The Mininet has been installed onto a VM. In this lab we have configured the IP, default route and DNS information for the Mininet. Also we have successfully performed SSH on to our Mininet from the desktop.

Ping Command

[Group6@group6d ~]$ ssh -X mininet@192.168.106.101
mininet@192.168.106.101's password:
Welcome to Ubuntu 13.04 (GNU/Linux 3.8.0-19-generic i686)

 * Documentation: https://help.ubuntu.com/
Your Ubuntu release is not supported anymore.
For upgrade information, please visit:
http://www.ubuntu.com/releaseendoflife

New release '13.10' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Apr 28 09:36:38 2014 from 192.168.106.1
mininet@mininet-vm:~$ ping -c 6 www.google.com
PING www.google.com (74.125.70.106) 56(84) bytes of data.
64 bytes from 74.125.70.106: icmp_req=1 ttl=63 time=47.4 ms
64 bytes from 74.125.70.106: icmp_req=2 ttl=63 time=47.1 ms
64 bytes from 74.125.70.106: icmp_req=3 ttl=63 time=46.8 ms
64 bytes from 74.125.70.106: icmp_req=4 ttl=63 time=47.0 ms
64 bytes from 74.125.70.106: icmp_req=5 ttl=63 time=46.9 ms
64 bytes from 74.125.70.106: icmp_req=6 ttl=63 time=47.1 ms

--- www.google.com ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5007ms
rtt min/avg/max/mdev = 46.854/47.099/47.454/0.189 ms

SSH into Mininet

[Group6@group6d ~]$ ssh -X mininet@192.168.106.101
mininet@192.168.106.101's password:
Welcome to Ubuntu 13.04 (GNU/Linux 3.8.0-19-generic i686)

New release '13.10' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Apr 28 02:22:29 2014 from 192.168.106.1
mininet@mininet-vm:~$ ls
a2b_owin.xpl   a2b_tput.ps   a2b_tsg.xpl b2a_tput.xpl   file.txt   multi4.tgz   sack
a2b_rtt.xpl   a2b_tput.xpl   a-big-file   b2a_tsg.xpl   ftp-transfer   of-dissector server.py
a2b_ssize.xpl   a2b_tsg.datasets a_b_tline.xpl capture_sack_20140408220744.pcap install-mininet-vm.sh oflops
tcp

a2b_tput.datasets a2b_tsg.gpl   b2a_owin.xpl capture_sack_20140408220804.pcap manual.tar.gz   oftest
vlan_example.py
a2b_tput.gpl   a2b_tsg.labels   b2a_rtt.xpl   client.py   mininet   openflow
a2b_tput.labels a2b_tsg.ps   b2a_ssize.xpl dumpfile.txt   multi   pox

mininet@mininet-vm:~$ ifconfig
eth0   Link encap:Ethernet HWaddr 08:00:27:5f:6a:de
         inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:84 errors:0 dropped:0 overruns:0 frame:0
         TX packets:341 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX bytes:23996 (23.9 KB) TX bytes:30087 (30.0 KB)

eth1   Link encap:Ethernet HWaddr 08:00:27:7a:3a:5a
         inet addr:192.168.106.101 Bcast:192.168.106.255 Mask:255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:155 errors:0 dropped:0 overruns:0 frame:0
         TX packets:114 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX bytes:19488 (19.4 KB) TX bytes:16732 (16.7 KB)

lo   Link encap:Local Loopback
         inet addr:127.0.0.1 Mask:255.0.0.0
         UP LOOPBACK RUNNING MTU:65536 Metric:1
         RX packets:0 errors:0 dropped:0 overruns:0 frame:0
         TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:0
         RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

IfConfig Command
mininet@mininet-vm:~$ ifconfig
eth0   Link encap:Ethernet HWaddr 08:00:27:5f:6a:de
         inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:84 errors:0 dropped:0 overruns:0 frame:0
         TX packets:341 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX bytes:23996 (23.9 KB) TX bytes:30087 (30.0 KB)

eth1   Link encap:Ethernet HWaddr 08:00:27:7a:3a:5a
         inet addr:192.168.106.101 Bcast:192.168.106.255 Mask:255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:155 errors:0 dropped:0 overruns:0 frame:0
         TX packets:114 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX bytes:19488 (19.4 KB) TX bytes:16732 (16.7 KB)

lo   Link encap:Local Loopback
         inet addr:127.0.0.1 Mask:255.0.0.0
         UP LOOPBACK RUNNING MTU:65536 Metric:1
         RX packets:0 errors:0 dropped:0 overruns:0 frame:0
         TX packets:0 errors:0 dropped:0 overruns:0 carrier:0

collisions:0 txqueuelen:0
        RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

mininet@mininet-vm:~$

Encoding and Design :

You are to implement a wireless network within a particular frequency band. What encoding scheme would you choose to maximize data throughput, and why would you choose this approach?

