

# ArubaOS-CX Switching Fundamentals, Rev. 20.21

## Course description

This course teaches you the fundamental skills necessary to configure and manage modern, open standards-based networking solutions using Aruba's OS-CX routing and switching technologies. This course consists of approximately 60% lecture and 40% hands-on lab exercises to help you learn how to implement and validate small to medium enterprise network solutions. This 5-day course prepares candidates for the Aruba Certified Switching Associate exam.

In this course, participants learn about ArubaOS-CX switch technologies including multi-layer switches. You will also learn about broadcast domains and Virtual Local Area Networks (VLANs); secure management protocols such as AAA, SSH, HTTPS, and Dynamic Segmentation using Aruba's Role-Based Access Control (RBAC); availability technologies such as Multiple Spanning Tree Protocol (MSTP); link aggregation techniques including Link Aggregation Control Protocol (LACP) and switch virtualization with Aruba's Virtual Switching Framework (VSF). Static and dynamic IP routing protocols such as Open Shortest Path First (OSPF) are also covered.

<b>Course ID</b>	01126291
<b>Course format, Typical duration</b>	<b>Select one:</b> VILT - Virtual Instructor Led, 5 days ILT - Instructor Led, 5 days
<b>Skill level</b>	Foundational
<b>Delivery languages</b>	English
<b>Lab required</b>	Yes
<b>Related certifications</b>	<ul style="list-style-type: none"> <li><a href="#">Aruba Certified Switching Associate (ACSA)</a></li> </ul>
<b>In preparation for these exams</b>	Selected items from this course are included in these exams: <ul style="list-style-type: none"> <li><a href="#">Aruba Certified Switching Associate Exam</a></li> </ul>

[Register for this course.](#)  
Find this course offering in the Training calendar. Click "Register" to take the course in The Learning Center. Login and Password required.

## Ideal candidate for this course

Ideal candidates are IT Professionals who deploy small-to-medium scale enterprise network solutions based on Aruba products and technologies.

## Topics

- **Network Fundamentals**
  - What is a network?
  - What is a Protocol?
  - OSI Reference Model
  - Encapsulation, frames, packets, segments
  - Layer 2 to Layer 7 headers
  - Media, cabling, Ethernet/wifi headers
  - Binary/Hex/Decimal theory and conversion
  - TCP/IP Stack (IP addressing & Transport Protocols TCP/UDP)
  - Types of traffic: Unicast, Broadcast, Multicast
- **TCP/IP Stack**
  - Overview
  - Ethernet frames
  - IPv4 Header
  - TCP Header – Three-way Handshake
  - TCP Header – Sequence Numbers
  - TCP Header – Port Numbers
  - TCP Header
  - UDP Header
- **Basic Networking with Aruba Solutions**
  - Networking devices: Switches, Routers, Multilayer Switches, APs, Mobility Controllers, Firewalls, Servers (HTTP, DHCP, DNS, Telnet, FTP)
  - 2-Tier vs 3-Tier hierarchy
  - Switching Portfolio (AOS switches & AOS-CX switches) is this introducing both portfolio on a couple of slide and few slides on AOS-CX

hardware architecture, software architecture and intro to NAE high level.

- Introduction to AOS-CX and feature set
- Port numbering
- Accessing Aruba OS-CX CLI
- Prompt modes/levels and navigation
- Context sensitive help
- Show logs, configuration, interfaces, transceivers, flash, version
- Hostname/interface name, enabling interfaces
- Link Layer Discovery Protocol
- ICMP and reachability testing tools: Ping and Traceroute
- PoE (standards one slide and what we support and one or two slide on configuration and verifications.)
  
- **VLANs**
  - Broadcast/collision domains
  - VLAN benefits
  - VLAN creation
  - DHCP server configuration in switches (optional)
  - 802.1Q tagging
  - Switchports vs. Routed ports
  - MAC address table
  - ARP table
  - Packet Delivery part 1
  
- **Spanning Tree Protocol**
  - Redundant network
  - L2 loops
  - 802.1D
  - Common Spanning Tree
  - 802.1s
  - 802.1w overview
  - 802.1w load balancing
  - 802.1w region configuration
  
- **Link Aggregation**
  - Static Aggregation
  - LACP
  - Load Balancing
  
- **IP Routing - Part 1**
  - Default Gateway
  - DHCP IP Helper Address
  - IP Routing Service
  - Inter-VLAN routing
  - Packet Delivery Part 2
  - Need for layer 3 redundancy
  - Introduction to VRF
  
- **VRRP**
  - VRRP overview
  - VRRP basic operation
  - VRRP failover and preempt
  - VRRP and MSTP coordination
  
- **IP Routing - Part 2**
  - Subnetting
  - CIDR
  - Static routes
  - Administrative Distance
  - Floating routes
  - Scalability issues

- **IP Routing - Part 3**

- IGP vs EGP
- Distance Vector vs Link State
- OSPF Router-ID and Hello Messages
- Passive interfaces
- States
- DR and BDR
- LSDB: LSA 1 and 2
- Path selection and convergence
- Using cost to manipulate routes

- **Stacking**

- Control Plane, Management Plane, and Data Plane
- Introduction to Stacking technologies
- Stacking Benefits
- Centralized control and management plane
- Distributed Data Plane and Distributed Link Aggregation
- VSF
- VSF requirements
- VSF Link and member roles
- VSF member IDs and port numbers
- VSF Configuration
- VSF Provisioning use cases
- Tracing Layer 2 traffic: Unicast
- Tracing Layer 2 traffic: Broadcast, Multicast, and Unknown Unicast
- VSF Failover and OSFP Graceful-Restart
- VSF Link failure without MAD
- MAD
- VSX Introduction

- **Secure Management and Maintenance**

- OOBM port
- Management VRF
- Secure Management Protocols: AAA, SSH, HTTPS, RBAC
- Radius-based management auth (VSA)
- SNMP
- Web interface
- Configuration file management (Backup, restore, checkpoint and roll back)
- Operating System image management (backup and restore)
- Factory default/password recovery

- **AOS-CX Management tools**

- Intro to NetEdit
- NetEdit installation
- Basic monitoring with NetEdit
- AOS-CX Mobile App

## **Objectives**

After you successfully complete this course, expect to be able to:

- Explain Networking Fundamentals
- Describe and review the Aruba Switching portfolio with customers
- Install and configure devices running the ArubaOS-CX Network Operating System
- Describe and configure VLANs
- Explain, describe and configure Spanning Tree Protocol
- Understand when to use VRRP and how to configure it
- Explain and configure Link Aggregation
- Understand and configure IP Routing
- Explain IP Subnetting
- Understand and configure OSPFv2 – Single Area
- Describe and configure Switch Stacking using VSF
- Configuration of Aruba solutions using Secure Management and Maintenance methodologies
- Manage, monitor, administer and operate Aruba solutions using Aruba's NetEdit tool

## **How to register**

View the [Certification and Learning Global Training Calendar](#) to register for the training offerings that best meets your needs.

## **Policies, fees and cancellations**

Course fees may vary. Fees are established and collected by the training center that delivers the course. Cancellation fees may apply. Contact your HPE Authorized Training Partner for their respective policies.

## **For more information**

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Information is as of October 2020, Revision 3