

### 组网及说明

设备：S6800  
版本：2612P02

### 问题描述

S6800设备替换思科旧设备时，发现提示ACL资源不足：  
PFILTER/3/PFILTER\_IF\_NO\_RES, acl resource is insufficient.

### 过程分析

查看现场返回的诊断信息，发现packet filter下发到底层为double模式，共占用了6个slice，这6个slice，根据TD2+芯片规格，理论上可以提供2048+1024+1024=4096个entry，而现场已经使用了3977个entry。查看思科配置发现，思科设备是把一条超长的ACL（里边有462的rule），在33个vlan interface inbound方向上进行包过滤，这个操作需要消耗462\*33=15246条slice资源。超出了设备规格，导致下发失败，最后提示资源不足的问题。

通过命令行查看底层资源占用情况，

```
[h3c-probe]debug qacl show acl-resc slot 2 chip 0
```

```
Pri 7, Group 3,usedEntries 130,mode Single, physlice 3/
```

```
=====
acl type          usedEntries[130]
=====
[111]Policy Based Routing V4    130
=====
```

```
Pri 8, Group 2,usedEntries 3977,mode Double, physlice 0/1/4/5/6/7/
```

```
=====
acl type          usedEntries[3977]
=====
[96 ]PktFilter IP on VRF      3977
=====
```

TD2+ 芯片规格：每个slice的entry：

```
{2048, }, /* 0 */
{2048, }, /* 1 */
{2048, }, /* 2 */
{2048, }, /* 3 */
{1024, }, /* 4 */
{1024, }, /* 5 */
{1024, }, /* 6 */
{1024, }, /* 7 */
{1024, }, /* 8 */
{1024, }, /* 9 */
{1024, }, /* 10 */
{1024, }, /* 11 */
```

### 解决方法

1. 不合理的解决方法：

1.1 改成全局MQC上下发，占用462\*2条资源，但是全局这种方案存在同时匹配L2/L3的潜在问题，不建议现场采用。

1.2 优化ACL规则，删减掉带gt和 range的ACL条目，使ACL占用模式变成single.并且不能在33个vlan interface这么多下发。改成在22个vlan interface下发。或者再删除PBR 节省2K资源，在27个vlan interface下发。这种方法不满足客户需求，也最终未采用。

例如：

```
rule 35 permit udp source 10.97.31.11 0 destination 10.97.32.0 0.0.0.255 destination-port gt 16384
-----删除
```

2. 合理的解决方法：

2.1 对ACL进行精简，起33个独立ACL，针对现网流量最大限度的减少rule条数。

2.2 使用9850设备替换，基于interface vlan的share mode，可以共享一份资源。可以实测成功下发：

```
[TD3_Tor_9850]display packet-filter interface
Interface: Vlan-interface10
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface11
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface12
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface13
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface14
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface15
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface16
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface17
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface18
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface19
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface20
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface21
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface22
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface23
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface24
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface25
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface26
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface27
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface28
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface29
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface30
Inbound policy:
```

```

IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface31
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface32
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface33
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface134
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface135
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface136
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface137
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface138
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface139
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface140
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface141
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode
Interface: Vlan-interface142
Inbound policy:
  IPv4 ACL AL-Input-Standard, Share-mode

```

```
[TD3_Tor_9850-tcl-probe]debug qacl show acl-resc sl 1 c 0
```

```

-----Qacl Group UsedResc Info-----
Acl Hw Resource: VFP, Pipe:0
-----
Pri 3, Group 5,usedEntries 16 ,mode Single, physlice 0/
=====
acl type          usedEntries[16]
=====
[109]Pdt VFP FirstNh2Classid    16
=====
-----
Acl Hw Resource: EFP, Pipe:0
-----
Acl Hw Resource: IFP, Pipe:0
-----
Pri 120, Group 3,usedEntries 46 ,mode Double, physlice 6/7/
=====
acl type          usedEntries[46]
=====
[23 ]RX Low          9
[25 ]Super_RX Low    1
[92 ]DATAPROTECT     1
[114]IFP LOW         1
[129]MPLS Vpn High   1
[153]PDT LOW INITIAL 1

```

[307]UntrustPriority 32

=====  
-----  
Pri 122, Group 7,usedEntries 1 ,mode Single, physlice 8/  
8/

=====  
acl type usedEntries[1]  
=====

[120]Policy Based Routing V4 1  
=====

-----  
Pri 123, Group 9,usedEntries 462,mode Double, physlice 3/4/  
=====

acl type usedEntries[462]  
=====

[96 ]PktFilter IP on VRF 462  
=====

-----  
Pri 125, Group 1,usedEntries 59 ,mode Triple, physlice 9/10/11/  
=====

acl type usedEntries[59]  
=====

[8 ]RX IPv4 High 5  
[10 ]RX IPv4 Middle 29  
[13 ]RX IPv6 High 8  
[14 ]RX IPv6 Middle\_High 1  
[15 ]RX IPv6 Middle 3  
[70 ]RX Middle Low 2  
[87 ]STMVLAN\_PERMIT 9  
[88 ]STM\_DENYALL 1  
[152]PDT HIGH INITIAL 1  
=====

