Executive Summary — WCDN Datapath Strategic Networking Core

This project focused on designing and configuring a functional routed network using Cisco Packet Tracer, with the goal of demonstrating foundational skills in network architecture, device configuration, connectivity validation, and troubleshooting.

The environment consisted of a router connected to two Cisco switches, each serving separate network segments. The topology included end devices connected through FastEthernet ports, requiring proper interface activation, IP assignment, VLAN configuration, and correct routing pathways to ensure full network communication.

The initial phase of the project involved configuring the router's FastEthernet interfaces with the correct IP addressing scheme and subnet masks, ensuring that each interface aligned with the assigned network. The router's interfaces were activated, and IP configuration was validated for correctness across the topology.

Next, each switch was configured through the CLI. This included assigning VLAN1 IP addresses for management access, enabling the necessary interfaces, and verifying the physical and logical connectivity of switch ports. Switch 1 and Switch 2 were configured with appropriate IP addresses to support administrative communication and device reachability.

A key portion of the project involved troubleshooting connectivity issues. Several devices initially experienced communication failures due to incorrect cabling, disabled interfaces, and mismatched configurations—issues highlighted by red link indicators in Packet Tracer. Through systematic diagnostics, issues were resolved by enabling interfaces, correcting cabling, and ensuring uniform IP addressing across devices, resulting in a fully functional network.

End-to-end testing confirmed that all devices could communicate across the router, validating successful routing and switching operations. The completed lab demonstrated working inter-device communication, router gateway functionality, and proper switch management configuration.

Overall, this project showcased essential networking competencies, including Cisco device configuration, subnetting, VLAN management, interface activation, and structured problem-solving. It reflects a strong understanding of how real-world networks are built, tested, and troubleshot using industry-standard tools.