AALOK INSTITUTE

MySQL Administration Training

MySQL High Availability with InnoDB Cluster Administrator Training And AWS Amazon Aurora MySQL Training

Hands-on Training on MySQL

Duration: 40 Hours

Architecture of MySQL

- MySQL Introduction
- Architecture of MySQL

Installation and Configuration

- Installing MySQL on Linux Using RPM Packages
- Installing MySQL on Linux Using generic binaries
- Pluggable engines: (MyISAM, InnoDB)
- Other Engines: Archive, Memory, Federated, Blackhole, NDBCluster
- Working with MySQL configuration file.

Configuration

- Config file for InnoDB in detail.
- Congifuring log files (slow log, general log)
- Log and Status Files
- The SHOW Statement
- SQL Modes
- The PERROR Utility
- Modifying a Setting by Using Command-Line Arguments
- Changing Dynamic Settings
- Persisting Global Variables
- Configuring the Client

The InnoDB Engine

- Features of Innodb
- Transactions
- Referential Integrity
- Physical Characteristics of Innodb Tables

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- Tablespace Configuration
- Log File and Buffer Configuration
- Innodb Status

Client Programs

- mysql — The MySQL Command-Line Client
- mysqladmin — A MySQL Server Administration Program
- mysqlcheck — A Table Maintenance Program
- mysqldump — A Database Backup Program
- mysqlimport — A Data Import Program
- mysqlpump — A Database Backup Program
- mysqlshow — Display Database, Table, and Column Information
- mysqlslap — A Load Emulation Client

Table Maintenance Operations

- Check Table
- Repair Table
- Analyze Table
- Optimize Table
- MySQL Check
- MYISAMCHK
- Repairing Innodb Tables

MySQL Users and Security Management

- User Accounts
- Creating Users
- Renaming Users
- Changing Passwords
- Dropping Users
- Granting Privileges
- The User Table
- Connection Validation
- Granting and revoking privileges
- Types of Privileges
- Revoking Privileges
- Resource Limits
- The MySQL Database
- The Show Grants Command
- Taking user backup, changing password.
- Topics: Backup requirement
- Physical and logical backup
- Cold and hot backup
- Enabling and disabling binary logging
- Understanding the binary log architecture

- Configure SSL Connections
- Password-less Logins Using Option Files

Backup and Recovery

- Installing Percona XtraBackup from Repositories
- Installing Percona XtraBackup from a Binary Tarball
- Backup Scenarios
- The Backup Cycle - Full Backups
- Different backup techniques in MySQL (MySQL dump, Full backup, Transactional backup, Percona Xtrabackup)
- Incremental Backup
- Compressed Backup
- Encrypted Backup
- Creating a Full backup using percona xtrabackup
- Preparing a backup using percona xtrabackup
- Restoring a Backup using percona xtrabackup
- Percona XtraBackup Point-In-Time Recovery
- Creating a Full backup using percona xtrabackup
- Back Up from the Command-Line with mysqldump
- Backing Up with mysqlpump
- MySQL Binlog utility and PITR.
- Making Incremental Backups by Enabling the Binary Log
- Making Backups Using Replicas
- Dump several databases with single command
- How Save MySQL query results into a CSV/text file
- Making Backups by Copying Table Files
- How to Restore MySQL with mysqldump
- Restoring MySQL backup, Purging old logs
- Restoring the Database Using the Binary Log
- Point-in-Time Recovery Using Binary Log
- Point-in-Time Recovery Using Event Positions

Replication

- Master-Slave Replication
- Master-Master replication
- Replication introduction
- Replication Architecture
- Taking Incremental backup and restoring using Percona XtraBackup
- Configure Replication based on binlog file position
- what does Show slave status means

- Configure MySQL replication using xtrabackup8
- Streaming MySQL Backups with Percona XtraBackup
- Configure MySQL replica set using clone plugin
- Configure Replication using Clone Plugin
- Troubleshooting Replication Errors
- How Skip counter works on Non-transitional table
- How to use pt-slave-restart to start replication
- How to remove replication
- How to use pt-table-checksum
- How to use pt-table-sync
- Introduction to GTID
- Configure GTID replication
- How to Solve Errors In GTID Replication and use pt-slave-restart
- What is Errant GTID
- How to Find and Fix Errant GTID
- How to fix errant GTID by setting GTID_PURGED Values
- Semi synchronous replication
- How to setup semi synchronous replication.
- How to disable Semi synchronous replication

