
TTM4180 - APPLIED NETWORKING

LAB 4: HUB

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Q1: Which components does a flow table entry contain? Use the Openflow v1.0.0 specification and Section 1.2 as aid. Explain each component's purpose.

Flow table in switches contains various fields among which we find:

Match: *ofp_match* Define a set of headers for packages to match with. If the package arriving matches, the action of *ofp_flow_mod* object will be applied to it.

Counter: Update and a set of instructions will execute.

Action: List of actions executed in order when there is a match. Two of the most important ones:

- *Output:* Forward packets out of a physical or virtual port.
- *Enqueue:* Forwards a packet through the designated queue.

The most important components for these labs are match and action.

Q2: The OpenFlow protocol supports three message types. List and explain all three.

Defined in the file *pox/openflow/libopenflow_01.py*

Controller-to-switch: Initiated by the controller and used to directly manage or inspect the switch *ofp_packet_out:* Inject a package into a particular switch.

Asynchronous or Switch-to-controller: Initiated by the switch and used to update the controller *ofp_packet_in:* The switch sends a captured packet to the controller

Symmetric: Initiated by the switch or controller and sent without solicitation.

Q3: Include a drawing of the topology used in this lab. It should show all ports for both the switch and hosts, the IPv4 address of each host, and the connection between the switch and the controller.

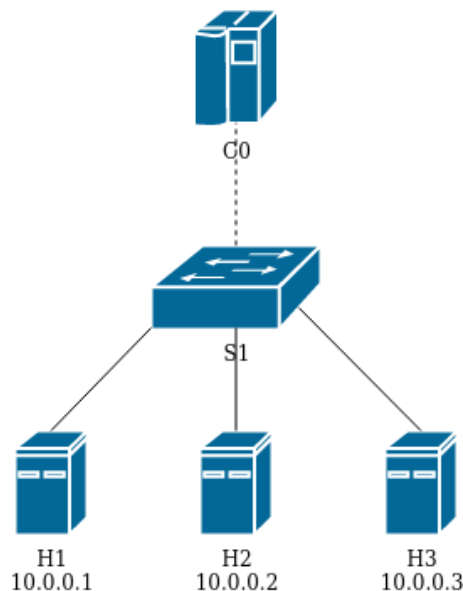


Figure 1: Diagram

T1: Stop the controller, then, exit and clean up your current Mininet session. Ensure that the hub is currently set to (**reactive = True**), remember to save after configuring the hub.py file. Make sure that Wireshark is currently running (clean session), start the controller first and then restart Mininet with the topology shown in the walkthrough. Use *ovs-ofctl* to check the status of the flow

table in s1 (take a screenshot). Initiate a ping session between h1 and h3 with -c 10. Then, when it has completed, take a screenshot of the ping statistics, stop the Wireshark capture and save as *hub-reactive*.

```
root@b72cb07e0089:/home/ubuntu/pox# cd /home/ubuntu/pox && ./pox.py log.level --
DEBUG forwarding.hub
POX 0.3.0 (dart) / Copyright 2011-2014 James McCauley, et al.
INFO:forwarding.hub:Reactive hub running.
DEBUG:core:POX 0.3.0 (dart) going up...
DEBUG:core:Running on CPython (2.7.17/Feb 27 2021 15:10:58)
DEBUG:core:Platform is Linux-5.4.0-104-generic-x86_64-with-Ubuntu-18.04-bionic
INFO:core:POX 0.3.0 (dart) is up.
DEBUG:openflow.of_01:Listening on 0.0.0.0:6633
INFO:openflow.of_01:[00-00-00-00-00-01 1] connected
```

Figure 2: Reactive controller

```
root@b72cb07e0089:~# sudo ovs-ofctl dump-flows s1
cookie=0x0, duration=03.960s, table=0, n_packets=28, n_bytes=2288, actions=FL00D
root@b72cb07e0089:~# sudo ovs-ofctl show s1
OFPST_FEATURES_REPLY (xid=0x2): dpid:0000000000000001
n_tables:254, n_buffers:0
capabilities: FLOW_STATS TABLE_STATS PORT_STATS QUEUE_STATS ARP_MATCH_IP
actions: output enqueue set_vlan_vid set_vlan_pcp strip_vlan mod_dl_src mod_dl_dst mod_nw_src mod_nw_dst mod_nw_tos mod_tp_src mod_tp_dst
1(s1-eth1): addr:4e:3d:c6:08:98:7b
  config: 0
  state: 0
  current: 10GB-FD COPPER
  speed: 10000 Mbps now, 0 Mbps max
2(s1-eth2): addr:36:06:4f:b8:27:9d
  config: 0
  state: 0
  current: 10GB-FD COPPER
  speed: 10000 Mbps now, 0 Mbps max
3(s1-eth3): addr:e6:49:0a:72:da:c5
  config: 0
  state: 0
  current: 10GB-FD COPPER
  speed: 10000 Mbps now, 0 Mbps max
LOCAL(s1): addr:f2:82:f1:e5:9c:42
  config: PORT_DOWN
  state: LINK_DOWN
  speed: 0 Mbps now, 0 Mbps max
OFPST_GET_CONFIG_REPLY (xid=0x4): frags=normal miss_send_len=0
```

