

Study Guide |



Aruba Certified Design Expert (ACDX) Study Guide



Certified Design Expert

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Introduction

The Aruba Certified Design Expert (ACDX) exam tests candidates on their ability to effectively design a secure campus wireless LAN (WLAN), Virtual Branch Network (VBN), and management solution that meets customer requirements in a large scale deployment. Candidates will be tested on their ability to design a solution in a scenario-based exam that includes designing for redundancy, WLAN SSIDs, user roles and policies, RF planning, QoS design, network security, authentication, and integration with existing infrastructure. The ideal candidate should have extensive experience designing Aruba solutions and should have experience evaluating customer needs and existing network infrastructure, and then translating that material into a comprehensive and competitive plan to meet customer needs.

Prerequisites for the ACDX

Candidates are required to have a valid Aruba Certified Mobility Professional (ACMP) certification at the time that they apply to take the ACDX exam.

It is recommended that the candidate have at least two years hands on experience designing and deploying Aruba Networks solutions in across a broad range of customers. It is also recommended that the candidate have a broad understanding of WLAN and general network technologies.

Exam Format

The candidate will have 8 hours to complete the exam. The candidate may take snack, beverage, and bathroom breaks during the exam but the 8-hour time will not be stopped during these breaks. Candidates may bring food and beverage into the testing facility.

During the exam all personal cell phones and personal/business computers may not be used and must be turned-off and stored with the proctor, who may keep these under lock and key as needed. No personal belongings, including books, notebooks, or other implements, including electronic devices, will be permitted at the candidate's assigned desk/table.

The exam candidate may not bring any paper or writing implements into the testing room. Paper and pen and pencil will be provided. Absolutely no internet or email access will be allowed from the testing room.

During exam check-in the candidate must show 2 forms of identification to the proctor. One of the identifications must be a picture ID. The candidate must agree to and sign the exam rules sheet provided by the proctor.

Software Versions

The exam is based on ArubaOS 3.3.2, ArubaOS-RN 3.1, and AirWave 6.3, and only hardware and software features supported on these versions of ArubaOS and AirWave will be considered valid during grading.

Exam Deliverables

The exam has four types of deliverables:

1. Essay Questions

2. Spreadsheet Fill-in Questions
3. Visio Network Diagram
4. RF Plans

The candidate must produce a design proposal consisting of:

- Design plan:
 - Bill of Materials
 - Role and Policy design
 - SSID design
 - Controller design
- Bill of Materials (include all controllers, their location, licenses required, AP type and quantity)
- RF Plans
- Network Diagram (Visio) showing Aruba equipment placement

In the controller configuration the exam candidate is not expected to present CLI or GUI controller configuration commands but rather the design that would be used to generate the commands. The design proposal should be presented as a Visio network diagram and the completed ACDX spreadsheet. The exam documents will be collected electronically by the Aruba proctor at the completion of the exam.

Exam Equipment

Laptops will be provided for the student and only those devices will be allowed during the exam. The exam is completed using the following software tools:

- Microsoft Word
- Microsoft Excel
- Microsoft Visio
- Aruba RFplan

The following documents will be provided on the laptop as reference material:

- ArubaOS user guide
- ArubaOS-RN user guide
- AirWave user guide
- Price List
- Airwave Sizing chart
- Antenna Matrix
- AP Matrix
- Controller Matrix
- Aruba Quote Tool

Scheduling and Paying for an Exam

The scheduling process has yet to be determined, as the ACDX exam has not been officially launched.

Payment for the ACDX exam is accepted in the form of a PO, just like any other Aruba product/service. The official SKU # is **EDU-ACDX**. The cost is \$1000 USD.

Recommended Training Courses

While not required, it is highly recommended that candidates follow the ACDX design track when preparing for the exam. That track is listed below:

Level I -- ***Implementing Aruba WLANs*** or ***Partner Technical Training*** → ACMA Exam

Level II – ***Scalable WLAN Design and Implementation*** → ACMP Exam (required for ACDX)

Aruba Mobility Bootcamp → IAW/SWDI combined → ACMP Exam (required for ACDX)

Level III – ***Advanced Troubleshooting*** → Not required for ACDX, but very useful for training.

Recommended Reading

The following reading material is highly recommended:

http://www.arubanetworks.com/technology/design_guides.php

- Campus Wireless Networks Validated Reference Design v3.3
- Virtual Branch Networks Validated Reference Design v3.0RN
- Retail Wireless Networks Validated Reference Design v3.3

<https://support.arubanetworks.com/DOCUMENTATION/tabid/77/DMXModule/512/EntryId/1712/Default.aspx>

- ArubaOS User Guide 3.3.2
- ArubaOS-RN User Guide

<http://www.airwave.com/support/>

- AirWave User Guide

List of Topics

The following topic list should be studied with the expectation that you're knowledge of these topics will be tested in various ways over the course of the exam.

1. Network Design
 - a. Physical Design
 - i. International compliance
 - ii. Hardware counts
 - iii. AP and controller selection, code selection, sizing and scaling
 - iv. Licensing (selecting and sizing)
 - b. Logical Design
 - i. Overlay in layers (management, aggregation, network access)
 - ii. AP discovery
 - iii. Redundancy
 - iv. RAP design requirements
 - v. AP/AM Termination
 - vi. VLAN Design/Sizing

- vii. VLAN pooling
 - viii. AP Groups
- 2. RF Design
 - a. RF Design Strategy
 - i. Coverage vs. Capacity
 - ii. RF Plan
 - b. 802.11n
 - i. 802.11a/b/g vs. 11n
 - c. WIDS
 - i. AP vs. AM
 - ii. Security implications
 - iii. RF management & troubleshooting implications
 - d. Antenna Selection & Placement
 - i. Antenna placement strategies (cover indoor and outdoor)
 - ii. Coverage reliability, signal propagation, etc.
 - iii. AP placement for x, y, z (location)
- 3. Authentication & Security Design
 - a. SSID Design
 - i. SSID count, encryption type, VLAN assignment
 - b. AAA Integration
 - i. Auth and encryption selection
 - ii. RADIUS servers, LDAP, EAP offload
 - iii. Role Assignment
 - c. Role Design
 - i. Standard Aruba Roles in VRDs (Employee, Guest, Voice, etc.)
 - ii. Time-based, location-based, bandwidth contracts, additional authentication parameters
 - iii. Management users/administrative levels (Controller, AirWave)
 - iv. Authentication for management users
 - v. Secure guest access
- 4. QoS Design
 - a. WLAN Infrastructure Optimization
 - i. Band Selection
 - ii. ARM functionality
 - iii. AP Tx Power Limiting
 - iv. Location dependent SSIDs
 - b. Capacity planning
 - i. Planning call capacity per-AP
 - ii. Planning data reservation, handoff reservation & peak reserve per AP
 - c. Roaming & Mobility
 - i. L2 Mobility
 - ii. L3 Mobility
- 5. Management Design
 - a. General Network Mgmt
 - i. User/role/admin management
 - ii. Multi-vendor infrastructure (AirWave)
 - iii. End to end WIPS (rogue detection, mitigation and containment)

- iv. Reporting
- v. PCI, other regulatory compliance
- vi. Licensing
- vii. Support and troubleshooting (OOB network, console, tools, roles)
- b. AirWave
 - i. Sizing appliances & logical design



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