Achieving High Availability with MySQL InnoDB Cluster

- Creating MySQL InnoDB Cluster
- Deploying MySQL Router and Testing the Cluster
- Testing High Availability
- Introduction to MySQL InnoDB Cluster
- Downloading and installing the components
- MySQL Server - Installing and Upgrading MySQL Server
- MySQL Shell - Installing MySQL Shell
- MySQL Router - Installing MySQL Router
- InnoDB Cluster Requirements
- InnoDB Cluster Limitations
- User Accounts for InnoDB Cluster
- Deploying a Production InnoDB Cluster
- Pre-Checking Instance Configuration for InnoDB Cluster Usage
- Checking Instance Configuration
- Configuring Production Instances for InnoDB Cluster Usage
- Configuring the Instance
- Creating an InnoDB Cluster
- Adding Instances to an InnoDB Cluster
- Configuring InnoDB Cluster Ports
- Using MySQL Clone with InnoDB Cluster
- Testing High Availability

- Administering InnoDB Cluster
- Testing Primary Instance Fails Over
- Changing the Primary Instance
- Configure InnoDB Cluster Settings
- Listing and Removing Router Metadata
- Changing the Cluster Topology Mode
- Configuring and Testing IP Address Permissions
- Handling Failures in InnoDB Cluster
- Rejoining an Expelled Instance to the Cluster
- Restoring a Cluster from Complete Cluster Outage
- Restoring a Cluster from Quorum Loss
- Dissolving a Cluster
- Super Read-only and Instances
- Rescanning a Cluster
- Monitoring InnoDB Cluster and Group Replication
- InnoDB Cluster Information Using AdminAPI
- Viewing the Status of a Replication Group Using Performance Schema
- Setting Options for InnoDB Cluster
- Customizing InnoDB Cluster Member Servers
- Configuring the Election Process
- Configuring Failover Consistency
- Configuring Automatic Rejoin of Instances
- Configuring the Parallel Replication Applier
- InnoDB Cluster and Binary Log Purging.
- Upgrading an InnoDB Cluster
- Rolling Upgrades
- Upgrading InnoDB Cluster Metadata
- Troubleshooting InnoDB Cluster Upgrades

Amazon Aurora MySQL with other AWS services

- What is Aurora?
- Setting up your environment
- Configuring your Aurora DB cluster
- Managing an Aurora DB cluster
- Backing up and restoring an Aurora DB cluster
- Monitoring metrics in an Aurora DB cluster
- Monitoring events, logs, and database activity streams
- Working with Aurora MySQL
- Migrating data to Aurora MySQL
- Managing Aurora MySQL
- Replication with Aurora MySQL
- Cross-Region replication
- Using binary log (binlog) replication
- Using GTID-based replication
- Integrating Aurora MySQL with AWS services

Monitoring Practices

- Monitoring the availability of MySQL,
- Monitoring different aspects of MySQL.
- Using tools for monitoring.
- Necessary Reporting for a MySQL DBA.
- MySQL Workbench,Percona Toolkit.

Troubleshooting and Performance Tuning/Optimization for large databases

- General Problems and their resolution,
- Connection problems, and understanding the error log.
- Monitoring MySQL Configuring the Slow Query
- Monitoring MySQL Using Using Performance Schema
- Optimization – Optimizing the MySQL database.
- Creating and Dropping Indexes

- Obtaining Index Metadata
- Indexing Principles
- Indexing and Join
- Improving Query Performance with Indexes
- Configuring the Buffer Pool

Partitioned tables concepts

- Range partitioning
- Hash partitioning
- Key partitioning
- List partitioning
- Composite partitioning or subpartitioning
- Maintenance of partitioned tables

Upgradation and Migration

- Upgrading From MySQL 5.7 to MySQL 8
- Migrate from On-premises MySQL to AWS Cloud as RDS-MySQL
- Migrate from Oracle to MySQL Both On Premises and AWS Cloud using DMS

For Any Clarification please feel free to contact @ +91 9867328291.

Cheers,
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