**MySQL Distributed Database Setup (Windows & WSL Ubuntu)**

This guide outlines the setup of a distributed MySQL database using Windows and WSL Ubuntu as two nodes.

**Prerequisites**

* Windows 10/11 with WSL 2
* Ubuntu installed via WSL
* MySQL Server installed on both Windows and WSL

**Installation**

**Windows Node (Primary)**

1. Download & install MySQL Community Server from [MySQL website](https://dev.mysql.com/downloads/mysql/).
2. Choose "Server only" during installation.
3. Set up a strong root password and enable MySQL as a Windows service.
4. Allow MySQL through Windows Firewall:
5. netsh advfirewall firewall add rule name="MySQL" dir=in action=allow protocol=TCP localport=3306

**WSL Ubuntu Node (Replica)**

1. Install MySQL:
2. sudo apt update && sudo apt install mysql-server -y
3. Secure the installation:
4. sudo mysql\_secure\_installation
5. Allow MySQL through the firewall:
6. sudo ufw allow 3306

**Configuration**

**Windows (Primary) Configuration**

1. Edit my.ini (C:\ProgramData\MySQL\MySQL Server 8.0):
2. [mysqld]
3. server-id = 1
4. log\_bin = mysql-bin
5. binlog\_format = ROW
6. binlog-do-db = shared\_db
7. bind-address = 0.0.0.0
8. Restart MySQL service:
9. net stop mysql80
10. net start mysql80

**WSL Ubuntu (Replica) Configuration**

1. Edit /etc/mysql/mysql.conf.d/mysqld.cnf:
2. server-id = 2
3. log\_bin = mysql-bin
4. relay\_log = mysql-relay-bin
5. log\_slave\_updates = 1
6. read\_only = 1
7. binlog-do-db = shared\_db
8. bind-address = 0.0.0.0
9. Restart MySQL:
10. sudo service mysql restart

**Setting Up Replication**

**Windows (Primary)**

1. Connect to MySQL:
2. mysql -u root -p
3. Create a replication user:
4. CREATE USER 'replicator'@'%' IDENTIFIED BY 'SecurePass123!';
5. GRANT REPLICATION SLAVE ON \*.\* TO 'replicator'@'%';
6. FLUSH PRIVILEGES;
7. Get master status:
8. SHOW MASTER STATUS;

**WSL Ubuntu (Replica)**

1. Connect to MySQL:
2. sudo mysql -u root -p
3. Configure replication:
4. CHANGE MASTER TO
5. MASTER\_HOST='<Windows\_IP\_Address>',
6. MASTER\_USER='replicator',
7. MASTER\_PASSWORD='SecurePass123!',
8. MASTER\_LOG\_FILE='<File\_from\_master\_status>',
9. MASTER\_LOG\_POS=<Position\_from\_master\_status>;
10. START SLAVE;
11. Verify replication:
12. SHOW SLAVE STATUS\G

**Testing Replication**

**On Windows (Primary)**

CREATE DATABASE shared\_db;

USE shared\_db;

CREATE TABLE test\_data (id INT PRIMARY KEY, message VARCHAR(100));

INSERT INTO test\_data VALUES (1, 'Data from Windows primary');

**On WSL Ubuntu (Replica)**

USE shared\_db;

SELECT \* FROM test\_data;

**Troubleshooting**

* Ensure both nodes can ping each other.
* Check error logs:
  + **Windows**: C:\ProgramData\MySQL\MySQL Server 8.0\Data\<hostname>.err
  + **WSL**: /var/log/mysql/error.log
* Restart replication if needed:
* STOP SLAVE;
* RESET SLAVE;
* START SLAVE;

**Notes**

* WSL IP changes after reboot;
* This setup is for demonstration; production requires additional security and monitoring.

This two-node MySQL setup enables distributed database operations across Windows and WSL Ubuntu.









