

# Implementing Cisco Enterprise Wireless Networks (ENWLSI)

**Course Duration: 40 Hours**

**Course code: ENWLSI**

## 1. Course Overview

The Implementing Cisco Enterprise Wireless Networks course gives you the knowledge and skills needed to implement a secure wireless network infrastructure and troubleshoot any related issues. You'll learn how to implement and secure a wireless network infrastructure and use Cisco Identity Service Engine (ISE), Cisco Prime Infrastructure (PI), Cisco DNA Center, Cisco Spaces and Cisco Connect Mobile Experience to monitor and troubleshoot network issues.

## 2. What you'll learn?

**After completing this course you should be able to:**

- Explain how to secure the wireless network infrastructure
- Describe how to monitor and troubleshoot a wireless network
- Explain how to monitor wireless networks with Cisco Prime Infrastructure
- Explain how to observe wireless network with Cisco DNA Center
- Implement 802.1x authentication
- Configure FlexConnect
- Implement guest access
- Describe how to monitor and troubleshoot client connectivity
- Describe how to implement QoS in wireless networks
- Implement Cisco AVC in wireless networks
- Implement multicast services
- Explain the QoS troubleshooting process

- Describe how to deploy Cisco Spaces and Cisco CMX
- Explain how to implement location services
- Describe how to monitor a wireless network with Cisco Spaces and Cisco CMX

### 3. Target Audience

Individuals needing to understand how to implement, secure and troubleshoot a Cisco Enterprise Wireless Network.

### 4. Pre-Requisites

**Attendees should meet the following prerequisites:**

Foundation level knowledge of networking and wireless networks

**Recommended prerequisites:**

CCNA - Implementing and Administering Cisco Solutions

WLFNDU - Understanding Cisco Wireless Foundations

ENCOR - Implementing and Operating Cisco Enterprise Network Core Technologies

### 5. Course content

#### 1- Secure the Wireless Network Infrastructure

- Device Administration
- Security Best Practices for Administrative Access to Cisco WLC
- TACACS+ Overview
- Cisco WLC Configuration for TACACS+
- Role-Based Access Control on Cisco ISE
- AP Configuration for Management
- 802.1X Authentication
- AP Configuration for 802.1X Authentication
- Cisco ISE Configuration for AP 802.1X Authentication

## 2- Monitor and Troubleshoot Wireless Network

- Defining Network Troubleshooting Techniques
- Structured Troubleshooting Methodologies
- Troubleshooting Access Point Join Issues
- Troubleshooting CAPWAP Access Point Discovery Issues
- Troubleshooting CAPWAP Access Point DTLS Issues
- Troubleshooting CAPWAP Access Point Join Issues
- Tools for Troubleshooting Access Point Issues
- Monitoring Wireless Network for Rogue Devices
- Monitoring and Managing RF Interferers on Cisco WLC

## 3- Monitor Wireless Networks with Cisco Prime Infrastructure

- Cisco WLC Configuration for Cisco Prime Infrastructure
- Add New Devices to Cisco Prime Infrastructure
- Add Access Points to Maps
- Monitor Wireless Clients
- Reports in Cisco Prime Infrastructure
- Enhanced Client Information with Cisco ISE
- Location Details with Cisco CMX
- Monitor Wireless Networks for Rogue Devices with Cisco Prime Infrastructure
- Monitor and Manage RF Interferers on Cisco Prime Infrastructure

## 4- Monitor Wireless Network with Cisco DNA Center

- Adding Devices to Cisco DNA Center
- Adding Access Points to Maps
- Monitoring Wireless Clients
- Enhanced Client Information with Cisco ISE
- Location Details with Cisco Spaces or Cisco CMX

- Troubleshooting Access Point and WLC Issues with Cisco DNA Center Assurance
- Enhanced Network Insights with Cisco AI Network Analytics
- Reports in Cisco DNA Center
- Monitoring the Wireless Network for Rogue Devices with Cisco DNA Center
- Monitoring Radio Frequency Interferers on Cisco DNA Center

