

NETLOGIC TRAINING CENTER

Course Training

Cisco Certificated Network Associated – CCNA Routing and Switching (200-125 CCNAX) version 3.0

Course Content

This course consists of Interconnecting Cisco Networking Devices, Part 1 (ICND1) and Interconnecting Cisco Networking Devices, Part 2 (ICND2) content merged into a single course. Overlapping content between ICND1 and ICND2 is eliminated and content is rearranged for the purpose of the course flow. Students will learn how to install, operate, configure, and verify a basic IPv4 and IPv6 network, including configuring a LAN switch, configuring an IP router, connecting to a WAN, and identifying basic security threats. It also includes more in-depth topics that teach learners how to perform basic troubleshooting steps in enterprise branch office networks, preparing students for the Cisco CCNA certification.

Course Objective

Upon completing this course, you will have the skills and knowledge to:

- Install, operate, and troubleshoot a medium-sized network, including connecting to a WAN and implementing network security
- Describe the effects of new technologies such as IoE, IoT, IWAN, and SDN on network evolution.

Course Prerequisite

Before taking the CCNAX course, learners should be familiar with:

- Basic computer literacy
- Basic PC operating system navigation skills
- Basic Internet usage skills
- Basic IP address knowledge
- Good understanding of network fundamentals

Course Pre-Test

Not Required

Course Details

Day 1

Item	Subject	Details	Personal Lap and devices	Workgroup Lab and devices
1	Network Fundamentals	<ul style="list-style-type: none"> • Compare and contrast OSI and TCP/IP models • Compare and contrast TCP and UDP protocols • Describe the impact of infrastructure components in an enterprise network <ul style="list-style-type: none"> a Firewalls b Access points c Wireless controllers • Describe the effects of cloud resources on enterprise network architecture <ul style="list-style-type: none"> a Traffic path to internal and external cloud services b Virtual services c Basic virtual network infrastructure • Compare and contrast collapsed core and three-tier architectures • Compare and contrast network topologies <ul style="list-style-type: none"> a Star b Mesh c Hybrid • Select the appropriate cabling type based on implementation requirements • Apply troubleshooting methodologies to resolve problems <ul style="list-style-type: none"> a Perform and document fault isolation b Resolve or escalate c Verify and monitor resolution • Configure, verify, and troubleshoot IPv4 addressing and subnetting • Compare and contrast IPv4 address types <ul style="list-style-type: none"> a Unicast b Broadcast c Multicast • Describe the need for private IPv4 addressing • Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment • Configure, verify, and troubleshoot IPv6 addressing • Configure and verify IPv6 Stateless Address Auto Configuration • Compare and contrast IPv6 address types <ul style="list-style-type: none"> a Global unicast b Unique local c Link local d Multicast e Modified EUI 64 f Auto-configuration g Anycast 	Theory Lecture and Calculated	
Break				

Item	Subject	Details	Trainee Lab and devices	Workgroup Lab and devices
2	LAN Switching Technologies	<ul style="list-style-type: none"> • Describe and verify switching concepts <ul style="list-style-type: none"> a MAC learning and aging b Frame switching c Frame flooding d MAC address table • Interpret Ethernet frame format • Troubleshoot interface and cable issues (collisions, errors, duplex, speed) • Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches <ul style="list-style-type: none"> a Access ports (data and voice) b Default VLAN • Configure, verify, and troubleshoot interswitch connectivity <ul style="list-style-type: none"> a Trunk ports b Add and remove VLANs on a trunk c DTP, VTP (v1&v2), and 802.1Q d Native VLAN • Configure, verify, and troubleshoot STP protocols <ul style="list-style-type: none"> a STP mode (PVST+ and RPVST+) b STP root bridge selection • Configure, verify and troubleshoot STP related optional features <ul style="list-style-type: none"> a PortFast b BPDU guard • Configure and verify Layer 2 protocols <ul style="list-style-type: none"> a Cisco Discovery Protocol b LLDP • Configure, verify, and troubleshoot (Layer 2/Layer 3) EtherChannel <ul style="list-style-type: none"> a Static b PAGP c LACP • Describe the benefits of switch stacking and chassis aggregation 	Theory Lecture and Configuration	
	Summary challenge advance lab for Basic configure, VLAN and VTP	(Lab 1) - Basic switch configuration and verify (Lab 2) - VLAN , VTP and Etherchannel configuration and verifying (Lab 3) - STP, RPVST and PVST configuration	(Lab 1) <u>Real devices</u> Catalyst 2960 Catalyst 3560-CX	(Lab 2 and Lab 3) <u>Real devices</u> Catalyst 2960 Catalyst 3560-CX

