Multi-Area

OSPF

Cisco CCNP Lab 1

Mason and Hoffman – Period 6-8

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Purpose

The purpose of this lab was to review over multi-area ospf from the CCNA course. Concepts included setting up an appropriate topology so that multi-area ospf can be used, using appropriate network, wildmask, and area commands so that ospf can work correctly, and to set up a functioning backbone area so that traffic from other areas can route to other areas through the backbone area.

Background

In Cisco, static routing is defined by manually entering addresses on an end device or a network device. To these, we then do more advanced things such as ospf, which is an Interior Gateway Protocol; a protocol in which all routing is done in the internal area. However, we used multi-area ospf which allows utilize multiple areas in order to make many networks to connect to each other through learning the routes via ospf. In ospf, we use the backbone area, basically the central areas to where all routers connect which have independent areas of their own.

Lab Summary

We started off with the wrong addressing scheme, but then overheard what we were supposed to do and adjusted accordingly. Then we set up an addressing scheme in packet tracer, to which we set up our topology. After, we entered the commands on the routers and put addresses on the interfaces and the PCs and pinged all devices to ensure connectivity between them.

Configurations

Below are the router configurations for the 3 routers used within the topology.

asdf R1#sh run

Building configuration...

hostname R1

no ip domain lookup

ip cef

ipv6 unicast-routing

ipv6 cef

multilink bundle-name authenticated

voice-card 0

license udi pid CISCO2901/K9 sn FTX1704Y03F

license accept end user agreement

license boot module c2900 technology-package securityk9

license boot module c2900 technology-package uck9

vtp domain cisco

vtp mode transparent

redundancy

interface Embedded-Service-Engine0/0

no ip address

shutdown

interface GigabitEthernet0/0

ip address 192.168.3.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:C::1/64

ipv6 ospf 1 area 1

interface GigabitEthernet0/1

ip address 192.168.1.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:A::1/64

ipv6 ospf 1 area 0

interface Serial0/0/0

no ip address

shutdown

clock rate 2000000

interface Serial0/0/1

no ip address

shutdown

clock rate 2000000

router ospf 1

router-id 1.1.1.1

network 192.168.1.0 0.0.0.255 area 0

network 192.168.3.0 0.0.0.255 area 1

default-information originate

ip forward-protocol nd

no ip http server

no ip http secure-server

ipv6 router ospf 1

router-id 1.1.1.1

default-information originate

control-plane

mgcp profile default

gatekeeper

shutdown

line con 0

password cisco

logging synchronous

login

line aux 0

line 2

no activation-character

no exec

transport preferred none

transport input all

transport output pad telnet rlogin lapb-ta mop udptn v120 ssh

stopbits 1

line vty 0 5

password cisco

logging synchronous

login

transport input all

scheduler allocate 20000 1000

End

R1#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.1.0/24 is directly connected, GigabitEthernet0/1

L 192.168.1.1/32 is directly connected, GigabitEthernet0/1

O 192.168.2.0/24 [110/2] via 192.168.1.2, 00:31:14, GigabitEthernet0/1

192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.3.0/24 is directly connected, GigabitEthernet0/0

L 192.168.3.1/32 is directly connected, GigabitEthernet0/0

O IA 192.168.4.0/24 [110/2] via 192.168.1.2, 00:30:42, GigabitEthernet0/1

O IA 192.168.5.0/24 [110/3] via 192.168.1.2, 00:20:48, GigabitEthernet0/1

O 192.168.6.0/24 [110/2] via 192.168.3.2, 00:29:24, GigabitEthernet0/0

O IA 192.168.7.0/24 [110/3] via 192.168.1.2, 00:09:01, GigabitEthernet0/1

O IA 192.168.8.0/24 [110/4] via 192.168.1.2, 00:07:35, GigabitEthernet0/1

R1# sh ipv6 route

IPv6 Routing Table - default - 11 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, R - RIP, H - NHRP, I1 - ISIS L1

I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP

EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination

NDr - Redirect, O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1

OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2

C 2001:DB8:ACAD:A::/64 [0/0]

via GigabitEthernet0/1, directly connected

L 2001:DB8:ACAD:A::1/128 [0/0]

via GigabitEthernet0/1, receive

O 2001:DB8:ACAD:B::/64 [110/2]

via FE80::EAB7:48FF:FE75:7A80, GigabitEthernet0/1

C 2001:DB8:ACAD:C::/64 [0/0]

via GigabitEthernet0/0, directly connected

L 2001:DB8:ACAD:C::1/128 [0/0]

via GigabitEthernet0/0, receive

OI 2001:DB8:ACAD:D::/64 [110/2]

via FE80::EAB7:48FF:FE75:7A80, GigabitEthernet0/1

OI 2001:DB8:ACAD:E::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A80, GigabitEthernet0/1

O 2001:DB8:ACAD:F::/64 [110/2]

via FE80::EAB7:48FF:FE07:DB01, GigabitEthernet0/0

OI 2001:DB8:ACAD:A1::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A80, GigabitEthernet0/1

