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Register

Terraform On-Premises with OpenStack Training

3 days (21 hours)

Overview

Our Terraform On-Premises training will teach you how to master Terraform in a proprietary environment to ensure the sovereignty of your system. To enable self-hosting, we will also teach you how to use Ansible and OpenStack.

We will start with an introduction to Terraform and OpenTofu, followed by best practices for Infrastructure as Code. We will teach you how to install and configure this popular DevOps tool. You will learn how to manage infrastructure using HCL language, providers, resources, and variables.

Our training includes a significant practical component where you will experiment with functions for managing the resource lifecycle. You will learn how to manage collaborative work through code reuse across modules and state persistence.

In addition, we will introduce you to the Terraform ecosystem in general: Vault, Packer, Terragrunt, and Gitlab CI/CD for complete automation of your infrastructure management.

As with all our training courses, this one will introduce you to the latest version of Terraform, which at the time of writing is Terraform 1.7.

Objectives

- Understand the HashiCorp ecosystem and the challenges of infrastructure as code
- Master the fundamental concepts of Terraform On-Premise, including Providers, Resources, and Variables
- Manage the lifecycle of resources virtualized by OpenStack with Terraform
- Learn how to structure and manage Terraform modules effectively
- Acquire knowledge about integrating Ansible with Terraform and building complete projects combining both tools

Target audience

- DevOps
- System administrators
- Infrastructure engineers
- Technical project managers
- Developers

Prerequisites

- Cloud and virtualization principles

Technical prerequisites

Each user workstation must have:

- A terminal
- A text editor (Visual Code)
- The rights to install the Terraform binary

Terraform On-Premises training program

Introduction to Terraform

- Introduction to the HashiCorp Ecosystem
- Challenges of infrastructure as code
- Positioning of Terraform and OpenTofu
- Private infrastructure use cases
- Practical work: Installation and first steps with the Terraform command

Infrastructure management with Terraform

- Introduction to the Terraform HCL language
- Terraform Providers
- Terraform resources
- Terraform variables
- Practical work: Deploying resources on OpenStack

Anatomy of a Terraform Module

- HCL Language Structures
- Built-in Language Functions

- Count and For_each
- Managing dependencies between resources
- Resource lifecycle management
- Practical work: Implementing the various functions and mechanisms presented

Workflows and methods for collaborative work

- Terraform modules and code reuse
- Practical work: Creating and using Terraform modules
- Terraform state management and persistence
- Management of concurrency and multiple environments
- Practical work: Building a complete Terraform project with modules and multiple environments

Generating files with Terraform templates

- Documentation management
- Configuration file management
- Practical work: Generating documentation with Terraform

Ansible for machine configuration

- Positioning in relation to Terraform and integration
- Ansible playbooks
- Ansible inventories
- Practical work: Installation and first steps with Ansible

Using dynamic playbooks

- Jinja2 templates
- Variables and variable files
- Control structures: blocks, conditions, loops
- Practical work: Building a complete Ansible project, integrated with Terraform

Ecosystem and positioning of related solutions

- Unit and functional testing
- Vault for secret management
- Packer for image management
- Terragrunt for managing multiple environments
- Gitlab CI/CD for continuous deployment
- Practical work: Demonstrations

Target companies

This training is intended for both individuals and companies, small or large.

wishing to train its teams in advanced new IT technology or to acquire specific professional knowledge or modern methods.

Positioning at the start of training

The positioning at the start of training complies with Qualiopi quality criteria. Upon final registration, learners receive a self-assessment questionnaire that allows us to assess their estimated level of proficiency in different types of technologies, as well as their expectations and personal objectives for the upcoming training, within the limits imposed by the selected format. This questionnaire also allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could be problematic for the monitoring and smooth running of the training session.

Teaching methods

Practical training: 60% practical, 40% theory. Training materials distributed in digital format to all participants.

Organization

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

Validation

At the end of the session, a multiple-choice questionnaire is used to verify that the skills have been correctly acquired.

Certification

A certificate will be issued to each trainee who has completed the entire training course.

Training organization registered under number 11 75 54743 75. This registration does not constitute state approval.
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