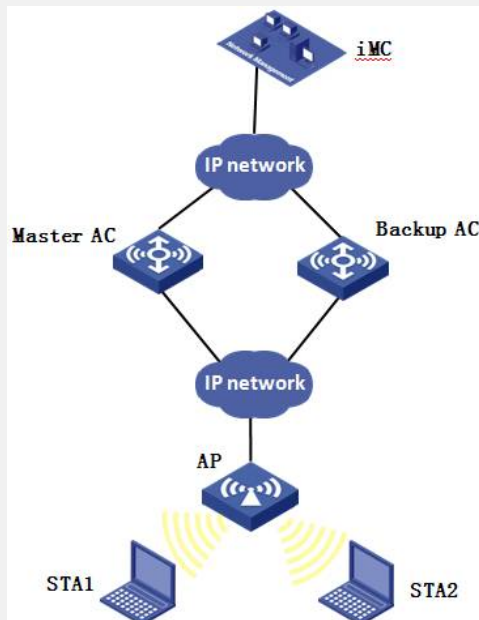


## 某局点无线办公网Android终端频繁漫游掉线问题处理方法

### 一、组网：

某行业局点使用我司两台WX5004 AC和68台WA2620i-AGN、WA2610H-GN AP提供两个SSID进行无线办公接入认证，XXXX-YG SSID 员工使用，使用802.1X认证，XXXX-Guest 访客使用，使用portal认证。



### 二、问题描述：

大厦领导及员工在使用Android系统终端接入XXXX-YG进行802.1X认证，在使用过程中会出现无线终端闪断问题，需要用户手工重新进行接入认证。

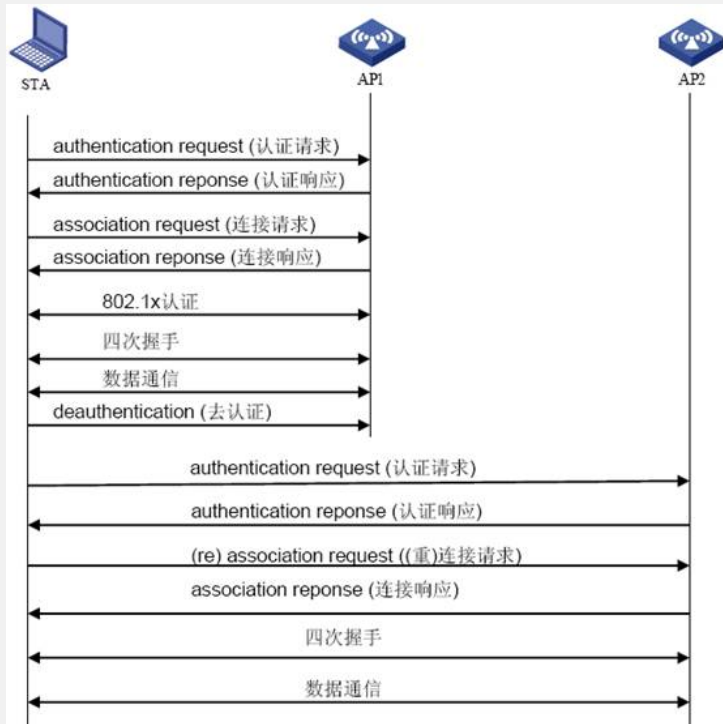
### 三、过程分析：

1、收集问题终端MAC地址（MAC：f8df-a884-1531），在AC后台监控终端接入状态。同时，在AC上收集下面debug信息：

```
debugging wlan mac all  
debugging port-security all  
debugging sc all  
debugging dot1x all  
debugging radius packet  
t m  
t d
```

2、在AC上使用display wlan client mac-address f8df-a884-1531 verbos、display wlan client roam-track mac-address f8df-a884-1531命令监控终端与AP关联状态及终端在AC上的漫游信息。在AC后台监控期间发现，问题终端与AP之间的关联时间很短，且在不同AP之间频繁发生漫游切换。

3、在故障复现后停止收集debug信息，并分析收集上来的debug信息，分析上面的debug信息发现终端在不同AP之间不断地漫游切换。终端在不同AP之间漫游切换时涉及终端与老AP断开关联及新AP重新关联认证的过程。终端进行快速漫游时802.1X认证涉及重认证过程如下：



