巧用流量统计判断网络丢包位置的配置举例

进程监控和维护配置　王森森　2014-03-25 发表

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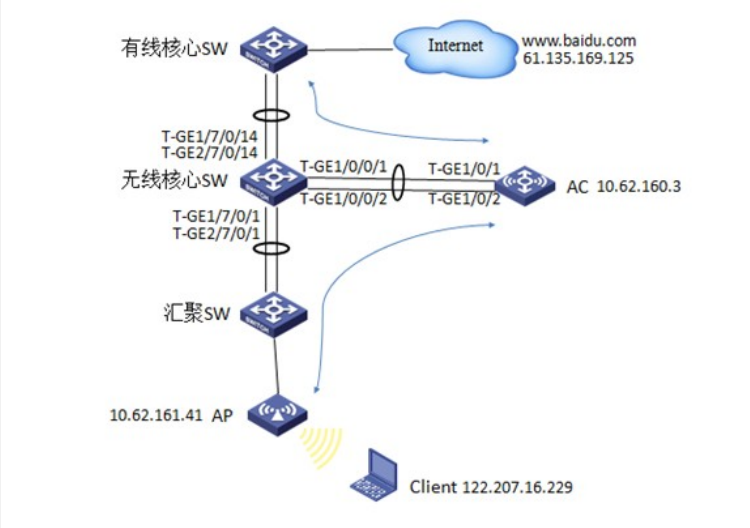
一、组网图：



某局点组网由有线核心交换机、无线核心交换机、汇聚交换机、AC、AP组成，设备之间的物理端口连接如图。IP地址情况：AC为10.62.160.3，AP为10.62.161.41，无线终端为122.207.16.229，在无线终端上ping www.baidu.com，DNS解析百度服务器IP地址为61.135.169.125。AC、AP之间为集中转发。

二、举例一：定位AC向AP发送的Discovery Response报文的丢包位置

1．流量统计前的定位简介

现网发现AP（10.62.161.41）不能正常注册在AC（10.62.160.3）上，AP、AC上同时开启debugging wlan lwapp all显示：AP向AC发送了Discovery Request报文，AC收到了AP发送的Discovery Request报文并向AP发送了Discovery Response报文，但AP未收到AC发送的Discovery Response的报文。需要定位AC向AP发送的Discovery Response报文的丢包位置。

AP上debugging wlan lwapp all信息显示：

*Feb 19 16:04:17:349 2014 wyl-3f-3 LWPC/7/Pkt_Send:
Sent Discovery Request to 10.62.160.3 (Length: 171)
*Feb 19 16:04:34:349 2014 wyl-3f-3 LWPC/7/Pkt_Send:
Sent Discovery Request to 10.62.160.3 (Length: 171)
*Feb 19 16:04:48:349 2014 wyl-3f-3 LWPC/7/Pkt_Send:
Sent Discovery Request to 10.62.160.3 (Length: 171)

AC上debugging wlan lwapp all信息显示：

*Feb 19 16:04:44:117 2014 AC2-Backup LWPS/7/Pkt_Rcvd:
Received Discovery Request from 10.62.161.41 (Length: 171)(to 10.62.160.3)
*Feb 19 16:04:44:119 2014 AC2-Backup LWPS/7/Pkt_Send:
Sent Discovery Response to 10.62.161.41 (Length: 61)(from 10.62.160.3)
*Feb 19 16:05:15:119 2014 AC2-Backup LWPS/7/Pkt_Rcvd:
Received Discovery Request from 10.62.161.41 (Length: 171)(to 10.62.160.3)
*Feb 19 16:05:15:121 2014 AC2-Backup LWPS/7/Pkt_Send:
Sent Discovery Response to 10.62.161.41 (Length: 61)(from 10.62.160.3)
*Feb 19 16:05:43:621 2014 AC2-Backup LWPS/7/Pkt_Rcvd:
Received Discovery Request from 10.62.161.41 (Length: 171)(to 10.62.160.3)
*Feb 19 16:05:43:623 2014 AC2-Backup LWPS/7/Pkt_Send:
Sent Discovery Response to 10.62.161.41 (Length: 61)(from 10.62.160.3)

