AMBIENT-IT

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Sign up

Terraform On-Premises training with OpenStack

3 days (21 hours)

Presentation

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

To get you started, we'll give you an introduction to Terraform and OpenTofu, followed by best practices in Infrastructure as Code. We'll teach you how to install and configure this famous DevOps tool. You'll learn how to manage an infrastructure using the HCL language, providers, resources and variables.

Our training includes a significant practical part, where you will experiment with functions to manage the resource lifecycle. You'll also learn how to manage collaborative working, thanks to code reuse through modules and state persistence.

We'll also 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

- Understanding the HashiCorp ecosystem and the challenges of infrastructure as code
- Master the fundamental concepts of Terraform On-Premise, including Providers, Resources and Variables
- Managing the lifecycle of OpenStack virtualized resources with Terraform
- Learn how to structure and manage Terraform modules efficiently
- Learn how to integrate Ansible with Terraform and build complete projects combining the two tools.

Target audience

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

Prerequisites

- Cloud and virtualization principles

Technical requirements

Each user workstation must have :

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

Terraform On-Premises training program

Introduction to Terraform

- Introducing the HashiCorp ecosystem
- The challenges of infrastructure as code
- Positioning Terraform and OpenTofu
- Private infrastructures
- 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 working

- Terraform modules and code reuse
- Practical work: Creating and using Terraform modules
- Terraform report management and persistence
- Managing competition and multiple environments
- Practical work: Building a complete Terraform project with multiple modules and environments

Generating files with Terraform templates

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

Ansible for machine configuration

- Positioning and integration with Terraform
- 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: Building a complete Ansible project, integrated with Terraform

Ecosystem and positioning of related solutions

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

Companies concerned

This course is aimed at both individuals and companies, large or small,

wishing to train its teams in a new advanced IT 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.