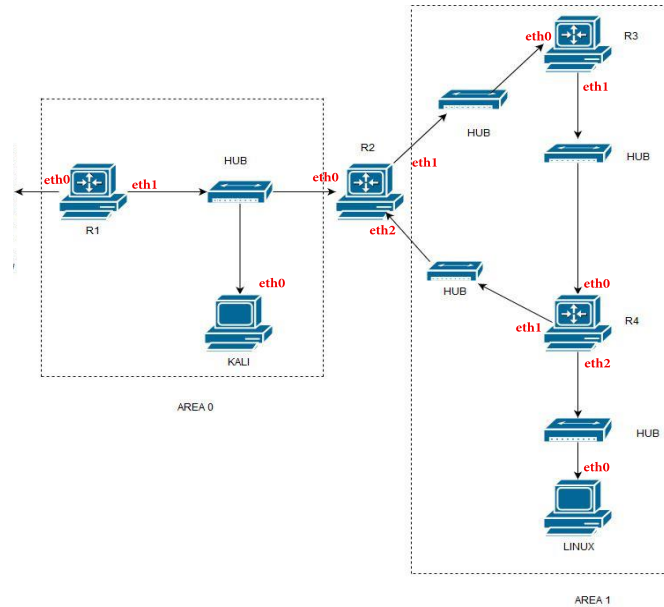


OSPF

Ajay Shete
Abs717
N19633252



Using Kali to ping every other machine:

```
student@kali: ~  
File Edit View Search Terminal Help  
64 bytes from 10.10.10.2: icmp_seq=2 ttl=64 time=0.278 ms  
^C  
--- 10.10.10.2 ping statistics ---  
2 packets transmitted, 2 received, 0% packet loss, time 999ms  
rtt min/avg/max/mdev = 0.278/0.356/0.434/0.078 ms  
student@kali:~$ ping 10.10.10.9  
PING 10.10.10.9 (10.10.10.9) 56(84) bytes of data.  
64 bytes from 10.10.10.9: icmp_seq=1 ttl=64 time=0.282 ms  
64 bytes from 10.10.10.9: icmp_seq=2 ttl=64 time=0.288 ms  
^C  
--- 10.10.10.9 ping statistics ---  
2 packets transmitted, 2 received, 0% packet loss, time 999ms  
rtt min/avg/max/mdev = 0.282/0.285/0.288/0.003 ms  
student@kali:~$ ping 10.10.10.17  
PING 10.10.10.17 (10.10.10.17) 56(84) bytes of data.  
64 bytes from 10.10.10.17: icmp_seq=1 ttl=63 time=1.44 ms  
64 bytes from 10.10.10.17: icmp_seq=2 ttl=63 time=1.60 ms  
^C  
--- 10.10.10.17 ping statistics ---  
2 packets transmitted, 2 received, 0% packet loss, time 1001ms  
rtt min/avg/max/mdev = 1.446/1.526/1.607/0.089 ms  
student@kali:~$ ping 10.10.10.18  
PING 10.10.10.18 (10.10.10.18) 56(84) bytes of data.  
64 bytes from 10.10.10.18: icmp_seq=1 ttl=64 time=0.254 ms  
64 bytes from 10.10.10.18: icmp_seq=2 ttl=64 time=0.324 ms  
^C  
--- 10.10.10.18 ping statistics ---  
2 packets transmitted, 2 received, 0% packet loss, time 1001ms  
rtt min/avg/max/mdev = 0.254/0.289/0.324/0.035 ms  
student@kali:~$ ping 10.10.10.13  
PING 10.10.10.13 (10.10.10.13) 56(84) bytes of data.  
64 bytes from 10.10.10.13: icmp_seq=1 ttl=62 time=1.31 ms
```

