



WAC-2003
Gigabit Wireless LAN Controller
User's Manual

V1.0_20170620

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Chapter 1: Product Main Features and Packing Content

Item		Specification
Standard		IEEE 802.3, IEEE 802.3u
QTY of managed AP		1~300PCS wireless AP can be managed, Max 300PCS
Ports		1*10/100/1000Mbps WAN Port in Default, max 4 WAN Ports
		4*10/100/1000Mbps LAN Ports in Default, min 1 LAN port
LED indicator	Power	Power LED Indicator
	Run	System LED Indicator
Environment		Working Temperature: -10°C ~ 50°C
		Working Humanity: 10% ~ 90%RH (No condensation)
		Storage Temperature: -40°C ~ 70°C
		Storage Humanity: 5% ~ 90%RH (No condensation)
Packing Content		WAC-2003
		Power Adapter
		Setting Accessory
		User Manual

Chapter 2: Hardware Introduce and Connection

Hardware:



WAN1: WAN Port in Default

WAN2/LAN4; WAN3/LAN3; WAN4/LAN2: LAN Port in default, but can set up as WAN port in gateway operation mode based on needs.

LAN1: LAN Port in default

Reset: Press it 15 second, it return to default setting.

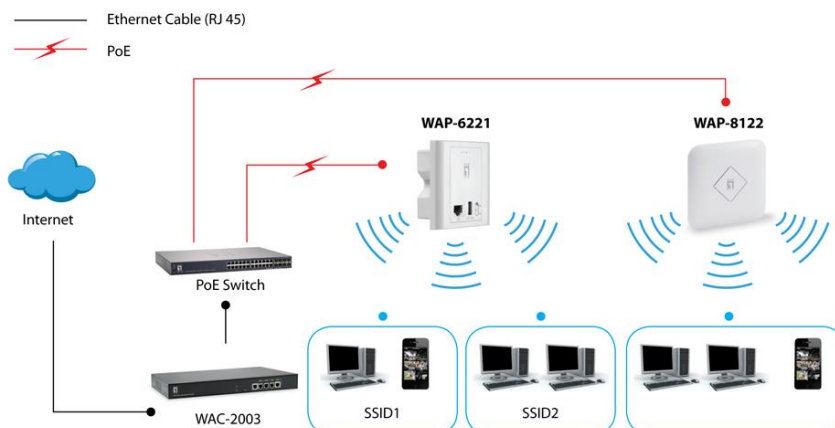
Power: When power on, power LED indicator will be on;

RUN: When this device run in good status, this LED indicator will be flashing

Application and Connection:

If there is a Gateway in the whole network, then this WLAN controller work as Controller to manage wireless AP only;

The working diagram show as follow:



Chapter 3: Login

3.1: Setup an IP address for PC, The IP address should be anyone between 192.168.1.2~192.168.1.254;

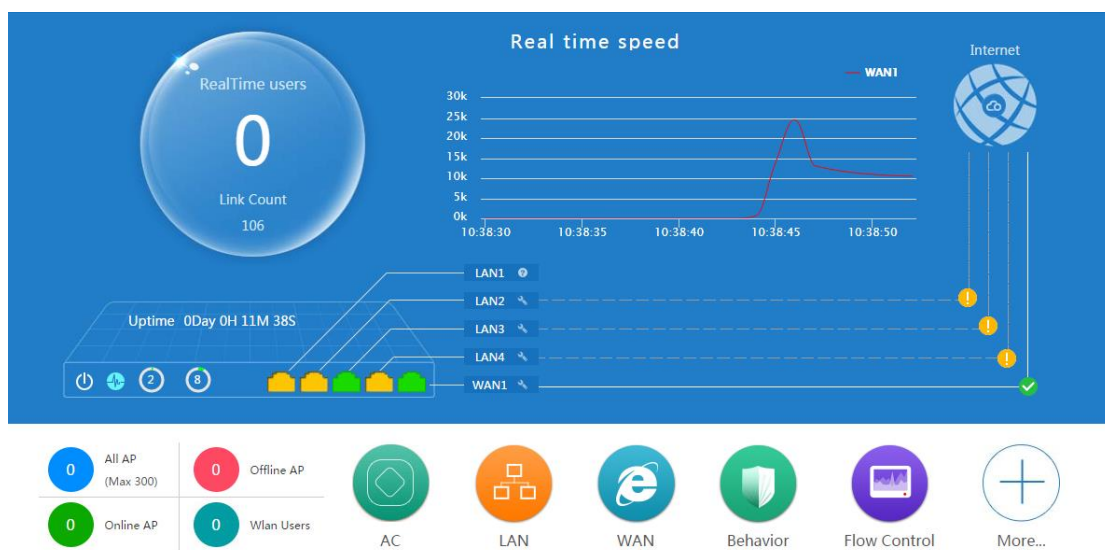
3.2 Open IE browser, input WAC-2003 IP address **192.168.1.1**, Enter to log in WAC-2003 WEB GUI.

3.3 Choose the Language, then input **admin** and Login



Chapter 4: WEB GUI Configuration

When login this WAC-2003, the following home page will pop up; let's introduce it first!



RealTime Users: Mean the QTY of end users access into it when it work as Gateway.

Link Count: Mean the QTY of internet link.

