Cisco VIP 2025 Project Report

Enterprise Network Implementation & Analysis

Project Title	Enterprise Network Topology with Routing Implementation
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Platform	Cisco Packet Tracer + Python Analysis

Executive Summary

This project demonstrates the successful implementation of a professional enterprise network using Cisco ISR routers and Catalyst switches. The network features two interconnected sites with static routing, providing reliable inter-site communication for distributed operations. Key Achievements: • Successfully configured 2-router enterprise topology with 4 endpoints • Implemented static routing for inter-site connectivity • Achieved 100% end-to-end network connectivity verification • Demonstrated professional network troubleshooting and validation procedures • Created scalable network architecture suitable for enterprise deployment

Network Architecture & Design

Component	Specification	Configuration
Site A LAN	192.168.10.0/24	Router1 + Switch1 + PC1/PC2
Site B LAN	192.168.20.0/24	Router2 + Switch2 + PC3/PC4
WAN Connection	10.0.0.0/30	Serial link between routers
Routing Protocol	Static Routes	Inter-site communication
Hardware	Cisco 1941 ISR	2x Routers, 2x Switches, 4x PCs

Device Configuration Summary

Router1 Configuration: • LAN Interface: GigabitEthernet0/0 - 192.168.10.1/24 • WAN Interface: Serial0/0/0 - 10.0.0.1/30 • Static Route: ip route 192.168.20.0 255.255.255.0 10.0.0.2 Router2 Configuration: • LAN Interface: GigabitEthernet0/0 - 192.168.20.1/24 • WAN Interface: Serial0/0/0 - 10.0.0.2/30 • Static Route: ip route 192.168.10.0 255.255.255.0 10.0.0.1 PC Configurations: • PC1: 192.168.10.10/24, Gateway: 192.168.10.1 • PC2: 192.168.10.11/24, Gateway: 192.168.10.1 • PC3: 192.168.20.10/24, Gateway: 192.168.20.1 • PC4: 192.168.20.11/24, Gateway: 192.168.20.1

Network Validation & Testing Results

Test Type	Source	Destination	Result
Local Connectivity	PC1	Router1 (192.168.10.1)	✓ Success
Same Network	PC1	PC2 (192.168.10.11)	✓ Success
Inter-Site Routing	PC1	Router2 (192.168.20.1)	✓ Success
End-to-End	PC1	PC3 (192.168.20.10)	✓ Success
Cross-Network	PC2	PC4 (192.168.20.11)	✓ Success
Simulation Mode	PC1→PC3	Packet Flow Analysis	✓ Success

Technical Skills Demonstrated

This project successfully demonstrates mastery of key networking concepts: • Router Configuration: CLI-based configuration of Cisco ISR routers • Static Routing: Implementation of inter-network routing tables • Network Design: Hierarchical topology with proper IP addressing • Switching: Layer 2 communication within LANs • Network Validation: Comprehensive testing using multiple methodologies • Troubleshooting: Systematic approach to network problem resolution • Documentation: Professional technical documentation standards

Conclusion

The network implementation successfully meets all project objectives and demonstrates professional-level networking capabilities. The topology provides reliable connectivity between distributed sites and serves as an excellent foundation for enterprise network operations. This project showcases practical application of Cisco networking technologies and validates understanding of fundamental routing and switching concepts essential for network engineering roles. Generated on: August 22, 2025 at 08:25 Platform: Cisco Packet Tracer with static routing implementation