AA-Koala Deployment Guide

Recommended System Requirement

- **CPU**: 3.2GHz x 2 cores
- **RAM**: 16GB
- **Hard drive**: 40GB
- **Operating system**: Linux(e.g. ubuntu or centOS with docker and git installed)

Before you start: Make sure Docker and Git are installed on the Server

- **Install Docker** (Here takes centOS as an example. For other operating system, instructions can be found here https://docs.docker.com/engine/install/centos/)

```
# install and start docker
sudo yum install -y yum-utils
sudo yum-config-manager \
    --add-repo \
    https://download.docker.com/linux/centos/docker-ce.repo
sudo yum install -y docker-ce docker-ce-cli containerd.io
sudo systemctl start docker

# Test if proper installed
sudo docker run hello-world
```

- **Install docker compose**

```
sudo curl -L
"https://github.com/docker/compose/releases/download/1.27.4/docker-compose-
$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
sudo chmod +x /usr/local/bin/docker-compose
sudo ln -s /usr/local/bin/docker-compose /usr/bin/docker-compose

# Test if proper installed
docker-compose --version
```

- **Install git**

```
sudo yum install -y git
```

Deploy our service

1. Pull code from our github repo

```
git clone https://github.com/geoffreychen831/AABKoala.git
```

(Alternatively, you can upload the server code onto the server)

2. Deploy

```
cd Server
sudo docker-compose up -d
```

Done, by far you have finished the deployment of your project, both backend and MySQL database are up running. You can check them by executing command `sudo docker ps` to see if there are two processes (backend and database) running.

What did the docker-compose do?

- Launch the MySQL database
- Set MySQL database password type to legacy passsword
- Map database directory to `/data` (i.e. All the database data are stored in `/data` directory in the Linux file system)
- (if it is first time launching) Create schema `NDS`

- Launch Backend
- Connect backend to MySQL database
- Map graph directory to `/graph` (i.e. All the generated plots are stored in `/graph` directory in the Linux file system)
- (if first time launching) Create tables specified in `model.py` class. (if not first time launching) check if `model.py` class has been modified, if changed, modify the tables, if not, do nothing.
- Creates a backend super user (username: client, password: AA-koala123456, you can convert this user info into base64 format and put it in local program `config.py` to allow local program access to the backend)

(Optional) Change code

- If you wish to change code, the first thing you need to do is to upload the modified python files onto the server and replace the same python file on server.
- And then execute the folloing command to stop all running docker containers

```
sudo docker stop $(sudo docker ps)
```

- Build a new docker image based on the modified code

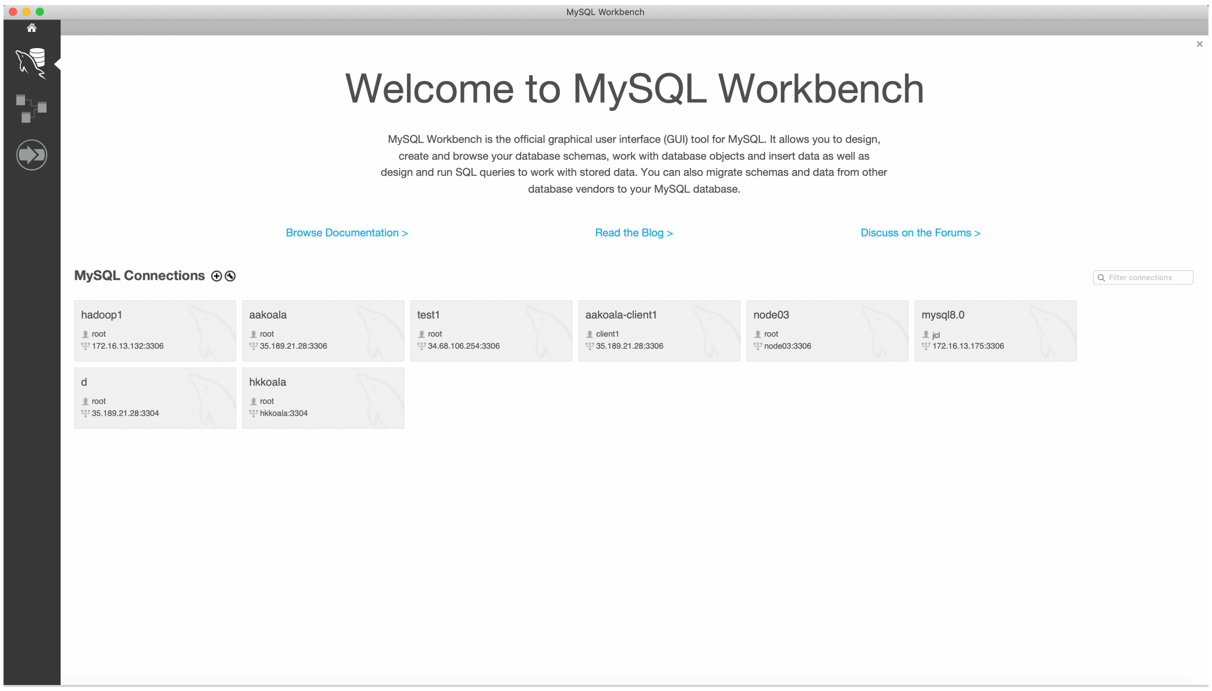
```
sudo docker-compose build --no-cache
```

