

Content

Chapter 1	Radio-frequency Parameters Configuration	..... 1-1
1.1	Introduction to Radio-frequency Parameters Configuration	..... 1-1
1.2	Radio-frequency Parameters Configuration	..... 1-2
1.3	Radio-frequency Parameters Configuration Examples	..... 1-6
1.4	Radio-frequency Parameters Configuration Troubleshooting	.... 1-7
Chapter 2	Radio-frequency Scanning	..... 2-1
2.1	Introduction to Radio-frequency Scanning	..... 2-1
2.2	Radio-frequency Scanning Configuration	..... 2-1
2.3	Radio-frequency Scanning Configuration Examples	..... 2-2
2.4	Radio-frequency Scanning Configuration Troubleshooting	..... 2-3
Chapter 3	Automatic Channel Adjustment	..... 3-1
3.1	Introduction to Automatic Channel Adjustment	..... 3-1
3.2	Application Scene of Normal Automatic Channel Adjustment	... 3-1
3.3	Automatic Channel Adjustment Configuration	..... 3-7
3.4	Automatic Channel Adjustment Configuration Examples	..... 3-8
3.5	Automatic Channel Adjustment Configuration Troubleshooting	..... 3-10
Chapter 4	Automatic Power Adjustment	..... 4-1
4.1	Introduction to Automatic Power Adjustment	..... 4-1
4.2	Automatic Power Adjustment Configuration	..... 4-2
4.3	Automatic Power Adjustment Configuration Examples	..... 4-3
4.4	Automatic Power Adjustment Configuration Troubleshooting	... 4-4
Chapter 5	DFS	..... 5-1
5.1	Introduction to DFS	..... 5-1
5.2	DFS Configuration	..... 5-1
5.3	DFS Troubleshooting	..... 5-2

Chapter 1 Radio-frequency Parameters Configuration

1.1 Introduction to Radio-frequency Parameters Configuration

AP provide WLAN service for client around through radiofrequency, the radiofrequency parameters must be configured correctly, including channel, rate, transmission power etc. In AC+Fit AP structure, the radiofrequency of AP is configured to issue by AC. The network management configures radiofrequency parameters on AC (Access Controller) and save them to profile. In the process of AP accessing AC, AC completes to configure radiofrequency parameters of AP mainly and save them to the relevant AP profile. When profile is issuing, they are issued to AP as information field of AP Configuration Message and 802.11 radiofrequency functions are achieved by AP radiofrequency module. The interaction process is as below.

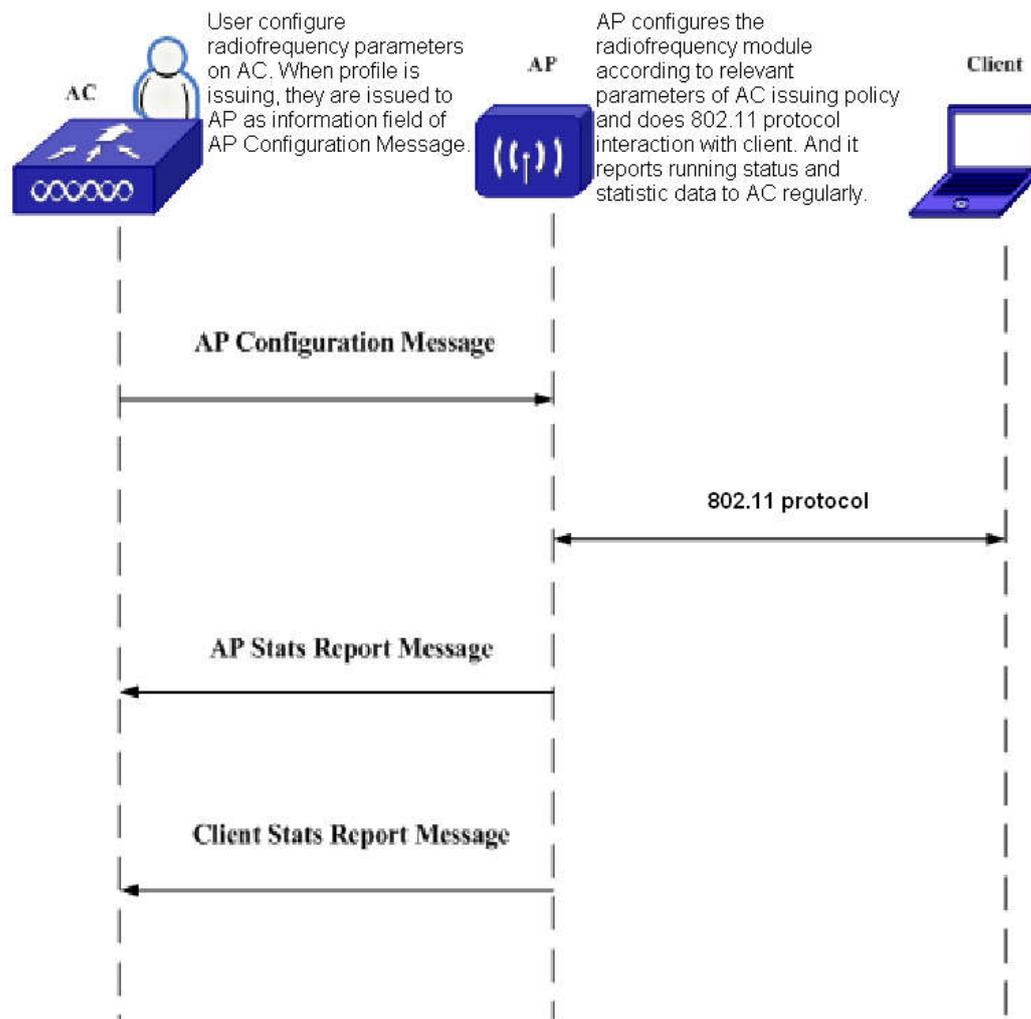


Fig 1-1 interaction picture of AP radiofrequency parameters configuration

1.2 Radio-frequency Parameters Configuration

1. Configure basic radiofrequency parameters
 - 1) Configure country code
 - 2) Configure radio number
 - 3) Configure radio type
2. Configure parameters related to 802.11MAC layer
3. Configure the relevant parameters of rate
4. Configure the relevant parameters of channel
5. Configure the relevant parameters of power
6. Configure the relevant parameters of 802.11n
7. Configure the relevant parameters of 802.11bg
8. Configure the relevant parameters of 802.11ac

1. Configure basic radiofrequency parameters

1) Configure country code

Command	Explanation
Wireless Global Mode	
country-code <code> no country-code	Configure the controller and the country-code of the AP which is managed by the controller. The no command recovers the country-code to be CN.

2) Configure radio number

Command	Explanation
AP Profile Configuration Mode	
radio <1-2>	Choose the radio number.

