Certified Wireless Design Professional (CWDP-305) Objectives

Introduction

When you pass the CWDP exam and hold a valid CWNA certification, you earn the CWDP certification and fulfil one of the requirements of the CWNE certification.

The Certified Wireless Design Professional (CWDP) has the knowledge and skill set required to manage any of the steps in the Wi-Fi WLAN design life cycle: defining, designing, assuring proper deployment, validating and optimizing. A CWDP contributes to, or takes responsibility for, any or all stages within this process.

The skills and knowledge measured by this examination are derived from a Job Task Analysis (JTA) involving wireless networking experts (CWNEs) and professionals. The results of this JTA were used in weighing the subject areas and ensuring that the weighting is representative of the relative importance of the content.

The following table provides the breakdown of the exam as to the distribution of questions within each knowledge domain.

Knowledge Domain	Percentage
Define Specifications for the WLAN	25%
Design the WLAN	40%
Deploy the WLAN	10%
Validate and Optimize the WLAN	25%

1.0 Define Specifications for the WLAN – 25%

1.1 Collect and use business requirements

1.1.1	Business use cases and justification
1.1.2	User requirements
1.1.3	Regulatory compliance
1.1.4	Industry compliance
1.1.5	Budget
1.1.6	Aesthetics
1.1.7	Architectural constraints
1.1.8	Mounting restrictions
1.1.9	Access restrictions
1.1.10	Security objectives
1.1.11	Monitoring requirements
1.1.12	Time constraints
1.1.13	Building codes and safety codes
1.1.14	Common vertical market practices

1.2 Collect and define technical requirements

1.2.1	Vendor selection
1.2.2	Location services such as RTLS
1.2.3	Latency and QoS requirements
1.2.4	Signal strength requirements
1.2.5	Coverage and capacity requirements
1.2.6	High density considerations
1.2.7	Bandwidth requirements
1.2.8	Frequency management requirements
1.2.9	Security requirements

- BYOD and guest access
- Roaming
- Monitoring
- Authentication and encryption

1.2.10	Applications and their specific requirements
1.2.11	WLAN upgrade requirements, when applicable
1.2.12	Bridge link requirements, when applicable
1.2.13	Voice over WLAN (VoWLAN), when applicable
1.2.14	Client devices including most important and least capable device
1.2.15	Requirement areas

1.3 Collect existing project documentation

  1.3.1   Validated floor plans
  1.3.2   Network infrastructure
  ▪ Network diagrams
  ▪ AP locations
  ▪ Existing network services including DNS, DHCP, NTP, and authentication servers
  ▪ Switch capabilities and capacity
  ▪ Power availability and PoE capabilities
  1.3.3   Cabling infrastructure
  ▪ Cabling maps and plans
  ▪ Wiring closet locations
  1.3.4   Existing wireless systems
  1.3.5   Previous design/survey documentation

1.4 Define requirement areas including essential metrics for each requirement

  1.4.1   Client device types and capabilities
  1.4.2   Applications
  1.4.3   User and device density
  1.4.4   SSIDs
  1.4.5   Security settings

1.5 Gather information on environmental factors impacting RF design

  1.5.1   Building materials
  1.5.2   Attenuation values
  1.5.3   Ceiling heights
  1.5.4   Site annotations (photos, notes, plans)
  1.5.5   Wireless environment scan
  ▪ Packet captures
  ▪ Spectrum captures
  ▪ Wi-Fi scanners

2.0 Design the WLAN – 40%

2.1 Explain WLAN configuration choices and options

  2.1.1   Management and control architecture
  ▪ On-premises controller-based (physical and virtual) architectures
  ▪ Cloud-based and local WNMS
  ▪ Standalone/Autonomous APs

2.1.2   Data forwarding architecture
  ▪ Centralized
  ▪ Distributed
2.1.3   RF management and configuration options
  ▪ Static radio management
  ▪ Dynamic radio management
  ▪ Software defined radio
  ▪ RF profiles
2.1.4   Select and/or recommend the appropriate equipment for the design and selected architecture (APs, antennas, controllers, managed services)

