

CCNA: Switching, Routing, and Wireless Essentials

Duration: 5 Days (40 Hours Total)

Day 1 – Network Fundamentals & Switching Basics

- Course orientation and objectives
 - Review of OSI and TCP/IP models
 - Role of switches, routers, and wireless devices
 - Ethernet fundamentals and MAC addressing
 - Switch forwarding methods and CAM table
 - Collision and broadcast domains
 - VLAN concepts and benefits
 - VLAN types (default, data, voice, management)
 - Access ports vs trunk ports
 - Inter-VLAN communication overview
 - Router-on-a-Stick and SVI concepts
 - Basic switching lab and verification
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Day 2 – Switching Operations & Layer 2 Redundancy

- Switch boot process and IOS overview
 - Switch memory components
 - Configuration and verification commands
 - Spanning Tree Protocol (STP) concepts
 - Root bridge election process
 - STP port roles and port states
 - STP versions overview (STP, RSTP, PVST+)
 - EtherChannel fundamentals
 - Load balancing concepts
 - Basic EtherChannel configuration
 - Layer 2 troubleshooting scenarios
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Day 3 – Routing Fundamentals & IP Services

- Router role and routing fundamentals
- Routing table structure
- Directly connected and remote networks
- Static routing concepts

- Default route configuration
 - Introduction to dynamic routing
 - OSPFv2 fundamentals
 - Single-area OSPF concepts (Area 0)
 - Router ID selection
 - Introduction to IP services
 - DHCP, DNS, and NTP overview
 - Routing and IP services lab practice
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Day 4 – Wireless Networking Fundamentals

- Wireless LAN fundamentals
 - IEEE 802.11 standards overview
 - 2.4 GHz and 5 GHz frequency bands
 - Channels and channel planning basics
 - Wireless components and AP types
 - Autonomous vs controller-based WLAN
 - Cloud-managed wireless overview
 - WLAN security fundamentals
 - WPA2 and WPA3 overview
 - Client association process
 - Common wireless issues and troubleshooting
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Day 5 – Network Security, Automation & Practical Labs

- Network security principles
 - CIA triad and common threats
 - Device hardening best practices
 - Port security fundamentals
 - Access Control List (ACL) concepts
 - Standard vs Extended ACL overview
 - ACL placement rules
 - Introduction to network automation
 - Traditional vs controller-based networking
 - APIs and basic automation concepts
 - End-to-end lab scenarios
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Course Outcome

By the end of this course, participants will be able to:

- Configure and troubleshoot switching and VLANs
- Implement basic routing using static routes and OSPF

- Understand and deploy wireless LAN fundamentals
 - Apply basic security and ACL concepts
 - Build a strong foundation for enterprise networking
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