

User Manual of 5.8G Outdoor CPE



Version V1.2

Thank you for purchasing Enterprise High Gain Outdoor CPE. This manual will instruct you how to configure and manage this CPE, enable you to use it in a perfect status. After installed the CPE, you will be able to enjoy the surfing freely.

Please check the Package before use it.

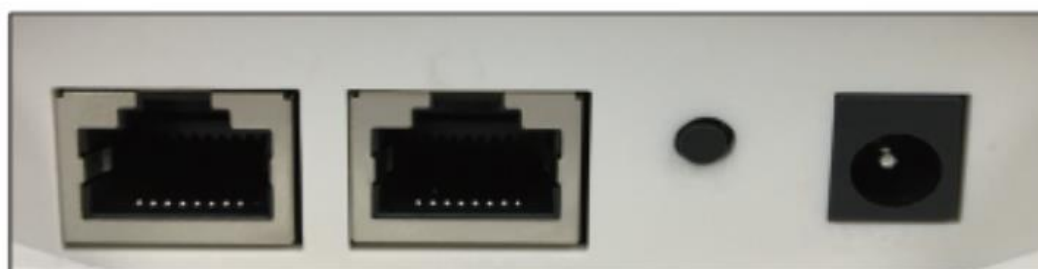
Package Contents

Item	Description	Unit	QTY
1	Outdoor CPE	PCS	1
2	24V /1A PoE Adapter	PCS	1
3	Mounting Accessory	Set	1
4	Quick Installation Guide	PC	1
5	LAN Cable	PC	1

Quick Installation Guide

1. How to connect and power on the outdoor CPE

CPE's Interface Description



LAN

WAN

Reset

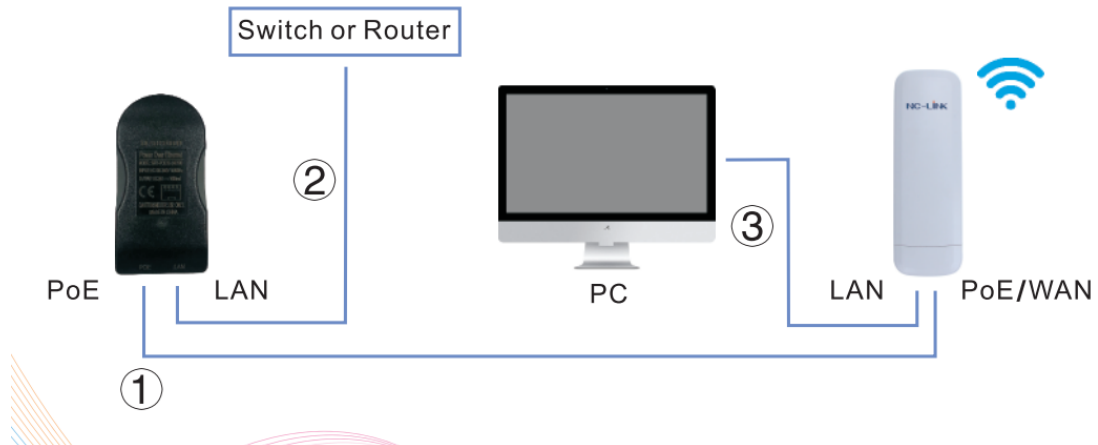
DC

P1 Interface

- **Reset:** Press it for 10-15 seconds, the CPE will restore to factory default.
- **WAN:** Connect with Internet cable
- **LAN:** Connect the CPE with computer by LAN cable.
- **DC:** For Power supply, the DC's electronic standard is 12V/1A.

POE: This equipment can be powered over **Ethernet**, Connect CPE's WAN/LAN Port with PoE adapter's POE port by LAN Cable (CPE's LAN port and WAN port support the 24V PoE.)

Refer to P2 for PoE Power and CPE configure



P2 Diagram of PoE Power and CPE configure



Attention

Make sure our CPE working with included Power adapter or PoE adapter, and under right connection way, or the device will be damaged.

Hardware Installation

Below shows the install steps:



- a) Turn the screw on the Metal Strap counter clockwise to open the Strap.



b) Slide it through the back of the device.



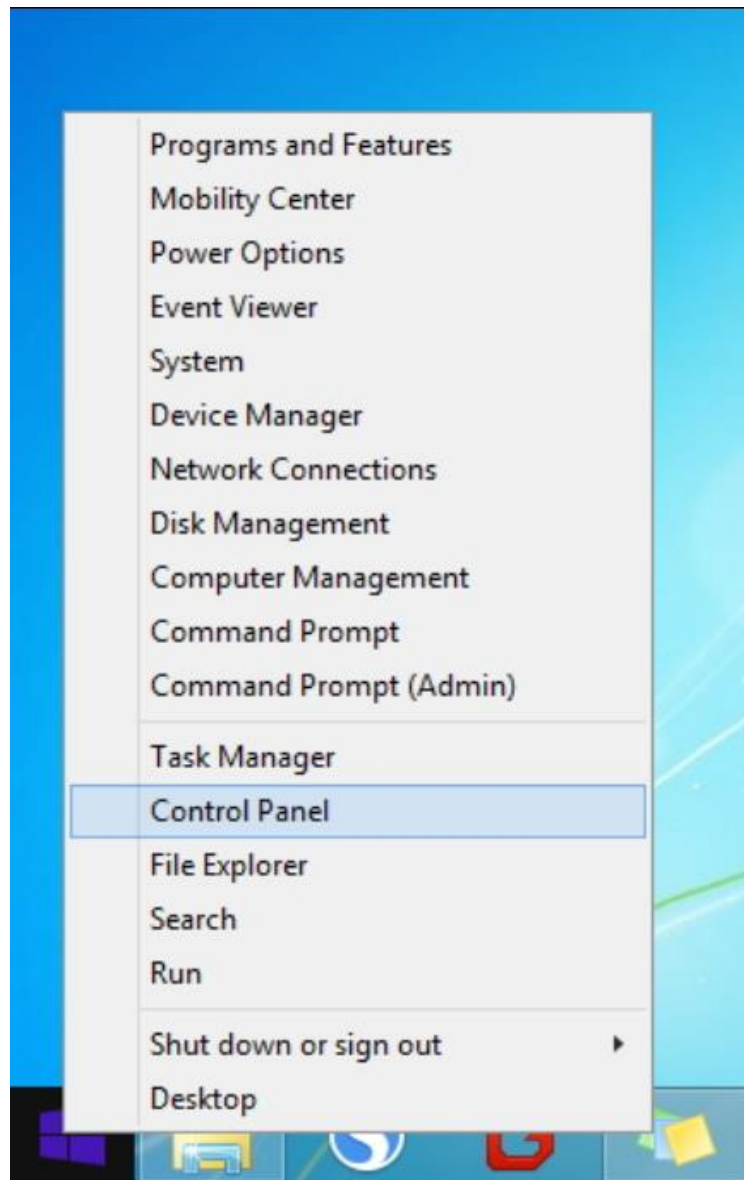
c) Wrap the Strap around the pole with a cross screwdriver to turn the screw clockwise and fasten to the pole.

2. CPE Start and Login

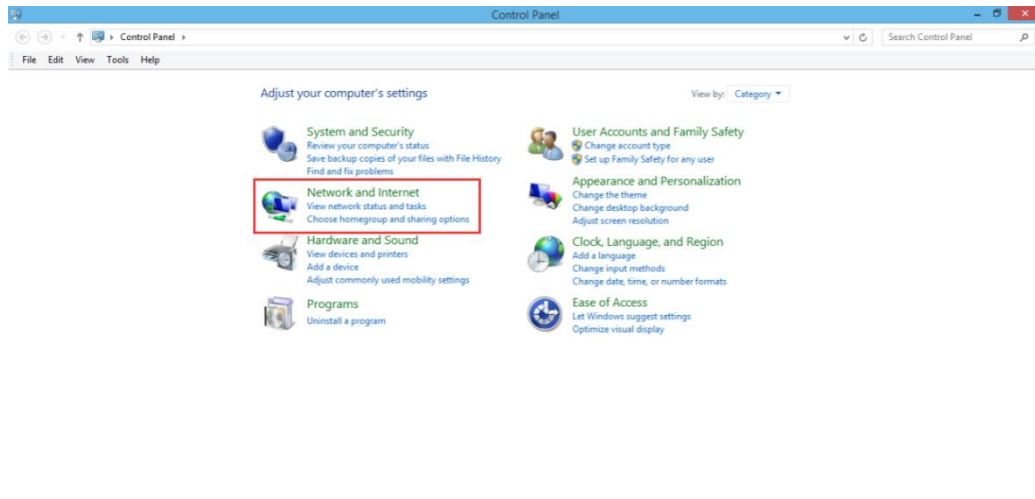
Power the CPE as P2 show

Configure the Computer's IP Address : Set the computer's IP address as **192.168.188.X** (X is number between 2-252), make it same as CPE's network segment, then set Subnet mask is **255.255.255.0**, Default gateway leave it blank, then click **OK**.