OI 2001:DB8:ACAD:B1::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A80, GigabitEthernet0/1

L FF00::/8 [0/0]

via Null0, receive

R2#sh run

ip cef

ipv6 unicast-routing

ipv6 cef

multilink bundle-name authentication

voice-card 0

license udi pid CISCO2901/K9 sn FTX1520806H

license accept end user agreement

license boot module c2900 technology-package securityk9

license boot module c2900 technology-package uck9

vtp domain cisco

vtp mode transparent

redundancy

interface Embedded-Service-Engine0/0

no ip address

shutdown

interface GigabitEthernet0/0

ip address 192.168.1.2 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:A::2/64

ipv6 ospf 1 area 0

interface GigabitEthernet0/1

ip address 192.168.2.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:B::1/64

ipv6 ospf 1 area 0

interface GigabitEthernet0/1/0

ip address 192.168.4.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:D::1/64

ipv6 ospf 1 area 2

router ospf 1

router-id 2.2.2.2

network 192.168.1.0 0.0.0.255 area 0

network 192.168.2.0 0.0.0.255 area 0

network 192.168.4.0 0.0.0.255 area 2

default-information originate

ip forward-protocol nd

no ip http server

no ip http secure-server

ipv6 router ospf 1

router-id 2.2.2.2

default-information originate

control-plane

mgcp profile default

gatekeeper

shutdown

line con 0

password cisco

logging synchronous

login

line aux 0

line 2

no activation-character

no exec

transport preferred none

transport input all

transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh

stopbits 1

line vty 0 5

password cisco

logging synchronous

login

transport input all

scheduler allocate 20000 1000

end

R2#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.1.0/24 is directly connected, GigabitEthernet0/0

L 192.168.1.2/32 is directly connected, GigabitEthernet0/0

192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.2.0/24 is directly connected, GigabitEthernet0/1

L 192.168.2.1/32 is directly connected, GigabitEthernet0/1

O IA 192.168.3.0/24 [110/2] via 192.168.1.1, 00:31:38, GigabitEthernet0/0

192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.4.0/24 is directly connected, GigabitEthernet0/1/0

L 192.168.4.1/32 is directly connected, GigabitEthernet0/1/0

O IA 192.168.5.0/24 [110/2] via 192.168.2.2, 00:21:33, GigabitEthernet0/1

O IA 192.168.6.0/24 [110/3] via 192.168.1.1, 00:30:10, GigabitEthernet0/0

O 192.168.7.0/24 [110/2] via 192.168.4.2, 00:09:46, GigabitEthernet0/1/0

O IA 192.168.8.0/24 [110/3] via 192.168.2.2, 00:08:21, GigabitEthernet0/1

R2#sh ipv6 route

IPv6 Routing Table - default - 12 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

H - NHRP, I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea

IS - ISIS summary, D - EIGRP, EX - EIGRP external, NM - NEMO

ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect

O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2, l - LISP

C 2001:DB8:ACAD:A::/64 [0/0]

via GigabitEthernet0/0, directly connected

L 2001:DB8:ACAD:A::2/128 [0/0]

via GigabitEthernet0/0, receive

C 2001:DB8:ACAD:B::/64 [0/0]

via GigabitEthernet0/1, directly connected

L 2001:DB8:ACAD:B::1/128 [0/0]

via GigabitEthernet0/1, receive

OI 2001:DB8:ACAD:C::/64 [110/2]

via FE80::AEF2:C5FF:FE66:60E1, GigabitEthernet0/0

C 2001:DB8:ACAD:D::/64 [0/0]

via GigabitEthernet0/1/0, directly connected

L 2001:DB8:ACAD:D::1/128 [0/0]

via GigabitEthernet0/1/0, receive

OI 2001:DB8:ACAD:E::/64 [110/2]

via FE80::EAB7:48FF:FE07:DAB8, GigabitEthernet0/1

OI 2001:DB8:ACAD:F::/64 [110/3]

via FE80::AEF2:C5FF:FE66:60E1, GigabitEthernet0/0

O 2001:DB8:ACAD:A1::/64 [110/2]

via FE80::26E9:B3FF:FE49:F720, GigabitEthernet0/1/0

OI 2001:DB8:ACAD:B1::/64 [110/2]

via FE80::EAB7:48FF:FE07:DAB8, GigabitEthernet0/1

L FF00::/8 [0/0]

via Null0, receive

R3#sh run

Building configuration..

