

Kết quả:

```
mininet@mininet-vm:~$ sudo mn --custom triangle.py --topo custom --controller=none
*** Creating network
*** Adding controller
*** Adding hosts:
h1 h2 h3 h4 h5 h6
*** Adding switches:
sw1 sw2 sw3
*** Adding links:
(sw1, h1) (sw1, h2) (sw1, sw2) (sw1, sw3) (sw2, h3) (sw2, h4) (sw2, sw3) (sw3, h5) (sw3, h6)
*** Configuring hosts
h1 h2 h3 h4 h5 h6
*** Starting controller

*** Starting 3 switches
sw1 sw2 sw3 ...
*** Starting CLI:
mininet> sh sudo ovs-ofctl dump-flows sw1
NXST_FLOW reply (xid=0x4):
mininet> sh sudo ovs-ofctl dump-flows sw2
NXST_FLOW reply (xid=0x4):
mininet> sh sudo ovs-ofctl dump-flows sw3
NXST_FLOW reply (xid=0x4):
mininet> pingall
*** Ping: testing ping reachability
h1 -> X X X X X
h2 -> X X X X X
h3 -> X X X X X
h4 -> X X X X X
h5 -> X X X X X
h6 -> X X X X X
*** Results: 100% dropped (0/30 received)
mininet>
```

No.	Time	Source	Destination	Protocol	Length	Info
6...	15.704...	192.168.2.20	192.168.2.22	OpenFlow	74	Type: OFPT_HELLO
6...	15.710...	192.168.2.20	192.168.2.22	OpenFlow	90	Type: OFPT_FEATURES_REQUEST
6...	15.710...	192.168.2.22	192.168.2.22	OpenFlow	98	Type: OFPT_FEATURES_REPLY
6...	15.711...	192.168.2.20	192.168.2.22	OpenFlow	74	Type: OFPT_BARRIER_REQUEST
6...	15.711...	192.168.2.22	192.168.2.22	OpenFlow	74	Type: OFPT_BARRIER_REPLY
6...	15.718...	192.168.2.20	192.168.2.20	OpenFlow	82	Type: OFPT_MULTIPART_REQUEST, OFPMP_DE...
6...	15.718...	192.168.2.22	192.168.2.22	OpenFlow	1138	Type: OFPT_MULTIPART_REPLY, OFPMP_DESC
7...	15.728...	192.168.2.20	192.168.2.20	OpenFlow	114	Type: OFPT_MULTIPART_REQUEST, OFPMP_PO...
7...	15.728...	192.168.2.22	192.168.2.22	OpenFlow	98	Type: OFPT_MULTIPART_REPLY, OFPMP_METE...
7...	15.728...	192.168.2.22	192.168.2.22	OpenFlow	122	Type: OFPT_MULTIPART_REPLY, OFPMP_GROU...
7...	15.728...	192.168.2.22	192.168.2.22	OpenFlow	402	Type: OFPT_MULTIPART_REPLY, OFPMP_PORT...
7...	15.734...	192.168.2.20	192.168.2.20	OpenFlow	90	Type: OFPT_ROLE_REQUEST
7...	15.734...	192.168.2.22	192.168.2.22	OpenFlow	90	Type: OFPT_ROLE_REPLY
7...	15.734...	192.168.2.20	192.168.2.20	OpenFlow	90	Type: OFPT_ROLE_REQUEST
7...	15.734...	192.168.2.22	192.168.2.22	OpenFlow	90	Type: OFPT_ROLE_REPLY
7...	15.753...	192.168.2.20	192.168.2.20	OpenFlow	82	Type: OFPT_MULTIPART_REQUEST, OFPMP_TA...
7...	15.753...	192.168.2.22	192.168.2.22	OpenFlow	6178	Type: OFPT_MULTIPART_REPLY, OFPMP_TABLE
7...	15.757...	192.168.2.20	192.168.2.20	OpenFlow	82	Type: OFPT_MULTIPART_REQUEST, OFPMP_GR...
7...	15.757...	192.168.2.22	192.168.2.22	OpenFlow	82	Type: OFPT_MULTIPART_REPLY, OFPMP_GROU...
7...	15.758...	192.168.2.20	192.168.2.20	OpenFlow	90	Type: OFPT_MULTIPART_REQUEST, OFPMP_GR...
7...	15.758...	192.168.2.22	192.168.2.22	OpenFlow	82	Type: OFPT_MULTIPART_REPLY, OFPMP_GROUP
7...	15.759...	192.168.2.20	192.168.2.20	OpenFlow	122	Type: OFPT_MULTIPART_REQUEST, OFPMP_FL...
7...	15.759...	192.168.2.22	192.168.2.22	OpenFlow	82	Type: OFPT_MULTIPART_REPLY, OFPMP_FLOW
7...	15.760...	192.168.2.20	192.168.2.20	OpenFlow	90	Type: OFPT_MULTIPART_REQUEST, OFPMP_PO...
7...	15.760...	192.168.2.22	192.168.2.22	OpenFlow	642	Type: OFPT_MULTIPART_REPLY, OFPMP_PORT...
7...	15.761...	192.168.2.20	192.168.2.20	OpenFlow	90	Type: OFPT_MULTIPART_REQUEST, OFPMP_QU...
7...	15.762...	192.168.2.22	192.168.2.22	OpenFlow	82	Type: OFPT_MULTIPART_REPLY, OFPMP_QUEUE
7...	15.774...	192.168.2.20	192.168.2.20	OpenFlow	130	Type: OFPT_FLOW_MOD
7...	15.778...	192.168.2.20	192.168.2.20	OpenFlow	666	Type: OFPT_PACKET_OUT
7...	16.213...	192.168.2.20	192.168.2.20	OpenFlow	74	Type: OFPT_BARRIER_REQUEST
7...	16.213...	192.168.2.22	192.168.2.22	OpenFlow	74	Type: OFPT_BARRIER_REPLY
7...	17.767...	192.168.2.20	192.168.2.20	OpenFlow	202	Type: OFPT_FLOW_MOD
7...	17.769...	192.168.2.20	192.168.2.20	OpenFlow	474	Type: OFPT_FLOW_MOD
7...	17.811...	192.168.2.20	192.168.2.20	OpenFlow	316	Type: OFPT_PACKET_OUT
7...	17.812...	192.168.2.20	192.168.2.20	OpenFlow	316	Type: OFPT_PACKET_OUT
7...	18.268...	192.168.2.20	192.168.2.20	OpenFlow	74	Type: OFPT_BARRIER_REQUEST
7...	18.268...	192.168.2.22	192.168.2.22	OpenFlow	74	Type: OFPT_BARRIER_REPLY
8...	18.778...	192.168.2.20	192.168.2.20	OpenFlow	82	Type: OFPT_MULTIPART_REQUEST, OFPMP_TA...