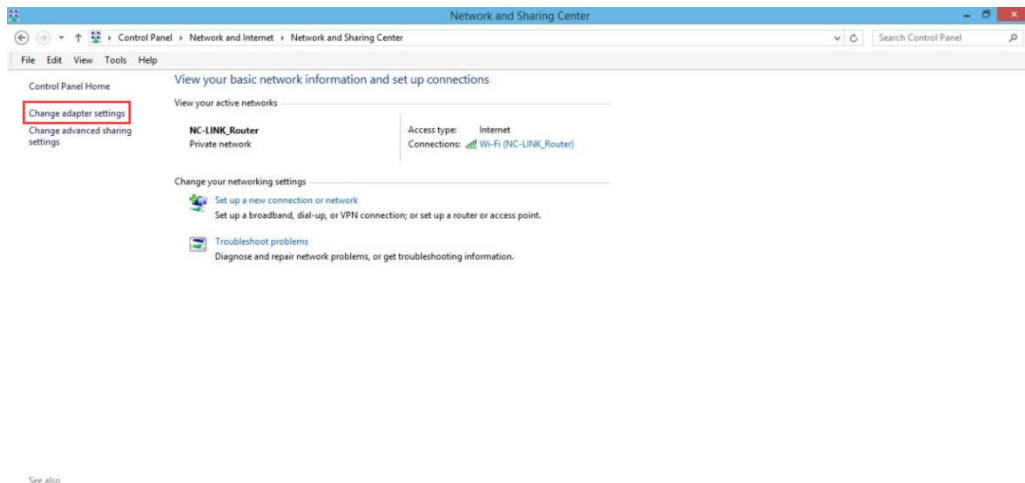
Follow P3 and P4 for wired configuration. (Window 8.1 is an example)



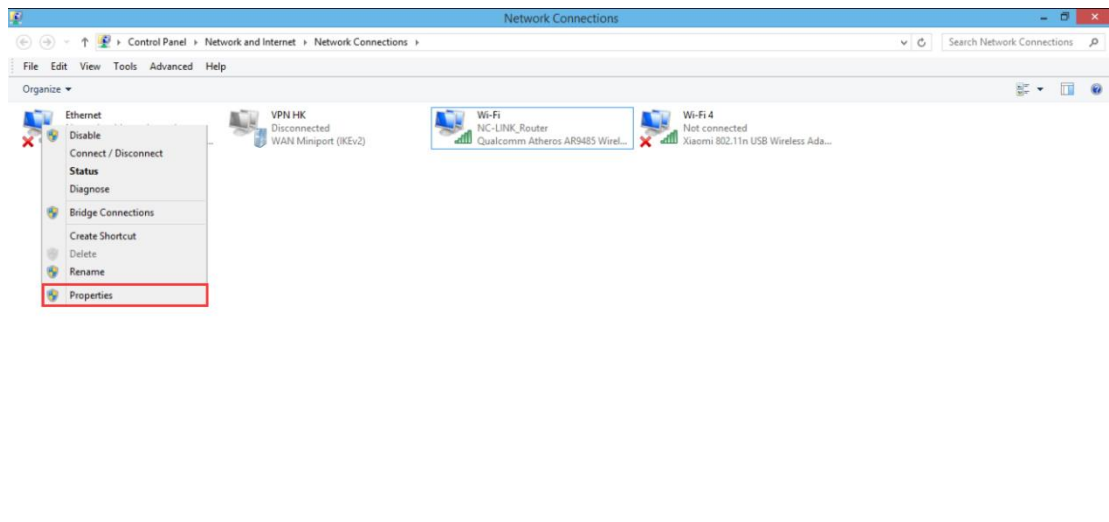
P3 Configure the computer's IP address by wired



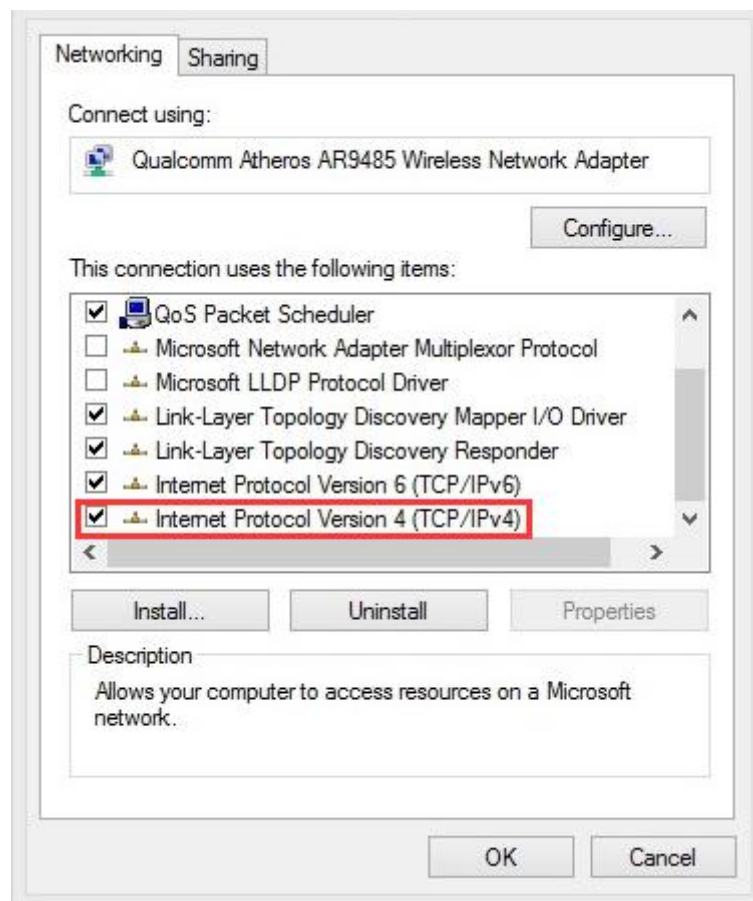
P4 Network and Internet



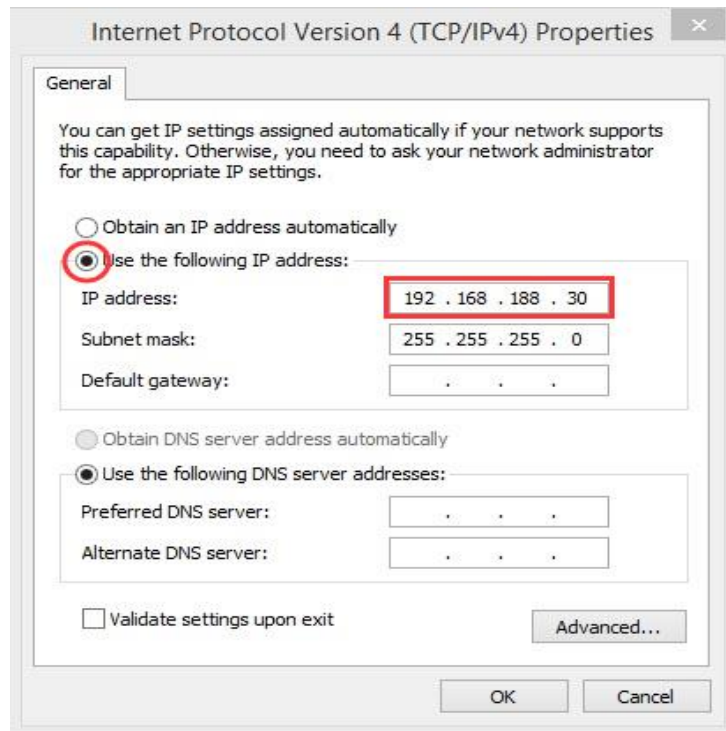
P5 Change Adapter Setting



Right click Ethernet and select **Properties**

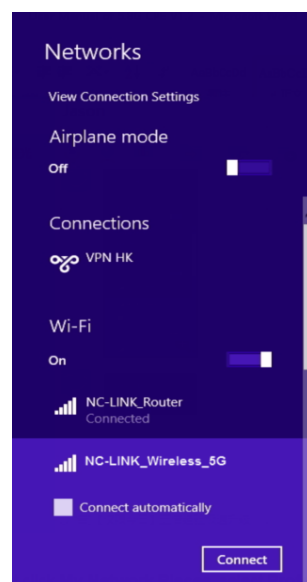


Select IPv4 and click Properties



Select fixed IP and set a IP in same subnet with CPE

If you want to connect our CPE by wireless after IP address configuration, pls right click **Wireless networking Connection**, then **View Available Wireless Networks**, our CPE's default **SSID** is **NC-Link_Wireless_5G**, **passwords: 66666666**, Click **Refresh network list** , double click the correct SSID and input the passwords, if have, then **connect, please refer to P7.**



P7 CPE Wireless Connection



If your computer with build in 802.11b/g/n wireless adapter, but can't search the available wireless networking after refresh, please contact with computer supplier or after-sale department after appear following points:

1. Right click **My Network Places**, select **Properties**, appear **Local Area Connection** or **Other Connection**, No **Wireless Network Connection**
2. There is **Wireless Network Connection** in **My Network Places**, Show **General** and **Advanced** after right click **Wireless Network Connection** and select **Properties**, but no **Wireless Network Configuration** in Window

Login the CPE: Open your web browser, type in **192.168.188.253** in the address bar, enter the **Password: admin**, which you can found on the label attached to the device, click **LOGIN**

Authentication Required

http://192.168.188.253 requires a username and password.

Your connection to this site is not private.