Real time speed: Mean the WAN Ethernet speed

Internet : WAN Ethernet

Uptime: Mean AC controller running time



: Click to Reboot this AC controller



: Examination: disable in default, can enable



: CPU Usage



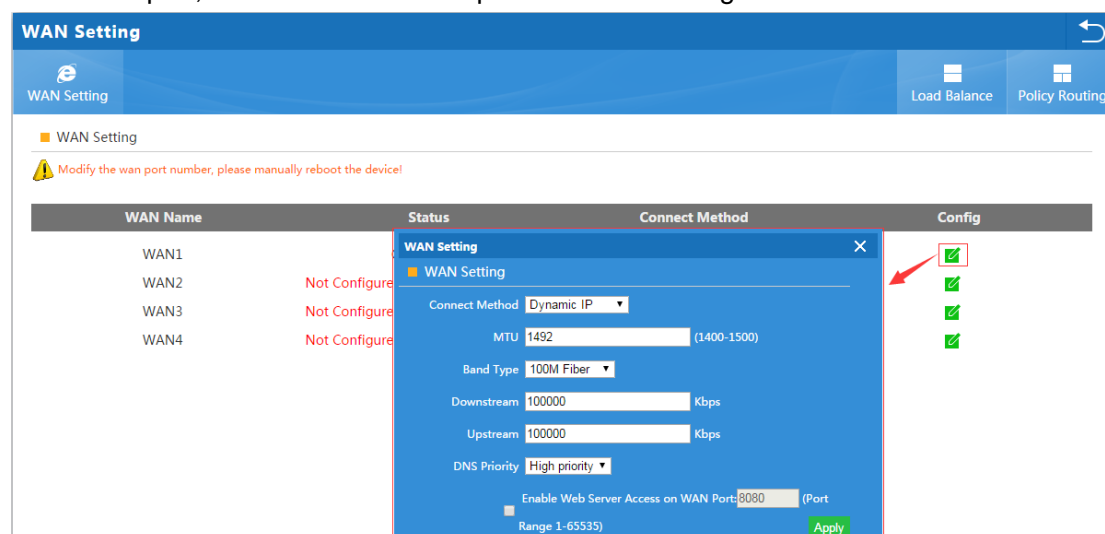
: Memory usage



: Yellow show disconnect, Green show connected



: Setup button, click it, will show following picture to show the status and setup WAN/LAN port; will show more in chapter 4.3 WAN settings.



The screenshot shows the 'WAN Setting' configuration page. At the top, there are tabs for 'WAN Setting', 'Load Balance', and 'Policy Routing'. Below the tabs, there is a warning message: 'Modify the wan port number, please manually reboot the device!'. The main content area contains a table with columns: 'WAN Name', 'Status', 'Connect Method', and 'Config'. The table lists WAN1, WAN2, WAN3, and WAN4, all with a status of 'Not Configure'. A modal window is open over the table, showing the configuration for a WAN interface. The modal has a title 'WAN Setting' and a close button. It contains the following fields: 'Connect Method' (Dynamic IP), 'MTU' (1492), 'Band Type' (100M Fiber), 'Downstream' (100000 Kbps), 'Upstream' (100000 Kbps), 'DNS Priority' (High priority), and 'Enable Web Server Access on WAN Port' (8080). There is an 'Apply' button at the bottom right of the modal. A red arrow points to the 'Config' column of the table, which contains four green checkmarks.

WAN Name	Status	Connect Method	Config
WAN1	Not Configure		<input checked="" type="checkbox"/>
WAN2	Not Configure		<input checked="" type="checkbox"/>
WAN3	Not Configure		<input checked="" type="checkbox"/>
WAN4	Not Configure		<input checked="" type="checkbox"/>

All AP: Show QTY of wireless AP which connected with this WLAN controller

Offline AP: Show QTY of wireless AP which offline already

Online AP: Show QTY of wireless AP which online

WLAN Users: Show QTY of end users which access into this wireless AP.

AC: Wireless AP control and management

LAN: mean Local Area Network, is a computer network locally managed

WAN: Wide Area Network, it involves internet links

Behavior: end users actions based on rules or policy

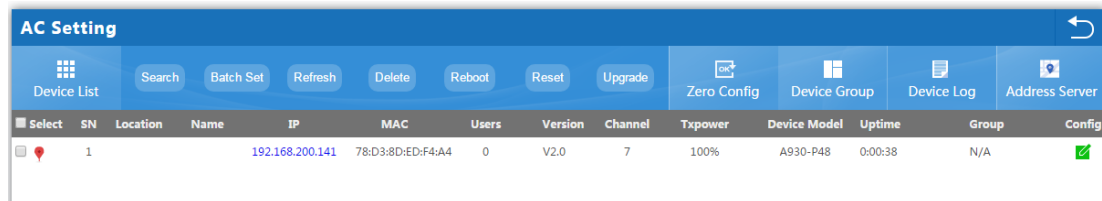
Flow Control: manage the rate of data transmission between two nodes to prevent a fast sender from overwhelming a slow receivers

More: including network function and device management

Let's introduce AC, LAN, WAN, Behavior, Flow Control and other function one by one to make users with more understanding in this product.

4. 1. AC

Click **AC** button , it will pop up following picture, which showed all the wireless AP connected into this WLAN controller.

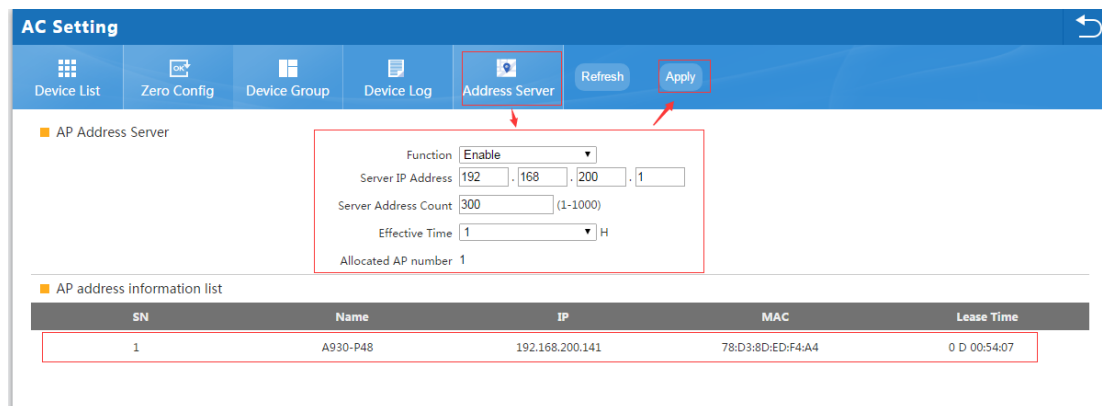


The screenshot shows the 'AC Setting' interface with a table of wireless APs. The table has columns for Select, SN, Location, Name, IP, MAC, Users, Version, Channel, Txpower, Device Model, Uptime, Group, and Config. One AP is listed with SN 1, IP 192.168.200.141, MAC 78:D3:8D:ED:F4:A4, 0 users, V2.0 version, channel 7, 100% txpower, A930-P48 device model, 0:00:38 uptime, and N/A group.

Select	SN	Location	Name	IP	MAC	Users	Version	Channel	Txpower	Device Model	Uptime	Group	Config
<input type="checkbox"/>	1			192.168.200.141	78:D3:8D:ED:F4:A4	0	V2.0	7	100%	A930-P48	0:00:38	N/A	<input checked="" type="checkbox"/>

4.1.1: Address Server:

Address Server: Mean this WAC-2003 can assign IP address for wireless AP automatic, no need to change wireless AP's IP address one by one



The screenshot shows the 'AC Setting' interface with the 'Address Server' configuration page. The 'Function' is set to 'Enable'. The 'Server IP Address' is 192.168.200.1. The 'Server Address Count' is 300. The 'Effective Time' is 1 hour. The 'Allocated AP number' is 1. Below the configuration is a table of AP address information.

