Lab 1 Solutions

2.

```
mininet> dump
<Host h1: h1-eth0:10.0.0.1 pid=7823>
<Host h2: h2-eth0:10.0.0.2 pid=7827>
<Host h3: h3-eth0:10.0.0.3 pid=7829>
<Host h4: h4-eth0:10.0.0.4 pid=7831>
<OVSSwitch s1: lo:127.0.0.1,s1-eth1:None,s1-eth2:None,s1-eth3:None pid=7836>
<OVSSwitch s2: lo:127.0.0.1,s2-eth1:None,s2-eth2:None,s2-eth3:None pid=7841>
<Controller c0: 127.0.0.1:6633 pid=7816>
mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 h3 h4
h2 -> h1 h3 h4
h3 -> h1 h2 h4
h4 -> h1 h2 h3
*** Results: 0% dropped (12/12 received)
```

In the screenshot, the command *dump*, dumps information about all nodes, while pingall displays the connectivity between all hosts and tells us which hosts are connected to each other.

3.

```
mininet> iperf
*** Iperf: testing TCP bandwidth between h1 and h4
*** Results: ['11.2 Gbits/sec', '11.2 Gbits/sec']
```

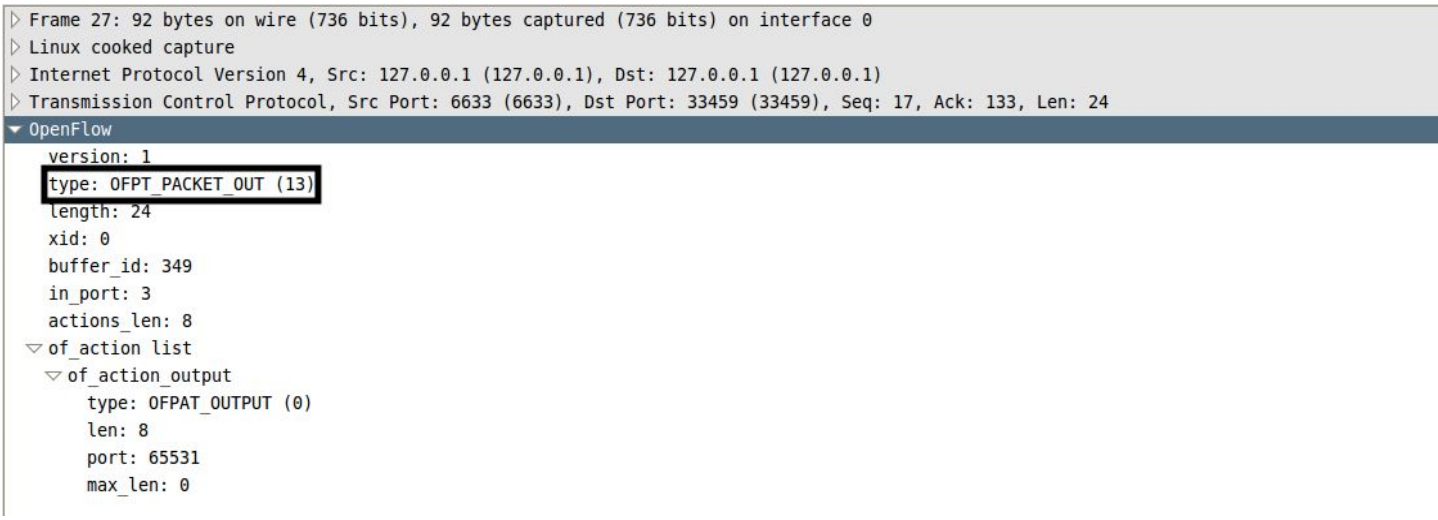
The result of running command *iperf*, shows that the bandwidth between hl and h4 is 11.2 Gbits/sec.

