Lab 5

2020 11 29   16:35

bowen, aaa

```
sudo apt install ssh -y
ssh bowen@10.0.2.15

sudo apt install wireshark -y

cant ssh in from outside
ssh to alex
scp lab5

# install termcolor
curl https://bootstrap.pypa.io/get-pip.py --output get-pip.py
sudo python2 get-pip.py
python -m pip install termcolor

# run
sudo python bgp.py
```

```
bowen@bowen-VirtualBox:~$ cd lab5
bowen@bowen-VirtualBox:~/lab5$ sudo python bgp.py
[sudo] password for bowen:
*** Creating network
*** Adding controller
*** Adding hosts:
h11 h12 h13 h21 h22 h23 h31 h32 h33 h41 h42 h43
*** Adding switches:
R1 R2 R3 R4
*** Adding links:
(R1, R2) (R1, R4) (R1, h11) (R1, h12) (R1, h13) (R2, R3) (R2, h21) (R2, h22) (R2
, h23) (R3, h31) (R3, h32) (R3, h33) (R4, h41) (R4, h42) (R4, h43)
*** Configuring hosts
h11 h12 h13 h21 h22 h23 h31 h32 h33 h41 h42 h43
*** Starting controller
*** Starting 4 switches
R1 R2 R3 R4
Waiting 3 seconds for sysctl changes to take effect...
Starting zebra and bgpd on R1
Starting zebra and bgpd on R2
Starting zebra and bgpd on R3
Starting web servers
*** Starting CLI:
```

```
mininet> help

Documented commands (type help <topic>):
========================================
EOF      exit    intfs     link    noecho       pingpair      py     source  xterm
dpctl    gterm   iperf     net     pingall      pingpairfull  quit   time
dump     help    iperfudp  nodes   pingallfull  px            sh     x

You may also send a command to a node using:
  <node> command {args}
For example:
  mininet> h1 ifconfig

The interpreter automatically substitutes IP addresses
for node names when a node is the first arg, so commands
like
  mininet> h2 ping h3
should work.

Some character-oriented interactive commands require
noecho:
  mininet> noecho h2 vi foo.py
However, starting up an xterm/gterm is generally better:
  mininet> xterm h2
```

```
mininet> R1 ifconfig
R1-eth1    Link encap:Ethernet  HWaddr aa:10:da:ea:8c:1f
           inet addr:11.0.1.254  Bcast:11.0.1.255  Mask:255.255.255.0
           inet6 addr: fe80::a810:daff:feea:8c1f/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:8 errors:0 dropped:0 overruns:0 frame:0
           TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R1-eth2    Link encap:Ethernet  HWaddr 0e:d3:10:d4:d2:56
           inet addr:11.0.2.254  Bcast:11.0.2.255  Mask:255.255.255.0
           inet6 addr: fe80::cd3:10ff:fed4:d256/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:10 errors:0 dropped:0 overruns:0 frame:0
           TX packets:7 errors:0 dropped:1 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:828 (828.0 B)  TX bytes:558 (558.0 B)

R1-eth3    Link encap:Ethernet  HWaddr 7e:c0:d0:d3:8d:4e
           inet addr:11.0.3.254  Bcast:11.0.3.255  Mask:255.255.255.0
           inet6 addr: fe80::7cc0:d0ff:fed3:8d4e/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:8 errors:0 dropped:0 overruns:0 frame:0
           TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R1-eth4    Link encap:Ethernet  HWaddr e6:8e:b3:88:9f:61
           inet addr:9.0.0.1  Bcast:9.0.0.255  Mask:255.255.255.0
           inet6 addr: fe80::e48e:b3ff:fe88:9f61/64 Scope:Link
```

```
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:163 errors:0 dropped:2 overruns:0 frame:0
          TX packets:209 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:13136 (13.1 KB)  TX bytes:16069 (16.0 KB)

R1-eth5   Link encap:Ethernet  HWaddr 8e:da:7a:48:1e:f3
          inet addr:9.0.4.1  Bcast:9.0.4.255  Mask:255.255.255.0
          inet6 addr: fe80::8cda:7aff:fe48:1ef3/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:900 (900.0 B)
```

```
mininet> R2 ifconfig
R2-eth1   Link encap:Ethernet  HWaddr 6a:a3:72:61:a8:75
          inet addr:12.0.1.254  Bcast:12.0.1.255  Mask:255.255.255.0
          inet6 addr: fe80::68a3:72ff:fe61:a875/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:9 errors:0 dropped:2 overruns:0 frame:0
          TX packets:7 errors:0 dropped:1 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:738 (738.0 B)  TX bytes:558 (558.0 B)

R2-eth2   Link encap:Ethernet  HWaddr ce:f0:54:b2:15:33
          inet addr:12.0.2.254  Bcast:12.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::ccf0:54ff:feb2:1533/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R2-eth3   Link encap:Ethernet  HWaddr da:72:9e:11:90:46
          inet addr:12.0.3.254  Bcast:12.0.3.255  Mask:255.255.255.0
          inet6 addr: fe80::d872:9eff:fe11:9046/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R2-eth4   Link encap:Ethernet  HWaddr 12:57:d6:2e:a3:33
          inet addr:9.0.0.2  Bcast:9.0.0.255  Mask:255.255.255.0
          inet6 addr: fe80::1057:d6ff:fe2e:a333/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:338 errors:0 dropped:0 overruns:0 frame:0
          TX packets:269 errors:0 dropped:1 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:25932 (25.9 KB)  TX bytes:21481 (21.4 KB)

R2-eth5   Link encap:Ethernet  HWaddr aa:b7:26:bb:d1:a1
          inet addr:9.0.1.1  Bcast:9.0.1.255  Mask:255.255.255.0
```

```
inet addr:9.0.1.1  Bcast:9.0.1.255  Mask:255.255.255.0
inet6 addr: fe80::a8b7:26ff:febb:d1a1/64 Scope:Link
UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
RX packets:369 errors:0 dropped:0 overruns:0 frame:0
TX packets:223 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:27942 (27.9 KB)  TX bytes:18421 (18.4 KB)
```

```
mininet> R3 ifconfig
R3-eth1    Link encap:Ethernet  HWaddr 42:56:a7:f0:c7:0b
           inet addr:13.0.1.254  Bcast:13.0.1.255  Mask:255.255.255.0
           inet6 addr: fe80::4056:a7ff:fef0:c70b/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:8 errors:0 dropped:0 overruns:0 frame:0
           TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R3-eth2    Link encap:Ethernet  HWaddr 8a:22:97:d0:6a:16
           inet addr:13.0.2.254  Bcast:13.0.2.255  Mask:255.255.255.0