Day 2

Item	Subject	Details	Trainee Lap and devices	Workgroup Lab and devices
3	Routing Technologies	<ul style="list-style-type: none"> • Describe the routing concepts <ul style="list-style-type: none"> a Packet handling along the path through a network b Forwarding decision based on route lookup c Frame rewrite • Interpret the components of a routing table <ul style="list-style-type: none"> a Prefix b Network mask c Next hop d Routing protocol code e Administrative distance f Metric g Gateway of last resort • Describe how a routing table is populated by different routing information sources <ul style="list-style-type: none"> a Admin distance • Configure, verify, and troubleshoot inter-VLAN routing <ul style="list-style-type: none"> a Router on a stick b SVI • Compare and contrast static routing and dynamic routing • Compare and contrast distance vector and link state routing protocols • Compare and contrast interior and exterior routing protocols • Configure, verify, and troubleshoot IPv4 and IPv6 static routing <ul style="list-style-type: none"> a Default route b Network route c Host route d Floating static 	Theory Lecture and Configuration	
Break				
		<ul style="list-style-type: none"> • Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs) • Configure, verify, and troubleshoot single area and multi-area OSPFv3 for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs) • Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub) • Configure, verify, and troubleshoot EIGRP for 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 	Theory Lecture and Configuration	
	Summary challenge advance lab for Dynamic Routing Protocol	(Lab 1) - Static routing configuration and verify (Lab 2) - RIPv1 , RIPv2 for IPV4 configuration and verify - RIPng for IPV6 configuration and verify (Lab 3) - OSPFv2 for IPV4 configuration and verify (Lab 4) - EIGRP classless and classful for IPV4 configuration and verify	(Lab 1,2,3 and Lab 4) <u>Real devices</u> Catalyst 2960 Catalyst 3560-CX Cisco ISR Router 4300	(Lab 1,2,3 and Lab 4) <u>Real devices</u> Catalyst 2960 Catalyst 3560-CX Cisco ISR Router 4300

Day 3

Item	Subject	Details	Trainee Lap and devices	Workgroup Lab and devices
4	WAN Technologies	<ul style="list-style-type: none"> • Configure and verify PPP and MLPPP on WAN interfaces using local authentication • Configure, verify, and troubleshoot PPPoE client-side interfaces using local authentication • Configure, verify, and troubleshoot GRE tunnel connectivity • Describe WAN topology options <ul style="list-style-type: none"> a Point-to-point b Hub and spoke c Full mesh d Single vs dual-homed • Describe WAN access connectivity options <ul style="list-style-type: none"> a MPLS b Metro Ethernet c Broadband PPPoE d 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 <ul style="list-style-type: none"> a Marking b Device trust c Prioritization <ul style="list-style-type: none"> c. [i] Voice c. [ii] Video c. [iii] Data d Shaping e Policing f Congestion management 	<p>Theory Lecture and Configuration</p>	
Break				
5	Infrastructure Services	<ul style="list-style-type: none"> • Describe DNS lookup operation • Troubleshoot client connectivity issues involving DNS • Configure and verify DHCP on a router (excluding static reservations) <ul style="list-style-type: none"> a Server b Relay c Client d TFTP, DNS, and gateway options • Troubleshoot client- and router-based DHCP connectivity issues • Configure, verify, and troubleshoot basic HSRP <ul style="list-style-type: none"> a Priority b Preemption c Version • Configure, verify, and troubleshoot inside source NAT <ul style="list-style-type: none"> a Static b Pool c PAT • Configure and verify NTP operating in a client/server mode 	<p>Theory Lecture and Configuration</p>	
	Summary challenge advance lab for Advance Routing protocol and network services	<p>(Lab 1) - MultiLink PPP configuration and verify</p> <p>(Lab 2) - eBGP configuration and verify</p> <p>(Lab 3) - DHCP server and DHCP relay agent configuration</p> <p>(Lab 4) - Dynamic NAT Pool configuration</p>	<p>(Lab 1,2, Lab 4)</p> <p>Real devices Catalyst 2960 Catalyst 3560-CX Cisco ISR Router 4300</p>	<p>(Lab 3)</p> <p>Real devices Catalyst 2960 Catalyst 3560-CX Cisco ISR Router 4300</p>