Current configuration : 1992 bytes

Last configuration change at 15:41:11 UTC Fri Sep 7 2018

version 15.2

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

hostname R3

boot-start-marker

boot-end-marker

no aaa new-model

memory-size iomem 10

ip cef

ipv6 unicast-routing

ipv6 cef

multilink bundle-name authentication

voice-card 0

license udi pid CISCO2901/K9 sn FTX1520806J

license accept end user agreement

license boot module c2900 technology-package securityk9

license boot module c2900 technology-package uck9

vtp domain cisco

vtp mode transparent

redundancy

interface Embedded-Service-Engine0/0

no ip address

shutdown

interface GigabitEthernet0/0

ip address 192.168.2.2 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:B::2/64

ipv6 ospf 1 area 0

interface GigabitEthernet0/1

ip address 192.168.5.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:E::1/64

ipv6 ospf 1 area 3

interface Serial0/0/0

no ip address

shutdown

clock rate 2000000

interface Serial0/0/1

no ip address

shutdown

clock rate 2000000

interface GigabitEthernet0/1/0

no ip address

shutdown

duplex auto

speed auto

router ospf 1

router-id 3.3.3.3

network 192.168.2.0 0.0.0.255 area 0

network 192.168.5.0 0.0.0.255 area 3

default-information originate

ip forward-protocol nd

no ip http server

no ip http secure-server

ipv6 router ospf 1

router-id 3.3.3.3

default-information originate

control-plane

mgcp profile default

gatekeeper

shutdown

line con 0

password cisco

logging synchronous

login

line aux 0

line 2

no activation-character

no exec

transport preferred none

transport input all

transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh

stopbits 1

line vty 0 5

password cisco

logging synchronous

login

transport input all

scheduler allocate 20000 1000

end

R3#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

O 192.168.1.0/24 [110/2] via 192.168.2.1, 00:24:04, GigabitEthernet0/0

192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.2.0/24 is directly connected, GigabitEthernet0/0

L 192.168.2.2/32 is directly connected, GigabitEthernet0/0

O IA 192.168.3.0/24 [110/3] via 192.168.2.1, 00:24:04, GigabitEthernet0/0

O IA 192.168.4.0/24 [110/2] via 192.168.2.1, 00:24:04, GigabitEthernet0/0

192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.5.0/24 is directly connected, GigabitEthernet0/1

L 192.168.5.1/32 is directly connected, GigabitEthernet0/1

O IA 192.168.6.0/24 [110/4] via 192.168.2.1, 00:24:04, GigabitEthernet0/0

O IA 192.168.7.0/24 [110/3] via 192.168.2.1, 00:11:17, GigabitEthernet0/0

O 192.168.8.0/24 [110/2] via 192.168.5.2, 00:08:45, GigabitEthernet0/1

R3#sh ipv6 route

IPv6 Routing Table - default - 11 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

H - NHRP, I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea

IS - ISIS summary, D - EIGRP, EX - EIGRP external, NM - NEMO

ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect

O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2, l - LISP

O 2001:DB8:ACAD:A::/64 [110/2]

via FE80::EAB7:48FF:FE75:7A81, GigabitEthernet0/0

C 2001:DB8:ACAD:B::/64 [0/0]

via GigabitEthernet0/0, directly connected

L 2001:DB8:ACAD:B::2/128 [0/0]

via GigabitEthernet0/0, receive

OI 2001:DB8:ACAD:C::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A81, GigabitEthernet0/0

OI 2001:DB8:ACAD:D::/64 [110/2]

via FE80::EAB7:48FF:FE75:7A81, GigabitEthernet0/0

C 2001:DB8:ACAD:E::/64 [0/0]

via GigabitEthernet0/1, directly connected

L 2001:DB8:ACAD:E::1/128 [0/0]

via GigabitEthernet0/1, receive

OI 2001:DB8:ACAD:F::/64 [110/4]

via FE80::EAB7:48FF:FE75:7A81, GigabitEthernet0/0

OI 2001:DB8:ACAD:A1::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A81, GigabitEthernet0/0

O 2001:DB8:ACAD:B1::/64 [110/1]

via GigabitEthernet0/1, directly connected

L FF00::/8 [0/0]

via Null0, receive

R4#sh run

hostname R4

boot-start-marker

boot-end-marker

no aaa new-model

memory-size iomem 10

ip cef

ipv6 unicast-routing

ipv6 cef

multilink bundle-name authenticated

voice-card 0

license udi pid CISCO2901/K9 sn FTX1520806A

license accept end user agreement

license boot module c2900 technology-package securityk9

license boot module c2900 technology-package uck9

vtp domain cisco

vtp mode transparent

redundancy

interface Embedded-Service-Engine0/0

no ip address

shutdown

interface GigabitEthernet0/0

ip address 192.168.6.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:F::1/64

ipv6 ospf 1 area 1

interface GigabitEthernet0/1

ip address 192.168.3.2 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:C::2/64