3) Configure radio type

Command	Explanation
Radio Configuration Mode	
enable no enable	Enable/disable the radiofrequency.
mode {a | b | g | bg | an | bgn | n-only-a | n-only-g} no mode	Configure the physical standard used by Radio (Radiofrequency Type). The no command recovers to the default mode.

2. Configure parameters related to 802.11MAC layer

Command	Explanation
Radio Configuration Mode	
rts-threshold <256-2346> no rts-threshold	Configure RTS (Request to Send) threshold. The no command recovers to be default value.
dtim-period <1-255> no dtim-period	Configure the DTIM period. The no command recovers the DTIM period to be default.
beacon-interval <20-2000> no beacon-interval	Configure the gap that AP send Beacon frame. The no command disables the gap configuration command and recovers the gap to be default.

fragmentation-threshold <256-2346> no fragmentation-threshold	Configure the maximum packet length (MTU) of packets transmitting without slice. The no command recovers it to be default.
--------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------

3. Configure the relevant parameters of rate

Command	Explanation
Radio Configuration Mode	
rate {basic | supported} <value> no rate {basic | support} <value>	Configure the rate set. The command is used to deletes the basic rate or the supported rate set configured by rate command from the relevant linked list.
rate-limit no rate-limit	Enable multicast and broadcast restriction function/multicast and broadcast outbreak restriction function. The no command disables this function.
rate-limit {normal <1-50> | burst <1-75>} no rate-limit [{normal | burst }]	Configure multicast and broadcast restriction threshold/multicast and broadcast outbreak restriction threshold. The no command recovers to be default value.
multicast tx-rate <rate> no multicast tx-rate	Configure the transmission rate of the empty multicast packets. The no command recovers to be default.
multicast tx-rate min <min-rate> no multicast tx-rate min	Configure the minimum rate restriction of the empty multicast packets. The no command is used to recover to be default.
mcs-index<0-23|all> no mcs-index<0-23|all>	Configure MCS index value supported by radio. The no command deletes the appointed MCS index value.
spatial-stream number <1-2> no spatial-stream number	Configure the number of spatial streams supported by radio. The no command recovers to be default.

4. Configure the relevant parameters of channel

Command	Explanation
Radio Configuration Mode	
channel auto no channel auto	Enable the function of automatic adjustment channel. The no command

	disables this function.
AP Configuration Mode	
radio <1-2> {channel <channel> | power <0-100>}	Configure the channel and power manually.

5. Configure the relevant parameters of power

Command	Explanation
Radio Configuration Mode	
power auto no power auto	Enable the function of automatic adjusting power. The no command disables this function.
power default <0-100> no power default	Configure the default power value. The no command deletes the default power value configured by power default command and recovers to be default value.

6. Configure the relevant parameters of 802.11n

Command	Explanation
Radio Configuration Mode	
a-mpdu no a-mpdu	Enable a-mpdu function on radio, the no command disables this function.
dot11n channel-bandwidth {20 | 40 | both} no dot11n channel-bandwidth	Configure the channel bandwidth mode. When it is in the 802.11 mode, the no command recovers the channel bandwidth mode to be default.
dot11n primary-channel {lower | upper} no dot11n primary-channel	Configure the different main broadband. The no command recovers the main broadband to be default.
dot11n short-guard-interval {enable | disable} no dot11n short-guard-interval	Enable/disable the time interval function. The no command recovers the short time interval to be default.
dot11n stbc-mode {enable | disable} no dot11n stbc-mode	Enable/disable STBC (Space-Time Block Coding). The no command recovers the STBC mode to be default.
protection {auto | off} no protection	Enable/disable the 802.11n protection function. The no command recovers to be the default automatic protection status.

7. Configure the relevant parameters of 802.11bg

Command	Explanation
Radio Configuration Mode	
dot11bg protection <0-100> no dot11bg protection	Configure the maximum restriction of the percentage that the Client in bg mode occupies buffer. The no command recovers to be default of 100.

8. 配置 802.11ac 相关参数

Command	Explanation
Radio Configuration Mode	
dot11ac channel-bandwidth {20 | 40[primary-channellower|upper] | 80}	Configure the channel bandwidth mode in ac mode. The no command recovers the channel bandwidth mode to be default.

1.3 Radio-frequency Parameters Configuration

Examples

Case:

User configures as below: use WLAN service in Chinese mainland and configure radio type used by radio as IEEE 802.11b/g. configure RTS threshold as 256 bytes. When MPDU length exceeds this value, 802.11MAC will start RTS/CTS interaction.

Configuration steps are as below:

AC>enable

AC#config

AC(config)#wireless

AC(config-wireless)#country-code cn

AC(config-wireless)#ap profile 1

AC(config-ap-profile)# radio 1

AC(config-ap-profile-radio)#enable

AC(config-ap-profile-radio)# mode bg

AC(config-ap-profile-radio)#rts-threshold 256

Configuration result:

AC#show wireless

.....

Country Code..... CN – China
.....
AC(config-ap-profile)#show wireless ap profile 1 radio 1
AP Profile ID..... 1
Profile Name..... Default
Radio..... 1 - 802.11b/g
Status..... On
Mode..... 802.11b/g
RF Scan - Other Channels Mode..... Enable
RTS Threshold (bytes)..... 256

1.4 Radio-frequency Parameters Configuration

Troubleshooting

If radio function is unusual, please check out if it is wrong with reasons as below:

- ☞ If the country code is correct. In different countries, channel ranges of radio are different.
- ☞ Examine if radio function is enabled, when configuring radio management, radio function must be enabled.

Chapter 2 Radio-frequency Scanning

2.1 Introduction to Radio-frequency Scanning

AP monitors radio environment around, including neighbor client and AP information. And it sends information periodically to relevant AC, AC knows about environment status of AP working according to this information and uses this information for computing with all kinds of algorithms. The monitoring neighbor information includes: receiving signal strength instruction (RSSI), signal strength, noise strength, working channel, rate, and MAC address etc.

Radiofrequency scanning includes two kinds of modes: Active and Sentry. In active mode, it deals with user flow normally. It scans monitoring information periodic in configured time interval, but it checks the working band of itself only, such as 2.4G or 5G. Radio in sentry mode does not deal with user flow any more, it is used for scanning monitoring information specially. It can monitor all channels in 2.4G and 5G in turn.

2.2 Radio-frequency Scanning Configuration

Configuration task list:

1. Enable sentinel scanning mode.
2. Enable function of rf-scan in other channels.
3. Configure scanning duration.
4. Configure the interval of information reporting of the radio-frequency scanning.

1. Enable sentinel scanning mode

Command	Explanation
Radio Configuration Mode	
rf-scan sentry [channels {a | bg | all}] no rf-scan sentry	Enable/disable sentinel scanning mode. channels: Appoint to scan channels in any mode; a: Do rf-scan in all channels of 802.11a (5G); bg: Do rf-scan in all channels of 802.11b/g (2.4G); all: Do rf-scan in all channels.