           inet6 addr: fe80::8822:97ff:fed0:6a16/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:8 errors:0 dropped:0 overruns:0 frame:0
           TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R3-eth3    Link encap:Ethernet  HWaddr 1a:76:31:f4:e9:f7
           inet addr:13.0.3.254  Bcast:13.0.3.255  Mask:255.255.255.0
           inet6 addr: fe80::1876:31ff:fef4:e9f7/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:8 errors:0 dropped:2 overruns:0 frame:0
           TX packets:7 errors:0 dropped:1 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:648 (648.0 B)  TX bytes:558 (558.0 B)

R3-eth4    Link encap:Ethernet  HWaddr 62:f5:16:80:00:9f
           inet addr:9.0.1.2  Bcast:9.0.1.255  Mask:255.255.255.0
           inet6 addr: fe80::60f5:16ff:fe80:9f/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:779 errors:0 dropped:0 overruns:0 frame:0
           TX packets:1035 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:62280 (62.2 KB)  TX bytes:79054 (79.0 KB)
```

```
mininet> R4 ifconfig
R4-eth1    Link encap:Ethernet  HWaddr 06:de:da:f1:17:70
           inet6 addr: fe80::4de:daff:fef1:1770/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:8 errors:0 dropped:0 overruns:0 frame:0
           TX packets:7 errors:0 dropped:1 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
```

```
                 RX bytes:648 (648.0 B)  TX bytes:558 (558.0 B)

R4-eth2     Link encap:Ethernet  HWaddr 2a:ae:26:e1:7a:95
            inet6 addr: fe80::28ae:26ff:fee1:7a95/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:8 errors:0 dropped:0 overruns:0 frame:0
            TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R4-eth3     Link encap:Ethernet  HWaddr 66:5d:9b:c5:a4:0d
            inet6 addr: fe80::645d:9bff:fec5:a40d/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:8 errors:0 dropped:0 overruns:0 frame:0
            TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)

R4-eth4     Link encap:Ethernet  HWaddr fe:d0:d5:39:4b:91
            inet6 addr: fe80::fcd0:d5ff:fe39:4b91/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:50 errors:0 dropped:0 overruns:0 frame:0
            TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:2412 (2.4 KB)  TX bytes:648 (648.0 B)
```

```
mininet> h11 ifconfig
h11-eth0   Link encap:Ethernet  HWaddr 0a:81:e5:11:27:a1
           inet addr:11.0.1.1  Bcast:11.0.1.255  Mask:255.255.255.0
           inet6 addr: fe80::881:e5ff:fe11:27a1/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:8 errors:0 dropped:0 overruns:0 frame:0
           TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)
```

```
mininet> h12 ifconfig
h12-eth0   Link encap:Ethernet  HWaddr 32:d8:be:1d:ab:4d
           inet addr:11.0.2.1  Bcast:11.0.2.255  Mask:255.255.255.0
           inet6 addr: fe80::30d8:beff:fe1d:ab4d/64 Scope:Link
           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
           RX packets:7 errors:0 dropped:2 overruns:0 frame:0