ipv6 ospf 1 area 1

interface Serial0/0/0

no ip address

shutdown

clock rate 2000000

interface Serial0/0/1

no ip address

shutdown

clock rate 2000000

interface GigabitEthernet0/1/0

no ip address

shutdown

duplex auto

speed auto

router ospf 1

router-id 4.4.4.4

network 192.168.3.0 0.0.0.255 area 1

network 192.168.6.0 0.0.0.255 area 1

default-information originate

ip forward-protocol nd

no ip http server

no ip http secure-server

ipv6 router ospf 1

router-id 4.4.4.4

default-information originate

control-plane

mgcp profile default

gatekeeper

shutdown

line con 0

password cisco

logging synchronous

login

line aux 0

line 2

no activation-character

no exec

transport preferred none

transport input all

transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh

stopbits 1

line vty 0 5

password cisco

logging synchronous

login

transport input all

scheduler allocate 20000 1000

end

R4#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

O IA 192.168.1.0/24 [110/2] via 192.168.3.1, 00:34:11, GigabitEthernet0/1

O IA 192.168.2.0/24 [110/3] via 192.168.3.1, 00:34:11, GigabitEthernet0/1

192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.3.0/24 is directly connected, GigabitEthernet0/1

L 192.168.3.2/32 is directly connected, GigabitEthernet0/1

O IA 192.168.4.0/24 [110/3] via 192.168.3.1, 00:34:11, GigabitEthernet0/1

O IA 192.168.5.0/24 [110/4] via 192.168.3.1, 00:24:24, GigabitEthernet0/1

192.168.6.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.6.0/24 is directly connected, GigabitEthernet0/0

L 192.168.6.1/32 is directly connected, GigabitEthernet0/0

O IA 192.168.7.0/24 [110/4] via 192.168.3.1, 00:12:37, GigabitEthernet0/1

O IA 192.168.8.0/24 [110/5] via 192.168.3.1, 00:11:12, GigabitEthernet0/1

R4#sh ipv6 route

IPv6 Routing Table - default - 11 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

H - NHRP, I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea

IS - ISIS summary, D - EIGRP, EX - EIGRP external, NM - NEMO

ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect

O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2, l - LISP

OI 2001:DB8:ACAD:A::/64 [110/2]

via FE80::AEF2:C5FF:FE66:60E0, GigabitEthernet0/1

OI 2001:DB8:ACAD:B::/64 [110/3]

via FE80::AEF2:C5FF:FE66:60E0, GigabitEthernet0/1

C 2001:DB8:ACAD:C::/64 [0/0]

via GigabitEthernet0/1, directly connected

L 2001:DB8:ACAD:C::2/128 [0/0]

via GigabitEthernet0/1, receive

OI 2001:DB8:ACAD:D::/64 [110/3]

via FE80::AEF2:C5FF:FE66:60E0, GigabitEthernet0/1

OI 2001:DB8:ACAD:E::/64 [110/4]

via FE80::AEF2:C5FF:FE66:60E0, GigabitEthernet0/1

C 2001:DB8:ACAD:F::/64 [0/0]

via GigabitEthernet0/0, directly connected

L 2001:DB8:ACAD:F::1/128 [0/0]

via GigabitEthernet0/0, receive

OI 2001:DB8:ACAD:A1::/64 [110/4]

via FE80::AEF2:C5FF:FE66:60E0, GigabitEthernet0/1

OI 2001:DB8:ACAD:B1::/64 [110/4]

via FE80::AEF2:C5FF:FE66:60E0, GigabitEthernet0/1

L FF00::/8 [0/0]

via Null0, receive

R4#

R5#sh run

Building configuration...

Current configuration : 1895 bytes

Last configuration change at 14:50:32 UTC Fri Sep 7 2018

version 15.2

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

hostname R5

boot-start-marker

boot-end-marker

no aaa new-model

memory-size iomem 10

ip cef

ipv6 unicast-routing

ipv6 cef

multilink bundle-name authenticated

voice-card 0

license udi pid CISCO2901/K9 sn FTX180180LX

license accept end user agreement

license boot module c2900 technology-package securityk9

license boot module c2900 technology-package uck9

vtp domain cisco

vtp mode transparent

redundancy

interface Embedded-Service-Engine0/0

no ip address

shutdown

interface GigabitEthernet0/0

ip address 192.168.4.2 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:D::2/64

ipv6 ospf 1 area 2

interface GigabitEthernet0/1

ip address 192.168.7.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:A1::1/64

ipv6 ospf 1 area 2

interface Serial0/0/0

no ip address

shutdown

clock rate 2000000

interface Serial0/0/1

no ip address

shutdown

clock rate 2000000

router ospf 1

router-id 5.5.5.5

network 192.168.4.0 0.0.0.255 area 2

network 192.168.7.0 0.0.0.255 area 2

default-information originate

ip forward-protocol nd

no ip http server

no ip http secure-server

ipv6 router ospf 1

router-id 5.5.5.5

default-information originate

control-plane

mgcp profile default

gatekeeper

shutdown

line con 0

password cisco

logging synchronous

login

line aux 0

line 2

no activation-character

no exec

transport preferred none

transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh

stopbits 1

line vty 0 5

password cisco

logging synchronous

login

transport input all

scheduler allocate 20000 1000

end

R5#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

O IA 192.168.1.0/24 [110/2] via 192.168.4.1, 00:35:03, GigabitEthernet0/0

O IA 192.168.2.0/24 [110/2] via 192.168.4.1, 00:35:03, GigabitEthernet0/0

O IA 192.168.3.0/24 [110/3] via 192.168.4.1, 00:35:03, GigabitEthernet0/0

192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.4.0/24 is directly connected, GigabitEthernet0/0