Figure 3: Reactive s1 table

```
root@b72cb07e0089:/home/ubuntu# sudo mn --topo single,3 --mac --controller remote --switch ovsk
*** Error setting resource limits. Mininet's performance may be affected.
*** Creating network
*** Adding controller
Unable to contact the remote controller at 127.0.0.1:6653
Connecting to remote controller at 127.0.0.1:6633
*** Adding hosts:
h1 h2 h3
*** Adding switches:
s1
*** Adding links:
(h1, s1) (h2, s1) (h3, s1)
*** Configuring hosts
h1 h2 h3
*** Starting controller
c0
*** Starting 1 switches
s1 ...
*** Starting CLI:
mininet> h1 ping -c10 h3
PING 10.0.0.3 (10.0.0.3) 56(84) bytes of data:
64 bytes from 10.0.0.3: icmp_seq=1 ttl=64 time=31.5 ms
64 bytes from 10.0.0.3: icmp_seq=2 ttl=64 time=38.9 ms
64 bytes from 10.0.0.3: icmp_seq=3 ttl=64 time=42.5 ms
64 bytes from 10.0.0.3: icmp_seq=4 ttl=64 time=43.0 ms
64 bytes from 10.0.0.3: icmp_seq=5 ttl=64 time=43.4 ms
64 bytes from 10.0.0.3: icmp_seq=6 ttl=64 time=47.7 ms
64 bytes from 10.0.0.3: icmp_seq=7 ttl=64 time=33.2 ms
64 bytes from 10.0.0.3: icmp_seq=8 ttl=64 time=42.8 ms
64 bytes from 10.0.0.3: icmp_seq=9 ttl=64 time=50.4 ms
64 bytes from 10.0.0.3: icmp_seq=10 ttl=64 time=56.1 ms

--- 10.0.0.3 ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 9029ms
rtt min/avg/max/ndev = 31.589/43.004/56.126/7.017 ms
```

Figure 4: Reactive h1 ping h3

Trace given in Section A.


```

root@a62625fef630:~# sudo ovs-ofctl dump-flows s1
cookie=0x0, duration=33.353s, table=0, n_packets=26, n_bytes=2148, actions=FLOW00
root@a62625fef630:~# sudo ovs-ofctl show s1
OFPPT_FEATURES_REPLY (xid=0x2): dpid:0000000000000001
n_tables:254, n_buffers:0
capabilities: FLOW_STATS TABLE_STATS PORT_STATS QUEUE_STATS ARP_MATCH_IP
actions: output enqueue set_vlan_vid set_vlan_pcp strip_vlan mod_d1_src mod_d1_dst mod_nw_src mod_n
w_dst mod_nw_tos mod_tp_src mod_tp_dst
1(s1-eth1): addr:36:ba:ad:f1:60:7e
config: 0
state: 0
current: 10GB-FD COPPER
speed: 10000 Mbps now, 0 Mbps max
2(s1-eth2): addr:ce:95:5d:68:ca:42
config: 0
state: 0
current: 10GB-FD COPPER
speed: 10000 Mbps now, 0 Mbps max
3(s1-eth3): addr:5e:56:3e:e9:4f:1c
config: 0
state: 0
current: 10GB-FD COPPER
speed: 10000 Mbps now, 0 Mbps max
LOCAL(s1): addr:f2:7b:51:56:68:43
config: PORT_DOWN
state: LINK_DOWN
speed: 0 Mbps now, 0 Mbps max
OFPPT_GET_CONFIG_REPLY (xid=0x4): frags=normal miss_send len=0

```

Figure 8: Proactive s1 table

```

root@a62625fef630: ~
File Edit View Search Terminal Help
*** Error setting resource limits. Mininet's performance may be affected.
*** Creating network
*** Adding controller
Unable to contact the remote controller at 127.0.0.1:6653
Connecting to remote controller at 127.0.0.1:6633
*** Adding hosts:
h1 h2 h3
*** Adding switches:
s1
*** Adding links:
(h1, s1) (h2, s1) (h3, s1)
*** Configuring hosts
h1 h2 h3
*** Starting controller
c0
*** Starting 1 switches
s1 ...
*** Starting CLI:
mininet> h1 ping -c h3
Usage: ping [-aAbBdDfHlNoQrRUVv64] [-c count] [-i interval] [-I interface]
[-m mark] [-M pmtudisc_option] [-l preload] [-p pattern] [-Q tos]
[-s packetsize] [-S sndbuf] [-t ttl] [-T timestamp_option]
[-w deadline] [-W timeout] [hop1 ...] destination
Usage: ping -6 [-aAbBdDfHlNoQrRUVv] [-c count] [-i interval] [-I interface]
[-l preload] [-m mark] [-M pmtudisc_option]
[-N nodeinfo_option] [-p pattern] [-Q tclass] [-s packetsize]
[-S sndbuf] [-t ttl] [-T timestamp_option] [-w deadline]
[-W timeout] destination
mininet> h1 ping -c h3
Usage: ping [-aAbBdDfHlNoQrRUVv64] [-c count] [-i interval] [-I interface]
[-m mark] [-M pmtudisc_option] [-l preload] [-p pattern] [-Q tos]
[-s packetsize] [-S sndbuf] [-t ttl] [-T timestamp_option]
[-w deadline] [-W timeout] [hop1 ...] destination
Usage: ping -6 [-aAbBdDfHlNoQrRUVv] [-c count] [-i interval] [-I interface]
[-l preload] [-m mark] [-M pmtudisc_option]
[-N nodeinfo_option] [-p pattern] [-Q tclass] [-s packetsize]
[-S sndbuf] [-t ttl] [-T timestamp_option] [-w deadline]
[-W timeout] destination
mininet> h1 ping -c10 h3
PING 10.0.0.3 (10.0.0.3) 56(84) bytes of data:
64 bytes from 10.0.0.3: icmp_seq=1 ttl=64 time=0.471 ms
64 bytes from 10.0.0.3: icmp_seq=2 ttl=64 time=0.106 ms
64 bytes from 10.0.0.3: icmp_seq=3 ttl=64 time=0.062 ms
64 bytes from 10.0.0.3: icmp_seq=4 ttl=64 time=0.120 ms
64 bytes from 10.0.0.3: icmp_seq=5 ttl=64 time=0.127 ms
64 bytes from 10.0.0.3: icmp_seq=6 ttl=64 time=0.104 ms
64 bytes from 10.0.0.3: icmp_seq=7 ttl=64 time=0.112 ms
64 bytes from 10.0.0.3: icmp_seq=8 ttl=64 time=0.073 ms
64 bytes from 10.0.0.3: icmp_seq=9 ttl=64 time=0.118 ms
64 bytes from 10.0.0.3: icmp_seq=10 ttl=64 time=0.086 ms
--- 10.0.0.3 ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 9215ms
rtt min/avg/max/mdev = 0.062/0.137/0.471/0.113 ms
mininet>

