



# Huawei ICT Competition 2023-2024

## Exam Outline

### Practice Competition - Network Track

I. C. The Future

## 1. Overview

| Competition Stage             | Exam Type | Duration   | Number of Questions | Question Type                                                                   | Total Score | Number of Contestants | Note                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------|-----------|------------|---------------------|---------------------------------------------------------------------------------|-------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preliminary stage (Mandatory) | Written   | 90 minutes | 60                  | True or false questions, single-answer questions, and multiple-answer questions | 1000        | Individual            | From January 1, 2023 to the end date of the regional preliminary, 50 bonus points will be acquired for passing any of HCIA-Datacom, HCIA-Security, and HCIA-WLAN certifications, 100 bonus points for any of HCIP-Datacom, HCIP-Security, and HCIP-WLAN certifications, and 200 bonus points for any of HCIE-Datacom, HCIE-Security, and HCIE-WLAN certifications. These bonus points can be combined up to a maximum of 200 points.<br><b>Important:</b> The Uniportal account used for the competition registration must be the same as that for the certification. Otherwise, no bonus point can be given. |
| National stage (Optional)     | Written   | 90 minutes | 90                  | True or false questions, single-answer questions, and multiple-answer questions | 1000        |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Regional stage                | Written   | 60 minutes | 60                  | True or false questions, single-answer questions, and multiple-answer questions | 1000        | 3 (as a team)         | In regional stage, each of the three contestants in a team needs to complete the test questions for the written exam, and they will together complete the tasks for the lab exam. One team can submit only one set of answers for each of their written and lab exams. Total score = 30% x Average written exam score of the team + 70% x Comprehensive lab exam score.                                                                                                                                                                                                                                       |
|                               | Lab       | 4 hours    | /                   | Comprehensive lab                                                               | 1000        |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Global stage                  | Lab       | 8 hours    | /                   | Comprehensive lab                                                               | 1000        |                       | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 2. Weighting

| Competition Stage Direction | Preliminary stage | National stage | Regional stage | Global stage |
|-----------------------------|-------------------|----------------|----------------|--------------|
| Datacom                     | 50%               | 50%            | 50%            | 50%          |
| Security                    | 30%               | 30%            | 35%            | 40%          |
| WLAN                        | 20%               | 20%            | 15%            | 10%          |

## 3. Scope

### 3.1. Overview of Exam Contents

The Network Track exam contents cover knowledge about datacom, security, and WLAN technologies, including but not limited to routing protocols, Layer 2 switching technologies, IPv6 technologies, Huawei firewall features, VPN technologies, and WLAN networking and configurations.