L 192.168.4.2/32 is directly connected, GigabitEthernet0/0

O IA 192.168.5.0/24 [110/3] via 192.168.4.1, 00:25:45, GigabitEthernet0/0

O IA 192.168.6.0/24 [110/4] via 192.168.4.1, 00:34:21, GigabitEthernet0/0

192.168.7.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.7.0/24 is directly connected, GigabitEthernet0/1

L 192.168.7.1/32 is directly connected, GigabitEthernet0/1

O IA 192.168.8.0/24 [110/4] via 192.168.4.1, 00:12:33, GigabitEthernet0/0

R5#sh ipv6 route

IPv6 Routing Table - default - 11 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

H - NHRP, I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea

IS - ISIS summary, D - EIGRP, EX - EIGRP external, NM - NEMO

ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect

O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2, l - LISP

OI 2001:DB8:ACAD:A::/64 [110/2]

via FE80::EAB7:48FF:FE75:7A90, GigabitEthernet0/0

OI 2001:DB8:ACAD:B::/64 [110/2]

via FE80::EAB7:48FF:FE75:7A90, GigabitEthernet0/0

OI 2001:DB8:ACAD:C::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A90, GigabitEthernet0/0

C 2001:DB8:ACAD:D::/64 [0/0]

via GigabitEthernet0/0, directly connected

L 2001:DB8:ACAD:D::2/128 [0/0]

via GigabitEthernet0/0, receive

OI 2001:DB8:ACAD:E::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A90, GigabitEthernet0/0

OI 2001:DB8:ACAD:F::/64 [110/4]

via FE80::EAB7:48FF:FE75:7A90, GigabitEthernet0/0

C 2001:DB8:ACAD:A1::/64 [0/0]

via GigabitEthernet0/1, directly connected

L 2001:DB8:ACAD:A1::1/128 [0/0]

via GigabitEthernet0/1, receive

OI 2001:DB8:ACAD:B1::/64 [110/3]

via FE80::EAB7:48FF:FE75:7A90, GigabitEthernet0/0

L FF00::/8 [0/0]

via Null0, receive

R5#

R6#sh run

Building configuration...

hostname R6

boot-start-marker

boot-end-marker

no aaa new-model

memory-size iomem 10

ip cef

ip domain name www.ISP.com

ipv6 unicast-routing

ipv6 cef

multilink bundle-name authenticatate

voice-card 0

license udi pid CISCO2901/K9 sn FTX180180LM

license accept end user agreement

license boot module c2900 technology-package securityk9

license boot module c2900 technology-package uck9

vtp domain cisco

vtp mode transparent

redundancy

interface Embedded-Service-Engine0/0

no ip address

shutdown

interface GigabitEthernet0/0

ip address 192.168.5.2 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:B1::1/64

ipv6 ospf 1 area 3

interface GigabitEthernet0/1

ip address 192.168.8.1 255.255.255.0

duplex auto

speed auto

ipv6 address 2001:DB8:ACAD:E::2/64

ipv6 ospf 1 area 3

interface Serial0/0/0

no ip address

shutdown

clock rate 2000000

interface Serial0/0/1

no ip address

shutdown

clock rate 200000

router ospf 1

router-id 6.6.6.6

network 192.168.5.0 0.0.0.255 area 3

network 192.168.8.0 0.0.0.255 area 3

default-information originate

ip forward-protocol nd

no ip http server

no ip http secure-server

ipv6 router ospf 1

router-id 6.6.6.6

default-information originate

control-plane

mgcp profile default

gatekeeper

shutdown

line con 0

password cisco

logging synchronous

login

line aux 0

line 2

no activation-character

no exec

transport preferred none

transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh

stopbits 1

line vty 0 4

password cisco

logging synchronous

login

transport input all

line vty 5 6

password cisco

logging synchronous

login

transport input all

scheduler allocate 20000 1000

end

R6#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

O IA 192.168.1.0/24 [110/3] via 192.168.5.1, 00:26:58, GigabitEthernet0/0

O IA 192.168.2.0/24 [110/2] via 192.168.5.1, 00:26:58, GigabitEthernet0/0

O IA 192.168.3.0/24 [110/4] via 192.168.5.1, 00:26:58, GigabitEthernet0/0

O IA 192.168.4.0/24 [110/3] via 192.168.5.1, 00:26:58, GigabitEthernet0/0

192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.5.0/24 is directly connected, GigabitEthernet0/0

