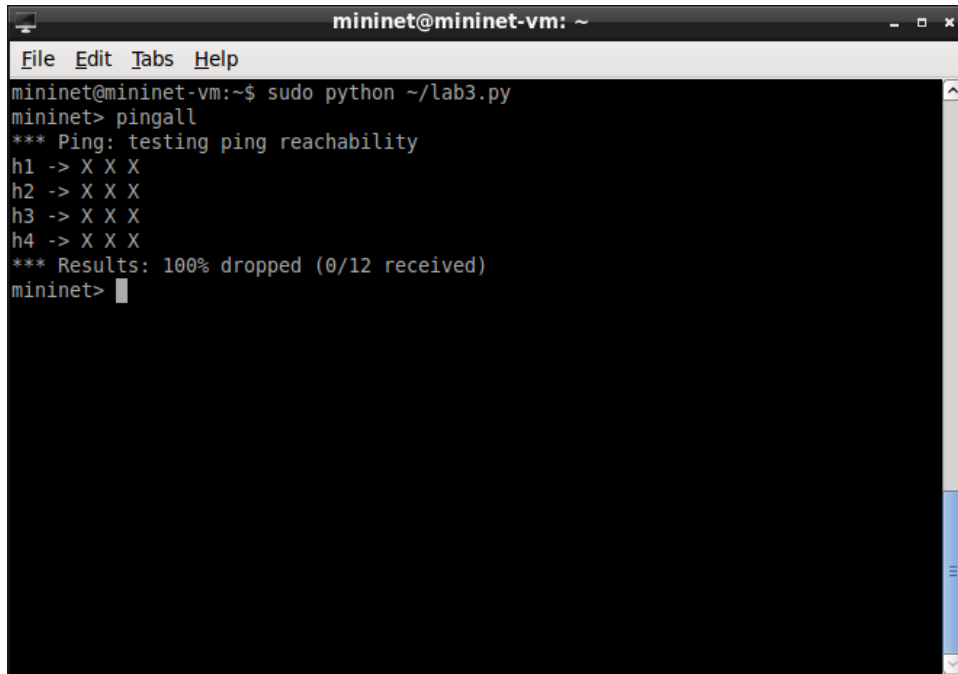
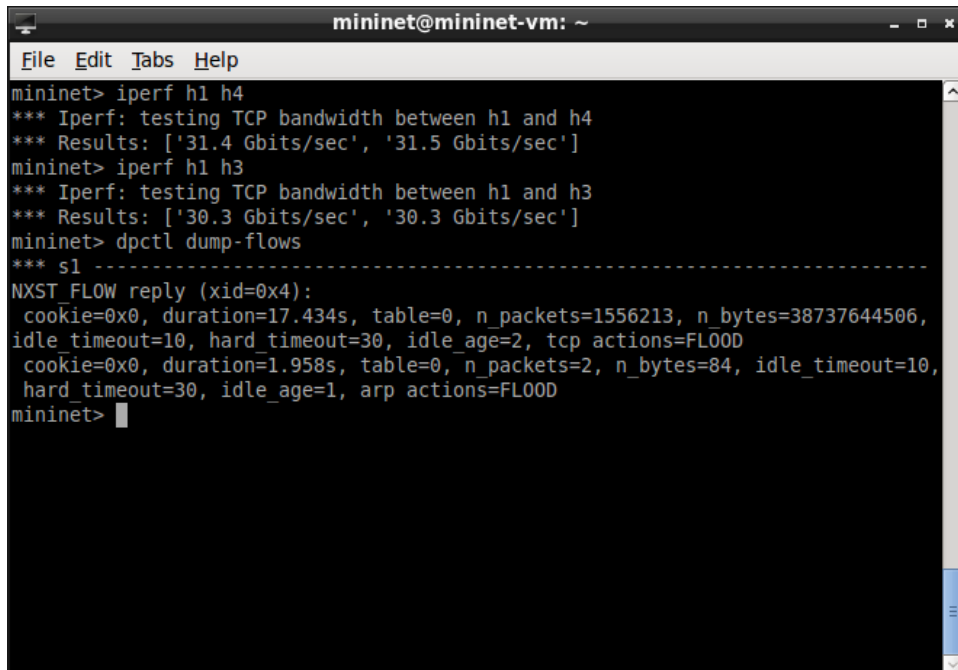


1. The output of `pingall` shows that all of the pings failed, which is the expected behavior, since ICMP traffic should be blocked by the firewall. All pings show "X" as a result, meaning 100% of packets were dropped. Below is a screenshot of my output:



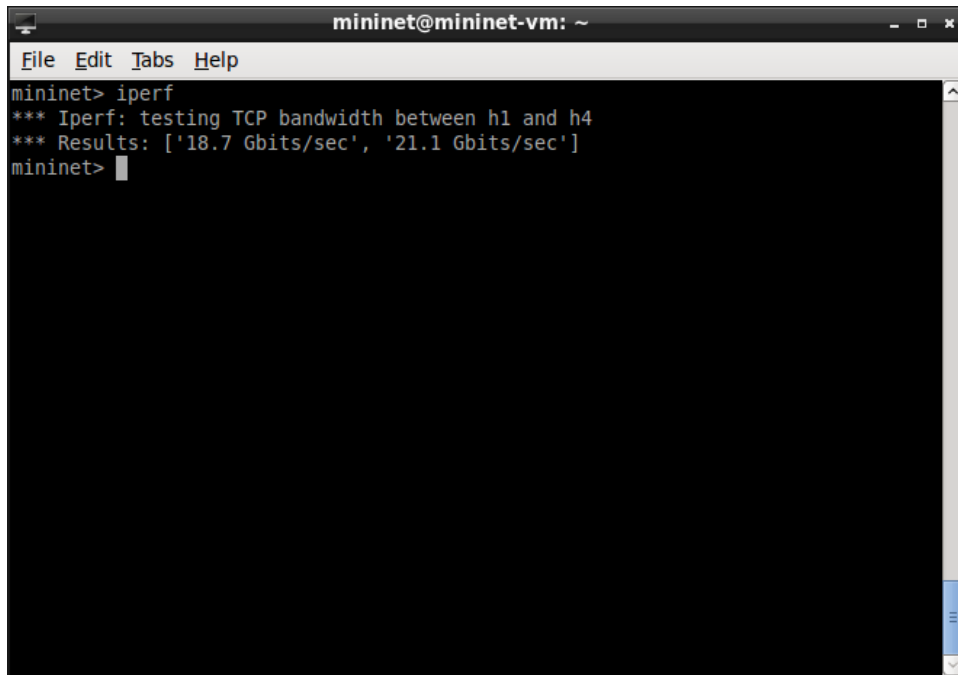
```
mininet@mininet-vm: ~  
File Edit Tabs Help  
mininet@mininet-vm:~$ sudo python ~/lab3.py  
mininet> pingall  
*** Ping: testing ping reachability  
h1 -> X X X  
h2 -> X X X  
h3 -> X X X  
h4 -> X X X  
*** Results: 100% dropped (0/12 received)  
mininet>
```

2. After I generated some TCP traffic using `iperf`, I immediately ran `dpctl dump-flows` to show the active flow entries installed in the switch before they expire due to the `idle_timeout` or `hard_timeout` specified in my `flow_mod` (`idle_timeout = 10`, `hard_timeout = 30`). Below is a screenshot of my output:



```
mininet@mininet-vm: ~  
File Edit Tabs Help  
mininet> iperf h1 h4  
*** Iperf: testing TCP bandwidth between h1 and h4  
*** Results: ['31.4 Gbits/sec', '31.5 Gbits/sec']  
mininet> iperf h1 h3  
*** Iperf: testing TCP bandwidth between h1 and h3  
*** Results: ['30.3 Gbits/sec', '30.3 Gbits/sec']  
mininet> dpctl dump-flows  
*** s1 -----  
NXST FLOW reply (xid=0x4):  
  cookie=0x0, duration=17.434s, table=0, n_packets=1556213, n_bytes=38737644506,  
  idle_timeout=10, hard_timeout=30, idle_age=2, tcp actions=FL00D  
  cookie=0x0, duration=1.958s, table=0, n_packets=2, n_bytes=84, idle_timeout=10,  
  hard_timeout=30, idle_age=1, arp actions=FL00D  
mininet>
```

3. The `iperf` test between h1 and h4 was successful, with high bandwidth rates, which indicates that my firewall is allowing TCP traffic. Below is a screenshot of my output:



```
mininet@mininet-vm: ~  
File Edit Tabs Help  
mininet> iperf  
*** Iperf: testing TCP bandwidth between h1 and h4  
*** Results: ['18.7 Gbits/sec', '21.1 Gbits/sec']  
mininet> 
```

The screenshot shows a terminal window titled "mininet@mininet-vm: ~". The window has a menu bar with "File", "Edit", "Tabs", and "Help". The terminal output shows the command "iperf" being executed, resulting in the message "*** Iperf: testing TCP bandwidth between h1 and h4" and "*** Results: ['18.7 Gbits/sec', '21.1 Gbits/sec']". The prompt "mininet>" is visible at the bottom of the terminal.