CCIE HUB

CCNA 200-301

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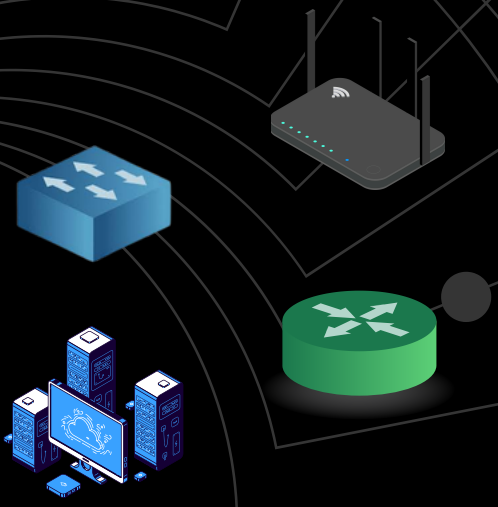
1.0 NETWORK FUNDAMENTAL 20%

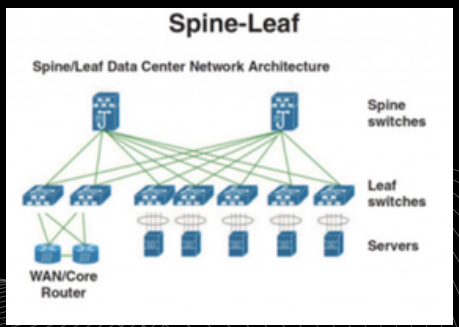
Explain the role and function of network components

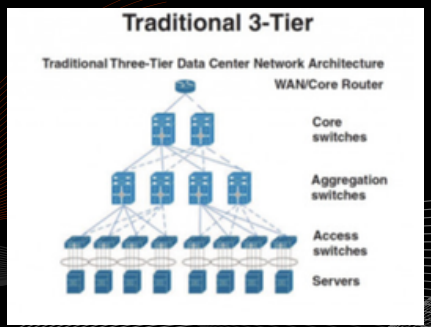
- Routers
- Switches
- Firewall
- Access point
- Cisco DNA Center
- Endpoint
- Server



Describe characteristics of network topology architectures

- Two-tier
- Three-tier
- Spine-leaf
- WAN
- Small office/home office (SOHO)
- On-premise and cloud





- **Compare physical interface and cabling types**
  - Single-mode fiber, multimode fiber, copper
  - Connections (Ethernet shared media and point-to-point)

- **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**

Describe IPv6 address types

- Unicast (global, unique local, and link local)
- Anycast
- Multicast
- Modified EUI 64

Verify IP parameters for Client OS (Windows, Mac OS, Linux)

- Describe wireless principles
- Nonoverlapping
- Wi-Fi channels
- SSID
- RF
- Encryption

Explain virtualization fundamentals (server virtualization, containers, and VRFs)

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- Describe switching concepts
- MAC learning and aging
- Frame switching
- Frame flooding
- MAC address table

2.0 NETWORK ACCESS (20%)

- **Configure and verify VLANs (normal range) spanning multiple switches**
  - Access ports (data and voice)
  - Default VLAN
  - InterVLAN connectivity
- **Configure and verify interswitch connectivity**
  - Trunk ports
  - 802.1Q
  - Native VLAN

- **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
  - Root port, root bridge (primary/secondary), and other port names
  - Port states (forwarding/blocking)
  - PortFast benefits

