

CAMBRIDGE

CIG

INDUSTRIES (GROUP) CO LTD.

WF-630R1 APUser Manual

Version 2

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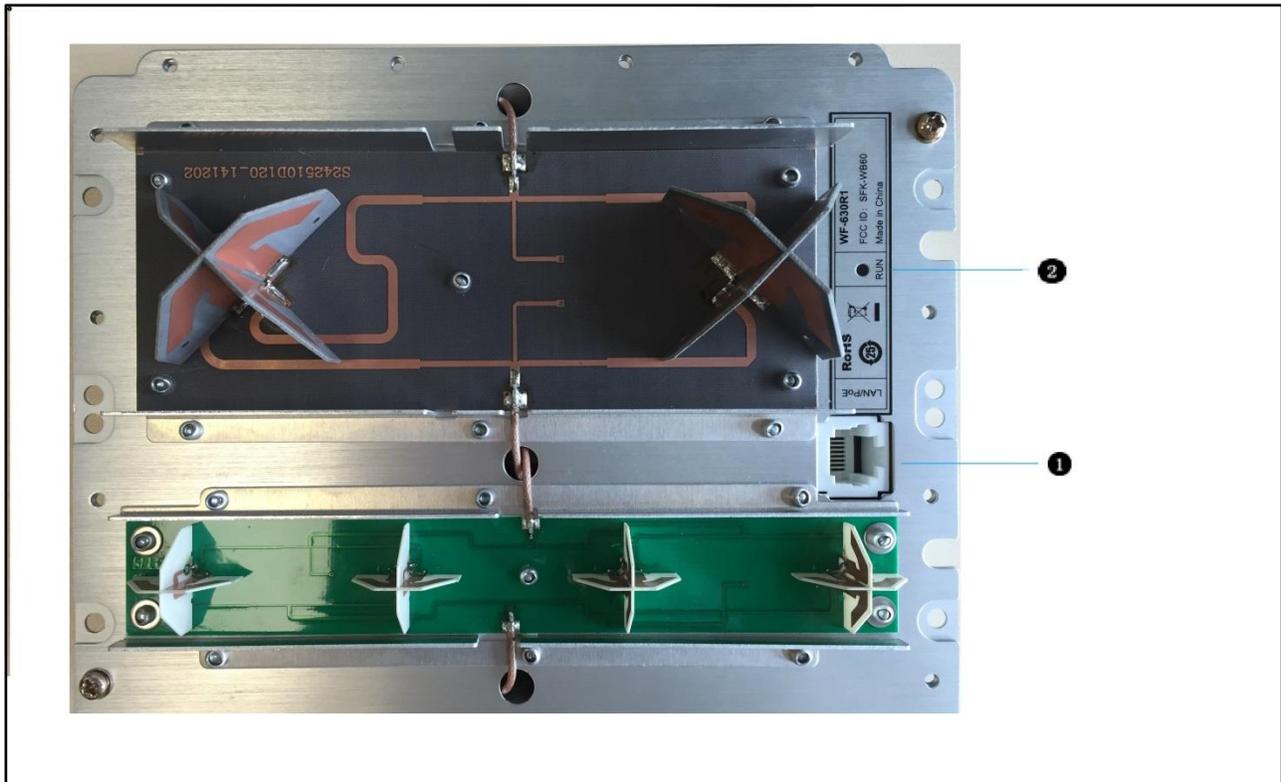
1 Quick Start

Thank you for buying this product. The following information aims to give you general information about product introduction, product overview and installation procedure and so on.

1.1 Introduction

WF-630R1 is a dual-band 802.11ac 2x2 outdoor Wi-Fi AP module, which is complied with the IEEE802.11n/11ac standard and designed for high-density deployments in offices, schools, hospitals and hotels that require premium performance. Having together MIMO (Multiple-in&Multiple-out) technology with high-throughput mode techniques, WF-630R1 works with most wireless terminals to builds a high capacity Wi-Fi network.

1.2 Product Overview



No.	Name	Function
①	LAN Port	10/100/1000M Base-T Ethernet port (RJ-45), used as a WAN port and used for being powered by PoE function.
②	LEDs	See LED Definition

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1.3 Installation

To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read all warnings and precautions in this guide before installing or maintaining product.

Caution

 To avoid risk of injury from electrical shock or energy hazard, installation and service of this product must be performed by qualified service personnel.

Safety Statement

- To avoid the abnormal work, do not install the device near the power line, electric lamp, power grid, or in any forceful power grid place
- Ensure the power adapter is grounded well if install the device indoor.
- Install other lightning protection equipment near the device if necessary, because the lightning protection module inside the device is basic.
- Use the steady power grid to provide the power to the device, which is to avoid the abnormal work.
- Use a less than 50m network cable to connect the PoE port, which is to acquire the steady power. The network cable complies with the DC resistance definition in the YD/926.2 protocol.

Installation Environment

- Operating ambient temperature: -40°C ~ +70°C
- Operating ambient humidity: 5% ~ 95%non-condensing

Installation mode:

- Pole mounting

Installation tool:

- Screws, screw-driver and wrench

Installation site:

- Please ensure the visibility of product and no tall buildings and woods block between them.

1.4 LED Definition

Label	Function	LED mode	Status
RUN	AP power / ready status	Off	No power to AP
		Red	Device hardware failure
		Flashing - Green	Device is managed by controller

Notice

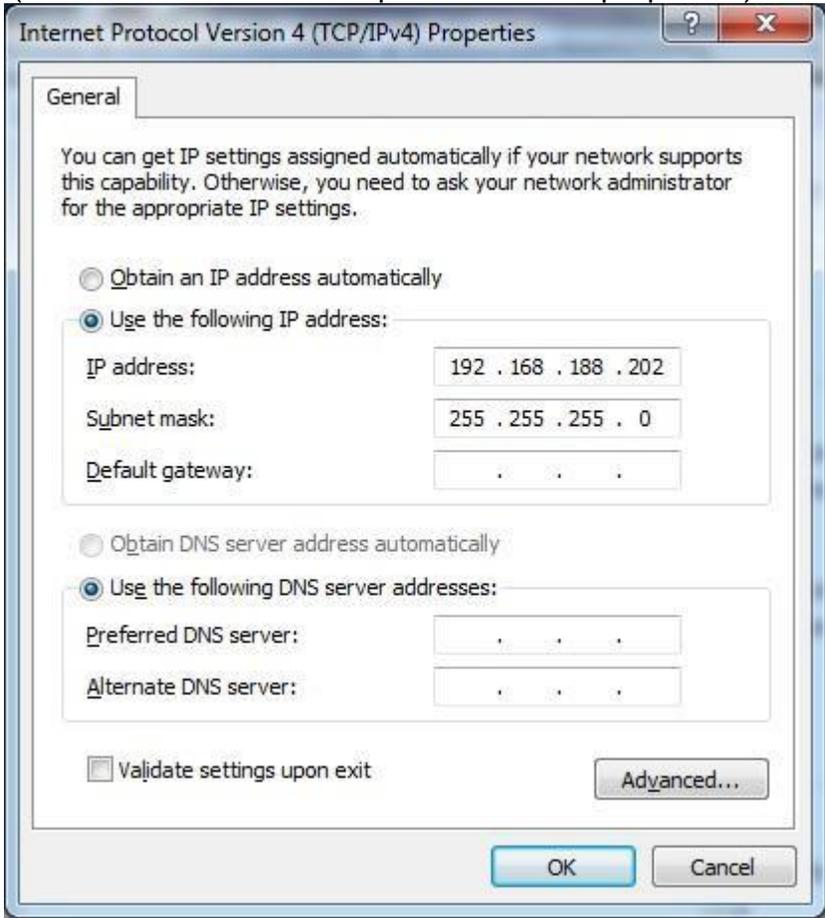
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		On - Green	Device ready
--	--	------------	--------------

1.5 Software Installation

Logging in to the Web Page

1. To configure PC IP address, fill 192.168.188.x in “IP address” and 255.255.255.0 in “Subnet mask”(set Window7 as an example to show the properties).



2. Input the default IP address 192.168.188.251 in the address bar of the web browser and press Enter.
3. Enter username and password (username: admin, password: password), after password authentication is successful, the web page is displayed.

1.6 Product Specification

Physical specification

LED	RUN
------------	------------

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Ethernet interface	RJ-45 connector
---------------------------	-----------------

Electrical specification

Power input	Standard 802.3at PoE
Power consumption	≤24W

Environmental specification

Working temperature	-40°C~ +70°C
Working humidity	5% ~ 95% non-condensing
Elevations	86kPa ~ 106kP0061
Lightning protection	6KV common mode surge

1.7 Product Proper Disposal

Waste of Electrical and Electronic Equipment



Directive 2002/96/EC on Waste of Electrical and Electronic Equipment are designed to tackle the fast increasing waste stream of electrical and electronic equipment and complements European Union measures on landfill and incineration of waste. CIG products at end of life are subject to separate collection and treatment in the EU Member States and therefore are marked with the symbol.

