# Cisco Enterprise Network Core Technologies (350-401)

# (Cisco Certification Mapped Curriculum)

## Architecture

- Explain design principles used in an enterprise network
  - Enterprise network design such as Tier 2, Tier 3, and Fabric Capacity planning
  - High availability techniques such as redundancy (FHRP)
- Analyze design principles of a WLAN deployment
  - Wireless deployment models (centralized, distributed, controller-less, controller based)
  - Location services in a WLAN design
- Differentiate between on-premises and cloud infrastructure deployments
- Explain the working principles of the Cisco SD-WAN solution
  - SD-WAN control and data planes elements
  - Traditional WAN and SD-WAN solutions
- Explain the working principles of the Cisco SD-Access solution
  - SD-Access control and data planes elements
- Describe concepts of QoS
  - QoS components and policies
- Differentiate between hardware and software switching mechanisms
  - Process and CEF, MAC address table and TCAM, FIB vs. RIB

## Virtualization

- Describe device virtualization technologies
  - Virtual machine, Virtual switching, Hypervisor type 1 and 2
- Data path virtualization technologies
  - VRF, GRE and IPsec tunneling
- Describe network virtualization concepts
  - LISP, VXLAN

## Infrastructure

## Layer 2:

- Troubleshoot static and dynamic 802.1q trunking protocols
- Troubleshoot static and dynamic Ether Channels
- Configure and verify common Spanning Tree Protocols (RSTP and MST)

## Layer 3:

- Compare routing concepts of EIGRP and OSPF (advanced distance vector vs. link state, load balancing, path selection, path operations, metrics)
- Configure and verify simple OSPF environments, including multiple normal areas, summarization, and filtering (neighbor adjacency, point-to-point and broadcast network types, and passive interface)
- Configure and verify iBGP and eBGP between directly connected neighbors (Attributes, best path selection algorithm and neighbor relationships)

## Wireless:

- Describe Layer 1 concepts, such as RF power, band and channels, and wireless client devices capabilities
- Describe AP modes and antenna types
- Describe access point discovery and join process (Discovery algorithms, WLC Authentication process)
- Describe the main principles and use cases for Layer 2 and Layer 3 roaming
- Troubleshoot WLAN configuration and wireless client connectivity issues

## IP Services:

- Describe Network Time Protocol (NTP)
- Configure and verify NAT/PAT
- Configure first hop redundancy protocols, such as HSRP, VRRP, GLBP
- Describe multicast protocols, such as PIM and IGMP v2/v3

## Network Assurance

- Diagnose network problems using tools such as debugs, conditional debugs, trace route, ping
- Configure and verify device monitoring using syslog
- Configure and verify SPAN/RSPAN/ERSPAN
- Configure and verify IPSLA (Remote object tracking)

## Security

- Configure and verify device access control
  - Lines and password protection
  - Authentication and authorization using AAA

- Configure and verify infrastructure security features
  - ACLs(Standard & Extended-Numbered & Named, IPv6 )

- Describe REST API
- Configure and verify wireless security features
  - EAP, WebAuth , PSK
- Describe the components of network security design
  - Threat defense, Endpoint security
  - Next-generation firewall, Security types
  - Network access control with 802.1X, MAB, and WebAuth

## Automation

- Describe basic components of scripts
- Describe the high-level principles and benefits of a data modeling language
- Describe APIs for Cisco DNA Center
- Construct EEM applet to automate configuration & troubleshooting
- Compare agent vs. agentless orchestration tools, such as Chef, Puppet, Ansible, and SaltStack