Cisco Project Requirement Document

Course: Computer Networks

Project Type: Cisco-Based Final Project

Tool Used: Cisco Packet Tracer

Assessment: This document is submitted as part of the academic evaluation and subject grading requirement.

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# 1. Project Overview

The project titled "ACL Implementation" aims to demonstrate the application of Access Control Lists (ACLs) in a network environment. The objective is to control traffic flow, improve network security, and ensure only authorized users can access specific network resources. This project uses Cisco Packet Tracer as the simulation tool.

# 2. Roles and Responsibilities

- Network Engineer 1 – Routing & Switching Specialist: Responsible for configuring routers and switches, applying ACL rules, and managing device connectivity.  
- Network Engineer 2 – Security & Access Control: Designs and applies standard and extended ACLs; ensures access is filtered based on IP and ports.  
- Network Engineer 3 – Simulation & Testing: Runs the simulation in Packet Tracer, tests ACLs, and validates traffic control functionalities.  
- Network Team Lead – Project Coordinator: Oversees the project development, coordinates team efforts, and ensures milestones are achieved on time.  
- Network System Leader – Documentation and Integration: Compiles all documentation, verifies configurations, and prepares the final implementation for presentation.

# 3. Features Overview or Process

1. Design a small to medium-sized enterprise network.  
2. Configure routers and switches using Cisco Packet Tracer.  
3. Implement both standard and extended ACLs to control traffic.  
4. Test the configuration by simulating different access scenarios.  
5. Document and analyze the results.

# 4. Cisco Technologies Used

## 4.1 System Requirements

Hardware (Simulation in Packet Tracer):  
- Routers (Cisco 2901)  
- Switches (Cisco 2960)  
- PCs (end devices)  
- Cables (straight-through, console)  
  
Software:  
- Cisco Packet Tracer (latest version)

## 4.2 Network/System Architecture Diagram

A three-tier network with Admin, HR, and Finance VLANs. ACLs are applied on the routers to permit or deny traffic based on source/destination IP, port numbers, and protocol types.

## 4.3 Implementation Plan

1. Design network topology in Packet Tracer.  
2. Configure IP addressing and VLANs.  
3. Set up routing (Static or RIP).  
4. Apply Standard ACL to filter traffic based on source IP.  
5. Apply Extended ACL to filter by source/destination and port.  
6. Test configurations using ping, telnet, and HTTP services.  
7. Document configuration and test cases.

# 5. Security Considerations

- Standard & Extended ACLs to filter and secure traffic.  
- Password-protected access to routers and switches.  
- VLAN segmentation for isolating departments.  
- Encrypted management access (if supported in simulation).

# 6. Expected Outcomes & Benefits

Enhanced network security through ACLs. Controlled user access based on IP and service type. Better understanding of traffic control mechanisms. Academic exposure to real-world network security practices. Scalable design that can be extended to larger networks.

# 7. References

- Cisco Networking Academy. (n.d.). Introduction to Networks v7.0.  
- Odom, W. (2020). CCNA 200-301 Official Cert Guide. Cisco Press.  
- Online Cisco Packet Tracer Tutorials: www.netacad.com

# 8. Project Completion Certificate

I certify that this software development document is complete. The project ACL Implementation defined in this folder has successfully completed development and testing and is now ready to be baseline and integrated into the network environment as per Cisco standards and academic requirements. This is to certify that the software development Network has been successfully completed as part of the Cisco-Based Final Year Project for the course Computer Networks.

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Network Engineer 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Network Engineer 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Network Engineer 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Network Team Lead: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Network System Leader: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date of Completion: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Instructor Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Supervisor Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_