European Union RoHS



EU Restriction and Hazardous Substances Directive 2011/65/EC (RoHS) restricts the use of specific hazardous materials in manufacture of electrical and electronic equipment. Specially, restricted materials are Lead, Cadmium, Mercury, Hexavalent Chromium, and Bromine. CIG products comply with this requirement and all marked with “RoHS” shown at the left.

China RoHS WF-630R1 complies with China environmental declaration requirements and is labeled with “EFUP 20” label shown as follows.

有毒有害物质声明
Hazardous Materials Declaration

部件名称 (Parts)			有毒有害物质或元素 (Hazardous Substance)		
铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬	多溴联苯	多溴二苯醚

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			(Cr6+)	(PBB)	(PBDE)
电路模块 (circuit modules)	x	○	○	○	○
电缆及电缆组件 (Mechanical assemblies)	x	○	○	○	○
金属部件 (Metal Parts)	○	○	○	○	○
塑料和聚合物部件 (Plastic and Polymeric Parts)	○	○	○	○	○
<p>○: 表示该有毒有害物质在该部件所有均质材料中的含量在SJ/T11363 — 2006标准规定的限量要求下。Indicates that the concentration of the hazardous substance in all homogeneous materials in the parts is below the relevant threshold of the SJ/T11363-2006 standard. X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts is above the relevant threshold of the SJ/T11363-2006 standard. 对销售之日的所售产品，本表显示剑桥公司供应链的电子信息产品可能包含这些物质。注意：在所售产品中可能会也可能不会含有所有所列的部件。This table shows where these substances may be found in the supply chain of CIG electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.</p>					



除非另外特别的标注，此标志为针对所涉及产品的环保使用期标志。某些零部件会有一个不同的环保使用期贴在其产品上。此环保使用期限只适用于产品是在产品手册中规定的条件下工

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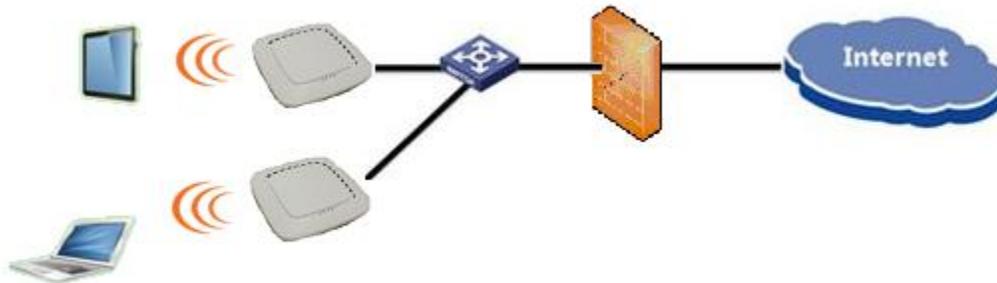
作。 The Environment-Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain parts may have a different EFUP and so are marked to reflect such. The Environment-Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.

1.8 Safety and Regulatory compliance

WF-630R1 has been tested and complied with the standards as follows:

- NRTL Listed 60950 (US & CA)
- CB with IEC/EN 60950-1
- EN 60601-1-1: 2001UL2043

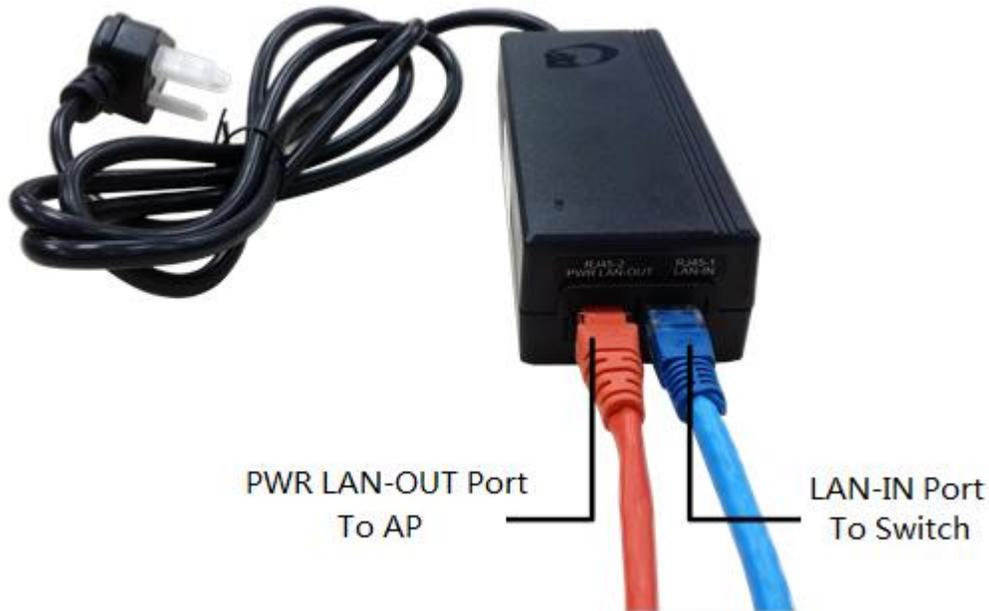
2 AP Network Topology



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2.1 Connect PoE Adapter to AP

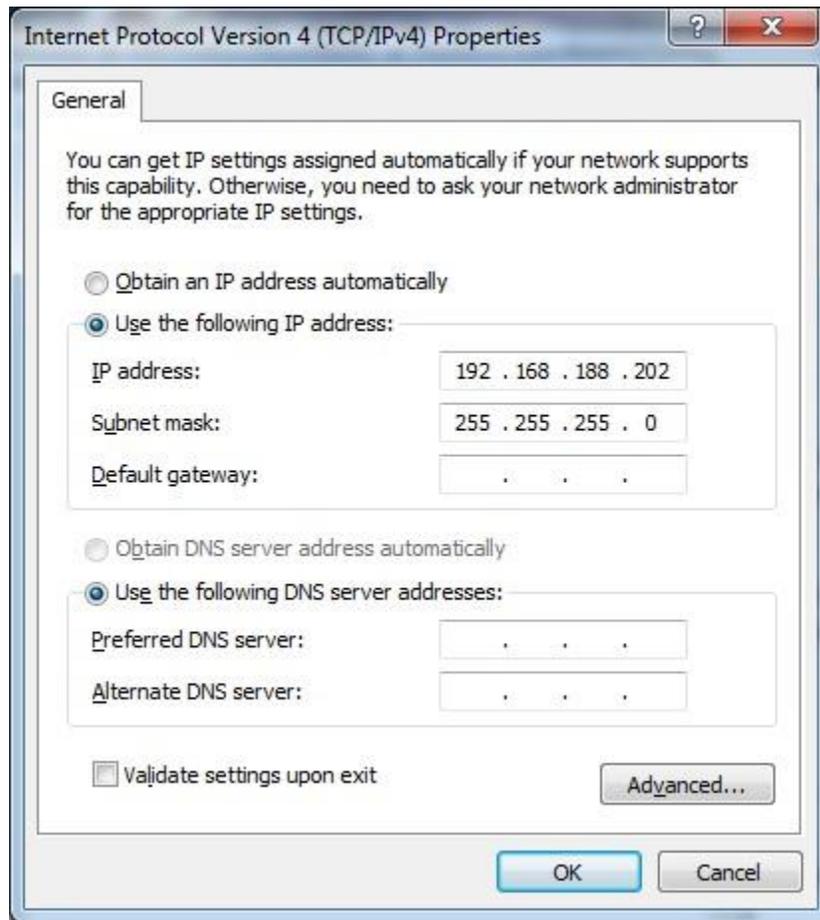


Notes: Please connect the Ethernet Port labeled “PWR LAN-OUT” on PoE Adapter to “ETH1” port of AP and the Ethernet Port labeled “LAN-IN” on PoE Adapter to your PC or Switch.