## 5- Implementing Cisco 802.1X Authentication

- IEEE 802.1X Overview
- AAA-Based Wireless Security on Cisco WLC
- AAA-Based Wireless Security on Cisco ISE
- WLAN for 802.1X on Cisco WLC
- Wireless Client for 802.1X Authentication
- AAA Override
- AAA Override on Cisco WLC
- AAA Override on Cisco ISE

## 6- Configure Cisco FlexConnect

- Cisco FlexConnect Overview
- Cisco FlexConnect Configuration on Cisco WLC
- Cisco FlexConnect Authentication Configuration
- Cisco FlexConnect Identity-Based Networking
- Split Tunneling Configuration for Cisco FlexConnect
- OfficeExtend Configuration

## 7- Implement Guest Access

- Guest Services in the Wireless Network
- Defining Guest Users
- Central Web Authentication
- Cisco WLC Configuration for Centralized Web Authentication
- Cisco ISE Configuration for Centralized Web Authentication

- BYOD Overview
- BYOD Device Onboarding
- Cisco ISE Configuration for BYOD

## **8- Monitor and Troubleshoot Client Connectivity**

- Troubleshooting Client Connectivity
- Troubleshooting Client Authentication Issues
- Troubleshooting Client Connectivity on Cisco WLC
- Tools for Troubleshooting Client Connectivity on Cisco WLC
- Issues That Affect Client Performance
- Wireless Coverage and Capacity
- Enhancing Client Performance
- Troubleshooting Client Throughput and Data Rate Issues

## **9- Implement QoS in Wireless Network**

- QoS in Wireless Networks
- Traffic Classification and Marking
- Congestion in the Wireless World
- IEEE 802.11 QoS Fundamentals
- Cisco WLC Configuration to Support Voice Traffic
- Wireless Utilization Optimization with Cisco Air Time Fairness
- Wireless Utilization Optimization with QoS Profiles
- Wireless Utilization Optimization with Cisco Fastlane

## **10- Implement Cisco AVC in Wireless Network**

- Application Visibility and Control
- Cisco AVC on Cisco WLC
- Cisco AVC Configuration on Cisco WLC

## **11- Implement Multicast Services**

- Multicast Services on Cisco WLC

- Multicast Forwarding on Cisco WLC
- Multicast Configuration on Cisco WLC
- Multicast DNS Service
- mDNS Configuration
- Cisco DNA Center Service for Bonjour
- Cisco Media Stream
- Cisco Media Stream Configuration

## 12- Troubleshoot QoS

- QoS Issues in the Wireless Network
- QoS Verification and Troubleshooting on Cisco WLC
- Issue Identification with Cisco AVC
- Cisco AVC Data in Cisco DNA Center
- mDNS Verification and Troubleshooting on Cisco WLC
- Media Stream Verification and Troubleshooting on Cisco WLC

## 13- Deploy Cisco Spaces and Cisco CMX

- Location Services Overview
- Location Services Design
- Deploying Cisco Spaces
- Integrating Cisco Spaces with Cisco DNA Center
- Deploying Cisco CMX
- Integrating Cisco CMX with Cisco Prime Infrastructure
- Integrating Cisco CMX with Cisco DNA Center
- Cisco Hyperlocation Overview
- Deploying Cisco Hyperlocation
- Configuring Cisco Hyperlocation

## 14- Implement Location Services

- Detect and Locate Services in Cisco Spaces
- Prepare Maps for Location Services in Cisco DNA Center

- Detect and Locate Services on Cisco CMX
- Analytics Services in Cisco Spaces
- Analytics on Cisco CMX
- Presence Services on Cisco CMX
- Guest Services Implementation in Cisco Spaces
- Guest Services Configuration in Cisco Spaces
- Guest Services Implementation with Facebook on Cisco CMX

## **15- Monitor Wireless Network with Cisco Spaces and Cisco CMX**

- Monitoring and Detecting Wireless Clients with Cisco Spaces
- Monitoring and Detecting Wireless Clients with Cisco CMX
- Monitoring and Locating Rogue Devices and Interferers with Cisco Spaces
- Monitoring and Locating Rogue Devices and Interferers with Cisco CMX
- Running Analytics on Wireless Clients with Cisco Spaces
- Running Analytics on Wireless Clients with Cisco CMX
- Troubleshooting Location Accuracy