

## Developing Applications and Automating Workflows using Cisco Platforms

**Durée: 5 Jours**    **Réf de cours: DEVASC**    **Version: 1.1**    **Méthodes d'apprentissage: Classe à distance**

### Résumé:

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 approx 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.**

### This course is worth 48 Continuing Education (CE) Credits

Virtual and Classroom learning - V&C Select™

V&C Select™ is a simple concept and a flexible approach to delivery. You can 'select' a course from our public schedule and attend in person or as a virtual delegate. Virtual delegates do not travel to this course, we will send you all the information you need before the start of the course and you can test the logins.

### Public visé:

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.

### Objectifs pédagogiques:

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

## Pré-requis:

### Attendees should meet the following prerequisites:

- Basic computer literacy
- Basic PC operating system navigation skills
- Basic Internet usage skills
- Hands-on experience with a programming language (specifically Python)
- PRNE-CPLL - Programming for Network Engineers - CPLL

## Test et certification

### Recommended as preparation for the following exam:

- **200-901** - DevNet Associate Exam

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## Après cette formation, nous vous conseillons le(s) module(s) suivant(s):

- DEVCOR - Developing Applications Using Cisco Platforms and APIs
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## Contenu:

### 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 Overview
- HTTP 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
- 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

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## Méthodes pédagogiques :

Explore the DevNet Certification area for specific topics and labs related to this course and certification:

<https://developer.cisco.com/certification/>

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## Autres moyens pédagogiques et de suivi:

- Compétence du formateur : Les experts qui animent la formation sont des spécialistes des matières abordées et ont au minimum cinq ans d'expérience d'animation. Nos équipes ont validé à la fois leurs connaissances techniques (certifications le cas échéant) ainsi que leur compétence pédagogique.
- Suivi d'exécution : Une feuille d'émargement par demi-journée de présence est signée par tous les participants et le formateur.
- En fin de formation, le participant est invité à s'auto-évaluer sur l'atteinte des objectifs énoncés, et à répondre à un questionnaire de satisfaction qui sera ensuite étudié par nos équipes pédagogiques en vue de maintenir et d'améliorer la qualité de nos prestations.

Délais d'inscription :

- Vous pouvez vous inscrire sur l'une de nos sessions planifiées en inter-entreprises jusqu'à 5 jours ouvrés avant le début de la formation sous réserve de disponibilité de places et de labs le cas échéant.
- Votre place sera confirmée à la réception d'un devis ou """"booking form"""" signé. Vous recevrez ensuite la convocation et les modalités d'accès en présentiel ou distanciel.
- Attention, si cette formation est éligible au Compte Personnel de Formation, vous devrez respecter un délai minimum et non négociable fixé à 11 jours ouvrés avant le début de la session pour vous inscrire via [moncompteformation.gouv.fr](http://moncompteformation.gouv.fr).

Accueil des bénéficiaires :

- En cas de handicap : plus d'info sur [globalknowledge.fr/handicap](http://globalknowledge.fr/handicap)
- Le Règlement intérieur est disponible sur [globalknowledge.fr/reglement](http://globalknowledge.fr/reglement)