CONCEPT

Enterprise Wi-Fi and Wireless LAN Design Course: Site Surveys, Capacity Planning and Roaming

19 – 23 April 2027
London - Central London four-star



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Introduction:

Enterprise Wi-Fi and wireless LAN design, with site surveys, capacity planning and roaming, is the subject of this 1-week course for network designers, wireless operations leads and infrastructure engineers, ending with a Wireless LAN Design and Validation Plan. Many venues suffer dropped calls, slow roaming and congested channels because access points were placed by guesswork and never validated. Nominees already configure or support wired and wireless networks, and teaching is by lab on survey tools, controllers and packet captures. CoreConcept Training Center delivers this enterprise Wi-Fi design course.

Course Objectives:

- Translate client, application and venue requirements into measurable coverage, capacity and roaming targets for a wireless LAN
- Build a predictive model and run passive and active on-site surveys that produce an access point schedule and heat maps
- Plan channels, transmit power and antenna choices that limit co-channel contention in dense and high-ceiling areas
- Size airtime and access point counts for high-density venues and configure roaming assistance for voice and handheld clients
- Configure WPA3 and 802.1X authentication with RADIUS and select a controller or cloud-managed architecture with its wired uplinks
- Diagnose slow, dropped and failing wireless sessions from controller statistics and packet captures, then validate the finished design

Target Audience:

- Network designers responsible for specifying access point placement, channel plans and wired uplinks
- Wireless operations leads accountable for coverage complaints, roaming faults and capacity during peak events
- Infrastructure engineers who deploy and tune controllers, access points and switch ports on campus and venue networks
- Security engineers who implement authentication and encryption for wireless users and devices
- Technical project leads who review survey reports and accept wireless installations from contractors

Course Outline:

Day 1: Wireless LAN Foundations, Requirements and Current-State Assessment

- IEEE 802.11 Amendments and Wi-Fi Generations Compared for Design
- 2.4, 5 and 6 GHz Band Propagation and Channel Widths
- Client and Application Requirements Matrix per Venue Type
- Existing WLAN Audit with Controller Logs and Client Complaint Review
- Spectrum Analyser Capture of Non-Wi-Fi Interference Sources

Day 2: Survey Methods, Radio Design, Channel and Power Planning

- Predictive Survey Modelling with Floor Plans and Attenuation Layers
- Passive and Active On-Site Survey Procedure with Heat Map Reports
- Minimum Signal Strength and Signal-to-Noise Targets per Coverage Cell
- Channel Reuse Plan and Co-Channel Contention Reduction
- Transmit Power Tuning and Access Point Placement and Mounting Rules

Day 3: High-Density Capacity and Seamless Roaming Design

- Airtime Budget Calculation per Client Count and Application Mix
- OFDMA, MU-MIMO and Minimum Data Rate Settings in 802.11ax Cells
- Stadium Seating Bowl Design with Directional Antennas and Small Cells
- 802.11k, 802.11r and 802.11v Roaming Assist Configuration
- Sticky Client Handling and Voice Roaming Delay Targets

Day 4: Wireless Security, Controller Architectures and Performance Diagnostics

- WPA3-Personal SAE and WPA3-Enterprise with Protected Management Frames
- 802.1X Authentication with RADIUS Servers and EAP-TLS Certificates
- Controller-Based, Cloud-Managed and Controllerless Architecture Trade-Offs
- Wired Uplink, PoE Budget and VLAN Design for Access Points
- Wireshark Capture Analysis of Retries, Association and Authentication Failures

Day 5: Lab on a Wireless LAN Design and Validation Plan

- Case Hospital Wing Predictive Model Build and Access Point Schedule
- Case Warehouse Roaming and Handheld Scanner Coverage Review
- Validation Test Script with Throughput, Latency and Roam Time Checks
- Post-Deployment Monitoring Thresholds and Alert Rule Worksheet
- Wireless LAN Design and Validation Plan Completion and Peer Review

Skills You Will Gain:

- Wireless Requirements Analysis
- Predictive Survey Modelling
- On-Site Survey Practice
- Channel and Power Planning
- Airtime Capacity Sizing
- Roaming Tuning
- Wireless Authentication Design
- Wireless Fault Diagnosis

Why Attend This Course:

- Deliver a Wireless LAN Design and Validation Plan to the network manager, facilities lead and site operations director
- Decide whether a coverage complaint calls for more access points, lower power, a channel change or a client setting
- Avoid paying for surplus access points, congested stadium or ward networks and failed acceptance tests after installation
- Coach colleagues and contractors on reading heat maps, survey reports and packet captures consistently

Conclusion:

Back at work, the participant presents the Wireless LAN Design and Validation Plan to the network manager, facilities lead and site operations director, who use it to approve access point counts, authentication settings and contractor acceptance tests. Support teams use its monitoring thresholds and roam time checks to separate radio faults from wired or authentication faults. After the first busy period on the new network, the unit should review airtime utilisation, roaming complaints and retry rates against the plan, then adjust power, channels and client settings.

Frequently Asked Questions FAQ:

What should participants know before an enterprise Wi-Fi and wireless LAN design course?

Participants should already configure or support wired and wireless networks and understand VLANs and IP addressing. Bringing a floor plan, an access point list or a coverage complaint log from their own site makes the lab work more useful.

How does an enterprise Wi-Fi and wireless LAN design course differ from a general networking course?

It concentrates on radio design for wireless networks: surveys, channel and power planning, airtime capacity and roaming. A general networking course spends its time on addressing, switching and routing and treats wireless in a brief overview.

Why does enterprise Wi-Fi design start with a site survey?

Walls, glass, shelving and crowds change how radio signals travel, so a model alone can mislead. Predictive modelling sets a starting layout, and passive and active on-site surveys then confirm signal, interference and throughput before installation.

What do participants take back from the enterprise Wi-Fi and wireless LAN design course?

Participants take back a Wireless LAN Design and Validation Plan, plus a requirements matrix, an airtime sizing worksheet, a roaming settings checklist and an acceptance test script adaptable to their own venues.