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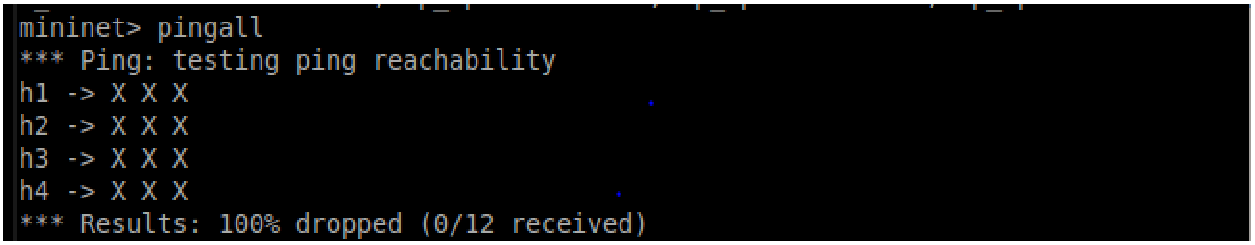
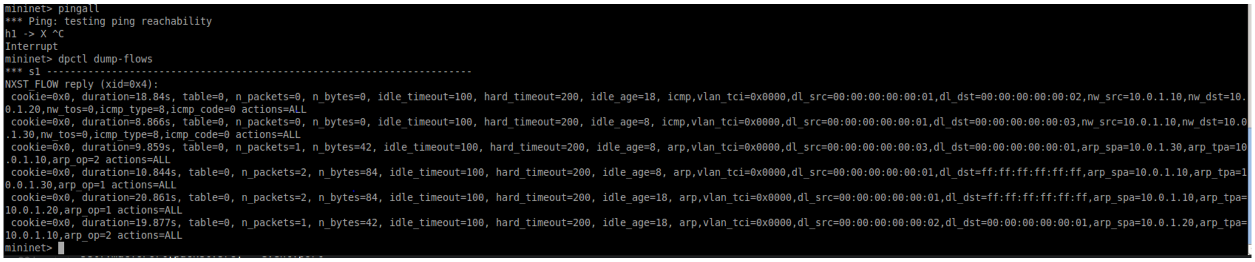
pingall: This should fail
Pingall fails because ICMP traffic is blocked, this means the packets did not reach the host because there is a problem with the network.



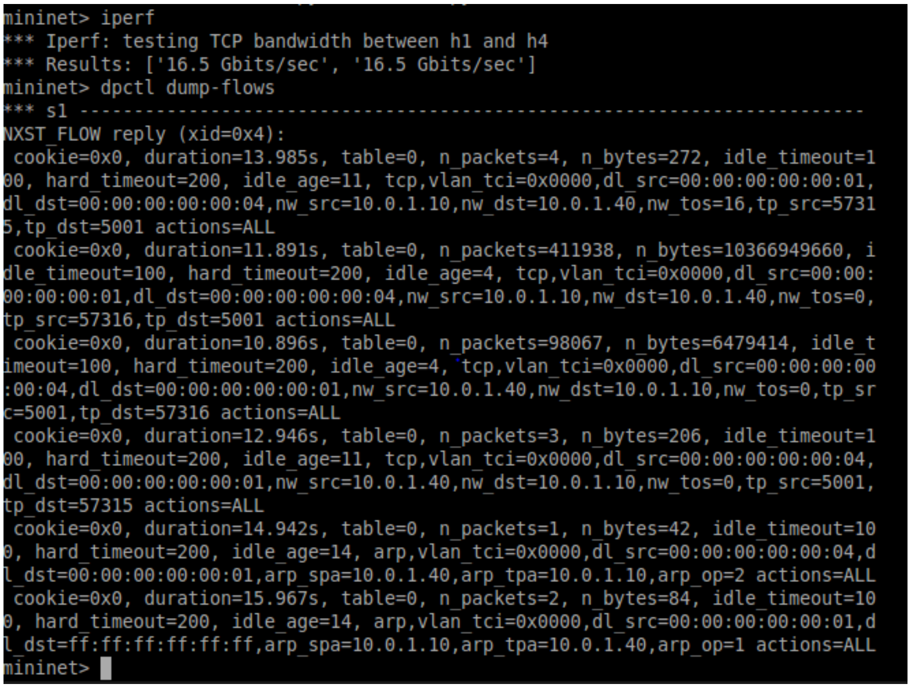
```
mininet> pingall
*** Ping: testing ping reachability
h1 -> X X X
h2 -> X X X
h3 -> X X X
h4 -> X X X
*** Results: 100% dropped (0/12 received)
```

pctl dump--flows :

the pctl dump-flows command shows the entries installed of the flow table using of.ofp_flow_mod(). Idle timeout is set to 100 and hard timeout is set to 200. Pingall is stopped early so avoid the wall of text when entering pctl dump-flow



