

MySQL优化逻辑(高性能的mysql)

1 问题驱动：根据问题去分析mysql。

2 体系驱动：

2.1 Schema与数据类型优化

2.2 索引优化

2.3 查询性能优化

2.4 mysql服务器优化

2.5 操作系统与硬件优化

2.6 应用优化

mysql官方优化指南：

<https://dev.mysql.com/doc/refman/5.7/en/optimize-overview.html>

- Optimizing at the Database Level
- Optimizing at the Hardware Level
- Balancing Portability and Performance

1 数据库层面

8.2 Optimizing SQL Statements

8.2.1 Optimizing SELECT Statements

8.2.2 Optimizing Subqueries, Derived Tables, and View References

8.2.3 Optimizing INFORMATION_SCHEMA Queries

8.2.4 Optimizing Data Change Statements

8.2.5 Optimizing Database Privileges

8.2.6 Other Optimization Tips

8.3 Optimization and Indexes

- 8.3.1 How MySQL Uses Indexes
- 8.3.2 Primary Key Optimization
- 8.3.3 Foreign Key Optimization
- 8.3.4 Column Indexes
- 8.3.5 Multiple-Column Indexes
- 8.3.6 Verifying Index Usage
- 8.3.7 InnoDB and MyISAM Index Statistics Collection
- 8.3.8 Comparison of B-Tree and Hash Indexes
- 8.3.9 Use of Index Extensions
- 8.3.10 Optimizer Use of Generated Column Indexes

8.4 Optimizing Database Structure

- 8.4.1 Optimizing Data Size
- 8.4.2 Optimizing MySQL Data Types
- 8.4.3 Optimizing for Many Tables
- 8.4.4 Internal Temporary Table Use in MySQL

8.5 Optimizing for InnoDB Tables

- 8.5.1 Optimizing Storage Layout for InnoDB Tables
- 8.5.2 Optimizing InnoDB Transaction Management
- 8.5.3 Optimizing InnoDB Read-Only Transactions
- 8.5.4 Optimizing InnoDB Redo Logging
- 8.5.5 Bulk Data Loading for InnoDB Tables
- 8.5.6 Optimizing InnoDB Queries
- 8.5.7 Optimizing InnoDB DDL Operations
- 8.5.8 Optimizing InnoDB Disk I/O
- 8.5.9 Optimizing InnoDB Configuration Variables
- 8.5.10 Optimizing InnoDB for Systems with Many Tables

8.6 Optimizing for MyISAM Tables

8.6.1 Optimizing MyISAM Queries

8.6.2 Bulk Data Loading for MyISAM Tables

8.6.3 Optimizing REPAIR TABLE Statements

8.9 Controlling the Query Optimizer

8.9.1 Controlling Query Plan Evaluation

8.9.2 Optimizer Hints

8.9.3 Switchable Optimizations

8.9.4 Index Hints

8.9.5 The Optimizer Cost Model

8.10 Buffering and Caching

8.10.1 InnoDB Buffer Pool Optimization

8.10.2 The MyISAM Key Cache

8.10.3 The MySQL Query Cache

8.10.4 Caching of Prepared Statements and Stored Programs

8.11 Optimizing Locking Operations

8.11.1 Internal Locking Methods

8.11.2 Table Locking Issues

8.11.3 Concurrent Inserts

8.11.4 Metadata Locking

8.11.5 External Locking

8.12 Optimizing the MySQL Server

8.12.1 System Factors

8.12.2 Optimizing Disk I/O

8.12.3 Using Symbolic Links

8.12.4 Optimizing Memory Use

8.12.5 Optimizing Network Use

2 硬件层面

3 平衡兼容性和性能

一条sql语句慢，思路：

1 什么语句？ DDL？ DML？ DQL？

2 出现频率？ 一次， 多次？

3 解决方法？

DQL： 1 explain 2 查看索引和表结构 3 mysql服务器状态 4 是否死锁

DML： 1 事务

DDL： 1