- Launch the new image

```
sudo docker-compose up
```

(Optional) Manage MySQL database users

- Download MySQL workbench from here: https://dev.mysql.com/downloads/workbench/
- Open MySQL workbench. On this page, create a new connection by click on the `+` button next to `MySQL Connections`



MySQL Workbench

Welcome to MySQL Workbench

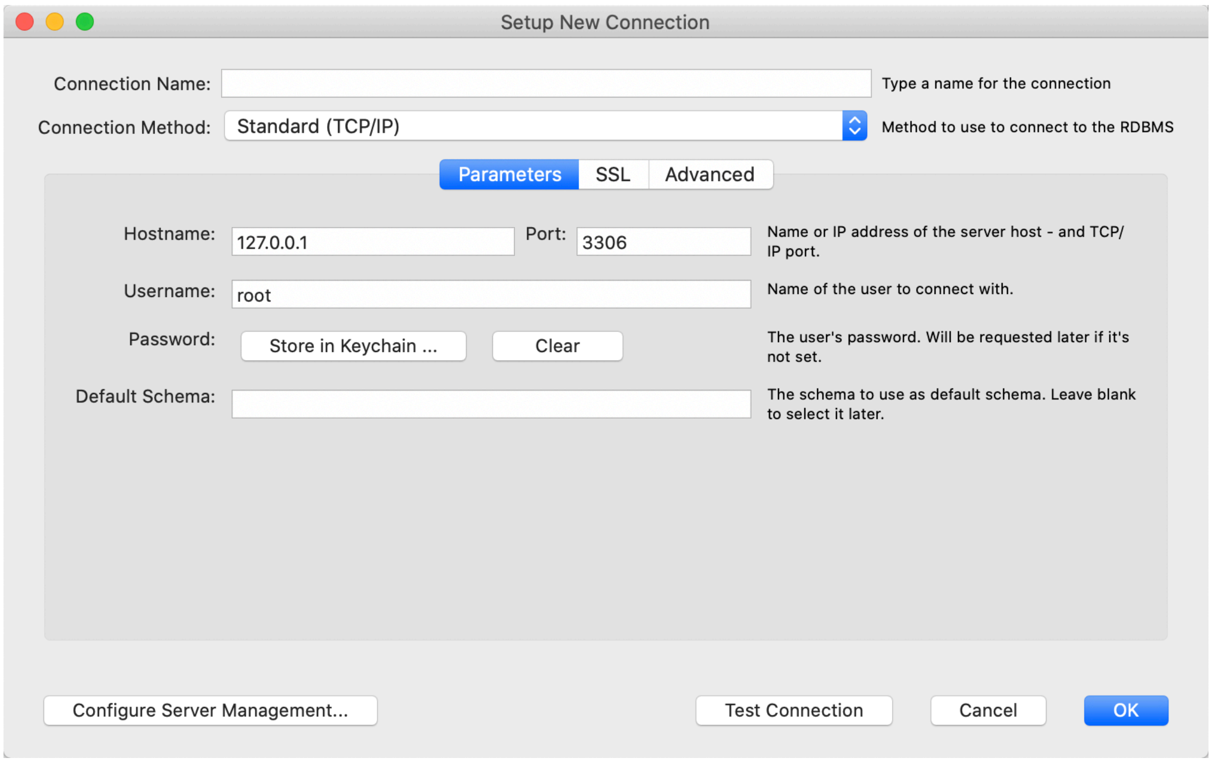
MySQL Workbench is the official graphical user interface (GUI) tool for MySQL. It allows you to design, create and browse your database schemas, work with database objects and insert data as well as design and run SQL queries to work with stored data. You can also migrate schemas and data from other database vendors to your MySQL database.