           TX packets:10 errors:0 dropped:0 overruns:0 carrier:0
           collisions:0 txqueuelen:1000
           RX bytes:558 (558.0 B)  TX bytes:828 (828.0 B)
```

```
mininet> h13 ifconfig
h13-eth0   Link encap:Ethernet  HWaddr 2e:4f:d4:18:18:24
           inet addr:11.0.3.1  Bcast:11.0.3.255  Mask:255.255.255.0
```

```
inet addr:11.0.3.1  Bcast:11.0.3.255  Mask:255.255.255.0
          inet6 addr: fe80::2c4f:d4ff:fe18:1824/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)


mininet> h21 ifconfig
h21-eth0  Link encap:Ethernet  HWaddr 3e:37:91:8d:2b:5d
          inet addr:12.0.1.1  Bcast:12.0.1.255  Mask:255.255.255.0
          inet6 addr: fe80::3c37:91ff:fe8d:2b5d/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:7 errors:0 dropped:2 overruns:0 frame:0
          TX packets:9 errors:0 dropped:1 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:558 (558.0 B)  TX bytes:738 (738.0 B)


mininet> h22 ifconfig
h22-eth0  Link encap:Ethernet  HWaddr e2:6d:bc:23:8a:70
          inet addr:12.0.2.1  Bcast:12.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::e06d:bcff:fe23:8a70/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)


mininet> h23 ifconfig
h23-eth0  Link encap:Ethernet  HWaddr 86:32:74:42:c2:7e
          inet addr:12.0.3.1  Bcast:12.0.3.255  Mask:255.255.255.0
          inet6 addr: fe80::8432:74ff:fe42:c27e/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)


mininet> h31 ifconfig
h31-eth0  Link encap:Ethernet  HWaddr 3e:14:53:11:b9:df
          inet addr:13.0.1.1  Bcast:13.0.1.255  Mask:255.255.255.0
          inet6 addr: fe80::3c14:53ff:fe11:b9df/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)


mininet> h32 ifconfig
```
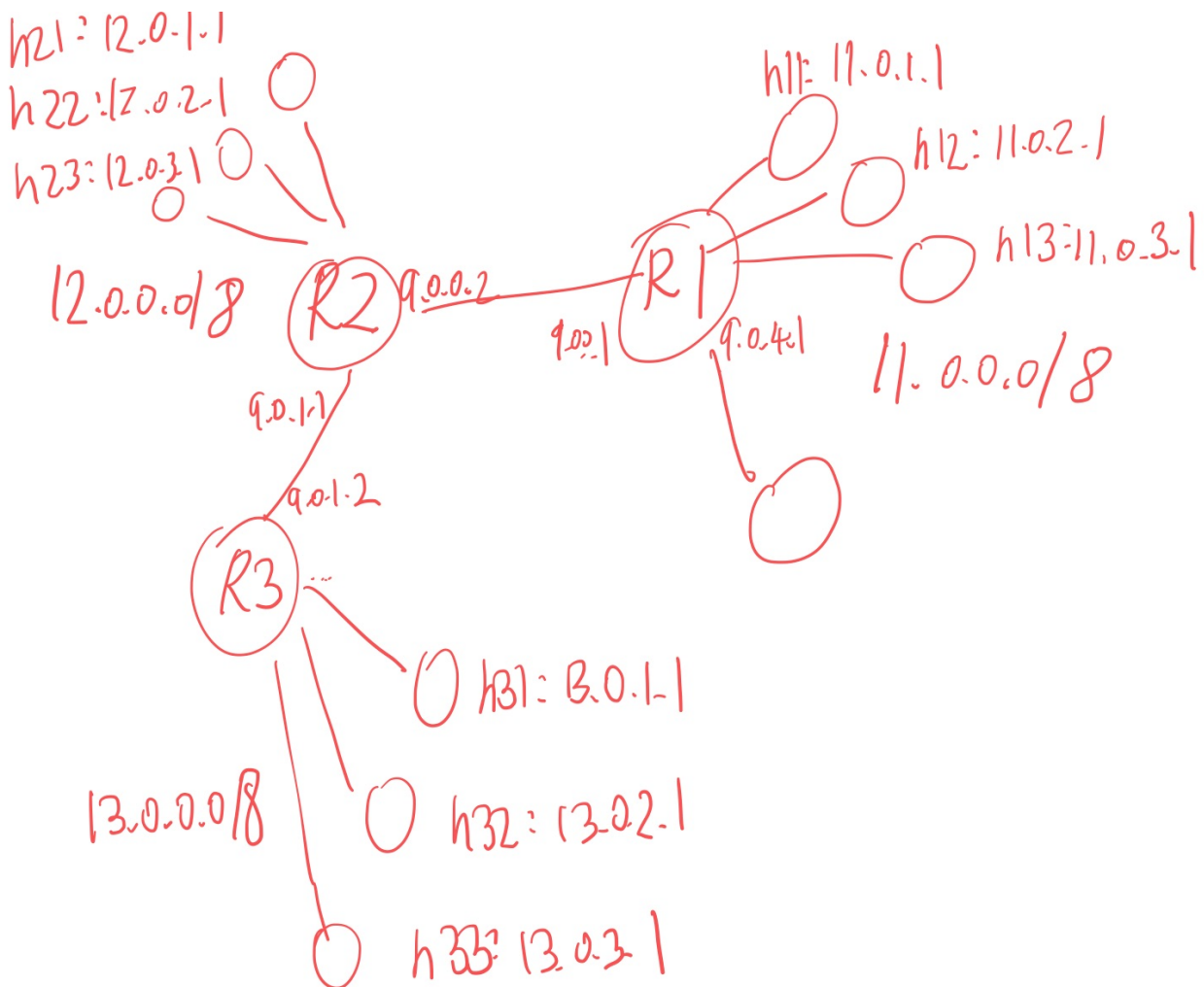
```
mininet> h32 ifconfig
h32-eth0  Link encap:Ethernet  HWaddr be:65:29:ad:80:27
          inet addr:13.0.2.1  Bcast:13.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::bc65:29ff:fead:8027/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:648 (648.0 B)  TX bytes:648 (648.0 B)
```

```
mininet> h33 ifconfig
h33-eth0  Link encap:Ethernet  HWaddr e6:90:d0:0a:e4:ed
          inet addr:13.0.3.1  Bcast:13.0.3.255  Mask:255.255.255.0
          inet6 addr: fe80::e490:d0ff:fe0a:e4ed/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:7 errors:0 dropped:2 overruns:0 frame:0
          TX packets:8 errors:0 dropped:1 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:558 (558.0 B)  TX bytes:648 (648.0 B)
```



```
./connect.sh R1
zebra
     cli - bgpd
  -  zebra
  -  bgp routing daemon
```

```
./connect.sh R1
zebra

    -   cii - bgpu
    -   zebra
    -   bgp routing daemon


show ip bgp
    -   list all ipv4 bgp routes


2.3
xterm R1 R2 R3
wireshark &
interface any


clear bgp external
show ip bgp
```

```
bgpd-R1# show ip bgp
BGP table version is 0, local router ID is 9.0.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 11.0.0.0         0.0.0.0                  0         32768 i

