AMBIENT-IT

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Sign up

Prometheus & Grafana training

3 days (21 hours)

Presentation

Our Prometheus and Grafana training courses will help you master the monitoring of your IT systems.

We'll teach you how to use Prometheus, and its role in collecting, storing and retrieving metrics. You'll learn how to distinguish between different metrics, and how to manipulate your key data.

Next, we'll focus on Grafana to visualize prepared data. We'll teach you how to create customized dashboards and use the available extensions. You'll also learn how to configure Nginx and ensure the security of your data.

During this course, an important part will be dedicated to the integration of Prometheus on Kubernetes. Advanced modules are also available, should you wish to learn more about these popular DevOps tools.

As always, our training based on the latest versions of these tools, namely Prometheus 3.1 and Grafana 11.

Objectives

- Understanding the basics of Prometheus and setting up an initial environment
- Implement Grafana, secure with Nginx and integrate Prometheus into Kubernetes
- Deepen exporters, configure alerts and monitor an application in Kubernetes

Target audience

- System administrators

- DevOps
- Developers
- Infrastructure architects

Prerequisites

- Basic knowledge of a Unix/Linux system
- Have already taken our Docker training course or have a good command of the subject
- How to use Docker Compose
- Be familiar with volume and network management

Technical requirements

Have Docker or WSL installed on your computer.

Prometheus & Grafana training program

Day 1

Prometheus foundations

- General presentation
- The role of metrics
- Data life cycle
- Quick overview of

appendices Installing

Prometheus

- Installing Prometheus with docker compose
- Configuring a system exporter
- Validation with metrics collection

Metrics in Prometheus

- Metric types (Counters, Gauges, Histograms, Summaries)
- Understanding quantiles
- Introduction to PromQL with practical examples
- Practical exercise: Simple PromQL queries on system metrics.

Day 2

Visualization: Setting up Grafana

- Introduction to Grafana
- Data sources and connection to Prometheus
- Create simple dashboards
- Community exploration and sharing
- Dashboard as code
- Practical exercise: connect Grafana to Prometheus and create several dashboards

Security: Installation of Nginx

- Quick installation of Nginx
- Setting up a reverse proxy for Prometheus and Grafana
- Add basic SSL certificates (e.g. self-signed or Let's Encrypt)
- Practical exercise: adding an Nginx reverse proxy and managing SSL

Integration with Kubernetes

- A quick introduction to Kubernetes
- Deploying Prometheus and Grafana in a cluster
- Using the Prometheus operator
- Configuring Kubernetes dashboards
- Practical exercise: Deploy Prometheus and Grafana on a local cluster (e.g. Minikube or k3d), dashboard as code with Kubernetes.

Day 3

Prometheus ecosystem exporters

- Prometheus exporter definition
- Overview of different types exporters: system, native, , application, network
- Practical exercise: Setting up several exporters and linking them to Prometheus

Alerts with Prometheus

- Alert principle

- Notification configuration (email/Slack)
- Inhibition management (Inhibition of alerts)
- Practical exercise: Deploy Alert Manager locally and integrate it with Prometheus

TP Final

- Practical: Supervising an application on Kubernetes (4h)
- Setting up a lightweight cluster with k3d
- Deployment of a simple application (e.g. a web app with several pods)
- Configuring Prometheus to monitor the application with Node exporter
- Create a Grafana dashboard to view CPU, memory and requests
- Definition of alerts (e.g. CPU threshold or unavailability)
- Load simulation to test pod scalability (e.g. with an HPA - Horizontal Pod Autoscaler)

Companies concerned

This 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 with regard to 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, 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.