** (**Internet Protocol version 6**) is a version of the Internet Protocol (IP) intended to succeed IPv4, which is the protocol currently used to direct almost all Internet traffic. IPv6 also implements additional features not present in IPv4. It simplifies aspects of address assignment (stateless address auto-configuration), network renumbering and router announcements when changing Internet connectivity providers. This router supports various types of IPv6 connection (Static IPv6 / DHCPv6 / PPPoE / 6 to 4 / IPv6 in IPv4 tunnel). **Please ask your ISP of what type of IPv6 is supported before you proceed with IPv6 setup.**
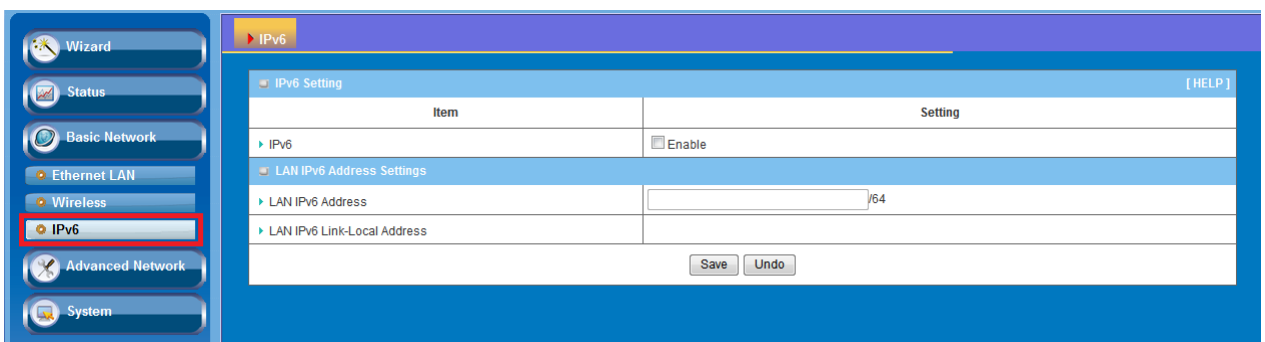
1. **LAN IPv6 address settings:** Please enter "LAN IPv6 address" and ignore the "LAN IPv6 Link-Local address".

   "2001:0db8:85a3:0000:0000:8a2e:0370:7334"

3.2 Advanced Network

This router also supports many advanced network features, such as Firewall, and Management. You can finish those configurations in this section.
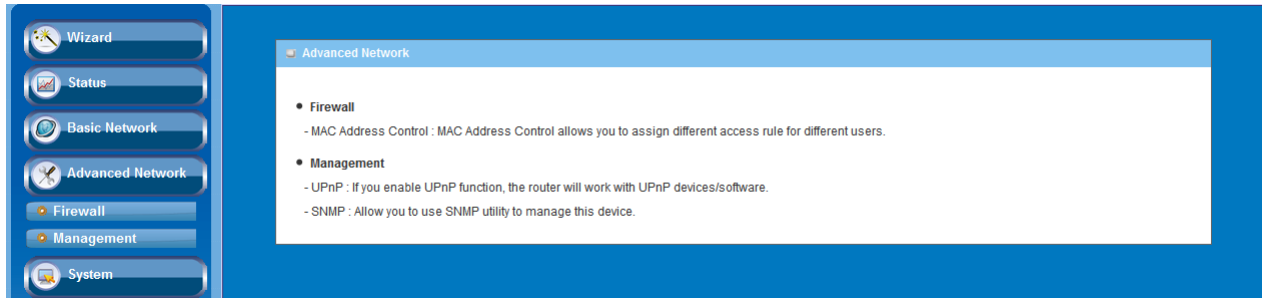
3.2.1 Firewall

The firewall includes MAC Address Control.