SN	Name	IP	MAC	Lease Time
1	A930-P48	192.168.200.141	78:D3:8D:ED:F4:A4	0 D 00:54:07

Refresh: to refresh the wireless AP's IP address

Function: Enable/Disable, default is Enable

Server IP address: default is 192.168.200.1; can change to anyone you like, but pls note, if server IP is 192.168.200.1, then wireless AP's IP address will be one from 192.168.200.2~192.168.200.254 if server address count is 300.

Server Address Count: default is 300, can be 1~1000, based on the QTY of wireless AP.

Effective Time: can be 1~24 hours

Allocated AP number: show the QTY of wireless AP which assigned IP address by this WLAN controller.

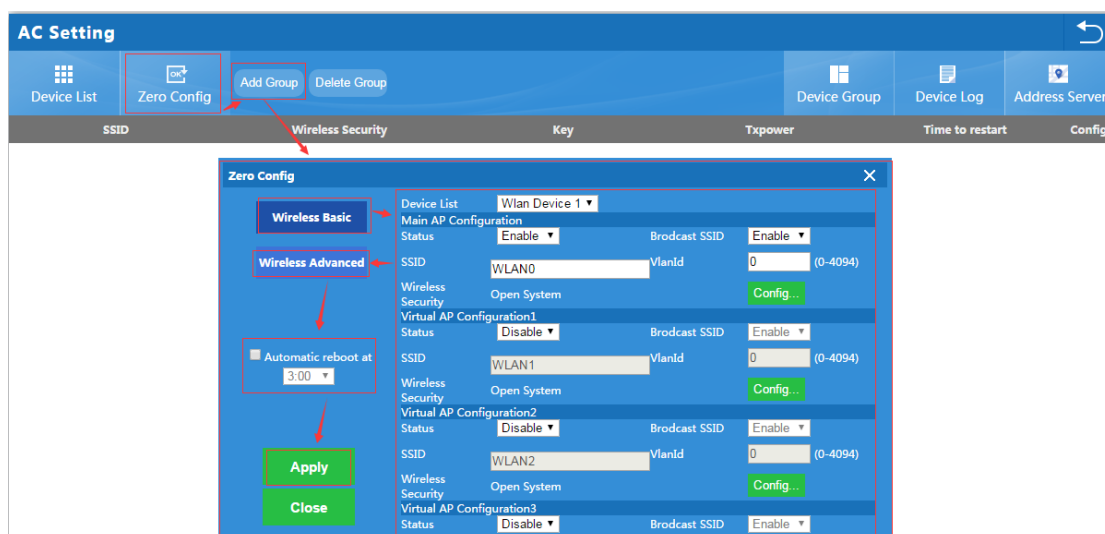
When setup the above data, click Apply to save it.

AP address information list: to show wireless AP's model number, IP address, MAC address and running time.

4.1.2: Zero Config

This function make wireless AP plug and play, but recommend to config this function before connect wireless AP into this network as following reason:

1. If config this function after wireless AP connected into this network, then all wireless AP should be reboot, then wireless AP will get the configuration from Zero config.
2. There is one group only in Zero config, which will make all wireless AP in same SSID, password, channel..., if want to different AP in different group, recommend Device Group function in 4.1.3.



Wireless Basic: to setup wireless AP's SSID, password, Tag VLAN

Device List: Wlan Device 1 and Wlan Device 2; Wlan Device 1 mean 2.4G Radio mainly; Wlan Device 2 mean 2.4G or 5.8G radio, based on wireless AP.

Main AP Configuration: setup the wireless AP's main SSID, Tag VLAN, Config Password.

Virtual AP Configuration: setup the wireless AP's virtual SSID, Tag VLAN, Config Password. The default status is disable for this virtual SSID.

Automatic Reboot at: Mean can setup this wireless AP reboot at certain time automatic, to improve the performance.

Wireless Advanced: to set up the channel, RF power, ShortGI, Coverage Threshold of wireless AP

Parameter	Value	Range
Device List	Wlan Device 1	
Channel	Auto	
Client Isolation	Disable	
Fragment Threshold	2346	(256-2346)
RTS Threshold	2347	(1-2347)
Beacon Interval	100	(50-1024)ms
Aggregation	Enable	
ShortGI	Enable	
Rev Option	5	
RF Output Power	100%	
Coverage Threshold	-90	(-65dBm~-95dBm)

Channel: Auto in default, but recommend to setup channel by manual based on environment.

RF Output Power: 100%, 75%, 50%, 25%, 12.5%, can adjust it based on application.

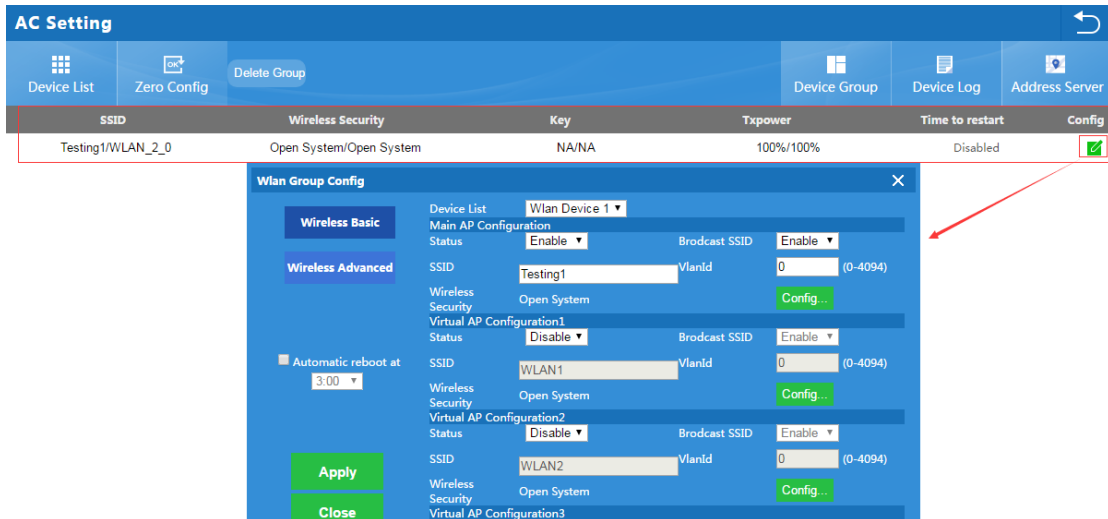
More RF Power, mean more WiFi Range;

Coverage Threshold: This make end users to connect the outdoor CPE with stronger signal strength;

For example, If one outdoor CPE with -80dBm coverage threshold data, another outdoor CPE with -95dBm coverage threshold data, then end users will connect the outdoor CPE with -95dBm coverage threshold always even this outdoor CPE with very weak signal strength.