### 3.2. Knowledge to Be Tested

| Direction                                                 | Category                                                                                                                                                                                                                             | Knowledge                                                                                                                                                                                                                                                | Details                                                                                                                                                                                                            | Preliminary Stage | National Stage | Regional Stage | Global Stage  |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|----------------|---------------|
|                                                           |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    | HCIA              | HCIP           | HCIE           | HCIE or Above |
| Datacom                                                   | Datacom basics                                                                                                                                                                                                                       | Datacom basics                                                                                                                                                                                                                                           | Have general knowledge of the VRP system and basic network knowledge.                                                                                                                                              | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | TCP/IP protocol basics                                                                                                                                                                                                                                   | Have general knowledge of the TCP/IP protocol architecture; have a good command of basic protocol technologies, including technical principles and configurations of TCP, UDP, ARP, IP, NAT, Telnet, FTP and DHCP. | √                 | √              | √              | √             |
|                                                           | Switching technologies                                                                                                                                                                                                               | Basics of Ethernet switching                                                                                                                                                                                                                             | Have general knowledge of the basic Ethernet switching process and MAC address learning process.                                                                                                                   | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | VLAN                                                                                                                                                                                                                                                     | Master the principles and configurations of VLAN, VLANIF, MUX VLAN, and VLAN aggregation.                                                                                                                          | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | Link aggregation, stacking, and clustering                                                                                                                                                                                                               | Master the principles and configurations of Eth-Trunk, iStack, and CSS technologies.                                                                                                                               | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | STP                                                                                                                                                                                                                                                      | Master the loop protection principles and configurations of the spanning tree.                                                                                                                                     | √                 | √              | √              | √             |
|                                                           | Routing technologies                                                                                                                                                                                                                 | RSTP and MSTP                                                                                                                                                                                                                                            | Master the principles and configurations of RSTP and MSTP.                                                                                                                                                         | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | Static routing                                                                                                                                                                                                                                           | Have a good command of basic IP routing knowledge as well as IPv4 and IPv6 static route configuration modes.                                                                                                       | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | OSPF                                                                                                                                                                                                                                                     | Have a good command of the basic principles and configurations of OSPF.                                                                                                                                            | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | OSPFv3                                                                                                                                                                                                                                                   | Have a good command of the basic principles and configurations of OSPFv3.                                                                                                                                          | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | IS-IS (IPv4 and IPv6)                                                                                                                                                                                                                                    | Master the basic principles and configurations of IS-IS in IPv4 and IPv6 scenarios.                                                                                                                                | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | BGP and BGP4+                                                                                                                                                                                                                                            | Master the basic principles and configurations of BGP in IPv4, IPv6, and VPN scenarios.                                                                                                                            | √                 | √              | √              | √             |
|                                                           | IPv6 technologies                                                                                                                                                                                                                    | ACL                                                                                                                                                                                                                                                      | Master the ACL principles and configurations.                                                                                                                                                                      | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | IP prefix list                                                                                                                                                                                                                                           | Master the principles and configurations of the IP prefix list.                                                                                                                                                    | √                 | √              | √              | √             |
|                                                           | WAN technologies                                                                                                                                                                                                                     | Routing policies and policy-based routing                                                                                                                                                                                                                | Master the principles and configurations of routing control technologies such as routing policies and policy-based routing.                                                                                        | √                 | √              | √              | √             |
| IPv6 basics                                               |                                                                                                                                                                                                                                      | Understand the IPv6 protocol and address-related concepts.                                                                                                                                                                                               | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
| MPLS technologies                                         | IPv6 address configuration                                                                                                                                                                                                           | Understand ICMPv6 and IPv6 stateless autoconfiguration.                                                                                                                                                                                                  | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
|                                                           | IPv6 transition technologies                                                                                                                                                                                                         | Master the principles and configurations of transition technologies such as dual stack, 6PE, 6VPE, and NAT64.                                                                                                                                            | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
| Network security technologies                             | WAN basics and technologies                                                                                                                                                                                                          | Understand the basic concepts of WAN as well as the principles and configurations of PPP and PPPoE.                                                                                                                                                      | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
|                                                           | Segment Routing technologies                                                                                                                                                                                                         | Understand the principles and configurations of SR-MPLS and SRv6.                                                                                                                                                                                        |                                                                                                                                                                                                                    |                   |                | √              |               |
