Final Project: Secure Network Infrastructure Design

# Project Overview

You will design and simulate a secure network infrastructure suitable for a small-to-medium organization. Your network must reflect the layered security concepts and best practices learned in the course and align with the Cisco Cybersecurity Associate curriculum.  
  
This project allows you to demonstrate your understanding of secure architecture, device roles, IP planning, segmentation, and threat mitigation.

# Requirements

## 1. Network Topology and Devices

- Minimum of 1 router, 2 switches, 2 VLANs, and 1 firewall (ASA or simulated)  
- At least 6 end devices (PCs, laptops, phones, printers, etc.)  
- At least 1 server (e.g., for DNS, DHCP, or Web)  
- Optional: Wireless Access Point and IoT/smart devices

## 2. Addressing Scheme

- Subnetted IP address plan (IPv4 required; IPv6 optional)  
- Static or DHCP where appropriate  
- Clearly labeled addressing table showing:  
 - Device name  
 - Interface  
 - IP address  
 - Subnet mask  
 - Default gateway

## 3. Security Configuration

- Basic ACLs on routers or firewalls (standard or extended)  
- VLAN configuration with inter-VLAN routing (This is optional for advanced networkers)  
- Demonstrate at least two security features, such as:  
 - Port security on switches  
 - Secure management (SSH, secure passwords)  
 - DMZ setup (optional)  
 - Security zones

## 4. Documentation

- A brief network design proposal (1–2 pages explaining design goals, assumptions, and security objectives)  
- A device list (router models, switch types, endpoint types, firewall)  
- A visual topology screenshot or exported from Packet Tracer  
- A summary of configurations (paste from CLI or explain what’s been configured per device)

# Deliverables

By the end of the two weeks, submit the following in a zipped folder:  
  
1. YourName\_FinalProject.pkt – Packet Tracer file  
2. YourName\_AddressingTable.xlsx or .docx  
3. YourName\_NetworkDesignProposal.docx – 2 – 4 pages, 12 point font, double spaced  
4. YourName\_DeviceList.docx  
5. (Optional) Additional diagrams or documentation (Visio, Draw.io, etc.)

# Grading Rubric (300 Points Total)

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| --- | --- |
| Criteria | Points |
| Functional Packet Tracer simulation | 100 |
| Addressing table (accurate & complete) | 30 |
| Device list (complete and realistic) | 30 |
| Security configurations implemented | 65 |
| Network design proposal + justification | 45 |
| Topology clarity and documentation | 30 |

# Tips for Success

- Start with the logical topology and subnetting plan before jumping into simulation  
- Validate connectivity with ping, traceroute, and show commands  
- Keep it realistic—use organizational structure (e.g., HR VLAN, IT VLAN)