Network Design and Planning Plan – Weekly Tasks

Week	Team Members	Key Tasks
One	Ali Ragab, Ali Mohamed	Requirements gathering, initial topology design, VLAN planning
Two	Nooran Maged, Mosaad Abd el Ghany	IP scheme, DHCP Pools, STP
Three	Fatma Omar, Mohamed Alsamman	Inter-VLAN routing, OSPF, Access ports
Four	Maryem Hany Zarief	NAT, PPPoE, IPv6, AAA, Validation

VLAN Segmentation and IP Addressing

VLAN ID	Name	Network	Mask	Gateway	Assignment
10	Sales	192.168.10.0/24	255.255.255.0	192.168.10.100	DHCP (vlan10)
20	IT_Support	192.168.20.0/24	255.255.255.0	192.168.20.100	DHCP (vlan20)
30	Management	192.168.30.0/24	255.255.255.0	192.168.30.100	DHCP
100	Guests/WiFi	192.168.100.0/24	255.255.255.0	192.168.100.100	DHCP (vlan100)
200	PPPoE Users	200.0.0.0/24	255.255.255.0	200.0.0.1	DHCP (vlan200)

Static IP Address Allocation

Device	Interface	IP Address	Mask	Notes
Router1	Gi0/0/1	10.0.0.1	/30	Link to R2
Router2	Gi0/0/0	10.0.0.2	/30	Link to R1
Router2	Gi0/0/1	20.0.0.1	/30	Link to R3
Router3	Gi0/0/0	20.0.0.2	/30	Link to R2
Router3	Gi0/0/1	30.0.0.1	/30	Link to R4
Router4	Gi0/0/0	30.0.0.2	/30	Link to R3
Router4	Static NAT	30.0.0.10	/32	Global NAT IP
Server	NIC	192.168.100.254	/24	Server in VLAN 100

End Device and Port Assignment

Device	Interface	VLAN	Type	IP	Notes
Switch1	Gi0/0/1	10	Access	N/A	Sales
Client_Sales_1	Gi0/0/2	10	Access	DHCP	Sales
Client_Sales_2	Gi0/0/3	10	Access	DHCP	Sales
Client_IT_1	Gi0/0/4	20	Access	DHCP	IT

Client_IT_2	Gi0/0/5	20	Access	DHCP	IT
Switch1	Gi0/0/6	20	Access	N/A	IT
Trunk Link	Gi0/0/7	Trunk	Trunk	N/A	Inter-VLAN
Switch2	Gi0/0/4	30	Access	DHCP	Management
Switch4	Gi0/0/2	100	Access	DHCP	Guests
Server	R4 Gi0/0/1.100	100	Sub-IF	192.168.100.254	Static

Validation Tests

#	Objective	Method	Expected	Notes
1	DHCP Test	Connect device	Receives correct IP	Check DHCP leases
2	Intra-VLAN	Ping same VLAN	Successful	
3	Inter-VLAN	Ping VLAN10→20	Successful	
4	OSPF	Check routing table	All O routes visible	
5	Static NAT	Ping 30.0.0.10	Server reachable	
6	PPPoE	Login PPPoE	Gets 200.0.0.x	
7	IPv6	Ping 2001::1<->2001::2	Successful	