After setup all the data, click Apply to add zero config group as follow:


Pls note, click config button  , can modify the data if need.



Delete Group: If need, can delete this zero config group.

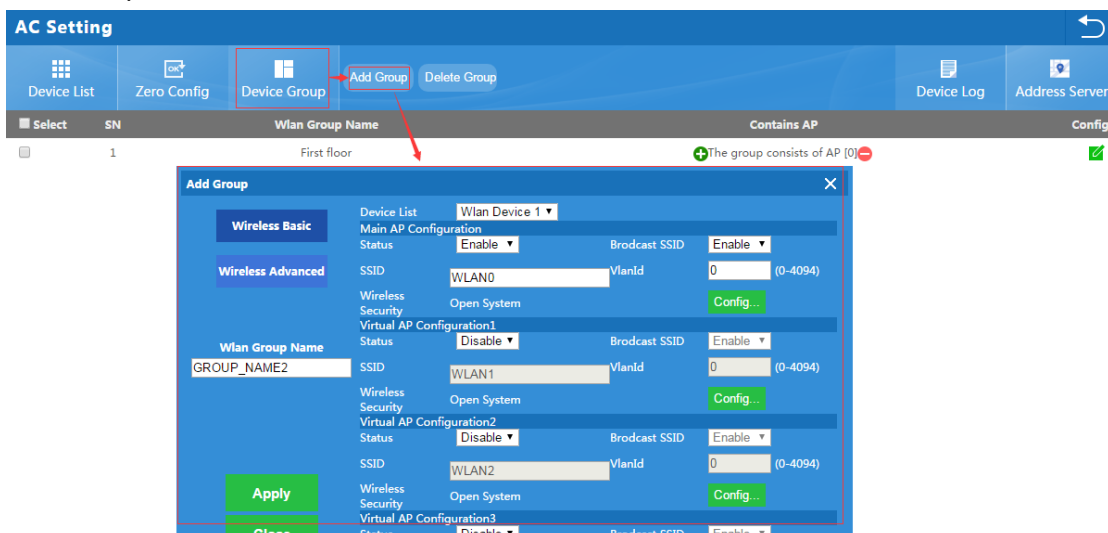
4.1.3 Device Group

In device group, can be more than one group, then different AP can be in different group.

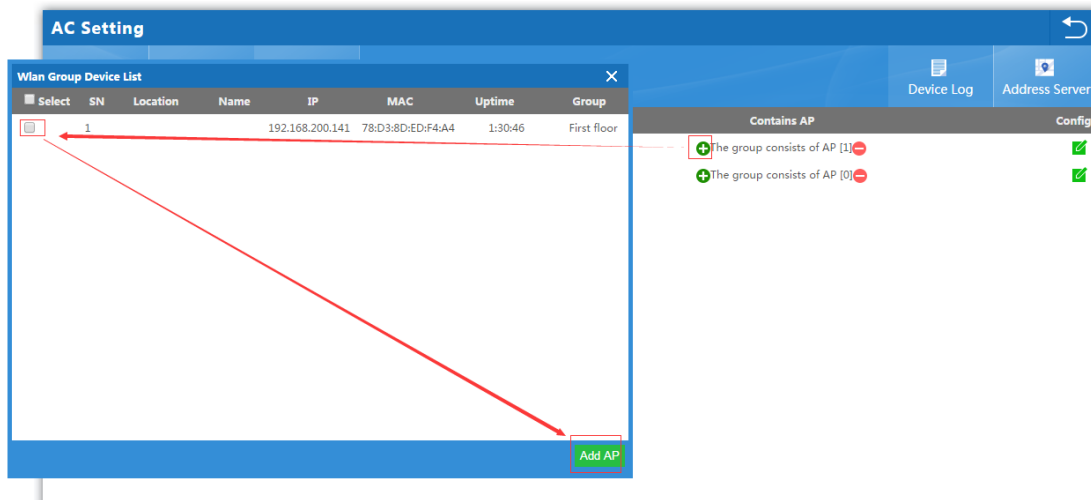
The steps is: Add Group----Config Group----Click  to Add AP into this group----Wireless AP will get data from this group.

Pls note, the configuration in device group is same as Zero Config.

Add Group

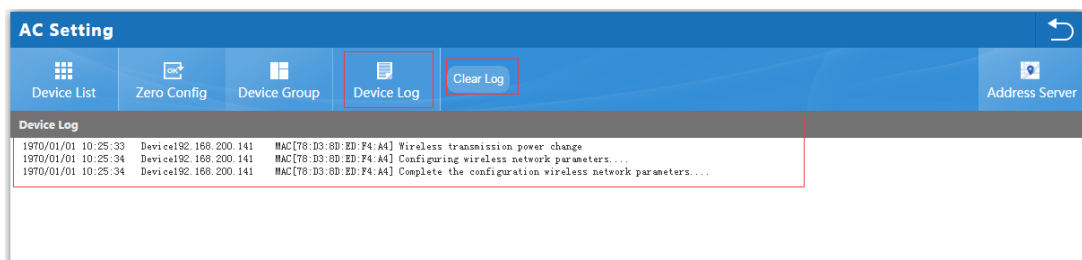


Add AP to Group:



4.1.4: Device Log

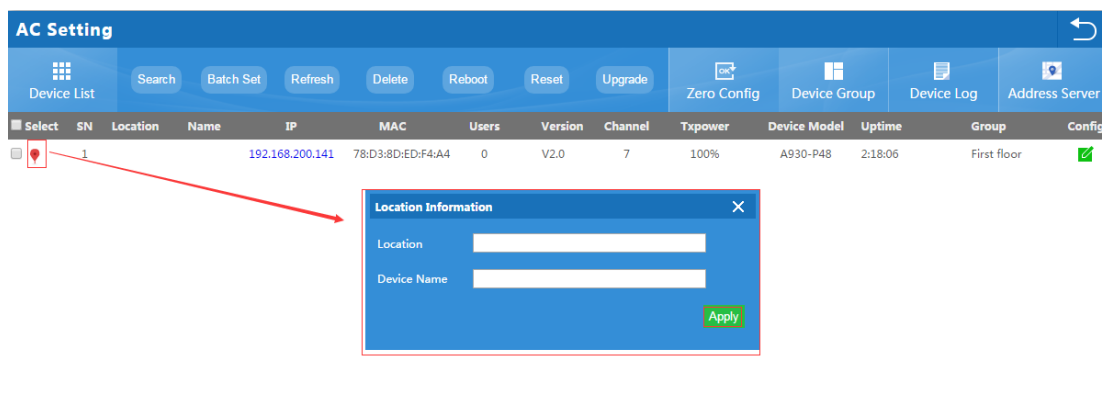
Device Log is keeping the management record of this WLAN controller.




