

Project 1: Building and Securing a Small Network

Week 1: Network Design and Configuration

- **Task:** Design a small network using Cisco devices. Define the network topology, IP addressing scheme, and device configurations.
- **Deliverables:** Network design diagram, IP addressing table, initial configuration scripts for routers and switches.

Week 2: VLANs and Inter-VLAN Routing

- **Task:** Implement VLANs in the network. Configure VLANs, VLAN trunks, and Inter-VLAN routing using Router-on-a-Stick.
- **Deliverables:** VLAN configuration scripts, Inter-VLAN routing setup documentation, VLAN troubleshooting report.

Week 3: Network Security Implementation

- **Task:** Implement security features including port security, ACLs, and basic firewall rules. Configure network security on switches and routers.
- **Deliverables:** Security configuration scripts, security policy document, and a report on the effectiveness of the implemented security measures.

Week 4: Final Testing and Reporting

- **Task:** Test network functionality, security, and connectivity. Prepare a final report including network performance, security assessment, and a presentation.
 - **Deliverables:** Final report, presentation slides, and test results.
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Project 2: Deploying and Securing IPv6 in an Enterprise Network

Week 1: IPv6 Addressing and Configuration

- **Task:** Design and implement IPv6 addressing within a small enterprise network. Configure IPv6 on routers and switches.
- **Deliverables:** IPv6 addressing plan, configuration scripts, and verification reports.

Week 2: IPv6 Routing and Connectivity

- **Task:** Implement and configure IPv6 routing protocols. Verify IPv6 connectivity between devices.
- **Deliverables:** IPv6 routing configuration scripts, connectivity verification reports, and troubleshooting documentation.

Week 3: IPv6 Security Measures

- **Task:** Apply IPv6 security measures including ACLs, firewall rules, and secure management access.
- **Deliverables:** IPv6 security configuration scripts, security policy document, and a security effectiveness report.

Week 4: Documentation and Presentation

- **Task:** Prepare a final report summarizing the implementation, security measures, and performance of the IPv6 network. Present findings and configurations.
 - **Deliverables:** Final report, presentation slides, and configuration summaries.
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Project 3: Advanced Wireless Network Setup and Security

Week 1: Wireless Network Configuration

- **Task:** Design and configure a wireless network including access points and controllers. Implement WLAN security measures.
- **Deliverables:** Wireless network design, configuration scripts for access points and controllers, and security configuration documentation.

Week 2: Implementing WLAN Security Protocols

- **Task:** Configure WPA2 Enterprise security and secure WLAN management. Perform initial security testing.
- **Deliverables:** WLAN security configuration scripts, security testing results, and documentation.

Week 3: Troubleshooting and Optimization

- **Task:** Troubleshoot common WLAN issues and optimize wireless performance. Document and resolve issues.
- **Deliverables:** Troubleshooting report, optimization techniques, and performance improvement documentation.

Week 4: Final Review and Presentation

- **Task:** Conduct a final review of the wireless network setup and security. Prepare a final report and presentation.
 - **Deliverables:** Final report, presentation slides, and a summary of the wireless network performance and security measures.
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Project 4: Implementing Network Security with ACLs and NAT

Week 1: ACL Configuration

- **Task:** Configure standard and extended ACLs to control traffic flow and secure network access.
- **Deliverables:** ACL configuration scripts, access control policy document, and verification reports.

Week 2: NAT Implementation and Testing

- **Task:** Implement NAT (Static, PAT) to manage IP address translations and enhance network security.
- **Deliverables:** NAT configuration scripts, testing results, and a NAT configuration guide.

Week 3: Integration and Security Assessment

- **Task:** Integrate ACLs and NAT into the existing network. Perform a comprehensive security assessment.
- **Deliverables:** Integration documentation, security assessment report, and updated network security policies.

Week 4: Documentation and Final Presentation

- **Task:** Prepare a final report detailing the ACL and NAT implementation, security improvements, and network performance. Create a presentation.
 - **Deliverables:** Final report, presentation slides, and a summary of network security enhancements.
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Project 5: Network Automation and Monitoring Implementation

Week 1: Introduction to Network Automation

- **Task:** Learn and configure basic network automation tools and protocols (e.g., REST APIs, Python scripting for automation).
- **Deliverables:** Automation scripts, configuration examples, and documentation on tools used.

Week 2: Setting Up Network Monitoring Tools

- **Task:** Deploy and configure network monitoring tools (e.g., SNMP, Syslog) for real-time network monitoring and alerting.
- **Deliverables:** Monitoring tool configuration scripts, setup documentation, and monitoring dashboard screenshots.

Week 3: Automation for Security and Performance

- **Task:** Implement automation for network security and performance monitoring. Integrate automation with monitoring tools.
- **Deliverables:** Automated scripts for security and performance, integration documentation, and performance reports.

Week 4: Final Report and Presentation

- **Task:** Prepare a final report on network automation and monitoring setup, including performance and security improvements. Create a presentation to showcase the work.
- **Deliverables:** Final report, presentation slides, and a summary of the automation and monitoring results.