Network Design Report

1. Network Design: Star Topology with a Central Multilayer Switch

Tashreeh: Humne star topology use ki hai jismein saare devices aik central multilayer switch se connect hote hain. Ye switch Layer 2 switching aur Layer 3 routing dono ka kaam karta hai.

Fayda: Aisi design say network asani se manage hota hai, kam failures hotay hain, aur traffic efficiently flow karta hai.

Kya Kehna Hai:

"Humne star topology use ki jismein aik central multilayer switch say saare devices connect hain. Ye network ko asani se manage karne aur traffic ko efficiently handle karne mein madad karta hai."

2. Subnetting (VLSM): /28 for Departments, /29 for Servers, /30 for Point-to-Point Links

Tashreeh: VLSM ka matlab hai Variable Length Subnet Masking. Isme hum IP addresses ko unki zarurat ke mutabiq divide karte hain:

/28 departments ke liye - 14 usable IPs

/29 servers ke liye - 6 usable IPs

/30 point-to-point links ke liye - 2 usable IPs

Fayda: Har segment ko uski zarurat ke mutabiq IP milta hai, aur IPs waste nahi hotay.

Kya Kehna Hai:

"Humne VLSM use kiya subnetting ke liye: /28 departments ko 14 IPs deta hai, /29 servers ko 6 IPs, aur /30 point-to-point links ko 2 IPs, taake IP allocation efficient ho."

3. VLAN Configuration: Unique VLANs for Each Department Lab

Tashreeh: Har department lab ko alag VLAN assign kiya gaya hai jisse unka traffic alag rehta hai.

Fayda: VLANs se security barhti hai aur broadcast traffic kam hota hai.

Kya Kehna Hai:

"Har department lab ko alag VLAN diya gaya hai jisse unka traffic isolate rehta hai, security barhti hai aur network congestion kam hota hai."

4. Routing: Static Routing and NAT on the Border Router

Tashreeh: Border router par static routing use hoti hai (jo pehle se define hoti hai) aur NAT (Network Address Translation) jo internal IPs ko public IP mein convert karta hai internet ke liye.

Fayda: Static routing predictable hoti hai aur NAT se internal IPs hidden rehti hain - yani security bhi milti hai.

Kya Kehna Hai:

"Border router par static routing use karte hain taake traffic ka rasta clear ho aur NAT use karte hain taake internal IPs ko secure rakhte hue internet access mil sake."

5. Security: ACLs to Restrict Access Between VLANs and Servers

Tashreeh: ACLs (Access Control Lists) rules hote hain jo network traffic ko control karte hain - kaun kis se connect ho sakta hai.

Fayda: Sirf authorized traffic ko allow karke security barhayi jati hai.

Kya Kehna Hai:

"Hum ACLs use karte hain taake VLANs aur servers ke darmiyan access control ho, aur sirf authorized traffic hi allow ho."

6. Testing: Connectivity and Access Validation

Tashreeh: Network ko test kiya jata hai tools jaise ping se taake confirm ho ke devices sahi connect hain aur ACLs kaam kar rahi hain.

Fayda: Isse pata chalta hai ke network aur security sahi kaam kar rahe hain.

Kya Kehna Hai:

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"Hum ping jaise tools use karke connectivity test karte hain aur access controls validate karte hain taake confirm ho ke security rules sahi kaam kar rahe hain."