|                                                           | VPN basics                                                                                                                                                                                                                           | Understand the basic principles and configurations of VPN and VRF.                                                                                                                                                                                       |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | Basic VPN technologies                                                                                                                                                                                                               | Have a good command of the basic principles and configurations of VPN technologies, such as GRE, L2TP, and IPsec.                                                                                                                                        |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | BGP/MPLS IP VPN                                                                                                                                                                                                                      | Master the basic principles and configurations of BGP/MPLS IP VPN.                                                                                                                                                                                       |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | VXLAN                                                                                                                                                                                                                                | Master the basic principles and configurations of VXLAN (VXLAN-based virtual network).                                                                                                                                                                   |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | EVPN                                                                                                                                                                                                                                 | Have a good command of EVPN basic principles and configurations (application of EVPN in campus and SD-WAN scenarios).                                                                                                                                    |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | Multicast basics                                                                                                                                                                                                                     | Have general knowledge of basic multicast concepts, IGMP principles, and IGMP configurations.                                                                                                                                                            |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | PIM                                                                                                                                                                                                                                  | Understand the principles and configurations of PIM.                                                                                                                                                                                                     |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | AAA                                                                                                                                                                                                                                  | Understand AAA principles and configurations.                                                                                                                                                                                                            | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
| Network reliability and network optimization technologies | Ethernet switching security                                                                                                                                                                                                          | Have a good command of port isolation, MAC address table security, port security, MAC address flapping prevention and detection, MACsec, switch traffic control, DHCP snooping, and IP source guard.                                                     |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | Network access control                                                                                                                                                                                                               | Master the principles and configurations of 802.1X authentication, MAC address authentication, Portal authentication, and policy association.                                                                                                            |                                                                                                                                                                                                                    | √                 | √              | √              |               |
| Network management and monitoring technologies            | Network reliability technologies                                                                                                                                                                                                     | Master the basic principles and configurations of reliability technologies, such as VRRP, BFD, and hot standby.                                                                                                                                          |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | Network optimization technologies                                                                                                                                                                                                    | Master the basic principles and configurations of QoS.                                                                                                                                                                                                   |                                                                                                                                                                                                                    | √                 | √              | √              |               |
| SDN technologies                                          | Network management and monitoring technologies                                                                                                                                                                                       | Have a good command of the basic principles and configurations of SNMP, LLDP, and NQA.                                                                                                                                                                   | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
|                                                           | Basics of network programming automation                                                                                                                                                                                             | Have a good command of basic knowledge as well as the principles and practices of NETCONF and Python.                                                                                                                                                    |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | Advanced technologies of network programming automation                                                                                                                                                                              | Master the basic principles and practices of SSH, YANG, Telemetry, and RESTful.                                                                                                                                                                          |                                                                                                                                                                                                                    |                   | √              | √              |               |
| DCN technologies                                          | Application of iMaster NCE                                                                                                                                                                                                           | Have general knowledge of controllers in different scenarios and their usage modes, including iMaster NCE-Campus, iMaster NCE-IP, and iMaster NCE-Fabric.                                                                                                |                                                                                                                                                                                                                    |                   |                | √              |               |
|                                                           | Free mobility                                                                                                                                                                                                                        | Understand the principles and practices of access control based on iMaster NCE-Campus.                                                                                                                                                                   |                                                                                                                                                                                                                    |                   |                | √              |               |
| Huawei scenario-specific solutions                        | DCN basics                                                                                                                                                                                                                           | Master the principles and configurations of technologies such as VXLAN, M-LAG, and microsegmentation.                                                                                                                                                    |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | Advanced knowledge of data centers                                                                                                                                                                                                   | Have a good command of virtualization basics, OpenStack basics, container basics, high-performance computing basics, and storage basics.                                                                                                                 |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | Campus                                                                                                                                                                                                                               | Have a good command of Huawei CloudCampus Solution, including the development and challenges of small and midsize campus networks and large and midsize campus networks, corresponding solutions, and planning and deployment.                           |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | Enterprise WAN interconnection                                                                                                                                                                                                       | Have a good command of Huawei SD-WAN Solution, including the development and challenges of WAN interconnection networks, corresponding solutions, and planning and deployment.                                                                           |                                                                                                                                                                                                                    | √                 | √              | √              |               |
