Group Activity: Network Topology Design & Configuration with Documentation

Objective

In this activity, your group will design and configure a functional network topology for a chosen organization. The goal is to apply networking concepts using Cisco IOS commands and Packet Tracer/GNS3, while also documenting the planning and research process.

Documentation Format

Each group must submit a **comprehensive project documentation** along with the Packet Tracer/GNS3 file and screenshots. The documentation should follow this format:

1. Cover Page

- Title of the Project
- Course / Subject
- Group Number
- Group Members (Full Names)
- Instructor's Name
- Date Submitted

2. Introduction

- Background of the chosen organization (real or simulated)
- Purpose of the network design activity
- Scope and limitations of the project

3. Interview Process

- Method of interview (in-person, online, email, simulated)
- Participants (e.g., IT staff, employees, or assumed roles if simulated)
- **Sample Questions Asked**:
    1. What are the current networking issues or challenges in your organization?
    2. How many departments and users require network connectivity?
    3. What services do you require (e.g., DHCP, file sharing, security, remote access)?
    4. What security concerns do you want addressed?
    5. Future plans or scalability needs?
- **Key Findings** (summarized in bullet points)

4. Proposed Network Topology

- Network topology diagram (screenshot from Packet Tracer/GNS3)
- Explanation of the design (e.g., why specific devices and connections were chosen)
- IP addressing scheme in tabular form

5. Configuration Details

Provide screenshots and/or copy of commands for each configuration step:

- VLANs and Inter-VLAN Routing
- DHCPv4 Setup
- ACL Implementation
- NAT Configuration (Static & Dynamic)
- Syslog & NTP Setup
- CDP Mapping
- Other services if applicable

6. Problems & Challenges

- Issues discovered during the interview (organization's perspective)
- Problems encountered during topology design and configuration
- Troubleshooting methods applied

7. Recommendations

- Suggested improvements for the organization's network (security, scalability, performance)
- Best practices in managing and securing the network
- Future considerations (e.g., upgrading devices, cloud integration, wireless expansion)

8. Conclusion

- Reflection on group learnings from the activity
- Summary of how objectives were met

Sample Interview Questionnaire

Section A – General Information

- Can you briefly describe your organization and its core functions?
- How many departments and employees are in your organization?
- Do you currently have an existing network infrastructure? If yes, what devices are being used (routers, switches, servers, firewalls)?

Section B – Networking Needs

- How many users or devices need to be connected to the network?
- Do you require separate networks or VLANs for different departments?
- What types of services are important to your daily operations (e.g., internet access, file sharing, email, VoIP, cloud services)?
- Do you plan to expand or scale your network in the future?

Section C – Current Problems and Challenges

- What network-related issues are you currently facing (e.g., slow connection, downtime, lack of IP management)?
- Are there any concerns with bandwidth usage or congestion?
- Do you experience difficulties in managing devices and configurations?
- Have you faced any challenges with remote access or branch connectivity?

Section D – Security Concerns

- How do you currently secure your network (e.g., firewalls, antivirus, ACLs)?
- Have you experienced any security incidents (e.g., malware, unauthorized access, phishing)?
- Do you require restrictions for certain users or departments (e.g., limiting access to sensitive files)?
- Is monitoring and logging (Syslog, SNMP, NTP, etc.) currently being implemented?

Section E – Future Plans and Recommendations

- What improvements would you like to see in your network infrastructure?
- Are there upcoming projects or business expansions that will affect networking needs?
- Would you be open to adopting cloud-based or IoT-based solutions in the future?
- Do you have budget constraints for upgrading your network?