3.2.1.1 MAC Address Control

MAC Address Control allows you to assign different access right for different users and to assign a specific IP address to a certain MAC address.
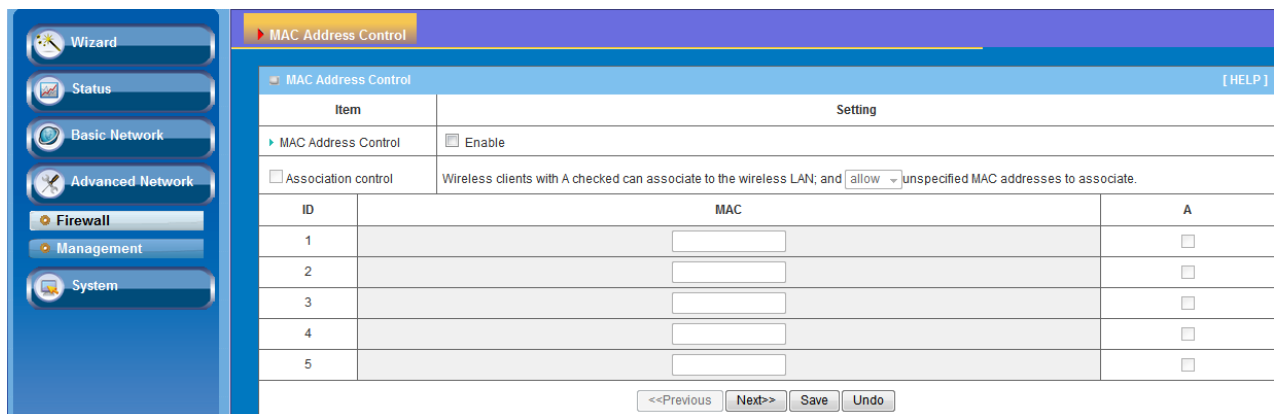
1. **MAC Address Control**: Check "Enable" to enable the "MAC Address Control". All of the settings in this page will take effect only when "Enable" is checked.

2. **Association control**: Check "Association control" to enable the control of which wireless client can associate to the wireless LAN. If a client is denied to associate to the wireless LAN, it means the client can't send or receive any data via this device. Choose "allow" or "deny" to allow or deny the clients, whose MAC addresses are not in the "Control table", to associate to the wireless LAN.

Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.2.2 Management

3.2.2.1 UPNP

UPnP Internet Gateway Device (IGD) Standardized Device Control Protocol is a NAT port mapping protocol and is supported by some NAT routers. It is a common communication protocol of automatically configuring port forwarding. Applications using peer-to-peer networks, multiplayer gaming, and remote assistance programs need a way to communicate through home and business gateways. Without IGD one has to manually configure the gateway to allow traffic through, a process which is error prone and time consuming
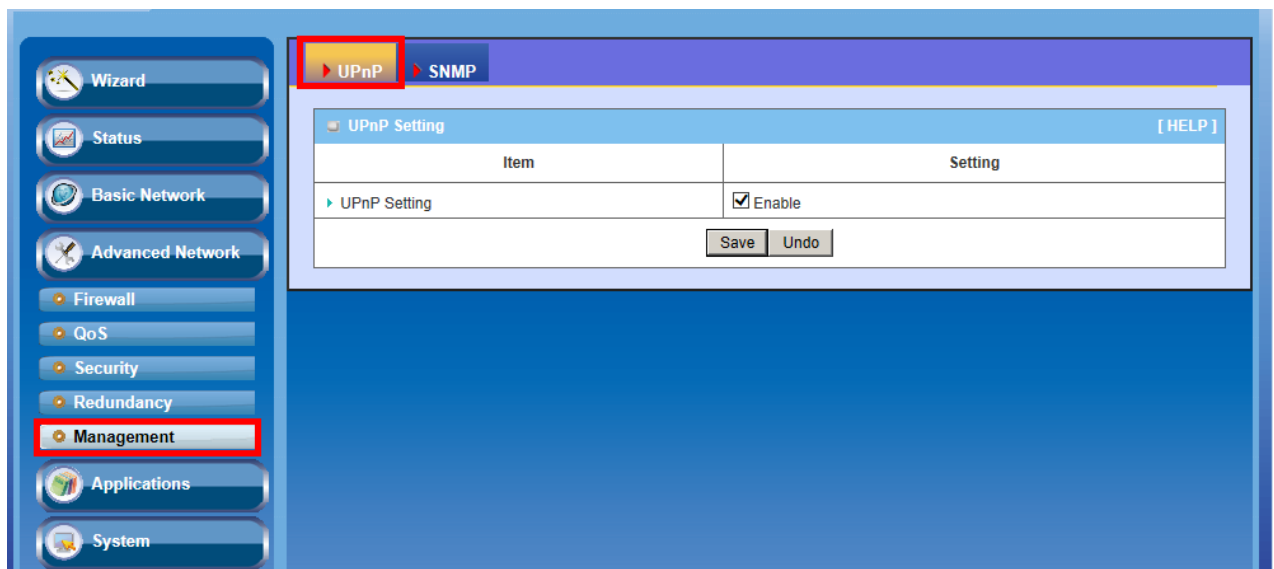
This device supports the UPnP Internet Gateway Device (IGD) feature. By default, it is enabled.