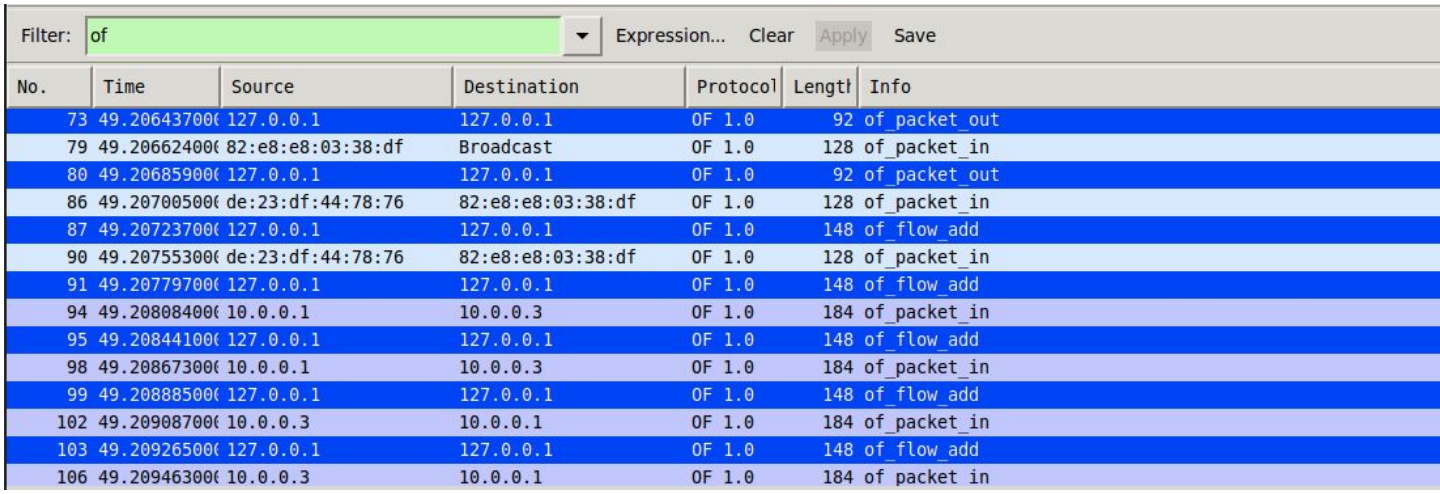
4a.

19	7.358200000	10.0.0.1	10.0.0.3	OF 1.0	184	of_packet_in
20	7.358902000	127.0.0.1	127.0.0.1	OF 1.0	92	of_packet_out
26	7.359393000	10.0.0.1	10.0.0.3	OF 1.0	184	of_packet_in
27	7.359788000	127.0.0.1	127.0.0.1	OF 1.0	92	of_packet_out
33	7.360182000	10.0.0.3	10.0.0.1	OF 1.0	184	of_packet_in
34	7.360664000	127.0.0.1	127.0.0.1	OF 1.0	148	of_flow_add
37	7.361099000	10.0.0.3	10.0.0.1	OF 1.0	184	of_packet_in
38	7.361392000	127.0.0.1	127.0.0.1	OF 1.0	148	of_flow_add
43	8.359613000	10.0.0.1	10.0.0.3	OF 1.0	184	of_packet_in
44	8.360450000	127.0.0.1	127.0.0.1	OF 1.0	148	of_flow_add
48	8.361482000	10.0.0.1	10.0.0.3	OF 1.0	184	of_packet_in
49	8.362125000	127.0.0.1	127.0.0.1	OF 1.0	148	of_flow_add
83	12.36752600(	3e:16:81:fb:fe:57	d6:3c:89:3a:e7:1c	OF 1.0	128	of_packet_in
84	12.36785800(	127.0.0.1	127.0.0.1	OF 1.0	148	of_flow_add
88	12.36870500(	3e:16:81:fb:fe:57	d6:3c:89:3a:e7:1c	OF 1.0	128	of_packet_in
89	12.36900800(	127.0.0.1	127.0.0.1	OF 1.0	148	of_flow_add
93	12.36946000(	d6:3c:89:3a:e7:1c	3e:16:81:fb:fe:57	OF 1.0	128	of_packet_in
94	12.36971900(	127.0.0.1	127.0.0.1	OF 1.0	148	of_flow_add
97	12.37025800(	d6:3c:89:3a:e7:1c	3e:16:81:fb:fe:57	OF 1.0	128	of_packet_in

From running the command ***hX ping c 5 hY*** where x = 1 and y = 3, results in 10 "***of_packet_in***" showing up.