User Name:

Password:

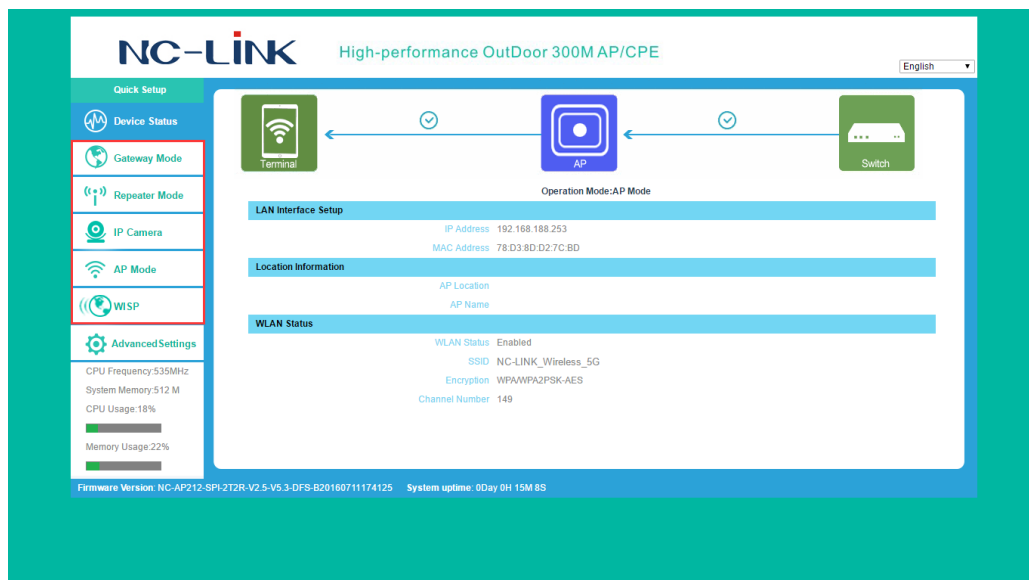
P8 Login

3. Setup Wizard

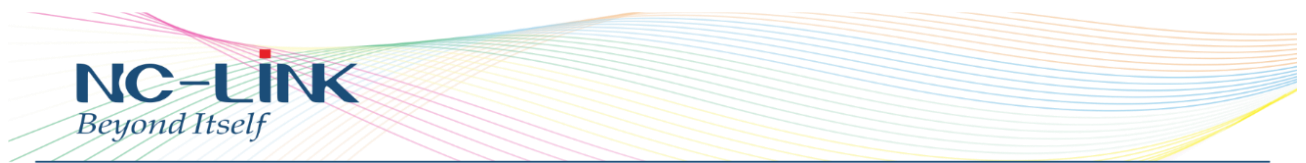
After successful login, you can see web management page of the CPE.



P9 Page after Login



P10 Operation Mode



NC-AP212 default is AP mode, you just need to plug in an Ethernet Cable which connect to Internet, clients can surfing through wireless once connect to NC-AP212. (Access type support DHCP)

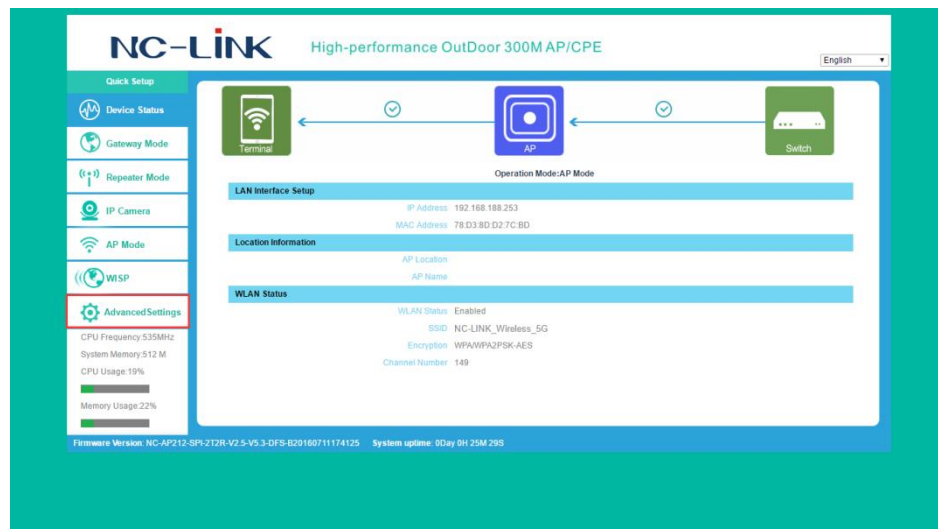
Wireless Setting:

Default wireless SSID is NC-LINK_Wireless_5G

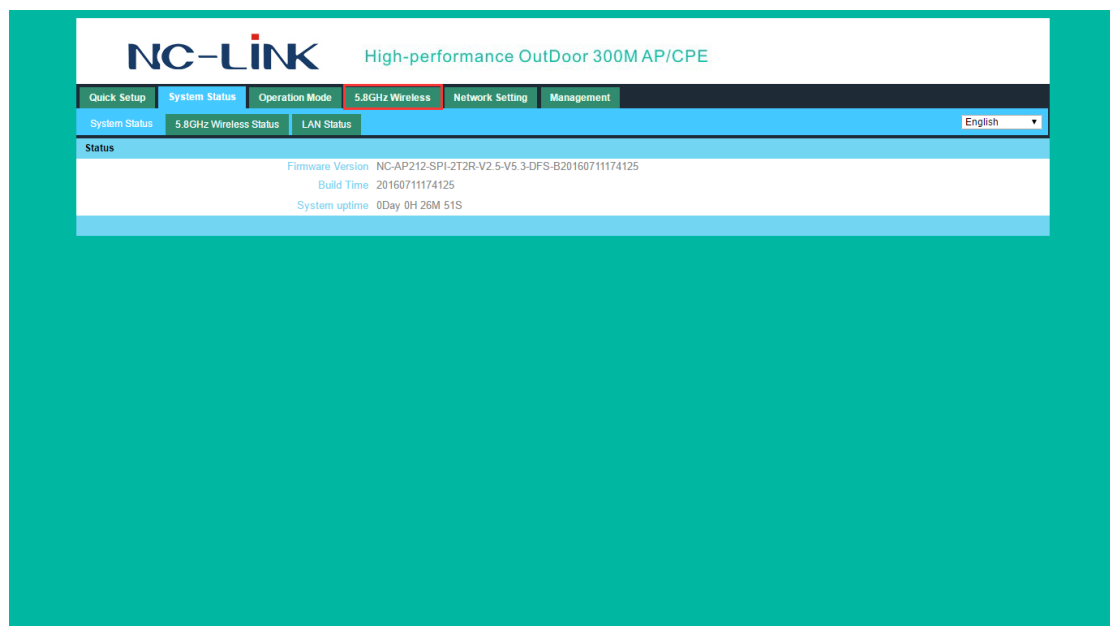
Default Wi-Fi Password is 66666666

Change the wireless parameter follow below steps:

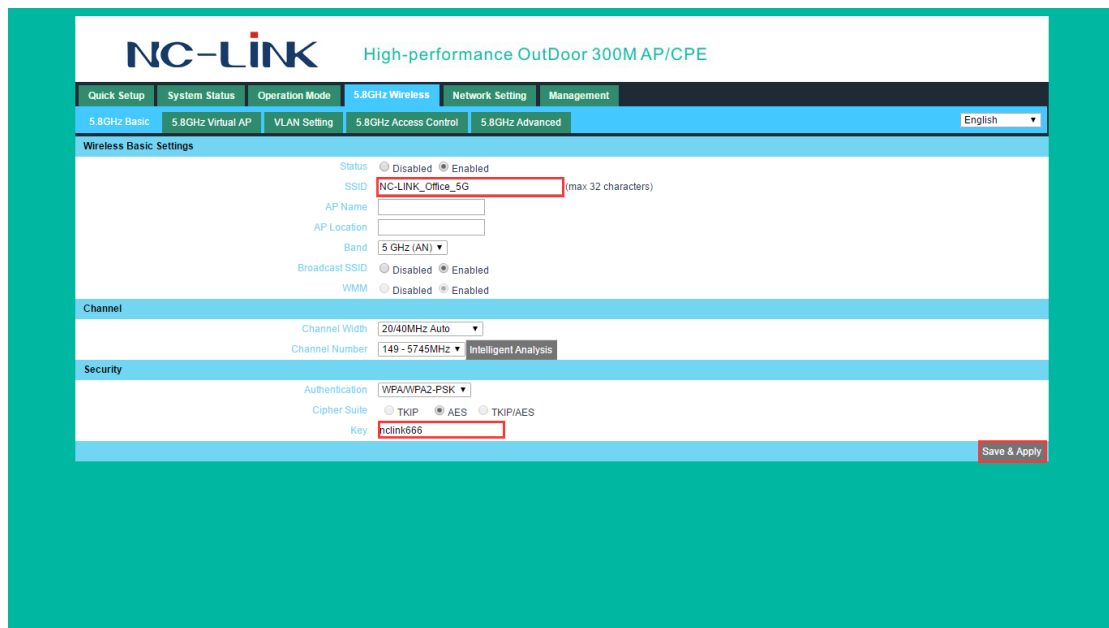
Click **Advanced Setting** after login



Click **5.8GHz Wireless**



Change the parameter you want to (SSID and Password for example). Then click **Save & Apply**.



