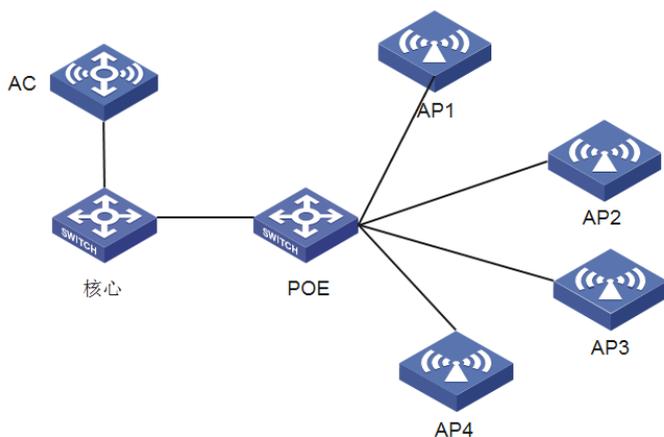


某局点S7610交换机下连终端获取地址异常问题处理经验案例

DHCP/DHCP Relay 俞璇 2019-03-14 发表

组网及说明

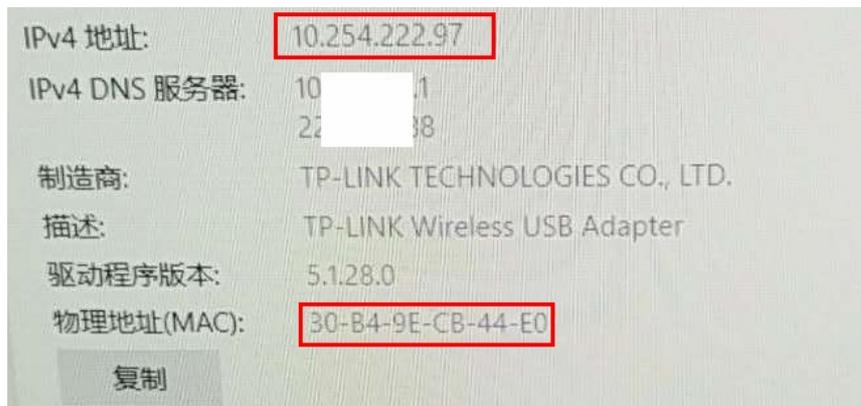


S7610作为业务网关和DHCP SERVER。

问题描述

终端关联无线后，在网卡上能够看到IP地址，但无法正常通过认证访问网络。在S7610上查看此IP地址分配给其他终端使用，非此关联终端。

终端上看到的ip地址：



设备上ip分配情况：

10.254.222.97 0c70-4a58-44df Dec 24 2018 17:11:09 Auto:COMMITTED

在S7610上debugging dhcp server all 可以看到设备一直收到DHCP request报文但一直未响应。

*Dec 24 15:52:28:772 2018 FSZX-S7610-SW DHCP/7/DHCPS_PACKET:

