

# 知 某局点CPE5100每天都会出现断网问题

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## 组网及说明

设备型号和版本：CPE5100 ESS1103 插入5G SIM卡附着运营商5G网络，通过运营商N6接口后与园区AC相通，并以fit模式运行

## 告警信息

## 问题描述

查看logfile中CPE的信息，问题发生时候为9月10日19:15左右，看的是和基站断开连接了，此时只有重启才能重新附着：

```
%@2462%Sep 12 08:30:43:512 2023 H3C SYSLOG/6/SYSLOG_RESTART: System restarted --
H3C Comware Software.
%@2463%Sep 12 08:31:21:911 2023 H3C IFNET/3/PHY_UPDOWN: Physical state on the interface
WLAN-Radio1/0/1 changed to up.
%@2464%Sep 12 08:31:21:912 2023 H3C IFNET/3/PHY_UPDOWN: Physical state on the interface
WLAN-Radio1/0/2 changed to up.
%@2465%Sep 12 08:31:23:264 2023 H3C STAMGR/6/SERVICE_ON: BSS 54c6-ff42-f6e0 was crea
ted after service template 1 with SSID H3C was bound to radio 1 on AP fatap.
%@2466%Sep 12 08:31:23:879 2023 H3C STAMGR/6/SERVICE_ON: BSS 54c6-ff42-f6f0 was creat
ed after service template 1 with SSID H3C was bound to radio 2 on AP fatap.
%@2467%Sep 12 08:31:32:216 2023 H3C IFNET/3/PHY_UPDOWN: Physical state on the interface
Vlan-interface1 changed to up.
%@2468%Sep 12 08:31:32:220 2023 H3C IFNET/5/LINK_UPDOWN: Line protocol state on the
interface Vlan-interface1 changed to up.
%@2469%Sep 12 08:31:32:228 2023 H3C STAMGR/6/STAMGR_CLIENT_ONLINE: Client a41a-3a
e0-302e went online from BSS 54c6-ff42-f6f0 vlan 1 with SSID H3C on AP fatap Radio ID 2. State ch
anged to Run.
%@2470%Sep 12 08:31:32:236 2023 H3C STAMGR/6/STAMGR_CLIENT_SNOOPING: Detected cli
ent IP change: Client MAC: a41a-3ae0-302e, IP: 192.168.8.4, -NA-, -NA-, -NA-, Username: -NA-, AP
name: fatap, Radio ID: 2, Channel number: 6, SSID: H3C, BSSID: 54c6-ff42-f6f0.
%@2471%Sep 12 08:31:35:304 2023 H3C NTP/5/NTP_LEAP_CHANGE: System Leap Indicator cha
nged from 3 to 0 after clock update.
%@2472%Sep 12 08:31:35:304 2023 H3C NTP/5/NTP_STRATUM_CHANGE: System stratum chan
ged from 16 to 8 after clock update.
%@2473%Sep 12 08:31:38:458 2023 H3C CELLULAR/4/DEV_INSERTED: Controller Cellular1/0/1:
Modem device is inserted.
%@2474%Sep 12 08:31:38:459 2023 H3C IFNET/3/PHY_UPDOWN: Physical state on the interface
Cellular1/0/1 changed to up.
%@2475%Sep 12 08:31:38:464 2023 H3C IFNET/3/PHY_UPDOWN: Physical state on the interface
Async1/0/1 changed to up.
%@2476%Sep 12 08:31:41:475 2023 H3C IFNET/3/PHY_UPDOWN: Physical state on the interface
GigabitEthernet1/0/1 changed to up.
%@2477%Sep 12 08:31:41:475 2023 H3C IFNET/5/LINK_UPDOWN: Line protocol state on the
interface GigabitEthernet1/0/1 changed to up.
%@2478%Sep 12 08:32:04:461 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
```

## 过程分析

- 1、从log中看到了大量的4G 5G切换信息，怀疑5网络波动导致CPE会切换到4G

```
Controller Cellular1/0/1: The network connection switched to 4G.
%2335%Sep 10 04:07:30:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
%2336%Sep 10 04:07:50:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 4G.
%2337%Sep 10 04:08:10:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
%2338%Sep 10 04:08:20:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 4G.
%2339%Sep 10 04:08:50:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
%2340%Sep 10 04:09:20:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 4G.
%2341%Sep 10 04:09:30:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
%2342%Sep 10 04:09:40:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 4G.
%2343%Sep 10 04:09:50:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
%2344%Sep 10 04:10:10:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 4G.
%2345%Sep 10 04:11:00:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
%2346%Sep 10 04:11:10:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 4G.
%2347%Sep 10 04:12:00:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
%2348%Sep 10 04:12:10:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 4G.
%2349%Sep 10 04:13:40:074 2023 H3C CELLULAR/5/CELLULAR:
Controller Cellular1/0/1: The network connection switched to 5G.
```