When finish the Address Server, Zero Config and Device Group, can connect wireless AP into this network.

4.1.5: AC Setting:

When back to AC setting, let's introduce more management functions:



Location  : Click it to setup the location and name of Wireless AP.

Search: Search wireless AP by IP address or MAC address

Batch Set: Set Channel, TX Power, Time to restart, Max users, device login password in batch.


Refresh: Fresh the status of wireless AP

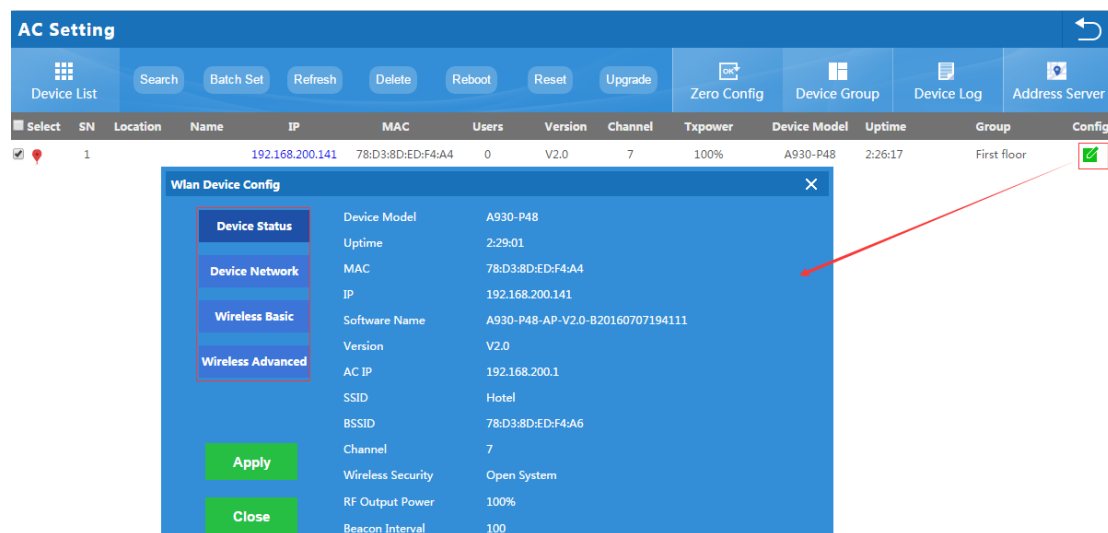
Delete: Delete wireless AP from this device list

Reboot: Restart this wireless AP


Reset: return to factory default

Upgrade: Upgrade firmware.

If need to setup wireless AP one by one, can click cofig button  to check device status, modify device network, wireless basic and wireless advanced also:



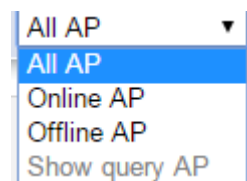
The screenshot shows the 'AC Setting' interface. At the top, there are several buttons: 'Device List', 'Search', 'Batch Set', 'Refresh', 'Delete', 'Reboot', 'Reset', 'Upgrade', 'Zero Config', 'Device Group', 'Device Log', and 'Address Server'. Below these is a table with columns: Select, SN, Location, Name, IP, MAC, Users, Version, Channel, Txpower, Device Model, Uptime, Group, and Config. The table contains one entry with IP 192.168.200.141 and MAC 78:D3:8D:ED:F4:A4. A red box highlights the 'Config' button in the table row. A dialog box titled 'Wlan Device Config' is open, showing various settings for the selected device, including Device Status, Device Network, Wireless Basic, and Wireless Advanced. A red arrow points from the 'Config' button in the table to the dialog box.

Select	SN	Location	Name	IP	MAC	Users	Version	Channel	Txpower	Device Model	Uptime	Group	Config
<input checked="" type="checkbox"/>	1			192.168.200.141	78:D3:8D:ED:F4:A4	0	V2.0	7	100%	A930-P48	2:26:17	First floor	

Wlan Device Config

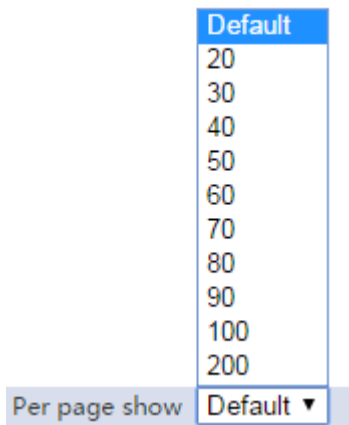
Device Status	Device Model	A930-P48
	Uptime	2:29:01
Device Network	MAC	78:D3:8D:ED:F4:A4
	IP	192.168.200.141
Wireless Basic	Software Name	A930-P48-AP-V2.0-B20160707194111
	Version	V2.0
Wireless Advanced	AC IP	192.168.200.1
	SSID	Hotel
	BSSID	78:D3:8D:ED:F4:A6
	Channel	7
	Wireless Security	Open System
	RF Output Power	100%
	Beacon Interval	100

Apply **Close**



A dropdown menu with the following options: 'All AP', 'All AP', 'Online AP', 'Offline AP', and 'Show query AP'. The first 'All AP' option is highlighted.

This button can show all AP, online AP or Offline AP;



: this show how many AP in each page for better checking.

4.2 LAN

This including LAN setting, DHCP Server Setting and Static DHCP

IP address: mean WAC-2003 IP address

Subnet Mask: to set the subnet of LAN

Spanning Tree: Enable to show the assigned IP list in DHCP list; Disable mean will not show it.

