Deliverable Document for Network Design Project

Project Title: Software House

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Research Topics for the Project

Network Infrastructure Design

Analyze the physical and logical topology tailored to organizational requirements.

Select 11 switches, 3 routers, and suitable access points to ensure performance and scalability.

IP Addressing and Subnetting

Design an efficient IP addressing scheme using subnetting for proper device allocation.

Employ CIDR (Classless Inter-Domain Routing) for optimal address utilization.

Network Services and Protocols

Research and implement essential services like DHCP, DNS, and VLANs.

Adopt routing protocols such as RIP, OSPF, or EIGRP to enable seamless inter-departmental communication.

Security Features

Integrate security measures such as firewalls, VPNs, and access control lists (ACLs).

Implement strategies to detect and mitigate common security threats like DoS attacks and unauthorized access.

Testing and Simulation Tools

Use tools like Cisco Packet Tracer to simulate and test network configurations.

Verify functionality using diagnostic tools like ping, traceroute, and packet analyzers.

Scalability and Future Growth

Develop modular network designs to accommodate future growth and expansion.

Ensure reliability by implementing redundancy mechanisms like link aggregation or failover strategies.

Deliverables for the Project

1. Organization Name

Software House

2. Number of Floors

3 Floors

3. Network Design Details

PCs: 26 (distributed across all departments).

Switches: 11 (placed strategically to connect devices efficiently).

Routers: 3 (to manage inter-department and internet connectivity).

Servers: 3 (dedicated for DHCP, Web Hosting, and File Storage).

4. Objectives

Ensure efficient communication between all departments within the organization.

Design a secure and scalable network infrastructure.

Future-proof the design to support upcoming organizational growth.

5. Tools to be Used

Cisco Packet Tracer: For network design and configuration.

Wireshark: For packet-level analysis and troubleshooting.

Subnet Calculator: For calculating subnet ranges and allocations.

6. Implementation Steps

Analyze Requirements: Gather information about the organization's workflow, device count, and security needs.

Develop a Topology Diagram: Create a logical and physical diagram depicting the placement of switches, routers, and devices.

Configure Network Devices: Use Cisco Packet Tracer to configure switches, routers, and servers based on the planned topology.

Implement VLANs: Segment the network into different VLANs for better traffic management and security.

Apply Security Features: Configure firewalls, VPNs, and ACLs to secure the network from potential threats.

Test and Validate: Test the network using ping tests, traceroute, and simulated user scenarios to ensure functionality.

Document Results: Record all configurations, diagrams, and testing results for future reference and troubleshooting.