



# 200-301 CCNA Exam Topics

## Customize Your Study Plan

To earn your CCNA certification, you must pass the **200-301 CCNA** exam. This 120-minute exam tests your knowledge of network fundamentals, network access, IP connectivity, IP services, security fundamentals, and automation and programmability.

The following topics are likely to be included on the **200-301 CCNA** exam. The topics are subject to change at any time to reflect the latest technologies aligned to Cisco's products.



**Cisco Cert Prep Tip:** Print out this document and use it as you assess your strengths and challenges in preparing your study plan.

### Exam Topics:

#### Section: 1.0 Network Fundamentals

1.1 Explain the role and function of network components	Need to Study?	Complete by:	Resource:	Completed
1.1.a Routers	Y / N			<input type="checkbox"/>
1.1.b L2 and L3 switches	Y / N			<input type="checkbox"/>
1.1.c Next-generation firewalls and IPS	Y / N			<input type="checkbox"/>
1.1.d Access points	Y / N			<input type="checkbox"/>
1.1.e Controllers (Cisco DNA Center and WLC)	Y / N			<input type="checkbox"/>
1.1.f Endpoints	Y / N			<input type="checkbox"/>
1.1.g Servers	Y / N			<input type="checkbox"/>
1.2 Describe characteristics of network topology architectures	Need to Study?	Complete by:	Resource:	Completed
1.2.a 2 tier	Y / N			<input type="checkbox"/>
1.2.b 3 tier	Y / N			<input type="checkbox"/>
1.2.c Spine-leaf	Y / N			<input type="checkbox"/>
1.2.d WAN	Y / N			<input type="checkbox"/>
1.2.e Small office/home office (SOHO)	Y / N			<input type="checkbox"/>
1.2.f On-premises and cloud	Y / N			<input type="checkbox"/>

<b>1.2 Describe characteristics of network topology architectures</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
1.2.a Two-tier	Y / N			<input type="checkbox"/>
1.2.b Three-tier	Y / N			<input type="checkbox"/>
1.2.c Spine-leaf	Y / N			<input type="checkbox"/>
1.2.d WAN	Y / N			<input type="checkbox"/>
1.2.e Small office/home office (SOHO)	Y / N			<input type="checkbox"/>
1.2.f On-premise and cloud	Y / N			<input type="checkbox"/>
<b>1.3 Compare physical interface and cabling types</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
1.3.a Single-mode fiber, multimode fiber, copper	Y / N			<input type="checkbox"/>
1.3.b Connections (Ethernet shared media and point-to-point)	Y / N			<input type="checkbox"/>
<b>1.4 Identify interface and cable issues (collisions, errors, mismatch duplex, and/or speed)</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>1.5 Compare TCP to UDP</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>1.6 Configure and verify IPv4 addressing and subnetting</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>1.7 Describe the need for private IPv4 addressing</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>1.8 Configure and verify IPv6 addressing and prefix</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>1.9 Describe IPv6 address types</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
1.9.a Unicast (global, unique local, and link local)	Y / N			<input type="checkbox"/>
1.9.b Anycast	Y / N			<input type="checkbox"/>
1.9.c Multicast	Y / N			<input type="checkbox"/>
1.9.d Modified EUI 64	Y / N			<input type="checkbox"/>
<b>1.10 Verify IP parameters for Client OS (Windows, Mac OS, Linux)</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>

1.11 Describe wireless principles	Need to Study?	Complete by:	Resource:	Completed
1.11.a Nonoverlapping Wi-Fi channels	Y / N			<input type="checkbox"/>
1.11.b SSID	Y / N			<input type="checkbox"/>
1.11.c RF	Y / N			<input type="checkbox"/>
1.11.d Encryption	Y / N			<input type="checkbox"/>
1.12 Explain virtualization fundamentals (server virtualization, containers, and VRFs)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
1.13 Describe switching concepts	Need to Study?	Complete by:	Resource:	Completed
1.13.a MAC learning and aging	Y / N			<input type="checkbox"/>
1.13.b Frame switching	Y / N			<input type="checkbox"/>
1.13.c Frame flooding	Y / N			<input type="checkbox"/>
1.13.d MAC address table	Y / N			<input type="checkbox"/>

## Section: 2.0 Network Access

2.1 Configure and verify VLANs (normal range) spanning multiple switches	Need to Study?	Complete by:	Resource:	Completed
2.1.a Access ports (data and voice)	Y / N			<input type="checkbox"/>
2.1.b Default VLAN	Y / N			<input type="checkbox"/>
2.1.c Connectivity	Y / N			<input type="checkbox"/>
2.2 Configure and verify interswitch connectivity	Need to Study?	Complete by:	Resource:	Completed
2.2.a Trunk ports	Y / N			<input type="checkbox"/>
2.2.b 802.1Q	Y / N			<input type="checkbox"/>
2.2.c Native VLAN	Y / N			<input type="checkbox"/>
2.3 Configure and verify Layer 2 discovery protocols (Cisco Discovery Protocol and LLDP)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
2.4 Configure and verify (Layer 2/Layer 3) EtherChannel (LACP)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>

