

MySQL Cluster Ed 2

Duration: 4 Days

What you will learn

This MySQL Cluster training teaches you how to install and configure a real-time database cluster at the core of your application. Expert instructors will teach you how to design and maintain your clusters for high availability and scalability by using MySQL Cluster's open-source and enterprise components.

Learn To:

- Install and configure MySQL Cluster nodes.
- Design simple and advanced cluster topologies.
- Secure cluster nodes and data.
- Backup and restore cluster data.
- Troubleshoot common cluster problems.
- Monitor and optimize cluster performance.
- Use enterprise tools to manage large cluster deployments.

Benefits to You

After taking this course, you will be able to evaluate MySQL Cluster in your application, and design a secure cluster topology to provide scalability and high availability. You will have developed the knowledge and skills to monitor and optimize the performance of your existing clusters and troubleshoot any problems that arise. You'll also be able to replicate between clusters that are separated by function or geography.

Participate in Hands-on, Interactive Labs

In addition to benefiting from interactive instruction, you'll also get a chance to create and configure several different clusters through hands-on exercises. You'll start by creating simple clusters manually, or with the MySQL Cluster Auto Installer. You will then create multiple clusters that are separated by a firewall, as well as clusters that use replication. These hands-on exercises will help you troubleshoot common problems and examine and optimize the performance of the cluster.

Audience

- Application Developers
- Database Administrators
- Database Designers
- Support Engineer
- System Administrator
- Technical Administrator
- Technical Consultant
- Web Administrator

Related Training

Required Prerequisites

Must have a working knowledge of UNIX/Linux command-prompt usage

Must have a working knowledge of database concepts

Must have a basic knowledge of computer networking

Suggested Prerequisites

Familiarity with VirtualBox

Linux administration skills

MySQL for Database Administrators Ed 3.1

MySQL server configuration and usage

Oracle Linux 5 & 6 System Administration

Course Objectives

Identify and correct common cluster problems

Describe common cluster use cases

Configure replication between MySQL Clusters

Describe MySQL Cluster operation in virtualized and Cloud environments

Explain the concepts associated with MySQL Cluster

Describe the MySQL Cluster architecture

List features of the NDB Storage engine

Describe MySQL Cluster design considerations

Install MySQL Cluster

Configure a basic MySQL Cluster

Perform backup and recovery operations

Secure a MySQL Cluster

Maintain a MySQL Cluster by using the Management console and MySQL Cluster Manager

Monitor and improve performance on a MySQL Cluster

Course Topics

Introduction to MySQL Cluster

MySQL Overview, Products, Services
Websites and Other Documentation
Key Benefits and Use Cases
Node types

Installing MySQL Cluster

Hardware, Software, and Network Requirements
Choosing and Installing Cluster Distributions
Installing and Configuring Cluster Nodes
MySQL Cluster Auto-Installer
Starting a Cluster with a Basic Configuration
Upgrading a Cluster

MySQL Cluster Architecture

The NDB storage engine
Clustered tables
SQL and NoSQL API nodes
Data Nodes and Node Groups
Partitions and Replicas
Checkpoints and the Redo Log
Redundancy and Resilience

Configuring MySQL Cluster

MySQL Cluster Configuration Files
Basic Configuration Options: NodId and HostName
Management Node Configuration
Data Node Configuration
Configuring Multi-Threaded Data Nodes
Cluster Program Startup Options
Viewing Cluster Configuration Information

Designing a MySQL Cluster

Design Guidelines
Sizing Memory Usage
In-Memory and Disk Data Storage
Configuring Disk Data Storage
Designing Clusters for Scale and High Availability
Cluster Configuration Examples

Maintaining a MySQL Cluster

Modifying Table Structure
Accessing the Cluster with Command-Line Tools
Single-User Mode
Backing Up a Cluster
Restoring a Cluster from Backup

Securing MySQL Cluster

Securing MySQL Cluster
Configuring Connection Security

- Configuring Firewall Rules
- Data Security
- MySQL Server Node Security

MySQL Cluster Manager

- Installing MySQL Cluster Manager Agent and Clients
- Sites, Clusters, Hosts, Processes, Packages, and Configuration Attributes
- Creating Managed Clusters
- Importing a Configuration from an Unmanaged Cluster
- Viewing Information About Your Sites and Clusters
- Maintaining Your Sites and Clusters

Replicating Between MySQL Clusters

- Replication in MySQL Cluster
- Transaction Ordering and Epochs
- Configuring Replication
- Starting, Stopping, and Resetting Replication
- Backups Using Replication Tables
- Replication Resilience
- Replication Information Repositories
- Multi-Master Replication and Conflict Resolution

Monitoring MySQL Cluster

- Introduction to Monitoring
- Monitoring with the `ndb_mgm` Client
- Using the Cluster Log
- `ndbinfo` Database
- Status Variables
- MySQL Enterprise Monitor

Troubleshooting MySQL Cluster Problems

- Starting to Troubleshoot
- Heartbeats
- Configuration Problems
- Disk Activity Problems
- Application Design Problems

Optimizing MySQL Cluster Performance

- Performance Concepts
- Identifying Queries for Optimization
- Optimizing with Indexes
- Using EXPLAIN
- Adaptive Query Localization
- Distribution Awareness
- The Process of Optimizing and Benchmarking

MySQL Cluster Environments

- MySQL Cluster and Virtualization
- Node Deployment in Cloud Environments
- Connecting to a Cluster with SQL and NoSQL APIs
- Comparing MySQL Cluster with Other High-Availability Solutions

Conclusion

Summary course contents and objectives

Recap of MySQL Products, services, websites, training, documentation