L 192.168.5.2/32 is directly connected, GigabitEthernet0/0

O IA 192.168.6.0/24 [110/5] via 192.168.5.1, 00:26:58, GigabitEthernet0/0

O IA 192.168.7.0/24 [110/4] via 192.168.5.1, 00:15:00, GigabitEthernet0/0

192.168.8.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.8.0/24 is directly connected, GigabitEthernet0/1

L 192.168.8.1/32 is directly connected, GigabitEthernet0/1

R6#sh ipv6 route

IPv6 Routing Table - default - 11 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, HA - Home Agent, MR - Mobile Router, R - RIP

H - NHRP, I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea

IS - ISIS summary, D - EIGRP, EX - EIGRP external, NM - NEMO

ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect

O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2, l - LISP

OI 2001:DB8:ACAD:A::/64 [110/3]

via FE80::EAB7:48FF:FE07:DAB9, GigabitEthernet0/0

OI 2001:DB8:ACAD:B::/64 [110/2]

via FE80::EAB7:48FF:FE07:DAB9, GigabitEthernet0/0

OI 2001:DB8:ACAD:C::/64 [110/4]

via FE80::EAB7:48FF:FE07:DAB9, GigabitEthernet0/0

OI 2001:DB8:ACAD:D::/64 [110/3]

via FE80::EAB7:48FF:FE07:DAB9, GigabitEthernet0/0

C 2001:DB8:ACAD:E::/64 [0/0]

via GigabitEthernet0/1, directly connected

L 2001:DB8:ACAD:E::2/128 [0/0]

via GigabitEthernet0/1, receive

OI 2001:DB8:ACAD:F::/64 [110/5]

via FE80::EAB7:48FF:FE07:DAB9, GigabitEthernet0/0

OI 2001:DB8:ACAD:A1::/64 [110/4]

via FE80::EAB7:48FF:FE07:DAB9, GigabitEthernet0/0

C 2001:DB8:ACAD:B1::/64 [0/0]

via GigabitEthernet0/0, directly connected

L 2001:DB8:ACAD:B1::1/128 [0/0]

via GigabitEthernet0/0, receive

L FF00::/8 [0/0]

via Null0, receive

S2#sh run

hostname S2

boot-start-marker

boot-end-marker

no aaa new-model

system mtu routing 1500

ip routing

ipv6 unicast-routing

vtp domain cisco

vtp mode transparent

no mpls traffic-eng auto-bw timers

spanning-tree mode pvst

spanning-tree extend system-id

vlan internal allocation policy ascending

vlan 2

name Data

vlan 3,10,30,50

vlan 996

name CUSTOMER\_NATIVE

interface FastEthernet1/0/1

no switchport

ip address 192.168.7.2 255.255.255.0

ipv6 address 2001:DB8:ACAD:A1::2/64

ipv6 ospf 1 area 2

interface FastEthernet1/0/2

interface FastEthernet1/0/3

interface FastEthernet1/0/4

interface FastEthernet1/0/5

interface FastEthernet1/0/6

interface FastEthernet1/0/7

interface FastEthernet1/0/8

interface FastEthernet1/0/9

interface FastEthernet1/0/10

interface FastEthernet1/0/11

interface FastEthernet1/0/12

interface FastEthernet1/0/13

interface FastEthernet1/0/14

interface FastEthernet1/0/15

interface FastEthernet1/0/16

interface FastEthernet1/0/17

interface FastEthernet1/0/18

interface FastEthernet1/0/19

interface FastEthernet1/0/20

interface FastEthernet1/0/21

interface FastEthernet1/0/22

interface FastEthernet1/0/23

interface FastEthernet1/0/24

interface GigabitEthernet1/0/1

interface GigabitEthernet1/0/2

interface GigabitEthernet1/1/1

speed auto 100

interface GigabitEthernet1/1/2

interface Vlan1

no ip addres

router ospf 1

router-id 7.7.7.7

network 192.168.7.0 0.0.0.255 area 2

default-information originate

ip http server

ip http secure-server

logging esm config

ipv6 router ospf 1

router-id 7.7.7.7

default-information originate

line con 0

password cisco

logging synchronous

login

line vty 0 4

password cisco

logging synchronous

login

line vty 5 15

password cisco

logging synchronous

login

end

S2#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

O IA 192.168.1.0/24 [110/3] via 192.168.7.1, 00:15:13, FastEthernet1/0/1

O IA 192.168.2.0/24 [110/3] via 192.168.7.1, 00:15:13, FastEthernet1/0/1

O IA 192.168.3.0/24 [110/4] via 192.168.7.1, 00:15:13, FastEthernet1/0/1

O 192.168.4.0/24 [110/2] via 192.168.7.1, 00:15:13, FastEthernet1/0/1

O IA 192.168.5.0/24 [110/4] via 192.168.7.1, 00:15:13, FastEthernet1/0/1

O IA 192.168.6.0/24 [110/5] via 192.168.7.1, 00:15:13, FastEthernet1/0/1

192.168.7.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.7.0/24 is directly connected, FastEthernet1/0/1