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2.2 Configure PC IP address

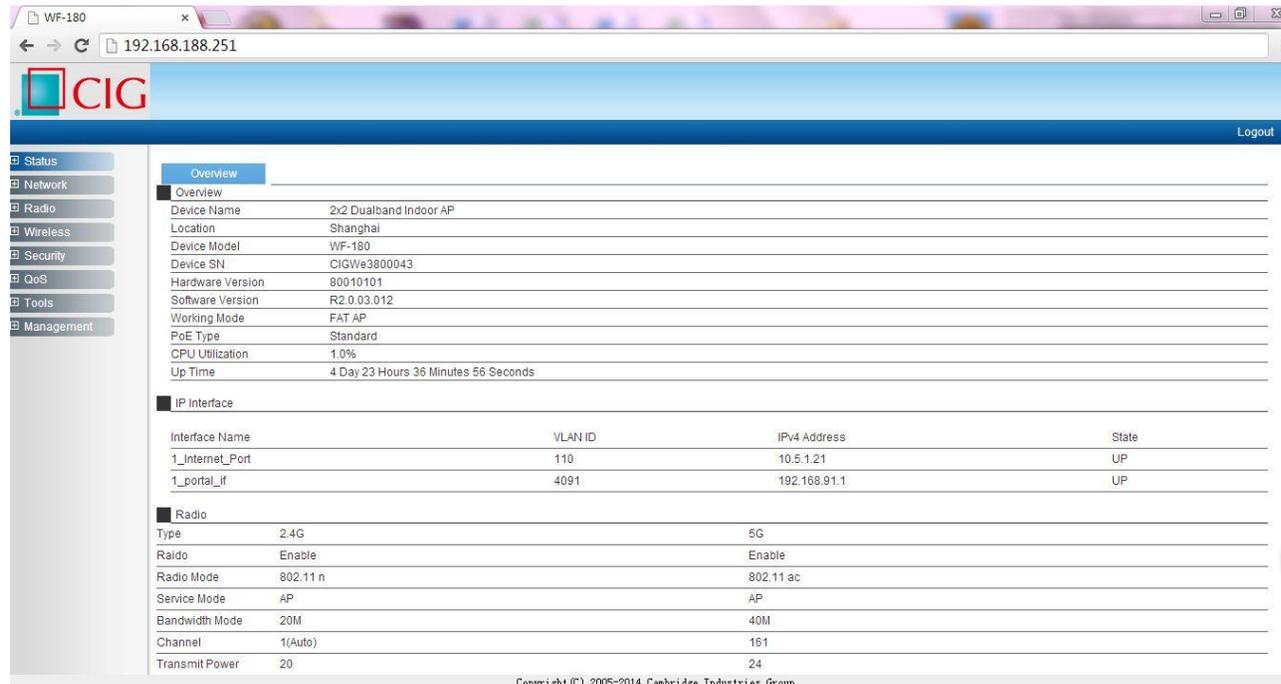


Notes: Connect your PC to the “LAN-IN” port on PoE Adapter of AP, manually configure your wired NIC with a static IP address on the 192.168.188.x subnet (e.g. 192.168.188.202).

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2.3 Visit AP Web page



The screenshot shows a web browser window with the address bar set to 192.168.188.251. The page displays the CIG logo and a navigation menu on the left. The main content area is divided into sections: Overview, IP Interface, and Radio. The Overview section provides details about the device, including its name, location, model, and version. The IP Interface section shows a table of interfaces with their respective VLAN IDs and IP addresses. The Radio section lists various radio-related settings.

Interface Name	VLAN ID	IPv4 Address	State
1_Internet_Port	110	10.5.1.21	UP
1_portal_if	4091	192.168.91.1	UP

Interface Name	VLAN ID	IP ver	Mode	Operation
1_Internet_Port	1	IPv4	IPoE	 

Notes: Input the default IP address “192.168.188.251” in the address bar of browser. Then enter the default username and password (username: admin, password: password) to enter the Web interface of AP.

2.4 Configure IP address for AP



The screenshot shows the CIG AP web interface with the IP Interface configuration page selected. The left navigation menu has 'IP Interface' highlighted. The main content area displays a table with columns for Interface Name, VLAN ID, IP ver, Mode, and Operation. The table contains one entry for '1_Internet_Port' with VLAN ID 1, IP ver IPv4, and Mode IPoE. The Operation column shows edit and delete icons.

Interface Name	VLAN ID	IP ver	Mode	Operation
1_Internet_Port	1	IPv4	IPoE	 

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IP Interface

IP Interface-Edit

Interface Name *

VLAN ID[0-4090]

Mode IPoE

IPv4 DHCP Static

IP Address *

SubNetMask *

GateWay *

Primary DNS *

Backup DNS

Support Service HTTP HTTPS SSH Telnet

Items marked with an asterisk(*) are required

2.5 Connect AP to Switch

Notes: Connect AP to Switch and confirm it can visit Internet, then configure your PC to the same subnet and connect to the same Switch in order to continue to configuring the AP.

2.6 Configure location, Language and Country code for AP

System

Region Code

Device Name

Location

Language

Country Code

NAS ID

NAS ID

Factory Defaults

To restore a default setting, click on the "Restore" button below.

Restore Factory Configuration

Configuration Management

Backup Configuration

Notes: The country code is US and can't be modified.

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2.7 Configure detailed WiFi parameters for AP

The screenshot shows the CIG configuration interface for a 2.4G WiFi AP. The left sidebar has 'Radio' selected, with '2.4G' highlighted. The main panel is titled 'Basic' and contains the following settings:

Radio	<input checked="" type="checkbox"/>
Service Mode	AP
TX Power	21 dBm
Radio Mode	802.11 n
Channel	Auto
802.11n: 802.11n only <input type="checkbox"/>	
TX Beamforming	<input checked="" type="checkbox"/>
Spatial Stream	2
Aggregation	AMPDU
Guard Interval	<input checked="" type="checkbox"/> Enable Short GI

Buttons: Ok, Cancel

The screenshot shows the CIG configuration interface for a 5G WiFi AP. The left sidebar has 'Radio' selected, with '5G' highlighted. The main panel is titled 'Basic' and contains the following settings:

Radio	<input checked="" type="checkbox"/>
Service Mode	AP
TX Power	21 dBm
Radio Mode	802.11 ac
Channel	161
802.11ac: 802.11ac only <input type="checkbox"/>	
Spatial Stream	2
Aggregation	AMPDU
Guard Interval	<input checked="" type="checkbox"/> Enable Short GI

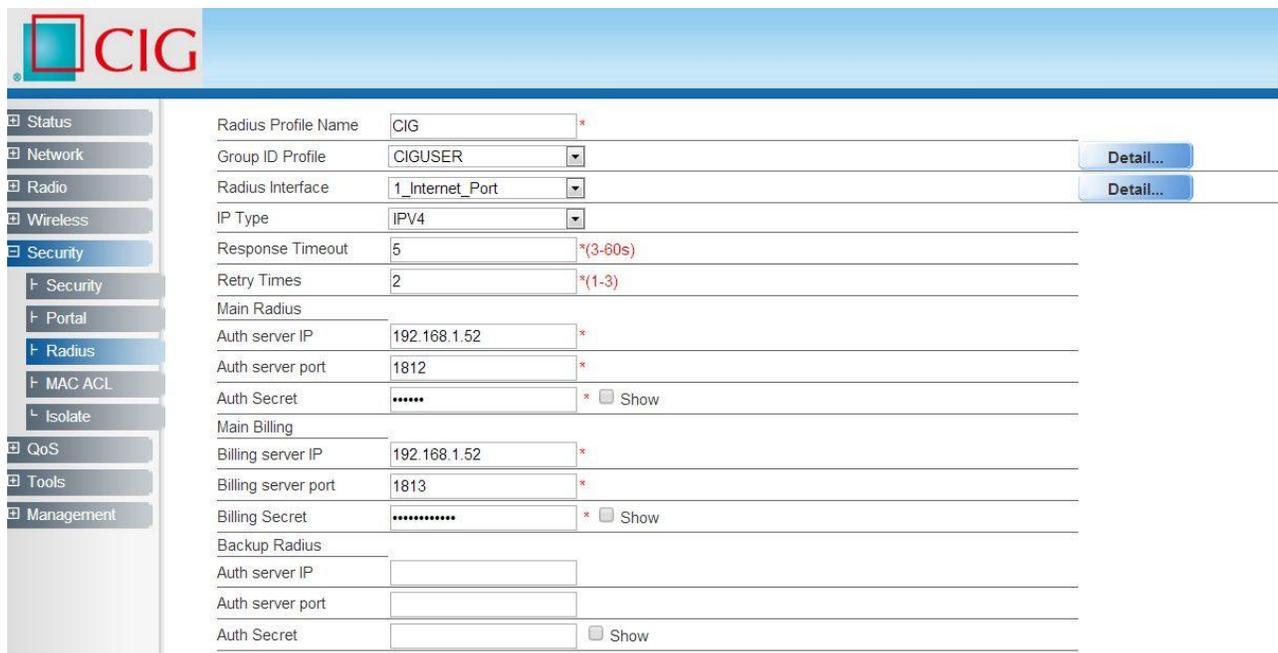
Buttons: Ok, Cancel

2.8 Configure Radius parameters for AP

Notes: If want to use the 802.1x authentication, it need to configure the Radius profile firstly. Then in the security profile, the radius profile will be presented in the drop-down list.

