LAB 3 – Routing with OSPF – Multiarea Advanced Setup

For this final lab we are going to build a realistic enterprise network. See the picture below

Diagram

Description automatically generated

This configuration consists of the following topology:

* Three OSPF areas – Area0, Area10, Area20
* Area 10 has 2 subnets, supported by TOR switches and an edge switch
* Area 20 is simulating a remote office, thus there is a /30 subnet between them
* R010 is the gateway for both the 10.10.1.0/24 and 10.10.2.0/24 subnets, notice eth0 has 2 IP addresses configured

To make your life easier, here is the IP configuration for each router:

R010:

vtysh

config t

interface eth0

ip address 10.10.1.1/24

ip address 10.10.2.1/24

interface eth1

ip address 10.1.1.1/24

interface lo

ip address 1.1.1.10/32

R0:

vtysh

config t

interface eth0

ip address 10.1.3.1/24

interface eth1

ip address 10.1.1.2/24

interface eth2

ip address 10.1.2.2/24

interface lo

ip address 1.1.1.1/32

R020:

vtysh

config t

interface eth0

ip address 10.254.1.1/30

interface eth1

ip address 10.1.2.1/24

interface lo

ip address 1.1.1.20/32

R20:

vtysh

config t

interface eth0

ip address 10.20.1.1/24

interface eth1

ip address 10.254.1.2/30

interface lo

ip address 1.1.20.1/32

Routers R0 and R20 are isolated within their own areas, so configuring OSPF is pretty straightforward:

R0:

router ospf

network 0.0.0.0/0 area 0

R20:

router ospf

network 0.0.0.0/0 area 20

The above command puts all interfaces into the correct area.

Also, don’t forget to save your configuration from time to time with “do write”

Questions/Discussion

1. Think about what you need to do to configure OSPF in Routers R010 and R020. Hint, each router will require you to:
   1. Enable OSPF routing: router ospf
   2. Then enter in 2 network commands in the format: network <IP/CIDR> area X where you will give a network ID in the form of a CIDR address, for example 10.1.0.0/16, and then for area X, set X to the correct area such as 0,10,20.
2. Study the routes and make sure you understand them –   
   command: do show ip ospf route
3. Make sure all of the hosts can ping each other.