Task List

Linux AS Router Setup

- Install Linux
- Determine NIC-to-Interface mappings
- Configure IP address/netmask on each interface
  - eth0: 192.168.1.<1,2> / 255.255.255.0
  - eth1: 10.<AS#>0.10.<1,2> / 255.255.0.0
  - eth2: 190.111.50.<11,12,13,14> / 255.255.255.0
- Create default route to backbone router (190.111.50.55) on eth2
- Enable IP forwarding
- Install Quagga (if not installed)
- Create initial zebra, ospfd, and bgpd config files
- Configure OSPF
  - Router ID: 10.<AS#>0.10.0
  - Networks: 10.<AS#>0.10.0 / 16
  - Originate default route
- Configure BGP
  - Router ID: 190.111.50.<11,12,13,14>
  - Networks: 10.<AS#>0.10.0 / 16
  - iBGP neighbors: 10.<AS#>0.10.<1 or 2,>
    10.<AS#>0.10.3
    10.<AS#>0.10.4
  - eBGP neighbors: 192.168.1.<1 or 2>
    190.111.50.55

Cisco AS Router Setup

- Initial setup
- Configure IP address/netmask on Ethernet interfaces
  - fa0/0: 190.111.50.<10, 15> / 255.255.255.0
  - fa0/1: 10.<AS#>0.10.<1,2> / 255.255.0.0
- Configure T1 crossover and Serial interface IP address
  - s0/0: 192.168.1.<1,2> / 255.255.255.0
- Create default route to backbone router (190.111.50.55)
- Configure OSPF
  - Router ID: 10.<AS#>0.10.0
  - Networks: 10.<AS#>0.10.0 / 0.0.255.255
  - Originate default route
- Configure BGP
  - Router ID: 190.111.50.<11,12,13,14>
  - Networks: 10.<AS#>0.10.0 / 255.255.0.0
  - iBGP neighbors**:** 10.<AS#>0.10.<1 or 2,>
    10.<AS#>0.10.3
    10.<AS#>0.10.4
  - eBGP neighbors: 192.168.1.<1 or 2>
    190.111.50.55

Pod Router Setup

- Initial setup
- Ensure that no default route exists
- Configure IP address/netmask on Ethernet interfaces
  - fa0/0: 190.111.<pod#>.254 / 255.255.255.0
  - fa0/1: 10.<AS#>0.10.<3,4> / 255.255.0.0
- Configure OSPF
  - Networks: 10.<AS#>0.10.0 / 0.0.255.255
    190.111.<pod#>.0 / 0.0.0.255
- Set OSPF priority to 0 on fa0/1
- Configure BGP
  - Networks: 10.<AS#>0.10.0 / 255.255.0.0
    190.111.<pod#>.0 / 255.255.255.0
  - iBGP neighbors: 10.<AS#>0.10.1
    10.<AS#>0.10.2
    10.<AS#>0.10.<3 or 4>

Verifying and Testing

- Interface IP address configuration
  - Cisco: show ip int brief
  - Linux: ifconfig
- Routing table
  - Cisco: show ip route
  - Linux: route -n
- OSPF
  - show ip ospf neighbor
- BGP
  - show ip bgp summary
  - show ip bgp neighbors
  - show ip bgp neighbors <neighbor address> advertised routes
  - show ip bgp neighbors <neighbor address> routes
- Ping to and from a router or system within each pod
- Simulate router failure on each AS router
  - Cisco: shutdown router
  - Linux: stop networking service or shutdown interfaces