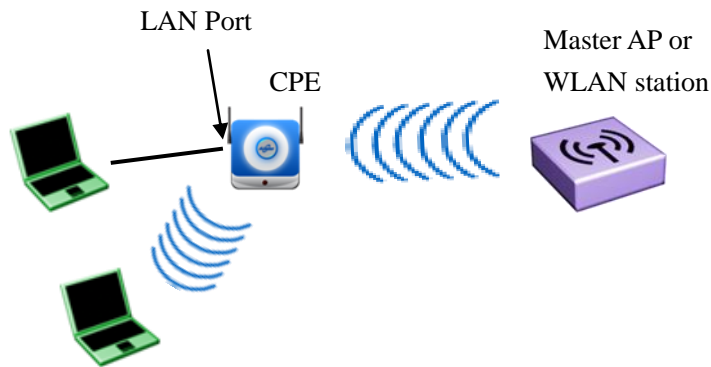
4. Repeater Operation Mode

Repeater: CPE's LAN Port, WAN Port and Wi-Fi will bridge together, CPE will broadcast an SSID outward simultaneously. Users access into CPE through LAN port or Wi-Fi, then get the IP address from AP or WLAN station.



Instruction

The CPE's default operation mode is AP Mode, the two RJ45 ports are LAN ports and PoE port under this mode.

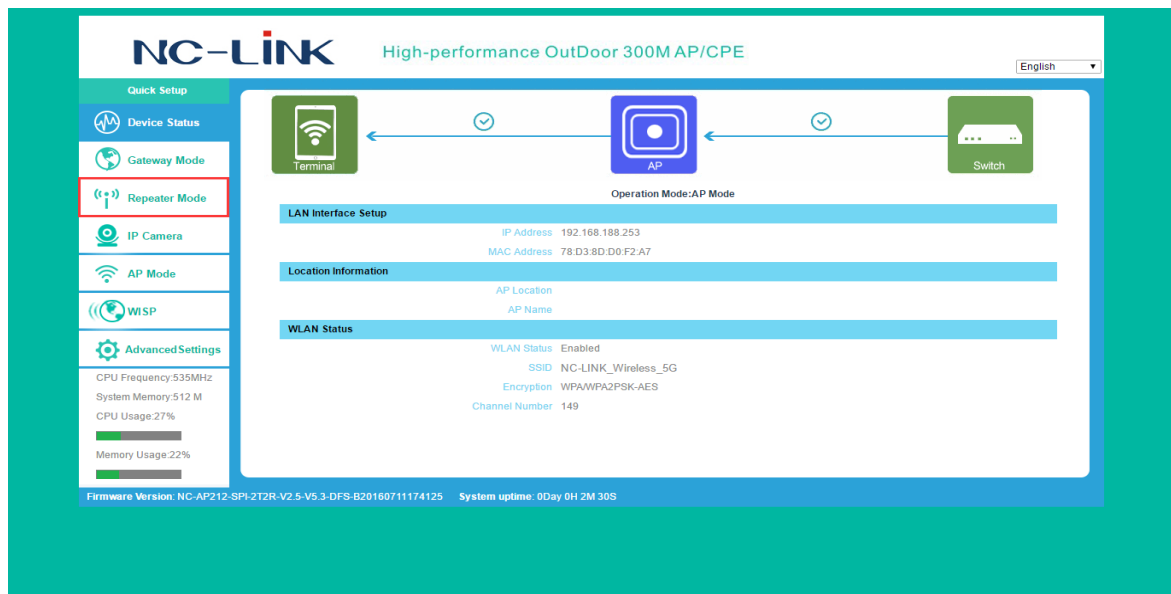


P11 Diagram of Bridge

How to Setup Repeater Mode

a) Select Repeater Mode

Login Web management page, click **Repeater Mode**.



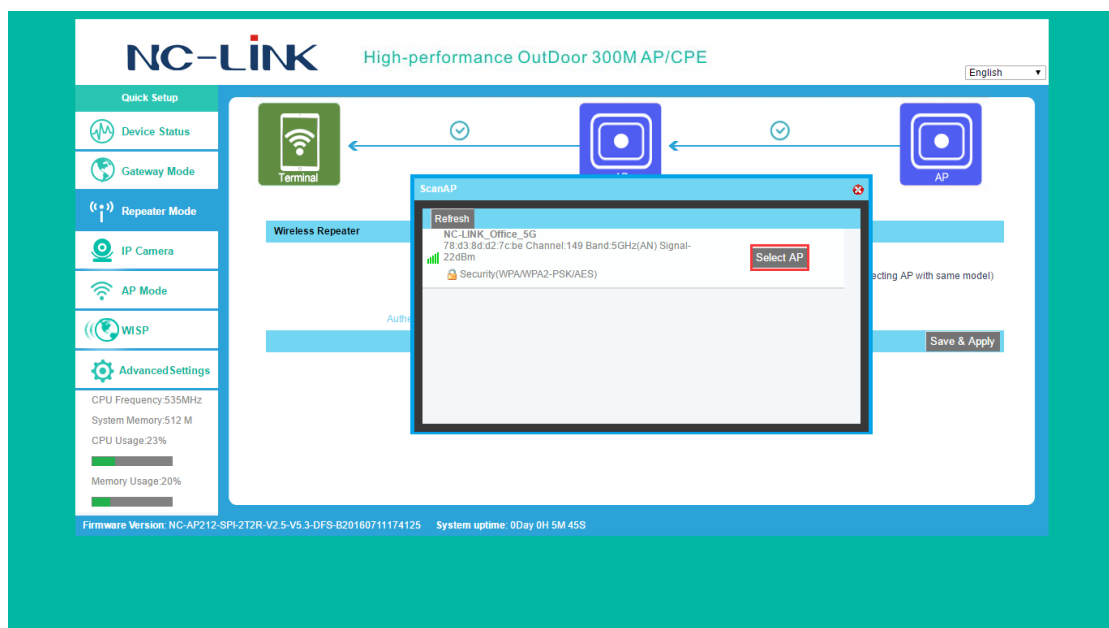
b) Connect to AP or WLAN Station

Click **Scan AP**, then will pop up a window as P12, take NC-Link_Office_5G for example, click **Select AP** and enter into a new web page P13:



Instruction

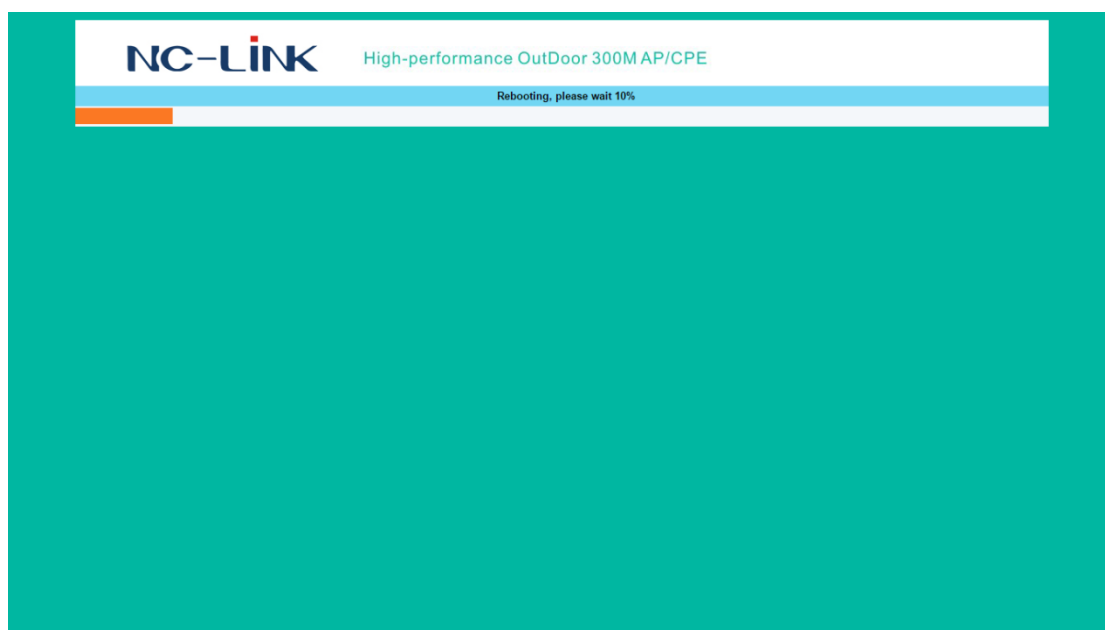
If your PC can't popup the page of P11, check your Browser and see whether block it or not. Or change a browser.



P12 Scan Wireless AP



P13 Fill in the password



c) Save & Apply to complete configuration

Click Next after fill in the Password, the Repeater Mode configuration is complete, device will reboot.

In this Repeater Mode only the LAN is Bridge with wireless signal, the Wi-Fi is still OFF.



