Implementing Cisco Wireless Network Fundamentals (200-355)

Exam Description: The Implementing Cisco Wireless Network Fundamentals (WIFUND) exam (200-355) is a 90-minute, 60–70 item assessment that is associated with the CCNA Wireless certification. This exam tests a candidate's knowledge of Radio Frequency (RF) and 802.11 technology essentials along with installing, configuring, monitoring, and basic troubleshooting tasks needed to support Small Medium Business and Enterprise wireless networks. Candidates can prepare for this exam by taking the Implementing Cisco Wireless Network Fundamentals (WIFUND) course.

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

13%   1.0   RF Fundamentals
- 1.1   Describe the propagation of radio waves
    - 1.1.a   Frequency, amplitude, phase, wavelength (characteristics)
    - 1.1.b   Absorption, reflection, diffraction, scattering, refraction, fading, free space path loss, multipath

- 1.2   Interpret RF signal measurements
    - 1.2.a   Signal strength (RSSI, Transmit power, receive sensitivity)
    - 1.2.b   Differentiate interference vs. noise
    - 1.2.c   Device capabilities (smartphones, laptops, tablets)
    - 1.2.d   Define SNR

- 1.3   Explain the principles of RF mathematics
    - 1.3.a   Compute dBm, mW, Law of 3s and 10s,

- 1.4   Describe Wi-Fi antenna characteristics
    - 1.4.a   Ability to read a radiation pattern chart
    - 1.4.b   Antenna types and uses
    - 1.4.c   dBi, dBd, EIRP

13%   2.0   802.11 Technology Fundamentals
- 2.1   Describe basic Wi-Fi governance
    - 2.1.a   Describe regional regulatory bodies (such as, FCC / ETSI/ NTT)
    - 2.1.b   IEEE 802.11
    - 2.1.c   Wi-Fi Alliance

- 2.2   Describe usable channel and power combination
    - 2.2.a   Regional EIRP limitation examples
    - 2.2.b   ISM, UNII frequency bands

       2.2.c   Describe RRM fundamental

    2.3   Describe 802.11 fundamentals
       2.3.a   Modulation techniques
       2.3.b   Channel width
       2.3.c   MIMO / MU-MIMO
           2.3.c (i)   MRC
           2.3.c (ii)   Beam forming
           2.3.c (iii) Spatial streams
       2.3.d   Wireless topologies
           2.3.d (i)   IBSS
           2.3.d (ii)   BSS
           2.3.d (iii) ESS
       2.3.e   Frame types
           2.3.e (i)   Management
           2.3.e (ii)   Control
           2.3.e (iii) Data

16%   3.0   Implementing a Wireless Network
    3.1   Describe the various Cisco wireless architectures
       3.1.a   Cloud
       3.1.b   Autonomous
       3.1.c   Split MAC
           3.1.c (i)   FlexConnect
           3.1.c (ii)   Centralized
           3.1.c (iii) Converged

    3.2   Describe physical infrastructure connections
       3.2.a   Wired infrastructures (AP, WLC, access/trunk ports, LAG)

    3.3   Describe AP and WLC management access connections
       3.3.a   Management connections (Telnet, SSH, HTTP, HTTPS, console)
       3.3.b   IP addressing: IPv4 / IPv6
       3.3.c   Management via wireless

20%   4.0   Operating a Wireless Network
    4.1   Execute initial setup procedures Cisco wireless infrastructures
       4.1.a   Cloud
       4.1.b   Converged
       4.1.c   Centralized
       4.1.d   Autonomous

    4.2   Describe the Cisco implementation of the CAPWAP discovery and join process
       4.2.a   DHCP
       4.2.b   DNS
       4.2.c   Master-controller
       4.2.d   Primary-secondary-tertiary
    4.3   Distinguish different lightweight AP modes

4.4 Describe and configure the components of a wireless LAN access for client connectivity using GUI only

4.5 Identify wireless network and client management and configuration platform options

4.5.a Controller GUI and CLI
4.5.b Prime infrastructure
4.5.c Dashboard
4.5.d ISE

4.6 Maintain wireless network
4.6.a Perform controller configuration backups
4.6.b Perform code updates on controller, APs, and converged access switches
4.6.b (i) AireOS: boot loader (FUS), image
4.6.b (ii) IOS-XE: bundle, unbundle
4.6.b (iii) Autonomous

16% **5.0** **Configuration of Client Connectivity**
5.1 Identify authentication mechanisms
5.1.a LDAP, RADIUS, local authentication, WebAuth, 802.1X,PSK

5.2 Configuring WLAN authentication mechanisms on the controller
5.2.a WebAuth, 802.1X, PSK
5.2.b TKIP deprecation

5.3 Configure client connectivity in different operating systems
5.3.a Android, MacOS, iOS, Windows

5.4 Describe roaming
5.4.a Layer 2 and Layer 3
5.4.b Intracontroller and intercontroller
5.4.c Centralized mobility
5.4.d Converged mobility

5.5 Describe wireless guest networking
5.5.a Anchor controller
5.5.b Foreign controller

13% **6.0** **Performing Client Connectivity Troubleshooting**
6.1 Validating WLAN configuration settings at the infrastructure side
6.1.a Security settings
6.1.b SSID settings

6.2 Validating AP infrastructure settings
6.2.a Port level configuration
6.2.b Power source
6.2.c AP and antenna orientation and position

6.3 Validate client settings
    6.3.a   SSID
    6.3.b   Security
    6.3.c   Device driver version

6.4 Employ appropriate controller tools to assist troubleshooting
    6.4.a   GUI logs
    6.4.b   CLI show commands
    6.4.c   Monitor pages
        6.4.c (i)   CleanAir (controller GUI)

6.5 Identify appropriate third-party tools to assist troubleshooting
    6.5.a   OS-based Client utilities
    6.5.b   Wi-Fi scanners
    6.5.c   RF mapping tool

9%   7.0   Site Survey Process
7.1 Describe site survey methodologies and their purpose
    7.1.a   Offsite (predictive / plan)
    7.1.b   Onsite
        7.1.b (i)   Predeployment (AP on a stick)
        7.1.b (ii)   Post deployment (validation)

7.2 Describe passive and active site surveys

7.3 Identify proper application of site survey tools
    7.3.a   Spectrum analyzer
    7.3.b   Site surveying software

7.4 Describe the requirements of client real-time and non-real-time applications