```

Figure 9: Proactive h1 ping h3

Trace given in Section B.

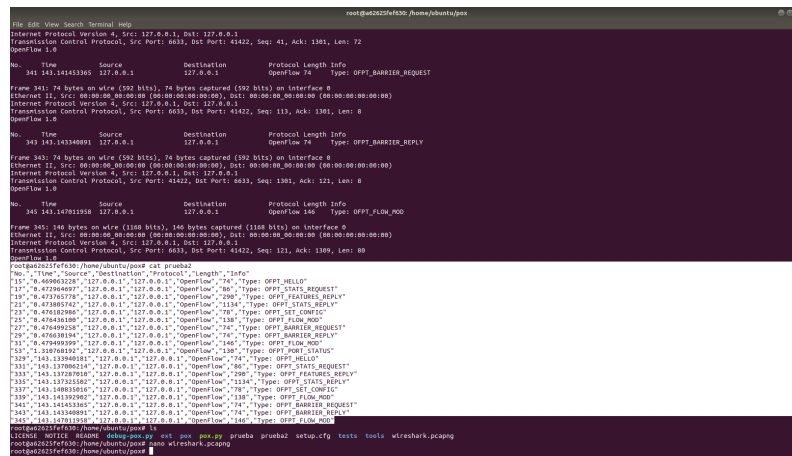


Figure 10: Proactive wireshark

Q4: Describe the functionality of hub.py as pseudocode.

Copied code from 2012 James McCauley

```
import ...
log = core.getLogger()

def _handle_ConnectionUp (event):
    """
    Be a proactive hub by telling every connected switch to flood all packets
    """
    msg = of.ofp_flow_mod() # modifies flow table
    msg.actions.append(of.ofp_action_output(port = of.OFPP_FLOOD)) # add action
    ↪ of every switch flood all the packages
    event.connection.send(msg) # send instruction
    log.info("Hubifying %s", dpidToStr(event.dpid))

def _handle_PacketIn (event):
    """
    Be a reactive hub by flooding every incoming packet
    """
    msg = of.ofp_packet_out() # instruct a switch to send a packet
    msg.data = event.ofp # the data to be sent
    msg.actions.append(of.ofp_action_output(port = of.OFPP_FLOOD)) # list of
    ↪ actions -> flood every package
    event.connection.send(msg) # sends the instruction

def launch (reactive = False): # trigger for reactive or proactive
    if reactive:
        core.openflow.addListenerByName("PacketIn", _handle_PacketIn)
        log.info("Reactive hub running.")
    else:
        core.openflow.addListenerByName("ConnectionUp", _handle_ConnectionUp)
        log.info("Proactive hub running.")
```

Q5: Why is there a difference in output from ovs-ofctl in T1 and T2?

reactive: cookie=0x0, duration=63.960s, table=0, n_packets=28, n_bytes=2288, actions=FLOOD
 proactive: cookie=0x0, duration=33.353s, table=0, n_packets=26, n_bytes=2148, actions=FLOOD

duration: The time the entry has been in the table.

n_packets: The number of packets that have matched the entry.

n_bytes: The total number of bytes from packets that have matched the entry.

The difference depends on when you have pushed the enter key, as it is depending on each entry.

