FINAL DEMONSTRATION LAB

Advanced Comprehensive Network Configuration

Course: CCNA - Cisco Certified Network Associate

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

Student: Akm Nizum

Lab File: FINAL-Demo-Lab.pkt

LAB OVERVIEW

Culminating laboratory demonstrating mastery of CCNA curriculum. Includes enterprise-level configurations with multiple routing protocols, VLANs, security features, and network services.

LEARNING OBJECTIVES

- Design and implement complex network topology
- Configure advanced VLAN features and inter-VLAN routing
- Implement dynamic routing protocols (OSPF/EIGRP)
- Configure Access Control Lists (ACLs) for security
- Implement Network Address Translation (NAT)
- Apply advanced troubleshooting techniques

SKILLS DEMONSTRATED

- Complex Network Design
- Advanced VLAN Configuration
- Inter-VLAN Routing
- Dynamic Routing (OSPF, EIGRP)
- Access Control Lists (ACLs)
- Network Address Translation (NAT)
- Advanced Troubleshooting

EQUIPMENT & TOPOLOGY

- 4+ Cisco Routers
- 3+ Cisco Switches
- Multiple PCs and Servers
- WAN simulation links

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: **FINAL-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.

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