Browse Documentation > Read the Blog > Discuss on the Forums >

MySQL Connections

hadoop1 root 172.16.13.132:3306	aakoala root 35.189.21.28:3306	test1 root 34.68.106.254:3306	aakoala-client1 client1 35.189.21.28:3306	node03 root node03:3306	mysql8.0 jcl 172.16.13.175:3306
d root 35.189.21.28:3304	hkkoala root hkkoala:3304				

- Fill out with your `host` , `port` , `username` , `password` . You can costimize the `Connection Name` to any name you want. It is just a display name, it does not affect the connection. You can click `Test Connection` to see if the configuration is correct. If it successfully connects, click `ok` to make changes take effect. If connection fails, check if you have filled in the correct info or check if MySQL is running on the server.



Setup New Connection

Connection Name: [ ] Type a name for the connection

Connection Method: Standard (TCP/IP) Method to use to connect to the RDBMS

Parameters | SSL | Advanced

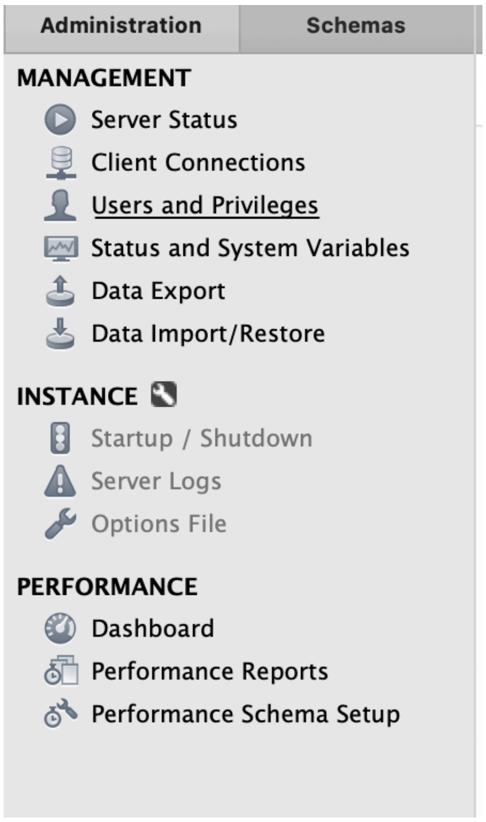
Hostname: 127.0.0.1 Port: 3306 Name or IP address of the server host - and TCP/IP port.

Username: root Name of the user to connect with.

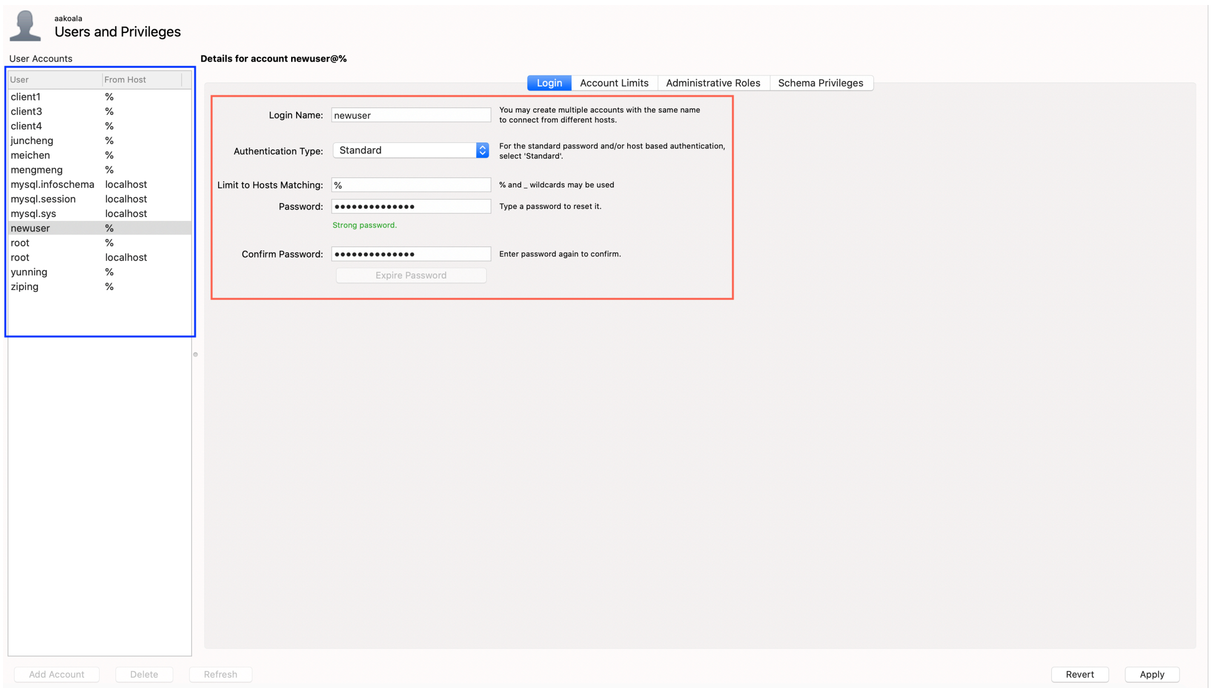
Password: Store in Keychain ... Clear The user's password. Will be requested later if it's not set.

