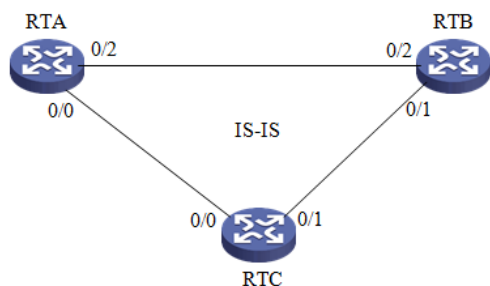


知 利用TRACK+BFD+EAA解决IS-IS路由无法切换方案

BFD Track EAA IS-IS 刘嘉炜 2018-03-10 发表



某局点在使用IS-IS路由协议后，网络管理员在设备互联接口上错误的调用了包过滤，并在全局将包过滤的默认规则修改为拒绝后整个内网全部中断。

设备配置:

RTA配置:

```
packet-filter default deny
#
isis 1
network-entity 20.0000.0000.0001.00
#
interface LoopBack0
ip address 7.7.7.7 255.255.255.255
isis enable 1
#
interface GigabitEthernet0/0
port link-mode route
ip address 192.168.0.1 255.255.255.0
isis enable 1
#
interface GigabitEthernet0/2
port link-mode route
ip address 2.2.2.1 255.255.255.0
isis enable 1
isis bfd enable
packet-filter 3000 inbound
```

RTB配置:

```
isis 1
network-entity 20.0000.0000.0002.00
#
interface LoopBack0
ip address 9.9.9.9 255.255.255.255
isis enable 1
#
interface GigabitEthernet0/1
port link-mode route
ip address 1.1.1.1 255.255.255.0
isis enable 1
#
interface GigabitEthernet0/2
port link-mode route
ip address 2.2.2.2 255.255.255.0
isis enable 1
isis bfd enable
```

RTC配置:

```
isis 1
network-entity 20.0000.0000.0003.00
#
interface GigabitEthernet0/0
port link-mode route
```

ip address 192.168.0.2 255.255.255.0

isis enable 1

#

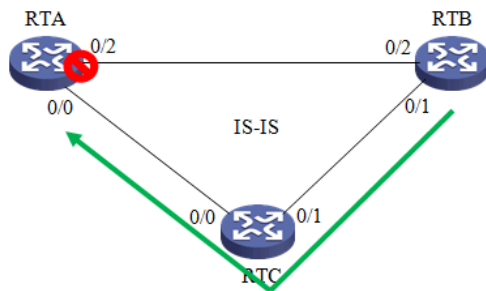
interface GigabitEthernet0/1

port link-mode route

ip address 1.1.1.2 255.255.255.0

isis enable 1

理论上RTA的0/2接口如果发生故障，那么路由会切换至RTC。但是现场路由却没有切换？



当在RTA执行“undo packet-filter default deny”时发现问题。

```
<H3C>%Mar 10 12:28:49:218 2018 H3C BFD/5/BFD_CHANGE_FSM: Sess[2.2.2.2/2.2.2.1, LD/RD:2049/2049, Interface:GE0/2, SessType:Ctrl, LinkType:INET], Ver:1, Sta: UP->DOWN, Diag: 3 (Neighbor or Signaled Session Down) \\此时BFD会话已经检测失败
```

```
%Mar 10 12:28:49:220 2018 H3C ISIS/5/ISIS_NBR_CHG: IS-IS 1, Level-1 adjacency 0000.0000.0001 (GigabitEthernet0/2), state changed to DOWN, Reason: BFD session down. \\随即IS-IS路由信息也down了
```

```
%Mar 10 12:28:49:223 2018 H3C BFD/5/BFD_CHANGE_SESS: Sess[2.2.2.2/2.2.2.1, LD/RD:2049/0, Interface:GE0/2, SessType:Ctrl, LinkType:INET], Ver:1, Sta: Deleted, Diag: 3 \\此时BFD位置在INET状态
```

```
%Mar 10 12:28:49:236 2018 H3C ISIS/5/ISIS_NBR_CHG: IS-IS 1, Level-1 adjacency 0000.0000.0001 (GigabitEthernet0/2), state changed to UP, Reason: 2way-pass. \\随即IS-IS路由又恢复了
```

所以即使数据层面无法通信，那么IS-IS协议状态也不会切换。

```
<H3C>display ip routing-table 7.7.7.7 verbose
Summary count : 1
Destination: 7.7.7.7/32
Protocol: IS_L1
Process ID: 1
SubProtID: 0x1 Age: 00h18m46s
Cost: 10 Preference: 15
IpPre: N/A QoSLocalID: N/A
Tag: 0 State: Active Adv
OrigTblID: 0x2 OrigVrf: default-vrf
TableID: 0x2 OrigAs: 0
NibID: 0x14000002 LastAs: 0
AttrID: 0xffffffff Neighbor: 0.0.0.0
Flags: 0x10041 OrigNextHop: 2.2.2.1
Label: NULL RealNextHop: 2.2.2.1
BkLabel: NULL BkNextHop: N/A
Tunnel ID: Invalid Interface: GigabitEthernet0/2
BkTunnel ID: Invalid BkInterface: N/A
FtnIndex: 0x0 TrafficIndex: N/A
Connector: N/A PathID: 0x0
```

通过NQA探测传输链路的状态，通过联动EAA执行相关测试。策略目的之间出问题出问题接口的IS-IS接口优先级修改大，致使路由切换。NQA探测恢复后再定义EAA策略恢复改接口优先级。

具体配置：

```
nqa entry 1 1
```

```
type icmp-echo
```

```
destination ip 7.7.7.7
```

```
frequency 1000
```

```
probe timeout 100
```

```
reaction 1 checked-element probe-fail threshold-type consecutive 3 action-type trigger-only
```

```
#
```

```
nqa schedule 1 1 start-time now lifetime forever
```

```
#
```

```
track 1 nqa entry 1 1 reaction 1
```

```
#
```

```
rtm cli-policy 1
```

event track 1 state negative
action 0 cli sys
action 1 cli in g0/2
action 2 cli isis cost 40 level-2
user-role network-admin

测试：在RTA执行“packet-filter default deny”，在路由信息中看到路由已经发生了切换。

[H3C]%Mar 10 16:59:48:620 2018 H3C NQA/6/NQA_ENTRY_PROBE_RESULT: Reaction entry 1 of NQA entry admin-name 1 operation-tag 1: probe-fail.

%Mar 10 16:59:48:672 2018 H3C RTM/6/RTM_POLICY: CLI policy 1 is running successfully.

```
[H3C]display ip routing-table 7.7.7.7 verbose
Summary count : 1
Destination: 7.7.7.7/32
  Protocol: IS_L1
  Process ID: 1
    SubProtID: 0x1          Age: 00h01m35s
      Cost: 20             Preference: 15
        IpPre: N/A        QosLocalID: N/A
          Tag: 0          State: Active Adv
    OrigTblID: 0x2        OrigVrf: default-vrf
      TableID: 0x2        OrigAs: 0
        NibID: 0x14000002  LastAs: 0
          AttrID: 0xffffffff Neighbor: 0.0.0.0
            Flags: 0x10041  OrigNextHop: 1.1.1.2
              Label: NULL   RealNextHop: 1.1.1.2
                BkLabel: NULL BkNextHop: N/A
          Tunnel ID: Invalid Interface: GigabitEthernet0/1
        BkTunnel ID: Invalid BkInterface: N/A
          FtnIndex: 0x0     TrafficIndex: N/A
            Connector: N/A   PathID: 0x0
```