

HCIA-WLAN

Huawei Certified ICT Associate-WLAN

Training and certificating engineers who have mastered basic WLAN technologies and are capable of deploying and maintaining WLAN products.

Overview

Master the basics of WLAN technology, have a clear understanding of the WLAN architecture and the functions of each related component, be familiar with WLAN configuration and know how to design, deploy and maintain a WLAN network.

Objectives

On completion of this program, the participants will be able to:

- Describe the basic concepts and development history of WLAN.
- Compare WLAN and Wi-Fi.
- Describe typical application scenarios of WLAN technologies.
- Illustrate the challenges and development trend of WLAN.
- Describe basic concepts of wireless communication.
- Distinguish 802.11 protocols and describe Wi-Fi generations.
- Describe the highlights of Wi-Fi 6.
- Describe key WLAN technologies.
- Describe basic concepts in WLAN.
- Describe WLAN networking modes.
- Differentiate WLAN forwarding models.
- Evaluate Huawei's typical WLAN networking solutions.
- Describe the origin and implementation of CAPWAP.
- Understand the CAPWAP tunnel establishment process.
- Describe how an AP joins an AC and how STAs go online.
- Master the working mechanism of STA roaming.
- Explain the WLAN development process.
- Classify Huawei WLAN products.
- Describe features of Huawei WLAN products.
- Identify power supply modes of APs.
- Describe development of the VRP.
- Use VRP basic operation commands.
- Learn the methods of upgrading ACs and APs.
- Distinguish characteristics of Fit and Fat APs.

Training Content

WLAN Technology Basics

- WLAN Overview
 - Enterprise WLAN Overview
 - Challenges Faced by Enterprise WLAN
 - Next-Generation Enterprise WLAN Solution
- WLAN Basics
 - Basic Concepts of Wireless Communication
 - Introduction to 802.11 Standards
 - Key WLAN Technologies
- WLAN Fundamentals
 - CAPWAP Tunnel
 - Key 802.11 Frames
 - STA Going-Online Process
 - WLAN Roaming
- Wi-Fi 6 Technologies and Products
 - Wi-Fi 6 Technologies
 - Huawei WLAN Product Family
 - Features of Huawei WLAN Products
 - AP Power Supply
- WLAN Networking Models
 - Basic Concepts in WLAN
 - WLAN Networking Architectures
 - Typical WLAN Networking Solutions
- WLAN Security and Configuration
- Huawei VRP and Device Upgrade
 - Huawei VRP Overview
 - Command Line Basics
 - WLAN Device Upgrade
 - Fat AP Configuration
- WLAN Security
 - WLAN Security Threats and Defense
 - WLAN Access Security
 - WLAN Data Security
 - WLAN Network Access Control
 - WLAN Security Configuration
- WLAN Service Configuration
 - WLAN Service Configuration Procedure
 - WLAN Configuration Application
- WLAN Troubleshooting
- WLAN Troubleshooting Basics
 - Overview of WLAN Troubleshooting
 - Troubleshooting APs' Failures to Go Online

- Troubleshooting STAs' Failures to Go Online
 - Troubleshooting AP Signal Issues
 - Troubleshooting Slow Internet Access of STAs
- WLAN Project Deployment
- WLAN Antenna Technology
 - Antenna Overview
 - Concepts Related to Antennas
 - Antenna Selection
 - Traditional Indoor Distribution System
- Overview of Common WLAN Deployment
 - Introduction to WLAN Planning and Design
 - WLAN Planning and Design Details
 - WLAN Project Acceptance
 - WLAN Planning Cases

HCIP-WLAN

Huawei Certified ICT Professional-WLAN

Training and certificating senior engineers who are capable of planning, designing, deploying, operating, and optimizing the WLAN of large- and medium-sized enterprises .

Overview

Mastered WLAN technologies and are capable of professional planning, design, deployment, O&M, and optimization of large- and medium-sized enterprise WLANs by using Huawei WLAN devices, ensuring secure, reliable, and stable operation of enterprise WLANs

Objectives

On completion of this program, the participants will be able to:

- Describe WLAN networking modes.
- Configure WLAN services.
- Describe the WLAN networking application scenarios.
- Describe common WLAN reliability networking modes.
- Know how to configure WLAN reliability solutions.
- Understand the architecture and main functions of iMaster NCE-Campus.
- Understand the cloud-based WAC management network architecture.
- Understand how to configure cloud-based WAC management.
- Understand the cloud-based AP management network architecture.
- Understand how to configure cloud-based AP management.
- Describe the basic process for WLAN access.
- Understand the implementation of the STA blacklist and whitelist.
- Describe common user access security policies.
- Understand how to configure different security policies.
- Describe common access control technologies.
- Understand how to configure different access control technologies.
- Understand basic concepts of roaming.
- Understand the data forwarding path of a STA after roaming.
- Understand common roaming optimization technologies.
- Understand the implementation principles of smart roaming.
- Describe the main factors that affect air interface performance.
- Describe common RRM technologies, including radio calibration, band steering, load balancing, and user CAC.
- Understand the factors that affect WLAN coverage.