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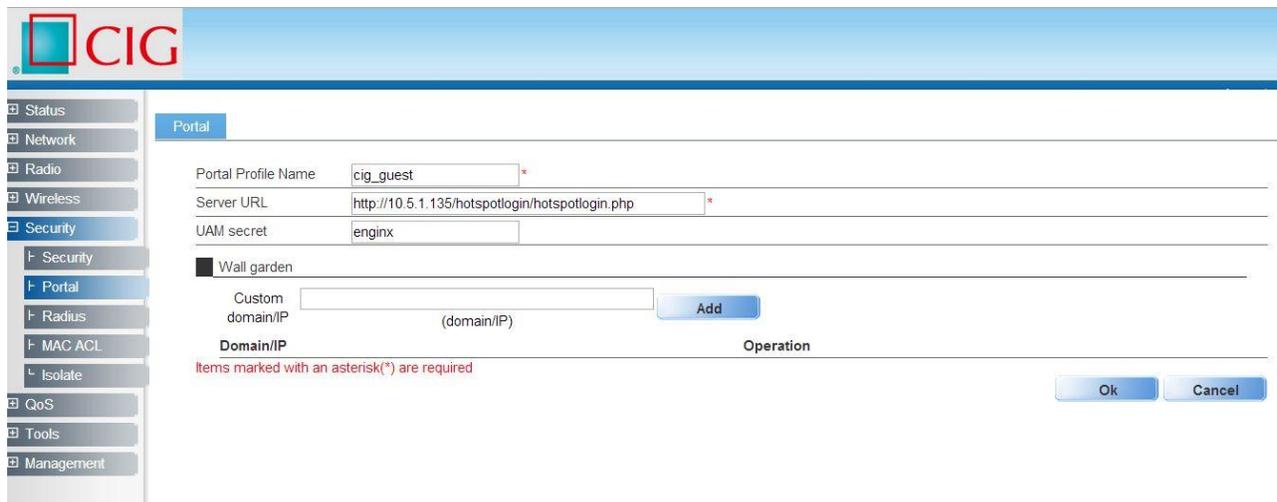
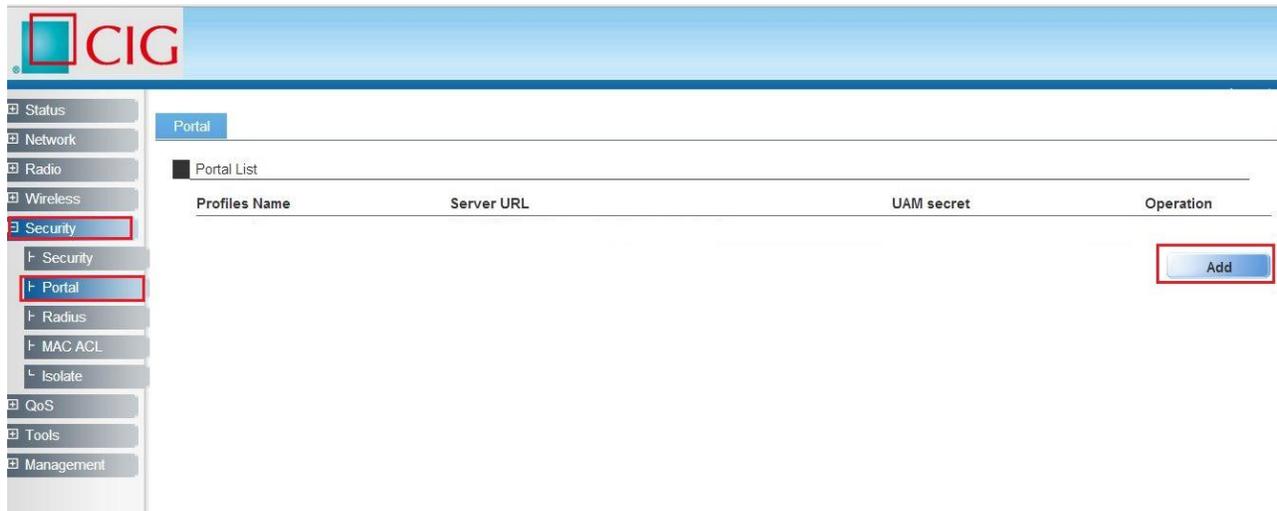


2.9 Configure Portal parameters for AP

Notes: The AP can support Web authentication based on Chillispot. If want to use the Web authentication, it need to configure the Portal profile and Radius profile firstly. Then in the security profile, the Portal profile and Radius profile will be presented in the drop-down list. Above all, you need to setup a Web authentication server and radius server.

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2.10 Configure security parameters for AP

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The screenshot shows the CIG web interface. The top header features the CIG logo. On the left, a navigation menu includes 'Status', 'Network', 'Radio', 'Wireless', 'Security', 'Portal', 'Radius', 'MAC ACL', 'Isolate', 'QoS', 'Tools', and 'Management'. The 'Security' menu item is highlighted with a red box. The main content area is titled 'Security' and contains a table with the following structure:

Profiles Name	Security Type	Operation
<input type="button" value="Add"/>		

PSK

The screenshot shows the CIG web interface with the 'Security-Add' configuration page. The top right corner has a 'Logout' link. The left sidebar shows 'Security' expanded to 'Security-Add'. The main form contains the following fields:

- Security Profile Name: *
- Security Type: ▾
- Encryption: ▾
- Authentication Type: ▾
- WPA Preshared Key: * Show

Items marked with an asterisk(*) are required

Buttons:

802.1x Authentication

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CIG

Security

Security-Edit

Security Profile Name: CIG *

Security Type: WPA/WPA2

Authentication Type: 802.1X/EAP

Radius Profile: CIG

Items marked with an asterisk(*) are required

Ok Cancel

Web Authentication

CIG

Security

Security-Edit

Security Profile Name: CIG_Guest *

Security Type: None

Authentication Type: MAC/Web

Portal Profile: cig_guest

Radius Profile: RadiusProf1

Items marked with an asterisk(*) are required

Ok Cancel

2.11 Configure Rate limit rule (Optional)

Notes: Rate Limit profile will be cited in the AP configuration.

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Logout

Rate Limit

Profile Name *

Station MAC (12:13:56:78:9a:bc)

Egress Method

Egress Rate +kbps (0 means no limit)

Station MAC	Egress	Select
00:11:22:33:44:55	Fix_1024kbps	<input type="checkbox"/>

Items marked with an asterisk(*) are required.

Logout

AP

VAP-Add

Radio

SSID *

Wireless Service Enable

Hidden SSID Enable

Station Isolation Enable

Maximum User *(1-128)

Idle Kickout Times *(0-255, 0 Means Disable Kickout function)

WDS Enable

VLAN Mode

PVID +(0-4090)

Pri +(0-7)

Security Profile

RateLimit Profile

Mapping Profile

MAC ACL Profile

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2.12 Configure Group ID (Optional)

Notes: Group profile is used for 802.1x/Web authentication. Group is classified by Filter-ID attribute in radius access accept message. The Group is bound with the role of the user. Different group has different VLAN and rate limit configuration. When a station sends the username and password to the Radius server for authentication, the server can respond with a Filter-ID (optional) to the AP. After AP gets the Filter-ID attribute, AP will search the Filter-ID in the Group profiles. If the Filter-ID can be matched in one profile, the traffic VLAN and rate limit will be applied to the station. The Group profile is cited in the Radius server profile.

Group Id

Group ID - Edit

Profile Name CIGUSER *

Group ID Rules - Edit

Group ID

VLAN ID[0-4090]

Ingress Method Fix

Ingress Rate 0 *kbps (0 means no limit)

Egress Method Fix

Egress Rate 0 *kbps (0 means no limit) Add

Group ID Rules List

Group ID	VLAN ID	Ingress Rate	Egress Rate	Select
RD	110	Fix_0kbps	Fix_0kbps	<input type="checkbox"/>

Items marked with an asterisk(*) are required.

Delete Ok Cancel

Radius-Edit

Radius Profile Name CIG *

Group ID Profile CIGUSER *

Radius Interface 1_Internet_Port *

IP Type IPv4

Response Timeout 5 *(3-60s)

Retry Times 2 *(1-3)

Main Radius

Auth server IP 192.168.1.52 *

Auth server port 1812 *

Auth Secret ***** * Show

Main Billing

Billing server IP 192.168.1.52 *

Billing server port 1813 *

Billing Secret ***** * Show

Backup Radius

Auth server IP

Auth server port

Auth Secret Show

Backup Billing

Billing server IP

Detail... Detail...

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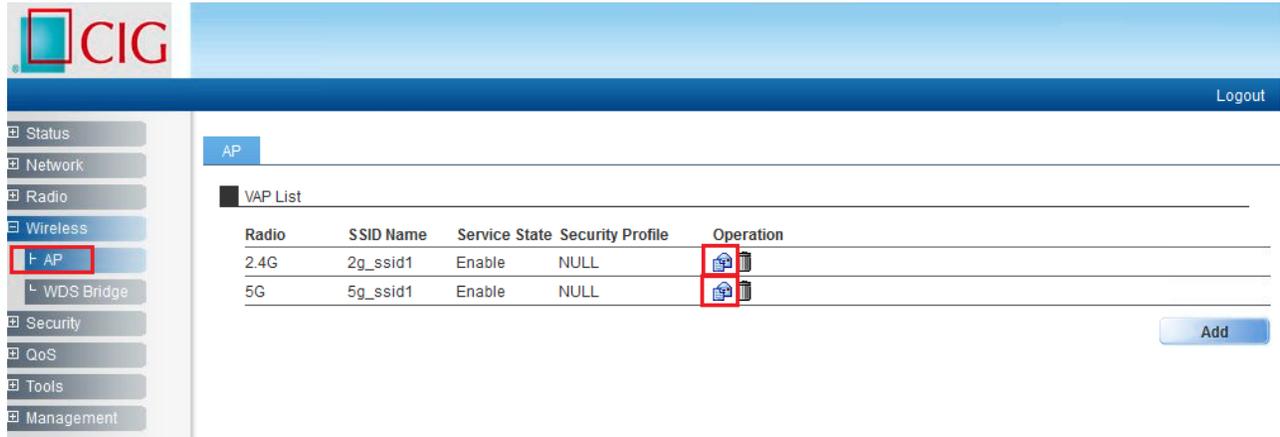
2.13 Configure MAC ACL rule (Optional)

The screenshot shows the CIG web interface. The top navigation bar includes the CIG logo and a 'Logout' link. A left sidebar contains a menu with categories: Status, Network, Radio, Wireless, Security, MAC ACL (highlighted with a red box), Isolate, QoS, Tools, and Management. The main content area is titled 'MAC ACL' and contains two sections: 'MAC-ACL-Profile-Edit' and 'MAC ACL List'. In the 'MAC-ACL-Profile-Edit' section, the 'MAC ACL Profile Name' field contains 'Black-1' with a red asterisk, and the 'Access Control Mode' has radio buttons for 'Black' (selected) and 'white'. The 'MAC ACL List' section has an 'Enter MAC Address' field with '18-03-73-58-e6-d3' and a placeholder '(XX:XX:XX:XX:XX:XX)', an 'Add' button, and a red note: 'Items marked with an asterisk(*) are required'. At the bottom right of the form are 'Ok' and 'Cancel' buttons.

