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Kubernetes Cluster API training: declarative management of cloud providers

3 days (21 hours)

Presentation

Our Kubernetes Cluster API training course will enable you to become fully operational in the use of declarative APIs to facilitate the creation, configuration and management of your Kubernetes environments. Using this extension will enable you to automate the management of your clusters while controlling them declaratively, making them much more flexible.

The course will familiarize you with the role of the Cluster API and how it differs from traditional Kubernetes management. You'll learn how to configure the API for your application environment, how to create and manage clusters, and the role of the components you'll encounter.

In this training course, you'll learn how to integrate cloud providers such as AWS, Azure or GCP into your Kubernetes infrastructure. You'll learn how to automate the scaling, lifecycle and provisioning of your cluster.

Like all our training courses, it will enable you to master the latest advances in this technology, ensuring that you are up to date with the tool's new features.

Objectives

- Configure Cluster API
- Create a cluster
- Integrating a cloud solution
- Automate the cluster lifecycle

Target audience

- **DevOps engineers**
- Cloud engineers

Prerequisites

- Familiarity with Kubernetes and Kubelect
- Being familiar with Helm

Cluster API training program

Introduction to Cluster API

- Cluster API in the Kubernetes ecosystem
- The evolution and importance of cluster API
- Key concepts and components
- Differences from traditional Kubernetes management

Basic concepts

- Cluster, Machine and MachineSet resources
- Exploring the control plan
- Node management
- The role of controllers

Environment configuration

- Prerequisites
- Installing tools and components
- Configuration

Cluster creation and management

- Defining configurations and resources
- Deploying a first cluster
- Cluster status and configuration management
- High availability and resilience strategies

Infrastructure providers

- Supplier presentation
- Configuration with Azure, AWS and GCP

- Cluster customization
    - Network configuration
    - Load balancers
    - Storage options
- Specific configurations
- Declarative configuration

Cluster life cycle

- **Automatic provisioning**
- Levelling and scaling
- Monitoring and maintenance
- Disaster recovery strategies

Advanced functions

- **Simultaneous management of multiple clusters**
- Advanced networking options
- Integration with native cloud tools
- Automation
- Customized resources

Cluster security

- Ensuring compliance
- RBAC access control
- Secure communication
- Data protection

Performance optimization

- Performance-related best practices
- Performance monitoring and logging
- Troubleshooting common problems

Cluster API deployment in production

- Transition from trial to production
- Large-scale Kubernetes cluster management
- Continuous cluster updates

Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.