- Understand the concepts of and relationship between power and signal strength.
- Understand the factors that affect WLAN capacity.
- Master skills of using the WLAN Planner.
- Use the WLAN Planner for indoor 3D simulation.
- Use the network planning functions of the CloudCampus APP.
- Understand the WLAN planning process.
- Understand requirements collection and site survey in WLAN planning.
- Understand device selection, coverage analysis, and capacity design in WLAN planning.
- Understand the channel planning, power supply cabling design, and AP installation mode design in WLAN planning.
- Describe common WLAN service types in enterprise office scenarios.
- Describe WLAN planning methods in enterprise office scenarios.
- Describe WLAN deployment solutions in enterprise office scenarios.
- Describe common service types and challenges in education scenarios.
- Describe WLAN planning methods in education scenarios.
- Describe WLAN deployment solutions in education scenarios.
- Describe common service types and challenges in hotel scenarios.
- Describe WLAN planning methods in hotel scenarios.
- Understand WLAN deployment solutions in hotel scenarios.
- Describe common WLAN service types in healthcare scenarios.
- Describe WLAN planning methods in healthcare scenarios.
- Understand WLAN deployment solutions in healthcare scenarios.
- Understand common service types and challenges in the shopping mall and supermarket scenarios.
- Understand the WLAN planning process in shopping mall and supermarket scenarios.
- Understand WLAN construction standards and deployment solutions in shopping mall and supermarket scenarios.
- Describe common service types and challenges in shop floor and warehouse scenarios.
- Describe WLAN planning methods in shop floor and warehouse scenarios.
- Understand WLAN deployment solutions in shop floor and warehouse scenarios.
- Understand common service types and challenges in outdoor coverage scenarios.
- Master WLAN planning methods for outdoor coverage scenarios.
- Master WLAN deployment solutions for outdoor coverage scenarios.
- Describe common services, characteristics, and challenges in outdoor backhaul scenarios.
- Understand AP and antenna selection policies in outdoor backhaul scenarios.

- Understand how to calculate the mesh link bandwidth in outdoor backhaul scenarios.
- Describe the WLAN planning process in outdoor backhaul scenarios.
- Master WLAN deployment solutions for outdoor backhaul scenarios.
- Describe common service types and challenges in high-density scenarios.
- Describe the WLAN planning process in high-density scenarios.
- Understand WLAN deployment solutions in high-density scenarios.
- Describe the WLAN optimization process.
- Describe the contents of WLAN optimization.
- Understand how to use WLAN optimization tools.
- Describe the traditional WLAN O&M solution.
- Describe the CampusInsight intelligent O&M solution.
- Describe CampusInsight functions and features.
- Understand how to locate common WLAN problems or faults.
- Describe the troubleshooting process.
- Understand WLAN troubleshooting methods.

Training Content

WLAN Network Features

1. WLAN Networking Architectures
 - a. WLAN Networking Overview
 - b. WLAN Networking Architectures
 - c. WLAN Networking Application Scenarios
2. WLAN Reliability Technology
 - a. WLAN Reliability Technology Overview
 - b. VRRP HSB
 - c. Dual-Link HSB
 - d. Dual-Link Cold Backup
 - e. N+1 Backup
3. WLAN Cloud Management Solution
 - a. Introduction to iMaster NCE-Campus
 - b. Cloud-based WAC Management
 - c. Cloud-based AP Management
4. User Access and Authentication
 - a. User Access Security
 - b. STA Blacklist and Whitelist
 - c. Security Policy
 - d. Access Control
5. WLAN Roaming
 - a. WLAN Roaming Overview