Q6: Which OpenFlow messages do you observe in *hub-reactive* and *hub-proactive* (Ignore OFPT_BARRIER_*)? Explain the purpose and direction (switch → controller, controller → switch) of each message, and why you see different messages in proactive/reactive mode.

hub-reactive: Flows are installed after the controller is notified of a packet received in a data plane

hub-proactive: The controller populates the flow tables ahead of time

hub-reactive and hub-proactive:

- OFPT_HELLO: Symmetric message. Negotiate the OpenFlow version supported by both the devices.
- OFPT_STATS_REQUEST: Controller-to-switch message to query datapaths current state.
- OFPT_FEATURES_REPLY: Asynchronous, the switch replies with a list of ports, port speeds, and supported tables and actions.
- OFPT_STATS_REPLY: Asynchronous, switch to controller. Switch respond to request sent by controller.
- OFPT_SET_CONFIG: Controller-to-switch. the controller asks the switch to send flow expiration.
- OFPT_FLOW_MOD: Controller to switch. Notification of modifications of the flow table to the switch.
- OFPT_BARRIER_REQUEST: Controller to switch. Check that message dependencies have been met or to receive notifications for completed operations.
- OFPT_BARRIER_REPLY: Asynchronous. Answer to OFPT_BARRIER_REQUEST.
- OFPT_PORT_STATUS: Symmetric. Information about ports statistics.

hub-reactive:

- OFPT_PACKET_IN: Asynchronous, when the packet does not match any entry of the switch's flow table.
- OFPT_PACKET_OUT: Controller-to-switch, The controller sends a packet to one or more switch.

Q7: Why is there a difference in the average RTT of each ping session?

reactive: 43.004ms

proactive: 0.137ms

The reactive one also reacts to the *packet_in* and *packet_out* packages.

Appendix

A Reactive trace

No.	Time	Source	Destination	Protocol
↪ Length Info				
15	0.398772789	127.0.0.1	127.0.0.1	OpenFlow 74
↪ Type: OFPT_HELLO				

Frame 15: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42530, Seq: 1, Ack: 9,
↪ Len: 8
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
17	0.409491208	127.0.0.1	127.0.0.1	OpenFlow 86
↪ Type: OFPT_STATS_REQUEST				

Frame 17: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42530, Seq: 9, Ack: 9,
↪ Len: 20
OpenFlow 1.0
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
19	0.410207841	127.0.0.1	127.0.0.1	OpenFlow 290
↪ Type: OFPT_FEATURES_REPLY				

Frame 19: 290 bytes on wire (2320 bits), 290 bytes captured (2320 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42530, Dst Port: 6633, Seq: 9, Ack: 29,
↪ Len: 224
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
21	0.410266320	127.0.0.1	127.0.0.1	OpenFlow 1134
↪ Type: OFPT_STATS_REPLY				

Frame 21: 1134 bytes on wire (9072 bits), 1134 bytes captured (9072 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 42530, Dst Port: 6633, Seq: 233, Ack:
↪ 29, Len: 1068
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	23 0.412568282	127.0.0.1	127.0.0.1	OpenFlow 78
	↪	Type: OFPT_SET_CONFIG		

Frame 23: 78 bytes on wire (624 bits), 78 bytes captured (624 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42530, Seq: 29, Ack:
↪ 1301, Len: 12
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	25 0.422805219	127.0.0.1	127.0.0.1	OpenFlow 138
	↪	Type: OFPT_FLOW_MOD		

Frame 25: 138 bytes on wire (1104 bits), 138 bytes captured (1104 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42530, Seq: 41, Ack:
↪ 1301, Len: 72
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	27 0.422892353	127.0.0.1	127.0.0.1	OpenFlow 74
	↪	Type: OFPT_BARRIER_REQUEST		

Frame 27: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42530, Seq: 113, Ack:
↪ 1301, Len: 8
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	29 0.423090895	127.0.0.1	127.0.0.1	OpenFlow 74
	↪	Type: OFPT_BARRIER_REPLY		

Frame 29: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42530, Dst Port: 6633, Seq: 1301, Ack:
↪ 121, Len: 8

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
31	0.427048038	127.0.0.1	127.0.0.1	OpenFlow 146
↪ Type: OFPT_FLOW_MOD				

Frame 31: 146 bytes on wire (1168 bits), 146 bytes captured (1168 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42530, Seq: 121, Ack:
↪ 1309, Len: 80
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
53	1.290477700	127.0.0.1	127.0.0.1	OpenFlow 130
↪ Type: OFPT_PORT_STATUS				

Frame 53: 130 bytes on wire (1040 bits), 130 bytes captured (1040 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42530, Dst Port: 6633, Seq: 1309, Ack:
↪ 201, Len: 64
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
201	81.838951238	127.0.0.1	127.0.0.1	OpenFlow 74
↪ Type: OFPT_HELLO				

Frame 201: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1, Ack: 9,
↪ Len: 8
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
203	81.842483695	127.0.0.1	127.0.0.1	OpenFlow 86
↪ Type: OFPT_STATS_REQUEST				

Frame 203: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 9, Ack: 9,
↪ Len: 20
OpenFlow 1.0
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
205	81.842941713	127.0.0.1	127.0.0.1	OpenFlow 290
↪ Type: OFPT_FEATURES_REPLY				

Frame 205: 290 bytes on wire (2320 bits), 290 bytes captured (2320 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 9, Ack: 29,
↪ Len: 224
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
207	81.842980586	127.0.0.1	127.0.0.1	OpenFlow 1134
↪ Type: OFPT_STATS_REPLY				

