16F - NET2000 - Intermediate Networking

Case Study

III. Acceptance Test

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1. Addressing requirements

1.1 Addressing for networks

Confirm network size for OTT_A OFFICE of 300 users with growth of 25% for a total of 375 users and OTT_B OFFICE of 120 users with growth of 25% for a total of 150 users

- OTT_A
    - Sh ip int g0/1
    - Sh ipv6 int g0/1
- OTT_B
    - Sh ip int g0/1
    - Sh ipv6 int g0/1

1.2 Addressing for VLANs

Confirm network size for VLAN 5 (DMZ) of 10 users with growth of 25% for a total of 13 users

- On DLS_A, DLS_B, and ALS_1
    - Sh ip int vlan 5
    - Sh ipv6 int vlan 5

- On DLS_A, DLS_B, and ALS_1
    - Sh ip int vlan 10
    - Sh ipv6 int vlan 10

- On DLS_A, DLS_B, and ALS_1
    - Sh ip int vlan 20
    - Sh ipv6 int vlan 20

- On DLS_A, DLS_B, and ALS_1
    - Sh ip int vlan 30
    - Sh ipv6 int vlan 30

1.3 Addressing for point-to-point links

Confirm correct IP addressing and mask between ISP and OTT_A

- On ISP and OTT_A
    - Sh ip int s0/0/0
    - Sh ipv6 int s0/0/0

Confirm correct IP addressing and mask between OTT_A and DLS_A

- On OTT_A
    - Sh ip int G0/0
    - Sh ipv6 int G0/0
- On DLS_A
    - Sh ip int F0/1
    - Sh ipv6 int F0/1

Confirm correct PO bundling between DLS_A, DLS_B, and ALS_1

- DLS_A
    - Sh int PO10
    - Sh int PO1
- DLS_B
    - Sh int PO10
    - Sh int PO2
- ALS_1
    - Sh int PO1
    - Sh int PO2

Confirm correct IP addressing and mask between OTT_B and DLS_B

- On OTT_B
    - Sh ip int G0/0
    - Sh ipv6 int G0/0
- On DLS_B
    - Sh ip int F0/1
    - Sh ipv6 int F0/1

1.4 Addressing for loopbacks and end-device links

Confirm correct IP addressing for Loopbacks

- On ISP, DLS_A, DLS_B, and OTT_B
    - Sh int looback0
    - Sh ipv6 int loopback0

2. Routing

2.1 OSPFv3 in area 0

Confirm OSPFv3 for IPv6 in area 0

- Router IDs are correct
- Routing properly
- Neighboring as expected
- Summarization
- Hello Timers
- Authentication with MD5 implementation
- DR on OTT_A, OTT_B, and DLS_A

On OTT_A, OTT_B, DLS_A, and DLS_B

- Sh ipv6 ospf neighbor
- Sh ipv6 ospf interface
- Sh ipv6 protocol
- Sh ipv6 route

2.2 OSPFv3 in area 10

Confirm OSPFv3 for IPv6 in area 10

- Router IDs are correct
- Routing properly
- Neighboring as expected
- Summarized routes to reduce routing table size
- Hello timers modified to ensure fast network convergence, bandwidth modified for correct metric calculation
- Authentication with MD5 implementation
- DR on DLS_A

On DLS_A and DLS_B

- Sh ipv6 ospf neighbor
- Sh ipv6 ospf interface
- Sh ipv6 protocol
- Sh ipv6 route

2.3 EIGRP for IPv4

Confirm EIGRP for IPv4

- Passive interfaces when connecting to end-devices
- Summarized routes to reduce routing table size
- Hello timers modified to ensure fast network convergence, bandwidth modified for correct metric calculation
- Authentication with MD5 implementation

On OTT_A, OTT_B, DLS_A, and DLS_B

- Sh ip eigrp neighbor
- Sh ip eigrp interface
- Sh ip protocol
- Sh ip route

2.4 Testing Reachability

Entire system must be able to access the internet, verify reachability by pinging loopback in ISP

