



CCIE Wireless Written Exam (350-050) Version 2.0

Exam Description: The Cisco CCIE® Wireless Written Exam (350-050) version 2.0 is a 2-hour test with 90–110 questions that will validate that a wireless engineer has the expertise to plan, design, implement, operate, and troubleshoot complex enterprise WLAN networks. The exam is closed book and no outside reference materials are allowed.

The following topics are general guidelines for the content likely to be included on the exam. However, other related topics may also appear on any specific delivery of the exam. In order to better reflect the contents of the exam and for clarity purposes, the guidelines below may change at any time without notice.

- 25% 1.0 Plan and Design 802.11 Wireless Technologies**
 - 1.1 WLAN organizations and regulations
 - 1.2 IEEE 802.11 standards and protocols
 - 1.3 Wireless security concepts and Protocols
 - 1.3.a L2/L3/L4 traffic restrictions
 - 1.3.b Management access restrictions
 - 1.3.c Layer 2/3 security
 - 1.3.d WPS, MFP and NAC
 - 1.4 Plan and design wireless solutions requirements
 - 1.4.a Translate customer requirements into services and design recommendations
 - 1.4.b Identify ambiguity and information gaps
 - 1.4.c Evaluate interoperability of proposed technologies against a deployed IP network Infrastructure and technologies
 - 1.4.d Suggest a deployment model
 - 1.5 RF planning
 - 1.5.a Define the tasks and goals for a preliminary site survey
 - 1.5.b Conduct the site survey
 - 1.5.c Determine AP quantity, placement and antenna type
 - 1.5.d Draft an RF operational model
 - 1.5.d (i) Radio resource management (Auto RF, manual, hybrid, TPC, and DCA)
 - 1.5.d (ii) Channel use (radar and other non-Wi-Fi interference)
 - 1.5.d (iii) Power level, overlap
 - 1.5.e Audit and optimize existing RF deployments
 - 1.5.f RF design for indoor and outdoor deployments
- 7% 2.0 Configure and Troubleshoot L2/L 3 Network Infrastructure to Support WLANs**

- 2.1 Configure and troubleshoot wired infrastructure to support WLANs
 - 2.1.a VLANs
 - 2.1.b VTP
 - 2.1.c STP
 - 2.1.d EtherChannel
 - 2.1.e HSRP
 - 2.1.f VSS
- 2.2 Network infrastructure capacity planning
- 2.3 Configure and troubleshoot network connectivity for various devices
 - 2.3.a WLAN clients
 - 2.3.b Standalone WLCs
 - 2.3.c Integrated WLCs
 - 2.3.d Lightweight APs
 - 2.3.e Autonomous APs
- 2.4 Configure and troubleshoot PoE for APs
- 2.5 Configure and troubleshoot QoS on the switching infrastructure
- 2.6 Configure and troubleshoot multicast on the switching infrastructure
- 2.7 Configure and troubleshoot basic IPv4 connectivity
 - 2.7.a Subnetting
 - 2.7.b Static routing
 - 2.7.c Basic OSPF
 - 2.7.d Basic EIGRP
- 2.8 Configure and troubleshoot basic IPv6 connectivity
 - 2.8.a Subnetting
 - 2.8.b Static routing
- 2.9 Configure and troubleshoot wired security
 - 2.9.a ACLs
 - 2.9.b Dot1x and MAC filtering
- 14%** **3.0 Configure and Troubleshoot Infrastructure Application Services**
 - 3.1 Configure and troubleshoot DNS, DHCP, NTP, syslog, and SNMP
 - 3.2 Configure and troubleshoot AAA server infrastructure
 - 3.2.a Client authentication
 - 3.2.b Management authentication
 - 3.2.c Basic PKI for dot1x and WebAuth
- 7%** **4.0 Configure and Troubleshoot an Autonomous Deployment Model**
 - 4.1 Configure and control management access

- 4.2 Configure and troubleshoot network services
 - 4.2.a NTP
 - 4.2.b syslog
- 4.3 Configure and troubleshoot different modes and roles
 - 4.3.a Root
 - 4.3.b WGB
 - 4.3.c Bridge
- 4.4 Configure and troubleshoot SSID and MBSSID
- 4.5 Configure and troubleshoot security
 - 4.5.a L2 security policies
 - 4.5.b Association filters
 - 4.5.c MFP
 - 4.5.d Peer-to-peer blocking
 - 4.5.e Local RADIUS
 - 4.5.f Dot1x profiles
- 4.6 Configure and troubleshoot radio settings
- 4.7 Configure and troubleshoot IGMP snooping
- 4.8 Configure and troubleshoot QoS
- 4.9 Configure and troubleshoot WDS (L2)
- 4.10 Upgrade Autonomous to Unified
- 21% 5.0 Configure and Troubleshoot a Unified Deployment Model**
 - 5.1 Configure and control management access
 - 5.2 Configure and troubleshoot network services
 - 5.2.a NTP
 - 5.2 b syslog
 - 5.2.c DHCP
 - 5.2.d DNS
 - 5.3 Configure and troubleshoot interface settings
 - 5.4 Configure and troubleshoot a unified AP
 - 5.4.a Dot1x
 - 5.4.b Locally significant certificates
 - 5.4.c Office extend
 - 5.4.d AP modes
 - 5.4.e AP authentication and authorization
 - 5.4.f High availability
 - 5.4.g Logging