-----  
Acl Hw Resource: IFP, Pipe:1  
-----

Pri 120, Group 4,usedEntries 71 ,mode Double, physlice 6/7/  
=====

acl type usedEntries[71]  
=====

[23 ]RX Low 9  
[25 ]Super\_RX Low 1  
[92 ]DATAPROTECT 1  
[114]IFP LOW 1  
[129]MPLS Vpn High 1  
[153]PDT LOW INITIAL 1  
[307]UntrustPriority 57  
=====

-----  
Pri 122, Group 8,usedEntries 1 ,mode Single, physlice 8/  
=====

acl type usedEntries[1]  
=====

[120]Policy Based Routing V4 1  
=====

-----  
Pri 123, Group 10,usedEntries 462,mode Double, physlice 3/4/  
=====

acl type usedEntries[462]  
=====

[96 ]PktFilter IP on VRF 462  
=====

-----  
Pri 125, Group 2,usedEntries 49 ,mode Triple, physlice 9/10/11/  
=====

```

=====
acl type          usedEntries[49]
=====
[8 ]RX IPv4 High      5
[10 ]RX IPv4 Middle  29
[13 ]RX IPv6 High     8
[14 ]RX IPv6 Middle_High  1
[15 ]RX IPv6 Middle   3
[70 ]RX Middle Low    2
[152]PDT HIGH INITIAL  1
=====

```

-----  
Acl Hw Resource: EXTERNAL, Pipe:0  
-----

ACL ext mode: disable  
Acl Group RollBack Info Begin  
Acl Group RollBack Info : VFP, Pipe 0

```

=====
GID  PRI  MODE   SliceBitmap
-----
5    3    Single  0x0001
=====

```

Acl Hw Resource: VFP, Pipe 0

```

=====
          entrynum  counternum  meternum
total    : 1024    0          0
total-reserved : 256    0          0
used-reserved  : 16    0          0
used-useracl   : 0     0          0
free-useracl   : 768   0          0
=====

```

-----  
Acl Group RollBack Info : EFP, Pipe 0  
-----

```

=====
GID  PRI  MODE   SliceBitmap
-----

```

Acl Hw Resource: EFP, Pipe 0

```

=====
          entrynum  counternum  meternum
total    : 2048   1024    1024
total-reserved : 0     0          0
used-reserved  : 0     0          0
used-useracl   : 0     0          0
free-useracl   : 2048  1024    1024
=====

```

-----  
Acl Group RollBack Info : IFP, Pipe 0  
-----

```

=====
GID  PRI  MODE   SliceBitmap
-----
3    122  Double  0x00c0
7    124  Single  0x0100
1    125  Triple  0x0e00
=====

```

Acl Hw Resource: IFP, Pipe 0

```

=====
          entrynum  counternum  meternum
total    : 18432  18432    3072
total-reserved : 7680  7680     768
used-reserved  : 538   72         56
used-useracl   : 1849  0          0
free-useracl   : 8903  10752    2304
=====

```

-----  
Acl Group RollBack Info : IFP, Pipe 1

=====  
GID PRI MODE SliceBitmap  
-----  
4 122 Double 0x00c0  
8 124 Single 0x0100  
2 125 Triple 0x0e00  
=====

Acl Hw Resource: IFP, Pipe 1

=====  
entrynum counternum meternum  
total : 18432 18432 3072  
total-reserved : 7680 7680 768  
used-reserved : 578 62 56  
used-useracl : 1849 0 0  
free-useracl : 8903 10752 2304  
=====

-----  
Acl Group RollBack Info : EXTERNAL, Pipe 0

=====  
GID PRI MODE SliceBitmap  
-----  
=====

Acl Hw Resource: EXTERNAL, Pipe 0

=====  
entrynum counternum meternum  
total : 0 0 0  
total-reserved : 0 0 0  
used-reserved : 0 0 0  
used-useracl : 0 0 0  
free-useracl : 0 0 0  
=====

-----  
[TD3\_Tor\_9850-tcl-probe]

[TD3\_Tor\_9850]display qos-acl re sl 1

Interfaces: HGE1/1/1 to HGE1/1/4, XGE1/1/5:1 to XGE1/1/6:4  
HGE1/1/7, XGE1/1/8:1 to XGE1/1/8:4  
FGE1/3/1 to FGE1/3/16 (slot 1)

-----  
Type Total Reserved Configured Remaining Usage  
-----  
VFP ACL 1024 256 0 768 25%  
IFP ACL 18432 7680 1849 8903 51%  
IFP Meter 3072 768 0 2304 25%  
IFP Counter 18432 7680 0 10752 41%  
EFP ACL 2048 0 0 2048 0%  
EFP Meter 1024 0 0 1024 0%  
EFP Counter 1024 0 0 1024 0%

Interfaces: GE1/0/1 to GE1/0/2, XGE1/2/1 to XGE1/2/24  
FGE1/2/25 to FGE1/2/26, WGE1/4/1 to WGE1/4/24  
HGE1/4/25, XGE1/4/26:1 to XGE1/4/26:4 (slot 1)

-----  
Type Total Reserved Configured Remaining Usage  
-----  
VFP ACL 1024 256 0 768 25%  
IFP ACL 18432 7680 1849 8903 51%  
IFP Meter 3072 768 0 2304 25%  
IFP Counter 18432 7680 0 10752 41%  
EFP ACL 2048 0 0 2048 0%  
EFP Meter 1024 0 0 1024 0%  
EFP Counter 1024 0 0 1024 0%

