

Developing Applications and Automating Workflows using Cisco Platforms

Course Code DEVASC
Duration 5 days

Overview

The Developing Applications and Automating Workflows Using Cisco Core Platforms course helps you prepare for the Cisco® DevNet Associate certification and for associate-level network automation engineer roles. You will learn how to implement basic network applications using Cisco platforms as a base, and how to implement automation workflows across network, security, collaboration, and computing infrastructure. The course gives you hands-on experience solving real world problems using Cisco Application Programming Interfaces (APIs) and modern development tools.

This course helps you prepare for the DevNet Associate (DEVASC) exam. By passing this exam, you earn the Cisco Certified DevNet Associate certification.

Please note this course is a combination of Instructor-Led and Self-Paced Study; 5 days in the classroom and approximately 3 days of self-study. The self-study content will be provided as part of the digital courseware that you receive at the beginning of the course and should be part of your preparation for the exam.

Audience

This course is designed for anyone who performs or seeks to perform a developer role and has one or more years of hands-on experience developing and maintaining applications that are built on top of Cisco platforms.

The course is appropriate for software developers, application developers, and network engineers who want to expand their skill base and validate their skills in programmability, software, and automation. Students preparing for Cisco Certified DevNet Associate certification.

Learning Objectives

By actively participating in this course, you will learn about the following:

- ▶ Describing the importance of APIs and use of version control tools in modern software development.
- ▶ Describing common processes and practices used in software development.
- ▶ Describing options for organizing and constructing modular software.
- ▶ Describing HTTP concepts and how they apply to network-based APIs.
- ▶ Applying Representational State Transfer (REST) concepts to integration with HTTP-based APIs.
- ▶ Describing Cisco platforms and their capabilities.
- ▶ Describing programmability features of different Cisco platforms.
- ▶ Describing basic networking concepts and interpret simple network topology.
- ▶ Describing interaction of applications with the network and tools used for troubleshooting issues.
- ▶ Applying concepts of model-driven programmability to automate common tasks with Python scripts.
- ▶ Identifying common application deployment models and components in the development pipeline.
- ▶ Describing common security concerns and types of tests, and utilize containerization for local development.
- ▶ Utilizing tools to automate infrastructure through scripting and model-driven programmability.



Pre-Requisites

- ▶ Basic computer literacy
- ▶ Basic PC operating system navigation skills
- ▶ Basic Internet usage skills
- ▶ Hands-on experience with a programming language (specifically Python)

Recommended courses:

- ▶ PRNE-CPLL - Programming for Network Engineers - CPLL

Course Contents

Practicing Modern Software Development

Rise of APIs in Software Design
API Data Formats
Serialization and Deserialization of Data
Collaborative Software Development
Version Control with GIT
Branching with GIT

Describing Software Development Process (Self-Study)

Software Development Methodologies
Test-Driven Development
TDD Example
Code Review

Designing Software (Self-study)

Modular Software Design
Modular Design Benefits
Architecture and Design Patterns
MVC Architecture Pattern
Observer Design Pattern

Introducing Network-Based APIs

HTTP Protocol Overview
HTTP Protocol Applied to Web-Based APIs
HTTP Content Negotiation
RPC-Style APIs
REST-Style APIs
Postman for REST API Consumption
Advanced Postman Topics
Consuming notification Events Using Webhooks

Consuming REST-Based APIs

Common API Constraints
API Authentication Mechanisms
Using HTTP Authentication
Leveraging HTTPS for Security
Handling Secrets for API Consumption



Introducing Cisco Platforms and APIs (Self-study)

- Cisco Network Management Platforms
- Cisco Compute Management Platforms
- Cisco Compute Management APIs
- Cisco Collaboration Platforms
- Cisco Collaboration APIs
- Cisco Security Platforms
- Cisco Security APIs
- Cisco Network Management Platforms in Cloud

Employing Programmability on Cisco Platforms

- Automating Cisco Network Operations
- Cisco IOS XE Device-Level APIs
- Cisco NX-OS Device-Level APIs
- Cisco Controller APIs
- Automating Cisco Webex Teams Operations
- DevNet Developer Resources

Describing IP Networks (Self-Study)

- Basic Networking Concepts
- MAC Addresses and VLANs
- Network Routes and Routing
- Transport Layer and Packet Delivery
- Network Device Planes

Relating Network and Applications

- Standard IP Network Services
- Network Address Translation
- Common Protocols
- Application Connectivity Issues
- Tools for Troubleshooting Connectivity Issues
- Explaining the Impact of Network Constraints on Applications

Employing Model-Driven Programmability

- Model-Driven Programmability Stack
- Network Automation and NETCONF
- Exploring YANG Models
- Utilizing Data Models with RESTCONF Protocol
- Using Python Scripts and Cisco SDKs
- Model Driven Programmability in a Cisco Environment

Deploying Applications

- Application Deployment Types
- Application Deployment Models
- Edge Computing Overview
- DevOps Practices and Principles
- Components of a CI-CD Pipeline
- Essential Bash Commands for Development and Operations



Automating Infrastructure

SDN and Intent-Based Networking
Infrastructure as Code
System Management with Ansible
Infrastructure Automation with Ansible Playbooks
CI/CD Pipelines for Infrastructure Automation

Testing and Securing Applications

Software Test Types
Verifying Code Behaviour with Unit Tests
Dockerfile Composition
Using Docker in a Local Developer Environment
Application Security
Securing and Scaling Application Ingress Traffic
Network Simulation and Test Tools

Labs

Parse API Data Formats with Python
Use Git for Version Control
Identify Software Architecture and Design Patterns on a Diagram
Implement Singleton Pattern and Abstraction-Based Method
Inspect HTTP Protocol Messages
Use Postman
Troubleshoot an HTTP Error Response
Utilize APIs with Python
Use the Cisco Controller APIs
Use the Cisco Webex Teams™ Collaboration API
Interpret a Basic Network Topology Diagram
Identify the Cause of Application Connectivity Issues
Perform Basic Network Configuration Protocol (NETCONF) Operations
Use Cisco Software Development Kit (SDK) and Python for Automation Scripting
Utilize Bash Commands for Local Development
Construct Infrastructure Automation Workflow
Construct a Python Unit Test
Interpret a Dockerfile
Utilize Docker Commands to Manage Local Developer Environment
Exploit Insufficient Parameter Sanitization

Exam Details

This course leads to the 200-901 - DevNet Associate Exam.

Further Information

For more information or to book this course, please contact our Course Enquiries Team on **01752 227330** (Option 2) or email us at enquiries@skilltec.co.uk.