

MYSQL PERFORMANCE TUNING

Course: SQL-4402; Duration: 4 Days; Instructor-led

WHAT YOU WILL LEARN

In this class, you'll learn practical, safe, highly efficient ways to optimize performance for the MySQL Server. This course will prepare each student with the skills needed to utilize tools for monitoring, evaluating and tuning. Students will evaluate the architecture, learn to use the tools, configure the database for performance, tune application and SQL code, tune the server, examine the storage engines, assess the application architecture, and learn general tuning concepts

AUDIENCE

This programme is suitable for Database Administrators, Developer, System Administrator

PREREQUISITES

REQUIRED PREREQUISITES

- Experience maintaining a database server (preferably a MySQL server)
- Can use MySQL tools to connect to the MySQL Server
- Have knowledge of general SQL statement structure and basic SQL tuning principles
- Working knowledge of Linux operating systems

Suggested Prerequisites:

- MySQL for Database Administrators
- Experience with a MySQL Server instance and MySQL tools
- Experience writing SQL retrieve, insert, modify and delete
- An ability to locate and execute commands on Linux

METHODOLOGY

This program will be conducted with interactive lectures, PowerPoint presentation, discussions and practical exercise

COURSE OBJECTIVES

Upon completion of this program, participants should be able to :

- Understand the basics of performance tuning
- Use performance tuning tools
- Tune the MySQL Server instance to improve performance
- Improve performance of tables based on the storage engine being used

- Implement proper Schema Design to improve performance
- Improve the performance of MySQL Queries
- Describe additional items related to performance tuning

COURSE OUTLINES

Module 1 - Introduction

- MySQL Overview
- MySQL Products and Tools
- MySQL Services and Support
- MySQL Web Pages
- MySQL Courses
- MySQL Certification
- MySQL Documentation

Module 2 - Performance Tuning Basics

- Thinking About Performance
- Areas to Tune
- Performance Tuning Terminology
- Benchmark Planning
- Benchmark Errors
- Tuning Steps
- General Tuning Session
- Deploying MySQL and Benchmarking

Module 3 - Performance Tuning Tools

- MySQL Monitoring Tools
- Open Source Community Monitoring Tools
- Benchmark Tools
- Stress Tools

Module 4 - MySQL Server Tuning

- Major Components of the MySQL Server
- MySQL Thread Handling
- MySQL Memory Usage
- Simultaneous Connections in MySQL
- Reusing Threads
- Effects of Thread Caching
- Reusing Tables
- Setting table_open_cache

Module 5 - MySQL Query Cache

- MySQL Query Cache
- When to Use the MySQL Query Cache
- When NOT to Use the MySQL Query Cache
- MySQL Query Cache Settings
- MySQL Query Cache Status Variables
- Improve Query Cache Results

Module 6 - InnoDB

- InnoDB Storage Engine
- InnoDB Storage Engine Uses
- Using the InnoDB Storage Engine
- InnoDB Log Files and Buffers
- Committing Transactions
- InnoDB Table Design
- SHOW ENGINE INNODB STATUS
- InnoDB Monitors and Settings

Module 7 - MyISAM

- MyISAM Storage Engine Uses
- MyISAM Table Design
- Optimizing MyISAM
- MyISAM Table Locks
- MyISAM Settings
- MyISAM Key Cache
- MyISAM Full-Text Search

Module 8 - Other MySQL Storage Engines And Issues

- Large Objects
- MEMORY Storage Engine Uses
- MEMORY Storage Engine Performance
- Multiple Storage Engine Advantages
- Single Storage Engine Advantages

Module 9 - Schema Design And Performance

- Schema Design Considerations
- Normalization and Performance
- Schema Design
- Data Types
- Indexes
- Partitioning

Module 10 - MySQL Query Performance

- General SQL Tuning Best Practices
- EXPLAIN
- MySQL Optimizer
- Finding Problematic Queries
- Improve Query Executions
- Locate and Correct Problematic Queries

Module 11 - Performance Tuning Extras

- Configuring Hardware
- Considering Operating Systems
- Operating Systems Configurations
- Logging
- Backup and Recovery