在终端快速漫游出现时，几十毫秒时间内完成终端断开重认证过程，如下图所示：

```

2816 *Nov 6 11:09:11:182 2013 UTIS-WX5004-1 WPA2/6/WPA2 CLIENT DOES OFFLINE: Client f8df-a894-1531 disconnected from WLAN Backseat-US. Reason code is 65534.
2817 *Nov 6 11:09:11:183 2013 UTIS-WX5004-1 WPA2/6/WPA2 CLIENT JOIN WLAN: Client f8df-a894-1531 successfully joins WLAN Backseat-US, on APID 242 with SSID 7425-8a55-d
2818 *Nov 6 11:09:11:183 2013 UTIS-WX5004-1 WPA2/7/FRAME: Frame received from station... MAC address : f8df-a894-1531.
2819 *Nov 6 11:09:11:184 2013 UTIS-WX5004-1 WPA2/7/EVENT: Allocate AID (1) for STA f8df-a894-1531 successfully
2820 *Nov 6 11:09:11:185 2013 UTIS-WX5004-1 WPA2/7/EVENT: Delete mobile (f8df-a894-1531) sent
2821 *Nov 6 11:09:11:185 2013 UTIS-WX5004-1 WPA2/7/EVENT: De-allocate AID (127) for STA f8df-a894-1531 successfully.
2822 *Nov 6 11:09:11:185 2013 UTIS-WX5004-1 WPA2/7/EVENT: Add mobile (f8df-a894-1531) sent
2823 *Nov 6 11:09:11:188 2013 UTIS-WX5004-1 WPA2/7/FRAME: Frame received from station... MAC address : f8df-a894-1531
2824 *Nov 6 11:09:11:188 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully
2825 *Nov 6 11:09:11:189 2013 UTIS-WX5004-1 WPA2/7/EVENT: 4-way handshake FSM changes state, idle -> prepare for client f8df-a894-1531
2826 *Nov 6 11:09:11:189 2013 UTIS-WX5004-1 WPA2/7/FRAME: Frame received from station... MAC address : f8df-a894-1531
2827 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully
2828 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: 4-way handshake FSM state is changed, prepare -> idle to resend message for client f8df-a894-1531
2829 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully
2830 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: 4-way handshake FSM changes state, idle -> prepare for client f8df-a894-1531
2831 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully
2832 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: 4-way handshake FSM state is changed, prepare -> idle to resend message for client f8df-a894-1531
2833 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully
2834 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: 4-way handshake FSM changes state, idle -> prepare for client f8df-a894-1531
2835 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully
2836 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: 4-way handshake FSM state is changed, prepare -> idle to resend message for client f8df-a894-1531
2837 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully
2838 *Nov 6 11:09:11:191 2013 UTIS-WX5004-1 WPA2/7/EVENT: 4-way handshake FSM changes state, idle -> prepare for client f8df-a894-1531
2839 *Nov 6 11:09:12:003 2013 UTIS-WX5004-1 WPA2/7/FRAME: Frame received from station... MAC address : f8df-a894-1531
2840 *Nov 6 11:09:12:007 2013 UTIS-WX5004-1 WPA2/7/FRAME: Frame received from station... MAC address : f8df-a894-1531
2841 *Nov 6 11:09:12:043 2013 UTIS-WX5004-1 WPA2/7/ERROR: Received invalid 4-way handshake message from client f8df-a894-1531. Wrong reply: control
2842 *Nov 6 11:09:12:043 2013 UTIS-WX5004-1 WPA2/7/ERROR: Received invalid EAPOL-REQ frame from client f8df-a894-1531. Status: 0
2843 *Nov 6 11:09:12:043 2013 UTIS-WX5004-1 WPA2/7/EVENT: Received EAPOL-REQ frame from client f8df-a894-1531 is successfully handled
2844 *Nov 6 11:09:12:050 2013 UTIS-WX5004-1 WPA2/7/ERROR: Received invalid 4-way handshake message from client f8df-a894-1531. Wrong reply: control
2845 *Nov 6 11:09:12:051 2013 UTIS-WX5004-1 WPA2/7/ERROR: Received invalid EAPOL-REQ frame from client f8df-a894-1531. Status: 0
2846 *Nov 6 11:09:12:051 2013 UTIS-WX5004-1 WPA2/7/EVENT: Received EAPOL-REQ frame from client f8df-a894-1531 is successfully handled
2847 *Nov 6 11:09:12:056 2013 UTIS-WX5004-1 WPA2/7/ERROR: Received invalid 4-way handshake message from client f8df-a894-1531. Wrong reply: control
2848 *Nov 6 11:09:12:057 2013 UTIS-WX5004-1 WPA2/7/ERROR: Received invalid EAPOL-REQ frame from client f8df-a894-1531. Status: 0
2849 *Nov 6 11:09:12:057 2013 UTIS-WX5004-1 WPA2/7/EVENT: Received EAPOL-REQ frame from client f8df-a894-1531 is successfully handled
2850 *Nov 6 11:09:12:059 2013 UTIS-WX5004-1 WPA2/7/EVENT: Received valid 4-way handshake message from client f8df-a894-1531
2851 *Nov 6 11:09:12:059 2013 UTIS-WX5004-1 WPA2/7/EVENT: Sent 4-way handshake message to station f8df-a894-1531 successfully

```

正常情况下终端断开重认证过程用户在无感知情况下很快就会完成，但如上图所示，在快速漫游切换过程中802.1X认证四次握手期间，AP会向终端发送握手报文message1，如果终端给AP回应message2，则握手过程继续，如果失败，则AP会向终端再发送2次握手报文message1。如果终端给AP回应message2，则握手过程继续，如果再次握手失败，则802.1X认证断开。所以，大厦无线办公网802.1X认证四次握手失败的原因如下：

？四次握手报文交互时间只有几十毫秒时间，终端在快速漫游期间在新老AP重叠区域信号较差，无线报文传输过程中出现大延迟及丢包问题，导致报文在传输过程中被丢弃，进而导致四次握手失败。

？个别无线终端在四次握手期间不回应AP发送的message报文，四次握手失败，最终导致802.1X认证失败。

在AC上查看问题终端信号强度RSSI只有22，远低于正常无线终端接入时的信号强度RSSI>30。至此，大厦无线办公网终端频繁掉线问题定位是由于手机终端无线网卡发射功率比正常PC机网卡要低，对信号强度要求高，但问题终端所属区域为AP覆盖重叠的弱信号区域，手机终端在多台AP之间来回漫游切换，导致终端掉线问题发生。

#### 四、解决方法：

- 1) 在手机终端感知为弱信号的区域新增AP点位，满足终端信号覆盖需求；
- 2) 优化AC上配置，删除AC上漫游导航及客户端断开重关联功能，避免客户端频繁出现上下线问题。