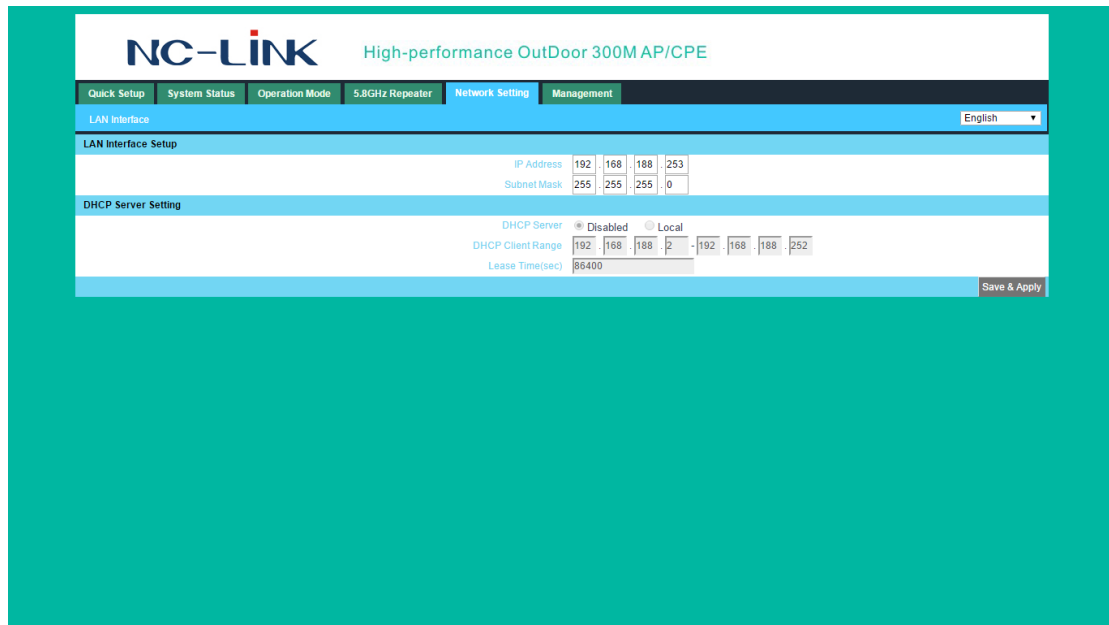
Instruction

Please scan several times more if haven't find the target SSID in scan list. If can't find it still, make sure the CPE support the channel of WLAN station or AP. For example: AP's channel is Channel 14, but CPE support Channel 13. In addition, check the CPE and AP's wireless protocol to see if match. Or restore CPE to factory default.

d) LAN Port Setting

Click **Advanced Settings Network, LAN Settings**, the web management page will be as follow:

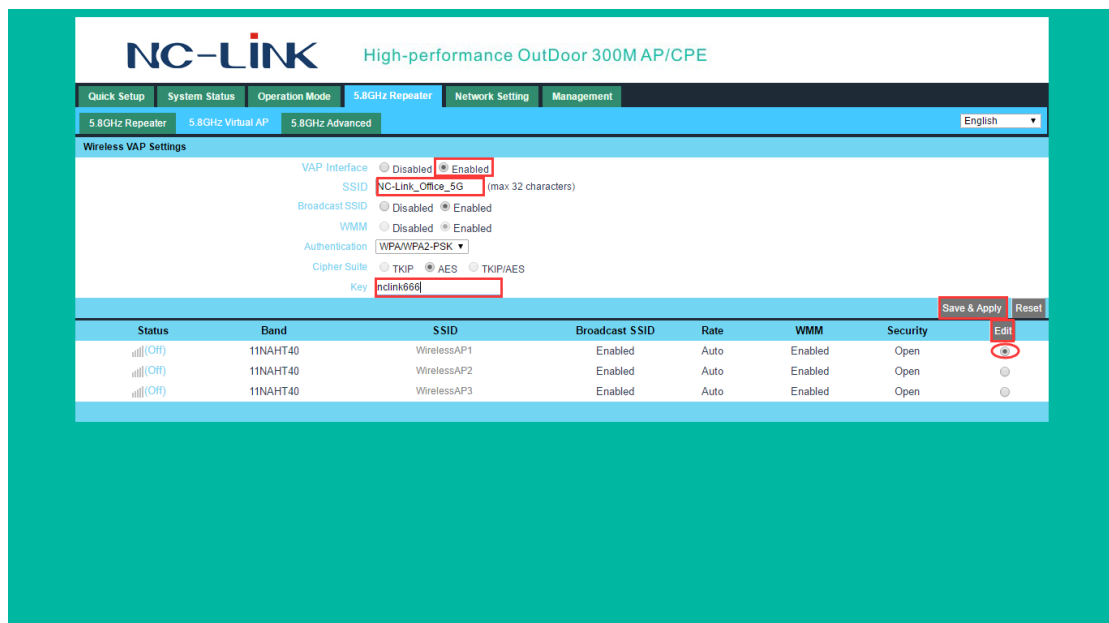
- IP address: it is CPE's management address. In Bridge Mode, the LAN port address has nothing to do with PC's IP Address. Modify it according your require. (It is not in the same network segment with Internet IP address from WAN)
- Choose **Disable** in DHCP Server, click **Apply**



P14 LAN Setting

e) Wireless Setting

Click "**Advanced Settings**" → "**5.8GHz Repeater**" → "**5.8GHz Virtual AP**", enter into the basic setting page as follow:



Status	Band	SSID	Broadcast SSID	Rate	WMM	Security	Edit
⬇️ (Off)	11NAHT40	WirelessAP1	Enabled	Auto	Enabled	Open	⚙️
⬇️ (Off)	11NAHT40	WirelessAP2	Enabled	Auto	Enabled	Open	⚙️
⬇️ (Off)	11NAHT40	WirelessAP3	Enabled	Auto	Enabled	Open	⚙️

P15 Configure the Basic Setting

Select one of the Virtual AP and click **Edit**. Choose Enable the Virtual AP, and set the **SSID**, **Authentication** and **Key**. Then click **Save & Apply**.

- **VAP Interface** is Enable, then CPE will open the Wi-Fi
- **SSID** means Service Set Identifier (Your Wi-Fi name).
- **Broadcast SSID:** Enable, SSID is visible; Disable: SSID is hidden, the user can't scan the SSID if hide, have to input it by manual.
- **Encryption:** Support None, WPA, WPA2, WPAPSK/WPA2, recommend TKIP/AES mode



Instruction

There is no need to set Channel in Bridge Mode here, because the CPE's channel will keep it same with WLAN and AP's Channel in Bridge Mode

f) Advanced Settings

Click "**Advanced Settings**" → "**5.8GHz Repeater**" → "**5.8GHz Advanced**"

The screenshot shows the '5.8GHz Advanced' settings page in the NC-LINK web interface. The page is titled 'High-performance OutDoor 300M AP/CPE'. The navigation bar includes 'Quick Setup', 'System Status', 'Operation Mode', '5.8GHz Repeater', 'Network Setting', and 'Management'. The '5.8GHz Repeater' tab is selected, and the '5.8GHz Advanced' sub-tab is active. The 'Wireless Advanced Settings' section contains the following fields:

- Country/Region:** ETSI/China (dropdown)
- Channel:** 149-165 (dropdown)
- Fragment Threshold:** 2346 (range: 256-2346)
- RTS Threshold:** 2346 (range: 0-2347)
- Beacon Interval:** 100 (range: 100-1000ms)
- Max Users:** 40 (range: 0-40)
- Sensitivity Threshold:** -90 (range: -95 ~ -65dBm)
- Ack Timeout Control:** 64 (range: 43-176ms) and 3 (range: 0-20km)
- Preamble Type:** Long Preamble (selected), Short Preamble (radio button)
- Aggregation:** Disabled (selected), Enabled (radio button)
- Short GI:** Disabled (selected), Enabled (radio button)
- WLAN Partition:** Disabled (selected), Enabled (radio button)
- RF Output Power:** 100% (selected), 75%, 50%, 25%, 12.5% (radio buttons)

Buttons for 'Save & Apply' and 'Reset' are located at the bottom right of the settings area.

P16 Advanced Settings

- **Country Region:** set it of your country or region
- **RF Output Power:** 100%, 75%, 50%, 25%, 12.5%
- **MAX user:** limit the number of connect client
- **Sensitivity threshold:** limit the weak signal client to connect
- Other advanced Setting: Professional installation or maintenance person can set it accordingly. General, keep it default. Click Apply after setting

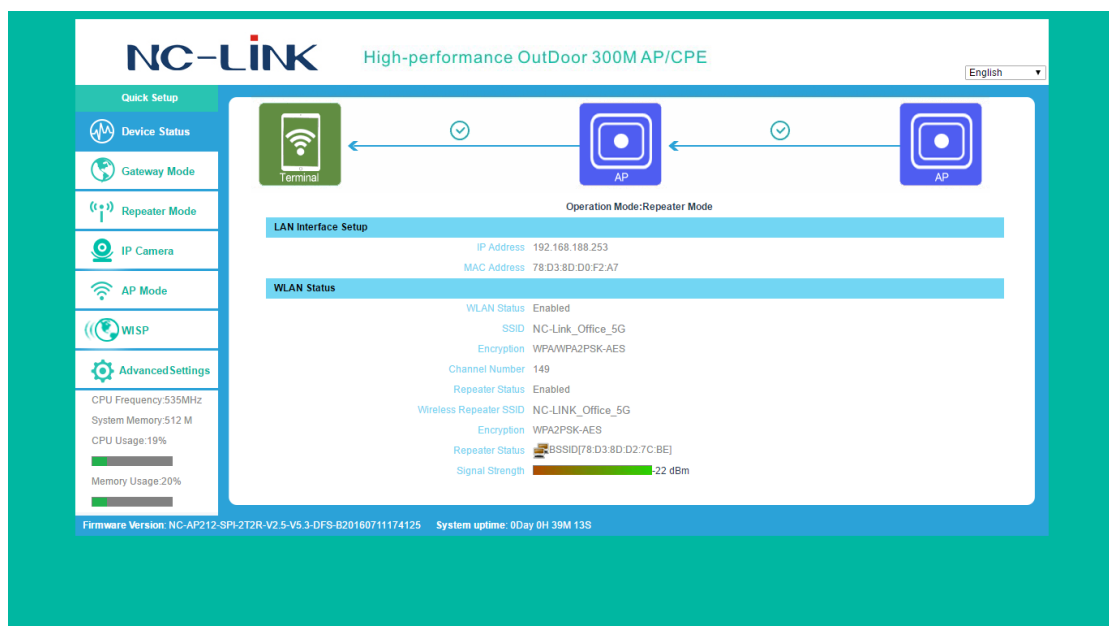


Instruction

Wireless Setting is effect for the wireless signal broadcast by CPE, it should match with the WLAN station or AP's security. If the user access to CPE not via wireless, then can hide the CPE's SSID to prevent unauthorized user access.

