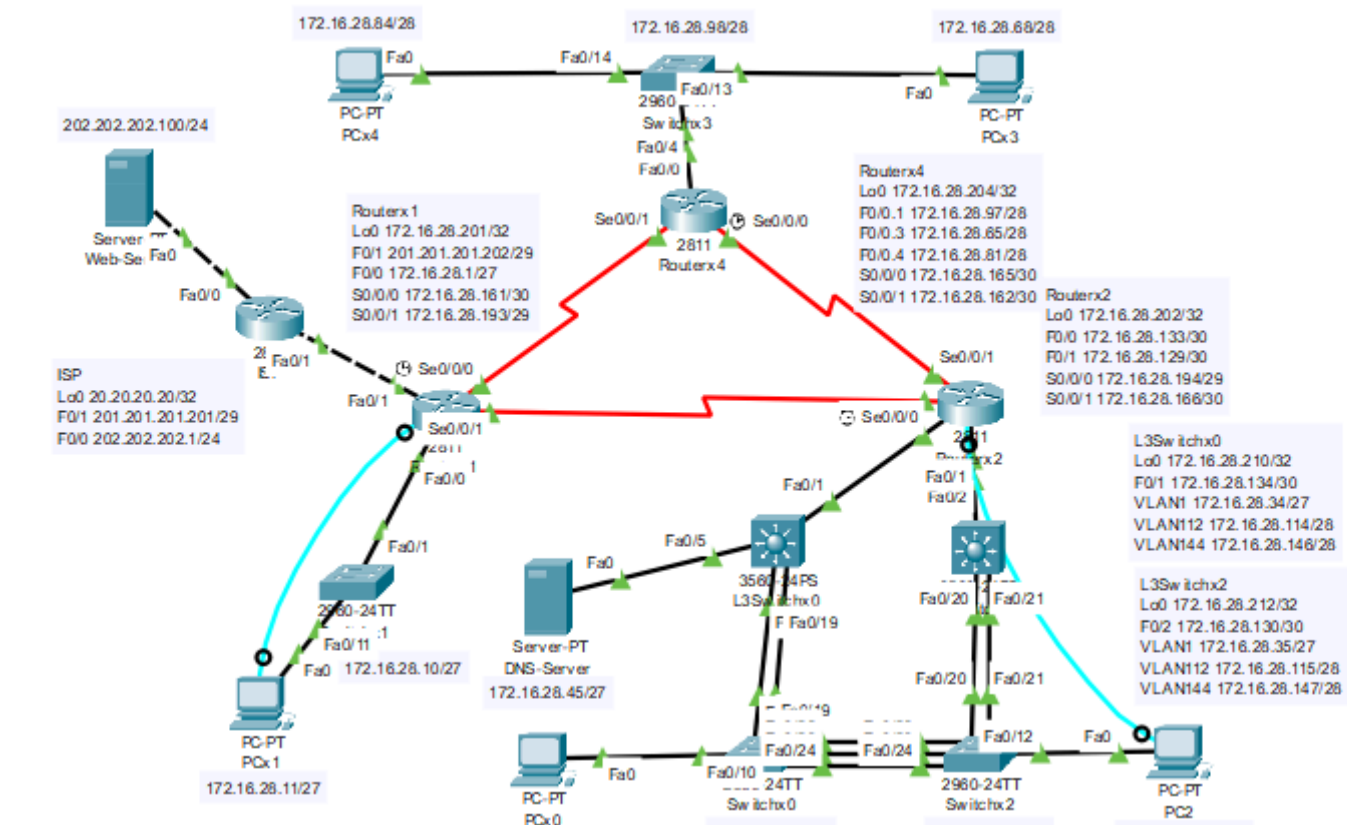


Challenge Lab

Topology:



1. VLANs

I used the commands show vlan and switchport show int f0/x switchport to show

that the vlans are configured correctly

```
1    default          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                   Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                   Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                   Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                   Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                   Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                   Gig0/1, Gig0/2
3    VLAN0003         active    Fa
4    VLAN0004         active    Fa
1002 fddi-default     active
1003 token-ring-default active
1004 fddinet-default  active    1002 fddi-default          active
1005 trnet-default    active    1003 token-ring-default   active
                                   1004 fddinet-default      active
                                   1005 trnet-default        active

VLAN Type  SAID      MTU    Parent RingNo BridgeNo
-----
1    enet    100001    1500   -      -      -
3    enet    100003    1500   -      -      -
4    enet    100004    1500   -      -      -
1002 fddi    101002    1500   -      -      -
1003 tr      101003    1500   -      -      -
1004 fdnet   101004    1500   -      -      -
1005 trnet   101005    1500   -      -      -

VLAN Type  SAID      MTU    Parent RingNo BridgeNo
-----
Remote SPAN VLANs
-----

Primary Secondary Type      Ports
-----
Switchx3#
Switchx3#
Switchx3#show int f0/4 switchport
Name: Fa0/4
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On

VLAN Type  SAID      MTU    Parent RingNo BridgeNo
-----
144  enet    100144    1500   -      -      -
1002 fddi-default     active
1003 token-ring-default active
1004 fddinet-default  active
1005 trnet-default    active

VLAN Type  SAID      MTU    Parent RingNo BridgeNo
-----
1    enet    100001    1500   -      -      -
144  enet    100144    1500   -      -      -
1002 fddi    101002    1500   -      -      -
1003 tr      101003    1500   -      -      -
1004 fdnet   101004    1500   -      -      -
1005 trnet   101005    1500   -      -      -

VLAN Type  SAID      MTU    Parent RingNo BridgeNo
-----
Remote SPAN VLANs
-----

Primary Secondary Type      Ports
-----
Switch> show int f0/12 switchport
Name: Fa0/12
Switchport: Enabled
Administrative Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 144 (VLAN0144)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
```

2. EtherChannel

I used the commands show etherchannel summary and show interfaces to show that the EtherChannel configuration is operational, providing information on the status, interfaces, and health of the link aggregation.

```
Switch>show etherchannel summary
Flags: D - down        P - in port-channel
       I - stand-alone s - suspended
       H - Hot-standby (LACP only)
       R - Layer3      S - Layer2
       U - in use      f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)        LACP       Fa0/20(P) Fa0/21(P) Fa0/22(I) Fa0/23(I) Fa0/24(I)
Switch>show interfaces FastEthernet0/20
FastEthernet0/20 is up, line protocol is up (connected)
  Hardware is Lance, address is 0001.96de.e714 (bia 0001.96de.e714)
  BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
    2357 packets output, 263570 bytes, 0 underruns
    0 output errors, 0 collisions, 10 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out

Switch>show interfaces FastEthernet0/21
FastEthernet0/21 is up, line protocol is up (connected)
  Hardware is Lance, address is 0001.96de.e715 (bia 0001.96de.e715)
  BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops:
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
    2357 packets output, 263570 bytes, 0 underruns
    0 output errors, 0 collisions, 10 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out

Switch>show interfaces FastEthernet0/22
FastEthernet0/22 is up, line protocol is up (connected)
  Hardware is Lance, address is 0001.96de.e716 (bia 0001.96de.e716)
  BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
    2357 packets output, 263570 bytes, 0 underruns
    0 output errors, 0 collisions, 10 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out

Switch>show interfaces FastEthernet0/23
FastEthernet0/23 is up, line protocol is up (connected)
  Hardware is Lance, address is 0001.96de.e717 (bia 0001.96de.e717)
  BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
```

3. InterVLAN Routing with a Router-on-a-Stick

I used the command show int to show all of the subinterfaces on routerx4 proving that they are configured and correspond to a VLAN.

```
FastEthernet0/0.1 is up, line protocol is up (connected)
  Hardware is PQ1ICC_FEC, address is 000b.be23.9b57 (bia 000b.be23.9b57)
  Internet address is 172.16.28.97/28
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 1
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
FastEthernet0/0.3 is up, line protocol is up (connected)
  Hardware is PQ1ICC_FEC, address is 000b.be23.9b57 (bia 000b.be23.9b57)
  Internet address is 172.16.28.65/28
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 3
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
FastEthernet0/0.4 is up, line protocol is up (connected)
  Hardware is PQ1ICC_FEC, address is 000b.be23.9b57 (bia 000b.be23.9b57)
  Internet address is 172.16.28.81/28
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 4
```