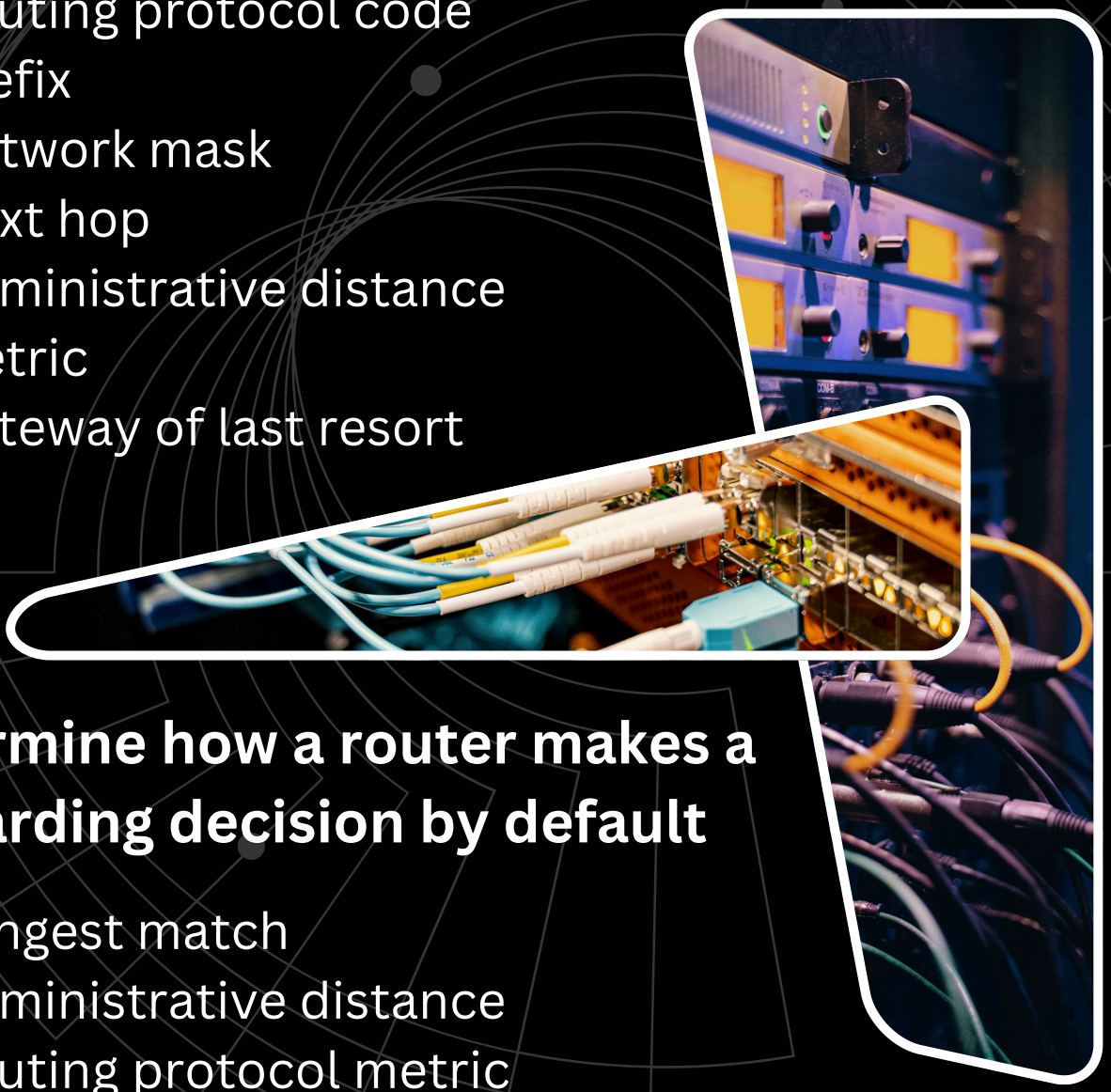
- **Compare Cisco Wireless Architectures and AP modes**
- **Describe physical infrastructure connections of WLAN components (AP,WLC, access/trunk ports, and LAG)**
- **Describe AP and WLC management access connections (Telnet, SSH, HTTP, HTTPS, console, and TACACS+/RADIUS)**

- 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

3.0 IP CONNECTIVITY (25%)

Interpret the components of routing table

- Routing protocol code
- Prefix
- Network mask
- Next hop
- Administrative distance
- Metric
- Gateway of last resort



Determine how a router makes a forwarding decision by default

- Longest match
- Administrative distance
- Routing protocol metric
- Configure and verify IPv4 and IPv6 static routing
- Default route
- Network route
- Host route
- Floating static

Configure and verify single area OSPFv2

- Neighbor adjacencies
- Point-to-point
- Broadcast (DR/BDR selection)
- Router ID

Describe the purpose, functions, and concepts of first hop redundancy protocols

4.0 IP SERVICES (10%)

- 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,

- Configure network devices for remote access using SSH
- Describe the capabilities and function of TFTP/FTP in the network

5.0 SECURITY FUNDAMENTAL (15%)

- Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)
- Describe security program elements (user awareness, training, and physical access control)
- Configure and verify device access control using local passwords

- Describe security password policies elements, such as management, complexity, and password alternatives (multifactor authentication, certificates, and biometrics)

- Describe IPsec 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

6.0 AUTOMATION AND PROGRAMMABILITY (10%)

- **Explain how automation impacts network management**
- **Compare traditional networks with controller-based networking**
- **Describe controller-based and software defined architectures (overlay, underlay, and fabric)**
  - Separation of control plane and data plane
  - North-bound and south-bound APIs

- 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

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Thank You

ENROLL NOW

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