Rx, interface Vlan-interface1133

Message type: request

Hardware type: 1, Hardware address length: 6

Hops: 0, Transaction ID: 1484497364

Seconds: 0, Broadcast flag: 1

Client IP address: 0.0.0.0 Your IP address: 0.0.0.0

Server IP address: 0.0.0.0 Relay agent IP address: 0.0.0.0

Client hardware address: 30b4-9ecb-44e0

Server host name: Not Configured, Boot file name: Not Configured

DHCP message type: DHCP Request

过程分析

经确认，request报文分两种，一种是offer之后的回应，一种是续费报文。这两种是不一样的，请看下面的对比：

类型一、收到offer报文后，发送request广播报文进一步确认，同时通知其他dhcp服务器已经收到租约，如下所示：

```
▷ Frame 7: 590 bytes on wire (4720 bits), 590 bytes captured (4720 bits)
▷ Ethernet II, Src: 06:ea:cd:18:2f:31 (06:ea:cd:18:2f:31), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
▷ Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
▷ User Datagram Protocol, Src Port: 68 (68), Dst Port: 67 (67)
└─ Bootstrap Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0x6ebd473b
  Seconds elapsed: 0
  ▷ Bootp flags: 0x0000 (Unicast)
  Client IP address: 0.0.0.0
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 0.0.0.0
  Client MAC address: 06:ea:cd:18:2f:31 (06:ea:cd:18:2f:31)
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  └─ Option: (53) DHCP Message Type (Request)
    Length: 1
    DHCP: Request (3)
  └─ Option: (61) Client identifier
    Length: 7
    Hardware type: Ethernet (0x01)
    Client MAC address: 06:ea:cd:18:2f:31 (06:ea:cd:18:2f:31)
  ▷ Option: (60) Vendor class identifier
  └─ Option: (50) Requested IP Address
    Length: 4
    Requested IP Address: 2.5.5.6
  └─ Option: (54) DHCP Server Identifier
    Length: 4
    DHCP Server Identifier: 2.5.5.5
  ▷ Option: (55) Parameter Request List
```

类型二、在租约的0.5倍时间上，发送request单播报文续约，如下所示：

```
▷ Frame 3: 590 bytes on wire (4720 bits), 590 bytes captured (4720 bits)
▷ Ethernet II, Src: 06:ea:cd:18:2f:31 (06:ea:cd:18:2f:31), Dst: 06:ea:cd:18:2f:30 (06:ea:cd:18:2f:30)
▷ Internet Protocol Version 4, Src: 2.5.5.6, Dst: 2.5.5.5
▷ User Datagram Protocol, Src Port: 68 (68), Dst Port: 67 (67)
└─ Bootstrap Protocol (Request)
  Message type: Boot Request (1)
  Hardware type: Ethernet (0x01)
  Hardware address length: 6
  Hops: 0
  Transaction ID: 0x7480c12f
  Seconds elapsed: 0
  ▷ Bootp flags: 0x0000 (Unicast)
  Client IP address: 2.5.5.6
  Your (client) IP address: 0.0.0.0
  Next server IP address: 0.0.0.0
  Relay agent IP address: 0.0.0.0
  Client MAC address: 06:ea:cd:18:2f:31 (06:ea:cd:18:2f:31)
  Client hardware address padding: 00000000000000000000
  Server host name not given
  Boot file name not given
  Magic cookie: DHCP
  └─ Option: (53) DHCP Message Type (Request)
    Length: 1
    DHCP: Request (3)
  └─ Option: (61) Client identifier
    Length: 7
    Hardware type: Ethernet (0x01)
    Client MAC address: 06:ea:cd:18:2f:31 (06:ea:cd:18:2f:31)
  ▷ Option: (60) Vendor class identifier
  └─ Option: (55) Parameter Request List
```

类型一、二有啥区别？dhcp server在接收到此两种类型的报文后，处理是否相同呢？

类型一存在option 50、54，而不存在client ip (bootp flag)；

类型二不存在option 50、54，而存在client ip (bootp flag)；

原因：

在offer的确认，client其实还不能确定该ip能否真正能为自己所用，还需要等待server 回复ack；

而0.5倍单播request续约时，不需要携带option 50、54，默认该ip已经为自己所用，即在client ip (bootp flag) 填写即可

在0.85倍广播request续约时，不同于0.5倍单播续约，存在client ip (bootp flag) 和option 50，而不存在option 54（因为client默认server已经丢失）

dhcp server在收到此类报文时，均对两种情况进行了检查，也即如果

- 1、option 50、54与server中租约信息相符合，则回复ack报文
- 2、client ip (bootp flag) 与server ip相符合，则回复ack报文
- 3、option 54不存在，option 50与本地租约符合，也可回复ack报文（即有可能单播续约包没有及时收到）

而故障终端发送的request报文既不属于类型一也不属于类型二，是不规范的报文，所以交换机不响应

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解决方法

协调终端网卡厂商处理解决。