2. Enable function of rf-scan in other channels

Command	Explanation
Radio Configuration Mode	
rf-scan other-channels [interval <5-86400>] no rf-scan other-channels	Enable/disable function of rf-scan in other channels. interval: At intervals of time interval, AP will leave from the current channel to execute the function of rf-scan in other channels. <5-86400>: The time interval, the unit is second.

3. Configure scanning duration

Command	Explanation
Radio Configuration Mode	
rf-scan duration <10-2000> no rf-scan duration	Configure rf-scan duration; the unit is ms. The no command recovers to be default.

4. Configure the interval of information reporting of the radio-frequency scanning

Command	Explanation
Wireless Global Configuration Mode	
rfscan-report-interval <30-65535> no rfscan-report-interval	Configure the interval of information reporting of the radio-frequency scanning manually, and the unit is second.

2.3 Radio-frequency Scanning Configuration

Examples

Case:

User configures as below: configure AP in active mode and request it to scan in other channel once every 30 seconds, at the same time, make the time of monitoring neighbor flow in this channel to be 30ms.

Configuration steps are as below:

```
AC(config-wireless)#ap profile 1
```

```
AC(config-ap-profile)#radio 1
```

```
AC(config-ap-profile-radio)#no rf-scan sentry
```

```
AC(config-ap-profile-radio)#rf-scan other-channels
```

```
AC(config-ap-profile-radio)#rf-scan other-channels interval 30
```

AC(config-ap-profile-radio)#rf-scan duration 30

Configuration result:

AC(config-ap-profile-radio)#show wireless ap profile 1 radio 1

RF Scan - Other Channels Mode..... Enable

RF Scan - Other Channels Scan Interval..... 30

RF Scan - Sentry Mode..... Disable

RF Scan - Scan Duration..... 30

2.4 Radio-frequency Scanning Configuration

Troubleshooting

If rf-scan function is unusual, please check out if it is wrong with reasons as below:

- ☞ Make sure every item is configured correctly.
- ☞ Pay attention to the difference between active and sentry. At default case, rf-scan mode is active mode. This mode is only responsible for scanning bands itself works in; sentry mode does not deal with user flow, client cannot be related to AP.

Chapter 3 Automatic Channel Adjustment

3.1 Introduction to Automatic Channel Adjustment

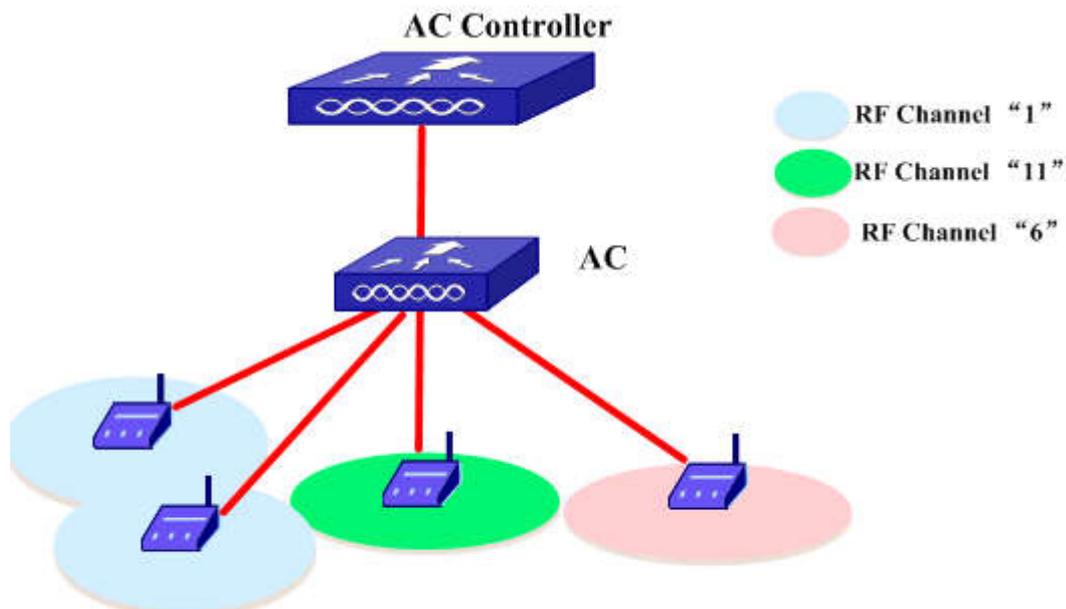
For wireless local area network, channel is the very scarce resource. Every AP can only work in very limited non-overlapping channels, such as 2.4G network, it has only 3 non-overlapping channels. Distributing channels for AP intelligently is the key of wireless application. At the same time, there is a large number of interference in the working frequency band of wireless local area network, such as radar, microwave etc. They can interfere the normal working of AP. Through channel adjustment function, it can make sure that every AP can be distributed the best channel and the neighbor channel interference will be reduced and avoided as much as possible. Through channel detection, AP can keep away from the interference of radar and microwave regularly. Automatic channel adjustment can achieve ongoing of communication and provide pledge for reliable transmission of network.

Automatic channel configuration algorithm supports two modes: ICS (Initial Channel Selection) and ACA (Auto Channel Adjustment). ICS is automatic selection algorithm of AP power-on; ACA is the periodic channel optimization and adjustment algorithm. For 802.11n of 2.4G, it does not support ACA of 40M, because only one lawful channel can be used in this case.

There are three trigger modes in ACA algorithm: fixed time trigger (hh:mm, within 24 hours), periodic trigger (the unit is minute, the range is from 3 to 1440), manual trigger. Only one trigger method can be selected once in ordinary.

3.2 Application Scene of Normal Automatic Channel Adjustment

In 2.4G example, in the actual deployment process, only three non-overlapping channels can be selected. 1, 6, 11 will be selected in normal.



New AP is added to the system on channel "1"

Fig 3-1 original three AP in system and adding a new AP

As shown in Fig 3-1, there are 3 AP in system. They use channel 1, 6 and 11 respectively. In this time, add a new AP in system (the left corner in picture), the initial channel of the new AP is channel 1.

