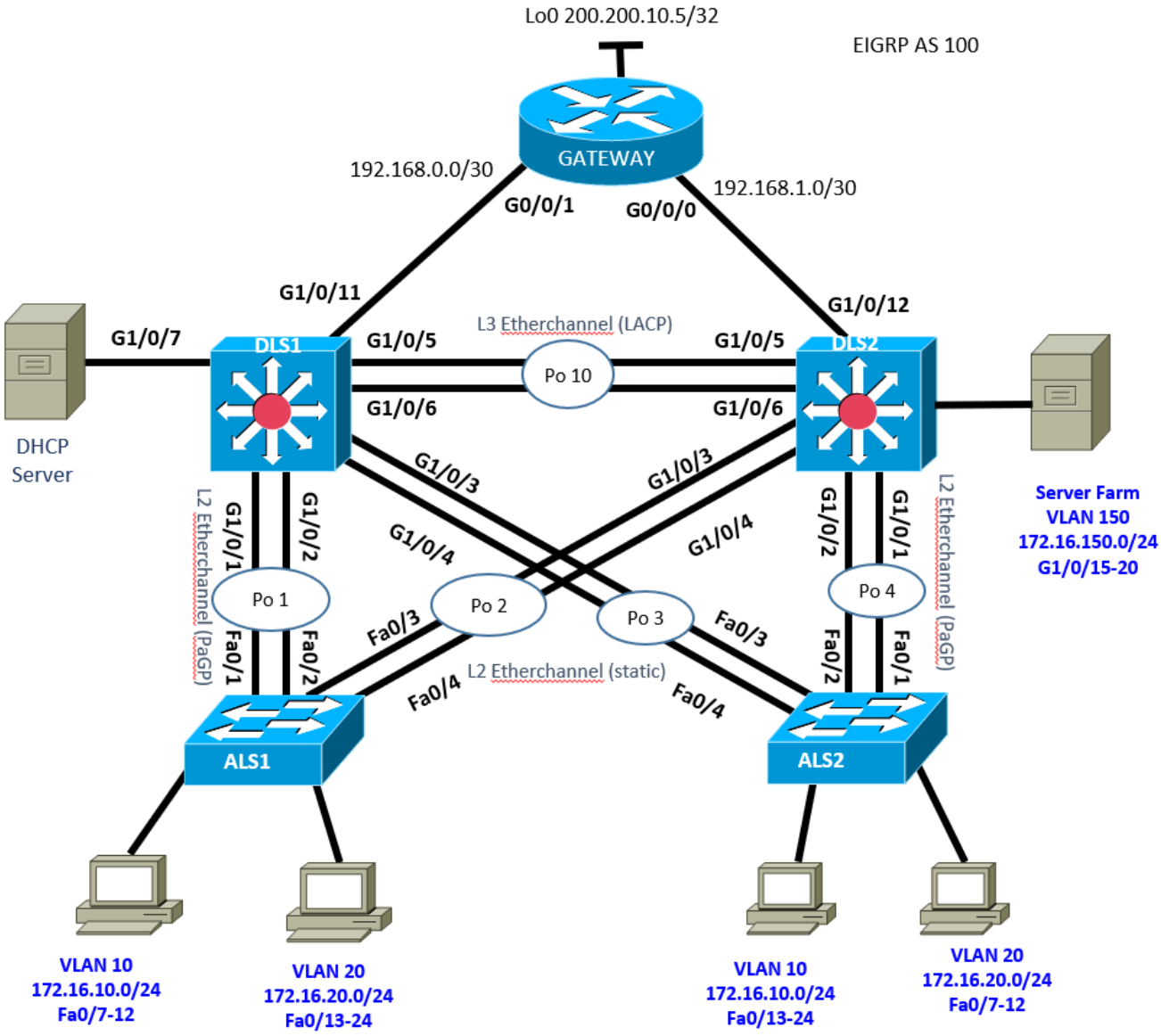
CCNPv7.1 SWITCH

Case Study (Practice Skills Exam) v3.1[redacted]

Topology Diagram



For HSRP Gateway addresses use the following: VLAN 10: 172.16.10.1/24, VLAN 20: 172.16.20.1/24, VLAN100: 172.16.100.1/24, VLAN 110: 172.16.110.1/24

Instructions

Plan, design, and implement the International Travel Agency switched network as shown in the diagram and described below. Implement the design on the lab set of switches. Verify that all configurations are operational and functioning according to the guidelines. [redacted]

[redacted]

Scenario

The International Travel Agency has two distribution switches, DLS1 and DLS2, and two access layer switches, ALS1 and ALS2. Configure a group of switches as follows:

- The connection between DLS1 and DLS2 will be a layer 3 Etherchannel using LACP. DLS1 will use the IP address 172.16.200.1/30 and DLS2 will use 172.16.200.2/30
- Create etherchannels for each set of trunk links between each of the switches.
  - The Port-channels on interfaces G1/0/1 G1/02, fa0/1 and fa0/2 will use PAgP
  - The Port-channels on interfaces G1/0/3, G1/0/4, fa0/3 and fa0/4 will be statically assigned
- Make sure that all inter-switch links are statically set as 802.1q trunks
- All trunks will use VLAN 800 as the native VLAN