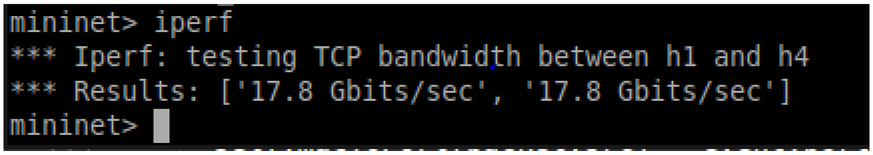
```
mininet> pingall
*** Ping: testing ping reachability
h1 -> X ^C
Interrupt
mininet> dpctl dump-flows
*** s1 ------------------------------------------------------------------------
NXST_FLOW reply (xid=0x4):
 cookie=0x0, duration=18.84s, table=0, n_packets=0, n_bytes=0, idle_timeout=100, hard_timeout=200, idle_age=18, icmp,vlan_tci=0x0000,dl_src=00:00:00:00:00:01,dl_dst=00:00:00:00:00:02,nw_src=10.0.1.10,nw_dst=10.
0.1.20,nw_tos=0,icmp_type=8,icmp_code=0 actions=ALL
 cookie=0x0, duration=8.866s, table=0, n_packets=0, n_bytes=0, idle_timeout=100, hard_timeout=200, idle_age=8, icmp,vlan_tci=0x0000,dl_src=00:00:00:00:00:01,dl_dst=00:00:00:00:00:03,nw_src=10.0.1.10,nw_dst=10.0
.1.30,nw_tos=0,icmp_type=8,icmp_code=0 actions=ALL
 cookie=0x0, duration=9.859s, table=0, n_packets=1, n_bytes=42, idle_timeout=100, hard_timeout=200, idle_age=8, arp,vlan_tci=0x0000,dl_src=00:00:00:00:00:03,dl_dst=00:00:00:00:00:01,arp_spa=10.0.1.30,arp_tpa=10
.0.1.10,arp_op=2 actions=ALL
 cookie=0x0, duration=10.844s, table=0, n_packets=2, n_bytes=84, idle_timeout=100, hard_timeout=200, idle_age=8, arp,vlan_tci=0x0000,dl_src=00:00:00:00:00:01,dl_dst=ff:ff:ff:ff:ff:ff,arp_spa=10.0.1.10,arp_tpa=1
0.0.1.30,arp_op=1 actions=ALL
 cookie=0x0, duration=20.861s, table=0, n_packets=2, n_bytes=84, idle_timeout=100, hard_timeout=200, idle_age=18, arp,vlan_tci=0x0000,dl_src=00:00:00:00:00:01,dl_dst=ff:ff:ff:ff:ff:ff,arp_spa=10.0.1.10,arp_tpa=
10.0.1.20,arp_op=1 actions=ALL
 cookie=0x0, duration=19.877s, table=0, n_packets=1, n_bytes=42, idle_timeout=100, hard_timeout=200, idle_age=18, arp,vlan_tci=0x0000,dl_src=00:00:00:00:00:02,dl_dst=00:00:00:00:00:01,arp_spa=10.0.1.20,arp_tpa=
10.0.1.10,arp_op=2 actions=ALL
mininet> 
```



```
mininet> iperf
*** Iperf: testing TCP bandwidth between h1 and h4
*** Results: ['16.5 Gbits/sec', '16.5 Gbits/sec']
mininet> dpctl dump-flows
*** s1 ------------------------------------------------------------------------
NXST_FLOW reply (xid=0x4):
 cookie=0x0, duration=13.985s, table=0, n_packets=4, n_bytes=272, idle_timeout=1
00, hard_timeout=200, idle_age=11, tcp,vlan_tci=0x0000,dl_src=00:00:00:00:00:01,
dl_dst=00:00:00:00:00:04,nw_src=10.0.1.10,nw_dst=10.0.1.40,nw_tos=16,tp_src=5731
5,tp_dst=5001 actions=ALL
 cookie=0x0, duration=11.891s, table=0, n_packets=411938, n_bytes=10366949660, i
dle_timeout=100, hard_timeout=200, idle_age=4, tcp,vlan_tci=0x0000,dl_src=00:00:
00:00:00:01,dl_dst=00:00:00:00:00:04,nw_src=10.0.1.10,nw_dst=10.0.1.40,nw_tos=0,
tp_src=57316,tp_dst=5001 actions=ALL
 cookie=0x0, duration=10.896s, table=0, n_packets=98067, n_bytes=6479414, idle_t
imeout=100, hard_timeout=200, idle_age=4, tcp,vlan_tci=0x0000,dl_src=00:00:00:00
:00:04,dl_dst=00:00:00:00:00:01,nw_src=10.0.1.40,nw_dst=10.0.1.10,nw_tos=0,tp_sr
c=5001,tp_dst=57316 actions=ALL
 cookie=0x0, duration=12.946s, table=0, n_packets=3, n_bytes=206, idle_timeout=1
00, hard_timeout=200, idle_age=11, tcp,vlan_tci=0x0000,dl_src=00:00:00:00:00:04,
dl_dst=00:00:00:00:00:01,nw_src=10.0.1.40,nw_dst=10.0.1.10,nw_tos=0,tp_src=5001,
tp_dst=57315 actions=ALL
 cookie=0x0, duration=14.942s, table=0, n_packets=1, n_bytes=42, idle_timeout=10
0, hard_timeout=200, idle_age=14, arp,vlan_tci=0x0000,dl_src=00:00:00:00:00:04,d
l_dst=00:00:00:00:00:01,arp_spa=10.0.1.40,arp_tpa=10.0.1.10,arp_op=2 actions=ALL
 cookie=0x0, duration=15.967s, table=0, n_packets=2, n_bytes=84, idle_timeout=10
0, hard_timeout=200, idle_age=14, arp,vlan_tci=0x0000,dl_src=00:00:00:00:00:01,d
l_dst=ff:ff:ff:ff:ff:ff,arp_spa=10.0.1.10,arp_tpa=10.0.1.40,arp_op=1 actions=ALL
mininet> 
```

iperf : This should succeed.

Iperf is used to measure the network throughput that can be handled. Because ARP and TCP packets are accepted, iperf will succeed. To filter for ARP and TCP packets .find() function was used on the eth_packet or eth_packet payload.



```
mininet> iperf
*** Iperf: testing TCP bandwidth between h1 and h4
*** Results: ['17.8 Gbits/sec', '17.8 Gbits/sec']
mininet>
```