



# IO-Power Outdoor WiFi MIMO AP

## APM-101R(H) / APM-102R(H) / APM-103R(H)

### Quick Installation Guide V3

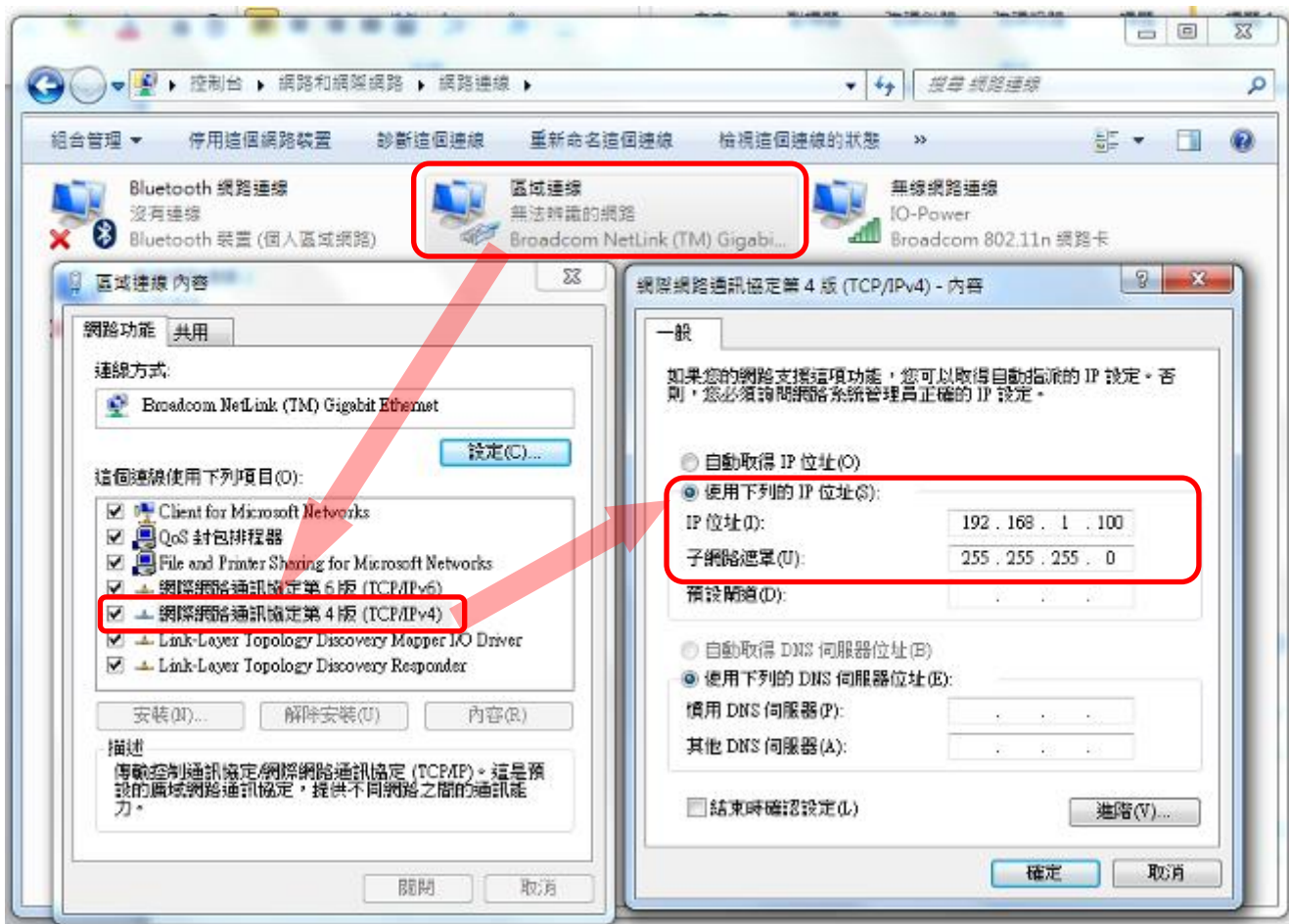
#### 1. System Login

1-1. Log in wireless device through TCP/IP & web browser IP.

