BLACKBIRD
FOR TRAINING

CCNP Routing and Switching

Florida (USA)

16 - 27 September 2024

UK Traininig
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CCNP Routing and Switching

Code: IT28 From: 16 - 27 September 2024 City: Florida (USA) Fees: 11000 Pound

Introduction

The CCNP Routing and Switching: Modern Advanced Concepts and Practices course is designed to provide participants with an extensive and up-to-date understanding of advanced concepts and practices in routing and switching. This comprehensive course aims to enhance your knowledge and skills to successfully design, implement, and troubleshoot complex enterprise networks using the latest technologies and best practices.

Objectives

- Develop a deep understanding of advanced routing protocols, including OSPFv3, EIGRPv6, and BGP, and their application in modern networks.
- Explore advanced switching concepts, such as VLANs, Rapid Spanning Tree Protocol RSTP, Virtual Switching System VSS, and Software-Defined Networking SDN.
- Acquire expertise in network design principles and best practices for modern enterprise networks, including network segmentation and scalability.
- Master advanced troubleshooting techniques for routing and switching issues in complex network environments.
- Learn about emerging technologies and trends in network automation, network programmability, and network security.

Course Outline

Day 1

Advanced Routing Protocols

- Introduction to advanced routing protocols in modern networks
- OSPFv3: Configuration and optimization in IPv6 environments
- EIGRPv6: Configuration and optimization for IPv6 networks
- BGP: Concepts, configuration, and best practices
- Route redistribution and filtering in multi-protocol networks

Day 2

Advanced Switching Concepts

- Advanced VLAN concepts and configuration in modern networks
- Rapid Spanning Tree Protocol RSTP and Multiple Spanning Tree Protocol MSTP optimization

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- Virtual Switching System VSS and Virtual Port Channels vPC for enhanced network scalability and redundancy
- Software-Defined Networking SDN principles and application in modern networks
- Network Function Virtualization NFV and Network Programmability

Day 3

Network Design and Scalability

- Enterprise network design principles for modern networks
- Network segmentation and virtualization techniques
- Scalability considerations for enterprise networks
- High availability and redundancy design in complex network architectures
- Quality of Service QoS implementation for optimized network performance

Day 4

Advanced Troubleshooting Techniques

- Advanced troubleshooting methodologies for routing and switching issues
- Troubleshooting complex network connectivity problems
- Troubleshooting performance issues and network optimization
- Network monitoring and analysis tools for troubleshooting
- Real-world case studies and hands-on troubleshooting scenarios

Day 5

Network Automation and Programmability

- Introduction to network automation and programmability
- Network automation tools and frameworks e.g., Ansible, Python scripting
- Network Configuration Management and Orchestration
- Introduction to SDN controllers and programmable network devices
- Application Programming Interfaces APIs for network automation and integration

Day 6

Network Security and Threat Mitigation

- Advanced network security concepts and best practices
- Access Control Lists ACLs, Firewalls, and Intrusion Prevention Systems IPS
- Threat mitigation techniques, including Network Address Translation NAT and Denial of Service DoS protection
- Secure network design principles and defense-in-depth strategies
- Network security monitoring and incident response

Day 7

Network Virtualization and Cloud Technologies

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- Virtualization technologies for network environments e.g., Virtual Routing and Forwarding - VRF, Virtual Extensible LAN - VXLAN
- Software-Defined Data Center SDDC concepts and architectures
- Network overlays and tunneling technologies e.g., Virtual Extensible LAN - VXLAN, Generic Routing Encapsulation - GRE
- Cloud networking principles and best practices e.g., Cloud Service Models, Cloud Connectivity Options

Day 8

Network Services and Infrastructure

- DNS Domain Name System architecture and implementation
- DHCP Dynamic Host Configuration Protocol design and deployment
- Network Time Protocol NTP and its importance in network synchronization
- Network Monitoring and Management protocols e.g., SNMP, NetFlow, Syslog
- Network infrastructure optimization and capacity planning

Day 9

Emerging Technologies and Trends

- Introduction to emerging network technologies and trends
- Network automation frameworks and tools e.g., DevOps, Infrastructure as Code - IaC
- Network analytics and intent-based networking
- Internet of Things IoT and its impact on network infrastructure
- Next-generation network architectures and technologies e.g., SD-WAN, Intent-Based Networking

Day 10

Network Design Project

- Collaborative network design project incorporating advanced routing and switching concepts
- Network design validation and optimization
- Presentation of network design project outcomes
- Q&A session and course wrap-up

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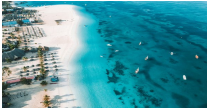Kigali (Rwanda)

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