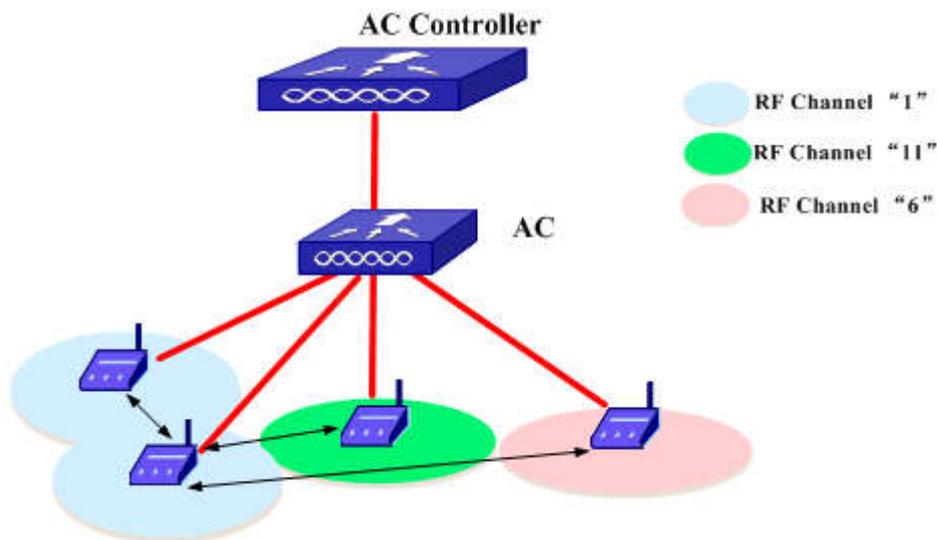


Fig 3-2 AP sends neighbor information packets with maximum power

As shown in Fig 3-2, in the beginning, AP sends neighbor information packets with maximum power in system. It is convenient for neighbor AP to detect signal interference status in time.

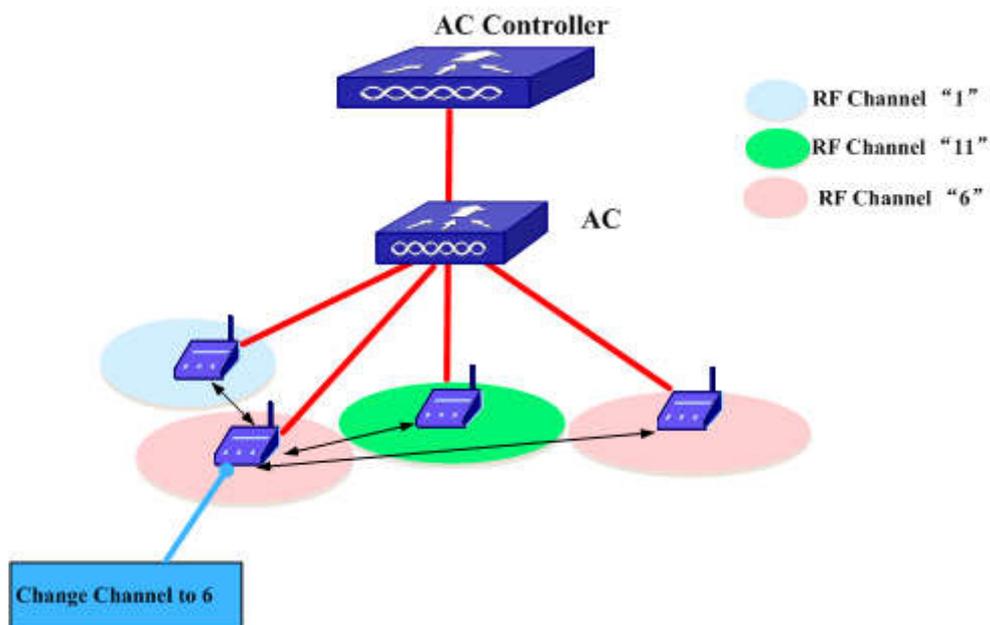


Fig 3-3 the channel of new AP is optimized and adjusted

Then, the controller optimizes and adjusts the channel; it adjusts the new AP to channel 6 according to the radio topology information of the whole system. The process is as Fig 3-3.

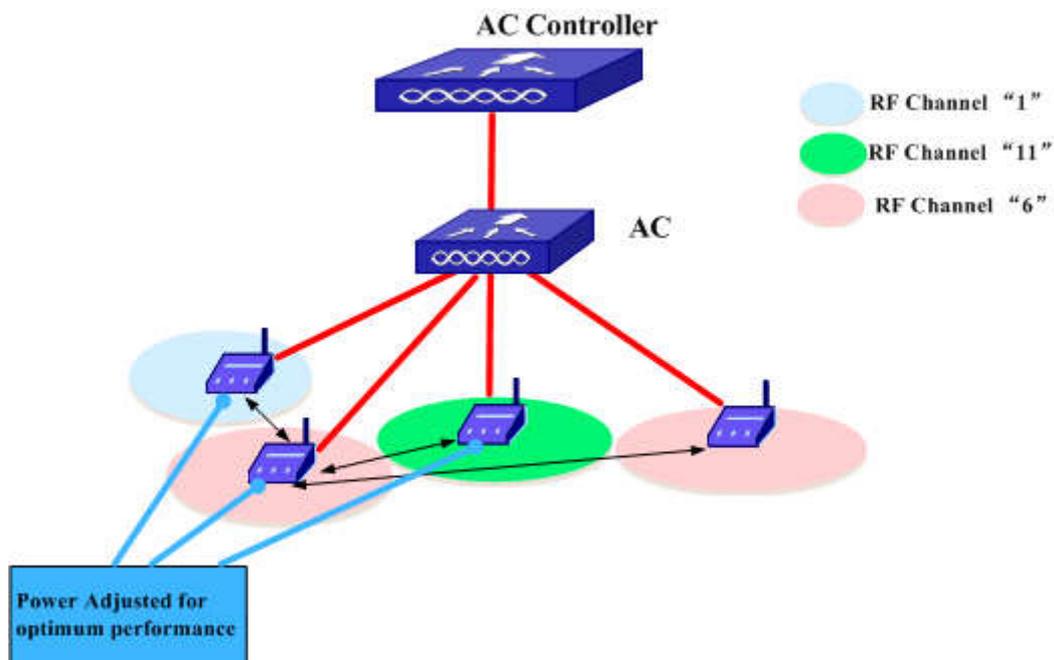


Fig 3-4 controller optimizes and adjusts the sending power of every AP uniform

Then, controller will optimize and adjust the sending power of every AP uniform to make its conflict smallest when achieving the best coverage, as shown in Fig 3-4.