<b>2.5 Interpret basic operations of Rapid PVST+ Spanning Tree Protocol</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
2.5.a Root port, root bridge (primary/secondary), and other port names	Y / N			<input type="checkbox"/>
2.5.b Port states (forwarding/blocking)	Y / N			<input type="checkbox"/>
2.5.c PortFast	Y / N			<input type="checkbox"/>
<b>2.6 Describe Cisco Wireless Architectures and AP modes</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>2.7 Describe physical infrastructure connections of WLAN components (AP, WLC, access/trunk ports, and LAG)</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>2.8 Describe AP and WLC management access connections (Telnet, SSH, HTTP, HTTPS, console, and TACACS+/RADIUS)</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>2.9 Interpret the wireless LAN GUI configuration for client connectivity, such as WLAN creation, security settings, QoS profiles, and advanced settings</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>

## Section: 3.0 IP Connectivity

<b>3.1 Interpret the components of routing table</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
3.1.a Routing protocol code	Y / N			<input type="checkbox"/>
3.1.b Prefix	Y / N			<input type="checkbox"/>
3.1.c Network mask	Y / N			<input type="checkbox"/>
3.1.d Next hop	Y / N			<input type="checkbox"/>
3.1.e Administrative distance	Y / N			<input type="checkbox"/>
3.1.f Metric	Y / N			<input type="checkbox"/>
3.1.g Gateway of last resort	Y / N			<input type="checkbox"/>
<b>3.2 Determine how a router makes a forwarding decision by default</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
3.2.a Longest prefix match	Y / N			<input type="checkbox"/>
3.2.b Administrative distance	Y / N			<input type="checkbox"/>
3.2.c Routing protocol metric	Y / N			<input type="checkbox"/>

<b>3.3 Configure and verify IPv4 and IPv6 static routing</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
3.3.a Default route	Y / N			<input type="checkbox"/>
3.3.b Network route	Y / N			<input type="checkbox"/>
3.3.c Host route	Y / N			<input type="checkbox"/>
3.3.d Floating static	Y / N			<input type="checkbox"/>
<b>3.4 Configure and verify single area OSPFv2</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
3.4.a Neighbor adjacencies	Y / N			<input type="checkbox"/>
3.4.b Point-to-point	Y / N			<input type="checkbox"/>
3.4.c Broadcast (DR/BDR selection)	Y / N			<input type="checkbox"/>
3.4.d Router ID	Y / N			<input type="checkbox"/>
<b>3.5 Describe the purpose, functions, and concepts of first hop redundancy protocols</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>

## Section: 4.0 IP Services

<b>4.1 Configure and verify inside source NAT using static and pools</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>4.2 Configure and verify NTP operating in a client and server mode</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>4.3 Explain the role of DHCP and DNS within the network</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>4.4 Explain the function of SNMP in network operations</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>4.5 Describe the use of syslog features including facilities and levels</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>
<b>4.6 Configure and verify DHCP client and relay</b>	<b>Need to Study?</b>	<b>Complete by:</b>	<b>Resource:</b>	<b>Completed</b>
	Y / N			<input type="checkbox"/>

4.7 Explain the forwarding per-hop behavior (PHB) for QoS, such as classification, marking, queuing, congestion, policing, and shaping	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
4.8 Configure network devices for remote access using SSH	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
4.9 Describe the capabilities and function of TFTP/FTP in the network	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>

## Section: 5.0 Security Fundamentals

5.1 Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.2 Describe security program elements (user awareness, training, and physical access control)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.3 Configure and verify device access control using local passwords	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.4 Describe security password policies elements, such as management, complexity, and password alternatives (multifactor authentication, certificates, and biometrics)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.5 Describe IPsec remote access and site-to-site VPNs	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.6 Configure and verify access control lists	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.7 Configure and verify Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>

5.8 Compare authentication, authorization, and accounting concepts	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.9 Describe wireless security protocols (WPA, WPA2, and WPA3)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
5.10 Configure and verify WLAN within the GUI using WPA2 PSK	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>

## Section: 6.0 Automation and Programmability

6.1 Explain how automation impacts network management	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
6.2 Compare traditional networks with controller-based networking	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
6.3 Describe controller-based, software defined architecture (overlay, underlay, and fabric)	Need to Study?	Complete by:	Resource:	Completed
6.3.a Separation of control plane and data plane	Y / N			<input type="checkbox"/>
6.3.b Northbound and Southbound APIs	Y / N			<input type="checkbox"/>
6.4 Compare traditional campus device management with Cisco DNA Center enabled device management	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
6.5 Describe characteristics of REST-based APIs (CRUD, HTTP verbs, and data encoding)	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
6.6 Recognize the capabilities of configuration management mechanisms Puppet, Chef, and Ansible	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>
6.7 Recognize components of JSON-encoded data	Need to Study?	Complete by:	Resource:	Completed
	Y / N			<input type="checkbox"/>

## CCNA Study Resources

Cisco certifications empower you to understand real-world issues and address them quickly and effectively. Get started on the path to certification success and enjoy your personal and professional journey.



### CCNA Course Overview

<http://cs.co/CCNACourseOverview>

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### Exam Review Tool

<http://cs.co/cisco-exam-review>

Put your skills to the test with practice questions designed to identify knowledge gaps.



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### Cisco Learning Labs

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Access the complete set of Cisco IOS Software labs, with guided instructions aligned to the concepts tested on the exam.



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