Cisco Certified Network Professional (CCNP)

CCNP - Cisco Certified Network professional. This is the advanced level certification program from Cisco. This is meant for professionals who want to gain a deeper understanding of networking technologies with an emphasis on planning and implementing LANs and WANs. The CCNP program helps the engineer bring together technologies like wireless, VoIP, security into a comprehensive whole.

We offer the CCNP as three specialized courses-Routing and Switching, Security and Voice. The prerequisite for each is a CCNA in the respective specializations. The CCNP program is taught by senior network engineers in a world class environment with state of the art labs and infrastructure.

Course Outline

☞ CCNP - Routing and Switching

- Implementing Cisco IP Routing (ROUTE)
- Implementing Cisco IP Switched Networks (SWITCH)
- Troubleshooting and Maintaining Cisco IP Networks (TSHOOT)

☞ CCNP - Security

- Deploying Cisco ASA Firewall solutions
- Deploying Cisco VPN solutions
- Implementing Cisco Intrusion Prevention System

☞ CCNP – Voice

- Implementing Cisco Voice Communications and QoS (CVOICE)
- Implementing Cisco Unified Communications Manager, Part 1 (CIPT1)
- Implementing Cisco Unified Communications Manager, Part 2 (CIPT2)
- Troubleshooting Cisco Unified Communications (TVOICE)
- Integrating Cisco Unified Communications Applications (CAPPS)

CCNP Routing & Switching

Course Curriculum

ROUTE- (300-101)

Introduction to Router and Routing Protocols:
- Static Routing, Dynamic Routing, Default Routing
- IP Addressing, Summarization (Auto and Manual)

Enhanced Interior Gateway Routing Protocol
- EIGRP Features, EIGRP Update Process
- Configuration and Verification of EIGRP Tables
- EQUAL and UNEQUAL Metric Route Load Sharing
- Summarization, EIGRP Metric Tuning
- Manipulating Hello and Hold Timer
- Static Neighbor configuration
- Passive Interfaces, Authentication
- Neighbor ship over WAN, EIGRP Stub features
- Default Route with EIGRP
- Route Filtering by using ACL, IP Prefix-list and Route-Map

OPEN SHORTEST PATH FIRST
- OSPF Link State Features, Packet Types
- OSPF Neighbors and Adjacencies on LAN and WAN
- LSA TYPES, OSPF Metric Calculation and Tuning
- OSPF Network Types (Point-to-Point, BMA, NBMA)
- OSPF Configuration and Verification, Route Filtering
- Route Summarization, Default Route in OSPF
- Special Areas (Stub, Totally Stubby, NSSA, Totally NSSA)
- OSPF Virtual Link with Authentication / No Authentication
- Manipulating Hello and Dead Intervals

Route Redistribution
- Redistribution Concepts and Process
- Redistributing into EIGRP / OSPF / RIP

Advance Redistribution:
- PBR function and configuration,
- Redistribution with Route-Map / Distribute-list
- Issues with Multiple Redistribution Points
- IP Service Level Agreement

BORDER GATEWAY PROTOCOL
- Basics of Internet Routing and Addressing
- Internet Route Aggregation
- BGP ASNs (Public and Private ASNs)
- Single Homed, Dual Homed
- Single Multi homed, Dual Multi homed
- Internal BGP: Next-hop Issue with IBGP
- Split-Horizon, IBGP Mesh
- Clearing BGP Peers (Inbound and Outbound Filtering)
- IBGP Neighbors with Loopback Address
- External BGP: EBGP Neighbors with Loopback Address
- BGP Update Messages and BGP States
- Effect of Auto Summarization in BGP
- BGP Path Attributes: weight, Local Preference, As-path Pre-pend
- Origin Codes, Multi Exit Discriminator
- BGP Route Filtering and BGP PATH Selection Process

IP Version 6 Addressing
- IPV6 Address Representation, Types of IPV6 Addresses
- Global Route Aggregation, Static IPV6 Address Configuration
- Stateful DHCP, Stateless Auto Configuration
- Multicast and other Special IPV6 Addresses, DAD
- IPV6 Routing Protocols and IGP Redistribution
- IPV4 and IPV6 Co-existence: Dual Stack, Tunneling, NAT-PT
- Static Point-to-Point IPV6 Tunneling
- Dynamic Multipoint IPV6 Tunnel:
- Auto and Manual 6 to 4 Tunnel, ISATAP Tunnel

VPN Technologies
- VPN/MPLS
- DMVPN (Single Hub)
- PPPoE (Client Side)

Infrastructure Security
- IPv4 ACL (Standard, Extended, Time-based)
- IPV6 Traffic Filter
- Unicast RPF

Infrastructure Services
- Configure and Verfify IPV4 NAT
- Static, Dynamic, PAT
- IPV6 NAT

SWITCH – (300-115)

Enterprise Campus Network Design
- Hierarchical Network Design
- Multi Layer Switch Operation, Types of Multi Layer Switch
- Switching Tables: CAM / TCAM
- Switch Port Cables and Connectors
- Switch Port Configuration: Port Speed & Port Duplex Mode
- VLAN and TRUNKS: VLAN Membership and Deployment
- Trunk Encapsulation (ISL/Dot1q), DTP
- VLAN Trunking Protocol: VTP Domain / Modes / Advertisement
- VTP Version and VTP Pruning
- Power over Ethernet: Configuring and Verifying PoE
- Configuring and Verifying Voice VLAN

Aggregating Switch Link
- Switch Port Aggregating with Ether Channel,
- Ether Channel Load Balancing,
- Ether Channel Negotiation Protocol (PAgP, LACP)

Spanning Tree Protocol
- STP Concept, BPDU (CBPDU, TCN BPDU)
- STP States, STP Timers
- Types of STP: CST/PVST /PVST+
- STP Root Bridge Placement and Configuration
- STP Customization, Modifying STP Timers
- PORTFAST / UPLINKFAST / BACKBONEFAST
- Protecting STP: ROOTGUARD/ BPDUGUARD/ LOOPGUARD/UDLD

Advance Spanning Tree Protocol
- Rapid Spanning Tree Protocol
- BPDU & Convergence in RSTP
- Multiple Spanning Tree Protocol
- MST Region, Instances with MST
- Type of Interfaces in MLS, Inter VLAN Routing in MLS
- Multi Layer Switching with CEF, DHCP within a MLS
- Routing Configuration in MLS

Layer 3 High Availability
- HSRP / VRRP / GLBP
- Supervisor and Route Processor Redundancy
- Configuring Redundancy Modes & Supervisor Synchronization
- Non Stop Forwarding

Securing Switched Network
- Port Security, 802.1x Authentication, Port Based Authentication
- Mitigating Spoofing Attacks, DHCP Snooping, IP Source Guard
- Dynamic ARP Inspection, VLAN ACL, Securing VLAN Trunk,
- VLAN Hopping, Private-VLAN Concept

TSHOOT – (300-135)
- Introduction to Network Maintenance
- Introduction to Troubleshooting Process
- Maintenance & Troubleshooting
- Basic & Adv. Cisco Catalyst Switch Troubleshooting
- Introduction to Troubleshooting Routing Protocols
- Security Troubleshooting
- IP Services Troubleshooting
- IP Communications Troubleshooting
- Network Monitoring tools PRTG, SolarWinds
- Packet Analyzing & Sniffing tools Wireshark