- b. Process of Traffic Forwarding During Roaming
 - c. Roaming Optimization Technologies
 - d. Smart Roaming
- 6. WLAN Radio Resource Management
 - a. Air Interface Performance
 - b. Radio Calibration
 - c. STA Steering
 - d. Band Steering
 - e. AP-based Load Balancing
 - f. User CAC
- 7. WLAN Network Planning
- 8. WLAN Planning Basics
 - a. WLAN Planning Overview
 - b. WLAN Coverage Design
 - c. WLAN Capacity Design
- 9. WLAN Planning Tools
 - a. WLAN Planner
 - b. CloudCampus APP
- 10. WLAN Planning Process
 - a. WLAN Planning Overview
 - b. WLAN Planning Process
 - c. WLAN Planning Case
- 11. WLAN Planning for Enterprise Office Scenarios
 - a. Introduction to Enterprise Office Scenarios
 - b. WLAN Planning Process in Enterprise Office Scenarios
 - c. WLAN Planning Solutions in Enterprise Office Scenarios
- 12. WLAN Planning for Education Scenarios
 - a. Introduction to Education Scenarios
 - b. WLAN Planning Process in Education Scenarios
 - c. WLAN Planning Solutions in Education Scenarios
- 13. WLAN Planning for Hotel Scenarios
 - a. Introduction to Hotel Scenarios
 - b. WLAN Planning Process in Hotel Scenarios
 - c. WLAN Planning Solutions in Hotel Scenarios
- 14. WLAN Planning for Healthcare Scenarios
 - a. Introduction to Healthcare Scenarios
 - b. WLAN Planning Process in Healthcare Scenarios
 - c. WLAN Planning Solutions for Healthcare Scenarios
- 15. WLAN Planning for Retail Scenarios
 - a. Introduction to Shopping Mall and Supermarket Scenarios
 - b. WLAN Planning Process in Shopping Mall and Supermarket Scenarios

- c. WLAN Planning Solutions for Shopping Mall and Supermarket Scenarios
- 16. WLAN Planning for Shop Floor and Warehouse Scenarios
 - a. Introduction to Shop Floor and Warehouse Scenarios
 - b. WLAN Planning Process in Shop Floor and Warehouse Scenarios
 - c. WLAN Planning Solutions in Shop Floor and Warehouse Scenarios
- 17. WLAN Planning for Outdoor Coverage Scenarios
 - a. Introduction to Outdoor Coverage Scenarios
 - b. WLAN Planning Process in Outdoor Coverage Scenarios
 - c. WLAN Planning Solutions for Outdoor Coverage Scenarios
- 18. WLAN Planning for Outdoor Backhaul Scenarios
 - a. Introduction to Outdoor Backhaul Scenarios
 - b. WLAN Planning Process in Outdoor Backhaul Scenarios
 - c. WLAN Planning Solutions in Outdoor Backhaul Scenarios
- 19. WLAN Planning for High-Density Scenarios
 - a. Introduction to High-Density Scenarios
 - b. WLAN Planning Process in High-Density Scenarios
 - c. WLAN Planning Solutions for High-Density Scenarios
- 20. WLAN network optimization and troubleshooting
- 21. WLAN Optimization Solution
 - a. Overview of WLAN Optimization
 - b. WLAN Optimization Tools
 - c. WLAN Optimization Solutions
 - d. WLAN Optimization Cases
- 22. WLAN O&M
 - a. Overview of Network O&M
 - b. Traditional WLAN O&M
 - c. CampusInsight Intelligent O&M
- 23. WLAN Troubleshooting
 - a. Overview of WLAN Troubleshooting
 - b. Reliability Faults
 - c. Cloud Management Faults
 - d. Wireless Bridge Faults
 - e. Radio Resource Management Faults
 - f. Roaming Faults

HCIE-WLAN

Huawei Certified ICT Expert-WLAN

Training and certificating network technical experts who are capable of planning, design, deployment, O&M, and optimization of large- and medium-sized complex networks in the campus WLAN field.

Overview

Solid WLAN theory, WLAN solution planning and design capabilities, large-scale WLAN network deployment, and network O&M optimization capabilities.

Objectives

On completion of this program, the participants will be able to:

- Describe Huawei WLAN technical architecture
- Describe Huawei HCIE-WLAN Certification architecture
- Master WLAN networking technologies
- Master WLAN roaming technologies
- Master WLAN radio resource management
- Master WLAN multicast technologies and mDNS principles
- Master WLAN security and defense
- Implement WLAN admission control
- Describe Huawei WLAN and IoT convergence solution
- Describe the principles and solutions of the wireless positioning technology
- Master how to construct an IPv6 WLAN
- Describe the CloudCampus solution
- Master the design and deployment of CloudCampus large-scale campus networks
- Master the design and deployment of CloudCampus small- and medium-sized campus networks
- Master WLAN troubleshooting methods
- Describe CampusInsight intelligent O&M
- Master WLAN optimization design and implementation
- Describe the WLAN project lifecycle