3.2.2.2 SNMP

In brief, SNMP, the Simple Network Management Protocol, is a protocol designed to give a user the capability to remotely manage a computer network by polling and setting terminal values and monitoring network events.

1. **Enable SNMP**: Enable this Function.

2. **SNMP Version:** Supports SNMP V1, V2c, and V3.

3. **Get Community:** The community of GetRequest that this device will respond. This is a text password mechanism that is used to weakly authenticate queries to agents of managed network devices.

4. **Set Community:** The community of SetRequest that this device will accept.

5. **SNMPv3 Settings: User 1/2**: This device supports up to two SNMP management accounts. You can specify the account permission as "Read" or "Read/Write" respectively.

6. **User 1/2 AUTH Mode**: Select MD5 or SHA as the method of password encryption for the specified level of access, or to disable authentication.

7. **User 1/2 Privacy Mode:** You can configure the SNMP privacy mode. There are three modes for you to choose: "noAuthNoPriv" for both authentication and private key are not required, "authNoPriv" for no private key required, and

"authPriv" for both authentication and private key required.

8. **Username 1/2:** Use this field to identify the user name for the specified level of access.

9. **Password 1/2:** Use this field to set the password for the specified level of access.

10. **User 1/2 Priv Key:** Use this field to define the encryption key for the specified level of access.

11. **Trap Event Receiver 1 ~ 4:** Enter the IP addresses or Domain Name of your SNMP Management PCs. You have to specify the IP address, so that the device can send SNMP Trap message to the management PCs consequently.

3.3 System

In this section you can see system information, system logs, use system tools for system update and do service scheduling and system administration setting.
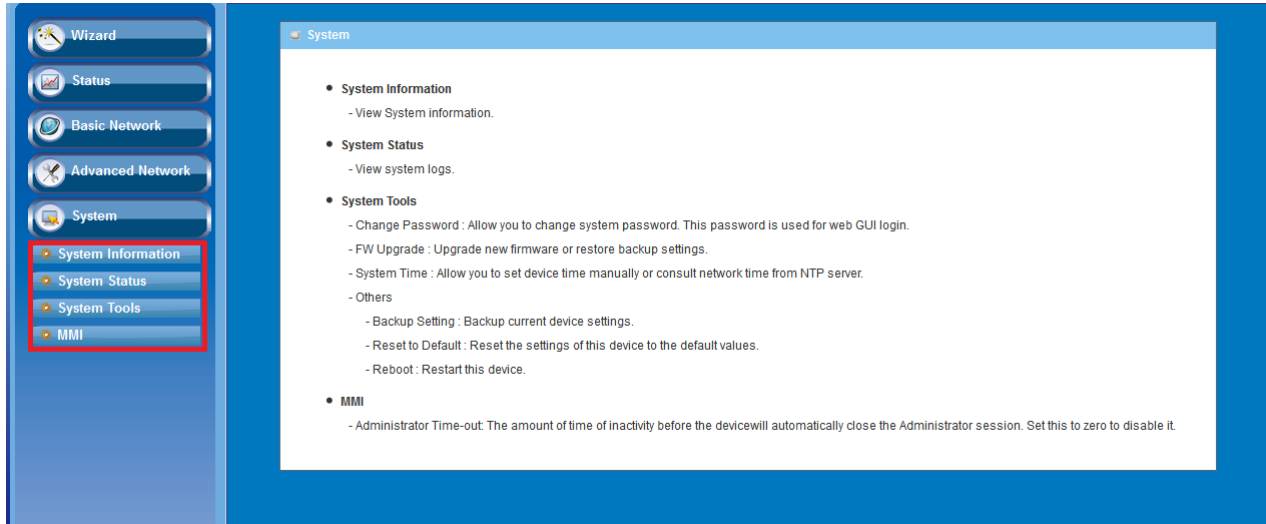
3.3.1 System Information