4. InterVLAN Routing with SVIs

These screenshots show the VLANs on the layer 3 switches and that they have the first available address in the network.

```
Switch#show interfaces v12
show interfaces v12
Vlan112 is up, line protocol is up
  Hardware is CPU Interface, address is 000d.bd6e.9601 (bia 000d.bd6e.9601)
  Internet address is 172.16.28.115/28
  MTU 1500 bytes, BW 100000 Kbit, DLY 1000000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 21:40:21, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    1682 packets input, 530955 bytes, 0 no buffer
    Received 0 broadcasts (0 IP multicast)
    0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    563859 packets output, 0 bytes, 0 underruns
    0 output errors, 23 interface resets
    0 output buffer failures, 0 output buffers swapped out

Switch#show interfaces v144
Vlan144 is up, line protocol is up
  Hardware is CPU Interface, address is 000d.bd6e.9602 (bia 000d.bd6e.9602)
  Internet address is 172.16.28.147/28
  MTU 1500 bytes, BW 100000 Kbit, DLY 1000000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 21:40:21, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
```

```
Switch#show interfaces v1
Vlan1 is up, line protocol is up
  Hardware is CPU Interface, address is 0006.2a03.9212 (bia 0006.2a03.9212)
  Internet address is 172.16.28.34/27
  MTU 1500 bytes, BW 100000 Kbit, DLY 1000000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 21:40:21, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    1682 packets input, 530955 bytes, 0 no buffer
    Received 0 broadcasts (0 IP multicast)
    0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    563859 packets output, 0 bytes, 0 underruns
    0 output errors, 23 interface resets
    0 output buffer failures, 0 output buffers swapped out

Switch#show interfaces v144
Vlan144 is up, line protocol is up
  Hardware is CPU Interface, address is 0006.2a03.9202 (bia 0006.2a03.9202)
  Internet address is 172.16.28.146/28
  MTU 1500 bytes, BW 100000 Kbit, DLY 1000000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 21:40:21, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
```