- All switches are to use VTP version 3 in the VTP domain CISCO
- Place all switches in VTP transparent mode

- Create the following VLANs locally on each switch
  - 10 Staff
  - 20 Students
  - 100 Management
  - 110 Voice
  - 800 Native
  - 999 Parking
- Configure the following interfaces as access ports

	VLAN 10	VLAN 20	VLAN100
DLS1			Gi1/0/7
ALS1	Fa0/7-12	Fa0/13-24	
ALS2	Fa0/13-24	Fa0/7-12	

- Place all unused interfaces into the Parking VLAN, and make sure in access mode and shut down

- Configure Spanning-tree as follows on each switch: MST instance 1 – VLAN 10, 20. Make primary on DLS1 and Secondary on DLS2. MST instance 2 – VLAN 100, 110. Make primary on DLS2 and Secondary on DLS1.

- For Management Van 100 create SVI addresses on each switch. Make sure you can ping each device. Use x.x.x.2 DLS1, x.x.x.3 DLS2, x.x.x.101 ALS1, x.x.x.102 ALS2
- Create SVIs for vlans 10,20,110. Use x.x.x.2 DLS1, x.x.x.3 DLS2
- Create a layer 3 interface on DLS1 G1/0/11 and DLS2 G1/0/12. Give the following IP addresses: DLS1 192.168.0.2/30, DLS2 192.168.1.2/30.

- Create HSRPv2 on the two DL Switches so that DLS1 is active for VLANs 10, 20, and DLS2

is active for VLANs 100, 110. Include the pre-empt option, and configure interface tracking on the links to the GATEWAY router.

- Configure GATEWAY with relevant IP addresses. The Lo0 address is to represent an address somewhere on the Internet. This address must not be advertised through EIGRP, instead a default route is to point to the Lo0, and the default route propagated into EIGRP.
- Configure EIGRP with an AS of 100 disable automatic summarization.

- Enable PortFast on all access ports
- Enable BPDUguard on all access ports
- Enable UDLD protection on all switchports interfaces on all switches, using the command to place the port in the error-disable state if a violation occurs.

- Configure DHCP snooping to trust all trunk ports on the ALSwitches. Limit the rate of DHCP requests on all user access ports to 15 pps.
- On the DLSwitches allow the DCHP information to be trusted.

- Configure ALS1 Fa0/13-24 for port security. Allow only up to three MAC addresses to be learned on each port and then shut down if traffic from other MAC addresses.
- Configure ALS2 Fa0/18 to only allow the MAC address 1234.1234.1234 and to go to protected mode if a violation occurs.

- You are going to add a server farm to DLS2, but some servers in the farm is to be isolated from each other.
- On all Switches add VLAN 150 Server_Farm
- Add routing and HRSP information for VLAN150 making DLS2 the primary and DLS1 the standby. Use the network 172.16.150.0/24
- On DLS2 create VLAN 151 as an isolated VLAN, and VLAN 152 as a community VLAN. Associate VLANs 151,152 with the Primary VLAN 150
- Configure DLS2 interface Gi1/0/15-17 for the isolated VLAN 151 and interfaces Gi1/0/18-20 for the community VLAN 152.

- Create an ACL to separate the student and staff VLANs

- A temporary staff member is going to be assigned to ASL1 Fa0/9 with an IP address of 172.16.10.150. Assign this interface to the Staff VLAN and create a VACL to block access to the rest of the Staff VLAN, and still have access to the rest of the network.

- Configure SSH on GATEWAY to allow remote access. Use the ip domain name as sshremote.lab. Add a user Admin password sshuser. Test ssh access with PuTTY.

- Set the correct UTC time, configure DLS1 as an NTP server and then set the correct time zone.

- Configure DLS2, ALS1, and ASL2 to use the Management Network to synchronize the time with the NTP server.

For submission of this Case study to be marked you must do the following.

Section	device	Commands	completed
Trunks and Portchanels	all Switches	Show int tru	
	all Switches	Show etherchannel sum	
VTP	all Switches	sh vtp status	
Vlans	all Switches	show vlan brief	
Spanning tree	all Switches	sh span mst conf	
	all Switches	sh span root	
spanning enhancements	all Switches	sh run | section span	
SVIs	all Switches	sh ip int brie | exclude unassigned	
HSRP	DLS1 & 2	sh stand brie	
	DLS1 & 2	sh run | section track	
Routing	R, DLS1 & 2	sh ip route	
DHCP snooping	ALS1 & 2	sh ip dhcp snooping	
	DLS1 & 2	sh run | section ip dhcp relay	
Port Security	ALS1 & 2	sh port-security	
ACL	ALS1 DLS1 & 2	sh access-list	
	ALS1 DLS1 & 2	sh ip int | include line|list	
VACL	ALS1	sh run | section vlan access-map	
	ALS1	sh run | section vlan filter	
ssh	R	sh ip ssh	
	R	sh run | section line vty	
NTP	all Switches	sh ntp status	
	all Switches	sh ntp association	
Private Vlans	DLS2	sh vlan private-vlan	
	DLS2	sh vlan private-vlan type	
Test connectivity to Internet	ALS1 & ALS2	ping 200.200.10.5	
		Total Marks 25	

The commands must be placed into a notepad file for marking.