You can view the System Information in this page.
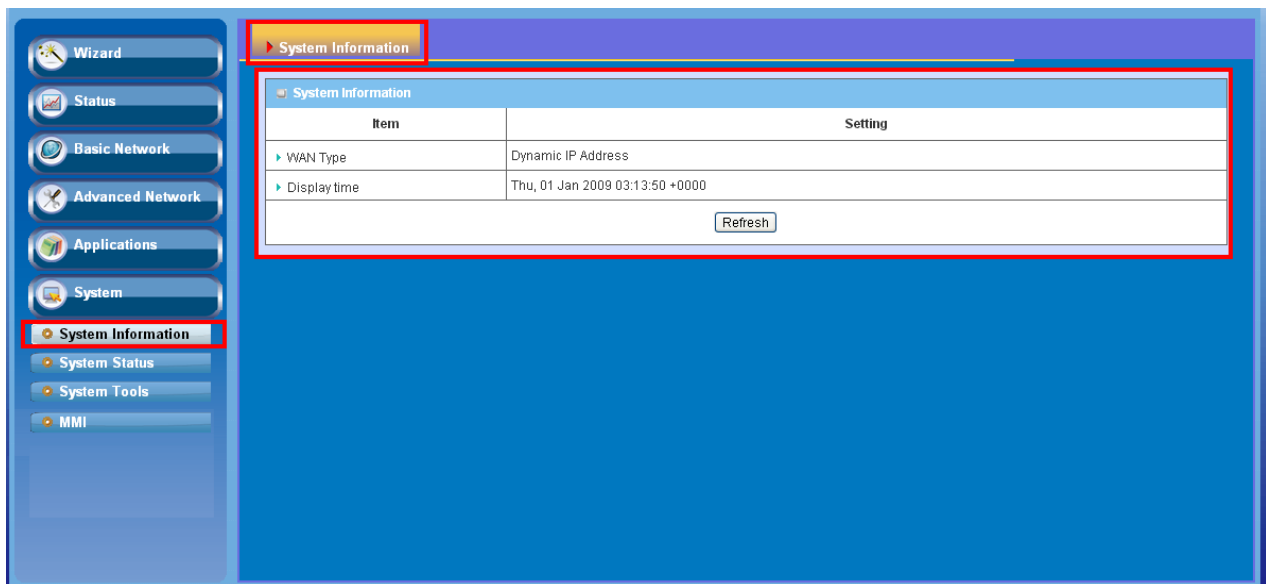
3.3.2 System Status

3.3.2.1 Web Log
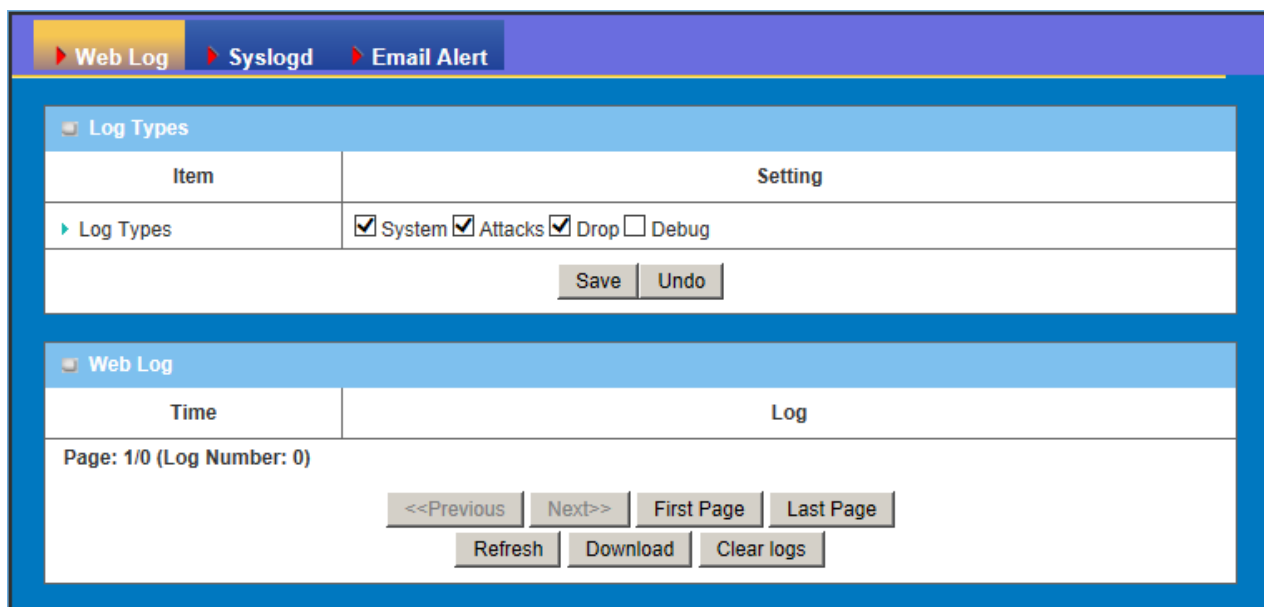
1. **Log Types**: You can select the log types to be collected in the web log area. There are "System", "Attacks", "Drop", and "Debug" types for you to select.