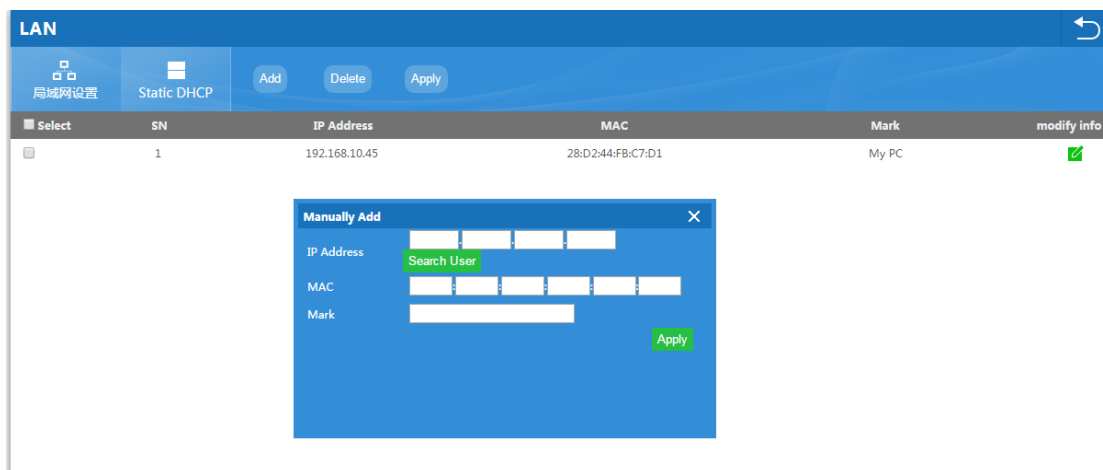
DHCP Server Setting: Enable mean can assign IP address automatic.

Maximum DHCP address allocation: QTY of max DHCP address

DHCP Lease Time: the IP address lease time by DHCP server

DHCP allocation quantity: QTY of IP address that DHCP assigned.

Static DHCP: Can add, delete the IP address set by static.



4.3. WAN

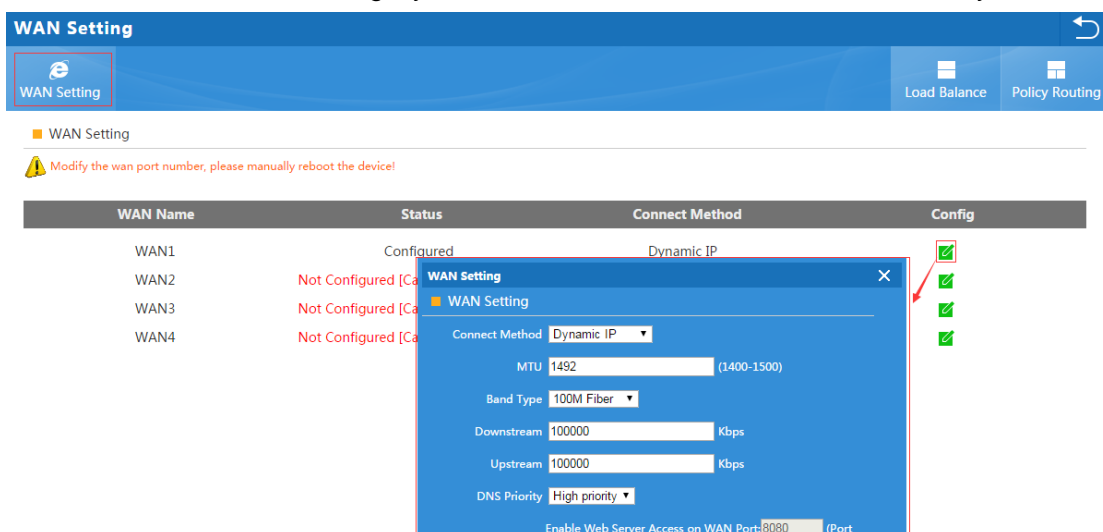
If WAC-2003 work as Gateway also in the whole networking, then we should click WAN, which including WAN setting, Load Balance, Policy Routing

4.3.1 WAN Setting:

WAN1 is WAN port in default; WAN2, WAN3, WAN4 is LAN ports in default, but can config as WAN ports, which make Ethernet backup and Ethernet superposition.

When click WAN, it will show following picture, click config button, will show Connect Method, MTU, Band Type, Downstream, Upstream, DNS Priority, Remote control

In connect method, it including Dynamic IP, PPPoE, Static IP, here show one by one:



WAN Setting

Connect Method: PPPOE(ADSL)

User Name:

User Password:

MTU: 1452 (1400-1492)

Service Name: If not, please do not fill out

Server Name: If not, please do not fill out

Band Type: 100M Fiber

Downstream: 100000 Kbps

Upstream: 100000 Kbps

DNS Priority: High priority

Enable Web Server Access on WAN Port: 8080 (Port Range 1-65535)

WAN Setting

Connect Method: Static IP

IP Address: 172 . 1 . 1 . 1

Subnet Mask: 255 . 255 . 255 . 0

Default Gateway: 172 . 1 . 1 . 254

MTU: 1500 (1400-1500)

Primary DNS: 8 . 8 . 8 . 8

Secondary DNS: 4 . 4 . 4 . 4

Band Type: 100M Fiber

Downstream: 100000 Kbps

Upstream: 100000 Kbps

DNS Priority: High priority

Enable Web Server Access on WAN Port: 8080 (Port Range 1-65535)

4.3.2 Load Balance

Load Balance is set bandwidth when there are multiple WAN ports; It can detect the IP address auto or manual; But pls note, when WLAN controller is in multiple WAN, pls restart the WLAN controller by manual.