Total number of prefixes 1
bgpd-R1# show ip bgp
BGP table version is 0, local router ID is 9.0.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 11.0.0.0         0.0.0.0                  0         32768 i
*> 12.0.0.0         9.0.0.2                  0             0 2 i
*> 13.0.0.0         9.0.0.2                                0 2 3 i

Total number of prefixes 3
```

wireshark

```
129 23.602165711  9.0.0.1              9.0.0.2            BGP      140 KEEPALIVE Message, UPDATE Message
  ▼ Border Gateway Protocol - KEEPALIVE Message
        Marker: ffffffffffffffffffffffffffffffff
        Length: 19
        Type: KEEPALIVE Message (4)
  ▼ Border Gateway Protocol - UPDATE Message
        Marker: ffffffffffffffffffffffffffffffff
        Length: 53
        Type: UPDATE Message (2)
        Withdrawn Routes Length: 0
        Total Path Attribute Length: 28
```

```
▼ Path attributes
    ▶ Path Attribute - ORIGIN: IGP
    ▶ Path Attribute - AS_PATH: 1
    ▶ Path Attribute - NEXT_HOP: 9.0.0.1
    ▶ Path Attribute - MULTI_EXIT_DISC: 0
▼ Network Layer Reachability Information (NLRI)
    ▼ 11.0.0.0/8
          NLRI prefix length: 8
          NLRI prefix: 11.0.0.0
```

R1 (9.0.0.1) first advertises its own network in UPDATE message to R2 (9.0.0.2), that it is able to reach 11.0.0.0/8

```
131 23.602304107    9.0.0.1          9.0.0.1          BGP      190 KEEPALIVE Message, UPDATE Message, UPDATE Mess…
▼ Border Gateway Protocol - KEEPALIVE Message
      Marker: ffffffffffffffffffffffffffffffff
      Length: 19
      Type: KEEPALIVE Message (4)
▼ Border Gateway Protocol - UPDATE Message
      Marker: ffffffffffffffffffffffffffffffff
      Length: 53
      Type: UPDATE Message (2)
      Withdrawn Routes Length: 0
      Total Path Attribute Length: 28
    ▼ Path attributes
        ▶ Path Attribute - ORIGIN: IGP
        ▶ Path Attribute - AS_PATH: 2
        ▶ Path Attribute - NEXT_HOP: 9.0.0.2
        ▶ Path Attribute - MULTI_EXIT_DISC: 0
    ▼ Network Layer Reachability Information (NLRI)
        ▼ 12.0.0.0/8
              NLRI prefix length: 8
              NLRI prefix: 12.0.0.0
▼ Border Gateway Protocol - UPDATE Message
      Marker: ffffffffffffffffffffffffffffffff
      Length: 50
      Type: UPDATE Message (2)
      Withdrawn Routes Length: 0
      Total Path Attribute Length: 25
    ▼ Path attributes
        ▶ Path Attribute - ORIGIN: IGP
        ▶ Path Attribute - AS_PATH: 2 3
```

```
    ▶ Path Attribute - NEXT_HOP: 9.0.0.2
  ▼ Network Layer Reachability Information (NLRI)
    ▼ 13.0.0.0/8
        NLRI prefix length: 8
        NLRI prefix: 13.0.0.0
```
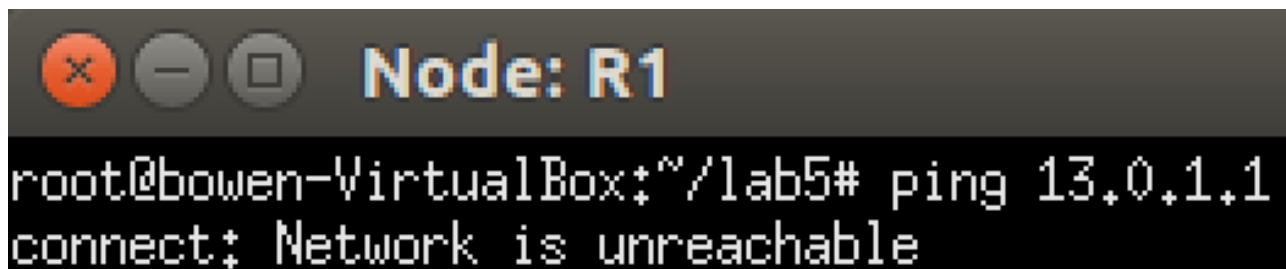
R2 (9.0.0.2) replies with its own paths:
able to reach network 12.0.0.0/8 with next hop 9.0.0.2,
with path 2
able to reach network 13.0.0.0/8 with next hop 9.0.0.2,
with path 2, 3

h11 ping h33
not reachable
```
mininet> h11 ping h33
PING 13.0.3.1 (13.0.3.1) 56(84) bytes of data.
