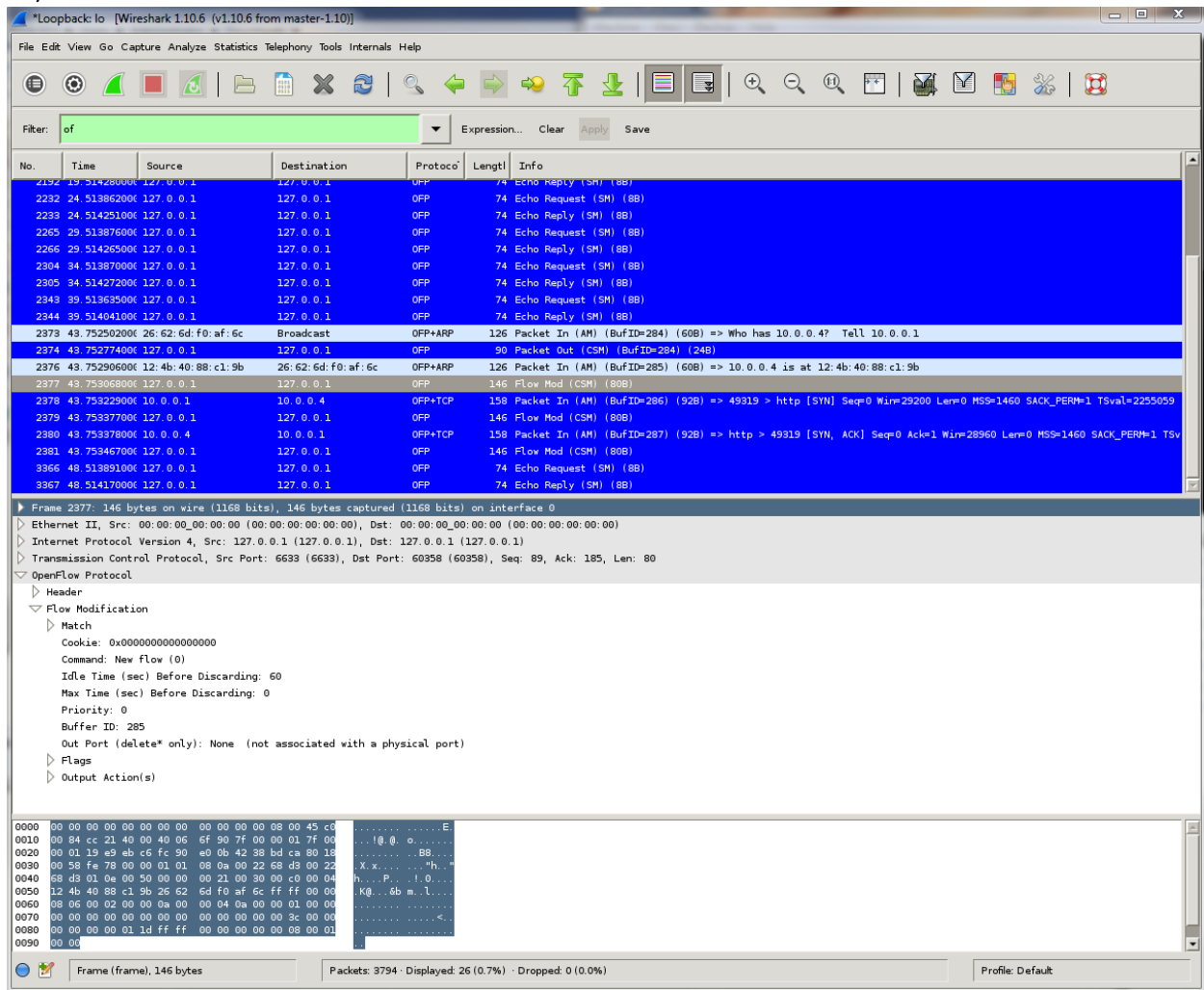


3a)



3b)

```
NXST_FLOW reply (xid=0x4):
cookie=0x0, duration=2.256s, table=0, n_packets=6, n_bytes=510, idle_timeout=60, idle_age=2, priority=0, tcp, in_port=1, vlan_tci=0x0000, dl_src=26:62:6d:f0:af:6c, dl_dst=12:4b:40:88:c1:9b, nw_src=10.0.0.1, nw_dst=10.0.0.4, nw_tos=0, tp_src=49321, tp_dst=80 actions=output:4
cookie=0x0, duration=2.256s, table=0, n_packets=5, n_bytes=1325, idle_timeout=60, idle_age=2, priority=0, tcp, in_port=4, vlan_tci=0x0000, dl_src=12:4b:40:88:c1:9b, dl_dst=26:62:6d:f0:af:6c, nw_src=10.0.0.4, nw_dst=10.0.0.1, nw_tos=0, tp_src=80, tp_dst=49321 actions=output:1
```

There is not a single bi-directional flow because each flow is assigned based on each flow's individual source and destination. This allows for more control over flows.

3c) From the wireshark capture we can see that the idle timeout is set to 60 seconds, and the max time is set to 0. This means the flow modification entry will exist until 60 seconds after the last packet that matches that rule was seen. If the max time had a time limit, then no matter what, the rule would expire after that limit.

3d) The latency of the first packet of a flow is higher because that packet needs to be forwarded to the controller. The controller then responds to the switch with what it should do with that packet, and possibly sets up a flow modification rule. Subsequent packets that have a flow modification rule are simply forwarded on to the destination.