

Database Replication

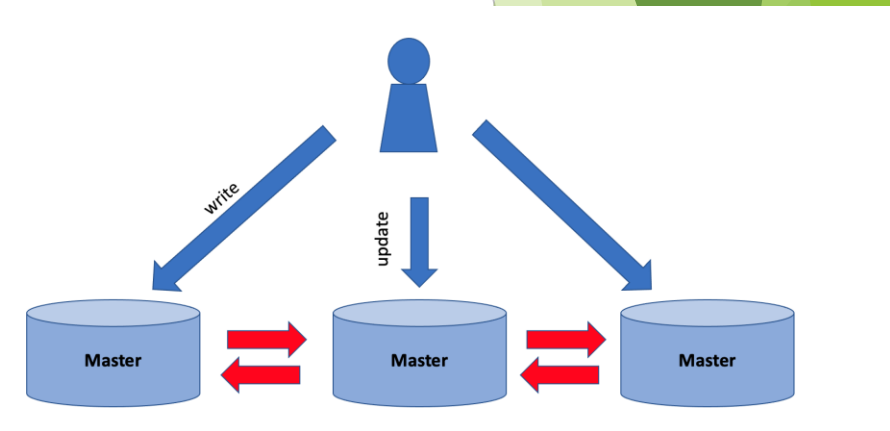
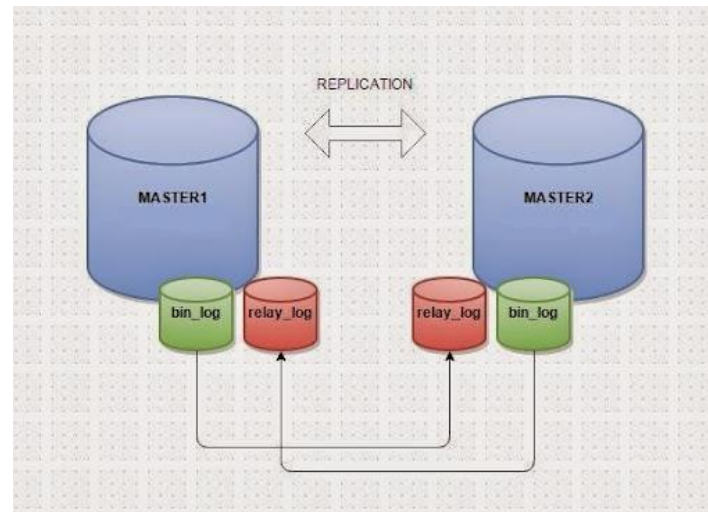
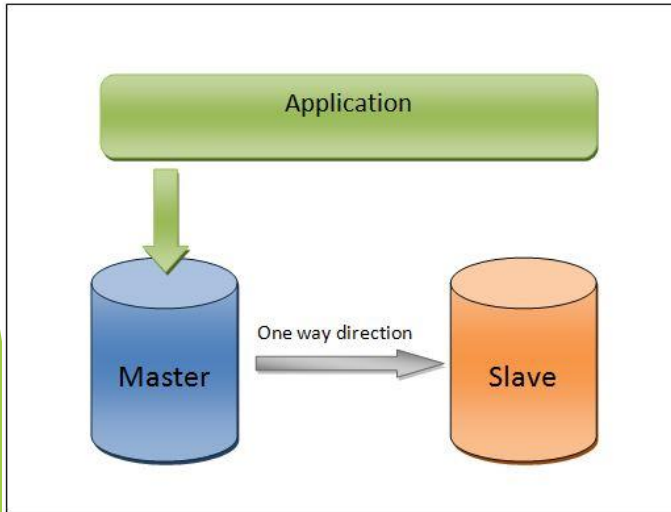
Meaning of Database Replication

- ▶ Database Replication is the process of copying data from one database (master) to another database (slave).
- ▶ It helps keep the information in the database consistent and up to date.



Type of Database Replication

- ▶ One-way Replication: Data is sent only from the source to the destination.
- ▶ Bi-directional Replication: Data is exchanged between the source and destination.
- ▶ Multi-master Replication: Multiple databases can be mastered simultaneously.



Benefits of Database Replication

- ▶ **High Availability:** Replication helps reduce the risk of a single point of failure by maintaining multiple copies of the data
- ▶ **Disaster Recovery:** Replicas can serve as off-site backups, allowing for quick recovery in the event of a disaster affecting the primary database
- ▶ **Load Balancing:** By directing read queries to replicas, the workload can be distributed, improving the overall scalability and performance of the system
- ▶ **Data Security:** Replicas can be used as a secure backup, protecting against data loss or corruption in the primary database

Setup Database Replication in MySQL

1

Configuring the Master Database

- Enable Binary Logging on the Master Database

Go to the MySQL my.ini file and add the following lines

```
log-bin=mysql-bin  
server-id=1
```

- Create a Replication user account

Log in to the MySQL shell and run the following commands:

```
CREATE USER 'repl'@'%' IDENTIFIED BY 'password';  
GRANT REPLICATION SLAVE ON *.* TO 'repl'@'%';  
FLUSH PRIVILEGES;
```

Setup Database Replication in MySQL

1

Configuring the Master Database

- Check the Binary Log status

Run the command `SHOW MASTER STATUS;` to note down the File and Position values.

Setup Database Replication in MySQL

2

Configuring the Slave Database

- Enable Replication on the Slave Database

Go to the MySQL `my.ini` file and add the following lines

```
log-bin=mysql-bin  
server-id=2
```

- Set the connection parameters for the Master Database

Log in to the MySQL shell and run the following command

```
CHANGE MASTER TO  
MASTER_HOST='master_host_name',  
MASTER_USER='repl',  
MASTER_PASSWORD='password',  
MASTER_LOG_FILE='mysql-bin.000001',  
MASTER_LOG_POS=100;
```

Setup Database Replication in MySQL

2

Configuring the Slave Database

- Start the Replication process

Run the command `START SLAVE;`

- Check the Replication status

Run the command `SHOW SLAVE STATUS\G` to verify that the Slave IO and Slave SQL Threads are running.

Setup Database Replication in MySQL

3

Testing the Database Replication

- Perform an INSERT, UPDATE, or DELETE operation on the Master Database
- Verify that the changes have been replicated to the Slave Database

Note that the specific values for the Master Host Name, User, and Password should be provided according to your setup. Also, ensure that the **MASTER_LOG_FILE** and **MASTER_LOG_POS** values match the ones obtained from the Master Database, so that the Replication can work correctly.