2．流量统计

AC上流量统计配置：

#

acl number 3001 //创建ACL 3001，匹配源IP地址为10.62.160.3（AC）、目的IP地址为10.62.161.41（AP）的报文。

rule 0 permit ip source 10.62.160.3 0 destination 10.62.161.41 0

#

traffic classifier 1 operator and //创建类1，匹配规则ACL 3001。

if-match acl 3001

#

traffic behavior 1 //创建流行为1，流行为为过滤动作允许。AC由于硬件芯片原因暂时不支持流量统计，通过过滤动作允许进行统计。

filter permit

#

qos policy 1 //创建策略1，指定类1采用流行为1。

classifier 1 behavior 1

#

interface Ten-GigabitEthernet1/0/1 //接口上应用QoS策略1，并指定应用方向。

qos apply policy 1 outbound

#

interface Ten-GigabitEthernet1/0/2

qos apply policy 1 outbound

无线核心交换机上流量统计配置：

#

acl number 3001

rule 0 permit ip source 10.62.160.3 0 destination 10.62.161.41 0

#

traffic classifier 1 operator and

if-match acl 3001

#

traffic behavior 1 //创建流行为1，流行为为基于包为单位对报文进行统计。

accounting

#

qos policy 1

classifier 1 behavior 1

#

interface Ten-GigabitEthernet1/0/0/1

qos apply policy 1 inbound

#

interface Ten-GigabitEthernet1/0/0/2

qos apply policy 1 inbound

#

interface Ten-GigabitEthernet1/7/0/1

qos apply policy 1 outbound

#

interface Ten-GigabitEthernet2/7/0/1

qos apply policy 1 outbound

AC上流量统计结果显示：

display qos policy interface

Interface: Ten-GigabitEthernet1/0/1

Direction: Outbound

Policy: 1

Classifier: 1

Matched : 0(Packets) 0(Bytes)

Operator: AND

Rule(s) : If-match acl 3001
Behavior: 1
Filter Enable: permit

Interface: Ten-GigabitEthernet1/0/2

Direction: Outbound

Policy: 1
Classifier: 1
Matched : 31(Packets) 3600(Bytes)
Operator: AND
Rule(s) : If-match acl 3001
Behavior: 1
Filter Enable: permit

无线核心交换机上流量统计显示：

display qos policy interface

Interface: Ten-GigabitEthernet1/7/0/1

Direction: Outbound

Policy: 1
Classifier: 1
Operator: AND
Rule(s) : If-match acl 3001
Behavior: 1
Accounting Enable:
0 (Packets)

Interface: Ten-GigabitEthernet1/0/0/1

Direction: Inbound

Policy: 1
Classifier: 1
Operator: AND
Rule(s) : If-match acl 3001
Behavior: 1
Accounting Enable:
0 (Packets)

Interface: Ten-GigabitEthernet1/0/0/2

Direction: Inbound

Policy: 1
Classifier: 1
Operator: AND
Rule(s) : If-match acl 3001
Behavior: 1
Accounting Enable:
31 (Packets)

Interface: Ten-GigabitEthernet2/7/0/1

Direction: Outbound

Policy: 1

Classifier: 1

Operator: AND

Rule(s) : If-match acl 3001

Behavior: 1

Accounting Enable:

0 (Packets)

备注：

通过用户视图下的reset counters interface命令清空流量统计信息。

结论：

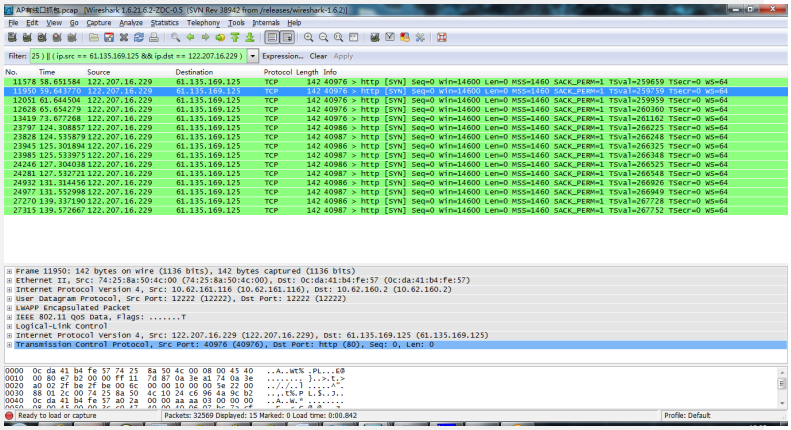
AC向无线核心交换机发送了31个报文，无线核心交换机从AC收到了31个报文，但无线核心交换机未向AP连接的汇聚交换机发送报文，即AC向AP发送的Discovery Response报文丢在了无线核心交换机上。

三、举例二：定位无线终端访问百度网页时，百度服务器向无线终端发送报文的丢包位置

1．流量统计前的定位简介

现网发现某无线终端（122.207.16.229）无法访问网页（以百度网页为例），另外一个关联同AP的无线终端ping www.baidu.com可以ping通，DNS解析百度服务器IP地址为61.135.169.125。在无线终端所关联AP的有线口抓包（AP上联的接入交换机上做本地镜像），过滤无线终端与百度服务器之间的交互报文(ip.src == 122.207.16.229 && ip.dst == 61.135.169.125) || (ip.src == 61.135.169.125 && ip.dst == 122.207.16.229)，发现无线终端向百度服务器发送的TCP连接未得到回应，需定位百度服务器向无线终端发送报文的丢包位置。

