



Course: Cisco CCNA 200-301

Contact Hours: 50

Pre-requisite: Network+

Abstract

This course allows students to experience with the latest technical knowledge of networking Cisco LAN and WAN routers and switches.

Target Audience

- Network/Server Administrators
- System Administrators

Learning outcomes

On completion of this course, learners will be able to understand:

1. Network Fundamentals
2. Network Access
3. IP Connectivity
4. IP Services
5. Security Fundamentals
6. Automation and Programmability

Course Content

1. Network Fundamentals

- Explain the role and functions of network components
- Describe characteristics of network topology architectures
- Compare physical interface and cabling types
- Identify interface and cable issues (collisions, errors, mismatch duplex, and/or speed)
- Compare TCP to UDP
- Configure and verify IPv4 addressing and subnetting
- Describe the need for private IPv4 addressing
- Configure and verify IPv6 addressing and prefix
- Compare IPv6 address types
- Verify IP parameters for Client OS (Windows, Mac OS, Linux)
- Describe wireless principles
- Explain virtualization fundamentals (virtual machines)
- Describe switching concepts

2. Network Access

- Configure and verify VLANs (normal range) spanning multiple switches
- Configure and verify interswitch connectivity
- Configure and verify Layer 2 discovery protocols (Cisco Discovery Protocol and LLDP)
- Configure and verify (Layer 2/Layer 3) EtherChannel (LACP)
- Describe the need for and basic operations of Rapid PVST+ Spanning Tree Protocol and identify basic operations
- Compare Cisco Wireless Architectures and AP modes
- Describe physical infrastructure connections of WLAN components (AP, WLC, access/trunk ports, and LAG)
- Describe AP and WLC management access connections (Telnet, SSH, HTTP, HTTPS, console, and TACACS+/RADIUS)
- Configure the components of a wireless LAN access for client connectivity using GUI only such as WLAN creation, security settings, QoS profiles, and advanced WLAN settings

3. IP Connectivity

- Interpret the components of routing table
- Determine how a router makes a forwarding decision by default
- Configure and verify IPv4 and IPv6 static routing
- Configure and verify single area OSPFv2
- Describe the purpose of first hop redundancy protocol

4. IP Services

- Configure and verify inside source NAT using static and pools
- Configure and verify NTP operating in a client and server mode
- Explain the role of DHCP and DNS within the network
- Explain the function of SNMP in network operations
- Describe the use of syslog features including facilities and levels
- Configure and verify DHCP client and relay

- Explain the forwarding per-hop behavior (PHB) for QoS such as classification, marking, queuing, congestion, policing, shaping
- Configure network devices for remote access using SSH
- Describe the capabilities and function of TFTP/FTP in the network

5. Security Fundamentals

- Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)
- Describe security program elements (user awareness, training, and physical access control)
- Configure device access control using local passwords
- Describe security password policies elements, such as management, complexity, and password alternatives (multifactor authentication, certificates, and biometrics)
- Describe remote access and site-to-site VPNs
- Configure and verify access control lists
- Configure Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)
- Differentiate authentication, authorization, and accounting concepts
- Describe wireless security protocols (WPA, WPA2, and WPA3)
- Configure WLAN using WPA2 PSK using the GUI

6. Automation and Programmability

- Explain how automation impacts network management
- Compare traditional networks with controller-based networking
- Describe controller-based and software defined architectures (overlay, underlay, and fabric)
- Compare traditional campus device management with Cisco DNA Center enabled device management
- Describe characteristics of REST-based APIs (CRUD, HTTP verbs, and data encoding)
- Recognize the capabilities of configuration management mechanisms Puppet, Chef, and Ansible
- Interpret JSON encoded data

Assessment Criteria

In order to achieve Learning Outcome...	The Learner must...
1. Network Fundamentals	<ul style="list-style-type: none">– Configure and verify IPv4 addressing and subnetting in a small network.– Configure and verify a small switched network with new switches.– Configure and verify IPv6 addressing and subnetting in a small network.– Achieve 80 percent in a 20 question quiz duration 30 minutes.
2. Network Access	<ul style="list-style-type: none">– Configure and verify VLANs (normal range) spanning multiple switches.– Configure and verify Rapid PVST+ Spanning Tree Protocol in a switched network.– Achieve 80 percent in a 20 question quiz duration 30 minutes.
3. IP Connectivity	<ul style="list-style-type: none">– Configure and verify single area OSPFv2 in a small WAN.– Troubleshoot problems in an IPv4 routed network.– Troubleshoot problems related to OSPFv2 routing.– Configure and verify HSRP in a LAN.– Achieve 80 percent in a 20 question quiz duration 30 minutes.
4. IP Services	<ul style="list-style-type: none">– Configure and verify inside source NAT using static and pools.– Configure network devices for remote access using SSH.– Configure and verify DHCP.– Configure and verify NTP operating in a client and server mode.– Achieve 80 percent in a 20 question quiz duration 30 minutes.
5. Security Fundamentals	<ul style="list-style-type: none">– Configure device access control using local passwords.– Configure and verify Access Control Lists.– Configure Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security).

	<ul style="list-style-type: none"> – Configure WLAN using WPA2 PSK using the GUI. – Achieve 80 percent in a 20 question quiz duration 30 minutes.
6. Automation and Programmability	<ul style="list-style-type: none"> – Interpret JSON encoded data. – Describe characteristics of REST-based APIs. – Achieve 80 percent in a 30 question quiz duration 30 minutes.

Essential Learning Resources:

Course Material

CCNA 200-301 Official Certificate Guide Library 1st Edition

Websites

<https://learningnetwork.cisco.com/>

<https://www.netacad.com/courses/packet-tracer>

<https://www.cisco.com/c/en/us/training-events/training-certifications/certifications/associate/ccna.html>

<https://www.ciscopress.com/register>

<https://home.pearsonvue.com/>