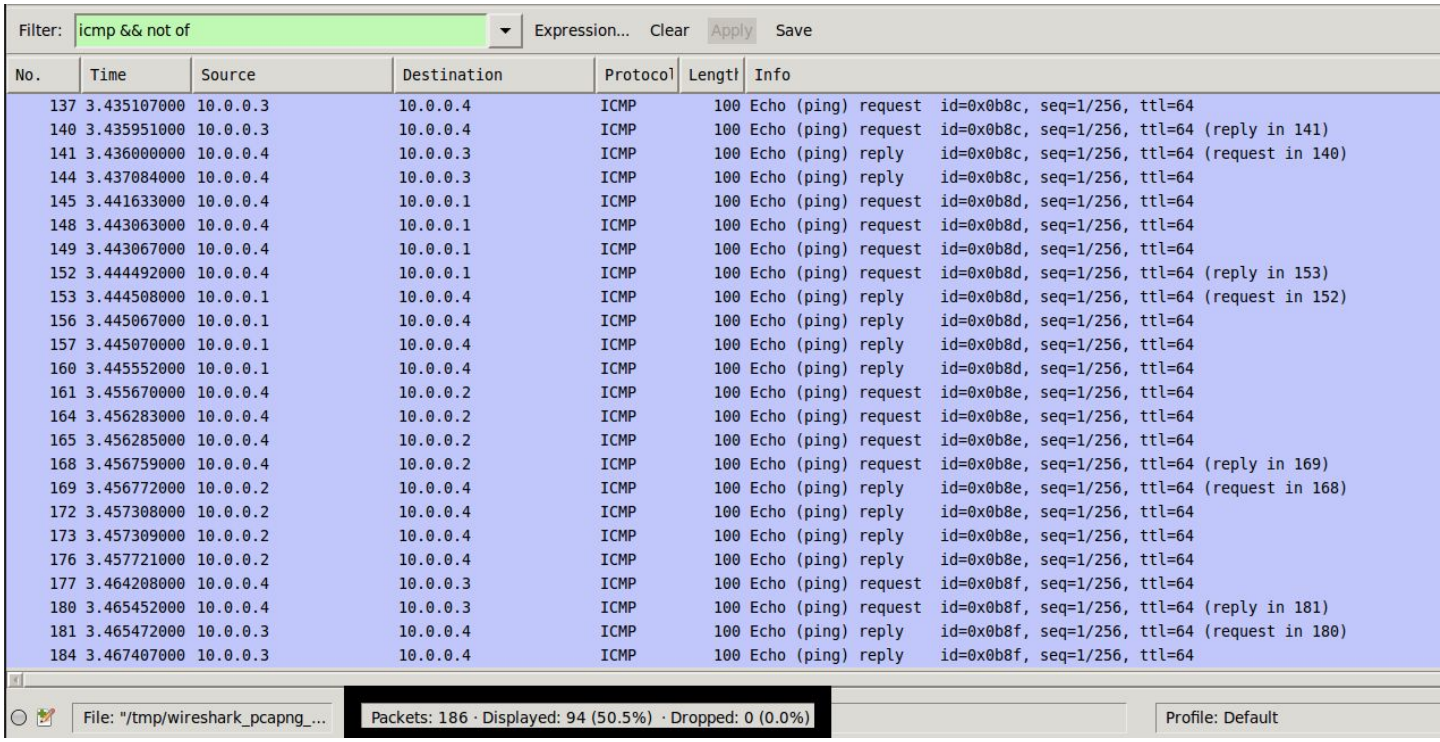
4b.





The source and destination of the IP addresses is 127.0.0.1. While the of_packet_in was 10.0.0.1 and 10.0.0.3

4c.



There are 94 entries generated in wireshark, the type of icmp entries are request and replies.