WAN Setting

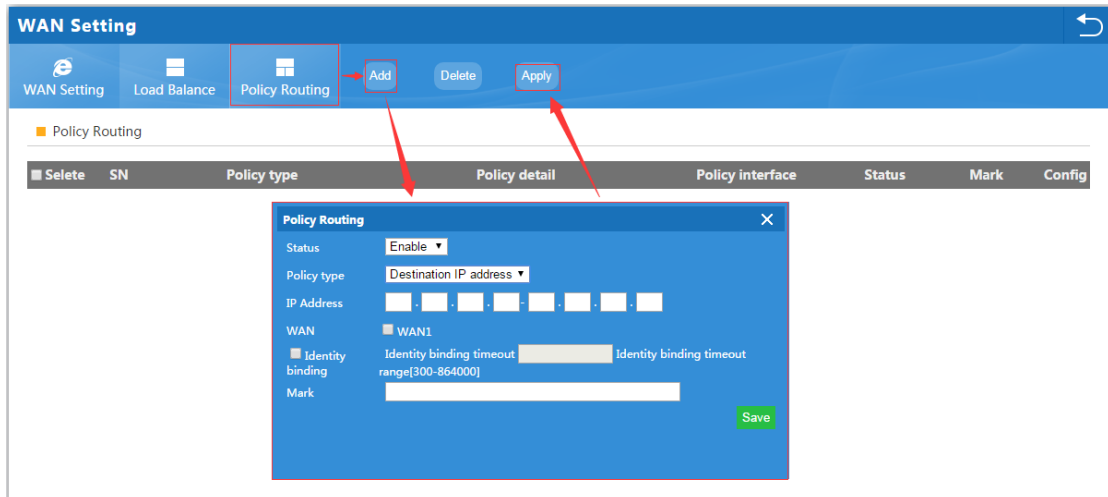
WAN Setting | | |

Load Balance

WAN Name	Detection IP	Bandwidth Ratio(%)
WAN1	<input checked="" type="checkbox"/> 114 . 114 . 114 . 114 / 114 . 115 . 115	<input type="text" value="100"/>
WAN2	Not Configured [Can serve as Lan port]	
WAN3	Not Configured [Can serve as Lan port]	
WAN4	Not Configured [Can serve as Lan port]	

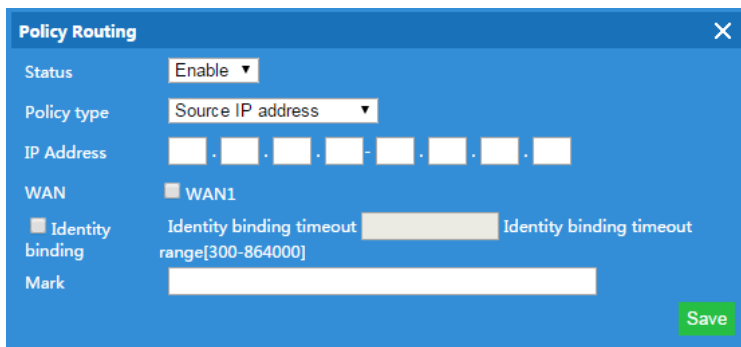
4.3.3 Policy Routing

Policy Routing is some policy to control the router; Manager can make this policy to control the router.

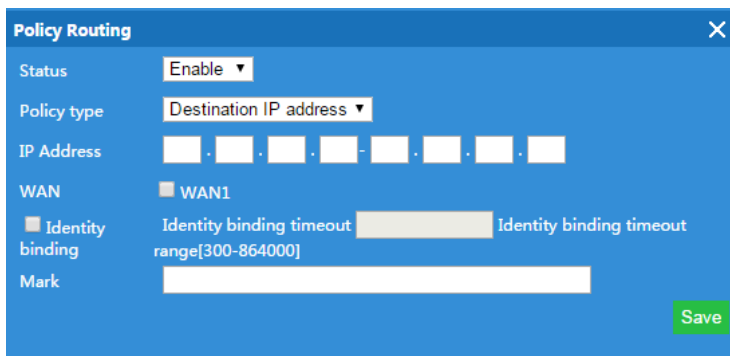


Policy Type:

Source IP Address: Policy based on source IP address



Destination IP address: Policy based on destination IP address



Source MAC address: Policy based on source MAC address

Policy Routing ✕

Status:

Policy type:

MAC:

WAN: WAN1

Identity binding: Identity binding timeout Identity binding timeout range[300-864000]

Mark:

Network Interface: Policy based on router interface

Policy Routing ✕

Status:

Policy type:

LAN: LAN1 LAN2 LAN3 LAN4

WAN: WAN1

Identity binding: Identity binding timeout Identity binding timeout range[300-864000]

Mark:

Domain Policy: Policy based on router domain

Policy Routing ✕

Status:

Policy type:

URL:

WAN: WAN1

Identity binding: Identity binding timeout Identity binding timeout range[300-864000]

Mark:

Destination Port: Policy based on destination port.

Policy Routing ✕

Status:

Policy type:

Destination port: can not be empty, port range:1-65535

WAN: WAN1

Identity binding: Identity binding timeout Identity binding timeout range[300-864000]

Mark:

4.4 Behavior

In behavior part, it allow/reject end users some behavior based on rules.

Behavior

Behavior Setting

Selete	SN	Group Name	Time Group	Application Info	Action	Status	Mark	Config
<input type="checkbox"/>	1	Any	Any	WeChat	Reject	Enable		<input checked="" type="checkbox"/>

Behavior Setting

Status: Enable

IP Group: Any [Add IP Group](#)

Time Group: Any [Add Time Group](#)

Application Class: Instant messaging Select all the software in the class

Application Info: WeChat

Action: Reject

Mark:

[Apply](#)

Status: Enable or Disable

IP Group: Can add the IP group if need based on following picture

IP/Time Group

IP Group Management

Selete	SN	Group Name	IP Range	Mark	Config
<input type="checkbox"/>	1	Sales	192.168.10.10-192.168.10.39	Sales Department	<input checked="" type="checkbox"/>

IP Group

Group Name: Sales

IP Range: 192.168.10.10 - 192.168.10.99 [Search User](#)

Mark: Sales Department

[Apply](#)

Time Group: Can add time group based on requirement in following picture:

IP/Time Group

Time Group Management

Selete	SN	Time Group	Time Range	Work date	Mark	Config
<input type="checkbox"/>	1	sales department	10:00-19:00	Monday Tuesday Wednesday Thursday Friday		<input checked="" type="checkbox"/>

Time Group

Time Group: sales department

Time Range: 10:00 - 19:00

Work date: Monday Tuesday Wednesday Thursday Friday Saturday Sunday

Note: do not choose any work date represented for each day

Mark:

[Apply](#)

Application Class: Including

Instant messaging (QQ, Trade Manager, WeChat);

Network Download (Thunder, BT, Edonkey);

Network Video (Youtube, PPTV, Tencent Video, Ppstream, Youku, Sohu Video, Letv, RSTP, Douyu, Storm web version, funsh, YY)

Office (FTP, DNS, Http, NTP, NFS, DHCP, RTSP, IRC, Telnet, Stun, System Log, IPSEC, IGMP, SSH, TFTP, PPTP, Radius, OpenVPN)

Finance and other (ICMP, Flush, DZH, Eastmoney)

4.5 Flow Control

Speed Limit

Speed Limit: Mean limit end users Ethernet speed;

Should add IP group first, then choose the limited mode.

