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JuiceFS Training

3 days (21 hours)

Overview

JuiceFS is a distributed file system designed to separate metadata, data, and cache, enabling the creation of cloud architectures that are more flexible, more efficient, and easier to operate.

Our JuiceFS training course will provide you with an in-depth understanding of its decoupled architecture, FUSE mounting mechanisms, object storage, and metadata management, as well as best practices for deployment in a production environment.

You'll learn how to install and configure JuiceFS, choose a metadata engine, connect an S3-compatible backend, and master the essential settings related to local caching, consistency, and performance.

The course will also show you how to leverage advanced features such as revalidation, distributed caching, encryption, and access optimization to support use cases such as data platforms, AI, or shared storage.

By the end of this course, you will be able to design a production-ready solution, diagnose read and write behaviors, and secure the day-to-day operation of a modern distributed storage system.

Like all our training courses, this one will introduce you to **the latest stable version** of the technology and its new features.

Objectives

- Understand the JuiceFS architecture and the separation between data and metadata.
- Install, format, and mount a JuiceFS volume in a cloud environment.

- Configure an object backend and a metadata engine tailored to your needs.
- Master caching, consistency, and performance mechanisms.
- Apply best practices for operations, security, and monitoring.
- Implement a reliable configuration for distributed storage use cases in production.

Target Audience

- Cloud Engineer
- Cloud Architect
- DevOps Engineer
- System Administrator
- Data Platform Engineer

Requirements

- Basic knowledge of Linux and the command line.
- Understanding of object storage principles and S3 services.
- Basic understanding of distributed architectures and caching issues.
- Previous experience with a cloud environment or virtualized infrastructure.
- Experience with at least one system administration or automation tool.

Technical Prerequisites

- A recent computer with at least 8 GB of RAM and a multicore processor.
- A Linux or macOS system, or a Windows machine with a compatible environment.
- A stable Wi-Fi or Ethernet network connection for cloud operations.
- A functional terminal with FUSE and the system tools required for installation.
- Access to a cloud account or a test environment provided by the instructor, if necessary.

JuiceFS Training Course Outline

[Day 1 - Morning] JuiceFS

Fundamentals

- Understand JuiceFS's position within the distributed storage ecosystem.
- Identify the respective roles of data, metadata, and the cache.
- Discover the principle of separation between object storage and the file access layer.
- Analyze typical use cases, from file sharing to data platforms.
- Understand how a user-side FUSE client works.
- Hands-on workshop: mapping out a target JuiceFS architecture based on a business requirement.

[Day 1 - Afternoon] Installation

and Initial Setup

- Prepare the JuiceFS client installation environment.
- Select and validate an S3-compatible object storage backend.
- Select a metadata engine suited to the context.
- Execute the formatting and mounting commands.
- Verify initial read and write access to the mount point.
- Hands-on workshop: Create and mount a JuiceFS volume from start to finish.

[Day 2 - Morning] Metadata

and Consistency

- Examine how the metadata layer works and its operational implications.
- Understand kernel-side and client-side caching mechanisms.
- Configure cache TTLs for attributes, entries, and directories.
- Interpret close-to-open consistency and its limitations.
- Anticipate the effects of writes, file closes, and concurrent reads.
- Hands-on workshop: Measure the impact of cache settings on the visibility of changes.

[Day 2 - Afternoon]

Performance and Optimization

- Distinguish between sequential and random reads.
- Understand the benefits of the local cache for reducing latency.
- Adjust partial cache and pre-read options based on use cases.
- Evaluate the impact of compression and encryption on performance.
- Identify bottlenecks between local disk and object storage.
- Hands-on workshop: Compare multiple cache profiles across different read workloads.

[Day 3 - Morning]

Advanced Operations

- Configure a distributed cache to share hot data among clients.
- Understand the principles of fault tolerance and service continuity.
- Implement monitoring and health check practices.
- Address issues related to security, encryption, and minimal exposure.
- Analyze maintenance, cleanup, and scaling-up scenarios.
- Hands-on workshop: Simulate an operational scenario with a shared cache and a controlled incident.

[Day 3 - Afternoon]

Deployment and Best Practices

- Build a production-ready architecture based on JuiceFS.
- Define sizing decisions for the client, the cache, and associated services.
- Establish best practices for deployment, operations, and scalability.
- Develop a strategy for testing, validation, and recovery.
- Leverage feedback to ensure reliability in real-world use cases.
- Hands-on workshop: Develop a comprehensive production deployment plan for a cloud use case.

Target Audience

This training is intended for both individuals and companies—large or small—that wish to train their teams in a new advanced IT technology or to acquire specific business knowledge or modern methods.

Assessment at the Start of Training

The pre-training assessment complies with Qualiopi quality standards. Upon final registration, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency with various types of technologies, as well as their expectations and personal goals 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 pose challenges for monitoring and ensuring the smooth running of the training session.

Teaching Methods

Hands-On Training: 60% Practical, 40% Theoretical. Training materials distributed in digital format to all participants.

Organization

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

Assessment

At the end of the session, a multiple-choice quiz is administered to verify that participants have successfully acquired the skills.

Certification

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