5. Default Static Routing and Default Route Injection

These screenshots show the static ip routes and the OSPF configuration on the routers.

```
Router#show 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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 201.201.201.202 to network 0.0.0.0

    20.0.0.0/32 is subnetted, 1 subnets
C       20.20.20.20/32 is directly connected, Loopback0
    201.201.201.0/24 is variably subnetted, 2 subnets, 2 masks
C       201.201.201.200/29 is directly connected, FastEthernet0/1
L       201.201.201.201/32 is directly connected, FastEthernet0/1
    202.202.202.0/24 is variably subnetted, 2 subnets, 2 masks
C       202.202.202.0/24 is directly connected, FastEthernet0/0
L       202.202.202.1/32 is directly connected, FastEthernet0/0
S*     0.0.0.0/0 [1/0] via 201.201.201.202

    172.16.0.0/16 is variably subnetted, 12 subnets, 4 masks
C       172.16.28.0/27 is directly connected, FastEthernet0/0
L       172.16.28.1/32 is directly connected, FastEthernet0/0
O       172.16.28.128/30 [110/65] via 172.16.28.194, 01:41:41, Serial0/0/1
O       172.16.28.132/30 [110/65] via 172.16.28.194, 01:41:41, Serial0/0/1
C       172.16.28.160/30 is directly connected, Serial0/0/0
L       172.16.28.161/32 is directly connected, Serial0/0/0
O       172.16.28.164/30 [110/128] via 172.16.28.162, 02:17:21, Serial0/0/0
C       172.16.28.192/29 is directly connected, Serial0/0/1
L       172.16.28.193/32 is directly connected, Serial0/0/1
C       172.16.28.201/32 is directly connected, Loopback0
O       172.16.28.202/32 [110/65] via 172.16.28.194, 00:57:49, Serial0/0/1
O       172.16.28.204/32 [110/65] via 172.16.28.162, 01:01:05, Serial0/0/0
    201.201.201.0/24 is variably subnetted, 2 subnets, 2 masks
C       201.201.201.200/29 is directly connected, FastEthernet0/1
L       201.201.201.202/32 is directly connected, FastEthernet0/1
S*     0.0.0.0/0 [1/0] via 201.201.201.201

Router#
Router#show ip ospf
Routing Process "ospf 1" with ID 172.16.28.201
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 2. Checksum Sum 0x007358
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0)
    Number of interfaces in this area is 3
    Area has no authentication
    SPF algorithm executed 19 times
    Area ranges are
      172.16.28.0/27, 172.16.28.1/32, 172.16.28.128/30, 172.16.28.132/30, 172.16.28.160/30, 172.16.28.161/32, 172.16.28.164/30, 172.16.28.192/29, 172.16.28.193/32, 172.16.28.201/32, 172.16.28.202/32, 172.16.28.204/32, 201.201.201.200/29, 201.201.201.202/32

Routing Process "ospf 1" with ID 172.16.28.202
Supports only single TOS(TOS0) routes
Supports opaque LSA
It is an autonomous system boundary router
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 2. Checksum Sum 0x007358
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0)
    Number of interfaces in this area is 4
    Area has no authentication
    SPF algorithm executed 20 times
    Area ranges are
      172.16.28.0/27, 172.16.28.1/32, 172.16.28.128/30, 172.16.28.132/30, 172.16.28.160/30, 172.16.28.161/32, 172.16.28.164/30, 172.16.28.192/29, 172.16.28.193/32, 172.16.28.201/32, 172.16.28.202/32, 172.16.28.204/32, 201.201.201.200/29, 201.201.201.202/32
```

6. Dynamic Routing

I used the commands show ip ospf and show ip ospf neighbor to show that I configured OSPF on the layer 3 switches as well.

```
show ip ospf
Routing Process "ospf 1" with ID 172.16.28.212
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPF's 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 0. Checksum Sum 0x000000
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0) (Inactive)
    Number of interfaces in this area is 0
    Area has no authentication
    SPF algorithm executed 1 times
    Area ranges are
    Number of LSA 1. Checksum Sum 0x0038ce
    Number of opaque link LSA 0. Checksum Sum 0x000000
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
```

```
show ip ospf
Routing Process "ospf 1" with ID 172.16.28.210
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPF's 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 2. Checksum Sum 0x007358
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0)
    Number of interfaces in this area is 1
    Area has no authentication
    SPF algorithm executed 19 times
    Area ranges are
    Number of LSA 5. Checksum Sum 0x02e8bb
    Number of opaque link LSA 0. Checksum Sum 0x000000
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
```

Router# show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address	Interface
172.16.28.210	1	FULL/DR	00:00:31	172.16.28.134	FastEthernet0/0
172.16.28.201	0	FULL/-	00:00:31	172.16.28.193	Serial0/0/0

7. Access Control Lists

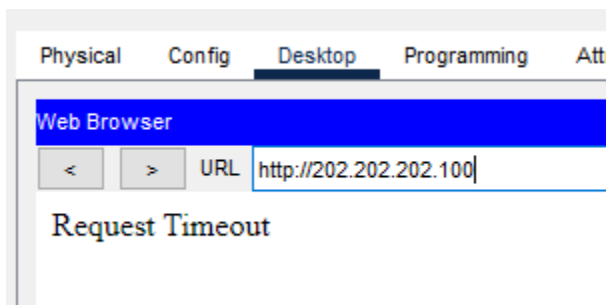
I used the command show access-lists to show my ACLs.

```
Extended IP access list 123
 10 deny tcp host 172.16.28.11 host 202.202.202.100 eq www (12 match(es))
 20 permit ip any any (1537 match(es))
Extended IP access list 134
 10 permit ip any any (34 match(es))
```