From 11.0.1.254 icmp_seq=1 Destination Net Unreachable
```
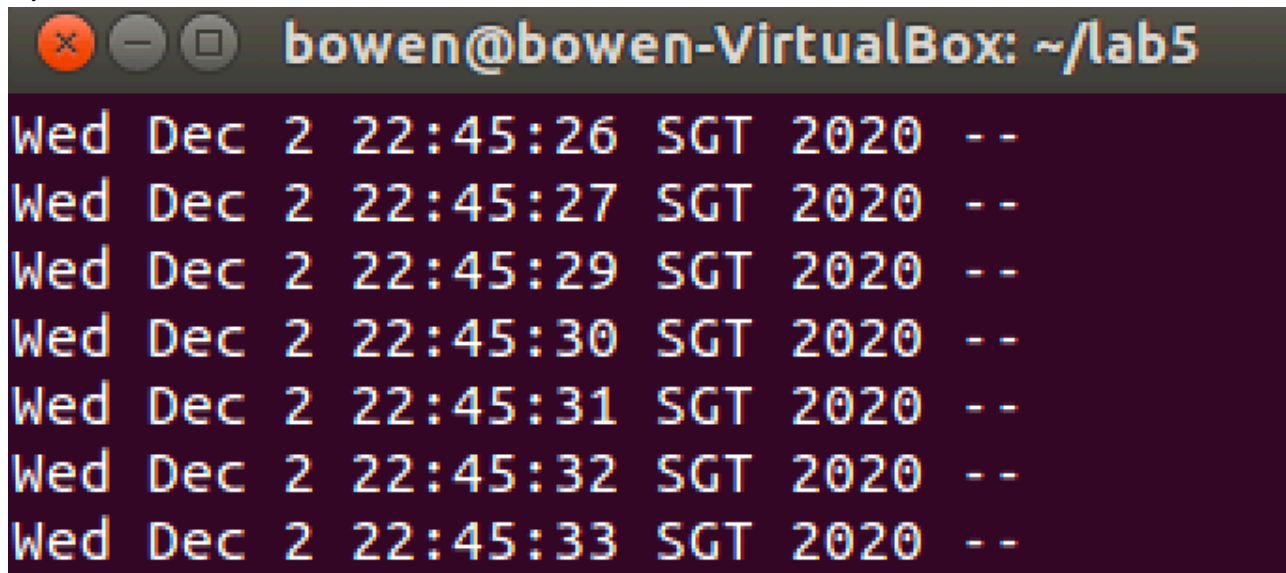
xterm R1


```
root@bowen-VirtualBox:~/lab5# ping 13.0.1.1
connect: Network is unreachable
```

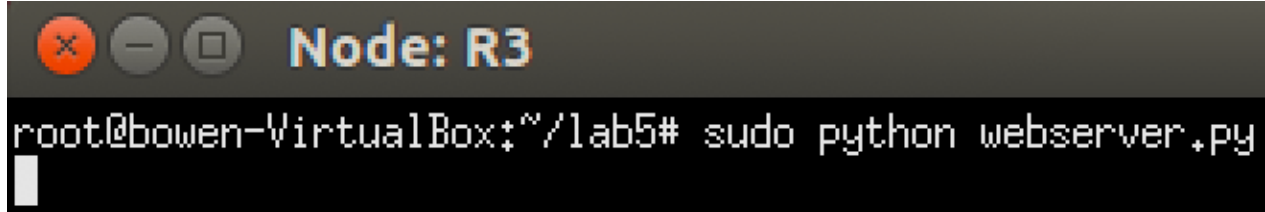not sure why cant connect.. :(

bgp attack
./website.sh R1


```
Wed Dec 2 22:45:26 SGT 2020 --
Wed Dec 2 22:45:27 SGT 2020 --
Wed Dec 2 22:45:29 SGT 2020 --
Wed Dec 2 22:45:30 SGT 2020 --
Wed Dec 2 22:45:31 SGT 2020 --
Wed Dec 2 22:45:32 SGT 2020 --
Wed Dec 2 22:45:33 SGT 2020 --
```

```
Wed Dec 2 22:45:34 SGT 2020 --
Wed Dec 2 22:45:35 SGT 2020 --
Wed Dec 2 22:45:36 SGT 2020 --
Wed Dec 2 22:45:37 SGT 2020 --
Wed Dec 2 22:45:39 SGT 2020 --
Wed Dec 2 22:45:40 SGT 2020 --
Wed Dec 2 22:45:41 SGT 2020 --
Wed Dec 2 22:45:42 SGT 2020 --
Wed Dec 2 22:45:43 SGT 2020 --