Chỉnh sửa đường mạng:

Device

openflow:1 [sw1] [Open vSwitch]

General properties

Table

0

ID

Drop3

Priority

1000

In port

openflow:1:3

✕

Actions

Drop

✕

Show preview

Send request

Send all

Back

No.	Time	Source	Destination	Protocol	Length	Info
4...	5.1271...	192.168....	192.168.2.21	OpenFlow	642	Type: OFPT_MULTIPART_REPLY, OFPMP_PORT...
4...	5.1276...	192.168....	192.168.2.20	OpenFlow	90	Type: OFPT_MULTIPART_REQUEST, OFPMP_QU...
4...	5.1277...	192.168....	192.168.2.21	OpenFlow	82	Type: OFPT_MULTIPART_REPLY, OFPMP_QUEUE
4...	5.3208...	192.168....	192.168.2.20	OpenFlow	191	Type: OFPT_PACKET_OUT
4...	5.3212...	192.168....	192.168.2.20	OpenFlow	191	Type: OFPT_PACKET_OUT
4...	5.3221...	192.168....	192.168.2.20	OpenFlow	316	Type: OFPT_PACKET_OUT
4...	5.3222...	192.168....	192.168.2.20	OpenFlow	316	Type: OFPT_PACKET_OUT
4...	5.3222...	192.168....	192.168.2.20	OpenFlow	191	Type: OFPT_PACKET_OUT
4...	5.3226...	192.168....	192.168.2.21	OpenFlow	193	Type: OFPT_PACKET_IN
4...	5.3227...	192.168....	192.168.2.21	OpenFlow	193	Type: OFPT_PACKET_IN
4...	5.3229...	192.168....	192.168.2.21	OpenFlow	193	Type: OFPT_PACKET_IN
4...	5.3232...	192.168....	192.168.2.20	OpenFlow	191	Type: OFPT_PACKET_OUT
4...	5.3233...	192.168....	192.168.2.20	OpenFlow	316	Type: OFPT_PACKET_OUT
4...	5.3234...	192.168....	192.168.2.21	OpenFlow	193	Type: OFPT_PACKET_IN
4...	5.3235...	192.168....	192.168.2.21	OpenFlow	193	Type: OFPT_PACKET_IN
4...	5.3239...	192.168....	192.168.2.20	OpenFlow	316	Type: OFPT_PACKET_OUT
4...	5.3240...	192.168....	192.168.2.21	OpenFlow	193	Type: OFPT_PACKET_IN
4...	5.3390...	192.168....	192.168.2.20	OpenFlow	74	Type: OFPT_BARRIER_REQUEST
4...	5.3391...	192.168....	192.168.2.21	OpenFlow	74	Type: OFPT_BARRIER_REPLY
4...	5.3547...	192.168....	192.168.2.20	OpenFlow	74	Type: OFPT_BARRIER_REQUEST
4...	5.3548...	192.168....	192.168.2.21	OpenFlow	74	Type: OFPT_BARRIER_REPLY
4...	5.6097...	192.168....	192.168.2.20	OpenFlow	74	Type: OFPT_BARRIER_REQUEST
4...	5.6098...	192.168....	192.168.2.21	OpenFlow	74	Type: OFPT_BARRIER_REPLY
5...	6.9013...	192.168....	192.168.2.20	OpenFlow	130	Type: OFPT_FLOW_MOD
5...	7.4026...	192.168....	192.168.2.20	OpenFlow	74	Type: OFPT_BARRIER_REQUEST
5...	7.4030...	192.168....	192.168.2.21	OpenFlow	74	Type: OFPT_BARRIER_REPLY
5...	7.8681...	192.168....	192.168.2.20	OpenFlow	82	Type: OFPT_MULTIPART_REQUEST, OFPMP_TA...
5...	7.8686...	192.168....	192.168.2.21	OpenFlow	386	Type: OFPT_MULTIPART_REPLY, OFPMP_TABLE
5...	7.8773...	192.168....	192.168.2.20	OpenFlow	82	Type: OFPT_MULTIPART_REQUEST, OFPMP_GR...