无线终端与百度服务器之间的报文交互：



2．流量统计

AC上流量统计配置：

#

acl number 3001 //创建ACL 3001，匹配无线终端（122.207.16.229）与百度服务器TCP 80端口之间的报文。

rule 1 permit tcp source 61.135.169.125 0 source-port eq www destination 122.207.16.229 0

rule 2 permit tcp source 122.207.16.229 0 destination 61.135.169.125 0 destination-port eq www

#

traffic classifier 1 operator and

if-match acl 3001

#

traffic behavior 1

filter permit

#

qos policy 1

classifier 1 behavior 1

#

interface Ten-GigabitEthernet1/0/1

qos apply policy 1 inbound

qos apply policy 1 outbound

#

interface Ten-GigabitEthernet1/0/2

qos apply policy 1 inbound

qos apply policy 1 outbound

无线核心交换机上流量统计配置：

#

acl number 3001

rule 1 permit tcp source 61.135.169.125 0 source-port eq www destination 122.207.16.229 0

rule 2 permit tcp source 122.207.16.229 0 destination 61.135.169.125 0 destination-port eq www

#

traffic classifier 1 operator and

if-match acl 3001

#

traffic behavior 1

filter permit

#

qos policy 1

classifier 1 behavior 1

#

interface Ten-GigabitEthernet1/0/0/1

qos apply policy 1 inbound

qos apply policy 1 outbound

#

interface Ten-GigabitEthernet1/0/0/2

qos apply policy 1 inbound

qos apply policy 1 outbound

#

interface Ten-GigabitEthernet1/7/0/14

qos apply policy 1 inbound

qos apply policy 1 outbound

#

interface Ten-GigabitEthernet2/7/0/14

qos apply policy 1 inbound

qos apply policy 1 outbound

AC上流量统计结果显示：

dis qos policy interface

Interface: Ten-GigabitEthernet1/0/1

Direction: Inbound

Policy: 1

Classifier: 1

Matched : 38(Packets) 4300(Bytes)

Operator: AND

Rule(s) : If-match acl 3001

Behavior: 1

```
    Filter Enable: permit

  Direction: Outbound

  Policy: 1
   Classifier: 1
     Matched : 66(Packets) 7800(Bytes)
     Operator: AND
     Rule(s) : If-match acl 3001
     Behavior: 1
      Filter Enable: permit

  Interface: Ten-GigabitEthernet1/0/2

  Direction: Inbound

  Policy: 1
   Classifier: 1
     Matched : 0(Packets) 0(Bytes)
     Operator: AND
     Rule(s) : If-match acl 3001
     Behavior: 1
      Filter Enable: permit

  Direction: Outbound

  Policy: 1
   Classifier: 1
     Matched : 0(Packets) 0(Bytes)
     Operator: AND
     Rule(s) : If-match acl 3001
     Behavior: 1
      Filter Enable: permit
```

无线核心交换机上流量统计显示：

```
display qos policy interface
  Interface: Ten-GigabitEthernet1/0/0/1

  Direction: Inbound

  Policy: 1
   Classifier: 1
     Operator: AND
     Rule(s) : If-match acl 3001
     Behavior: 1
      Accounting Enable:
        66 (Packets)

  Direction: Outbound

  Policy: 1
   Classifier: 1
     Operator: AND
     Rule(s) : If-match acl 3001
     Behavior: 1
      Accounting Enable:
        38 (Packets)
```

Interface: Ten-GigabitEthernet1/0/0/2

Direction: Inbound

Policy: 1
 Classifier: 1
  Operator: AND
  Rule(s) : If-match acl 3001
  Behavior: 1
   Accounting Enable:
    0 (Packets)

Direction: Outbound

Policy: 1
 Classifier: 1
  Operator: AND
  Rule(s) : If-match acl 3001
  Behavior: 1
   Accounting Enable:
    0 (Packets)

Interface: Ten-GigabitEthernet1/7/0/14

Direction: Inbound

Policy: 1
 Classifier: 1
  Operator: AND
  Rule(s) : If-match acl 3001
  Behavior: 1
   Accounting Enable:
    85 (Packets)

Direction: Outbound

Policy: 1
 Classifier: 1
  Operator: AND
  Rule(s) : If-match acl 3001
  Behavior: 1
   Accounting Enable:
    66 (Packets)

Interface: Ten-GigabitEthernet2/7/0/14

Direction: Inbound

Policy: 1
 Classifier: 1
  Operator: AND
  Rule(s) : If-match acl 3001
  Behavior: 1
   Accounting Enable:
    0 (Packets)

Direction: Outbound

Policy: 1

Classifier: 1

Operator: AND

Rule(s) : If-match acl 3001

Behavior: 1

Accounting Enable:

0 (Packets)

结论：

AC向无线核心交换机发送了66个报文，无线核心交换机从AC收到了66个报文，无线核心交换机向有线核心交换机发送了66个报文，有线核心交换机向无线核心交换机返回了85个报文，但无线核心交换机只向AC发送了38个报文，即百度服务器向无线终端发送的报文的丢在了无线核心交换机上。