A. Set up the IP address of LAN in your computer, set 192.168.1.X (Fixed IP)

(EX: 192.168.1.100)

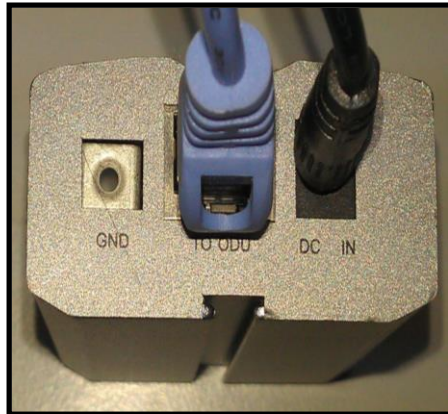
**Remind: IP address of Computer and Wireless device must be the same network segment.**



B. Plug the transformer of wireless device 110VAC to 48VDC, Offering 48VDC for PoE Integration of Ethernet, Power supply mode RJ-45 network cable through PoE ,Port the network cable RJ-45 into wireless device, Plugged RJ-45 network cable to the computer network at the same time, Establish the connection of wireless device and computer.



The bottom of the wireless device POE Ethernet waterproof port



PoE Ethernet integration  
 RJ-45 Ethernet port, to wireless device  
 DC Power plug, to the transformer



PoE Ethernet integration  
 RJ-45 Ethernet port, connect to computer  
 (or LAN, Camera and ADSL series with other wireless devices...)

C. Enter the address in the website <http://192.168.1.1>

(The default IP address of wireless devices is 192.168.1.1)

D. Front-page of wireless devices.





## E. Enter account and password, Login to the system (Default Account: admin , Default Password: admin)



## 2. System Setup (Wireless Devices IP address setup)

### 2-1. Basic Setup (\*\* No need to setup on this page \*\*)



### 2-2. Network Setup (\*\* Necessary setup on this page \*\*) IP address setup of wireless devices.





**System Setup** | Basic Setup | Network Setup | Administration | Utility | Status | Logout(admin)

### System Operation Mode

Mode: Bridge

### IP Setup

IP Address :	192.168.1.1	IP Address :	192.168.1.1
Subnet Mask :	255.255.255.0	Subnet Mask :	255.255.255.0
Default Gateway :	0.0.0.0	Default Gateway :	0.0.0.0
DNS 1 :	0.0.0.0	DNS 1 :	0.0.0.0
DNS 2 :	0.0.0.0	DNS 2 :	0.0.0.0

### IP Setup

IP Address :	192.168.21.1	IP Address :	192.168.21.1
Subnet Mask :	255.255.255.0	Subnet Mask :	255.255.255.0
Default Gateway :	0.0.0.0	Default Gateway :	0.0.0.0
DNS 1 :	0.0.0.0	DNS 1 :	0.0.0.0
DNS 2 :	0.0.0.0	DNS 2 :	0.0.0.0

**Reminds: When the IP address has been changed (EX.192.168.21.1) , Be sure to change to the same network segment of your computer (EX.192.168.21.99) , Then keep up setting.**

組合管理 | 停用這個網路裝置 | 診斷這個連線 | 重新命名這個連線 | 檢視這個連線的狀態

Bluetooth 網路連線  
沒有連線  
Bluetooth 裝置 (個人區域網路)

區域連線  
無法辨識的網路  
Broadcom NetLink (TM) Gigabi...

無線網路連線  
IO-Power  
Broadcom 802.11n 網路卡

區域連線 內容

網路功能 驗證 共用

連線方式:  
Broadcom NetLink (TM) Gigabit Ethernet

這個連線使用下列項目(O):

- File and Printer Sharing for Microsoft Networks
- HTC NDIS Protocol Driver
- 可靠的多點傳送通訊協定
- 網際網路通訊協定第 6 版 (TCP/IPv6)
- 網際網路通訊協定第 4 版 (TCP/IPv4)
- Link-layer Topology Discovery Mapper I/O Driver

安裝(A)... 解除安裝(U) 內容(R)

描述  
傳輸控制通訊協定/網際網路通訊協定 (TCP/IP) - 這是預設的廣域網路通訊協定，提供不同網路之間的通訊能力。

網際網路通訊協定第 4 版 (TCP/IPv4) - 內容

一般

如果您的網路支援這項功能，您可以取得自動指派的 IP 設定。否則，您必須詢問網路系統管理員正確的 IP 設定。

自動取得 IP 位址(O)

使用下列的 IP 位址(S):

IP 位址(I): 192.168.21.99

子網路遮罩(U): 255.255.255.0

預設閘道(D): . . .

