Cisco Certified Network Associate (CCNA)

The CCNA (Cisco certified network associate) is meant for engineers looking to get a foothold in networking. This forms the base of the Cisco training pyramid and offers different specializations for network engineers. The basic CCNA course is CCNA - Routing and Switching. We also offer the CCNA Security and the CCNA Voice both of which require the CCNA Routing and Switching as a prerequisite.

The CCNA course is taught by world class instructors in state of the art classrooms with labs equipped with cutting edge infrastructure, including high end routers, switches and servers. The course is taught in hands on manner so that students can get an actual feel of the nitty gritty of networking.

Course Outline

- **CCNA Routing and Switching**
  - Basics of IP networking
  - Lan Switching
  - IP Addressing IPv4 and IPv6
  - Routing Protocols
  - WAN Technologies
  - Troubleshooting
- **CCNA Security**
  - Common Security threats and attacks
  - Security on Cisco Routers
  - Cisco Firewall Technologies
  - Cisco IPS
  - VPN Technologies
  - Secure Network Management and Reporting
- **CCNA Voice:**
  - Cisco Unified Communications Manager Express
  - Cisco IP Phone Concepts, Rigistration and EPhone-DNS
  - VoIP
  - PSTN and digital network convergence
  - Cisco unified communications
  - Enabling Telephony Features with CUCM

CCNA Routing & Switching

Course Curriculum

Network Fundamentals

- Compare & contrast OSI & TCP/IP models
- Compare & contrast TCP & UDP protocols
- Impact of infrastructure components in a network
  - Firewalls, Access points, Wireless controllers
- Effects of cloud resources on network architecture
  - Traffic path to internal and external cloud services
  - Virtual services
  - Basic virtual network infrastructure
- Compare & contrast collapsed core and three-tier architecture
- Compare & contrast network topologies
  - Star, Mesh, Hybrid
- Select the appropriate cabling type (Straight & Cross)
- Apply troubleshooting methodologies to resolve problems
  - Perform and document fault isolation
  - Resolve or escalate
  - Verify & monitor resolution
- Configure, verify & troubleshoot IPv4 addressing & subnetting
- Compare & contrast IPv4 address types
  - Unicast, Broadcast, Multicast
- Describe the need for private IPv4 addressing
- Identify IPv6 addressing to use in LAN / WAN environment
- Configure, verify & troubleshoot IPv6 addressing
- Configure & verify IPv6 Stateless Address Auto Configuration
- Compare & contrast IPv6 address types
- Global unicast, Unique local, Link local, Multicast, Modified EUI 64, Autoconfiguration, Anycast

LAN Switching Technologies

- Describe & verify switching concepts
  - MAC learning & aging, Frame switching, Frame flooding, MAC address table
- Interpret Ethernet frame format
- Troubleshoot interface & cable issues (collisions, errors, duplex, speed)
- Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches
  - Access ports (data & voice), Default VLAN
- Configure, verify, and troubleshoot interswitch connectivity
  - Trunk ports, Add & remove VLANs on a trunk
  - DTP, VTP (v1&v2), and 802.1Q Native VLAN
- Configure, verify, & troubleshoot STP protocols
  - STP mode (PVST+ and RPVST+), STP root bridge selection
- Configure, verify & troubleshoot STP related optional features
  - PortFast, BPDU guard
- Configure & verify Layer 2 protocols
  - Cisco Discovery Protocol, LLDP
- Configure, verify, & troubleshoot (Layer 2/Layer 3) EtherChannel
  - Static, PAGP, LACP
- Describe the benefits of switch stacking & chassis aggregation

Routing Technologies

- Describe the routing concepts
  - Packet handling along the path through a network
  - Forwarding decision based on route lookup
  - Frame rewrite
- Interpret the components of a routing table
  - Prefix, Network mask, Next hop, Routing protocol code
  - Administrative distance, Metric
  - Gateway of last resort & Admin distance
- Configure, verify, & troubleshoot inter-VLAN routing
  - Router on a stick & SVI
- Compare & contrast static routing & dynamic routing
- Compare & contrast distance vector and link state routing protocols
- Compare & contrast interior and exterior routing protocols
- Configure, verify & troubleshoot IPv4 and IPv6 static routing
  - Default route, Network route, Host route, Floating static
- Configure, verify & troubleshoot single area & multi-area OSPFv2 for IPv4 & IPv6 (excluding authentication, filtering, anual summarization, redistribution, stub, virtual-link, and LSAs)
- Configure, verify & troubleshoot EIGRP for IPv4 & IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub)
- Configure, verify, and troubleshoot RIPv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution)
- Troubleshoot basic Layer 3 end-to-end connectivity issues

WAN Technologies

- Configure & verify PPP and MLPPP on WAN interfaces using local authentication
- Configure, verify, & troubleshoot PPPoE client-side interfaces using local authentication
- Configure, verify, & troubleshoot GRE tunnel connectivity
- Describe WAN topology options
  - Point-to-point, Hub and spoke, Full mesh, Single vs dual-homed
- Describe WAN access connectivity options
  - MPLS, Metro Ethernet, Broadband PPPoE, Internet VPN (DMVPN, site-to-site VPN, client VPN)
- Configure and verify single-homed branch connectivity using eBGP IPv4 (limited to peering and route advertisement using Network command only)
- Describe basic QoS concepts
  - Marking, Device trust, Prioritization, (Voice, Video & Data)
  - Shaping, Policing, Congestion management

Infrastructure Services

- Describe DNS lookup operation
- Troubleshoot client connectivity issues involving DNS
- Configure and verify DHCP on a router (excluding static reservations)
  - Server, Relay, Client, TFTP, DNS, & gateway options
- Troubleshoot client- and router-based DHCP connectivity issues
- Configure, verify, and troubleshoot basic HSRP
  - Priority, Pre-emption, Version
- Describe common access layer threat mitigation techniques
  - Using CDP or LLDP for device discovery
  - Licensing, Logging, Time zone & Loopback
- Configure and verify initial device configuration
- Perform device maintenance