



Java Performance Tuning

This Java Performance Tuning training teaches performance tuning concepts applicable to the Java programming language. Expert Oracle University instructors will teach you how it applies to Java garbage collectors on the Hotspot JVM, including the G1 garbage collector.

Learn To:

- Monitor, profile and tune your Java applications.
- Use command line and visual tools to perform these tasks.
- Get hands on practice with Visual VM, Java Mission Control, Flight Recorder and the NetBeans IDE.
- Use these tools and techniques to analyze Java 7 and earlier JVMs.
- Effectively apply tools like Java Mission Control and Flight Recorder to your daily work.

Benefits to You:

Learn how Java garbage collection works and how it affects your applications. Learn how to select the appropriate garbage collector and performance goal for your applications. Finally, use the Mission Control and Java Flight Recorder tools to monitor and analyze your applications.

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Prerequisites

Suggested Prerequisites

- Java SE 7 Programming
- Java SE 8 Programming
- Developing Applications for the Java EE 7 Platform

Audience

- Administrator
- Developer
- Implementer
- Systems Administrator

Objectives

- Monitor operating system performance on Solaris, Linux, and Windows
- Describe basic principles of performance
- Describe the operation of generational garbage collection
- List the garbage collectors available in Java including the G1 collector
- Monitor performance at the JVM and application level
- Monitor and analyze Java application performance using Java Mission Control and Flight Recorder
- Profile the performance of a Java application
- Tune garbage collection in a Java application
- Apply basic performance tuning principles to a Java application

Topics

- Course Overview
 - Introduce course
- Java Virtual Machine and Performance Overview
 - JVM Overview
 - What is Performance?
 - Performance Methodology
- The JVM and Java Garbage Collection
 - HotSpot GC Basics
 - The GC Aging Process
 - G1 GC
- Java Garbage Collectors
 - Garbage Collecting Algorithms
 - Types of GC Collectors
 - JVM Ergonomics
- Command Line JVM Monitoring
 - GC Monitoring Options
 - JIT Monitoring Options
- Mission Control and JVM Monitoring Tools
 - Monitoring with VisualVM
 - Monitoring with Mission Control
- Java Flight Recorder
 - Creating Flight Recordings
 - Analyze a Flight Recording
- Monitoring Operating System Performance
 - Monitoring CPU Usage
 - Monitoring Memory Usage
 - Monitoring Network I/O
 - Monitoring Disk I/O
 - Monitoring Processes
- Performance Profiling Tools
 - Overview of Profiling Tools
 - CPU Profiling
 - Heap Profiling
- Troubleshooting Performance Issues by Profiling

- Memory Leak Profiling
- Detecting Memory leaks
- Detecting Contention and Locking Issues
- Garbage Collection Tuning
 - Tuning with Serial GC
 - Tuning with Parallel GC
 - Tuning with Concurrent GC
 - Tuning with G1 GC
- Language Level Concerns and Garbage Collection
 - Object Allocation
 - Working with Large Objects
 - Explicit Garbage Collection
 - Finalizers
 - Memory Leak Detection Tools
 - Object References