```
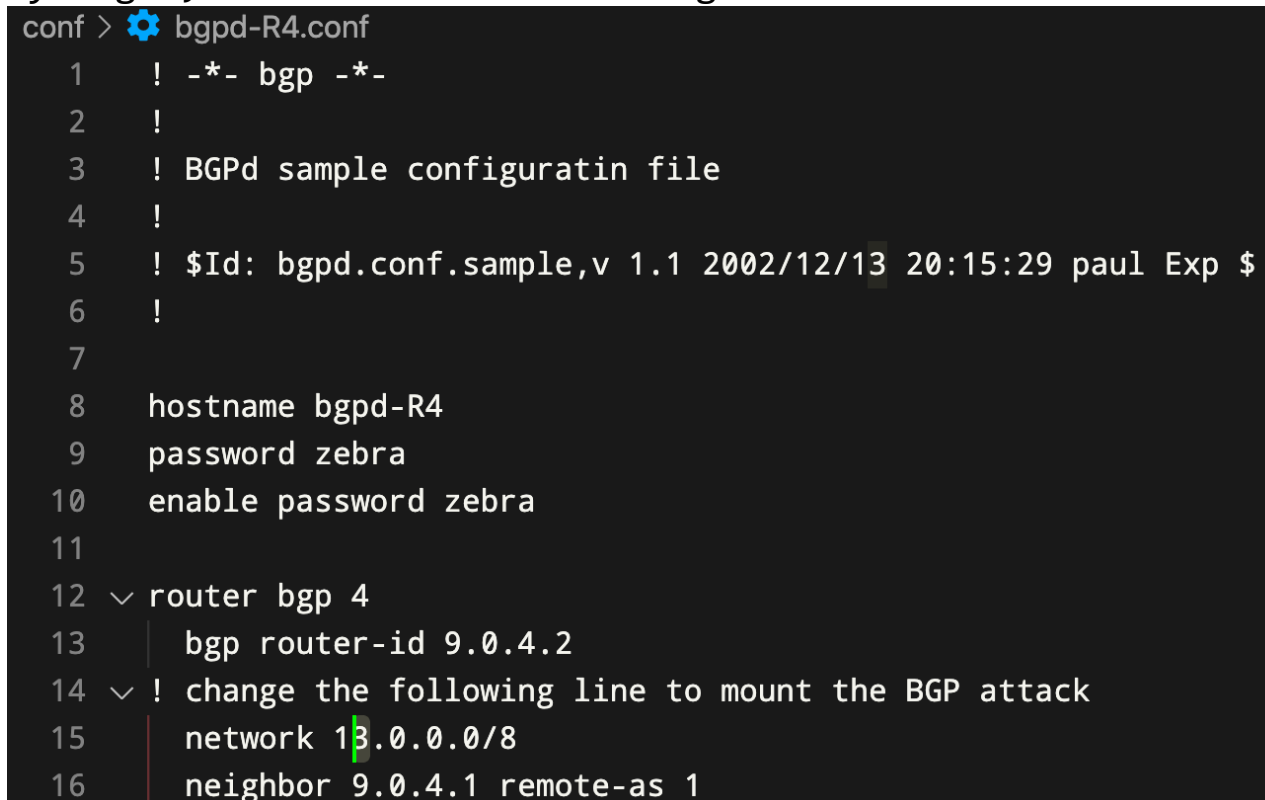
no result.. :(

with webserver running on R3

Node: R3

```
root@bowen-VirtualBox:~/lab5# sudo python webserver.py
```

not able to perform attack

by right, should do the following edits:

```
conf > ⚙ bgpd-R4.conf
  1    ! -*- bgp -*-
  2    !
  3    ! BGPd sample configuratin file
  4    !
  5    ! $Id: bgpd.conf.sample,v 1.1 2002/12/13 20:15:29 paul Exp $
  6    !
  7
  8    hostname bgpd-R4
  9    password zebra
 10    enable password zebra
 11
 12  ∨ router bgp 4
 13      bgp router-id 9.0.4.2
 14  ∨ ! change the following line to mount the BGP attack
 15      network 13.0.0.0/8
 16      neighbor 9.0.4.1 remote-as 1
```

```
17    neighbor 9.0.4.1 ebgp-multihop
18    neighbor 9.0.4.1 next-hop-self
19    neighbor 9.0.4.1 timers 5 5
```