student@kali: ~

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```
student@kali:~$ ping 10.10.10.13
PING 10.10.10.13 (10.10.10.13) 56(84) bytes of data.
64 bytes from 10.10.10.13: icmp_seq=1 ttl=62 time=1.31 ms
64 bytes from 10.10.10.13: icmp_seq=2 ttl=62 time=1.54 ms
^C
--- 10.10.10.13 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 1.317/1.429/1.541/0.112 ms
student@kali:~$ ping 10.10.10.14
PING 10.10.10.14 (10.10.10.14) 56(84) bytes of data.
64 bytes from 10.10.10.14: icmp_seq=1 ttl=63 time=0.952 ms
64 bytes from 10.10.10.14: icmp_seq=2 ttl=63 time=1.16 ms
^C
--- 10.10.10.14 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 0.952/1.056/1.160/0.104 ms
student@kali:~$ ping 10.10.10.33
PING 10.10.10.33 (10.10.10.33) 56(84) bytes of data.
64 bytes from 10.10.10.33: icmp_seq=1 ttl=63 time=1.17 ms
64 bytes from 10.10.10.33: icmp_seq=2 ttl=63 time=1.29 ms
^C
--- 10.10.10.33 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 1.177/1.234/1.292/0.067 ms
student@kali:~$ ping 10.10.10.35
PING 10.10.10.35 (10.10.10.35) 56(84) bytes of data.
64 bytes from 10.10.10.35: icmp_seq=1 ttl=62 time=1.48 ms
64 bytes from 10.10.10.35: icmp_seq=2 ttl=62 time=1.09 ms
^C
--- 10.10.10.35 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 1.098/1.290/1.483/0.195 ms
```

student@kali: ~

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```
student@kali:~$ ping 10.10.10.10
PING 10.10.10.10 (10.10.10.10) 56(84) bytes of data.
64 bytes from 10.10.10.10: icmp_seq=1 ttl=63 time=0.578 ms
64 bytes from 10.10.10.10: icmp_seq=2 ttl=63 time=0.664 ms
^C
--- 10.10.10.10 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1000ms
rtt min/avg/max/mdev = 0.578/0.621/0.664/0.043 ms
student@kali:~$ ping 10.10.10.1
PING 10.10.10.1 (10.10.10.1) 56(84) bytes of data.
64 bytes from 10.10.10.1: icmp_seq=1 ttl=64 time=0.239 ms
64 bytes from 10.10.10.1: icmp_seq=2 ttl=64 time=0.325 ms
^C
--- 10.10.10.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 999ms
rtt min/avg/max/mdev = 0.239/0.282/0.325/0.043 ms
student@kali:~$ ping 10.10.10.2
PING 10.10.10.2 (10.10.10.2) 56(84) bytes of data.
64 bytes from 10.10.10.2: icmp_seq=1 ttl=64 time=0.336 ms
64 bytes from 10.10.10.2: icmp_seq=2 ttl=64 time=0.290 ms
^C
--- 10.10.10.2 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 999ms
rtt min/avg/max/mdev = 0.290/0.313/0.336/0.023 ms
student@kali:~$
```

Route Tables of all Routers:

```
Connected (unencrypted) to: QEMU (263_20_33)
student@CN-R1:~$ route
Kernel IP routing table
Destination      Gateway         Genmask         Flags Metric Ref    Use Iface
default          10.20.1.1      0.0.0.0         UG    0      0      0 eth0
10.10.10.0       *              255.255.255.248 U      0      0      0 eth1
10.10.10.8       10.10.10.2     255.255.255.252 UG    20     0      0 eth1
10.10.10.12      10.10.10.2     255.255.255.252 UG    30     0      0 eth1
10.10.10.16      10.10.10.2     255.255.255.252 UG    20     0      0 eth1
10.10.10.32      10.10.10.2     255.255.255.240 UG    30     0      0 eth1
10.20.1.0        *              255.255.255.0   U      0      0      0 eth0
link-local       *              255.255.0.0     U     1000   0      0 eth1
student@CN-R1:~$ _
```

Router 1

```
Connected (unencrypted) to: QEMU (263_20_34)
student@CN-R2:~$ route
Kernel IP routing table
Destination      Gateway         Genmask         Flags Metric Ref    Use Iface
10.10.10.0       *              255.255.255.248 U      0      0      0 eth0
10.10.10.8       *              255.255.255.252 U      0      0      0 eth1
10.10.10.12      10.10.10.17    255.255.255.252 UG    20     0      0 eth2
10.10.10.16      *              255.255.255.252 U      0      0      0 eth2
10.10.10.32      10.10.10.17    255.255.255.240 UG    20     0      0 eth2
link-local       *              255.255.0.0     U     1000   0      0 eth1
student@CN-R2:~$ _
```

Router 2


```
Connected (unencrypted) to: QEMU (263_20_35)
student@CN-R3:~$ route
Kernel IP routing table
Destination      Gateway         Genmask         Flags Metric Ref    Use Iface
10.10.10.0       10.10.10.9     255.255.255.248 UG    20     0      0 eth0
10.10.10.8       *              255.255.255.252 U      0     0      0 eth0
10.10.10.12      *              255.255.255.252 U      0     0      0 eth1
10.10.10.16      10.10.10.9     255.255.255.252 UG    20     0      0 eth0
10.10.10.32      10.10.10.14    255.255.255.240 UG    20     0      0 eth1
link-local       *              255.255.0.0     U      1000   0      0 eth1
student@CN-R3:~$
```

Router 3

```
Ubuntu 16.04.2 LTS CN-R4 tty1

CN-R4 login: student
Password:
Last login: Sat Nov 25 14:16:38 EST 2017 on tty1
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.8.0-56-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

342 packages can be updated.
131 updates are security updates.

student@CN-R4:~$ route
Kernel IP routing table
Destination      Gateway         Genmask         Flags Metric Ref    Use Iface
10.10.10.0       10.10.10.18    255.255.255.248 UG    20     0      0 eth1
10.10.10.8       10.10.10.18    255.255.255.252 UG    20     0      0 eth1
10.10.10.12      *              255.255.255.252 U      0     0      0 eth0
10.10.10.16      *              255.255.255.252 U      0     0      0 eth1
10.10.10.32      *              255.255.255.240 U      0     0      0 eth2
link-local       *              255.255.0.0     U      1000   0      0 eth2
student@CN-R4:~$
```

Router 4