Notice

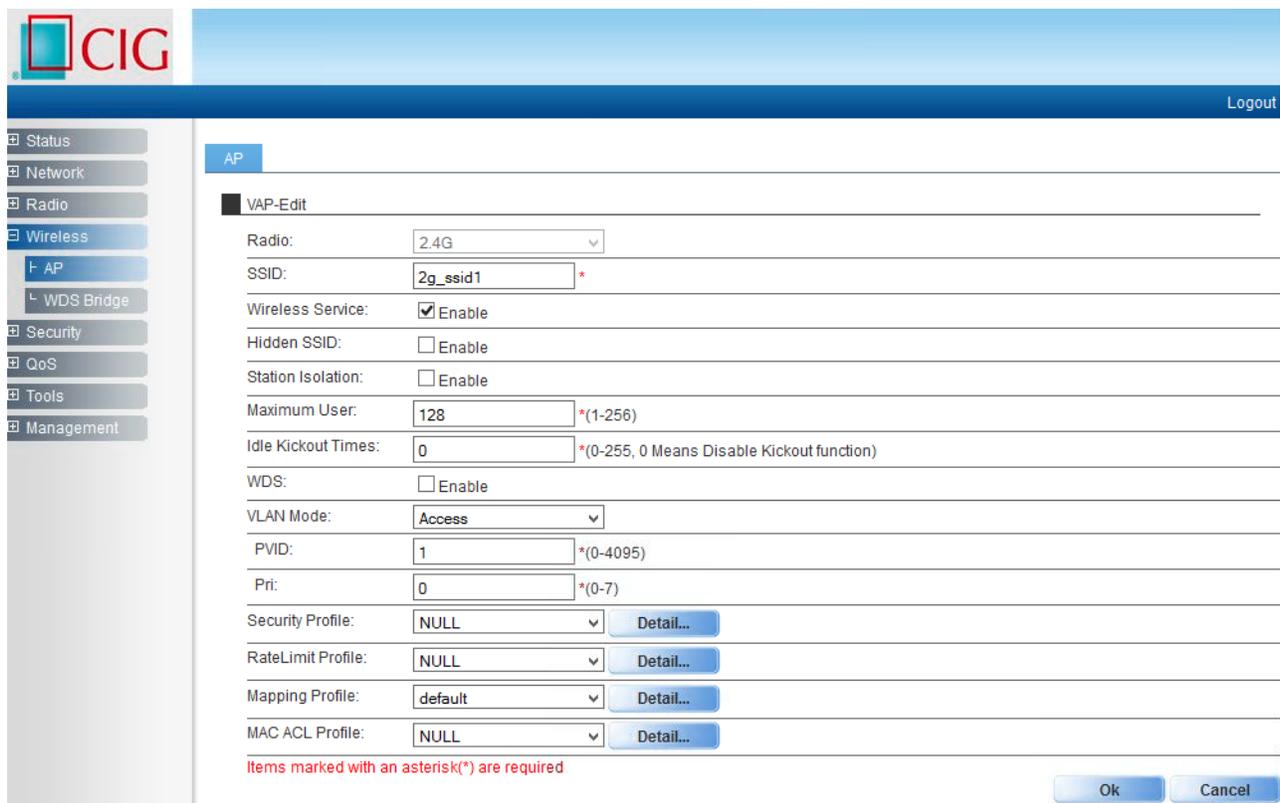
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2.14 Configure SSID



The screenshot shows the CIG web interface with the 'AP' menu item selected in the left sidebar. The main content area displays the 'VAP List' table. The table has five columns: Radio, SSID Name, Service State, Security Profile, and Operation. Two rows are visible: one for 2.4G radio with SSID '2g_ssid1' and one for 5G radio with SSID '5g_ssid1'. Both are in 'Enable' state with 'NULL' security profiles. The 'Operation' column contains icons for edit and delete. A red box highlights the 'AP' menu item and the 'Operation' icons. An 'Add' button is located at the bottom right of the table.

Radio	SSID Name	Service State	Security Profile	Operation
2.4G	2g_ssid1	Enable	NULL	 
5G	5g_ssid1	Enable	NULL	 



The screenshot shows the 'VAP-Edit' configuration page in the CIG web interface. The 'AP' menu item is selected in the sidebar. The configuration fields are as follows:

- Radio: 2.4G
- SSID: 2g_ssid1 *
- Wireless Service: Enable
- Hidden SSID: Enable
- Station Isolation: Enable
- Maximum User: 128 *(1-256)
- Idle Kickout Times: 0 *(0-255, 0 Means Disable Kickout function)
- WDS: Enable
- VLAN Mode: Access
- PVID: 1 *(0-4095)
- Pri: 0 *(0-7)
- Security Profile: NULL [Detail...](#)
- RateLimit Profile: NULL [Detail...](#)
- Mapping Profile: default [Detail...](#)
- MAC ACL Profile: NULL [Detail...](#)

Items marked with an asterisk(*) are required

Buttons: Ok, Cancel

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The screenshot shows the CIG (Cisco Intelligent Gateway) web interface for configuring an AP. The left sidebar contains a navigation menu with options: Status, Network, Radio, Wireless, AP, WDS Bridge, Security, QoS, Tools, and Management. The 'Wireless' section is expanded, and 'AP' is selected. The main content area is titled 'AP' and contains a 'VAP-Edit' configuration form. The form includes the following fields and options:

- Radio: 5G
- SSID: 5g_ssid1 *
- Wireless Service: Enable
- Hidden SSID: Enable
- Station Isolation: Enable
- Maximum User: 128 *(1-256)
- Idle Kickout Times: 0 *(0-255, 0 Means Disable Kickout function)
- WDS: Enable
- VLAN Mode: Access
- PVID: 1 *(0-4095)
- Pri: 0 *(0-7)
- Security Profile: NULL (with a 'Detail...' button)
- RateLimit Profile: NULL (with a 'Detail...' button)
- Mapping Profile: default (with a 'Detail...' button)
- MAC ACL Profile: NULL (with a 'Detail...' button)

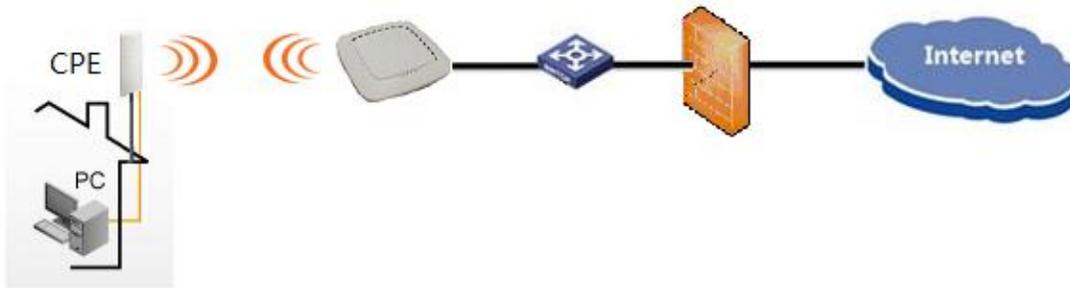
At the bottom of the form, a red note states: "Items marked with an asterisk(*) are required". At the bottom right of the page, there are 'Ok' and 'Cancel' buttons.

Notes: You may apply the relevant Security, Rate Limit, Mapping or MAC ACL profiles which you configured here. After the above setting, wireless stations can connect to the relevant SSID of AP and get IP address from DHCP server of firewall to visit Internet.