g) Check CPE's Status

After login, it will shows CPE's status



P17 CPE Status

When the CPE connect with WLAN station or Wireless AP, the connect status will show **Connect**, then show SSID, MAC address, AP Signal strength

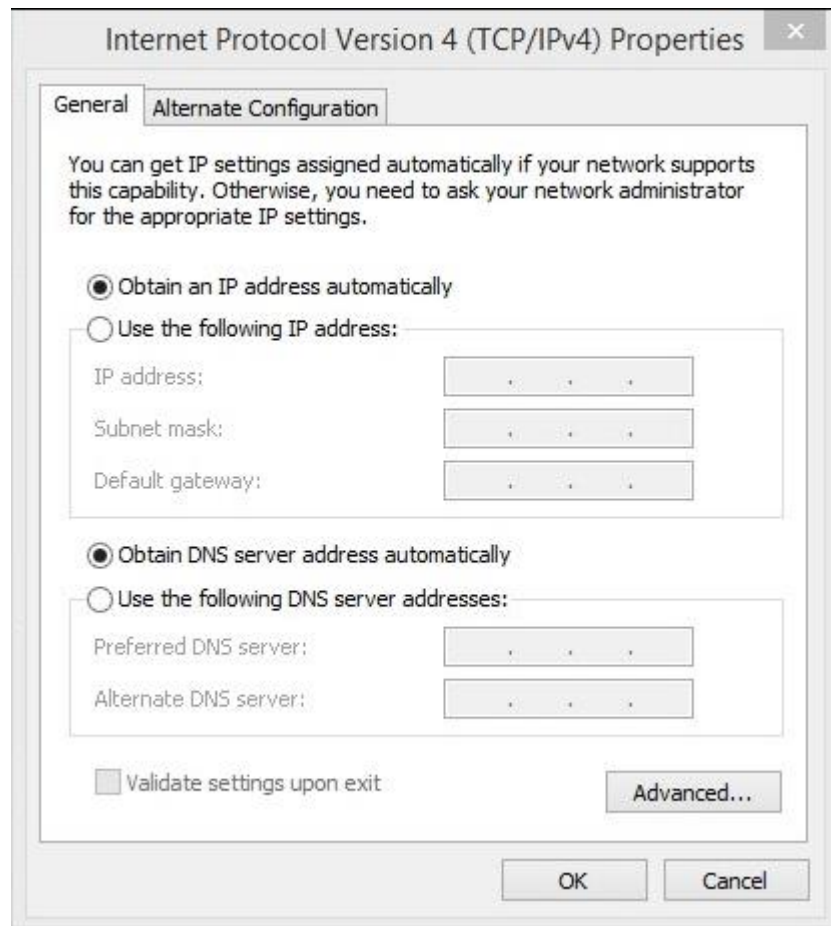


Indicator

We recommend the AP signal strength is greater than -75dBm, if signal strength weaker, CPE's bridge effect will be worse. In the condition of non-line-of-sight, the bridge effect will be worse also, adjust the CPE direction to get better signal strength and Link Quality

h) PC Setting

Set PC's Internet TCP/IP as **Obtain an IP address automatically**, then the PC can obtain the IP address assigned by Wireless AP or WLAN station



P20 Set PC's IP Address

After setting finished, input Ping command to test internet connectivity.

5. Gateway Operation Mode



NC-LINK High-performance OutDoor 300M AP/CPE

English

Quick Setup

- Device Status
- Gateway Mode
- Repeater Mode
- IP Camera
- AP Mode
- WiSP
- Advanced Settings

CPU Frequency: 535MHz
System Memory: 512 M
CPU Usage: 24%
Memory Usage: 21%

Firmware Version: NC-AP212-SP1-2T2R-V2.5-V5.3-DFS-B20160711174125 System uptime: 0Day 0H 3M 18S

Gateway Mode(Basic structure of the network graph)

WAN Access Type: **DynamicIP**

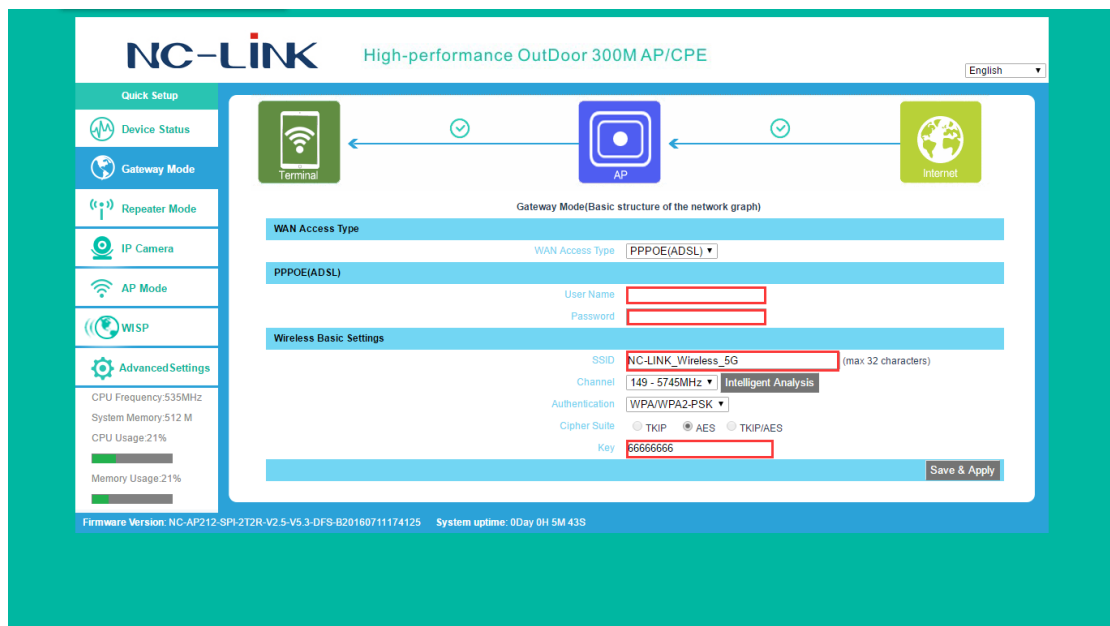
PPPOE(ADSL): User Name: , Password:

Wireless Basic Settings

SSID: **NC-LINK_Wireless_5G** (max 32 characters)
Channel: **149 - 5745MHz** Intelligent Analysis
Authentication: **WPA/WPA2-PSK**
Cipher Suite: ☐ TKIP ☒ AES ☐ TKIP/AES
Key: **66666666**

Save & Apply

Access type is Dynamic, setting the wireless parameter, like SSID, Password. Then **Save & Apply**.



NC-LINK High-performance OutDoor 300M AP/CPE

English

Quick Setup

- Device Status
- Gateway Mode
- Repeater Mode
- IP Camera
- AP Mode
- WiSP
- Advanced Settings

CPU Frequency: 535MHz
System Memory: 512 M
CPU Usage: 21%
Memory Usage: 21%

Firmware Version: NC-AP212-SP1-2T2R-V2.5-V5.3-DFS-B20160711174125 System uptime: 0Day 0H 5M 43S

Gateway Mode(Basic structure of the network graph)

WAN Access Type: **PPPOE(ADSL)**

PPPOE(ADSL): User Name: , Password:

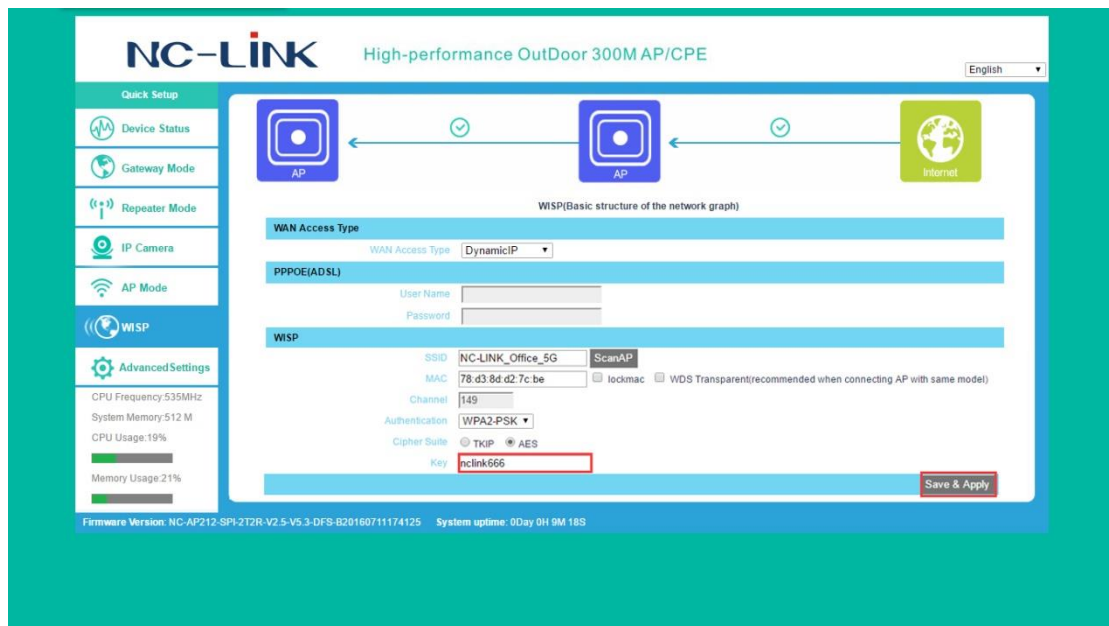
Wireless Basic Settings

SSID: **NC-LINK_Wireless_5G** (max 32 characters)
Channel: **149 - 5745MHz** Intelligent Analysis
Authentication: **WPA/WPA2-PSK**
Cipher Suite: ☐ TKIP ☒ AES ☐ TKIP/AES
Key: **66666666**