2. **Web Log**: You can browse, refresh, download, and clear the log messages.

3.3.2.2 Syslog
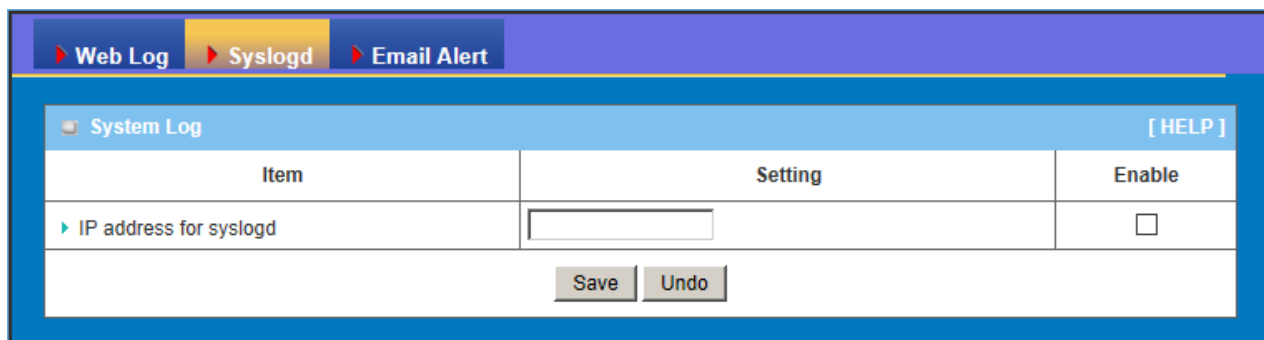
This device can also export system logs to specific destination by means of syslog (UDP) and SMTP(TCP). With enabled Syslog function, this device will send log to a certain host periodically. You need to install a syslog utility on a host to receive syslogs

The items you have to setup include:

1. **IP Address for syslogd**: Host IP of destination where syslog will be sent to. Check **Enable** to enable this function.

3.3.2.3 Email Alert

This device can also export system logs via sending emails to specific recipients. The items you have to setup include:

1. **Setting of Email alert**: Check if you want to enable Email alert (send syslog via email).

2. **SMTP Server: Port**: Input the SMTP server IP and port, which are connected with ':'. If you do not specify port number, the default value is 25.
   For example, "mail.your_url.com" or "192.168.1.100:26".

3. **SMTP Username:** Enter the Username offered by your ISP.

4. **SMTP Password:** Enter the password offered by your ISP.

5. **E-mail Addresses:** The recipients are the ones who will receive these logs. You can assign more than 1 recipient, using ';' or ',' to separate these email addresses.

6. **E-mail Subject**: The subject of email alert is optional.

Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.3.3 System Tools

3.3.3.1 Change Password

You can change the System Password here. We **strongly** recommend you to change the system password for security reason. Click on "Save" to store your settings or

click "Undo" to give up the changes.
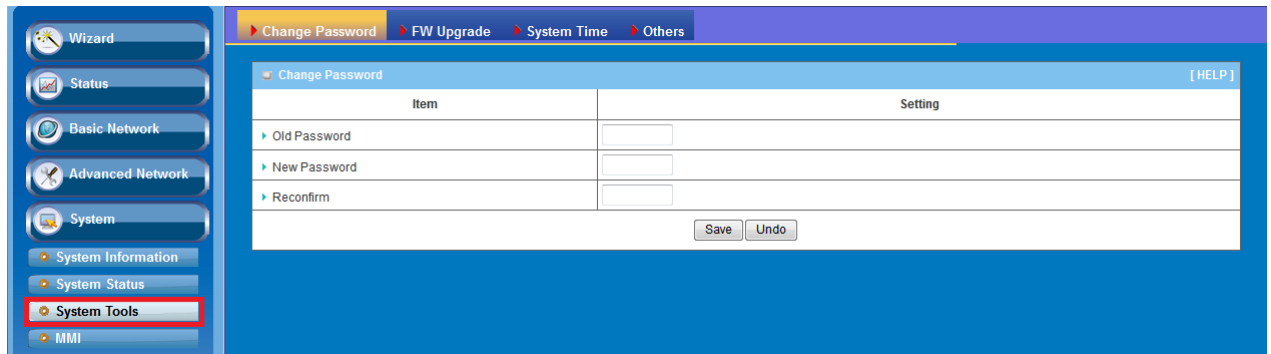
3.3.3.2 FW Upgrade