自動取得 DNS 伺服器位址(B)

使用下列的 DNS 伺服器位址(E):

慣用 DNS 伺服器(P): . . .

其他 DNS 伺服器(A): . . .

結束時確認設定(L)

進階(V)...

確定 取消



### 3. Wireless setup (P to P wireless device setting)

EX: Planning two APM-101R , set a P to P wireless transmission system.



#### 3-1. (AP Mode) Radio Setup (Wireless setup-NIC setting)

**Radio Setup** | WLAN Setup | Wireless Security | MESH Setup | WMM Setup | Bandwidth Control

**RADIO - 1**

Wireless Band : 802.11na HT40 Plus	Wireless Band : <input type="text" value="802.11na HT40 Plus"/>	Select the wireless transmit mode
Channel : 52 CH - 5260MHz	Channel : <input type="text" value="52 CH - 5260MHz"/>	Select Channel/Frequency
Transmission Power : Full	Transmission Power : <input type="text" value="Full"/>	Select output power
Antenna Number : 2	Antenna Number : <input type="text" value="2"/>	Select antenna quantity
Short Guard Interval : On	Short Guard Interval : <input type="text" value="On(400ns)"/>	Select transmit packet waiting time
Aggregation : Enable	Aggregation : <input type="text" value="Disabled"/> <input checked="" type="radio"/> Enable	Select packet integration capabilities
Distance(x 100m) : 10	Distance(x 100m) : <input type="text" value="10"/>	Set the wireless response from the parameters Each 100m represent 1 Unit Distance less than 1000 m, set 10parameters

Cancel Apply

Press Apply

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Exp: Red frame option must be set. Green frame option , set by default do not need to change.



## 3-2. (AP Mode) WLAN Setup (Wireless operation setting—Wireless software setting)

Exp: Wireless AP(Access Point = AP)has to set a name(SSID) , for other wireless devices(Wireless Station = AP Client = AC)。 PTP\_AP1\_1 is the name of wireless device this time(SSID)。

**WLAN Setup**

**RADIO-1 WLAN Setup**

SSID: wireless\_1 Broadcast SSID: wireless\_1 PTP\_AP1\_1  Broadcast

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**WLAN Setup**

**Wireless station SSID setup**

SSID: PTP\_AP1\_1 Broadcast SSID: PTP\_AP1\_1 PTP\_AP1\_1  Broadcast

Enable: Yes  No  Yes

WLAN Mode: Access Point

RTS: 2312

Fragmentation: 2346

Data Rate: Auto (Limited) Limited Data Rate: Auto 0 kbps  Fixed

Multicast Rate: Auto Multicast Rate: Auto

Rate Adaptation: Default

VLAN: ID: 0 Priority: 0

Client Numbers: 64

Client Isolation: Off  On

Bandwidth Profile: 0-Disable [Edit Bandwidth Profile](#)

Cancel Apply

**Press Apply**

**Annotations:**

- Select wireless Access Point SSID need broadcast or not
- Select wireless interface Enable
- Select wireless mode
- Select limited data rate or Auto
- Select wireless interface fixed rate or Auto
- Select multicast limited rate or Auto

EXP: Red frame option must be set. Green frame option , set by default do not need to change.





**\*\* Remember , IP address of second wireless device must be set 192.168.21.2\*\***

### 3-3. (AC Mode) Radio Setup (Wireless operation setting— RF modules)

**Select wireless band, AC and AP transmission need the same frequency mode.**

**Select wireless channel/frequency**  
 Recommend starting set the same channel to accelerate connection successful. and then change to Auto , helps to adjust AP channel , AC can Automatically change the channel to re-connection .

**Set the wireless response from the parameters each 100m represent 1 Unit**  
 Distance less than 1000 m, set 10parameters.

EXP: Red frame option must be set. Green frame option , set by default do not need to change.

