

Java Performance Tuning

By Dr. Vishwanath Rao

Day 1

- Introduction to Java Performance Tuning
- Course Agenda
- JVM and Performance Overview
- JVM Overview
- Performance Principles
- Common Performance Problems
- Performance Methodology
- Development and Performance
- Monitoring Operating System Performance
- Monitor CPU Usage
- Monitor Network I/O
- Monitor Disk I/O
- Monitor Virtual Memory Usage
- Monitor and Identify Lock Contention
- Monitoring the JVM
- HotSpot Generational Garbage Collector
- Monitor the Garbage Collector with Command Line Tools
- Monitor the Garbage Collector with VisualVM
- Monitor the JIT Compiler Throughput and Responsiveness
- Dead Locks
- Hung Threads
- Starvations

Day 2

- Performance Profiling
- NetBeans Profiler, Oracle Solaris Studio, and jmap/jhat
- Profile CPU Usage
- Profile JVM Heap
- Out of memory
- Generate Thread Dump
- Generate Java Core Dump
- Find Memory Leaks

- Identify Lock Contention
- Heap Profiling Anti-patterns
- Method Profiling Anti-patterns
- Garbage Collection Schemes Garbage Collection
- View Heap Dumps in Profile tools
- JVisual VM monitoring and views
- Generational Garbage Collection
- GC Performance Metrics
- Garbage Collection Algorithms
- Types of Garbage Collectors
- JVM Ergonomics
- Garbage Collection Tuning
- Tune the Garbage Collection

Day 3

- Select the Garbage Collector
- Interpret GC
- Output Language Level Concerns and Garbage Collection
- The best practices for Object Allocation
- Invoking the Garbage Collector
- Reference Types in Java
- The use of Finalizers
- ELK Stack Installation and configuration
- Viewing and monitoring running JVMs
- Distributed Log collection
- Data set views and generate graphs
- AWS Elastic Search Service.
- Performance Tuning at the Language Level
- String-efficient Java Applications
- Collection Classes
- Using Threads
- Using I/O Efficiently