

CCNA

3.1. Network Fundamentals

- OSI Model and TCP/IP Model Review
- IP Addressing (IPv4, IPv6), Subnetting
- Network Devices (Routers, Switches, Hubs)
- TCP and UDP Protocols, DNS, DHCP
- Ethernet LANs and VLANs

3.2. Switching, Routing, and Wireless Essentials

- Cisco Switch Configuration (VLANs, Trunks)
- Spanning Tree Protocol (STP)
- Cisco Router Configuration (Static and Dynamic Routing)
- Routing Protocols (RIP, EIGRP, OSPF)
- Wireless LANs (Wi-Fi Standards, WLAN Configuration)
- Access Points, Wireless Controllers

3.3. Network Access and IP Connectivity

- ARP, NAT, and PAT
- ACLs (Access Control Lists)
- DHCP Relay, VLANs, VTP (VLAN Trunking Protocol)
- EtherChannel, Link Aggregation
- Inter-VLAN Routing

3.4. Security Fundamentals

- VPNs (IPSec, SSL)
- Cisco Security Devices (Firewalls, IDS/IPS)
- Cisco ASA (Adaptive Security Appliance)
- AAA (Authentication, Authorization, Accounting)
- Secure Router and Switch Access (SSH, HTTPS)

3.5. Automation and Programmability

- SDN (Software-Defined Networking) Concepts
- Cisco DNA Center and Intent-Based Networking
- REST APIs and Network Automation Tools
- Programmable Network Protocols (NETCONF, YANG)

3.6. Network Troubleshooting

- Cisco Troubleshooting Tools (show, debug commands)
- Troubleshooting IP Connectivity, VLANs, Routing Protocols
- Wireless Network Troubleshooting
- Common Network Performance Issues