

Problem Statement: Wired LAN Configuration for ABC Tech Company

Background

ABC Tech Company is upgrading its IT infrastructure to support its growing internal operations and public services. The company requires a reliable wired local area network (LAN) capable of serving various essential functions such as dynamic IP allocation, internal/external web hosting, and domain name resolution. The company aims to deploy a robust network using Cisco Packet Tracer simulation for demonstration and staff training purposes. JITA-DNS-DHCP-v2.jpg

Scenario

The current office network consists of desktop PCs, laptops, a router, and critical servers for DHCP, DNS, and web hosting. The company's network must provide dynamic IP assignment, internal file/application sharing, and public-facing website hosting. Additionally, employees must be able to access both internal and external resources without connectivity issues. Network services should be seamlessly integrated and centrally managed. JITA-DNS-DHCP-v2.jpg

Network Requirements

1. Gateway and Internal Routing

- The router must be set as the default gateway for all devices using the address 192.168.1.1. JITA-DNS-DHCP-v2.jpg
- Internal LAN traffic should be routed efficiently through a central switch.

2. Dynamic IP Address Allocation

- Deploy and configure a DHCP server (192.168.1.5) to automatically assign IP addresses across the network.

3. Domain Name Resolution

- Set up a DNS server (192.168.1.7) to enable name-based access to internal/external company resources.

4. Web Hosting

- Configure one internal web server (192.168.1.11) hosting company applications and resources accessible only to local employees.
- Configure one external web server (192.168.1.13) to serve the company's public-facing website.

5. Device Connectivity

- Ensure all client PCs and laptops can communicate with each server and each other via the switch (internal LAN).

- Verify reachability of both web servers and DNS server from both employee devices. JITA-DNS-DHCP-v2.jpg

6. Network Testing and Service Validation

- Confirm all devices obtain IP addresses automatically via DHCP.
- Validate DNS resolution for internal company-hosted resources.
- Test HTTP access to internal and external company websites.
- Document successful end-to-end connectivity between all networked devices.

Task

Using the provided Packet Tracer topology, complete the following:

1. Configure Router and Switch

- Set router IP to 192.168.1.1.
- Connect all LAN devices via the central switch.

2. Install and Set Up DHCP Server

- Configure DHCP on 192.168.1.5 to serve the local network with dynamic IP addresses (range within 192.168.1.x).
- Verify IP lease distribution to every client device.

3. Install and Set Up DNS Server

- Configure DNS server at 192.168.1.7 to resolve hostnames for local resources and ensure accessibility to web servers.

4. Configure Web Servers

- Set up the internal website server (192.168.1.11) and the external website server (192.168.1.13) with appropriate content.

5. Connectivity Testing

- Ensure all employee devices (PCs and laptops) successfully connect to the network, obtain IP addresses, resolve DNS, and reach both internal and external web servers via HTTP.
- Document results using screenshots or log outputs of successful tests.

Expected Outcome

At the end of this task, ABC Tech Company's LAN should be fully operational. All PCs and laptops must be dynamically configured via DHCP, capable of seamless communication, and able to access both internal and external company resources using DNS and direct HTTP connections. The demonstration will validate the company's network readiness and technical capability.