Using Oracle NoSQL Database

Duration: 4 Days

What you will learn

In this course, you'll learn what an Oracle NoSQL Database is, what the features and benefits are and how to use it to store Big Data. Explore key concepts of the NoSQL Database technology, while learning when to use the Oracle NoSQL Database versus an RDBMS.

Learn To:

Monitor and optimize Oracle NoSQL Database performance.
Perform backup, recovery and troubleshooting tasks.
Create an application using Oracle NoSQL Database APIs.
Define Big Data and identify when to use the Oracle NoSQL Database.
Explain the key features, benefits and components of Oracle NoSQL Database.
Install and configure Oracle NoSQL Database.

Installing & Configuring a KVStore

This course will also teach you how to install and configure a KVStore. You'll learn to optimize the KVStore's performance, troubleshoot errors, create and store records, manipulate data, handle exceptions and implement consistency and durability policies.

Audience

Application Developers
Database Administrators
Java Developer

Related Training

Required Prerequisites

Java programming

Understanding of Big Data

Introduction to Big Data

Suggested Prerequisites
Introduction to Oracle NoSQL Database

Java SE7 Fundamentals

Course Objectives

Define Big Data

Differentiate a NoSQL Database from the Relational Database Management System

Identify when to use a NoSQL Database

Identify the key features of the Oracle NoSQL Database

Explain the Oracle NoSQL Database architecture

Identify the components of Oracle NoSQL Database

Use KVLite

Identify the schema structure for Oracle NoSQL Database

Define and design major and minor keys

Define consistency and durability

Identify the Java API's to access the KVStore

Install Oracle NoSQL Database

Configure a KVStore using command line interface and admin console

Explain how to update an existing deployment

Identify how to override a default consistency and durability policy

Create and execute a transactional operation

Course Topics

Big Data and NoSQL Database Overview
Defining Big Data
Big Data Evolution
Introducing NoSQL Database
NoSQL Database versus RDBMS
Consideration Points Before Opting for NoSQL Database
Oracle Big Data Solution
HDFS

Oracle NoSQL Database
Defining the Oracle NoSQL Database
Key Features and Benefits
Supported Data Types
How Does the Oracle NoSQL Database Work?
Components of the Oracle NoSQL Database

Partitions and Key Value Pairs
Accessing KVStore
Introducing KVLite

Designing a Schema
Schema Structure
What is a Key Component?
Identifying the Major Key
Identifying the Minor Key
How is a Key Stored in the Oracle NoSQL Database?
Design Considerations for Key Components
What is a Value Component?
Types of Value Component

Consistency
Understanding the Write and Read Process
Understanding Consistency
Default Consistency
Applying Consistency
Predefined Consistency
Time Based Consistency
Version Based Consistency

Durability
Understanding the Write Process
Understanding Durability
Default Durability
Applying Durability
Synchronization Based Durability
Acknowledgement Based Durability

Credit Card Application and APIs: Overview
Credit card approval application
Analyzing the Data
Designing the Schema
Identifying the Key Structure
APIs: Overview

Administration: Overview
Tasks of the Administrator
KVStore Components: Review
Replication Nodes, Shards, and Partitions
Balancing a KVStore
Security
Defining Key Terms (Latency, Throughput, Cache)
Steps to Deploy a KVStore (Plan, Install, Configure Installation, Configure KVStore)

Planning the Installation
Analyze Workload and Identify Hardware Resources, Install storage nodes, Configure Installation
Analysis: Tasks
Estimating Record Size
Estimating Workload

Determining Throughput Requirements
Determining Store Configuration
Determining Cache Size

Setting-up the Oracle NoSQL Database Nodes
Prerequisites Checklist
KVHOME and KVROOT
Installation Steps
Creating Directories
Extracting Software
Verifying the Installation
Steps for Configuring the Installation
Using the makebootconfig Utility

Configuring and Deploying the KVStore
Configuration Tools
Introducing Plans
States/Life cycle of a Plan
Reviewing and Tracking Plans
Introducing the Admin Console
Configuring KVStore
Creating a Data Center
Creating a Storage Pool

Store Parameters
Introducing KVStore Parameters
Parameters List
Viewing Parameters
Changing Parameters Using CLI
Changing Parameters Using Admin Console
Setting Admin Parameters
Setting Storage Node Parameters
Setting Replication Node Parameters

Optimizing KVStore Performance
Factors Affecting KVStore Performance
Introducing JE Cache Size
Estimating JE Cache Size
Setting JE Cache Size
Introducing Java Heap Size
Optimizing Key Size
Logging Garbage Collection Activity

Backup and Recovery
Backup Process
Introducing Snapshots
Using Snapshots (commands to create, remove, list, and remove all)
Managing Snapshots
Methods to Recover KVStore
Recovering KVStore: Using a Load Program
Recovering KVStore: Using a Snapshot
Updating an Existing Deployment

Troubleshooting
Verifying a KVStore
Monitoring a KVStore
Replacing a Failed Storage Node
Fixing Incorrect HA Port Ranges

Accessing the KVStore
KVStore Handle
Creating a KVStore Handle
Using KVStoreFactory Class
KVStoreFactory Class Definition
Using KVStoreConfig Class
KVStoreConfig Class Definition
Creating a KVStore Handle: Example
View KVStore Parameters' Default Values

Creating Key and Value Components
Structure of a Record: Review
Creating a Key Component: Overview
Creating a Major Key Component
Creating a Minor Key Component
Creating a Key: Examples
Creating Value Components: Overview
Creating a Value Component
Creating Value Components: Examples

Loading Data into a KVStore
The Load Process
Creating a Load Program
Methods Available to Write Records to KVStore
Using the put() Method
Reviewing a Sample Load Program
Identify the Record Structure of the Sample Data
Running the Sample Load Program

Retrieving Data from a KVStore
Retrieving Records Methods: Overview
Using get()
get(): Example
Using multiGet()
mutiGet(): Example
Key Range
Creating a Key Range
Key Depth

Manipulating Data in a KVStore
Methods: Overview
putIfAbsent(): Use Case
Performing a Create Operation
putIfPresent(): Use Case
Performing an Update Operation
Deleting a Single Record

Deleting a Single Record: Example
Deleting Multiple Records

Handling Exceptions
Understanding Exceptions
Oracle NoSQL Database Exceptions
RequestTimeout Exception
Methods that Throw RequestTimeout Exception
Handling RequestTimeout Exception
RequestLimit Exception
Methods that Throw RequestLimit Exception
Handling RequestLimit Exception

Configuring Consistency
Consistency: Review
Viewing the Default Consistency
Using Pre-defined Consistencies
Over-riding the Default Consistency
Changing the Default Consistency
Creating Time Based Consistency
Creating Version Based Consistency

Configuring Consistency and Durability
Durability: Review
Viewing the Default Durability
Setting Synchronization-based Durability
Creating a New Durability Policy
Transactional Operation
Executing a Transactional Operation
OperationFactory: Methods
Handling Exceptions