Frame 207: 1134 bytes on wire (9072 bits), 1134 bytes captured (9072 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 233, Ack:
↪ 29, Len: 1068
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
209	81.847820142	127.0.0.1	127.0.0.1	OpenFlow 78
↪ Type: OFPT_SET_CONFIG				

Frame 209: 78 bytes on wire (624 bits), 78 bytes captured (624 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 29, Ack:
↪ 1301, Len: 12
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
211	81.848229319	127.0.0.1	127.0.0.1	OpenFlow 138
↪ Type: OFPT_FLOW_MOD				

Frame 211: 138 bytes on wire (1104 bits), 138 bytes captured (1104 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 41, Ack:
↪ 1301, Len: 72
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
213	81.848287257	127.0.0.1	127.0.0.1	OpenFlow 74
↪ Type: OFPT_BARRIER_REQUEST				

Frame 213: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 113, Ack:
↪ 1301, Len: 8
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
215	81.848367167	127.0.0.1	127.0.0.1	OpenFlow 74
↪ Type: OFPT_BARRIER_REPLY				

Frame 215: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 1301, Ack:
↪ 121, Len: 8
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
244	120.297983447	fe80::200:ff:fe00:1	ff02::2	OpenFlow 154
↪ Type: OFPT_PACKET_IN				

Frame 244: 154 bytes on wire (1232 bits), 154 bytes captured (1232 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 1365, Ack:
↪ 177, Len: 88
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
246	120.327611380	fe80::200:ff:fe00:1	ff02::2	OpenFlow 160
↪ Type: OFPT_PACKET_OUT				

Frame 246: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 177, Ack:
↪ 1453, Len: 94
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				

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248 122.348392501 fe80::200:ff:fe00:2 ff02::2 OpenFlow 154
↳ Type: OFPT_PACKET_IN

Frame 248: 154 bytes on wire (1232 bits), 154 bytes captured (1232 bits) on
↳ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↳ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 1453, Ack:
↳ 271, Len: 88
OpenFlow 1.0

No.      Time      Source      Destination      Protocol
↳ Length Info
250 122.357038638 fe80::200:ff:fe00:2 ff02::2 OpenFlow 160
↳ Type: OFPT_PACKET_OUT

Frame 250: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on
↳ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↳ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 271, Ack:
↳ 1541, Len: 94
OpenFlow 1.0

No.      Time      Source      Destination      Protocol
↳ Length Info
258 134.638266462 fe80::200:ff:fe00:3 ff02::2 OpenFlow 154
↳ Type: OFPT_PACKET_IN

Frame 258: 154 bytes on wire (1232 bits), 154 bytes captured (1232 bits) on
↳ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↳ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 1557, Ack:
↳ 381, Len: 88
OpenFlow 1.0

No.      Time      Source      Destination      Protocol
↳ Length Info
259 134.669170637 fe80::200:ff:fe00:3 ff02::2 OpenFlow 160
↳ Type: OFPT_PACKET_OUT

Frame 259: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on
↳ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↳ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 381, Ack:
↳ 1645, Len: 94
OpenFlow 1.0

No.      Time      Source      Destination      Protocol
↳ Length Info
329 239.084242354 fe80::200:ff:fe00:1 ff02::2 OpenFlow 154
↳ Type: OFPT_PACKET_IN

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Frame 329: 154 bytes on wire (1232 bits), 154 bytes captured (1232 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 1813, Ack:
→ 643, Len: 88
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
330	239.085412205	fe80::200:ff:fe00:1	ff02::2	OpenFlow 160
→ Type: OFPT_PACKET_OUT				

Frame 330: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 643, Ack:
→ 1901, Len: 94
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
332	241.134829771	fe80::200:ff:fe00:2	ff02::2	OpenFlow 154
→ Type: OFPT_PACKET_IN				

Frame 332: 154 bytes on wire (1232 bits), 154 bytes captured (1232 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 1901, Ack:
→ 737, Len: 88
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
333	241.168658334	fe80::200:ff:fe00:2	ff02::2	OpenFlow 160
→ Type: OFPT_PACKET_OUT				

Frame 333: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 737, Ack:
→ 1989, Len: 94
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
355	267.754518538	fe80::200:ff:fe00:3	ff02::2	OpenFlow 154
→ Type: OFPT_PACKET_IN				

Frame 355: 154 bytes on wire (1232 bits), 154 bytes captured (1232 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2029, Ack:
→ 871, Len: 88
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
356	267.792081887	fe80::200:ff:fe00:3	ff02::2	OpenFlow 160
→ Type: OFPT_PACKET_OUT				

Frame 356: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 871, Ack:
→ 2117, Len: 94
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
364	281.233480482	00:00:00_00:00:01	Broadcast	OpenFlow 126
→ Type: OFPT_PACKET_IN				

Frame 364: 126 bytes on wire (1008 bits), 126 bytes captured (1008 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2133, Ack:
→ 981, Len: 60
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
365	281.255277044	00:00:00_00:00:01	Broadcast	OpenFlow 132
→ Type: OFPT_PACKET_OUT				

Frame 365: 132 bytes on wire (1056 bits), 132 bytes captured (1056 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 981, Ack:
→ 2193, Len: 66
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
367	281.255839999	00:00:00_00:00:03	00:00:00_00:00:01	OpenFlow 126
→ Type: OFPT_PACKET_IN				