If new firmware is available, you can upgrade router firmware through the WEB GUI
here.
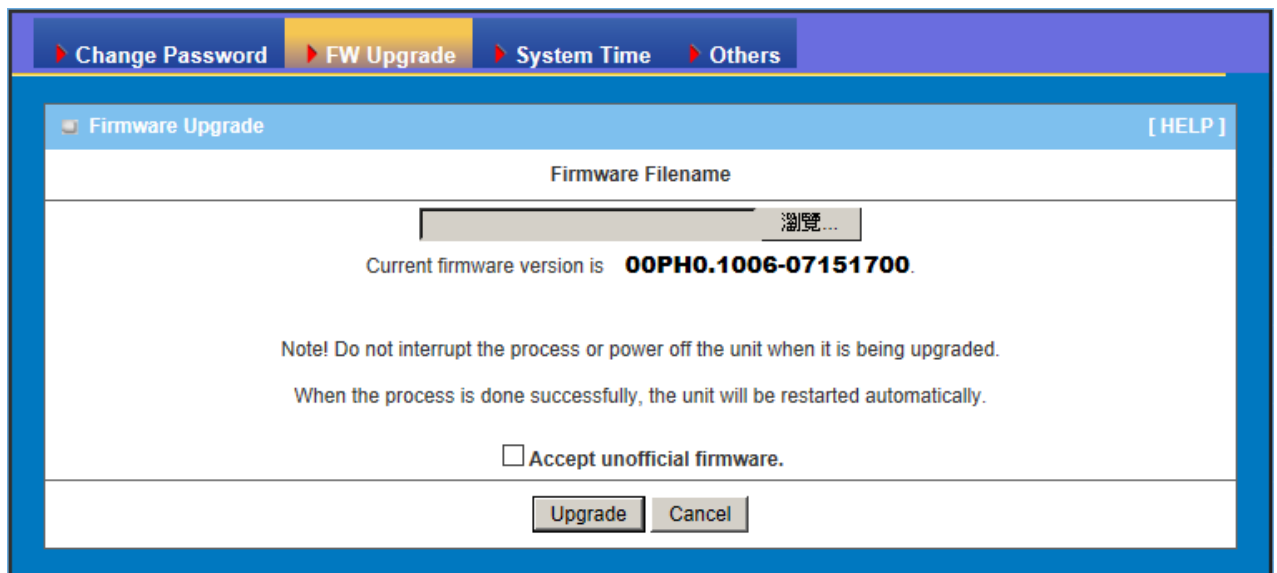
Press "browse" button to indicate the file name of new firmware, and then press
Upgrade button to start to upgrade new firmware on this device. If you want to
upgrade a firmware which is from GPL policy, please check "Accept unofficial
firmware".

**NOTE.   PLEASE DO NOT TURN THE DEVICE OFF WHEN UPGRADE IS
PROCEEDING.**

3.3.3.3 System Time

If new firmware is available, you can upgrade router firmware through the WEB GUI here.

Item	Setting
▶ Time Zone	* Not yet configured! The default is GMT+00:00
▶ Auto-Synchronization	☑ Enable Time Server (RFC-868): Auto
▶ Daylight saving time	☐
▶ Date And Time Manually	2010 / July / 24 (Year/Month/Day) 12 : 01 : 25 (Hour:Minute:Second)

Save Undo
Sync with Time Server   Sync with my PC (Wednesday July 24, 2013 12:01:35)

1. **Time Zone**: Select a time zone where this device locates.

2. **Auto-Synchronization**: Check the "Enable" checkbox to enable this function. Besides, you can select a NTP time server to consult UTC time.

3. **Sync with Time Server**: Click on the button if you want to set Date and Time by NTP Protocol.

4. **Sync with my PC**: Click on the button if you want to set Date and Time using the PC's Date and Time.

