Objetivos

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

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Pre-requisitos

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

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2700215 / 591-79671047
eriveros@cttbolivia.com

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- 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)**

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Contenido

- 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

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2700215 / 591-79671047
eriveros@cttbolivia.com

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Laboratorio

- 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)

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