Frame 367: 126 bytes on wire (1008 bits), 126 bytes captured (1008 bits) on
→ interface 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2193, Ack:
↪ 1047, Len: 60
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
368	281.257813205	00:00:00_00:00:03	00:00:00_00:00:01	OpenFlow 132
↪	Type: OFPT_PACKET_OUT			

Frame 368: 132 bytes on wire (1056 bits), 132 bytes captured (1056 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1047, Ack:
↪ 2253, Len: 66
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
369	281.258268248	10.0.0.1	10.0.0.3	OpenFlow 182
↪	Type: OFPT_PACKET_IN			

Frame 369: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2253, Ack:
↪ 1113, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
370	281.261504791	10.0.0.1	10.0.0.3	OpenFlow 188
↪	Type: OFPT_PACKET_OUT			

Frame 370: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1113, Ack:
↪ 2369, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
371	281.262306703	10.0.0.3	10.0.0.1	OpenFlow 182
↪	Type: OFPT_PACKET_IN			

Frame 371: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2369, Ack:
→ 1235, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
372	281.264295379	10.0.0.3	10.0.0.1	OpenFlow 188
→ Type: OFPT_PACKET_OUT				

Frame 372: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1235, Ack:
→ 2485, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
374	282.236369028	10.0.0.1	10.0.0.3	OpenFlow 182
→ Type: OFPT_PACKET_IN				

Frame 374: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2485, Ack:
→ 1357, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
375	282.272697604	10.0.0.1	10.0.0.3	OpenFlow 188
→ Type: OFPT_PACKET_OUT				

Frame 375: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1357, Ack:
→ 2601, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
377	282.273071965	10.0.0.3	10.0.0.1	OpenFlow 182
→ Type: OFPT_PACKET_IN				

Frame 377: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2601, Ack:
↪ 1479, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
378	282.274517684	10.0.0.3	10.0.0.1	OpenFlow 188
↪	Type: OFPT_PACKET_OUT			

Frame 378: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1479, Ack:
↪ 2717, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
380	283.239501180	10.0.0.1	10.0.0.3	OpenFlow 182
↪	Type: OFPT_PACKET_IN			

Frame 380: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2717, Ack:
↪ 1601, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
381	283.278238859	10.0.0.1	10.0.0.3	OpenFlow 188
↪	Type: OFPT_PACKET_OUT			

Frame 381: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1601, Ack:
↪ 2833, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
383	283.278728447	10.0.0.3	10.0.0.1	OpenFlow 182
↪	Type: OFPT_PACKET_IN			

Frame 383: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2833, Ack:
↪ 1723, Len: 116

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
384	283.281309342	10.0.0.3	10.0.0.1	OpenFlow 188
↪ Type: OFPT_PACKET_OUT				

Frame 384: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1723, Ack:
↪ 2949, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
386	284.242957841	10.0.0.1	10.0.0.3	OpenFlow 182
↪ Type: OFPT_PACKET_IN				

Frame 386: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 2949, Ack:
↪ 1845, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
387	284.282957474	10.0.0.1	10.0.0.3	OpenFlow 188
↪ Type: OFPT_PACKET_OUT				

Frame 387: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1845, Ack:
↪ 3065, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
389	284.283606069	10.0.0.3	10.0.0.1	OpenFlow 182
↪ Type: OFPT_PACKET_IN				

Frame 389: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3065, Ack:
↪ 1967, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
390	284.285538339	10.0.0.3	10.0.0.1	OpenFlow 188
↪ Type: OFPT_PACKET_OUT				

Frame 390: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 1967, Ack:
↪ 3181, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
392	285.247240489	10.0.0.1	10.0.0.3	OpenFlow 182
↪ Type: OFPT_PACKET_IN				

Frame 392: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3181, Ack:
↪ 2089, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
393	285.286702164	10.0.0.1	10.0.0.3	OpenFlow 188
↪ Type: OFPT_PACKET_OUT				

Frame 393: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2089, Ack:
↪ 3297, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
395	285.287308550	10.0.0.3	10.0.0.1	OpenFlow 182
↪ Type: OFPT_PACKET_IN				

Frame 395: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3297, Ack:
↪ 2211, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				

396 285.289883213 10.0.0.3 10.0.0.1 OpenFlow 188
↪ Type: OFPT_PACKET_OUT

Frame 396: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2211, Ack:
↪ 3413, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
398	286.251235668	10.0.0.1	10.0.0.3	OpenFlow 182
↪ Type: OFPT_PACKET_IN				

Frame 398: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3413, Ack:
↪ 2333, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
400	286.295988104	10.0.0.1	10.0.0.3	OpenFlow 188
↪ Type: OFPT_PACKET_OUT				

Frame 400: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2333, Ack:
↪ 3529, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
402	286.296381171	10.0.0.3	10.0.0.1	OpenFlow 182
↪ Type: OFPT_PACKET_IN				

Frame 402: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3529, Ack:
↪ 2455, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
404	286.298435018	10.0.0.3	10.0.0.1	OpenFlow 188
↪ Type: OFPT_PACKET_OUT				