Before:



After:



8. SSH

These screenshots show that I enabled SSH on the devices and the ACL I wrote to make sure that PCx4 is the only PC allowed to access them through SSH.

```
Switchx3#show ip ssh
SSH Enabled - version 1.5
Authentication timeout: 120 secs; Authentication retries: 3
Switchx3#
```

```
Routerx4> show ip ssh
SSH Enabled - version 1.5
Authentication timeout: 120 secs; Authentication retries: 3
Routerx4>
```

```
Routerx4#show access-list
Extended IP access list 101
 10 permit tcp host 172.16.28.84 any eq 22
 20 deny tcp any any eq telnet
 30 permit ip any any
```

9. DHCP

I was not able to get DHCP completely working for this topology, but here is the results of my attempt anyway.

```
Routerx4#show ip dhcp pool
```

```
Pool PC1-Pool :
```

```
Utilization mark (high/low) : 100 / 0
Subnet size (first/next)     : 0 / 0
Total addresses               : 14
Leased addresses              : 0
Excluded addresses            : 2
Pending event                 : none
```

```
1 subnet is currently in the pool
```

Current index	IP address range	Leased/Excluded/Total
172.16.28.1	172.16.28.1 - 172.16.28.14	0 / 2 / 14

```
Pool PCx3-Pool :
```

```
Utilization mark (high/low) : 100 / 0
Subnet size (first/next)     : 0 / 0
Total addresses               : 511
Leased addresses              : 0
Excluded addresses            : 2
Pending event                 : none
```

```
0 subnet is currently in the pool
```

10. NAT/PAT

I was also unfortunately unable to get NAT/PAT to be fully functional, and do not have any screenshots to show anything.

11. HSRP

I used the command show standby on both layer 3 switches to show the HSRP configuration that I created.

L3Switchx0:

```
Vlan1 - Group 1
  State is Active
    5 state changes, last state change 00:00:30
  Virtual IP address is 172.16.28.2
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.516 secs
  Preemption enabled
  Active router is local
  Standby router is unknown, priority 100
  Priority 110 (configured 110)
  Group name is hsrp-Vll-1 (default)
Vlan112 - Group 112
  State is Speak
    3 state changes, last state change 00:01:47
  Virtual IP address is 172.16.28.115
  Active virtual MAC address is unknown
    Local virtual MAC address is 0000.0C07.AC70 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
  Standby router is unknown
  Priority 110 (configured 110)
  Group name is hsrp-Vll-112 (default)
Vlan144 - Group 144
  State is Speak
    2 state changes, last state change 00:01:45
  Virtual IP address is 172.16.28.147
  Active virtual MAC address is unknown
    Local virtual MAC address is 0000.0C07.AC90 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.180 secs
  Preemption enabled
  Active router is unknown
```

L3Switchx2:

```
Switch# show standby
Vlan1 - Group 1
  State is Active
    5 state changes, last state change 02:06:35
  Virtual IP address is 172.16.28.2
  Active virtual MAC address is 0000.0C07.AC01
    Local virtual MAC address is 0000.0C07.AC01 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.89 secs
  Preemption enabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is hsrp-Vll-1 (default)
Vlan112 - Group 112
  State is Active
    6 state changes, last state change 02:22:22
  Virtual IP address is 172.16.28.115
  Active virtual MAC address is 0000.0C07.AC70
    Local virtual MAC address is 0000.0C07.AC70 (v1 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.611 secs
  Preemption enabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is hsrp-Vll-112 (default)
Vlan144 - Group 144 (version 2)
  State is Active
    9 state changes, last state change 02:33:48
  Virtual IP address is 172.16.28.147
  Active virtual MAC address is 0000.0C9F.F090
    Local virtual MAC address is 0000.0C9F.F090 (v2 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.702 secs
  Preemption enabled
  Active router is local
```