Implementing Cisco Unified Wireless Mobility Services (642-747)

Exam Description: The Implementing Cisco Unified Wireless Mobility Services (IUWMS) version 2.0 exam is a 90-minute test with 55−75 questions that are associated with the Cisco CCNP® Wireless certification. This exam assesses a candidate's ability to integrate mobility services into the WLAN, tune and troubleshoot the WLAN, and implement indoor enterprise mesh 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.

20% 1.0 Implement Location-Based Services

1.1 Describe the impact of distributed antenna systems (DAS) for location-based services

1.2 Tracking mobile clients
- 1.2.a Active RFID tag
- 1.2.b Wi-Fi devices
- 1.2.c Active interferers

1.3 Describe the applications of RFID, chokepoint, and TDoA tags
- 1.3.a Compare and contrast Cisco WCS and third-party applications

1.4 Calibrate RSSI for the Cisco and third-party implementation

1.5 Configure, generate, and interpret location and event notifications

1.6 Configure and tune the mobility services engine (SNMP impact on network traffic and platform hardware)
- 1.6.a NMSP

1.7 Design AP and antenna deployment model for location

1.8 Describe location techniques
- 1.8.a Angulations
- 1.8.b Cell of origin
- 1.8.c TDoA and ToA lateration
- 1.8.d RSS lateration
- 1.8.e Pattern recognition
- 1.8.f RF fingerprinting

23% **2.0 Design and Deploy WLAN Infrastructure for Mobility**

- 2.1 Configure single SSID designs with mobility
  - 2.1.a AP group VLANs
  - 2.1.b Identity based networking (IBN)
  - 2.1.c Single SSID and multiple WLAN
- 2.2 Analyze implications of layer 2 and layer 3 roaming
  - 2.2.a Avoid salt and pepper deployment
  - 2.2.b Minimize inter controller roaming
  - 2.2.c Mobility tunneling
- 2.3 Implement high availability
  - 2.3.a Legacy primary, secondary, and tertiary
  - 2.3.b Backup primary and backup secondary outside of mobility group
  - 2.3.c Enhanced timers
  - 2.3.d AP fallback
  - 2.3.e AP prioritization
  - 2.3.f Anchor controller redundancy
  - 2.3.g RF redundancy: coverage hole, RRM, and double AP
- 2.4 Troubleshoot AP join process using the following solutions
  - 2.4.a AP console debug
  - 2.4.b AP console configuration
  - 2.4.c WLC debug
  - 2.4.d WLC logs
  - 2.4.e Switch port, DHCP, and VLAN
- 2.5 Implement the following Cisco unified wireless best practices
  - 2.5.a LAG versus port-based
  - 2.5.b RF groups
  - 2.5.c H-REAP
  - 2.5.d AP count; per-subnet limitation
  - 2.5.e Client subnet sizing considerations
  - 2.5.f Per WLAN client limit
  - 2.5.g Office extend
  - 2.5.h Passive client
- 2.6 Define and implement mobility groups and mobility lists
  - 2.6.a AP regulatory domain flexibility
  - 2.6.b 24/48/72 WLC mobility size
- 2.7 Adjust authentication and EAP timers
- 2.8 Tune RF environment for context-aware services
  - 2.8.a Data rates
  - 2.8.b Transmit power levels and thresholds
  - 2.8.c Channels and DCA
  - 2.8.d Band select

2.8.e Cisco Client link

2.9 Troubleshooting inter controller communications
- 2.9.a Mobility group formation
- 2.9.b RF group formation
- 2.9.c Inter controller roaming

22% 3.0 Implement Cisco MSE Architecture

3.1 Describe Cisco MSE capabilities and integration with wireless network architecture
- 3.1.a Context aware
- 3.1.b Adaptive wireless IPS
- 3.1.c Guest tracking
- 3.1.d Spectrum intelligence
- 3.1.e Scalability

3.2 Deploy context-aware services for specific environments
- 3.2.a Mixed-use environments
- 3.2.b Complex RF environments
- 3.2.c Small areas
- 3.2.d Timing issues
- 3.2.e Adjusting history and location parameters
- 3.2.f Multi floor facilities
- 3.2.g Recalibration

3.3 Integrate third-party applications
- 3.3.a Server engines
- 3.3.b Licensing
- 3.3.c Common API

3.4 Integrate and manage MSE with Cisco WCS
- 3.4.a Install and synchronize
- 3.4.b Location
- 3.4.c Enable tracking
- 3.4.d Define the MSE parameters
- 3.4.e Understand advanced parameters

3.5 Maintain MSE
- 3.5.a Database clean up
- 3.5.b Database back-up and restore
- 3.5.c Upgrade

3.6 Troubleshoot MSE operations
- 3.6.a Debug of NMSP
- 3.6.b Debug of controller
- 3.6.c Location accuracy tool
- 3.6.d Debug RFID

17% 4.0 Implement and Manage Indoor and Outdoor Mesh

4.1 Describe wireless mesh and its benefits

4.2 Describe the following mesh operation modes
- 4.2.a RAP
- 4.2.b MAP
- 4.2.c Ethernet bridge functionality for mesh

4.3 Implement mesh
- 4.3.a Hop count
- 4.3.b Backhaul caveats (throughput rates, QoS, path properties)
- 4.3.c Secondary backhaul
- 4.3.d AP authorization (MAC filter entry)
- 4.3.e Utilize WLC CLI
- 4.3.f Outdoor RF considerations

4.4 Describe mesh convergence
- 4.4.a Cisco AWPP
- 4.4.b Bridge group names
- 4.4.c Parent selection
- 4.4.d Understand re-convergence

4.5 Utilize Cisco WCS for mesh monitoring
- 4.5.a Add mesh APs to map
- 4.5.b Utilize mesh tree view
- 4.5.c Utilize Cisco WCS mesh tools
- 4.5.d Generate mesh reports

4.6 Utilize workgroup bridges
- 4.6.a Cisco WCS management for workgroup bridges
- 4.6.b Differences between workgroup and universal bridges
- 4.6.c Considerations for using workgroup bridges

18% 5.0 Implement Advanced Services and Manage with Cisco WCS and Navigator

5.1 Install and maintain Cisco WCS and navigator and perform the following tasks:
- 5.1.a Add Cisco WCS
- 5.1.b Add controllers
- 5.1.c Adding APs
- 5.1.d Adding maps

5.2 Describe Navigator's role, features, and functions

5.3 Implement Cisco WCS partitioning and Navigator domains

5.4 Implement time-of-day AP power savings

5.5 Implement scheduled WLAN availability

5.6 Create and customize Cisco WCS reports

5.7 Configure background tasks

5.8 Configure and apply controller and access point templates

5.9 Monitor and convert autonomous APs

5.10 Configure WLC auto provisioning

5.11 Utilize configuration auditing in Cisco WCS