1) The application scene of automatic channel adjustment with interference of radar

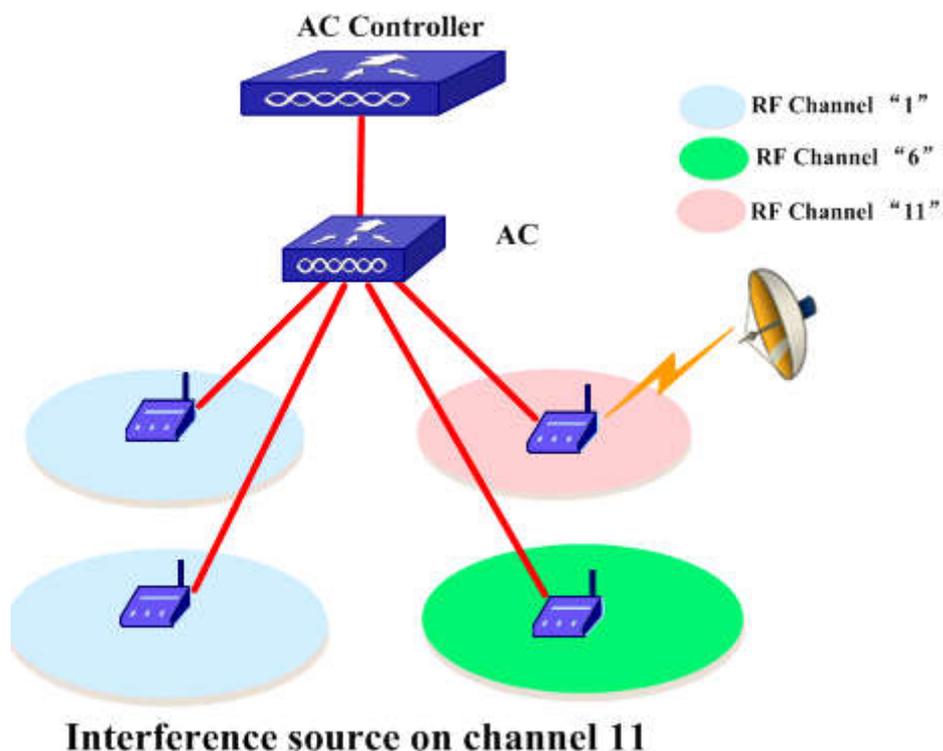


Fig 3-5 radar is on the same channel with AP in system

As shown in Fig 3-5, the AP in the upper right corner uses channel 11, but there is interference of radar on this channel when running. According to 802.11h standard provision, the same channel parameters with detection radar signal cannot be appoint to AP.

Then controller will adjust channels for relevant AP through automatic channeladjustment algorithm and the collection radio information of all AP in system. So as shown in Fig 3-6, the channel of the AP in upper right corner will be adjust from channel 11 to channel 1. At the same time, considering with system channels, the channel of AP in the lower left corner should be adjust from channel 1 to channel 11. Then the radio planning of the whole system is the best.

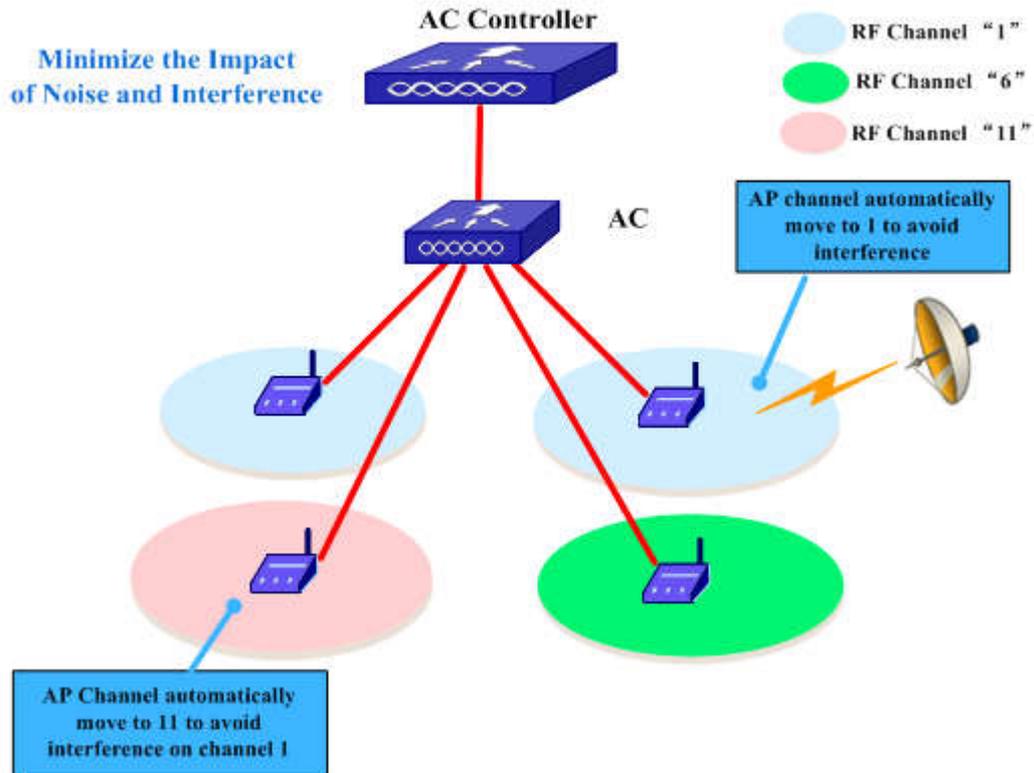


Fig 3-6 AP conducts to avoid automatic channel adjustment to interfere by radar

2) The application scene of automatic channel adjustment with illegal AP

As shown in Fig 3-7, there are 3 AP in system; they use channel 1, channel 6 and channel 11 apart. At this time, rogue AP appears in system, its working channel is channel 1.

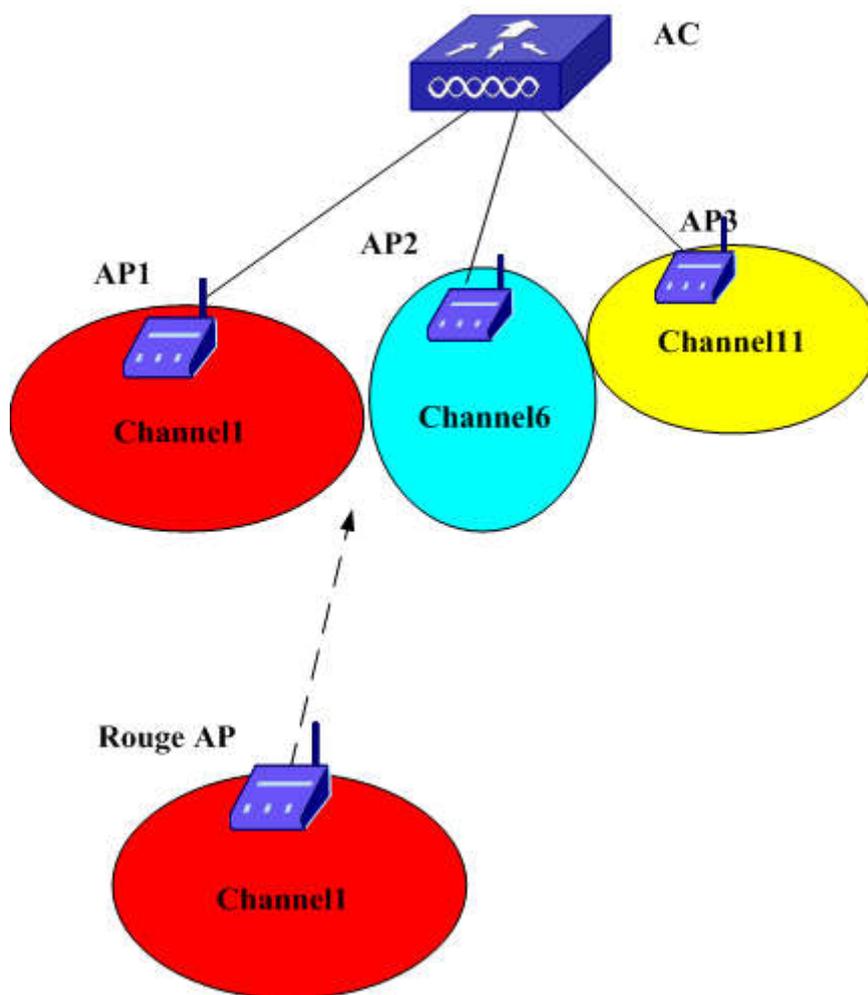


Fig 3-7 there are three AP in system, then a rogue AP appears
Controller conducts the channel adjustment and optimization. It adjusts the conflict
channel of AP1 to channel 11, as shown in Fig 3-8.