### 3-4. (AC Mode) WLAN Setup (Wireless operation setting—Feature Setting)

Exp: Wireless AP(Access Point = AP)has to set a name(SSID) , for other wireless devices(Wireless Station = AP Client = AC)。PTP\_AP1\_1 is the name of wireless device this time(SSID)。

**Setting the wireless AP's SSID**

**Select WLAN mode**  
 Wireless Station

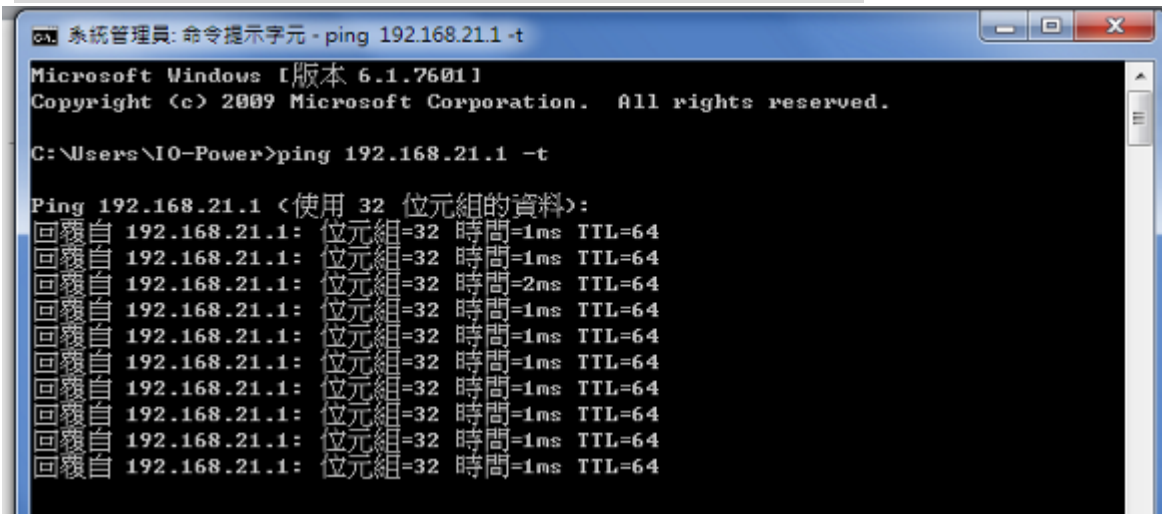
**Strongly recommended**  
 Do not fill the AP Mac address , to avoid lock the AP , It will leads to it can no longer automatically connect with other AP .

EXP: Red frame option must be set. Green frame option , set by default do not need to change.