5...	7.8774...	192.168....	192.168.2.21	OpenFlow	82	Type: OFPT_MULTIPART_REPLY, OFPMP GROU...
5...	7.8786...	192.168....	192.168.2.20	OpenFlow	90	Type: OFPT_MULTIPART_REQUEST, OFPMP_GR...
5...	7.8787...	192.168....	192.168.2.21	OpenFlow	82	Type: OFPT_MULTIPART_REPLY, OFPMP GROUP
5...	7.8798...	192.168....	192.168.2.20	OpenFlow	122	Type: OFPT_MULTIPART_REQUEST, OFPMP_FL...
5...	7.8798...	192.168....	192.168.2.21	OpenFlow	738	Type: OFPT_MULTIPART_REPLY, OFPMP_FLOW


```

▶ Frame 5383: 130 bytes on wire (1040 bits), 130 bytes captured (1040 bits) on
▶ Ethernet II, Src: Vmware_5a:ea:d7 (00:0c:29:5a:ea:d7), Dst: Vmware_70:59:2a
▶ Internet Protocol Version 4, Src: 192.168.2.21, Dst: 192.168.2.20
▶ Transmission Control Protocol, Src Port: 6653, Dst Port: 60234, Seq: 1345, A
▼ OpenFlow 1.3
  Version: 1.3 (0x04)
  Type: OFPT_FLOW_MOD (14)
  Length: 64
  Transaction ID: 7948
  Cookie: 0x0000000000000000
  Cookie mask: 0x0000000000000000
  Table ID: 0
  Command: OFPFC_ADD (0)
  Idle timeout: 0
  Hard timeout: 0
  Priority: 1000
  Buffer ID: OFP_NO_BUFFER (4294967295)
  Out port: OFPP_ANY (4294967295)
  Out group: OFPG_ANY (4294967295)
▶ Flags: 0x0000
▶ Pad: 0000
▶ Match
▶ Instruction

```

Device

openflow:1 [sw1] [Open vSwitch]

General properties

Table

0

ID

Drop4

Priority

1000

In port

openflow:1:4

×

Actions

Drop

×

Show preview

Send request

Send all

Back

```

mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 X X X X
h2 -> h1 X X X X
h3 -> X X h4 h5 h6
h4 -> X X h3 h5 h6
h5 -> X X h3 h4 h6
h6 -> X X h3 h4 h5
*** Results: 53% dropped (14/30 received)

```

Trường hợp sự cố mạng:

```
▶ Frame 4238: 138 bytes on wire (1104 bits), 138 bytes captured (1104 bits) on
▶ Ethernet II, Src: Vmware_5a:ea:d7 (00:0c:29:5a:ea:d7), Dst: Vmware_70:59:2a
▶ Internet Protocol Version 4, Src: 192.168.2.21, Dst: 192.168.2.20
▶ Transmission Control Protocol, Src Port: 6653, Dst Port: 60234, Seq: 685, Ack
▼ OpenFlow 1.3
  Version: 1.3 (0x04)
  Type: OFPT_FLOW_MOD (14)
  Length: 72
  Transaction ID: 13734
  Cookie: 0x0000000000000000
  Cookie mask: 0x0000000000000000
  Table ID: 0
  Command: OFPFC_DELETE_STRICT (4)
  Idle timeout: 0
  Hard timeout: 0
  Priority: 1000
  Buffer ID: OFP_NO_BUFFER (4294967295)
  Out port: OFPP_ANY (4294967295)
  Out group: OFPG_ANY (4294967295)
  ▶ Flags: 0x0000
  Pad: 0000
  ▶ Match
  ▶ Instruction
```

```
mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 h3 h4 h5 h6
h2 -> h1 h3 h4 h5 h6
h3 -> h1 h2 h4 h5 h6
h4 -> h1 h2 h3 h5 h6
h5 -> h1 h2 h3 h4 h6
h6 -> h1 h2 h3 h4 h5
*** Results: 0% dropped (30/30 received)
```