Frame 404: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2455, Ack:
↪ 3645, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
406	286.444454	103 00:00:00_00:00:03	00:00:00_00:00:01	OpenFlow 126
↪	Type: OFPT_PACKET_IN			

Frame 406: 126 bytes on wire (1008 bits), 126 bytes captured (1008 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3645, Ack:
↪ 2577, Len: 60
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
408	286.474202	051 00:00:00_00:00:03	00:00:00_00:00:01	OpenFlow 132
↪	Type: OFPT_PACKET_OUT			

Frame 408: 132 bytes on wire (1056 bits), 132 bytes captured (1056 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2577, Ack:
↪ 3705, Len: 66
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
410	286.474636	595 00:00:00_00:00:01	00:00:00_00:00:03	OpenFlow 126
↪	Type: OFPT_PACKET_IN			

Frame 410: 126 bytes on wire (1008 bits), 126 bytes captured (1008 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3705, Ack:
↪ 2643, Len: 60
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
412	286.476632	083 00:00:00_00:00:01	00:00:00_00:00:03	OpenFlow 132
↪	Type: OFPT_PACKET_OUT			

Frame 412: 132 bytes on wire (1056 bits), 132 bytes captured (1056 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2643, Ack:
→ 3765, Len: 66
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
414	287.253777885	10.0.0.1	10.0.0.3	OpenFlow 182
→ Type: OFPT_PACKET_IN				

Frame 414: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3765, Ack:
→ 2709, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
416	287.283538928	10.0.0.1	10.0.0.3	OpenFlow 188
→ Type: OFPT_PACKET_OUT				

Frame 416: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2709, Ack:
→ 3881, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
418	287.284066787	10.0.0.3	10.0.0.1	OpenFlow 182
→ Type: OFPT_PACKET_IN				

Frame 418: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3881, Ack:
→ 2831, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
420	287.286395368	10.0.0.3	10.0.0.1	OpenFlow 188
→ Type: OFPT_PACKET_OUT				

Frame 420: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
→ interface 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2831, Ack:
↪ 3997, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
422	288.257453556	10.0.0.1	10.0.0.3	OpenFlow 182
↪	Type: OFPT_PACKET_IN			

Frame 422: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 3997, Ack:
↪ 2953, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
424	288.295098738	10.0.0.1	10.0.0.3	OpenFlow 188
↪	Type: OFPT_PACKET_OUT			

Frame 424: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 2953, Ack:
↪ 4113, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
426	288.295731654	10.0.0.3	10.0.0.1	OpenFlow 182
↪	Type: OFPT_PACKET_IN			

Frame 426: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 4113, Ack:
↪ 3075, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
427	288.299383514	10.0.0.3	10.0.0.1	OpenFlow 188
↪	Type: OFPT_PACKET_OUT			

Frame 427: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 3075, Ack:
→ 4229, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
429	289.259355804	10.0.0.1	10.0.0.3	OpenFlow 182
→ Type: OFPT_PACKET_IN				

Frame 429: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 4229, Ack:
→ 3197, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
431	289.306407158	10.0.0.1	10.0.0.3	OpenFlow 188
→ Type: OFPT_PACKET_OUT				

Frame 431: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 3197, Ack:
→ 4345, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
433	289.307023903	10.0.0.3	10.0.0.1	OpenFlow 182
→ Type: OFPT_PACKET_IN				

Frame 433: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 4345, Ack:
→ 3319, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
435	289.309343839	10.0.0.3	10.0.0.1	OpenFlow 188
→ Type: OFPT_PACKET_OUT				

Frame 435: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 3319, Ack:
↪ 4461, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	437	290.263012970	10.0.0.1	10.0.0.3
	↪	Type: OFPT_PACKET_IN		OpenFlow 182

Frame 437: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 4461, Ack:
↪ 3441, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	439	290.314711309	10.0.0.1	10.0.0.3
	↪	Type: OFPT_PACKET_OUT		OpenFlow 188

Frame 439: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 3441, Ack:
↪ 4577, Len: 122
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	441	290.315419225	10.0.0.3	10.0.0.1
	↪	Type: OFPT_PACKET_IN		OpenFlow 182

Frame 441: 182 bytes on wire (1456 bits), 182 bytes captured (1456 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 42678, Dst Port: 6633, Seq: 4577, Ack:
↪ 3563, Len: 116
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	443	290.318607708	10.0.0.3	10.0.0.1
	↪	Type: OFPT_PACKET_OUT		OpenFlow 188

Frame 443: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 42678, Seq: 3563, Ack:
↪ 4693, Len: 122

OpenFlow 1.0

B Proactive trace

No.	Time	Source	Destination	Protocol
↪	Length Info			
	15 0.469063228	127.0.0.1	127.0.0.1	OpenFlow 74
↪	Type: OFPT_HELLO			

Frame 15: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 6633, Dst Port: 41140, Seq: 1, Ack: 9,
↪ Len: 8

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	17 0.472964697	127.0.0.1	127.0.0.1	OpenFlow 86
↪	Type: OFPT_STATS_REQUEST			

Frame 17: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface
↪ 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 6633, Dst Port: 41140, Seq: 9, Ack: 9,
↪ Len: 20

OpenFlow 1.0

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	19 0.473765778	127.0.0.1	127.0.0.1	OpenFlow 290
↪	Type: OFPT_FEATURES_REPLY			