Afterwards, click on "Save" to store your settings or click "Undo" to give up the changes.

3.3.3.4 Others

In this section you can do system backup, reset to default, system reboot settings and ping test.

1. **Backup Setting**: You can backup your settings by clicking the "**Backup"** button and save it as a bin file. Once you want to restore these settings, please click Firmware Upgrade button and use the bin file you saved.

2. **Reset to Default**: You can also reset this device to factory default settings by clicking the "**Reset**" button.

3. **Reboot**: You can also reboot this device by clicking the "**Reboot**" button.

4. **MAC Address for Wake-on-LAN**: Wake-on-LAN (WOL) is an Ethernet networking standard that allows a computer to be turned on or awakened by a network message. You can enter the MAC address of the computer, in your LAN network, to be remotely turned on.

5. **Domain Name or IP address for Ping Test**: This allows you to configure an IP, and ping the device. You can ping a specific IP to test whether it is alive.

6. **Domain Name or IP address for Traceroute**: Traceroute is a network diagnostic tool for displaying the route (path) and measuring transit delays of packets across an IP network. Traceroute proceeds unless all (three) sent packets are lost more than twice, then the connection is lost and the route cannot be evaluated. Ping, on the other hand, only computes the final round-trip times from the destination point

3.3.4 MMI

3.3.4.1 Web UI
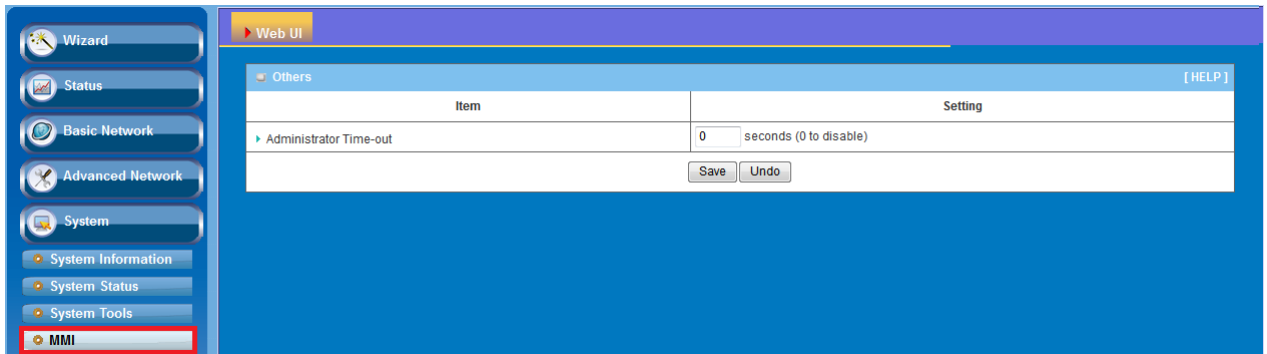
You can set UI administration time-out duration give remote administration host port in this page. When the host port is given please remember to check the enable box and save your settings.

CHAPTOR 4   Troubleshooting

This Chapter provides solutions to problems for the installation and operation of the WiFi Concurrent N600 Business AP. You can refer to the following if you are having problems.

1   Why can't I configure the router even the cable is plugged and the LED is lit?

Do a **Ping test** to make sure that the WiFi Broadband Router is responding.

Note: *It is recommended that you*

Go to **Start > Run**.

1.   Type **cmd**.
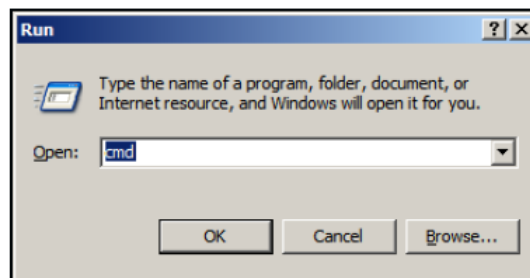
2.   Press **OK.**

3.   Type **ipconfig** to get the IP of default gateway.

4.   Type "**ping 192.168.1.1".** Assure that you ping the correct IP Address assigned to the WiFi Concurrent N600 Business AP. It will show four replies if you ping correctly.

Ensure that your Ethernet Adapter is working, and that all network drivers are installed

properly. Network adapter names will vary depending on your specific adapter. The installation steps listed below are applicable for all network adapters.

1. Go to **Start > Right click on "My Computer" > Properties**.

2. **Select** the **Hardware Tab**.

