

MIDTERM DEMONSTRATION LAB

Comprehensive Midterm Practical Exam

Course: CCNA - Cisco Certified Network Associate

Institution: Collin College (NSA CAE-CD Validated Program)

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Lab File: MIDTERM-Demo-Lab.pkt

LAB OVERVIEW

This comprehensive lab demonstrates fundamental networking skills required for CCNA certification. Students configure a multi-device network from scratch, implementing proper security, addressing, and routing protocols.

LEARNING OBJECTIVES

- Configure routers from scratch using Cisco IOS CLI
- Implement VLAN configuration on switches
- Configure IP addressing and subnetting schemes
- Implement static routing between networks
- Test and verify network connectivity
- Troubleshoot network issues systematically

SKILLS DEMONSTRATED

- Router Configuration (Cisco IOS CLI)
- Switch VLAN Configuration
- IP Addressing & Subnetting
- Static Routing Implementation
- Network Connectivity Testing
- Troubleshooting Methodology

EQUIPMENT & TOPOLOGY

- 2-3 Cisco Routers (1841 or 2811)
- 2-3 Cisco Switches (2960)
- Multiple PCs for testing
- Console cables for configuration

IMPLEMENTATION NOTES

- This laboratory was completed using Cisco Packet Tracer network simulation software.
- All configurations follow Cisco IOS best practices and industry standards.
- Configurations include proper security measures (passwords, enable secret, etc.).
- Network connectivity was verified using ping, traceroute, and show commands.
- Complete command-line configurations are preserved in the .pkt file.
- Lab demonstrates real-world networking scenarios applicable to enterprise environments.

ACCESSING THE LAB CONFIGURATION

To view the complete network topology, device configurations, and test the lab yourself: 1. Download the Packet Tracer file: **MIDTERM-Demo-Lab.pkt** 2. Install Cisco Packet Tracer (free with Cisco NetAcad account) 3. Open the .pkt file in Packet Tracer 4. Explore the network topology in the workspace 5. Click on any device to view its configuration 6. Use Simulation Mode to observe packet flow 7. Access CLI on devices to view running configurations All router and switch configurations are fully implemented and tested. You can examine the complete command-line configurations, test connectivity between devices, and explore how the network operates.

VERIFICATION & TESTING

The lab configuration has been thoroughly tested and verified using: • **show running-config** - Verify device configurations • **show ip interface brief** - Check interface status • **show ip route** - Verify routing tables • **show vlan brief** - Check VLAN configuration (switches) • **ping** and **traceroute** - Test end-to-end connectivity • **show protocols** - Verify routing protocol operation • Packet Tracer Simulation Mode - Observe packet flow All connectivity tests passed successfully, demonstrating proper network operation.