Day 4

Item	Subject	Details	Personal Lap	Workgroup Lab
6	Infrastructure Security	<ul style="list-style-type: none"> • Configure, verify, and troubleshoot port security <ul style="list-style-type: none"> a Static b Dynamic c Sticky d Max MAC addresses e Violation actions f Err-disable recovery • Describe common access layer threat mitigation techniques <ul style="list-style-type: none"> a 802.1x b DHCP snooping c Nondefault native VLAN • Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering <ul style="list-style-type: none"> a Standard b Extended c Named 	<p>Theory Lecture and Configuration</p>	
Break				
		<ul style="list-style-type: none"> • Verify ACLs using the APIC-EM Path Trace ACL analysis tool • Configure, verify, and troubleshoot basic device hardening <ul style="list-style-type: none"> a Local authentication b Secure password c Access to device <ul style="list-style-type: none"> c. [i] Source address c. [ii] Telnet/SSH d Login banner • Describe device security using AAA with TACACS+ and RADIUS 	<p>Theory Lecture and Configuration</p>	
	Summary challenge advance lab for Network security and authentication	<p>(Lab 1) - Port security configuration and verify</p> <p>(Lab 2) - Access Control List configuration and verify</p> <p>(Lab 3) - Local Authentication configuration and verify</p> <p>(Lab 4) - Telnet and SSH configuration and verifying</p> <p>(Lab 5) - Network service policy configuration and verifying via ACL</p>	<p>(Lab 1,2,3,4 and Lab 5)</p> <p>Real devices Catalyst 2960 Catalyst 3560-CX Cisco ISR Router 4300</p>	<p>(Lab 1,2,3,4 and Lab 5)</p> <p>Real devices Catalyst 2960 Catalyst 3560-CX Cisco ISR Router 4300</p>

Day 5

Item	Subject	Details	Personal Lap	Workgroup Lab
7	Infrastructure Management	<ul style="list-style-type: none"> Configure and verify device-monitoring protocols <ol style="list-style-type: none"> SNMPv2 SNMPv3 Syslog Troubleshoot network connectivity issues using ICMP echo-based IP SLA Configure and verify device management <ol style="list-style-type: none"> Backup and restore device configuration Using Cisco Discovery Protocol or LLDP for device discovery Licensing Logging Timezone Loopback Configure and verify initial device configuration 	Theory Lecture and Configuration	
Break				
		<ul style="list-style-type: none"> Perform device maintenance <ol style="list-style-type: none"> Cisco IOS upgrades and recovery (SCP, FTP, TFTP, and MD5 verify) Password recovery and configuration register File system management Use Cisco IOS tools to troubleshoot and resolve problems <ol style="list-style-type: none"> Ping and traceroute with extended option Terminal monitor Log events Local SPAN Describe network programmability in enterprise network architecture <ol style="list-style-type: none"> Function of a controller Separation of control plane and data plane Northbound and southbound APIs 	Theory Lecture and Configuration	
	Summary challenge advance lab for maintenance devices and logging message	(Lab 1) Backup configuration and restore configuration Factory default or recovery device (Lab 2) CDP and LLDP configuration and comparison Syslog server configuration Date Time configuration and verify	(Lab 1 and Lab 2) Real devices Catalyst 2960 Catalyst 3560-CX Cisco ISR Router 4300 TFTP server software KIWI syslog software	

Course Post-Test

Not required

Course Materials

Not include in this class training (but you can requested from sale team)

Course Devices Training (Per Personal)



Switch 2960 (Layer 2)



Switch 3560-CX (Layer 3)



ISR Router 4300