Notice

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3 AP WDS Network Topology



3.1 Enable WDS function

The screenshot shows the CIG AP configuration page. The left sidebar contains a navigation menu with the following items: Status, Network, Radio, Wireless, AP, WDS Bridge, Security, QoS, Tools, and Management. The 'Wireless' menu is expanded, and 'AP' is selected. The main content area shows the 'VAP-Edit' configuration page for the AP. The 'WDS' checkbox is checked and highlighted with a red box. Other configuration options include Radio (5G), SSID (5g_ssid1), Wireless Service (Enable), Hidden SSID (Disable), Station Isolation (Disable), Maximum User (128), Idle Kickout Times (0), VLAN Mode (Access), PVID (1), Pri (0), Security Profile (SecPro1), RateLimit Profile (RateLimitPro1), Mapping Profile (QosMappingPro2), and MAC ACL Profile (macacl). A note at the bottom states: 'Items marked with an asterisk(*) are required'.

Note: Enable WDS function when you configure SSID.

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3.2 Configure CPE WDS

The screenshot shows the configuration interface for a CPE device, specifically the Wireless mode settings. The interface is organized into several sections: Wireless mode, Basic, Security, and Advanced. The 'Enable WDS' checkbox is checked and highlighted with a red box. Other settings include SSID (5g_ssid1), Security (Personal WPA2), Encryption (AES), and Tx power (26 dBm).

Buttons: Apply, Discard, Save & Apply, Logout

Navigation: Status, Configuration, Services, System, Tools

Sub-navigation: Network, Wireless, Virtual AP, Wireless ACL, Traffic shaping, Port forwarding, Static routes

Wireless mode: Station
Country: CT
Non-standard channels: DISABLED

Enable WDS

Basic

SSID: 5g_ssid1
Scan
Scanned SSID
Lock Access Point

IEEE mode: A/N mixed
Channel width: 20/40 MHz

Security

Security: Personal WPA2
Encryption: AES
Passphrase: *****

Advanced

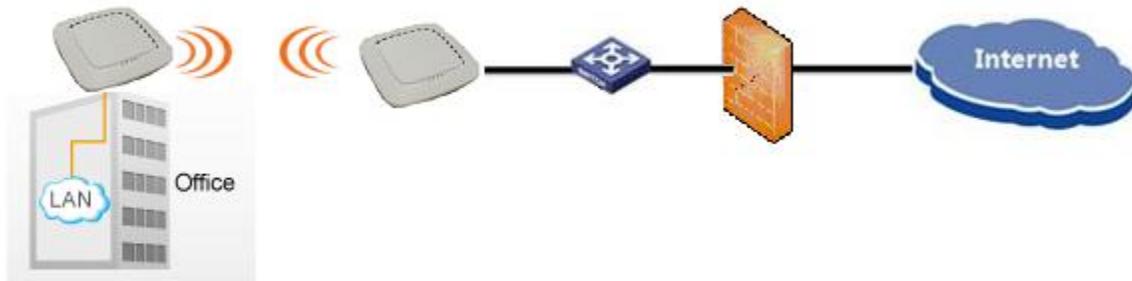
Tx power (dBm): 26
Mode: MIMO 2x2
Enable ATPC
Max data rate: Auto
Fragmentation: 256
Max data rate N: Auto

Note: Enable WDS function too when you configure CPE to connect to AP.

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4 NAWDSNetwork Topology



4.1 Configure WDS bridge mode

The screenshot shows the CIG configuration interface. The 'Radio' section is selected, and the 'Basic' tab is active. The 'Service Mode' is set to 'WDS Bridge'. The 'TX Power' is set to 21 dBm, and the 'Radio Mode' is set to '802.11 ac'. The 'Channel' is set to 161. The '802.11ac' section is expanded, showing '802.11ac only' is disabled, 'Spatial Stream' is set to 2, 'Aggregation' is set to 'AMPDU', and 'Guard Interval' is set to 'Enable Short GI'. The 'Ok' and 'Cancel' buttons are visible at the bottom right.

Note: Please select a specified Channel (for example 161) here.

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4.2 Input remote AP MAC

WDS Bridge

WDS Bridge-Edit

Radio: 5G

Remote WDS MAC0: 00-19-c7-cb-ad-ea

Remote WDS MAC1:

Remote WDS MAC2:

Remote WDS MAC3:

Remote WDS MAC4:

Remote WDS MAC5:

Remote WDS MAC6:

Remote WDS MAC7:

VLAN Mode: Trunk

PVID: *(0-4095)

Pri: *(0-7)

VLAN Member: *(e.g.: 1-10,15,18)

Detag Member: *(e.g.: 1-10,15,18)

Security Profile: NULL Detail...

RateLimit Profile: NULL Detail...

Mapping Profile: default Detail...

MAC ACL Profile: NULL Detail...

Items marked with an asterisk(*) are required

4.3 The configuration in remote AP

Basic Advance

Basic

Radio

Service Mode: WDS Bridge

TX Power: 21 dBm

Radio Mode: 802.11 ac

Channel: 161

HT20

HT40

HT80

802.11ac:

802.11ac only

Spatial Stream: 2

Aggregation: AMPDU

Guard Interval: Enable Short GI

Ok Cancel

Note: Please select the same Channel as the Channel of AP which you want to connect via WDS.

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- Status
- Network
- Radio
- Wireless
 - AP
 - WDS Bridge
- Security
- QoS
- Tools
- Management

WDS Bridge

WDS Bridge-Edit

Radio:	<input type="text" value="5G"/>		
Remote WDS MAC0:	<input type="text" value="00-19-c7-cb-5d-12"/>	Remote WDS MAC1:	<input type="text"/>
Remote WDS MAC2:	<input type="text"/>	Remote WDS MAC3:	<input type="text"/>
Remote WDS MAC4:	<input type="text"/>	Remote WDS MAC5:	<input type="text"/>
Remote WDS MAC6:	<input type="text"/>	Remote WDS MAC7:	<input type="text"/>
VLAN Mode:	<input type="text" value="Trunk"/>		
PVID:	<input type="text"/> *(0-4095)		
Pri:	<input type="text"/> *(0-7)		
VLAN Member:	<input type="text"/> *(e.g.: 1-10,15,18)		
Detag Member:	<input type="text"/> *(e.g.: 1-10,15,18)		
Security Profile:	<input type="text" value="NULL"/>	<input type="button" value="Detail..."/>	
RateLimit Profile:	<input type="text" value="NULL"/>	<input type="button" value="Detail..."/>	
Mapping Profile:	<input type="text" value="default"/>	<input type="button" value="Detail..."/>	
MAC ACL Profile:	<input type="text" value="NULL"/>	<input type="button" value="Detail..."/>	

Items marked with an asterisk(*) are required

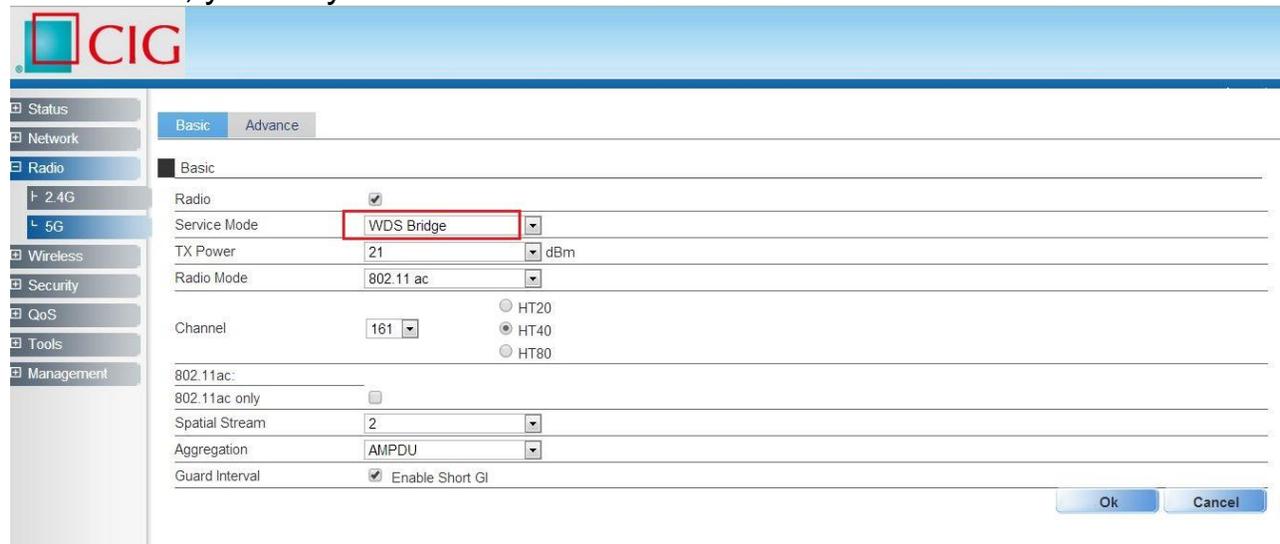
Note: Please input the MAC address of AP which you want to connect via WDS.