- 5.4.h Local and global configuration
- 5.5 Configure and troubleshoot AP groups
- 5.6 Configure and troubleshoot WLANs
 - 5.6.a Client exclusion
 - 5.6.b Load balancing
 - 5.6.c Band select
 - 5.6.d Passive clients
 - 5.6.e DHCP policies
 - 5.6.f Multicast VLAN
 - 5.6.g Radio policies
- 5.7 Configure and troubleshoot H-REAP
 - 5.7.a Local authorization
 - 5.7.b H-REAP groups
 - 5.7.c H-REAP local switching
 - 5.7.d Address learning
- 5.8 Configure and troubleshoot radio settings
 - 5.8.a Client link
 - 5.8.b Power
 - 5.8.c Channel settings
 - 5.8.d Antenna selection
 - 5.8.e Beacons
 - 5.8.f Data rates
 - 5.8.g Channel bonding
 - 5.8.h Cisco CleanAir
 - 5.8.h (i) EDDRRM
 - 5.8 h (ii) Interferer detection
 - 5.8 h (iii) Air quality
- 5.9 Implement RRM and Auto RF
 - 5.9.a Country selection
 - 5.9.b CHD, DCA, and TPC
 - 5.9.c RF groups
 - 5.9.d Profiles
- 5.10 Implement local DHCP services for clients
- 5.11 Configure and troubleshoot security settings
 - 5.11.a L2 security policies (IEEE 802.11i, static dynamic WEP, MAC filtering, and so on)
 - 5.11.b AAA (WLC to RADIUS or LDAP)
 - 5.11.c Local EAP authentication (against local user list and external LDAP)
 - 5.11.d Peer-to-peer blocking
 - 5.11.e L3 security policies (WebAuth and passthrough)
 - 5.11.f WPS settings (IDS)
 - 5.11.g ACL (interface, CPU, and WLAN)

- 5.11.h NAC
- 5.11.i MFP
- 5.12 Configure and troubleshoot mobility
 - 5.12.a L2/L3 roaming
 - 5.12.b Multicast optimization
 - 5.12.c Mobility group scaling
 - 5.12.d Inter-release controller mobility groups
- 5.13 Configure and troubleshoot controller redundancy and fallback (APs and clients)
- 5.14 Configure and troubleshoot wired and wireless guests
- 5.15 Configure and troubleshoot multicast
- 5.16 Configure and troubleshoot QoS
 - 5.16.a BW profile metal
 - 5.16.b EDCA
 - 5.16.c BW restrictions
 - 5.16.d Per user BW roles
- 5.17 Configure and troubleshoot mesh
 - 5.17.a AP authorization
 - 5.17.b BGN
 - 5.17.c Ethernet bridging
 - 5.17.d Serial backhaul
- 12% 6.0 Configure and Troubleshoot WCS**
 - 6.1 Configure and troubleshoot management access
 - 6.1.a AAA
 - 6.1.b Virtual domain
 - 6.2 Configure and troubleshoot NTP
 - 6.3 Perform basic operations
 - 6.3.a Create and deploy templates and template groups
 - 6.3.b Create a floor coverage proposal
 - 6.3.c Prepare the building and floor maps
 - 6.3.d Implement controllers to WCS
 - 6.3.e High availability
 - 6.3.f AP placement
 - 6.3.g Understand license managing
 - 6.3.h Mesh monitoring
 - 6.3.i Audits
 - 6.4 Performing maintenance operations
 - 6.4.a Backups
 - 6.4.b WCS upgrade

- 6.4.c WLC upgrade
- 6.4.d MSE upgrade
- 6.4.e Client troubleshooting
- 6.4.f AP conversion
- 6.4.g Logging

- 6.5 Security management
 - 6.5.a Audit configuration
 - 6.5.b Rogue detection, classification, and management
 - 6.5.c Alerts
 - 6.5.d Alarms and events
 - 6.5.e Security index
 - 6.5.f IDS and WIPS
 - 6.5.g RF management
 - 6.5.g (i) RRM events
 - 6.5.g (ii) Cisco CleanAir
 - 6.5.h Service levels

- 6.6 Implement MSE
 - 6.6.a Configure and troubleshoot management access
 - 6.6.b Implement network services
 - 6.6.c Perform maintenance operations

- 14% 7.0 Configure and Troubleshoot WLAN Services**
 - 7.1 Understand service characteristics, capabilities, and limitations

 - 7.2 Voice for autonomous deployments
 - 7.2.a RF design considerations
 - 7.2.b Implement the network infrastructure to support VoWLAN
 - 7.2.c General configuration settings
 - 7.2.d Security settings
 - 7.2.e CAC
 - 7.2.f Audit voice deployments

 - 7.3 Voice for unified deployments
 - 7.3.a RF design considerations
 - 7.3.b Implement the network infrastructure to support VoWLAN
 - 7.3.c General configuration settings
 - 7.3.d Security settings
 - 7.3.e CAC
 - 7.3.f Audit voice deployments

 - 7.4 Video
 - 7.4.a RF design considerations
 - 7.4.b Implement the network infrastructure to support VoWLAN
 - 7.4.c General configuration settings
 - 7.4.d CAC

- 7.5 Context-aware services
 - 7.5.a RF design considerations
 - 7.5.b Location
 - 7.5.c Notifications