2.2 Produce a design to meet requirements

2.2.1   Explain and use the appropriate design tools and equipment
  ▪ Design and survey software and hardware
  ▪ Spectrum analysis software and hardware
  ▪ Network analyzers
  ▪ Access points and antennas
  ▪ Portable power source
  ▪ Tripods
  ▪ Measuring tools
  ▪ Cameras
  ▪ Personal Protective Equipment (PPE)
2.2.2   Select and use appropriate design methodologies
  ▪ Predictive
  ▪ Measured
  ▪ Hybrid
  ▪ AI-assisted
  ▪ Bridge and mesh planning
2.2.3   Describe the common features of wireless design software
  ▪ Import and scale floor plans
  ▪ Model attenuation of the site
  ▪ Select and place APs and antennas
  ▪ Adjust AP and antenna settings
  ▪ Define area requirements and parameters
  ▪ Define channel and power settings
2.2.4   Select and use common wireless optimization features and make configuration recommendations
  ▪ Band steering
  ▪ Load balancing
2.2.5   Design for different client and application types
  ▪ Laptops

- Handhelds
- Smartphones and tablets
- IoT and smart devices
- Autonomous and assisted devices
- Location tracking
- Voice and video

2.2.6 Define and/or recommend network service requirements
- Wired and wireless QoS mappings
- QoS markings, classifications, and queues
- Infrastructure configuration supporting the Wi-Fi WLAN (DHCP, DNS, NTP)
- Wired-side security
- PoE, port speed, switches, and routers

2.2.7 Define and recommend security solutions
- Monitoring (detection and prevention)
- Authentication servers
- Authentication types (802.11 and EAP)
- Encryption
- Secure roaming

2.3 Create, distribute, and communicate design documentation

2.3.1 Bill of Materials (BoM)
2.3.2 RF Design Report
2.3.3 Physical Installation Guide

3.0 Deploy the WLAN – 10%

3.1 Explain the design and handover to the deployment team

3.1.1 Implementation meeting (explain design decisions to implementers and ensure understanding of design deployment)
3.1.2 Distribute required documents

3.2 Recommend or perform essential deployment tasks

3.2.1 Understand and perform installation procedures for different WLAN architectures (cloud-based, controller-based, WNMS, autonomous)
3.2.2 Infrastructure configuration supporting the WLAN (DHCP, DNS, NTP, switches, and routers)
3.2.3 Channel assignment, automatic radio management, and transmit power configuration
3.2.4 Installation procedures for cloud-based APs, controller-based APs, WNMS APs, and autonomous APs

3.3 Verify an ongoing installation for quality assurance

    3.3.1   Verify proper AP and antenna location and orientation
    3.3.2   Verify aesthetic requirements are met
    3.3.3   Verify physical security of the installation

4.0 Validate and Optimize the WLAN – 25%

4.1 Confirm the WLAN system is operational

    4.1.1   AP status
    4.1.2   Verify PoE provisioning of power requirements are met

4.2 Perform an RF validation survey

    4.2.1   Validate against coverage requirements
    4.2.2   Evaluate impacts of contention and interference

4.3 Conduct client performance testing and make recommendations

    4.3.1   Connectivity
    4.3.2   Application
    4.3.3   Roaming
    4.3.4   Capacity
    4.3.5   Security

4.4 Recommend appropriate physical adjustments

    4.4.1   APs
    4.4.2   Antennas and cabling

4.5 Recommend appropriate RF adjustments

    4.5.1   RF channel assignment
    4.5.2   RF channel bandwidth
    4.5.3   RF coverage (transmit power, radio count, antennas)
    4.5.4   RF interference issues
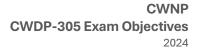
4.6 Recommend remediation for application issues

    4.6.1   Connectivity issues
    4.6.2   Application issues

4.6.3   Roaming issues
4.6.4   Capacity issues
4.6.5   Security issues

4.7 Implement project hand-off of closure

4.7.1   Knowledge transfer
4.7.2   Solution documentation and assets (validation documentation, digital or physical assets, guides, floorplans, configuration documents)
4.7.3   Final meeting (Q&A and hand-off)