Implementing DevOps Solutions and Practices Using Cisco Platforms (DevOps) v1.0

What you'll learn in this course

The **Implementing DevOps Solutions and Practices Using Cisco Platforms (DEVOPS)** v1.0 course teaches you how to automate application deployment, enable automated configuration, enhance management, and improve scalability of cloud microservices and infrastructure processes on Cisco® platforms. You will also learn how to integrate Docker and Kubernetes to create advanced capabilities and flexibility in application deployment. This course prepares you for the **300-910 Implementing DevOps Solutions and Practices Using Cisco Platforms (DEVOPS)** certification exam.

Course duration

- Instructor-led training: 5 days in the classroom with hands-on lab practice
- Virtual instructor-led training: 5 days of web-based classes with hands-on lab practice
- E-Learning: 5 days equivalent to classroom training

How you'll benefit

This course will help you:

- Gain the high-demand knowledge and skills to implement automation, streamline container orchestration, and enhance scalability
- Learn the skills to maximize the lightweight design of containers to scale more quickly and allow more responsiveness to website traffic load
- Prepare for the **300-910 DEVOPS** exam

What to expect in the exam

The **300-910 DEVOPS** exam certifies your knowledge and skills with DevOps. Key DevOps practices include deployment automation that enables configuration, management, and scalability of cloud microservices and infrastructure processes on Cisco platforms.

After you pass **300-910 DEVOPS**, you earn the **Cisco Certified DevNet Specialist - DevOps** certification, and you satisfy the concentration exam requirement for these professional-level certifications:

- **CCNP® Collaboration**
- **Cisco Certified DevNet Professional**

Who should enroll

This course is designed for network and software engineers interested in automation and programmability and who hold job roles such as:

- Account manager
- Consulting systems engineer
- Network administrator
- Network engineer
- Network manager
- Sales engineer
- Systems engineer
- Technical solutions architect
- Wireless design engineer
- Wireless engineer

How to enroll

- For instructor-led training, visit the [Cisco Learning Locator](#).
- For private group training, visit [Cisco Private Group Training](#).
- For e-learning, visit the [Cisco Learning Network Store](#).
- For digital library access, visit [Cisco Learning Library.](#)
- For other ways to purchase e-learning, contact us at [learning-bdm@cisco.com.](#)

Technology areas

- Network automation

Course details

Objectives

After taking this course, you should be able to:

- Describe the DevOps philosophy and practices, and how they apply to real-life challenges
- Explain container-based architectures and available tooling provided by Docker
- Describe application packaging into containers and start building secure container images
- Utilize container networking and deploy a three-tier network application
- Explain the concepts of Configuration Item (CI) pipelines and what tooling is available
- Implement a basic pipeline with Gitlab CI that builds and deploys applications
- Implement automated build testing and validation
- Describe DevOps principles applied to infrastructure
- Implement on-demand test environments and explain how to integrate them with an existing pipeline
- Implement tooling for metric and log collection, analysis, and alerting
- Describe the benefits of application health monitoring, telemetry, and chaos engineering in the context of improving the stability and reliability of the ecosystem

- Describe how to implement secure DevOps workflows by safely handling sensitive data and validating applications
- Explain design and operational concepts related to using a mix of public and private cloud deployments
- Describe modern application design and microservices architectures
- Describe the building blocks of Kubernetes and how to use its APIs to deploy an application
- Explain advanced Kubernetes deployment patterns and implement an automated pipeline
- Explain how monitoring, logging, and visibility concepts apply to Kubernetes

Prerequisites

Before taking this course, you should have the following knowledge and skills:

- Basic programming language concepts and familiarity with Python
- Basic understanding of compute virtualization
- Ability to use Linux, text-driven interfaces, and CLI tools, such as Secure Shell (SSH), bash, grep, ip, vim/nano, curl, ping, traceroute, and telnet
- Foundational understanding of Linux-based OS architecture and system utilities
- CCNA® level core networking knowledge
- Foundational understanding of DevOps concepts
- Awareness and familiarity with continuous integration, continuous deployment, and continuous delivery CI/CD) concepts
- Hands-on experience with Git

The following Cisco courses can help you gain the knowledge you need to prepare for this course:

- **Developing Applications and Automating Workflows Using Cisco Core Platforms (DEVASC)**
- **Developing Applications Using Cisco Core Platforms and APIs (DEVCOR)**

Outline

- Introducing the DevOps Model
- Introducing Containers
- Packaging an Application Using Docker
- Deploying a Multitier Application
- Introducing CI/CD
- Building the DevOps Flow
- Validating the Application Build Process
- Building an Improved Deployment Flow
- Extending DevOps Practices to the Entire Infrastructure
- Implementing On-Demand Test Environments at the Infrastructure Level
- Monitoring in NetDevOps
- Engineering for Visibility and Stability
- Securing DevOps Workflows
- Exploring Multicloud Strategies
- Examining Application and Deployment Architectures

- Describing Kubernetes
- Integrating Multiple Data Center Deployments with Kubernetes
- Monitoring and Logging in Kubernetes

Lab outline

- Interact with GitLab Continuous Integration (CI)
- Explore Docker Command-Line Tools
- Package and Run a WebApp Container
- Build and Deploy Multiple Containers to Create a Three-Tier Application
- Explore Docker Networking
- Build and Deploy an Application Using Docker Compose
- Implement a Pipeline in Gitlab CI
- Automate the Deployment of an Application
- Validate the Application Build Process
- Validate the Deployment and Fix the Infrastructure
- Build a Yaml Ain't Markup Language (YAML) Infrastructure as Code (IaC) Specification for the Test Environment
- Manage On-Demand Test Environments with Terraform
- Build Ansible Playbooks to Manage Infrastructure
- Integrate the Testing Environment in the CI/CD Pipeline
- Implement Pre-deployment Health Checks
- Set Up Logging for the Application Servers and Visualize with Kibana
- Create System Dashboard Focused on Metrics
- Use Alerts Through Kibana
- Instrument Application Monitoring
- Use Alerts and Thresholds to Notify Webhook Listener and Cisco Webex® Teams™ Rooms
- Secure Infrastructure in the CI/CD Pipeline
- Explore Kubernetes Setup and Deploy an Application
- Explore and Modify a Kubernetes CI/CD Pipeline
- Kubernetes Monitoring and Metrics–Elasticsearch, Logstash, and Kibana (ELK)