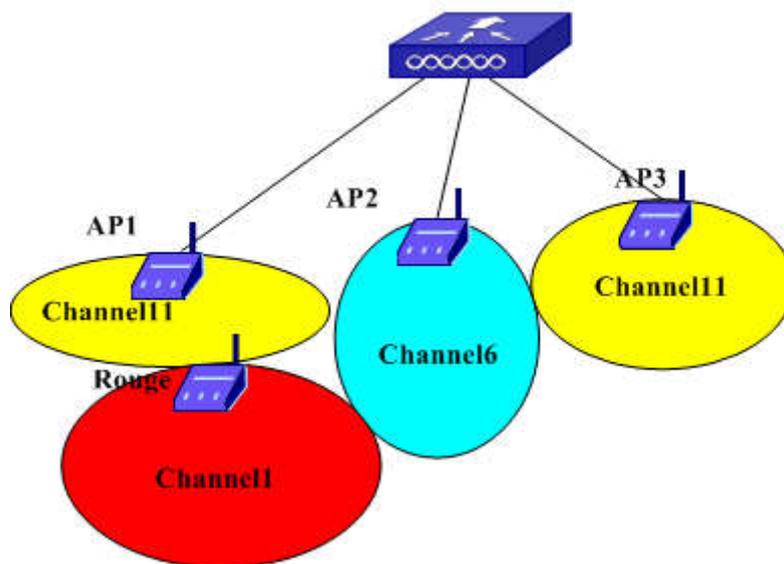


Fig 3-8 adjust channel of AP which is conflict with Rogue AP automatically

3.3 Automatic Channel Adjustment Configuration

Automatic channel adjustment configuration task list is as below:

1. Configure trigger method of automatic channel adjustment algorithm
2. Configure the relevant parameters of trigger method of automatic channel adjustment algorithm
3. Configure the relevant parameters of automatic channel adjustment

1. Configure trigger method of automatic channel adjustment algorithm

Command	Explanation
Wireless Global Mode	
channel-plan {an | bgn} mode {interval | manual | time}	Configure trigger method of automatic channel adjustment algorithm. It includes fixed time trigger, periodic trigger and manual trigger.

2. Configure the relevant parameters of trigger method of automatic channel adjustment algorithm

Command	Explanation
Wireless Global Mode	
channel-plan {an | bgn} interval <3-1440> no channel-plan {an | bgn} interval	Configure the automatic channel adjustment time interval. The no command recovers the channel adjustment interval in periodic trigger mode to be default of 30 (unit: minute).
channel-plan {an | bgn} time <hh:mm> no channel-plan {an | bgn} time	Configure fixed time of automatic channel adjustment. The no command recovers to be default of 00:00.
Admin Mode	
wireless channel-plan {an | bgn} {apply | clear | start}	When trigger mode is manual trigger, it needs to adjust the command and issue automatic channel adjustment algorithm manually.

3. Configure the relevant parameters of automatic channel adjustment

Command	Explanation
Wireless Global Mode	

<code>channel-plan {an | bgn} rssi-threshold <0-100></code> <code>no channel-plan {an | bgn} rssi-threshold</code>	Configure interference threshold of neighbors around. The no command recovers the threshold to be default of 10.
<code>channel-plan {an | bgn} err-threshold <0-100></code> <code>no channel-plan {an | bgn} err-threshold</code>	Configure the error threshold. The no command recovers to be default of 30%.
<code>channel-plan {an | bgn} history-depth <0-10></code> <code>no channel-plan {an | bgn} history-depth</code>	Configure history-depth of automatic channel adjustment. The no command recovers to be default of 5.

3.4 Automatic Channel Adjustment Configuration

Examples

Case:

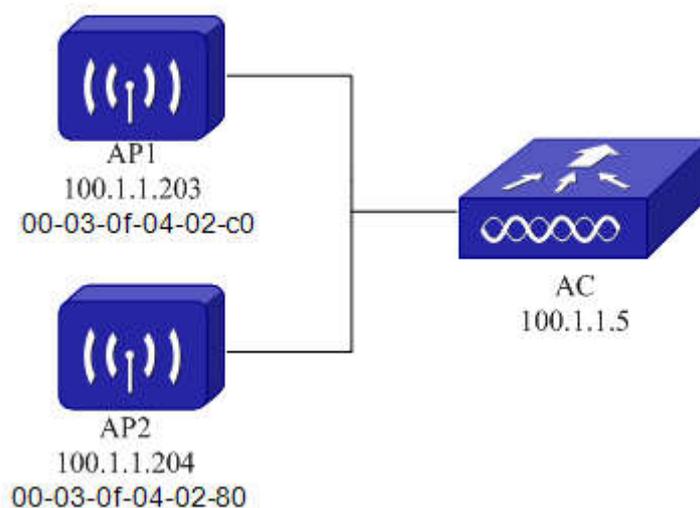


Fig 3-9 topology of automatic channel adjustment

1. Manual trigger configuration

There is the same channel between AP1 and AP2. Enable automatic channel adjustment of radio on AP and trigger channel adjustment algorithm manually.

Configuration steps are as below:

```
AC#config
```

```
AC(config)#wireless
```

```
AC(config-wireless)#ap profile 1
```

```
AC(config-ap-profile)#radio 1
```

AC(config-ap-profile-radio)#channel auto

AC(config-wireless)#channel-plan bgn mode manual

AC#wireless channel-plan bgn start

AC#show wireless ap radio status

MAC Address	Location	Radio	Channel	Transmit Power (%)	Auth. Clients
(*) Peer Managed					
00-03-0f-04-02-80		1	6	100	1
00-03-0f-04-02-c0		1	6	100	1

AC#show wireless channel-plan proposed bgn

Current Status..... Algorithm Completed

AP MAC Address	Location	Radio Channel	Current Channel	New Channel
00-03-0f-04-02-80		1	6	11

AC#wireless channel-plan bgn apply

AC#show wireless ap radio status

MAC Address	Location	Radio	Channel	Transmit Power (%)	Auth. Clients
(*) Peer Managed					
00-03-0f-04-02-80		1	11	100	1
00-03-0f-04-02-c0		1	6	100	1

2. Periodic trigger configuration

There is the same channel between AP1 and AP2. Enable automatic channel adjustment of radio on AP and enable periodic trigger channel adjustment function on AC manually. Configure the adjustment periodic as 8 minutes.