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4.4 NAWDS Auto Find

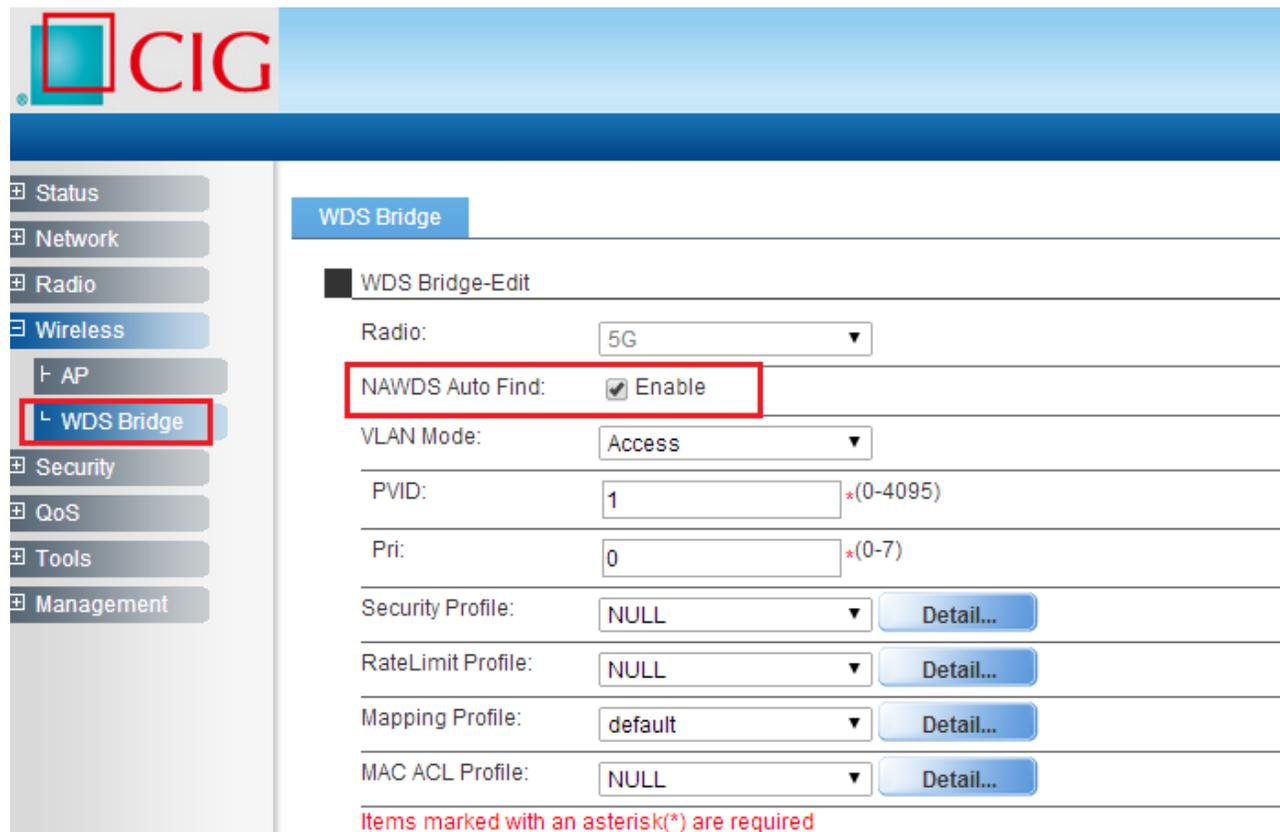
WF-630R1 also supports “NAWDS Auto Find” function, after you configure master AP, you may enable “NAWDS Auto Find” function in slave AP.



The screenshot shows the CIG web interface with the following configuration details:

- Radio:
- Service Mode: WDS Bridge
- TX Power: 21 dBm
- Radio Mode: 802.11 ac
- Channel: 161
- 802.11ac options: HT20, HT40, HT80
- 802.11ac only:
- Spatial Stream: 2
- Aggregation: AMPDU
- Guard Interval: Enable Short GI

Notes: Please select the same Channel as the Channel of AP which you want to connect via WDS.



The screenshot shows the CIG web interface with the following configuration details:

- Radio: 5G
- NAWDS Auto Find: Enable
- VLAN Mode: Access
- PVID: 1 *(0-4095)
- Pri: 0 *(0-7)
- Security Profile: NULL
- RateLimit Profile: NULL
- Mapping Profile: default
- MAC ACL Profile: NULL

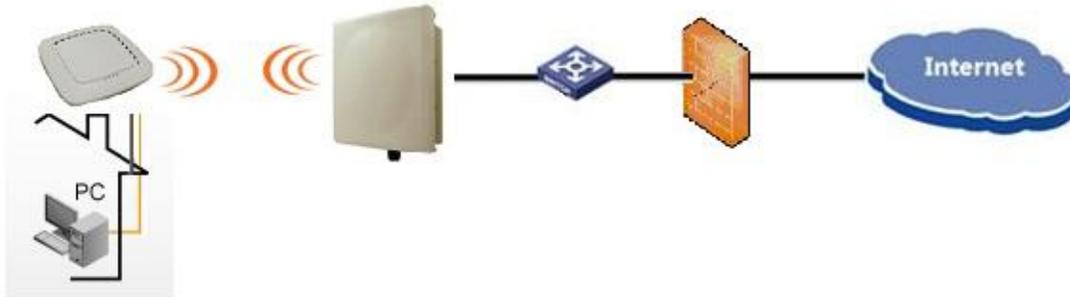
Items marked with an asterisk(*) are required

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Notes: After you enable “NAWDS Auto Find” function, the AP will connect to the master AP via WDS automatically.

5 Station Network Topology



Notes: WF-630R1 supports station mode. WF-630R1 access to the AP by Wi-Fi, and provide the Ethernet access to the client by the LAN port.

5.1 Configure Station mode

The screenshot shows the web interface for configuring the WF-630R1 device. The left sidebar contains a navigation menu with the following items: Status, Network, Radio (highlighted), 2.4G, 5G, Wireless, Security, QoS, Tools, and Management. The main content area is titled "Basic" and "Advance". The "Basic" tab is selected, and the "Radio" section is expanded. The "Radio" checkbox is checked. The "Service Mode" dropdown menu is set to "Station". The "TX Power" is set to "21" dBm. The "Radio Mode" is set to "802.11 n". The "Channel" is set to "Auto". The "HT20" radio button is selected, and the "HT40" radio button is unselected. The "Ok" and "Cancel" buttons are visible at the bottom right of the configuration area.

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5.2 Station Access to AP

The screenshot shows a web-based network management interface. On the left is a navigation menu with categories: Status, Network, Radio, Wireless, AP, Station, WDS Bridge, Security, QoS, Tools, and Management. The 'Wireless' and 'Station' items are highlighted with red boxes. The main content area is titled 'Station' and contains a 'Station list' table. The table has four columns: Radio, SSID Name, Security Profile, and Operation. A single row is visible with the following data: Radio: 2.4G, SSID Name: 2g_ssid1, Security Profile: NULL, and Operation: a small icon. A red box highlights the 'Operation' column. At the bottom of the page, there is a copyright notice: 'Copyright (C) 2005-2014 xxxxxxxx'.

Radio	SSID Name	Security Profile	Operation
2.4G	2g_ssid1	NULL	

The screenshot shows the 'Station-Edit' form in the same network management interface. The navigation menu is on the left, with 'Wireless' and 'Station' highlighted in red. The main content area is titled 'Station-Edit' and contains several input fields: 'Radio' (a dropdown menu set to '2.4G'), 'SSID' (a text input field containing '2g_ssid1'), and 'Security Profile' (a dropdown menu set to 'SecPro0'). A 'Detail...' button is located to the right of the 'Security Profile' field. Below the fields, there is a note: 'Items marked with an asterisk(*) are required'. At the bottom right of the form are 'Ok' and 'Cancel' buttons. A red box highlights the 'SSID' and 'Security Profile' fields. At the bottom of the page, there is a copyright notice: 'Copyright (C) 2005-2014 xxxxxxxx'.

Notes: Need to configure the SSID manually. If want to use the security method, need to configure the "security profile" firstly and then cite it here.

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5.3 Station Status

The screenshot shows the 'Radio2 4G' configuration page. The left sidebar has 'Radio 2.4G' selected. The main content area is divided into two sections: 'Overview' and 'SSID List'.

Overview:

- Radio: Enable
- Radio Mode: 802.11 n
- Service Mode: Station
- Bandwidth Mode: 20M
- Channel: 1(Auto)
- Transmit Power: 20 dbm
- Recv Noise Floor: 0 dbm
- Receive Packets: 1444 pkts
- Transmit Packets: 1017 pkts

SSID List:

SSID	BSSID	Clients	Rxpikts	Txpikts	RateLimit	Security	MAC ACL
2g_ssid1	00:19:C7:00:01:00	0	1444	1017	NULL	NULL	NULL

Below the SSID List is a 'Station List' table with columns: SSID, User Type, User Status, MAC Address, Online Time, Rx-bytes, Tx-bytes.

Notes: After WF-630R1 access to a AP successfully, can check the station status on the Web GUI, for example, the SSID and BSSID.

6 Troubleshooting

6.1 Ping Diagnose

The screenshot shows the 'Ping' configuration page. The left sidebar has 'Tools' selected, and 'Diagnose' is highlighted. The main content area is divided into two sections: 'Ping' configuration and 'Ping Test Results'.

