



IT254: CCNA Routing & Switching

Training Description:

This CCNA Routing & Switching practical training course provides participants with a comprehensive understanding of networking fundamentals, routing and switching concepts and practical skills required to design, implement and troubleshoot small to medium-sized networks. Networking forms the backbone of modern communication and business operations. Efficient and secure network design is critical for operational performance, reliability and security.

This intensive training course covers the fundamentals of TCP/IP networking, device configuration, routing and switching protocols, network security and troubleshooting methodologies. Participants will engage in hands-on labs, interactive exercises and real-world case studies to develop both conceptual knowledge and practical expertise.

By the end of the training course, participants will be able to configure and manage Cisco routers and switches, implement IP addressing and VLANs, apply routing protocols, and troubleshoot common network issues. The training enhances technical competence, analytical thinking, and confidence in managing enterprise networks.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Understand the fundamentals of networking and TCP/IP
- ✓ Configure and manage Cisco routers and switches
- ✓ Implement VLANs, trunking and inter-VLAN routing
- ✓ Apply static and dynamic routing protocols including RIP, EIGRP and OSPF
- ✓ Understand network addressing and subnetting
- ✓ Implement basic network security and access control lists
- ✓ Troubleshoot connectivity, routing and switching issues
- ✓ Monitor and optimize network performance
- ✓ Apply network design best practices for small to medium-sized networks

Training Designed for:

This course is intended for network engineers, IT administrators, system integrators, technical support staff, and professionals seeking foundational and practical knowledge of Cisco networking. It is suitable for individuals preparing for CCNA certification or responsible for network deployment, maintenance, and troubleshooting in enterprise environments.

Training Requirement:

“Hands on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

NETWORKING FUNDAMENTALS AND DEVICE CONFIGURATION

❖ Understanding the Basics

- Introduction to networking concepts and Cisco devices
- Overview of TCP/IP protocol suite
- OSI and TCP/IP models and their functions
- Network topologies, media types and cabling standards
- Basic router and switch configuration
- Configuring device interfaces and verifying connectivity
- **Practical exercise:** Setting up a small network and verifying connectivity

DAY TWO:

IP ADDRESSING AND VLAN CONFIGURATION

❖ Structuring the Network

- IPv4 and IPv6 addressing concepts
- Subnetting and supernetting techniques
- VLAN concepts, benefits and implementation
- Trunking and inter-VLAN routing configuration
- Configuring DHCP and static IP addressing
- **Workshop:** Implementing VLANs and routing between VLANs

DAY THREE:

ROUTING PROTOCOLS AND ROUTER CONFIGURATION

❖ Directing Network Traffic

- Introduction to routing concepts and protocols
- Static routing configuration and verification
- Dynamic routing overview: RIP, EIGRP and OSPF
- Configuring routers for dynamic routing
- Route summarization and default routes
- **Practical exercise:** Configuring routing protocols and testing connectivity

DAY FOUR:

SWITCHING, STP AND NETWORK SECURITY

❖ Optimizing and Securing the Network

- Advanced switching concepts and spanning tree protocol
- Port security and VLAN security best practices
- Access control lists and their implementation
- Troubleshooting common switching issues
- Network performance monitoring techniques
- **Workshop:** Securing switches and troubleshooting network problems

DAY FIVE:

TROUBLESHOOTING AND NETWORK DESIGN BEST PRACTICES

❖ Ensuring Reliability and Efficiency

- Systematic troubleshooting methodology