Configuration steps are as below:

AC#config

AC(config)#wireless

AC(config-wireless)#ap profile 1

AC(config-ap-profile)#radio 1

AC(config-ap-profile-radio)#channel auto

AC(config-wireless)#channel-plan bgn mode interval

AC(config-wireless)#channe-plan bgn interval 8

3. Fixed time trigger configuration

There is the same channel between AP1 and AP2. Enable automatic channel

adjustment of radio on AP and enable fixed trigger channel adjustment function on AC manually. Configure the trigger time as 14:00.

Configuration steps are as below:

```
AC#config
```

```
AC(config)#wireless
```

```
AC(config-wireless)#ap profile 1
```

```
AC(config-ap-profile)#radio 1
```

```
AC(config-ap-profile-radio)#channel auto
```

```
AC(config-wireless)#channel-plan bgn mode time
```

```
AC(config-wireless)#channel-plan bgn time 14:00
```

3.5 Automatic Channel Adjustment Configuration

Troubleshooting

If the automatic channel adjustment function cannot be achieved, please check out if it is wrong with reasons below:

- ☞ If the automatic channel adjustment function is enabled in radio mode.
- ☞ If the channel is fixed configured on AP. If configuring channel on AP, automatic channel adjustment would not be achieved.

Chapter 4 Automatic Power Adjustment

4.1 Introduction to Automatic Power Adjustment

The traditional radio power controlling method just configures the sending power as maximum and pursues the signal coverage only. But the large power may cause unnecessary interference to other wireless equipments. So choose a best power which is balance for coverage and system capacity.

Power adjustment means distributing the rational power automatically according to the wireless environment when the whole wireless network is running. When it runs the first time, it uses the default transmission power. At the same time, AC Controller will collect and analyze the radio scanning report in system to decide to crease or decrease the power.

APA (Automatic Power Adjustment) has two trigger modes: periodic trigger (the unit is minute and the range is from 15 to 1440), manual trigger.

When enable APA algorithm and the trigger method is not manual trigger, AC will enable black hole compensation (cell recover) function. Through APA algorithm, adjust sending power and compensate the black hole of radio coverage caused with fault or offline for neighbor AP.

The application scene of automatic power adjustment is as shown in Fig 4-1, there are 3 AP are in stable status in system. In this time, the middle AP goes wrong because of special reasons, the connection between AC and AP is broken. Then, the black hole appears in wireless coverage and the client in original coverage cannot work.

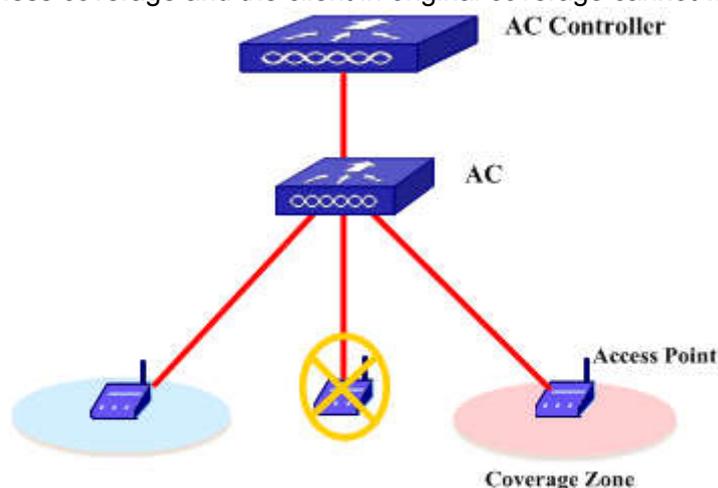


Fig 4-1 the middle AP goes wrong

After controller detecting this AP is failure, it adjusts the sending power of every AP

according to radio information of AP in system to make it achieve the best coverage. It compensates the black hole of signal of the original AP and makes sure the original client to work normally as much as possible. It is as shown in Fig 4-2.

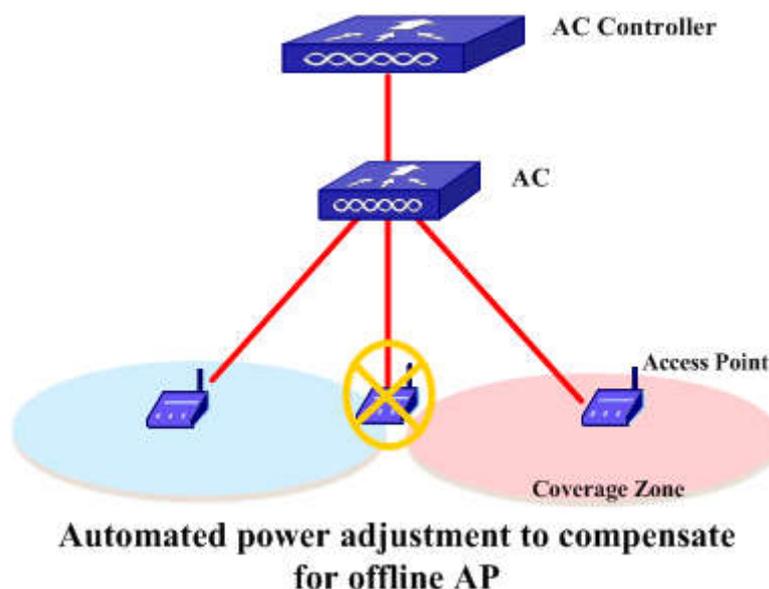


Fig 4-2 black hole compensation

4.2 Automatic Power Adjustment Configuration

Automatic power adjustment configure task list is as below:

1. Configure trigger method of automatic power adjustment algorithm
2. Configure the relevant parameters of trigger method of automatic power adjustment algorithm
3. Configure the relevant parameters of automatic power adjustment

1. Configure trigger method of automatic power adjustment algorithm

Command	Explanation
Wireless Global Mode	
power-plan mode {interval | manual}	Configure the algorithm trigger ways of automatic power adjustment. Periodic trigger or manual trigger.

2. Configure the relevant parameters of trigger method of automatic power adjustment algorithm

Command	Explanation
Wireless Global Mode	
power-plan interval <15-1440>	Configure the automatic power adjustment

no power-plan interval	cycle. The no command recovers to be default of 15.
Admin Mode	
wireless power-plan {apply | clear | start}	When the mode is manual trigger, the automatic adjustment command should be done manually.

