

# Implementing DevOps Solutions and Practices Using Cisco Platforms (DEVOPS)

## Description

The **Implementing DevOps Solutions and Practices Using Cisco Platforms (DEVOPS)** training 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 training prepares you for the 300-910 DEVOPS v1.0 exam. If passed, you earn the Cisco Certified DevNet Specialist – DevOps certification and satisfy the concentration exam requirement for the Cisco Certified DevNet Professional certification. This training also earns you 40 Continuing Education (CE) credits toward recertification.

## How you'll benefit

This training 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 v1.0 exam
- Earn 40 CE credits toward recertification

## Who should enroll

- Account Managers
- Consulting Systems Engineers
- Network Administrators
- Network Engineers
- Network Managers

- Sales Engineers
- Systems Engineers
- Technical Solutions Architects
- Wireless Design Engineers
- Wireless Engineers

## Technology areas

- Network Automation

## Objectives

- 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

There are no prerequisites for this training. However, the knowledge and skills you are recommended to have before attending this training are:

- 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

These skills can be found in the following Cisco Learning Offerings:

- [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

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- 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)

## What to expect on the exam

Implementing DevOps Solutions and Practices Using Cisco Platforms (300-910 DEVOPS) v1.0 is a 90-minute exam associated with the Cisco Certified DevNet Specialist – DevOps certification and satisfies the concentration exam requirement for the Cisco Certified DevNet Professional certification.

This exam tests your knowledge of DevOps practices as it pertains to deployment automation that enables:

- Automated configuration
- Management
- Scalability of cloud microservices and infrastructure processes on Cisco platforms

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## Links

- [Cisco U. Learning Path](#)
- [Cisco Learning Network Store](#)
- [Cisco Learning Locator](#)