



MySQL Performance & Tuning

Duration: 3 Days **Course Code: MYSDBAPT** **Delivery Method: Virtual Learning**

Overview:

This MySQL Performance & Tuning course is designed for Database Administrators, Application Developers and Technical Consultants who need to monitor and tune the performance of MySQL servers and databases. The course provides practical experience in monitoring and tuning MySQL servers and databases. Versions supported 8,5.7,5.6.

Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

Target Audience:

Anyone who wishes to monitor and tune MySQL performance for MySQL 5.6,5.7 and 8 databases.

Objectives:

- To provide the skills necessary to monitor and tune MySQL performance.
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Prerequisites:

Delegates must have a working knowledge of MySQL Database Administration.

This course is run on a Linux operating system, a basic knowledge of Linux/UNIX is recommended but is not essential.

Follow-on-Courses:

- Perl Programming (PERL)
 - Apache Web Server (APH)
 - PHP & MySQL for Web Development (PHPMWD)
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Content:

MySQL Performance ; Tuning Training Course Course Contents - DAY 1

Course Introduction

- Administration and Course Materials
- Course Structure and Agenda
- Delegate and Trainer Introductions

Session 1: INTRODUCTION TO PERFORMANCE TUNING

- Tuning Overview
- Tuning Levels
- Resolving Performance Issues
- Recommended Approach to Tuning
- Items to Evaluate
- Where to look
- Planning a Monitoring Routine
- Building a New Database for Performance
- Tuning an Existing Database
- Setting Suitable Goals

Session 2: MYSQL PERFORMANCE TUNING TOOLS

- Administration Tools
- The Information Schema
- MySQL 8 Information Schema Changes
- Performance-related SHOW Commands
- Benchmarking Tools
- The MySQL Performance Schema
- MonYog
- Exercises: Obtaining Performance Information

Session 3: SCHEMA DESIGN

- Normalisation
- De-normalisation
- Naming Conventions
- Load Generation, Stress Testing and Benchmarking Tools
- Selecting Data Types
- Data Types
- Character Sets
- Choosing Storage Engines
- Exercises: Effects of Design on Performance

Session 4: STATEMENT TUNING

- Overview of Statement Tuning
- Identifying Problem Queries
- The Optimizer
- Explain
- Exercises: Identifying Problem Queries and Using Explain

Session 5: INDEXES

- Index Overview
- Index Size
- Types of Index
- Index Tuning
- Indexes and Joins
- Descending Indexes
- Invisible Indexes
- InnoDB Cached Indexes Information
- Exercises: Indexes and Performance
MySQL Performance ; Tuning Training Course Course Contents - DAY 2

Session 6: SERVER CONFIGURATION AND MONITORING

- Server Configuration Variables
- Server Status Variables
- Table Cache
- Multi-Threading
- Connection Issues
- Query Cache
- Exercises: Setting and Interpreting Server Variables and Caching

Session 7: LOCKING

- Types of Locking
- Locking and Storage Engines
- Effects of Locking on Performance
- Monitoring InnoDB Locks in MySQL 5,7 and 8
- MySQL 8 Disable Deadlock Detection
- Exercises: Locking and Performance

Session 8: THE INNODB ENGINE

- Transactions
- Crash Recovery
- Locking
- Monitoring InnoDB
- Caches and Buffers
- Configuring Data Files
- Configuring the Log Files
- Exercises: InnoDB Configuration and Performance
MySQL Performance ; Tuning Training Course Course Contents - DAY 3

Session 9: OTHER STORAGE ENGINES

- MyISAM Engine
- Merge Engine
- Archive Engine
- Memory Engine
- Blackhole Engine
- CSV Engine
- The Spider Engine
- The ColumnStore Engine
- The MyRocks Engine
- Mixing Storage Engines
- Exercises: Storage Engine Performance

Session 10: OVERVIEW OF CLUSTERING AND PERFORMANCE

- Advantages Performance Advantages of Clustering
- Performance Issues and Clustering
- The NDBCluster Engine
- The Galera Cluster
- The Percona XtraDB Cluster
- MySQL InnoDB Cluster
- The Federated Engine
- The FederatedX Engine
- Overview of Other High Availability Techniques
- NOSQL and Memcached Overview

Session 11: DUMPING AND LOADING DATA

- SQL statements versus delimited data
- Parameters affecting dump performance
- Parameters affecting load performance
- Exercises: Dump and load performance

Session 12: PARTITIONED TABLES

- Partitioned tables concepts
- Range partitioning
- Hash partitioning
- Key partitioning
- List partitioning
- Composite partitioning or subpartitioning
- Partition Pruning
- MySQL 8 Partitioning new features
- Exercises: Partitioned Table Performance

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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