L 192.168.7.2/32 is directly connected, FastEthernet1/0/1

O IA 192.168.8.0/24 [110/5] via 192.168.7.1, 00:14:45, FastEthernet1/0/1

S2#sh ipv6 route

IPv6 Routing Table - default - 10 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, R - RIP, D - EIGRP, EX - EIGRP external

ND - Neighbor Discovery

O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2

OI 2001:DB8:ACAD:A::/64 [110/3]

via FE80::26E9:B3FF:FE49:F721, FastEthernet1/0/1

OI 2001:DB8:ACAD:B::/64 [110/3]

via FE80::26E9:B3FF:FE49:F721, FastEthernet1/0/1

OI 2001:DB8:ACAD:C::/64 [110/4]

via FE80::26E9:B3FF:FE49:F721, FastEthernet1/0/1

O 2001:DB8:ACAD:D::/64 [110/2]

via FE80::26E9:B3FF:FE49:F721, FastEthernet1/0/1

OI 2001:DB8:ACAD:E::/64 [110/4]

via FE80::26E9:B3FF:FE49:F721, FastEthernet1/0/1

OI 2001:DB8:ACAD:F::/64 [110/5]

via FE80::26E9:B3FF:FE49:F721, FastEthernet1/0/1

C 2001:DB8:ACAD:A1::/64 [0/0]

via FastEthernet1/0/1, directly connected

L 2001:DB8:ACAD:A1::2/128 [0/0]

via FastEthernet1/0/1, receive

OI 2001:DB8:ACAD:B1::/64 [110/4]

via FE80::26E9:B3FF:FE49:F721, FastEthernet1/0/1

L FF00::/8 [0/0]

via Null0, receive

S3#sh run

Building configuration...