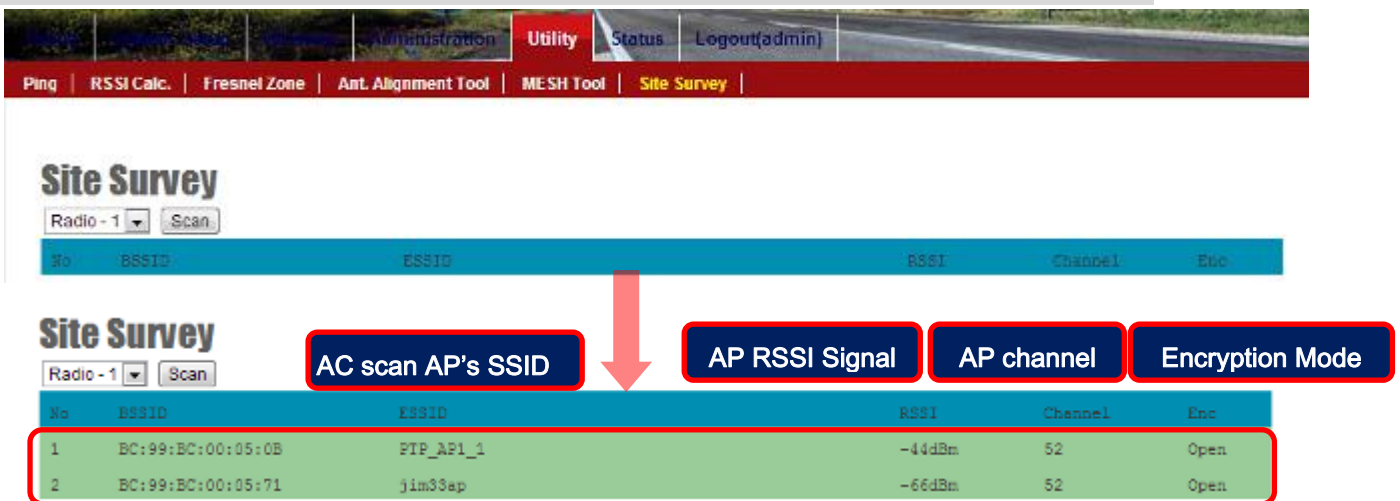


## 4. Test Point to Point wireless of AP & AC connection is complete

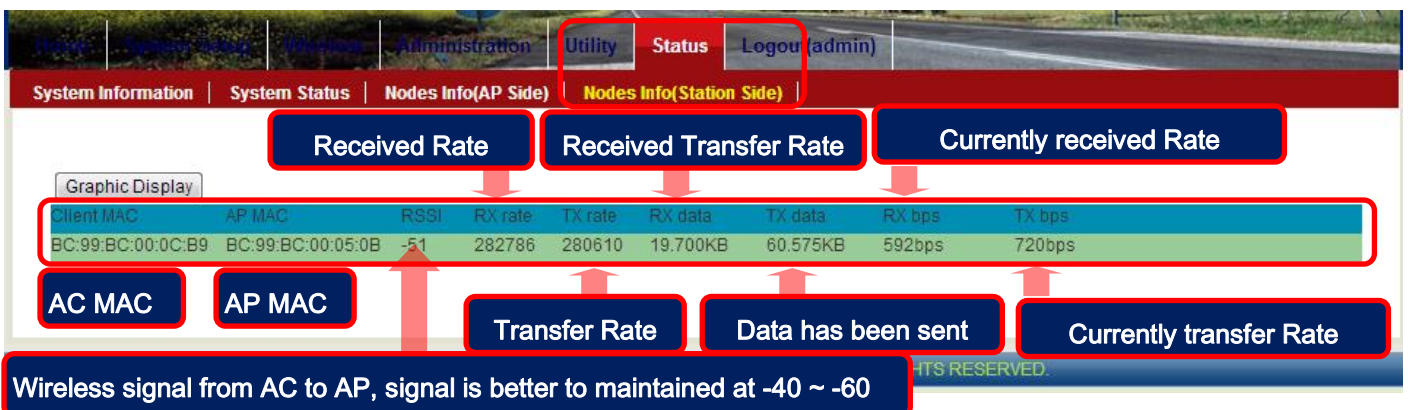
### 4-1. Check the Ping of the Wireless devices connection



### 4-2. From the client side of wireless AC (Wireless Station=AC) get into the website of device , in Utility/Site Survey, scan the AP signal of the environment.



### 4-3. From the client side of wireless AP (Wireless Station=AC) get into the website of device , in Status / Nodes (Station Side) scan the AP signal of the environment.



Please download manual from internet: <http://www.io-power.com/Product%20User%20Manual.htm>





## 5. Advanced Settings

### 5-1. Country Code of wireless setting

(Each country for the using of WiFi frequency and channel, they have their own regulations and management of national wireless communication, change the country code can meet the national wireless frequency)

Change the country code of device: Open DOS Mode

5-1-1. Enter telnet 192.168.1.1 (Default IP), If you have change the IP address, please enter the IP address you have been changed.

```
Microsoft Windows [版本 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\IO-Power>telnet 192.168.1.1
```

5-1-2. **Account ID: admin Password PW: admin (Default)**, If you have change the ID and PW of device, please enter the new ID and PW you set.

Get the country code of your device.

`/>get general/country code`

```
<none> login: admin
Password:
/>get general/countrycode
general/countrycode: 840 - UNITED STATES
/>_
```

General/country code: 840 - UNITED STATES

5-1-3. Change country code: 840-UNITED STATES (美國) change to 156-CHINA (中國) (**System will reboot**)

`/>set general/country code`

```
<none> login: admin
Password:
/>get general/countrycode
general/countrycode: 840 - UNITED STATES
/>set general/countrycode
This setting takes effect after a reboot,
the system will automatically reboot,
whether to continue ?(y/n) ?
country code[840 - UNITED STATES] : 156
OK ...
Reboot system now ...
/>_
```