2. 从log中看到了大量10分钟超时重启的信息，这种情况只会发生在FIT模式下连接不上AC的场景，当AP与AC断联后，间隔10min重启为正常现象

```
Line 31: %244Sep 28 00:10:02:285 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 94: %276Sep 28 00:20:05:978 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 118: %296Sep 28 00:30:10:072 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 166: %328Sep 28 00:40:14:095 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 197: %356Sep 28 00:50:18:191 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 242: %391Sep 28 01:00:22:055 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 273: %415Sep 28 01:10:26:011 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 304: %439Sep 28 01:20:30:059 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 335: %463Sep 28 01:30:34:175 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 366: %487Sep 28 01:40:38:012 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 397: %511Sep 28 01:50:42:303 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 428: %535Sep 28 02:00:46:037 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 465: %569Sep 28 02:10:50:115 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 498: %602Sep 28 02:20:54:113 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 511: %614Sep 28 02:30:58:121 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 534: %637Sep 28 02:41:01:999 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
Line 557: %660Sep 28 02:51:06:090 2022 H3C CWC/6/CWC_AP_REBOOT: AP in state Discovery is rebooting. Reason: Stayed in idle state for a long time.
```

3、问题时间点存在数据不通的情况：

```
%2443%Sep 10 19:11:12:993 2023 H3C NTP/5/NTP_SOURCE_LOST: Lost synchronization with
NTP server with IP address 0.0.0.0.
%2444%Sep 10 19:11:35:993 2023 H3C NTP/5/NTP_LEAP_CHANGE: System Leap Indicator cha
nged from 3 to 0 after clock update.
%2445%Sep 10 19:11:35:993 2023 H3C NTP/5/NTP_STRATUM_CHANGE: System stratum chan
ged from 16 to 3 after clock update.
%2446%Sep 10 19:14:47:993 2023 H3C NTP/5/NTP_SOURCE_LOST: Lost synchronization with
NTP server with IP address 0.0.0.0.
%2447%Sep 10 19:15:09:993 2023 H3C NTP/5/NTP_LEAP_CHANGE: System Leap Indicator cha
nged from 3 to 0 after clock update.
%2448%Sep 10 19:15:09:993 2023 H3C NTP/5/NTP_STRATUM_CHANGE: System stratum chan
ged from 16 to 8 after clock update.
```

这种数据面不通，且4G与5G频繁切换的现象，同时通过display cellular命令查看无相关的radio信息，确认为之前模组版本的软件已知问题，需升级模组版本解决，具体查看如下Modem Firmware Version: 500QCNAAR12A08M4G，如果不符合以下两种版本，需更新：

```
可以选择任一版本使用：
RG200UCNAAR03A01M2G
RG200UCNAAR03A03M2G
```

```
<H3C>display cellular
Cellular1/0/1:
```

Hardware Information:

Model: RM500Q-CN

Manufacturer: Quectel

Modem Firmware Version: 500QCNAAR12A08M4G

Hardware Version:

International Mobile Subscriber Identity (IMSI): 4600782227XXXX

International Mobile Equipment Identity (IMEI): 865087050288423

Modem Status: Online

Profile Information:

Profile index: 1

PDP Type: IPv4v6

Header Compression: Off  
Data Compression: Off  
Access Point Name (APN): cmnet  
Profile index: 2  
PDP Type: IPv4v6  
Header Compression: Off  
Data Compression: Off  
Access Point Name (APN): ims  
Profile index: 3  
PDP Type: IPv4v6  
Header Compression: Off

#### 解决方法

升级模组固件软件（版本向无线L3产线获取），首先将CPE中无用文件删除，保证可用空间在400M以上，然后使用tftp或者ftp工具将固件包传到flash目录，上传完毕后重启CPE，CPE会完成自动升级，升级过程中不要给CPE断电。固件写入完成后，CPE会自动重启2次，并有如下打印记录：

```
During modem firmware updating, powering off of device is forbidden.  
%Feb 28 06:02:47:490 2024 H3C MODEM/2/MODEM_FIRMWARE_UPDATE_START: Modem  
firmware update is starting...  
%Feb 28 06:02:47:492 2024 H3C MODEM/5/MODEM_FIRMWARE_UPDATE_PROGRESS: The mo  
dem firmware has been updated by 0%  
%Feb 28 06:02:53:503 2024 H3C MODEM/5/MODEM_FIRMWARE_UPDATE_PROGRESS: The mo  
dem firmware has been updated by 20%  
%Feb 28 06:03:47:358 2024 H3C MODEM/5/MODEM_FIRMWARE_UPDATE_PROGRESS: The mo  
dem firmware has been updated by 70%  
%Feb 28 06:03:47:358 2024 H3C MODEM/5/MODEM_FIRMWARE_UPDATE_SUCCESS: Modem fi  
rmware update is successful.
```

升级后可稳定注册5G网络中并显示详细radio信息

```
Network Information:  
  
Current Service Status: Service available  
  
Packet Service: Attached  
  
Current Data Bearer Technology: 5G SA  
  
Network Selection Mode: Automatic  
  
Mobile Network Name: CHINA MOBILE  
  
Mobile Country Code (MCC): 460  
  
Mobile Network Code (MNC): 00  
  
Cell ID: 793657345  
  
Radio Information:  
  
Technology Preference: Auto (NR)  
  
Technology Selected: NR  
  
Current Band Number: 41  
  
Current BandWidth: 100MHZ  
  
Current RSRQ: -11dB  
  
Current RSRP: -71dBm  
  
Current SINR: 31dB  
  
Current LTE Band: 1:3:5:8:34:38:39:40:41  
  
Current NR Band: 1:28:41:78:79
```