3. Configure the relevant parameters of automatic power adjustment

Command	Explanation
Wireless Global Mode	
power-plan retry-threshold <1-100>	Configure the re-issued threshold. The no command recovers to be default of 5.
no power-plan retry-threshold	

4.3 Automatic Power Adjustment Configuration

Examples

Case:

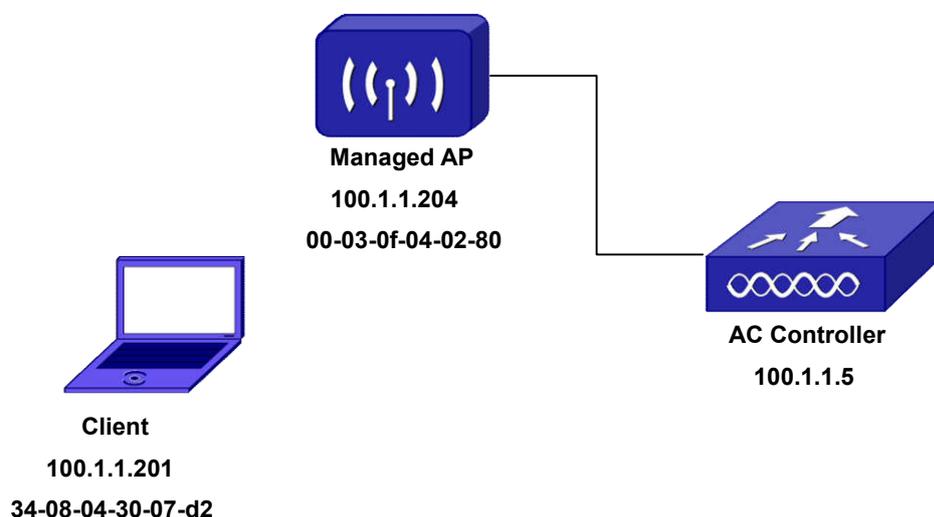


Fig 4-3 topology of automatic power adjustment

1. Manual trigger method

The transmission power of AP is smaller; there is always packets dropping phenomenon in client sending information. Now adjust transmission power of AP by

manual trigger method.

```
AC#config
```

```
AC(config)#wireless
```

```
AC(config-wireless)#ap profile 1
```

```
AC(config-ap-profile)#radio 1
```

```
AC(config-ap-profile-radio)#power auto
```

```
AC(config-wireless)#power-plan mode manual
```

```
AC#wireless power-plan start
```

```
AC#wireless power-plan apply
```

2. Periodic trigger method

The transmission power of AP is not stable, there is always packets dropping phenomenon in client sending information. Adjust transmission power once every 1 hour through periodic trigger method.

```
AC#config
```

```
AC(config)#wireless
```

```
AC(config-wireless)#ap profile 1
```

```
AC(config-ap-profile)#radio 1
```

```
AC(config-ap-profile-radio)#power auto
```

```
AC(config-wireless)#power-plan mode interval
```

```
AC(config-wireless)#power-plan interval 60
```

4.4 Automatic Power Adjustment Configuration

Troubleshooting

If automatic channel adjustment cannot be achieved, please check out if it is wrong with reasons below:

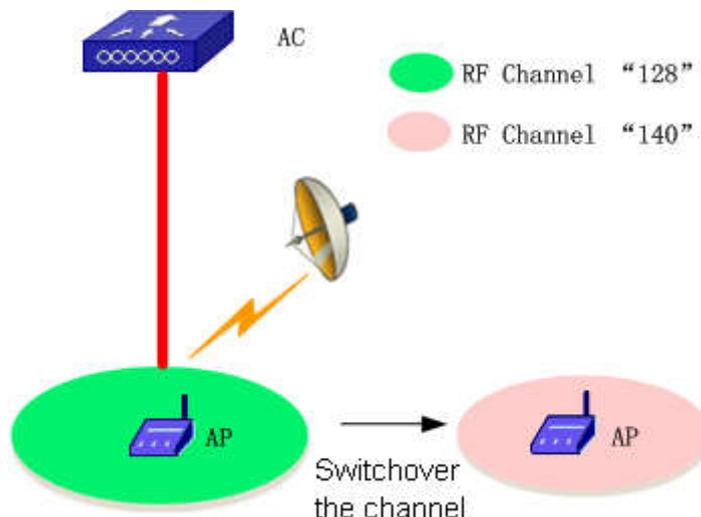
- ☞ If the automatic power adjustment function is enabled in radio mode.
- ☞ If the power is fixed configured on AP. If configuring power on AP, automatic power adjustment would not be achieved.
- ☞ Examine if the default power value achieves the maximum. If the default power value achieves the maximum, the power adjustment will not run.
- ☞ Black hole compensation is done in the mode of automatic power adjustment enabling. At the same time, it is done under periodic trigger method. The black hole compensation cannot be achieved under manual trigger method.

Chapter 5 DFS

5.1 Introduction to DFS

DFS (Dynamic Frequency Selection) is a kind of radio management function, it is used to avoid disturbing the 5GHz radar system and switchover the channel when detected the radar system. 5.25~5.35GHz and 5.47~5.725GHz are the working frequency ranges of the global radar system. For avoiding that the wireless device working in the 5GHz disturbs the radar system, the requirement of each country for DFS characters is added except the power, frequency spectrum and other regular items. Currently, North America, Europe, Canada, Australia, Japan and Korea have the compulsive requirement for DFS. The overlap channels of radar channel and 802.11a standard are: 5260MHz-5320MHz, 5500MHz-5700MHz.

Shown as below, AP and AC are associated. When AP works in channel 128, AP will scan the radar signal. If it scanned the radar signal, it will switchover the channel, this channel can be DFS channel or not. In the following figure, AP selects the channel 140. At the same time, AP can report the event to AC that it scanned the radar signal and switchovered the channel.



5.2 DFS Configuration

1. Show the radar information that the Radio detects on the managed AP.

Command	Explanation
Admin Mode	
show wireless ap <macAddr> radio	Show the radar information that the Radio

<1-2> radar status	detects on the managed AP.
--------------------	----------------------------

5.3 DFS Troubleshooting

When there are problems in using DFS function or the channel configuration, please check if the reason is as below:

- ☞ When using **wireless ap channel set < macAddr > radio <1-2> <channel>** to configure the working channel of 5G Radio on AC, if the configuration is not effective, please use **show wireless ap <macAddr> radio <1-2> radar status** to ensure whether the “Radar Detected Status” of the channel which needs to be configured is marked as “Yes”. Because AC can refuse to configure the channel with radar signal automatically.
- ☞ If user discovers AP does not work in the configured fixed channel under the ap database on AC, please use **show wireless ap <macAddr> radio <1-2> radar status** to ensure whether the “Radar Detected Status” of the channel which needs to be configured is marked as “Yes”. Because AP can avoid the channel which makes itself work in it with radar signal.