Pls note: Shared Mode: mean all users in this IP group share the downstream and upstream Ethernet speed; Exclusive Mode mean each end users in this IP group get the downstream and upstream fairly.

The screenshot shows the 'Flow Control' interface. At the top, there are tabs for 'Smart QoS' and 'Speed Limit'. Below the tabs are buttons for 'Add', 'Delete', and 'Apply'. A table below shows the 'IP speed limit setting' with columns: Select, SN, Group Name, Time Group, Limited Mode, Upstream, Downstream, Status, Mark, and Config. A red arrow points from the 'Add' button to a configuration dialog box titled 'IP speed limit setting'. The dialog box contains the following fields:

- Status: Enable (dropdown)
- IP Group: Sales (dropdown) with an 'Add IP Group' button
- Time Group: sales department (dropdown) with an 'Add Time Group' button
- Limited Mode: Shared mode (dropdown)
- Downstream: 2000 Kbps
- Upstream: 1000 Kbps
- Mark: (empty text field)
- Apply (button)

4.6 Routing Management

Including system routing and static route

In System routing, it show system routing form as follow:

Routing Management

System Routing

■ Routing Management

SN	Destination	Gateway	Subnet Mask	Metric	Network Interface
1	192.168.8.0	0.0.0.0	255.255.252.0	0	br0
2	192.168.200.0	0.0.0.0	255.255.252.0	0	br0

Static Route: add the static router based on destination IP address.

Routing Management

System Routing

■ Static Route Settings

Selete	SN	Destination	Gateway	Subnet Mask	Metric	Network Interface	Status	Mark	Config
--------	----	-------------	---------	-------------	--------	-------------------	--------	------	--------

Static Route Settings

Status:

Destination:

Subnet Mask:

Gateway:

Metric:

Network Interface:

Mark:

4.7 Port Mapping

Port forwarding: called port forwarding also, it an application of network address translation(NAT) that redirects a communication request from one address and port number combination to another while the packets are traversing a network gateway, such as a router or firewall

Port Mapping

Port Mapping

■ Enable port mapping function

Selete	SN	Rule Name	Lan IP	Protocol	External port	Internal port	Line	Status	Mark	Config
--------	----	-----------	--------	----------	---------------	---------------	------	--------	------	--------

Port Mapping

Status:

Rule Class:

Rule Name:

Protocol:

Lan IP:

External port: can not be empty, port range:1-65535

Internal port: can not be empty, port range:1-65535

Line:

Mark:

Status: Enable/Disable

Rule Class: Including user defined, http, https, FTP, POP3, SMTP, DNS, telnet, IPSEC, Remote Desktop

Rule name: Show the name of choosed rule class;

Protocol: Including TCP, UDP, TCP+UDP

LAN IP: port mapping LAN IP address

External Port: Set external port rule

Internet Port: Set internal port rule

Line: the Ethernet Line which will be applied in this rules

4.8 URL Filter

When enable URL filter, the router can reject users to visit the denied URL.

Selete	SN	Rule Name	Time Group	URL	Status	Mark	Config
<input type="checkbox"/>	1	google	Any	www.google.com	Enable		<input checked="" type="checkbox"/>

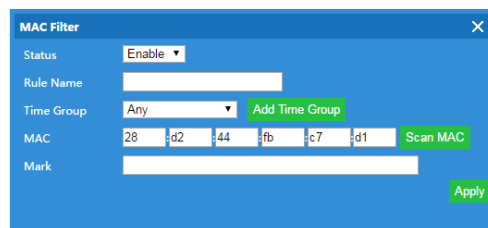
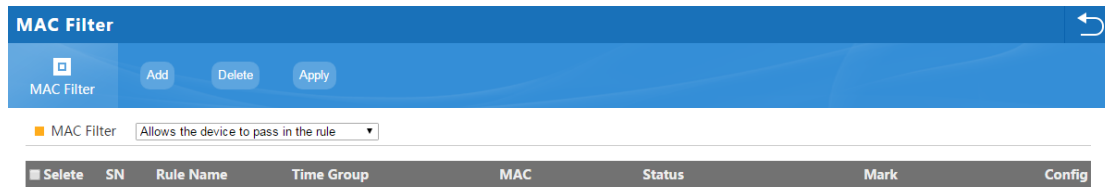
4.9 IP Filter

When enable this function, router will allow or limited this IP address to access into this router based on rules.

Selete	SN	Rule Name	Time Group	IP Address	Port Range	Protocol	Status	Mark	Config
--------	----	-----------	------------	------------	------------	----------	--------	------	--------

4.10 MAC Filter

When enable MAC filter, router will allow or prohibit this MAC address to access into this router based on rules.



4.11 DMZ

DMZ or Demilitarized Zone is a physical or logical subnetwork that contains an exposes an organization's external-facing service to a usually larger and untrusted network, usually the Internet. The purpose of a DMZ is to add an additional layer of security to an organization's local area network, an external network node can access only what is exposed in the DMZ, while the rest of organization's network is firewalled.



4.12 IP/Time Group

For this part, pls check more on chapter 4.3.4 Behavior

4.13 Authentication

Local Authentication:

Local authentication, no need access into cloud server, but can show advertisement only.

A. set up the local authentication in following picture:

The screenshot shows the 'Authentication' configuration page. The 'Authentication' dropdown is set to 'Local Authentication'. The 'Client Timeout' is set to 20 minutes. The 'External domain white list' contains the domain 'wifi.weixin.qq.com'. The 'MAC white list' is currently empty. There are 'Add domain' and 'Scan MAC' buttons. At the bottom, there are checkboxes for 'Free authentication port' on LAN1, LAN2, LAN3, and LAN4.

B. Upload advertisement pictures in local auth showed in following picture:

The screenshot shows the 'Local auth' configuration page. The 'Advertising Pictures' section includes an 'Upload first pictures' button and a file selection field. Below this are three sets of input fields for 'First pictures', 'Second pictures', and 'Third pictures', each with a 'button name' and a 'redirect url'. The 'button name' for all three is 'Access' and the 'redirect url' is 'www.baidu.com'. There is an 'Update Pictures' button and a note: 'Picture(280x280jpg) can not be more than 1M'.

4.14 Device Management

This is management for WLAN Controller, such as backup, reset, reboot, device log, upgrade firmware, modify password...

More Function



Network Function

Device Management



management



Device Log



Firmware Update



Modify Password



Examination



System Time



Reboot device

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