Ping Configuration:

- Interface Select: 1_Internet_Port
- IP Version: IPv4 (selected)
- IP Address/URL: www.yahoo.com *
- Packets Length: 32 *
- Ping Times: 4 *

Ping Test Results:

Reply From	Bytes	Time	TTL
203.84.197.25	32	39.210	47
203.84.197.25	32	45.901	47
203.84.197.25	32	39.171	47
203.84.197.25	32	36.807	47

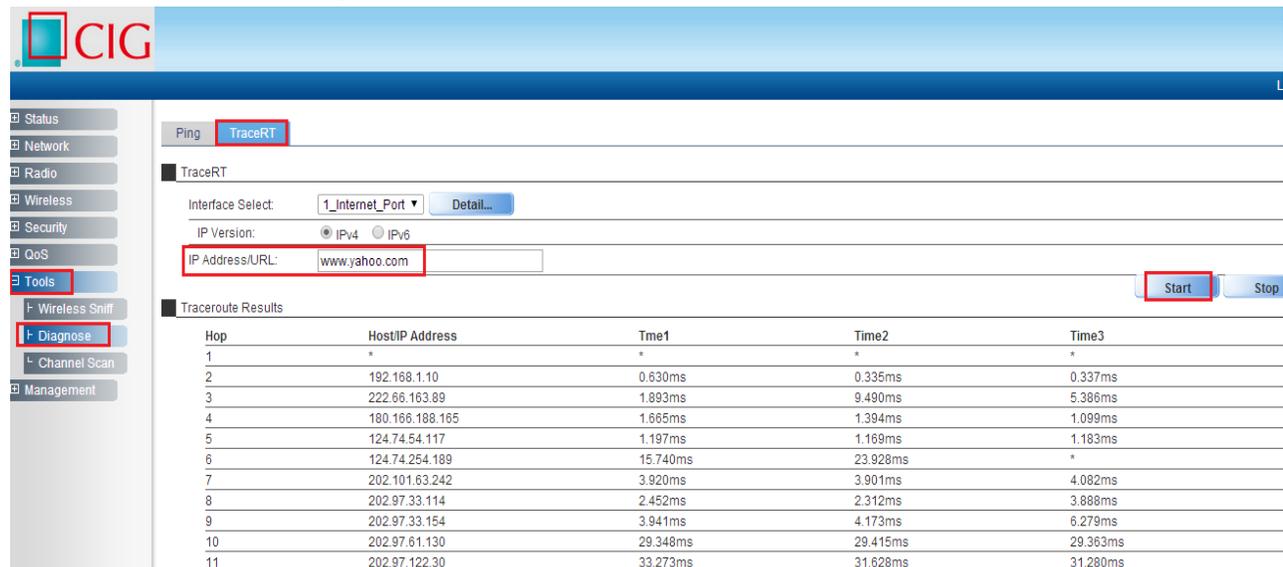
Ping Statistics:

Packets Sent	Packets Received	Packets Lost	Round Trip Min	Roundrip Max	Round Trip Average
4	4	0%	36.807	45.901	40.272

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6.2 TraceRT Diagnose

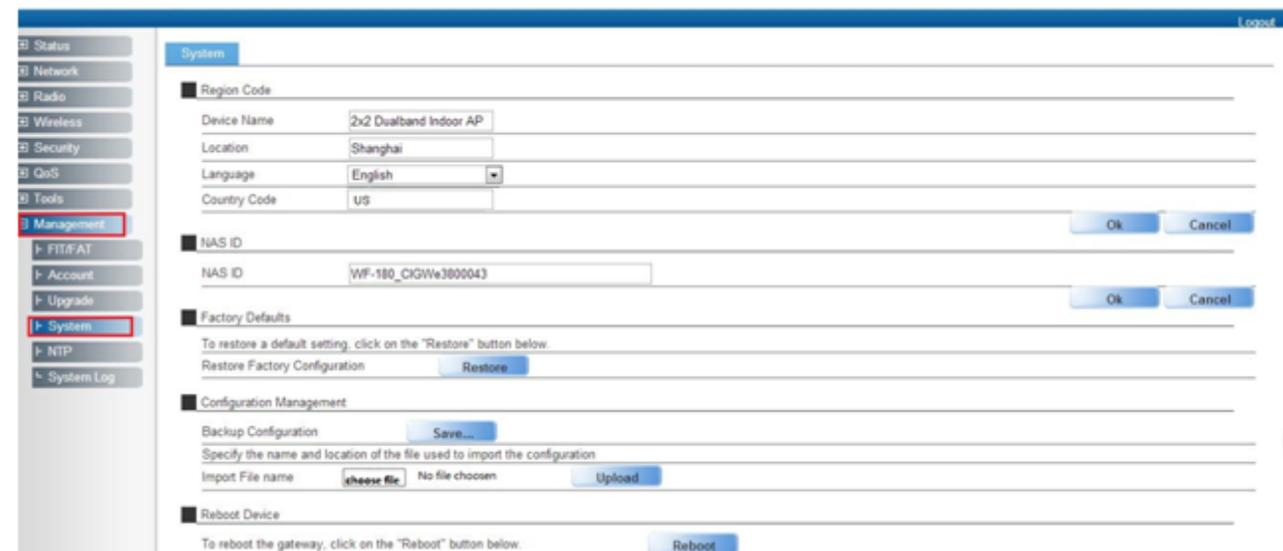


The screenshot shows the CIG web interface for the TraceRT diagnostic tool. The sidebar on the left contains navigation options: Status, Network, Radio, Wireless, Security, QoS, Tools, and Management. The main content area is titled "TraceRT" and includes the following elements:

- Ping** and **TraceRT** tabs.
- TraceRT** section with the following fields:
 - Interface Select: 1_Internet_Port (dropdown menu)
 - IP Version: IPv4 (selected), IPv6
 - IP Address/URL: www.yahoo.com
 - Start and Stop buttons.
- Traceroute Results** table:

Hop	Host/IP Address	Time1	Time2	Time3
1	*	*	*	*
2	192.168.1.10	0.630ms	0.335ms	0.337ms
3	222.66.163.89	1.893ms	9.490ms	5.386ms
4	180.166.188.165	1.665ms	1.394ms	1.099ms
5	124.74.54.117	1.197ms	1.169ms	1.183ms
6	124.74.254.189	15.740ms	23.928ms	*
7	202.101.63.242	3.920ms	3.901ms	4.082ms
8	202.97.33.114	2.452ms	2.312ms	3.888ms
9	202.97.33.154	3.941ms	4.173ms	6.279ms
10	202.97.61.130	29.348ms	29.415ms	29.363ms
11	202.97.122.30	33.273ms	31.628ms	31.280ms

6.3 How to backup/restore setting



The screenshot shows the CIG web interface for the System configuration page. The sidebar on the left contains navigation options: Status, Network, Radio, Wireless, Security, QoS, Tools, and Management. The main content area is titled "System" and includes the following sections:

- Region Code**: Device Name (2x2 Dualband Indoor AP), Location (Shanghai), Language (English), Country Code (US). Buttons: Ok, Cancel.
- NAS ID**: NAS ID (WF-180_CIGWe3800043). Buttons: Ok, Cancel.
- Factory Defaults**: To restore a default setting, click on the "Restore" button below. Restore Factory Configuration. Button: Restore.
- Configuration Management**: Backup Configuration. Button: Save. Specify the name and location of the file used to import the configuration. Import File name (choose file). No file chosen. Button: Upload.
- Reboot Device**: To reboot the gateway, click on the "Reboot" button below. Button: Reboot.

Notes: Press "Save" button to save current setting. Press "Upload" button to load saved setting.

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6.4 How to upgrade AP

The screenshot shows the CIG web interface. The left sidebar contains a menu with 'Management' and 'Upgrade' highlighted. The main content area is titled 'Upgrade' and contains the following information:

- Upgrade Software Image**
- Current Firmware Version: R1.2.02.003
- Downloaded file: Choose File No file chosen
- Upgrade button

Notes: Press “Choose File” button to select firmware file, then press “Upgrade” button to upgrade AP.

6.5 How to reset AP to default setting

The screenshot shows the CIG web interface. The left sidebar contains a menu with 'Management' and 'System' highlighted. The main content area is titled 'System' and contains the following information:

- Region Code**
 - Device Name: 2x2 Dualband Indoor AP
 - Location: Shanghai
 - Language: English
 - Country Code: US
 - Ok Cancel
- NAS ID**
 - NAS ID: WF-180_CIGWe3800043
 - Ok Cancel
- Factory Defaults**
 - To restore a default setting, click on the “Restore” button below.
 - Restore Factory Configuration Restores
- Configuration Management**
 - Backup Configuration Save...
 - Specify the name and location of the file used to import the configuration
 - Import File name Choose File No file chosen Upload
- Reboot Device**
 - To reboot the gateway, click on the “Reboot” button below.
 - Reboot

Notes: If you can't visit AP web page, please press the “Reset” button of AP and hold for more than 5 seconds, the AP will reset to default setting automatically. Or you can do it by the Web GUI.

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Federal Communications Commission (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 harmful interference in a residential installation. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. 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 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 the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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.

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.

RF exposure warning

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 48.25 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

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