



## Connecting to the Database Server

1. So, in the last lab you have installed the database server and created a database on it.
2. This was all done on the DB instance server.
3. But in this lab, you are going to setup for Web instance server.



### A Quick Note:

- I want to install the MySQL client on Web VM. I want to be able to use that MySQL client to connect onto the MySQL database engine. So far, we have used the MySQL inbuilt command line utility on DB VM itself to connect onto the database engine. But from another machine, I want to be able to connect onto my SQL.
  - So, it's not only a matter about rules in a security group, about routes in a route table, it's also about the software itself. How do you connect on to that software, in this case, the database engine? I mean, I said I normally prefer to establish that connectivity.
  - First, understand whether it works before deploying an application or to the instance itself that would connect onto the database. Hence, I want to make use of the MySQL client. Also, I'm going to create a new MySQL user that will have the required permissions that will connect via the MySQL client.
  - We will also need to modify something known as a configuration file for MySQL on DB VM to listen on its private IP address. Because when it comes on to connectivity between web VM and DB VM, this is going to happen on the private IP address. So, I said from the MySQL perspective, we might need to do some configuration just to ensure that we can connect. Always important, understand from the perspective of the software as well.
4. First, exit from MySQL server in your instance and go to this particular folder and list the items or objects in it by using the following commands.

```
cd ..  
cd /etc  
cd mysql  
cd mysql.conf.d/  
ls
```

```
mysql> exit  
Bye  
ubuntu@ip-10-0-1-25:~$ cd ..  
ubuntu@ip-10-0-1-25:/home$ cd /etc  
ubuntu@ip-10-0-1-25:/etc$ cd mysql  
ubuntu@ip-10-0-1-25:/etc/mysql$ cd mysql.conf.d/  
ubuntu@ip-10-0-1-25:/etc/mysql/mysql.conf.d$ ls  
mysql.cnf  mysqld.cnf
```

5. Now you need change the permission to modify the file.

```
sudo chmod 644 mysql
```

```
ubuntu@ip-10-0-1-25:/etc/mysql/mysql.conf.d$ sudo chmod 644 mysql
```

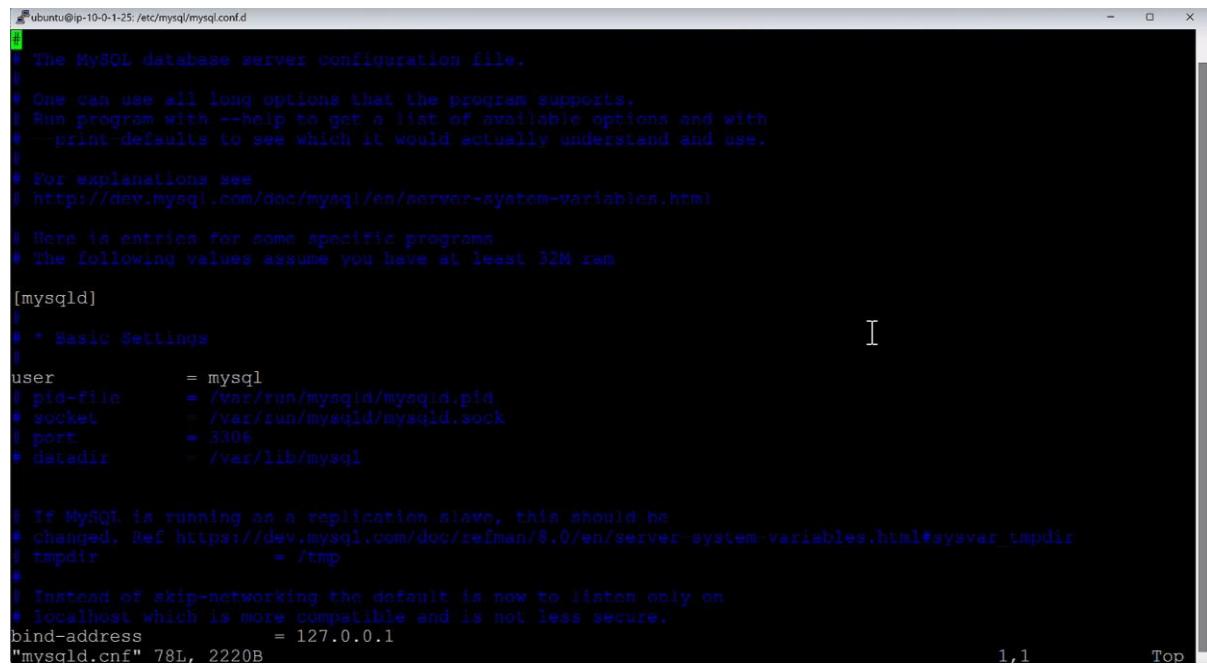
6. Now use this command to make changes to the file.

```
sudo vim mysqld.cnf
```

```
ubuntu@ip-10-0-1-25:/etc/mysql/mysql.conf.d$ sudo vim mysqld.cnf
```

7. After hitting enter you will see this on your screen then you need to click **ESC** on your keyboard, then you will be able to write here and make changes.

