
S1E15 - The Border Gateway Protocol - Lab

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Connecting

Connect to the lab server:

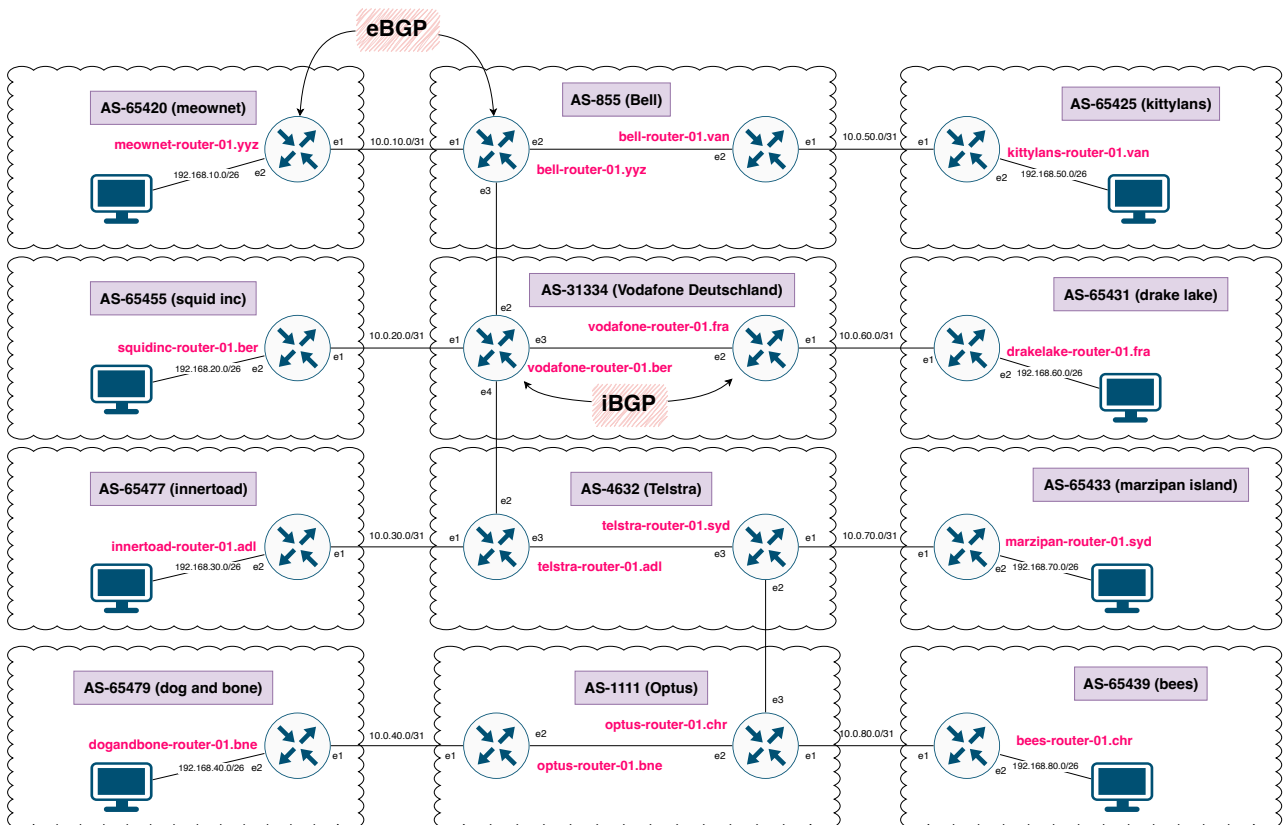
```
local$ ssh-keygen -R netlab.nanocat.net
local$ ssh lab@netlab.nanocat.net
Password: (see discord)
```

Connect to your router:

```
lab@netlab$ list-devices
lab@netlab$ connect DEVICE
```

Topology

Prefix and AS number allocations: https://docs.google.com/spreadsheets/d/1vxVgJI_LhY3NDGJ3icE-4zphmBxUurEvVFgdjafFBzc/edit?usp=sharing



Goal

- Configure basic IP addressing
- Configure a BGP session with another peer
- Advertise your /24 prefix
- Verify

Enable IP routing

Enable IP routing on your router.

Configure your IP addresses

- Configure your interface IP addresses, ISP side and PC side.
- You can use `show lldp neighbor` to discover where your interfaces connect.
- Your router should always take the lowest IP address.
- The link to the ISP will have a /31 netmask.
- The link to your PC will have a /26 netmask, allocated from your assigned /24.

```
!  
interface ethernetX  
  no switchport  
  ip address x.x.x.x/x  
!
```

Make sure you can ping your upstream router.

Configure BGP on your router

Establish a BGP session with your upstream. Refer to the diagram for the correct remote-as. You have the lower IP in the /31, your upstream has the higher IP.

```
!  
router bgp XXXXX                                <- your AS number  
  neighbor x.x.x.x remote-as xxxxx             <- your upstream's AS number  
  neighbor x.x.x.x description The ISP  
  network x.x.x.x/24                            <- your /24 IP allocation (not /26)  
!  
  
r1.xxx#show ip bgp summary  
r1.xxx#show ip route bgp  
r1.xxx#show ip bgp neighbor x.x.x.x advertised-routes  
r1.xxx#show ip bgp neighbor x.x.x.x received-routes
```

Do you see the routes?

- BGP won't advertise a network unless there's an exactly matching prefix in your local routing table
- Add static null0 routes matching your network prefixes

Add null0 routes

```
!  
ip route x.x.x.x/24 null0  
!
```

```
r1.xxx#show ip bgp neighbor x.x.x.x advertised-routes
```

```
r1.xxx#show ip bgp neighbor x.x.x.x advertised-routes
```

```
r1.xxx#show ip bgp neighbor x.x.x.x received-routes
```

Configure your PC

```
$ ip address add x.x.x.x/26 dev eth1    <- add an IP to eth1
$ ip route delete default              <- delete the gateway
$ ip route add default via x.x.x.1     <- add the correct gateway
$ ip route                             <- check your routing table
$ ping x.x.x.1                         <- make sure you can ping
```

Traceroute to other AS's

- Traceroute to some other AS's PCs. Make sure you can reach all of them.
- Look at your BGP database to check the AS path.

Observations

- Do your /31 link addresses need to appear in everyone else's routing table? Why or why not?
- Why do we advertise the whole /24, when we are only making use of a /26?

Fin! Questions?