

DevNet Automation Bootcamp for ACI

Course Duration: 32 Hours

Course code: ACI-OE

1. Course Overview

This course is designed for network engineers and automation developers who want to automate Cisco Application Centric Infrastructure (ACI) tasks using Python, APIs, and Cisco DevNet tools. Participants will gain practical experience in ACI automation workflows, REST APIs, scripting, and orchestration, enabling them to reduce manual effort, improve consistency, and accelerate operations in an ACI environment.

2. What you'll learn?

By the end of the course, learners should be able to:

- Understand Cisco ACI architecture and components
- Use REST APIs to interact with ACI fabric
- Automate network configuration and monitoring tasks
- Develop Python scripts for ACI automation
- Integrate Cisco DevNet tools for workflow orchestration
- Apply best practices for scalable and secure automation

3. Target Audience

- Network engineers and architects looking to automate ACI environments
- DevOps engineers working with network infrastructure
- IT professionals responsible for managing Cisco ACI fabric
- Developers interested in network automation using Python and APIs

4. Pre-Requisites

Familiarity with:

- Cisco ACI architecture and operations
- Basic Python programming
- REST API concepts

- Networking fundamentals (TCP/IP, VLANs, routing, switching)

5. Course content

Module 1: Course Introduction

- Introduction
- Course contents

Module 2: Overview of Cisco ACI

- ACI architecture and components
- APIC controllers and leaf-spine fabric
- Endpoint groups (EPGs) and tenants
- ACI use cases and benefits

Module 3: Introduction to Network Automation

- Automation concepts and benefits
- Overview of DevNet resources
- Introduction to Python for network automation

Module 4: REST API Fundamentals in ACI

- Understanding REST API architecture
- Accessing APIC APIs
- CRUD operations using REST
- Working with JSON and XML payloads

Module 5: Python Scripting for ACI

- Python basics and libraries (requests, json)
- Script examples for ACI automation
- Error handling and logging

Module 6: Automating ACI Configuration Tasks

- Tenant and EPG automation

- VLAN and Bridge Domain configuration
- Application profile creation and deployment
- Automating contracts and policies

Module 7: Workflow Orchestration

- Introduction to Cisco DevNet Sandbox
- Automating multi-step workflows
- Scheduling automation scripts
- Integration with CI/CD pipelines

Module 8: Monitoring and Troubleshooting via Automation

- Retrieving operational data from ACI
- Automated health checks and compliance validation
- Event and fault monitoring using scripts
- Troubleshooting common automation issues

Module 9: Security and Best Practices in ACI Automation

- API authentication and authorization
- Secure handling of credentials
- Error handling and rollback strategies
- Scalable and maintainable automation practices

Module 10: Advanced Automation Scenarios

- Multi-tenant automation
- Dynamic network provisioning
- Integration with external systems and tools

Module 11: Hands-On Labs and Use Cases

- Real-world automation exercises
- Tenant provisioning and application deployment
- Automating monitoring and reporting
- End-to-end ACI automation workflow examples

Module 12: Course Wrap-Up

- Summary of key concepts
- Next steps for advanced automation
- References and DevNet resources