We would choose NRZI coding for the maximization of the data throughput because NRZI has better performance in noise environment thereby maximizing the throughput.

You are to implement a fiber-based network using available technology. What encoding scheme would you choose to maximize data throughput, and why would you choose this approach?

We would again go with the NRZI coding due to its performance in noise environment.

mininet@mininet-vm: ~

File   Edit   View   Search   Terminal   Help

```
[Group6@group6d ~]$ ssh -X mininet@192.168.106.101
mininet@192.168.106.101's password:
Welcome to Ubuntu 13.04 (GNU/Linux 3.8.0-19-generic i686)

 * Documentation:  https://help.ubuntu.com/
Your Ubuntu release is not supported anymore.
For upgrade information, please visit:
http://www.ubuntu.com/releaseendoflife

New release '13.10' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Apr 28 09:36:38 2014 from 192.168.106.1
mininet@mininet-vm:~$ ping -c 6 www.google.com
PING www.google.com (74.125.70.106) 56(84) bytes of data.
64 bytes from 74.125.70.106: icmp_req=1 ttl=63 time=47.4 ms
64 bytes from 74.125.70.106: icmp_req=2 ttl=63 time=47.1 ms
64 bytes from 74.125.70.106: icmp_req=3 ttl=63 time=46.8 ms
64 bytes from 74.125.70.106: icmp_req=4 ttl=63 time=47.0 ms
64 bytes from 74.125.70.106: icmp_req=5 ttl=63 time=46.9 ms
64 bytes from 74.125.70.106: icmp_req=6 ttl=63 time=47.1 ms

--- www.google.com ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5007ms
rtt min/avg/max/mdev = 46.854/47.099/47.454/0.189 ms
mininet@mininet-vm:~$
```

mininet@mininet-vm: ~

File   Edit   View   Search   Terminal   Help

```
[Group6@group6d ~]$ ssh -X mininet@192.168.106.101
mininet@192.168.106.101's password:
Welcome to Ubuntu 13.04 (GNU/Linux 3.8.0-19-generic i686)

 * Documentation:  https://help.ubuntu.com/
Your Ubuntu release is not supported anymore.
For upgrade information, please visit:
http://www.ubuntu.com/releaseendoflife

New release '13.10' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Tue Apr 29 12:06:44 2014 from 192.168.106.1
mininet@mininet-vm:~$ ls
a2b_owin.xpl        a2b_tput.ps        a2b_tsg.xpl        b2a_tput.xpl        file.txt              multi4.tgz     sack
a2b_rtt.xpl         a2b_tput.xpl       a-big-file         b2a_tsg.xpl         ftp-transfer          of-dissector   server.py
a2b_ssize.xpl       a2b_tsg.datasets   a_b_tline.xpl      capture_sack_20140408220744.pcap   install-mininet-vm.sh   oflops    tcp
a2b_tput.datasets   a2b_tsg.gpl        b2a_owin.xpl       capture_sack_20140408220804.pcap   manual.tar.gz   oftest     vlan_example.py
a2b_tput.gpl        a2b_tsg.labels     b2a_rtt.xpl        client.py           mininet               openflow
a2b_tput.labels     a2b_tsg.ps         b2a_ssize.xpl      dumpfile.txt        multi                 pox
mininet@mininet-vm:~$ 
```

mininet@mininet-vm: ~

File   Edit   View   Search   Terminal   Help

```
mininet@mininet-vm:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:5f:6a:de
          inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:565 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1417 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:56112 (56.1 KB)  TX bytes:113949 (113.9 KB)

eth1      Link encap:Ethernet  HWaddr 08:00:27:7a:3a:5a
          inet addr:192.168.106.101  Bcast:192.168.106.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1418 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1118 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:259130 (259.1 KB)  TX bytes:185346 (185.3 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

mininet@mininet-vm:~$
```