| Security                                                  | Enterprise WAN                                                                                                                                                                                                                       | Have a good command of Huawei CloudWAN Solution, including WAN development and challenges, corresponding solutions, and planning and deployment.                                                                                                         |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | DCN                                                                                                                                                                                                                                  | Have a good command of Huawei CloudFabric solution, including the development and challenges of data center networks, corresponding solutions, and planning and deployment.                                                                              |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | Information security                                                                                                                                                                                                                 | Basic information security                                                                                                                                                                                                                               | Have general knowledge of network reference models (TCP/IP and OSI), common network security threat prevention measures, and common network devices.                                                               | √                 | √              | √              | √             |
|                                                           | Information security management technologies                                                                                                                                                                                         | Master information security prevention and trends, information security management and standards, privacy protection, and legal measures for privacy protection.                                                                                         | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
|                                                           | Secure communications                                                                                                                                                                                                                | Network security basics                                                                                                                                                                                                                                  | Understand the firewall security policy, NAT, hot standby, user management, and intrusion prevention technology.                                                                                                   | √                 | √              | √              | √             |
|                                                           | Advanced firewall features                                                                                                                                                                                                           | Be familiar with the firewall HA technology, traffic management, virtual system, and intelligent uplink selection.                                                                                                                                       | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
|                                                           | Secure network planning and deployment                                                                                                                                                                                               | Have a good command of all-scenario security solutions, comprehensive application of firewall technologies, and IPv6 security technologies.                                                                                                              | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
|                                                           | VPN technology                                                                                                                                                                                                                       | VPN basics (encryption/decryption)                                                                                                                                                                                                                       | Understand the principles of encryption and decryption technologies, the PKI certificate system, and basic applications of VPN technologies.                                                                       | √                 | √              | √              | √             |
|                                                           | VPN application                                                                                                                                                                                                                      | Be familiar with IPsec VPN and SSL VPN technologies and applications.                                                                                                                                                                                    | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
|                                                           | VPN HA technologies                                                                                                                                                                                                                  | Have a good command of VPN HA technologies (hot standby application).                                                                                                                                                                                    | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
| Attack and defense                                        | Security zone border protection technologies                                                                                                                                                                                         | Be familiar with cyber attacks and defense, vulnerability prevention and penetration testing, and content security filtering.                                                                                                                            | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
| Attack and defense technologies                           | Have a good command of information collection and network detection, content security filtering, web security, antivirus, network intrusion and defense, DDoS attack and mitigation, host security and hardening, and data security. |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    | √                 | √              |                |               |
| Cloud security                                            | Cloud data center network security technologies                                                                                                                                                                                      | Have a good command of the security service requirements, security deployment solutions, and security configuration examples related to cloud data center networks.                                                                                      |                                                                                                                                                                                                                    |                   | √              | √              |               |
| Huawei cloud security architecture design                 | Have a good command of public cloud security, tenant cloud security requirements and solutions, and tenant service security design.                                                                                                  |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                    | √                 | √              |                |               |
| Security O&M                                              | Security management center                                                                                                                                                                                                           | Be familiar with emergency response and network access control.                                                                                                                                                                                          |                                                                                                                                                                                                                    |                   | √              | √              |               |
| WLAN                                                      | Basic WLAN services                                                                                                                                                                                                                  | WLAN fundamentals                                                                                                                                                                                                                                        | Understand the CAPWAP tunnel, key WLAN packets, and STA online process.                                                                                                                                            | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN networking architectures                                                                                                                                                                                                                            | Have a good command of the Fat AP, leader AP, WAC + Fit AP, agile distributed, Navi AC, and Mesh.                                                                                                                  | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN reliability                                                                                                                                                                                                                                         | Have a good command of VRRP HSB, dual-link HSB, dual-link cold backup, and N+1 backup.                                                                                                                             | √                 | √              | √              | √             |
|                                                           | WLAN security                                                                                                                                                                                                                        | WLAN access security                                                                                                                                                                                                                                     | Have a good command of link authentication, user access security, STA blacklist and whitelist, and security policies.                                                                                              | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN data security                                                                                                                                                                                                                                       | Understand the open, WEP-open, WEP-share-key, WPA/WPA2-PSK, and WPA/WPA2-802.1X authentication.                                                                                                                    | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN security and defense                                                                                                                                                                                                                                | Be familiar with WLAN network security threats, security solution overview, and security of the WLAN management, control, and forwarding planes.                                                                   | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN network access control                                                                                                                                                                                                                              | Have a good command of 802.1X authentication, Portal authentication, MAC address authentication, and MAC address-prioritized Portal authentication.                                                                | √                 | √              | √              | √             |
