



**Document Generated: 11/22/2024**

**Learning Style: Virtual Classroom**

**Provider: Cisco**

**Difficulty: Intermediate**

**Course Duration: 2 Days**

## **SD-Access and Catalyst 9K Programmability (SDA9KP)**

### **About this course:**

This two-day course covers SD-Access and the Cisco Catalyst 9000 Series switch programming. The student will learn how to create production solutions that run on or interact with IOS-XE on the Catalyst 9000 switches. Students will learn how to use advanced Cisco tools including DNA Center, APIC-EM, ISE, and Network Data Platform to implement SD-Access. QuickStart recommends students have a working knowledge with Catalyst 9000 Switches, with ideal candidates for this Cisco SDA training course including anyone who is interested in course content, channel partner SEs, network admins, engineers, and architects, and others. See below for additional QuickStart IT training course details!

### **Course Objective:**

Upon completing the course, the learner will be able to meet these overall objectives:

- Describe use cases and examples of the value of Catalyst 9000 programmability
- Use Python to automate the Catalyst 9000
- Use object-oriented programming in Python to abstract Catalyst 9000
- Understand SD-Access
- Apply Cisco Software-Defined Access programmatically

## **Audience:**

The primary audience for this course is as follows:

- Anyone interested in SD-Access and the Catalyst 9000
- Channel Partner SEs and other sales support
- Personnel involved in SD-Access Design and Implementation
- Network Operations team with SD-Access solution
- Network admin staff that deal with Software Defined Networking
- Network Administrators
- Network Architects
- Network Engineers

## **Prerequisite:**

The knowledge and skills that a learner should have before attending this course are as follows:

- Familiarity with Catalyst 9K Switches

## **Course Outline:**

### **Module 1: SD-Access Overview**

- End-to-end segmentation
- Simple, automated work flows
- Open and Programmable APIs
- intelligent network fabric
- Use Cases
  - Security and segmentation
  - User mobility
  - Guest access
  - IoT integration
  - Monitoring and troubleshooting
- Cisco Catalyst 9000 Series Programmability
- Components
  - DNA Center
  - Catalyst 9000 Switches
  - APIC-EM

- ISE
- Network Data Platform
- Key Integration
  - IP Address Management (IPAM)
  - Network Orchestrators
  - Policy Orchestrators
  - Security Analytics
  - Firewalls
  - Public and Private Cloud Integration
  - IT Services Management (ITSM)

## **Module 2: Cisco DNA Programming Basics**

- IOS XE
- Understanding REST API
- Python and IOS XE
- Cisco Python Module
- Use cases
  - Automated Provisioning
  - Troubleshooting

## **Module 3: Catalyst 9000 Automation**

- NETCONF with SDN controllers
- OpenConfig
- YANG data models
- Guest Shell Linux Containers (LXCs)
- Cisco network plug-and-play
- Zero-touch provisioning
- Python scripting and custom libraries
- Use Cases
  - IT Operations
  - Analytics
  - PCI Compliance

## **Module 4: Software Defined Networks**

- SD-Access
- VXLANs
- MP-BGP EVPN
- Use Case
  - Extending Layer to Branch Offices
  - Business Continuance

## **Module 5: APIC-EM**

- SD-Access and APIC-EM
- Use Case
  - Network Threat Defense
  - Granular Control

- Smart Routing
- Catalyst 9000 Integration
- APIC-EM Automation
- APIC-EM APIs

## **Module 6: Cisco DNA Center to Manage Your Network**

- Components
- Benefits
- Automation

## **Module 7: Cisco SD Access Programming**

- Network Fabric
- Cisco SD-Access
- Use Cases
  - Network Deployment
  - End-to-End Segmentation
  - Simple, Automated Workflows
  - Intelligent Network Fabric
- Cisco SD-Access Hardware and Software Platform Requirements
- Centralized Control and Management Plane

## **Module 8: SD-Access Wireless and WAN Programming**

- Visibility of Wireless Traffic for Consistency
- Centralized Control/Management
- Intelligent Services Automation (Application Visibility & Control, EasyQoS)
- Network Embedded Threat/Anomaly Detection and Mitigation
- Intelligent WAN
- Use Cases
  - Accelerate Wireless Deployment
  - Enable Secure Access
  - Deploy branch offices quickly
  - Reduce costs and mitigate risks

## **Lab Outline**

- Lab 1: REST API
- Lab 2: Calling REST APIs from Python
- Lab 3: Programming the Catalyst 9300
- Lab 4: Software Defined Networks on Catalyst 9300
- Lab 5: APIC-EM Automation
- Lab 6: Setup Cisco DNA Center
- Lab 7: Setup Overlay and one Neighborhood
- Lab 8: Moving Users to Cisco SD-Access Fabric
- Lab 9: WAN Migration
- Lab 10: Enable Mobility Services

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