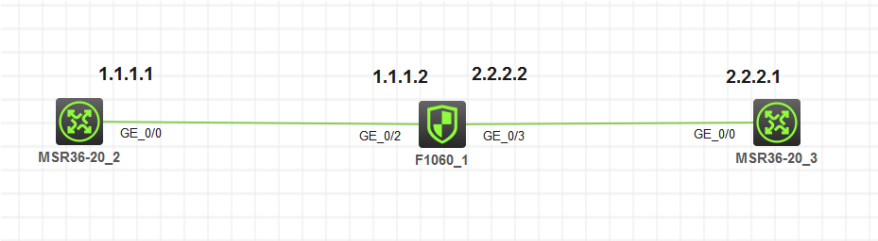
NGFW防火墙bfd echo会话down原因分析

BFD 胡伟 2020-02-20 发表

组网及说明




```
#
 bfd echo-source-ip 100.100.100.100
#
 track 1 bfd echo interface GigabitEthernet1/0/2 remote ip 1.1.1.1 local ip 1.1.1.2

#
nat address-group 1
 address 1.1.1.10 1.1.1.12

#
interface GigabitEthernet1/0/2
 port link-mode route
 combo enable copper
 ip address 1.1.1.2 255.255.255.0
#
```

问题描述

bfd echo会话down

过程分析

1. 在没有配置nat outbound时的会话

```
[H3C-GigabitEthernet1/0/2]display bfd session
 Total Session Num: 1     Up Session Num: 1     Init Mode: Active
 IPv4 Session Working Under Echo Mode:
 LD          SourceAddr      DestAddr        State    Holdtime    Interface
 97          1.1.1.2         1.1.1.1         Up       1629ms      GE1/0/2
```

```
display session table ipv4 verbose
Slot 1:
Initiator:
  Source      IP/port: 100.100.100.100/49248
  Destination IP/port: 1.1.1.2/3785
  DS-Lite tunnel peer: -
  VPN instance/VLAN ID/Inline ID: -/-/-
  Protocol: UDP(17)
  Inbound interface: InLoopBack0
  Source security zone: Local
Responder:
  Source      IP/port: 1.1.1.2/3785
  Destination IP/port: 100.100.100.100/49248
  DS-Lite tunnel peer: -
  VPN instance/VLAN ID/Inline ID: -/-/-
  Protocol: UDP(17)
  Inbound interface: GigabitEthernet1/0/2
  Source security zone: Trust
State: UDP_OPEN
```

Application: GENERAL_UDP
Rule ID: 0
Rule name: 0
Start time: 2019-01-24 10:33:38 TTL: 30s
Initiator->Responder: 0 packets 0 bytes
Responder->Initiator: 0 packets 0 bytes
Total sessions found: 1

2. 在配置nat outbound后

[H3C-GigabitEthernet1/0/2]nat outbound
[H3C-GigabitEthernet1/0/2]%Jan 24 11:26:59:212 2019 H3C BFD/5/BFD_CHANGE_FSM: -COntext=1; Sess[1.1.1.2/1.1.1.1, LD/RD:97/97, Interface:GE1/0/2, SessType:Echo, LinkType:INET], Ver:1, Sta: UP->DOWN, Diag: 1

[H3C-GigabitEthernet1/0/2]display bfd session
 Total Session Num: 1   Up Session Num: 0   Init Mode: Active
 IPv4 Session Working Under Echo Mode:
 LD   SourceAddr   DestAddr   State   Holdtime   Interface
 97   1.1.1.2   1.1.1.1   Down   0ms   GE1/0/2

