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Aerospike (intermediate)

High performance NoSQL DB with Python and Java - two days

FA-0513 · two days

Software Development

Introduction

Welcome to the two-day workshop on "Aerospike: High-Performance NoSQL Database," focusing on practical examples in Python and Java. Aerospike is a leading NoSQL database platform known for its lightning-fast performance, scalability, and reliability, making it a top choice for real-time, big data applications.

This course is designed for developers, database administrators, and software architects who wish to leverage Aerospike to build high-performance applications. Through a combination of theory and practical exercises, participants will gain a comprehensive understanding of Aerospike's architecture, features, and how to effectively implement solutions using both Python and Java.

Learning outcomes

By the end of this course, participants will:

- Understand the key features and architecture of the Aerospike database.
- Learn how to install, configure, and secure an Aerospike cluster.
- Gain hands-on experience with the Aerospike client libraries for Python and Java.
- Master the CRUD operations in Aerospike using Python and Java.
- Explore advanced Aerospike functionalities such as secondary indexes, user-defined functions (UDFs), and aggregations.
- Develop the ability to design and implement scalable applications using Aerospike.

Prerequisites

Participants should have:

- Basic understanding of NoSQL databases.
- Working knowledge of Python and Java programming languages.
- Familiarity with database concepts and operations.
- Basics understanding of CLI
- SSH capable system

Training outline

1. Overview of Aerospike

1. Introduction to Aerospike and its place in the NoSQL landscape
2. Key advantages of using Aerospike for real-time data-intensive applications
3. Aerospike architecture: Clusters, nodes, namespaces, and data distribution

2. Setting Up Aerospike

1. Installing Aerospike on different environments
2. Configuring an Aerospike cluster for optimal performance
3. Security features in Aerospike: Authentication and authorization

3. Aerospike Basics with Python and Java

1. Setting up the Aerospike client in Python and Java
2. Basic operations: Connecting to the cluster and basic CRUD (Create, Read, Update, Delete) operations
3. Working with complex data types: Lists, maps, and geoJSON

4. Advanced Aerospike Features

1. Implementing secondary indexes for query optimization
2. User-defined functions (UDFs): Writing and deploying scripts for custom server-side logic
3. Aggregations and MapReduce: Processing large data sets within the database

5. Practical Examples in Python and Java

1. Designing a real-time user profile store using Aerospike
2. Implementing a high-speed caching solution

3. Real-world use case: Session management for web applications

Best Practices and Performance Optimization

1. Tuning Aerospike configurations for different use cases
2. Monitoring and managing an Aerospike cluster
3. Tips for optimizing query performance and data modeling

6. Future Directions and Community Resources

1. Keeping up with Aerospike developments and updates
2. Exploring Aerospike XDR for cross data center replication
3. Leveraging the Aerospike community: Forums, GitHub repositories, and official documentation

This one-day workshop is structured to balance theoretical knowledge with practical, hands-on exercises. By the end of the session, participants will not only understand how to use Aerospike in their projects but will also have the confidence to apply it to solve complex data challenges. The use of Python and Java for examples ensures that attendees can work with Aerospike in their preferred programming language, enhancing the learning experience.

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