Current configuration : 4028 bytes

Last configuration change at 01:25:07 UTC Mon Mar 1 1993

version 12.2

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

hostname S3

boot-start-marker

boot-end-marker

no aaa new-model

system mtu routing 1500

ip routing

no ip domain-lookup

ipv6 unicast-routing

vtp domain cisco

vtp mode transparent

crypto pki trustpoint TP-self-signed-2495579008

enrollment selfsigned

subject-name cn=IOS-Self-Signed-Certificate-2495579008

revocation-check none

rsakeypair TP-self-signed-2495579008

crypto pki certificate chain TP-self-signed-2495579008

certificate self-signed 01

3082023A 308201A3 A0030201 02020101 300D0609 2A864886 F70D0101 04050030

31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274

69666963 6174652D 32343935 35373930 3038301E 170D3933 30333031 30303031

30325A17 0D323030 31303130 30303030 305A3031 312F302D 06035504 03132649

4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D32 34393535

37393030 3830819F 300D0609 2A864886 F70D0101 01050003 818D0030 81890281

8100A19D 6AD73C49 2927D5ED F9D4D94A 8B8F92B9 43185E51 37BFC375 29375263

0C49CE21 6CDB4FE3 B1EF50C5 9B06E0BD CE6D332C F288A318 B8CD1EF5 4E862CA8

71E47642 C5ECA5D1 3878C30E BB879A86 87CB9C2B 9C7D8077 23325083 B817AF4B

C32B3F02 1C3D2FF6 FCD7B343 34492E89 8C982D7A 62825359 161F1DFE C81BC932

81370203 010001A3 62306030 0F060355 1D130101 FF040530 030101FF 300D0603

551D1104 06300482 02533030 1F060355 1D230418 30168014 120B0D6F 64DF8AB8

516CE123 9CE8B319 67EB4B24 301D0603 551D0E04 16041412 0B0D6F64 DF8AB851

6CE1239C E8B31967 EB4B2430 0D06092A 864886F7 0D010104 05000381 81006574

43500302 81568A71 378329AF 51C54153 30926C8D 20E8CD9E 0AD48EEC EABE5837

CC1E94A5 8C2603FD 5AE39A62 C69C6798 3FA0C637 7CACD97F 89B407BC 1C895F59

F768AF8E EF5950C9 C7BED252 1DE766C8 123900FA CF26A0EE 8795050D 81773396

94155469 0694BAAA 37E65CDF A824850A A1BB01B4 37625DF4 7D4111AF B382

quit

spanning-tree mode pvst

spanning-tree portfast bpduguard default

spanning-tree extend system-id

vlan internal allocation policy ascending

vlan 2

name Data

vlan 3,10,30,50

vlan 996

name CUSTOMER\_NATIVE

interface FastEthernet1/0/1

no switchport

ip address 192.168.8.2 255.255.255.0

ipv6 address 2001:DB8:ACAD:B1::2/64

ipv6 ospf 1 area 3

interface FastEthernet1/0/2

switchport access vlan 30

interface FastEthernet1/0/3

switchport access vlan 50

interface FastEthernet1/0/4

interface FastEthernet1/0/5

interface FastEthernet1/0/6

interface FastEthernet1/0/7

interface FastEthernet1/0/8

interface FastEthernet1/0/9

interface FastEthernet1/0/10

interface FastEthernet1/0/11

interface FastEthernet1/0/12

interface FastEthernet1/0/13

interface FastEthernet1/0/14

interface FastEthernet1/0/15

interface FastEthernet1/0/16

interface FastEthernet1/0/17

interface FastEthernet1/0/18

interface FastEthernet1/0/19

interface FastEthernet1/0/20

interface FastEthernet1/0/21

interface FastEthernet1/0/22

interface FastEthernet1/0/23

interface FastEthernet1/0/24

interface GigabitEthernet1/0/1

interface GigabitEthernet1/0/2

interface GigabitEthernet1/1/1

interface GigabitEthernet1/1/2

interface Vlan1

no ip addres

shutdown

interface Vlan10

ip address 10.10.10.2 255.255.255.252

interface Vlan30

ip address 10.30.10.2 255.255.255.252

interface Vlan50

ip address 10.50.10.2 255.255.255.252

router ospf 1

router-id 8.8.8.8

network 10.10.10.0 0.0.0.3 area 0

network 10.30.10.0 0.0.0.3 area 0

network 10.50.10.0 0.0.0.3 area 0

network 192.168.8.0 0.0.0.255 area 3

default-information originate

ip http server

ip http secure-server

logging esm config

ipv6 router ospf 1

router-id 8.8.8.8

default-information originate

line con 0

password cisco

logging synchronous

login

line vty 0 4

password cisco

logging synchronous

login

line vty 5 15

password cisco

logging synchronous

login

end

S3#sh ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

O IA 192.168.1.0/24 [110/4] via 192.168.8.1, 00:15:11, FastEthernet1/0/1

O IA 192.168.2.0/24 [110/3] via 192.168.8.1, 00:15:11, FastEthernet1/0/1

O IA 192.168.3.0/24 [110/5] via 192.168.8.1, 00:15:11, FastEthernet1/0/1

O IA 192.168.4.0/24 [110/4] via 192.168.8.1, 00:15:11, FastEthernet1/0/1

O 192.168.5.0/24 [110/2] via 192.168.8.1, 00:15:11, FastEthernet1/0/1

O IA 192.168.6.0/24 [110/6] via 192.168.8.1, 00:15:11, FastEthernet1/0/1

O IA 192.168.7.0/24 [110/5] via 192.168.8.1, 00:15:11, FastEthernet1/0/1

192.168.8.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.8.0/24 is directly connected, FastEthernet1/0/1

L 192.168.8.2/32 is directly connected, FastEthernet1/0/1

S3#sh ipv6 route

IPv6 Routing Table - default - 10 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, R - RIP, D - EIGRP, EX - EIGRP external

ND - Neighbor Discovery

O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2

ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2

OI 2001:DB8:ACAD:A::/64 [110/4]

via FE80::7ADA:6EFF:FEBD:9B69, FastEthernet1/0/1

OI 2001:DB8:ACAD:B::/64 [110/3]

via FE80::7ADA:6EFF:FEBD:9B69, FastEthernet1/0/1

OI 2001:DB8:ACAD:C::/64 [110/5]

via FE80::7ADA:6EFF:FEBD:9B69, FastEthernet1/0/1

OI 2001:DB8:ACAD:D::/64 [110/4]

via FE80::7ADA:6EFF:FEBD:9B69, FastEthernet1/0/1

O 2001:DB8:ACAD:E::/64 [110/1]

via FastEthernet1/0/1, directly connected

OI 2001:DB8:ACAD:F::/64 [110/6]

via FE80::7ADA:6EFF:FEBD:9B69, FastEthernet1/0/1

OI 2001:DB8:ACAD:A1::/64 [110/5]

via FE80::7ADA:6EFF:FEBD:9B69, FastEthernet1/0/1

C 2001:DB8:ACAD:B1::/64 [0/0]

via FastEthernet1/0/1, directly connected

L 2001:DB8:ACAD:B1::2/128 [0/0]

via FastEthernet1/0/1, receive

L FF00::/8 [0/0]

via Null0, receive

Problems

We ran into an addressing scheme problem, where there were wrong ipv6 addresses that cannot be created past the letter F in the /64 prefix for creating the ipv6 address. Thus, we went into packet tracer and fixed our addressing scheme over there. In the lab, we noticed that the switch didn’t accept the router ospf 1 command, so we had to think for a few minutes, only to remember that you have to type no switchport in order to configure the switch to become a layer 3 switch; a switch that performs like a router”.

Conclusion

We set up ipv4 and ipv6 addresses for static routing in order to prepare for the more advanced ospf and ospfv3 methods. We set up multiple areas for ospf and ospfv3 with a backbone area so that traffic from different areas can be routed through there. I learned that sometimes patience is the key towards fixing simple problems, such as looking back at the commands or the topology, so that problems could be easily solved and everything functions again. This was a much needed review so that we could remember most of the things we learned.