Training Content

Build a Reliable WLAN Network

1. Huawei WLAN Certification Overview
 - a. Introduction to Huawei WLAN Career Certification
 - b. Introduction to WLAN Reliability
 - c. Improving Wireless User Experience
 - d. Building a Secure, Trustworthy WLAN Campus Network
 - e. Building an Open, Converged WLAN Campus Network
 - f. WLAN O&M and Optimization
 - g. WLAN Network Planning and Deployment
2. WLAN Networking Technology
 - a. WLAN Networking Architecture
 - b. Principles and Configurations of Navi AC
 - c. Principles and Configurations of Leader AP
 - d. Principles and Configurations of Mesh
 - e. Principles and Configurations of GRE and IPSec VPN
3. WLAN Reliability
 - a. WLAN Reliability Overview
 - b. HSB Technologies
 - c. Dual-Link Cold Backup
 - d. N+1 Backup
 - e. CAPWAP Link Failover
4. WLAN Roaming
 - a. WLAN Roaming Overview
 - b. WLAN Roaming Technologies
 - c. WLAN Roaming Optimization
 - d. Typical Roaming Scenarios of Huawei WLAN Solution
 - e. WLAN Roaming Fault Rectification
5. 2. Improve Wireless User Experience
6. WLAN Radio Resource Management
 - a. WLAN Radio Calibration
 - b. WLAN Load Balancing
 - c. WLAN Anti-Interference
 - d. WLAN QoS
 - e. VIP User Experience Guarantee
7. WLAN Multicast and mDNS
 - a. IP Multicast Fundamentals
 - b. WLAN Multicast Network Optimization
 - c. mDNS and mDNS Gateway
8. 3. Constructing a Secure and Trusted WLAN Network
9. WLAN Security and Defense
 - a. Overview of WLAN Security Threats and Security Solutions
 - b. WLAN Management Plane Security

- c. WLAN Control Plane Security
- d. WLAN Forwarding Plane Security
- e. WLAN Network Security Configuration Example
- 10. WLAN Network Admission Control (NAC)
 - a. Overview of NAC
 - b. Commonly Used NAC Methods and Their Working Mechanism
 - c. Huawei NAC Solution
 - d. Typical NAC Configuration
- 11. 4. Constructing an Open and Converged WLAN Network
- 12. WLAN and IoT Convergence
 - a. Overview and Development Trends of IoT Networks
 - b. Overview of Short-Range Wireless IoT Technologies
 - c. Huawei's CloudCampus IoT Solutions
- 13. WLAN Wireless Positioning Technologies
 - a. Overview of Wireless Positioning
 - b. Implementation of Wireless Positioning Technologies
 - c. Huawei's Wireless Positioning Solutions
- 14. Constructing an IPv6 WLAN
 - a. IPv6 Overview
 - b. IPv6-based WLAN Networking and Applications
 - c. IPv6-based WLAN Access Control
 - d. IPv6-based WLAN Security
 - e. WLAN Evolution to IPv6
- 15. 5. Constructing a New WLAN Network
- 16. Huawei CloudCampus Solution
 - a. CloudCampus Overview
 - b. Ultra-Broadband Connectivity
 - c. Simplified Network
 - d. Multi-Purpose Network
 - e. Access Authentication
 - f. Intelligent Policy
 - g. Intelligent O&M
- 17. CloudCampus Solution for Large and Medium-Sized Campus Networks
 - a. VXLAN-based Virtualized Campus Network and Solution
 - b. Underlay Design
 - c. Fabric Design
 - d. Overlay Design
 - e. Admission Control and Free Mobility Design
 - f. WLAN Design
 - g. O&M Design
- 18. CloudCampus Solution for Small and Medium-Sized Campus Networks
 - a. Service Requirements and Challenges Facing Small and Medium-Sized Campus Networks
 - b. Introduction to Huawei CloudCampus Solution

- c. Huawei CloudCampus Solution Design for Small and Medium-Sized Campus Networks
 - d. Typical Industry Application Scenarios
- 19. CloudCampus Solution Deployment for Large Campus Networks
 - a. Basic Concepts
 - b. Deployment Planning and Process
 - c. Deployment Guide
- 20. CloudCampus Solution Deployment for Small and Medium-Sized Campus
 - a. Deployment Process Overview
 - b. Deployment Design
 - c. Software and Hardware Installation
 - d. Deployment
 - e. Service Deployment
 - f. O&M Management
 - g. Acceptance Test
- 21. 6. WLAN Network O&M and Troubleshooting
- 22. WLAN Troubleshooting
 - a. WLAN Troubleshooting Roadmap
 - b. Auxiliary Methods for Troubleshooting WLAN Faults
 - c. WLAN Fault Cases
- 23. Intelligent O&M
 - a. CampusInsight Overview
 - b. CampusInsight Functions and Demonstration
- 24. 7. WLAN Network Planning and Optimization
- 25. Enterprise WLAN Optimization Design
 - a. Introduction to Enterprise WLAN Optimization
 - b. Enterprise WLAN Evaluation
 - c. Enterprise WLAN Optimization Solution Design
 - d. Solution Implementation and Acceptance
- 26. Large WLAN Networking Practice
 - a. WLAN Project Lifecycle
 - b. WLAN Project Deliverables
 - c. WLAN Project Cases