- For IPv4
    - Ping 2.2.2.2 from a PC on OTT_B's 192.168.2.0/24 network with an IP allocated through DLS_B's "OTT_B_OFFICE" DHCP pool
    - Ping a PC on OTT_A's 192.168.0.0/23 network from a PC on OTT_B's 192.168.2.0/24 network with an IP allocated through DLS_B's "OTT_B_OFFICE" DHCP pool
    - Ping 2.2.2.2 from ALS_1
    - Ping 150.50.5.230 from ISP
- For IPv6
    - Ping 2001:FACE:BECA:2::2/128 from a PC on OTT_B's 2001:FACE:BE50:1922::/64 network
    - Ping a PC on OTT_A's 2001:FACE:BE50:1920/64 network from a PC on OTT_B's 2001:FACE:BE50:1922::/64 network
    - Ping 2001:FACE:BECA:2::2/128 from ALS_1
    - Ping 2001:FACE:BECA:5::23/64 from ISP

2.5 DHCP

Confirm DHCP pools are implemented correctly on DLS_A and DLS_B

- First 10% of all ip addresses in all LANs
- Addresses to be split evenly between DLS A and DLS B
    - First half of addresses provided by DLS A and last half provided by DLS B
- DLS B to be DHCP server for OTTAWA B
- DHCP security measures implemented
    - DHCP snooping enabled
- Prevent against IP address spoofing
    - Using ACLs, permitting IPv4 addresses 150.50.2.0-150.50.99.255 and 192.168.0.0-192.168.1.255
    - For IPv6 permit 2001:FACE:BE::/40

On DLS_A and DLS_B

- Sh ip dhcp pool
- Sh ip dhcp snooping
- Sh ip dhcp conflict (make sure there are no conflicts)
- Make sure PCs on OTT_B's 192.168.2.0/24 network can dynamically obtain IPs from DLS_B's "OTT_B_OFFICE" DHCP pool

2.6 FHRP

Confirm HSRP is configured correctly with:

- DLS_A will be configured as standby with priority 110
- DLS_B will be configured as standby with priority 100
- Virtual gateway for…
    - VLAN 5: 150.50.5.200
    - VLAN 10: 150.50.10.200
    - VLAN 20: 150.50.20.200
    - VLAN 30: 150.50.30.200
    - VLAN 99: 150.50.99.200

- Standby preempt on DLS_A and DLS_B
- Standby track on DLS_A and DLS_B's PO10 interface

On DLS_A and DLS_B

- Sh standby

3. Network Switching

3.1 Etherchannels

Confirm the following:

- DLS A and DLS B connected to each other via Etherchannel Po10 using native vlan 666
- DLS A and ALS 1 connected to each other via Etherchannel Po1 using native vlan 666
- DLS B and ALS 1 connected to each other via Etherchannel Po2 using native vlan 666
- All switches connected together by Etherchannel will be trunking on vlan 666 with only vlans 5, 10, 20, 30 and 99 allowed on trunk

On DLS_A, and DLS_B

- Sh etherchannel summary
- Sh vlan id 666
- Sh run | begin interface Port-channel 1

3.2 Configuring Switchports

Confirm the following:

- DLS_A's F0/2 to INTRA_WEB SERVER will be a switchport with access to vlan 5 (DMZ)
- Unused ports shutdown and accessing vlan 999 NUSE
    - On DLS_A: F0/11-24, G0/1-2
    - On DLS_B: F0/2, F0/7-10, F0/15-24, G0/1-2
    - On ALS_1: F0/3-6, F0/15-24, G0/1-2

On DLS_A

- Sh vlan id 5 (confirm F0/2 is here and active)
- Sh vlan brief (confirm all unused ports are in vlan 999 NUSE)
- Sh ip int brief (confirm all unused ports are shutdown)

3.3 Configuring STP Security

Confirm BPDU guard and portfast on interfaces connecting to end devices

- F0/2 on DLS_A

On DLS_A

- Sh spanning-tree summary

3.4 Configuring Default Gateways for ALS_1's VLANs

Confirm that every VLAN in ALS_1 will have their own respective virtual gateways configured in HSRP

On ALS_1

- Sh run | include default-gateway