8. Then scroll down a little.



```
# The MySQL database server configuration file.

# One can use all long options that the program supports.
# Run program with --help to get a list of available options and with
# --print-defaults to see which it would actually understand and use.

# For explanations see
# http://dev.mysql.com/doc/mysql/en/server-system-variables.html

# Here is entries for some specific programs
# The following values assume you have at least 32M ram

[mysqld]

# * Basic Settings

user          = mysql
# pid-file    = /var/run/mysqld/mysqld.pid
# socket      = /var/run/mysqld/mysqld.sock
# port        = 3306
# datadir     = /var/lib/mysql

# If MySQl is running as a replication slave, this should be
# changed. Ref https://dev.mysql.com/doc/refman/8.0/en/server-system-variables.html#sysvar_tmpdir
# tmpdir       = /tmp

# Instead of skip-networking the default is now to listen only on
# localhost which is more compatible and is not less secure.
bind-address  = 127.0.0.1
```

9. You need to come down to bind address then change this address to your IP.
10. After changing it, now click ESC again and then click on Insert.
11. Now write :wq this save it the changes that you made then in last hit on the enter button.

```

bind-address          = 10.0.1.25
mysqlx-bind-address = 127.0.0.1
#
# * Fine Tuning
#
key_buffer_size      = 16M
# max_allowed_packet = 64M
# thread_stack        = 256K
#
# thread_cache_size   = -1
:wq

```

12. After the changes are made you need to restart the MySQL server on your instance.

```
ubuntu@ip-10-0-1-25:/etc/mysql/mysql.conf.d$ sudo service mysql restart
```

13. Now you need to connect to the database server again as root user.

```
mysql -u root -p
```

```

ubuntu@ip-10-0-1-25:/etc/mysql/mysql.conf.d$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.34-0ubuntu0.22.04.1 (Ubuntu)

Copyright (c) 2000, 2023, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> 
```

14. Now you need to create a new user again. Paste the below commands one by one

#### ■ Create a new user in the MySQL database server

```

CREATE USER 'sqlusr'@'%' IDENTIFIED BY 'sqlusr@1212';
GRANT ALL PRIVILEGES ON *.* TO 'sqlusr'@'%' WITH GRANT OPTION;
FLUSH PRIVILEGES;

```

```

mysql> CREATE USER 'appusr'@'%' IDENTIFIED BY
Query OK, 0 rows affected (0.02 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO          @'%' WITH GRANT OPTION;
Query OK, 0 rows affected (0.01 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

mysql> 
```

15. Now you need to exit from MySQL server until you reach to your web server. By the changed IP address, you can see that you are on the webserver instance now.

```
mysql> exit
Bye
ubuntu@ip-10-0-1-25:/etc/mysql/mysql.conf.d$ exit
logout
There are stopped jobs.
ubuntu@ip-10-0-1-25:/etc/mysql/mysql.conf.d$ exit
logout
Vim: Caught deadly signal TERM
Vim: preserving files...
Vim: Finished.

Connection to 10.0.1.25 closed.
ubuntu@ip-10-0-0-68:~$
```

16. On the web server now, you need to install the MySQL server.

```
sudo apt-get install mysql-client
```

17. Once it is done, now you need to go to the console and navigate to security groups. There you need to look for the security group which is connected with the DB instance. Then select that Security group and add an inbound rule for MySQL/Aurora. Use the Private IP Address of web instance. Then click on save changes and go back to the Putty session.

Security group rule ID	Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info
sgr-00158661c7d04bca7	SSH	TCP	22	Custom ▾ <input type="text" value="0.0.0.0"/> X	<input type="button" value="Delete"/>
-	MySQL/Aurora	TCP	3306	Custom ▾ <input type="text" value="10.0.0.68"/> X	<input type="button" value="Delete"/>

18. In the instance now you need to write this command to login into the MySQL server from your web instance. So, in the below code you need to enter the IP of your DB instance and then the username and password. Then you will in the MySQL server from your web instance.

```
sudo mysql -h 10.0.1.25 -u sqlusr -p
```

```
ubuntu@ip-10-0-0-68:~$ sudo mysql -h 10.0.1.25 -u appusr -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.0.34-Ubuntu0.22.04.1 (Ubuntu)

Copyright (c) 2000, 2023, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> █
```

19. Now to confirm that you are in the correct SQL server you need to view your table that you created.

```
USE demodb;
SELECT * FROM Course;
```

```
mysql> SELECT*FROM Course;
+-----+-----+-----+
| CourseID | CourseName           | Rating |
+-----+-----+-----+
|      1 | Computer Science - B.tech |   4.5  |
|      2 | Information Technology - B.tech |   4.6  |
|      3 | Mechanical Engineering - B.tech |   4.7  |
+-----+-----+-----+
3 rows in set (0.00 sec)
```

So, you have done all of this so, that you can connect to your database with the web instance.