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Sign up

Chaos Engineering Training: Infallible Infrastructure

2 days (14 hours)

Presentation

Modern IT infrastructures have become so complex that their reliability is in question. Chaos engineering is one of the answers to the problem of IT system resilience.

Our training course will introduce you to the principles and foundations of chaos engineering. You will learn the implementation process (observability, steady state, hypothesis, experimentation, validation). In addition, you'll practice by experimenting with your own chaos scenarios, such as latency injection at network level.

By the end of the course, you'll know how to use planned tests to strengthen the resilience and reliability of your IS, and optimize user satisfaction.

A complementary module dedicated to chaos engineering with Kubernetes is also included. You can also automate your actions with PowerfulSeal and Jenkins.

Objectives

- Learn about chaos engineering and its benefits
- Set up chaos engineering experiments
- Understand and apply the process (hypothesis, test and steady state)
- Know how to react during testing and analyze results

Target audience

- DevOps
- Administrators
- Developers

- Infrastructure architects
- Security engineers

Prerequisites

Experience in system administration.

Our Chaos Engineering training program

Chaos engineering

- The current development context
- The complexity of modern infrastructures and the impact of the human factor
- History of the concept
- How can chaos engineering help your infrastructure?
- Chaos engineering vs. SRE
- Principles and system evolution
- Estimating risks and costs (SLI, SLO and SLA) with chaos engineering

The fundamentals

- Different practices
 - Sandbox
 - Staging
 - Production
- The process
 - Ensuring observability
 - Define a steady state
 - Formulate a hypothesis
 - Run the experiment
 - Validate or not the hypothesis
- Good testing practices

Chaos observability

- The USE method
- Log centralization
- Introducing OpenTracing
- Deploying OpenTracing and using time series
- Opentracing control

The hypothesis

• How to define your stationary state?

- Why and how to define a hypothesis?
- Incident analysis
- System failure analysis
- Formulating a viable hypothesis
- Preconceived hypothesis models
- Creating a hypothesis backlog

Experiment

- The importance of testing to respond to real-life situations
- Defining experimental conditions
- Prioritize experiments
- Analyze performance gaps
- Determine whether the hypothesis is valid
- Drawing up an experimental report
- Optimize your system and re-apply the process

Tools presentation

- Chaos Monkey
- Chaoskube
- Chaos mesh
- Litmus
- PowerfulSeal
- ChaosToolkit
- Gremlin

How it works

- Installing ChaosToolkit CLI
- Create custom chaos drivers
- Adding human interaction
- Error injection
 - System latency
 - Query failures
- Control operations

Complementary module (+1 day): Engineering chaos with Kubernetes

Experimenting with Kubernetes

- Introduction to Kubernetes and its usefulness for SRE
- Adapting the method to applications using Kubernetes
- Launching a Kubernetes cluster

- Experiment
 - Attacking pods
 - Server latency
 - Attacking virtual machines

Automating experiments

- Installing PowerfulSeal
- Automating experiments
- Testing your hypothesis
- Continuous chaos
 - Planning chaos tests with cron
 - Installing Jenkins
 - Adding tests to Jenkins
 - Planning experiments

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their 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 forthcoming course, 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.

Certification

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

Training Program web page - Appendix 1 - Training sheet Training organization registered under number 11 75 54743 75. This registration does not constitute government approval. Ambient IT 2015-2025. All rights reserved. Paris, France - Switzerland - Belgium - Luxembourg