Frame 19: 290 bytes on wire (2320 bits), 290 bytes captured (2320 bits) on
↪ interface 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 41140, Dst Port: 6633, Seq: 9, Ack: 29,
↪ Len: 224

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪	Length Info			
	21 0.473805742	127.0.0.1	127.0.0.1	OpenFlow 1134
↪	Type: OFPT_STATS_REPLY			

Frame 21: 1134 bytes on wire (9072 bits), 1134 bytes captured (9072 bits) on
↪ interface 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 41140, Dst Port: 6633, Seq: 233, Ack:
→ 29, Len: 1068
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
23	0.476182986	127.0.0.1	127.0.0.1	OpenFlow 78
→ Type: OFPT_SET_CONFIG				

Frame 23: 78 bytes on wire (624 bits), 78 bytes captured (624 bits) on interface
→ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41140, Seq: 29, Ack:
→ 1301, Len: 12
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
25	0.476436100	127.0.0.1	127.0.0.1	OpenFlow 138
→ Type: OFPT_FLOW_MOD				

Frame 25: 138 bytes on wire (1104 bits), 138 bytes captured (1104 bits) on
→ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41140, Seq: 41, Ack:
→ 1301, Len: 72
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
27	0.476499258	127.0.0.1	127.0.0.1	OpenFlow 74
→ Type: OFPT_BARRIER_REQUEST				

Frame 27: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
→ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41140, Seq: 113, Ack:
→ 1301, Len: 8
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
→ Length Info				
29	0.476630194	127.0.0.1	127.0.0.1	OpenFlow 74
→ Type: OFPT_BARRIER_REPLY				

Frame 29: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
→ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
→ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 41140, Dst Port: 6633, Seq: 1301, Ack:
→ 121, Len: 8

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
31	0.479499399	127.0.0.1	127.0.0.1	OpenFlow 146
↪ Type: OFPT_FLOW_MOD				

Frame 31: 146 bytes on wire (1168 bits), 146 bytes captured (1168 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41140, Seq: 121, Ack:
↪ 1309, Len: 80
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
53	1.310768192	127.0.0.1	127.0.0.1	OpenFlow 130
↪ Type: OFPT_PORT_STATUS				

Frame 53: 130 bytes on wire (1040 bits), 130 bytes captured (1040 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 41140, Dst Port: 6633, Seq: 1309, Ack:
↪ 201, Len: 64
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
329	143.133940181	127.0.0.1	127.0.0.1	OpenFlow 74
↪ Type: OFPT_HELLO				

Frame 329: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41422, Seq: 1, Ack: 9,
↪ Len: 8
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
331	143.137006214	127.0.0.1	127.0.0.1	OpenFlow 86
↪ Type: OFPT_STATS_REQUEST				

Frame 331: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41422, Seq: 9, Ack: 9,
↪ Len: 20
OpenFlow 1.0
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
333	143.137287010	127.0.0.1	127.0.0.1	OpenFlow 290
↪ Type: OFPT_FEATURES_REPLY				

Frame 333: 290 bytes on wire (2320 bits), 290 bytes captured (2320 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 41422, Dst Port: 6633, Seq: 9, Ack: 29,
↪ Len: 224
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
335	143.137325502	127.0.0.1	127.0.0.1	OpenFlow 1134
↪ Type: OFPT_STATS_REPLY				

Frame 335: 1134 bytes on wire (9072 bits), 1134 bytes captured (9072 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 41422, Dst Port: 6633, Seq: 233, Ack:
↪ 29, Len: 1068
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
337	143.140835016	127.0.0.1	127.0.0.1	OpenFlow 78
↪ Type: OFPT_SET_CONFIG				

Frame 337: 78 bytes on wire (624 bits), 78 bytes captured (624 bits) on interface
↪ 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41422, Seq: 29, Ack:
↪ 1301, Len: 12
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
339	143.141392902	127.0.0.1	127.0.0.1	OpenFlow 138
↪ Type: OFPT_FLOW_MOD				

Frame 339: 138 bytes on wire (1104 bits), 138 bytes captured (1104 bits) on
↪ interface 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6633, Dst Port: 41422, Seq: 41, Ack:
↪ 1301, Len: 72
OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
341	143.141453365	127.0.0.1	127.0.0.1	OpenFlow 74
↪ Type: OFPT_BARRIER_REQUEST				

Frame 341: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 6633, Dst Port: 41422, Seq: 113, Ack:
↪ 1301, Len: 8

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
343	143.143340891	127.0.0.1	127.0.0.1	OpenFlow 74
↪ Type: OFPT_BARRIER_REPLY				

Frame 343: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface
↪ 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 41422, Dst Port: 6633, Seq: 1301, Ack:
↪ 121, Len: 8

OpenFlow 1.0

No.	Time	Source	Destination	Protocol
↪ Length Info				
345	143.147011958	127.0.0.1	127.0.0.1	OpenFlow 146
↪ Type: OFPT_FLOW_MOD				

Frame 345: 146 bytes on wire (1168 bits), 146 bytes captured (1168 bits) on
↪ interface 0

Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00
↪ (00:00:00:00:00:00)

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 6633, Dst Port: 41422, Seq: 121, Ack:
↪ 1309, Len: 80

OpenFlow 1.0