3. Click **Device Manager**.

4. Double-click on "**Network Adapters**".

5. Right-click on **Wireless Card bus Adapter** or **your specific network adapter**.

6. Select **Properties** to ensure that all drivers are installed properly.

7. Look under **Device Status** to see if the device is working properly.

8. Click "**OK"**.

2 What can I do if my Ethernet connection does not work properly?

A. Make sure the RJ45 cable connects with the router.

B. Ensure that the setting on your Network Interface Card adapter is "Enabled".

C. If settings are correct, ensure that you are not using a crossover Ethernet cable, not all Network Interface Cards are MDI/MDIX compatible, and use a patch cable is recommended.

D. If the connection still doesn't work properly, then you can reset it to default.

3 Something wrong with the wireless connection?

A. Can't setup a wireless connection?

I. Ensure that the SSID and the encryption settings are exactly the same to the Clients.

II. Move the WiFi Concurrent N600 Business AP and the wireless client into the same room, and then test the wireless connection.

III. Disable all security settings such as **WEP**, and **MAC Address Control**.

IV. Turn off the WiFi Concurrent N600 Business AP and the client, then restart it and then turn on the client again.

V. Ensure that the LEDs are indicating normally. If not, make sure that the power and Ethernet cables are firmly connected.

VI. Ensure that the IP Address, subnet mask, gateway and DNS settings are correctly entered for the network.

VII. If you are using other wireless device, home security systems or ceiling fans, lights in your home, your wireless connection may degrade dramatically. Keep your product away from electrical devices that generate RF noise such as microwaves, monitors, electric motors…

B. What can I do if my wireless client can not access the Internet?

I. Out of range: Put the router closer to your client.

II. Wrong SSID or Encryption Key: Check the SSID or Encryption setting.

III. Connect with wrong AP: Ensure that the client is connected with the correct Access Point.

   i. **Right-click** on the **Local Area Connection icon** in the taskbar.

   ii. Select **View Available Wireless Networks in Wireless Configure**. Ensure you have selected the correct available network.

   iii. Reset the WiFi Concurrent N600 Business AP to default setting

C. Why does my wireless connection keep dropping?

I. Antenna Orientation.

   i. Try different antenna orientations for the WiFi Concurrent N600 Business AP.

   ii. Try to keep the antenna at least 6 inches away from the wall or other objects.

II.	Try changing the channel on the WiFi Concurrent N600 Business AP, and your Access Point and Wireless adapter to a different channel to avoid interference.

III.	Keep your product away from electrical devices that generate RF noise, like microwaves, monitors, electric motors, etc.

4   What to do if I forgot my encryption key?

1.	Go back to advanced setting to set up your Encryption key again.

2.	Reset the WiFi Concurrent N600 Business AP to default setting

5   How to reset to default?

1.	Ensure the WiFi Concurrent N600 Business AP is powered on

2.	Find the **Reset** button on the right side

3.	Press the **Reset** button for 8 seconds and then release.

4.	After the WiFi Concurrent N600 Business AP reboots, it has back to the factory **default** settings.

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Linux Kernel	GPLv2	Linux-2.6.21
busybox	GPLv2	busybox_1.3.2
bridge-utils	GPLv2	bridge-utils 1.1
udhcp server	GPLv2	udhcp-0.9.9
udhcp client		
fdisk	GPLv2	util-linux 2.12q
mke2fs, e2fsck	GPLv2	e2fsprogs v1.40.2
samba	GNUv2	samba 3.0.20
wireless tools	GPLv2	wireless tools
vsfptd	GPLv2	vsftpd-2.0.3
Transmission	MIT	Transmission-1.74
mt-daapd	GNUv2	mt-daapd-0.2.4
dnrd	GNUv2	DNRD-2.17
libcurl	cURL-7.19.6	
OpenSSL	BSD	openssl-1.00b3
ntfs-3g	GNUv2	ntfs-3g-2009.4.4
Zebra	GNUv2	zebra-0.95a
snmpd	CMU	snmp-4.1.2
pptp	GNUv2	pptp-1.7.1
pppoe	GPLv2	pppoe-3.8
pppd	BSD	ppp-2.4
l2tpd	GPLv2	l2tp-0.4
iptables	GNUv2	iptables-1.4.2
tc	GNUv2	iproute2-2.6.11
wget	GNU	wget-1.7.1

Availability of source code

Please visit our web site or contact us to obtain more information.

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