Save & Apply

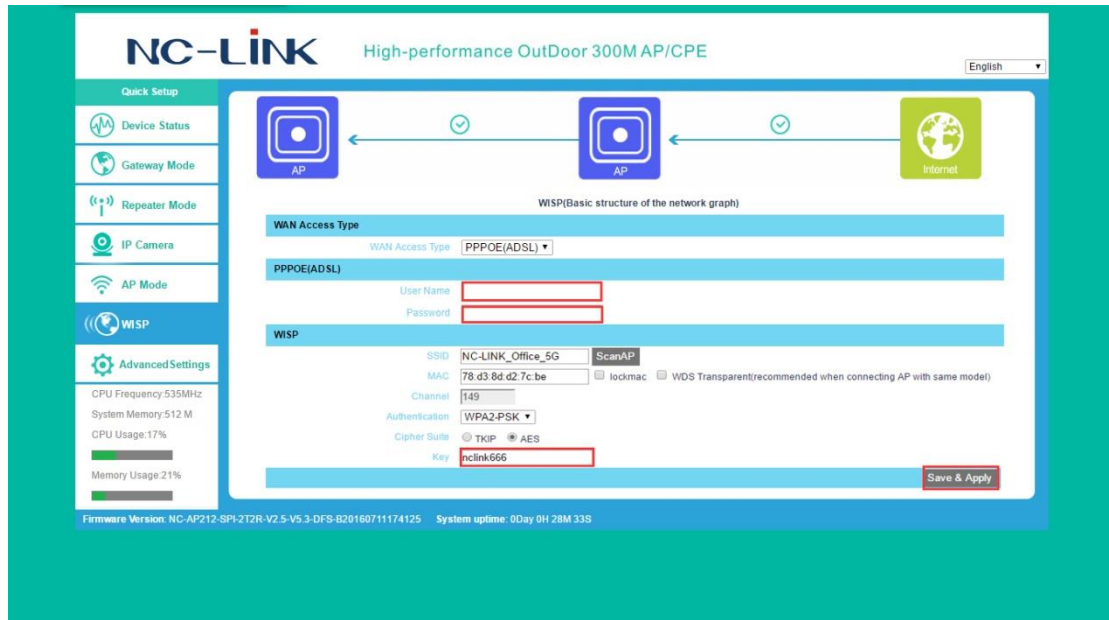
Access type is PPPOE, fill in the username and password provided by ISP, then set the parameter of wireless, click **Save & Apply**.

6. WISP Operation Mode



The screenshot shows the NC-LINK web interface for WISP configuration. The left sidebar includes 'Quick Setup' (Device Status, Gateway Mode, Repeater Mode, IP Camera, AP Mode, WISP, Advanced Settings) and 'System Information' (CPU Frequency: 535MHz, System Memory: 512 M, CPU Usage: 19%, Memory Usage: 21%). The main area displays a network diagram and configuration fields. The 'WAN Access Type' is set to 'DynamicIP'. The 'PPPOE(ADSL)' section has empty fields for 'User Name' and 'Password'. The 'WISP' section shows 'SSID: NC-LINK_Office_5G', 'MAC: 78.d3.8d.d2.7c.be', 'Channel: 149', 'Authentication: WPA2-PSK', and 'Cipher Suite: TKIP' (selected). The 'Key' field contains 'nclink666'. A 'ScanAP' button is present. The bottom status bar shows 'Firmware Version: NC-AP212-SP1-2T2R-V2.5-V5.3-DFS-B20160711174125' and 'System uptime: 0Day 0H 9M 18S'.

Access type is Dynamic. Scan AP and select the signal, fill in Password then **Save & Apply**.

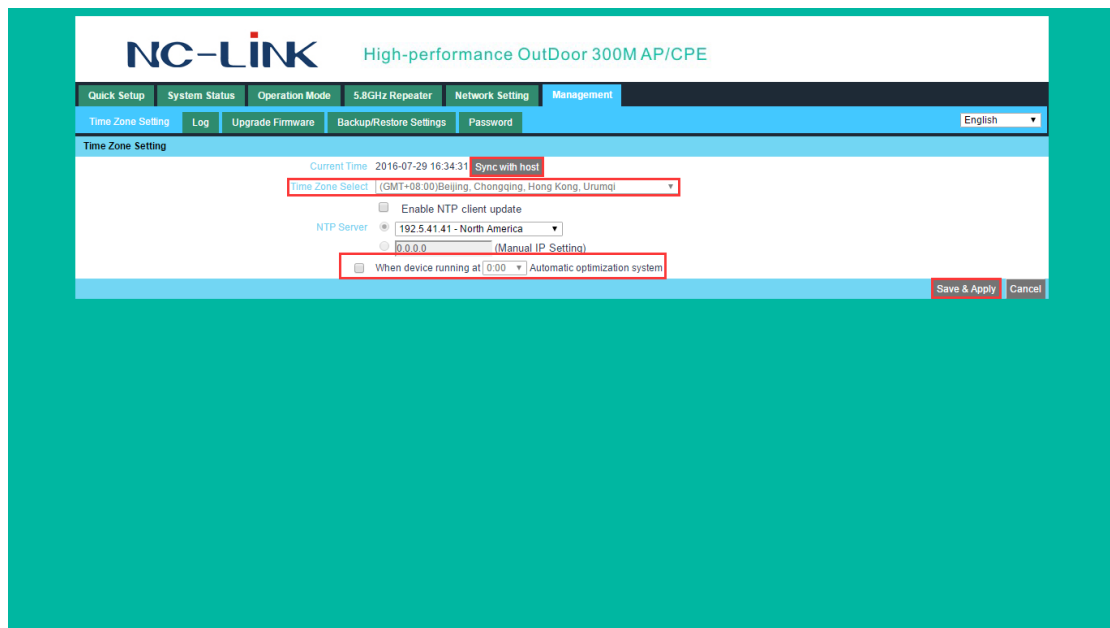


The screenshot shows the NC-LINK web interface for WISP configuration. The left sidebar is identical to the previous one. The main area shows the 'WAN Access Type' set to 'PPPOE(ADSL)'. The 'PPPOE(ADSL)' section has empty fields for 'User Name' and 'Password'. The 'WISP' section shows 'SSID: NC-LINK_Office_5G', 'MAC: 78.d3.8d.d2.7c.be', 'Channel: 149', 'Authentication: WPA2-PSK', and 'Cipher Suite: TKIP' (selected). The 'Key' field contains 'nclink666'. A 'ScanAP' button is present. The bottom status bar shows 'Firmware Version: NC-AP212-SP1-2T2R-V2.5-V5.3-DFS-B20160711174125' and 'System uptime: 0Day 0H 28M 33S'.

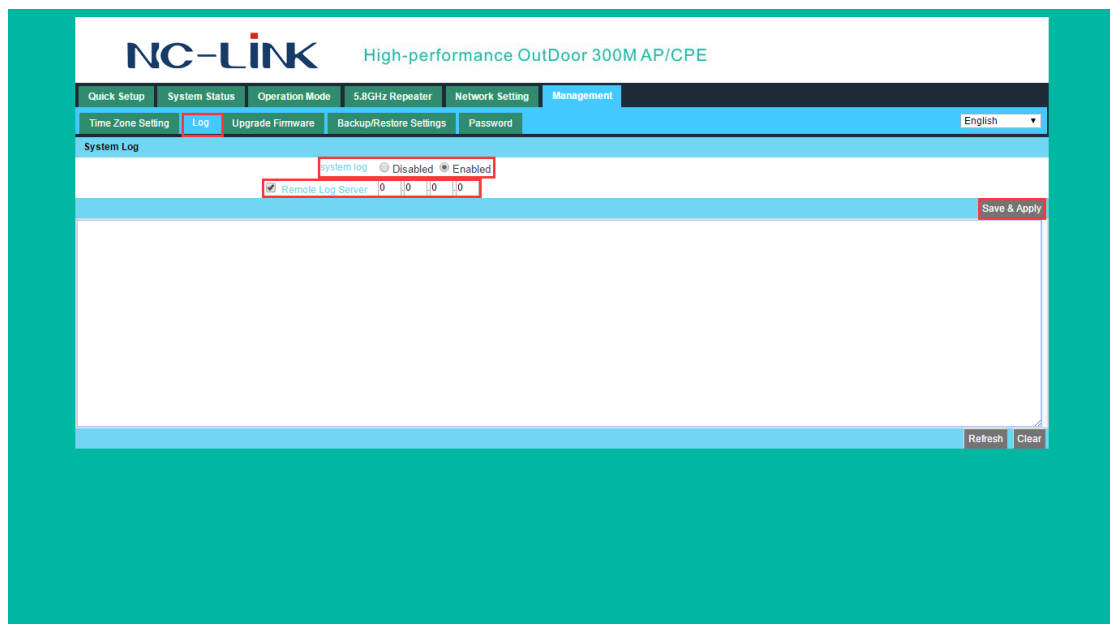
Access type is PPPOE. Scan AP and select the signal, fill in Password then **Save & Apply**.