[H3C-GigabitEthernet1/0/2]display session table ipv4 verbose
Slot 1:
Initiator:
  Source   IP/port: 100.100.100.100/49248
  Destination IP/port: 1.1.1.2/3785
  DS-Lite tunnel peer: -
  VPN instance/VLAN ID/Inline ID: -/-/-
  Protocol: UDP(17)
  Inbound interface: InLoopBack0
  Source security zone: Local
Responder:
  Source   IP/port: 1.1.1.2/3785
  Destination IP/port: 1.1.1.2/1024
  DS-Lite tunnel peer: -
  VPN instance/VLAN ID/Inline ID: -/-/-
  Protocol: UDP(17)
  Inbound interface: GigabitEthernet1/0/2
  Source security zone: Trust
State: UDP_OPEN
Application: GENERAL_UDP
Rule ID: 0
Rule name: 0
Start time: 2019-01-24 11:26:57 TTL: 29s
Initiator->Responder: 0 packets 0 bytes
Responder->Initiator: 0 packets 0 bytes
Total sessions found: 1
源目地址一致，报文被丢弃。

3. 创建一个ACL屏蔽bfd echo-source-ip 100.100.100.100

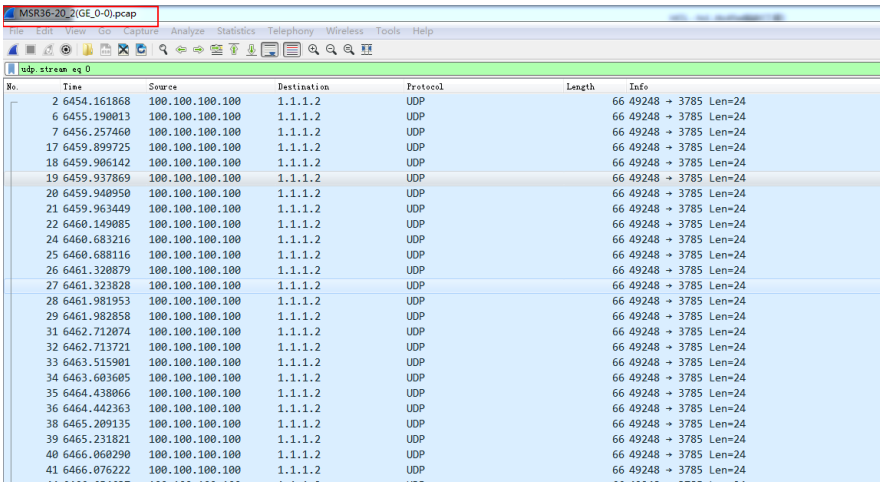
#
acl advanced 3999
 rule 0 deny ip source 100.100.100.100 0
 rule 5 permit ip

[H3C-GigabitEthernet1/0/2]undo nat outbound
[H3C-GigabitEthernet1/0/2]%Jan 24 11:31:44:299 2019 H3C BFD/5/BFD_CHANGE_FSM: -COntext=1; Sess[1.1.1.2/1.1.1.1, LD/RD:97/97, Interface:GE1/0/2, SessType:Echo, LinkType:INET], Ver:1, Sta: DOWN->INIT, Diag: 0
%Jan 24 11:31:44:302 2019 H3C BFD/5/BFD_CHANGE_FSM: -COntext=1; Sess[1.1.1.2/1.1.1.1, LD/RD:97/97, Interface:GE1/0/2, SessType:Echo, LinkType:INET], Ver:1, Sta: INIT->UP, Diag: 0

[H3C-GigabitEthernet1/0/2]nat outbound 3999
[H3C-GigabitEthernet1/0/2]display bfd session
 Total Session Num: 1   Up Session Num: 1   Init Mode: Active
 IPv4 Session Working Under Echo Mode:

LD	SourceAddr	DestAddr	State	Holdtime	Interface
97	1.1.1.2	1.1.1.1	Up	1751ms	GE1/0/2

4. 在路由器G0/0接口抓包



解决方法

可以这样理解，echo报文：封装在UDP报文中传送，其UDP目的端口号为3785。本端发送echo报文建立BFD会话，对端链路进行检测。对端不建立BFD会话，只需把收到的echo报文转发回本端。