#### 5-1-4.Change country code:156-CHINA (中國) change to 250-FRANCE (法國) ( System will reboot)

/>set general/countrycode

```
(none) login: admin
Password:
/>get general/countrycode
general/countrycode: 156 - CHINA
/>set general/countrycode
This setting takes effect after a reboot,
the system will automatically reboot,
whether to continue ?(y/n) ?
country code[156 - CHINA] : 250
OK ...
Reboot system now ...
/>
```

#### 5-1-5.Country code of main country

(036)AUSTRALIA (076)BRAZIL (124)CANADA (156)CHINA (250)FRANCE (276)GERMANY (356)INDIA  
(360)INDONESIA (380)ITALY (392)JAPAN (410)KOREA ROC (458)MALAYSIA (484)MEXICO  
(554)NEW\_ZEALAND (586)PAKISTAN (608)PHILIPPINES (616)POLAND (643)RUSSIA (682)SAUDI ARABIA  
(702)SINGAPORE  
(710)SOUTH AFRICA (724)SPAIN (158)TAIWAN (764)THAILAN (792)TURKEY (826)UNITED KINGDOM  
(704)VIET NAM

## 5-2. Start / Turn off DFS (Dynamic frequency-channel selection) (To avoid the military radar signal cover)

### 5-2-1.Get the DFS setting information of device

/>get general/dfschan

```
(none) login: admin
Password:
/>get general/dfschan
DFS Channel: supported
/>
```

DFS Channel: supported (啟動中)

### 5-2-2.Turn off the function of DFS, Parameter 0: supported turn on, Parameter 1: filtered turn off

/>set general/dfschan

```
(none) login: admin
Password:
/>get general/dfschan
DFS Channel: supported
/>set general/dfschan
This setting takes effect after a reboot,
the system will automatically reboot,
whether to continue ?(y/n) ?
DFS Channel<0: supported, 1: filtered>: [0] : 1
OK ...
Reboot system now ...
/>
```



### 5-2-3. Turn on the function of DFS, Parameter 0: supported turn on, Parameter 1: filtered turn off

/>set general/dfschan

```
(none) login: admin
Password:
/>set general/dfschan
This setting takes effect after a reboot,
the system will automatically reboot,
whether to continue ?<y/n> ?
DFS Channel<0: supported, 1: filtered>: [0] : 0
OK ...
Reboot system now ...
/>
```

#### Auto DFS: ( Auto Dynamic Frequency Selection )

What is Auto DFS? Simply saying : It is automatically hide the radar sweep.

What is Auto TPC? Simply saying: it is automatically adjust the output power , to avoid interference with military radar .

Auto DFS + Auto TPC = 802.11h , Which means , the technical of 802.11h refers to these two option.

These two functions are mandatory , Non-compliant products will not be the countries of the European Union and the requirements of this specification wireless products marketing authorization.

WiFi 802.11a in the frequency of 5GHz , Part of the frequency and military radar octave frequency , so military come first , Civil come second , civil WiFi 5GHz wireless device frequency , have to avoid the military frequencies , Therefore derived functional requirements Auto DFS and the certification and outdoor use.

Outdoor wireless devices defined in the certification ,it needs to change the channel when radar chase more than three times.

For example: When your wireless device(Access point) , Using 5.26GHz (Channel 52) in transmission , Receive the same 5.26GHz radar signal suddenly , Your outdoor wireless AP (Access Point) have to jump out 5.26Ghz (Channel 52) to 5.28GHz (Channel 56) ; If you receive the 5.28GHz radar signal again , Your outdoor wireless AP (Access Point) have to jump out 5.28Ghz (Channel 56) again , So must have more than three times in a row automatically jump open frequency function, in order to meet the certification and Use. In addition, radar chase to radio frequency (channel) must no longer be used within 30 minutes.





### 5-3.Restart the website of your wireless device:

Because of Internet Explorer (IE) or Firefox (火狐)或 Chrome (Google) web browser , Version differences or parameter setting , it will not functioning properly of the wireless device website , may not convenient for user , Through the command line , it can restart the web (about 10 seconds to finish) , it will helps the user.

/>restart\_web

```
<none> login: admin
Password:
/>restart_web
Web server start in 10 seconds..
/>
```