Networking

The successful candidate has the foundational knowledge and skills necessary to demonstrate how networks operate, including the devices, media, and protocols that enable network communication. This test will be an entry point into the Cisco certification program. The next certification in the pathway is **Cisco Certified Network Associate**.

This is a certification for foundational network technicians, networking students, interns, etc. The exam targets secondary and immediate post-secondary students, and IT and Networking professionals. The successful candidates are qualified work-ready network technicians and customer support technicians, students, and interns with at least 150 hours of instruction and hands-on experience.

Objective Domains: CCST Networking

1. Standards and Concepts

1.1 Identify the fundamental conceptual building blocks of networks.

- TCP/IP model, OSI model, frames and packets, addressing

1.2 Differentiate between bandwidth and throughput.

- Latency, delay, speed test vs. Iperf

1.3 Differentiate between LAN, WAN, MAN, CAN, PAN, and WLAN.

- Identify and illustrate common physical and logical network topologies.

1.4 Compare and contrast cloud and on-premises applications and services.

- Public, private, hybrid, SaaS, PaaS, IaaS, remote work/hybrid work

1.5 Describe common network applications and protocols.

- TCP vs. UDP (connection-oriented vs. connectionless), FTP, SFTP, TFTP, HTTP, HTTPS, DHCP, DNS, ICMP, NTP

2. Addressing and Subnet Formats

2.1 Compare and contrast private addresses and public addresses.

- Address classes, NAT concepts

2.2 Identify IPv4 addresses and subnet formats.

- Subnet concepts, Subnet Calculator, CIDR (slash notation), slash notation, subnet mask, broadcast domain

2.3 Identify IPv6 addresses and prefix formats.

- Types of addresses, prefix concepts

3. Endpoints and Media Types

3.1 Identify cables and connectors commonly used in local area networks.

- Cable types: fiber, copper, twisted pair; Connector types: coax, RJ-45, RJ-11, fiber connector types

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3.2 Differentiate between Wi-Fi, cellular, and wired network technologies.

- Copper, including sources of interference; fiber; wireless, including 802.11 (unlicensed, 2.4GHz, 5GHz, 6GHz); cellular (licensed), sources of interference

3.3 Describe endpoint devices.

- Internet of Things (IoT) devices, computers, mobile devices, IP Phone, printer, server

3.4 Demonstrate how to set up and check network connectivity on Windows, Linux, Mac OS, Android, and Apple iOS.

- Networking utilities on Windows, Linux, Android, and Apple operating systems; how to run troubleshooting commands; wireless client settings (SSID, authentication, WPA mode)

4. Infrastructure

4.1 Identify the status lights on a Cisco device when given instruction by an engineer.

- Link light color and status (blinking or solid)

4.2 Use a network diagram provided by an engineer to attach the appropriate cables.

- Patch cables, switches and routers, small topologies, power, rack layout

4.3 Identify the various ports on network devices.

- Console port, serial port, fiber port, Ethernet ports, SFPs, USB port, PoE

4.4 Explain basic routing concepts.

- Default gateway, layer 2 vs. layer 3 switches, local network vs. remote network)

4.5 Explain basic switching concepts.

- MAC address tables, MAC address filtering, VLAN

5. Diagnosing Problems

5.1 Demonstrate effective troubleshooting methodologies and help desk best practices, including ticketing, documentation, and information gathering.

- Policies and procedures, accurate and complete documentation, prioritization

5.2 Perform a packet capture with Wireshark and save it to a file.

- Purpose of using a packet analyzer, filtering a capture, saving and opening a .pcap file

5.3 Run basic diagnostic commands and interpret the results.

- ping, ipconfig/ifconfig/ip, tracert/traceroute, nslookup; recognize how firewalls can influence the result

5.4 Differentiate between different ways to access and collect data about network devices.

- Remote access (RDP, SSH, telnet), VPN, terminal emulators, Console, Network Management Systems, cloud-managed network (Meraki), scripts

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5.5 Run basic show commands on a Cisco network device.

- show run, show cdp neighbors, show ip interface brief, show ip route, show version, show inventory, show switch, show mac address-table, show interface, show interface x, show interface status; privilege levels; command help and auto-complete

6. Security

6.1 Describe how firewalls operate to filter traffic.

- Firewalls (blocked ports and protocols); rules deny or permit access

6.2 Describe foundational security concepts.

- Confidentiality, integrity, and availability (CIA); authentication, authorization, and accounting (AAA); Multifactor Authentication (MFA); encryption, certificates, and password complexity; identity stores/databases (Active Directory); threats and vulnerabilities; spam, phishing, malware, and denial of service

6.3 Configure basic wireless security on a home router (WPAx).

- WPA, WPA2, WPA3; choosing between Personal and Enterprise; wireless security concepts