7. Management Page

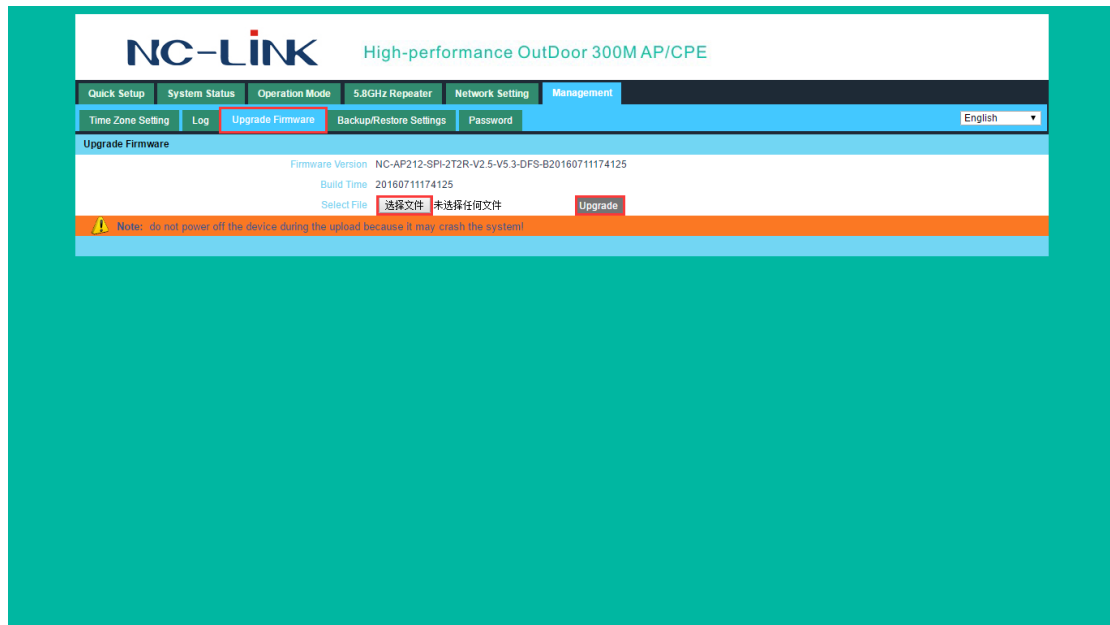
Click **"Management"** and enter into the management page:



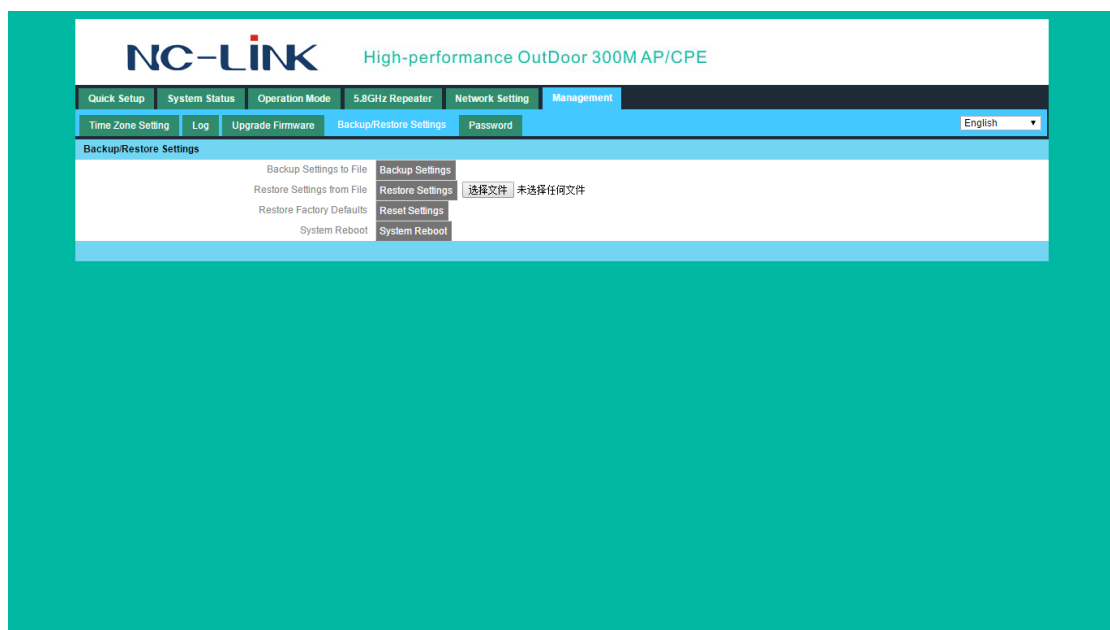
Time Zone Setting: set the time of device, can select the time or synchronize with host. Also you can define the device to optimize in detail available time.



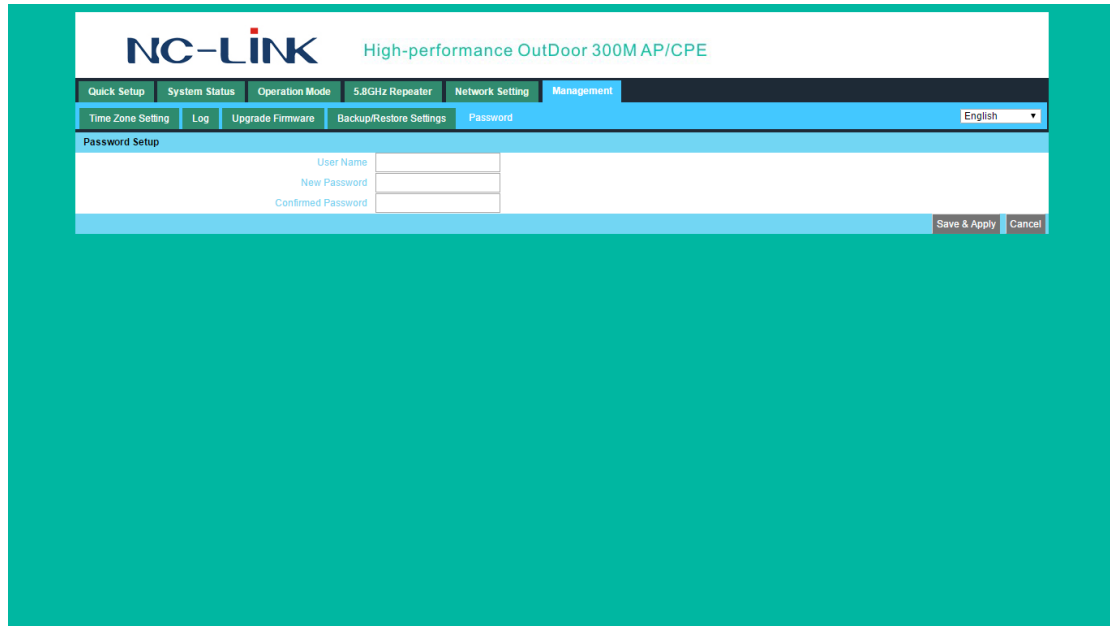
Log: device log, and can save in remote server.



Upgrade Firmware: select the upgrade file and click **Upgrade**.



Backup/Restore Setting: in this page, you can backup your current setting to a file, restore setting from a file, restore factory default and device reboot.



Password: insert the old password and set the new one to ensure more safe of the setting



Indicator

How to restore factory fault by **Reset** Button from CPE: Press the Reset button 15 seconds, the CPE system will reboot and restore to factory settings.

8. Troubleshooting

Form 1 Symptoms and Treatment

Symptoms	Treatment
Power indicator does not light	Check the POE port and LAN Port connection, the right connection way is PoE adapter PoE Port link to CPE's LAN, PoE adapter LAN Port link to PC, please refer to P2 above.
Can't login CPE through WEB management	Make sure PC and CPE's IP Address in same network segment, can test the CPE connectivity through Ping IP address: PC start-input " cmd " in Run, then ping 192.168.188.253 Restore the CPE to factory default to login Make sure there isn't any equipment take IP address 192.168.188.253 in CPE's networking Check your computer and network cable to avoid any problem, recommend to use unshielded twisted pair 10/100M Ethernet cable.
CPE can't connect with Wireless AP (connection status show un-connect)	Scan AP one more time Make sure CPE Connect (11b/g/n) is right setting. make sure the Authentication and key between CPE and Wireless AP are matched Maybe the wireless AP's signal strength is weaker than -75dBm, recommend the signal strength is more than -75dBm.
Can't find the AP after scan	Scan it several times more Make sure CPE support the AP's channel, such as 12,13,14 channel. Restore the CPE to factory setting, scan and manage it again.
CPE connect with wireless AP, but pc can't connect to Internet	Check the PC's IP address and DNS setting. If CPE's WAN setting is Dynamic IP, set the PC's TCP/IP as Obtain an IP address automatically; If CPE's WAN Setting is Static IP, consult with ISP for right IP address and DNS address
Restore CPE	Power CPE, press RESET button 15 seconds, the CPE will reboot and restore to factory default.