

Performance Tests

```
| ority=0 actions=CONTROLLER:65509
| mininet> iperf h1 l1
| *** Iperf: testing TCP bandwidth between h1 and l1
| ^C
| Interrupt
| mininet> iperf h1 r1
| *** Iperf: testing TCP bandwidth between h1 and r1
| ^C
| Interrupt
| mininet> h1 ping r1
| PING 33.0.0.1 (33.0.0.1) 56(84) bytes of data.
| ^C
| --- 33.0.0.1 ping statistics ---
| 3 packets transmitted, 0 received, 100% packet loss, time 2070ms
|
| mininet> h1 ping l1
| PING 22.0.0.1 (22.0.0.1) 56(84) bytes of data.
| ^C
| --- 22.0.0.1 ping statistics ---
| 3 packets transmitted, 0 received, 100% packet loss, time 2049ms
|
| mininet> h1 ping m1
| PING 44.0.0.1 (44.0.0.1) 56(84) bytes of data.
| ^C
| --- 44.0.0.1 ping statistics ---
| 4 packets transmitted, 0 received, 100% packet loss, time 3376ms
|
| mininet> r1 ping m1
| PING 44.0.0.1 (44.0.0.1) 56(84) bytes of data.
| ^C
| --- 44.0.0.1 ping statistics ---
| 6 packets transmitted, 0 received, 100% packet loss, time 5099ms
|
| mininet> l1 ping m1
| PING 44.0.0.1 (44.0.0.1) 56(84) bytes of data.
| ^C
| --- 44.0.0.1 ping statistics ---
| 5 packets transmitted, 0 received, 100% packet loss, time 4321ms
|
| mininet> l1 ping r1
| PING 33.0.0.1 (33.0.0.1) 56(84) bytes of data.
| ^C
| --- 33.0.0.1 ping statistics ---
| 6 packets transmitted, 0 received, 100% packet loss, time 5125ms
|
| mininet>
| ubuntu@ec2-13-10
```

Figure 1. iperf network performance test of original application.

To test network performance the iperf tool was selected to measure bandwidth.

I had difficulty with the SDN-cockpit environment however for future testing I would use iperf to set server – clients and run both sequential and parallel tests and varying numbers of sessions to record the bandwidth available under differing conditions.

```
0 actions=CONTROLLER:65509
mininet>
mininet>
mininet>
mininet> iperf h1 l1
*** Iperf: testing TCP bandwidth between h1 and l1
*** Results: ['519 Mbits/sec', '521 Mbits/sec']
mininet>
mininet> iperf h1 r1
*** Iperf: testing TCP bandwidth between h1 and r1
*** Results: ['520 Mbits/sec', '522 Mbits/sec']
mininet>
mininet> iperf r1 h1
*** Iperf: testing TCP bandwidth between r1 and h1
*** Results: ['520 Mbits/sec', '521 Mbits/sec']
mininet>
mininet> iperf l1 h1
*** Iperf: testing TCP bandwidth between l1 and h1
*** Results: ['480 Mbits/sec', '481 Mbits/sec']
mininet>
mininet> iperf l1 r1
*** Iperf: testing TCP bandwidth between l1 and r1
^C
Interrupt
```

Figure 2. iperf network performance test of solution application, though not shown m1 communications are dropped.

Figure 2 demonstrates that the connectivity discussed in the brief has been established, public network m1 reacts the same as patient records and patient networks (r1 and l1) as such when testing the TCP bandwidth the results are between 480 – 520 Mbits/s whereas figure 1 iperf tests failed to complete.