|                                                           | Advanced WLAN features                                                                                                                                                                                                               | WLAN roaming                                                                                                                                                                                                                                             | Be familiar with WLAN roaming overview, roaming traffic forwarding process, roaming optimization technologies, and smart roaming.                                                                                  | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN RRM                                                                                                                                                                                                                                                 | Have a good command of WLAN air interface performance, radio calibration, STA steering, band steering, AP-based load balancing, user CAC, WLAN anti-interference, WLAN QoS, and VIP user experience assurance.     |                   | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | Multicast and mDNS                                                                                                                                                                                                                                       | Have a good command of IP multicast basics, WLAN multicast network optimization, mDNS, and mDNS gateway.                                                                                                           |                   |                | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN and IoT convergence                                                                                                                                                                                                                                 | Understand the IoT overview, IoT development trend, IoT short-range wireless technology overview, and Huawei CloudCampus IoT Solution.                                                                             |                   |                | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN wireless positioning                                                                                                                                                                                                                                | Understand wireless positioning overview, wireless positioning fundamentals, and Huawei CloudCampus Wireless Positioning Solution.                                                                                 |                   |                | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | IPv6 WLAN construction                                                                                                                                                                                                                                   | Have a good command of IPv6 overview, IPv6-based WLAN networking and application, IPv6-based WLAN NAC, IPv6-based WLAN network security, and WLAN IPv6 evolution.                                                  |                   |                | √              | √             |
|                                                           | WLAN network planning                                                                                                                                                                                                                | WLAN planning basics                                                                                                                                                                                                                                     | Have a good command of WLAN network planning overview, WLAN coverage design, and WLAN capacity design.                                                                                                             | √                 | √              | √              | √             |
|                                                           |                                                                                                                                                                                                                                      | WLAN network planning tool                                                                                                                                                                                                                               | Understand how to use the WLAN Planner and CloudCampus APP.                                                                                                                                                        |                   | √              | √              | √             |
| WLAN network planning process                             |                                                                                                                                                                                                                                      | Have a good command of the overview, process, and cases of network planning.                                                                                                                                                                             | √                                                                                                                                                                                                                  | √                 | √              | √              |               |
| WLAN network optimization                                 |                                                                                                                                                                                                                                      | Have a good command of the overview, tools, solutions, and cases of WLAN network optimization.                                                                                                                                                           |                                                                                                                                                                                                                    | √                 | √              | √              |               |
| Huawei CloudCampus Solution                               | CloudCampus solution for small- and medium-sized campus networks                                                                                                                                                                     | Have a good command of service requirements and challenges of small- and medium-sized campus networks, CloudCampus solution overview, CloudCampus small- and medium-sized campus network design guide, and typical industry scenario-based applications. |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | CloudCampus solution for large- and medium-sized networks                                                                                                                                                                            | Have a good command of VXLAN-based virtualized campus network and solution, underlay network design, fabric design, overlay network design, access control and free mobility design, WLAN design, and O&M management design.                             |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | Deployment of the CloudCampus solution for small- and medium-sized campus networks                                                                                                                                                   | Have a good command of the deployment process overview, deployment planning, software and hardware installation, site deployment, service deployment, O&M management, and acceptance tests.                                                              |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | Deployment of the CloudCampus solution for large-scale campus networks (VXLAN-based Virtualization)                                                                                                                                  | Have a good command of the basic concepts, deployment planning and process, and deployment guide of the CloudCampus solution for large-scale campus networks.                                                                                            |                                                                                                                                                                                                                    |                   | √              | √              |               |
| WLAN O&M                                                  | Large-scale WLAN deployment                                                                                                                                                                                                          | Have a good command of WLAN project lifecycle introduction, WLAN project deliverables, and WLAN project cases.                                                                                                                                           |                                                                                                                                                                                                                    |                   | √              | √              |               |
|                                                           | Cloud management                                                                                                                                                                                                                     | Have a good command of iMaster NCE-Campus, WAC cloud management, and AP cloud management.                                                                                                                                                                |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | Conventional O&M                                                                                                                                                                                                                     | Be familiar with conventional WLAN network O&M.                                                                                                                                                                                                          |                                                                                                                                                                                                                    | √                 | √              | √              |               |
|                                                           | Intelligent O&M                                                                                                                                                                                                                      | Be familiar with intelligent O&M overview, real-time experience visualization, minute-level fault demarcation, and intelligent network optimization.                                                                                                     |                                                                                                                                                                                                                    | √                 | √              | √              |               |
| Troubleshooting                                           | Have a good command of WLAN troubleshooting overview, reliability faults, cloud management faults, wireless bridge service faults, radio management service faults, and roaming service faults.                                      | √                                                                                                                                                                                                                                                        | √                                                                                                                                                                                                                  | √                 | √              |                |               |

## Note

This Exam Outline is for general use only. It does not cover all exam details.