Default Schema: [ ] The schema to use as default schema. Leave blank to select it later.

- After clicking `ok` , a new conections will popup at the Mysql Workbench Launch page, click on it to log in.
- In administration, click on `Users and Privileges`



- The blue box lists current users, you can add or delete users or change user privilige.
- For example. click `Add Account` at bottom left and fill the new user info in the red box.



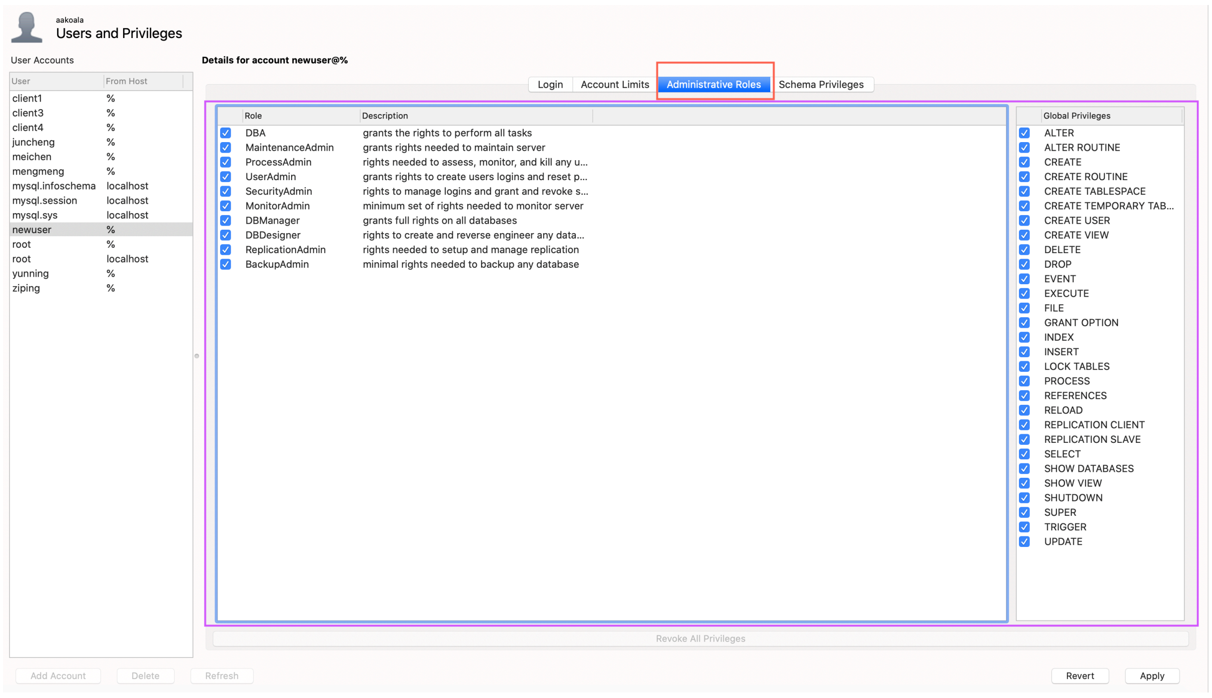
User Accounts

User	From Host
client1	%
client3	%
client4	%
juncheng	%
meichen	%
mengmeng	%
mysql.infoschema	localhost
mysql.session	localhost
mysql.sys	localhost
newuser	%
root	%
root	localhost
yunning	%
ziping	%

Details for account newuser@%

Login Name:	newuser	You may create multiple accounts with the same name to connect from different hosts.
Authentication Type:	Standard	For the standard password and/or host based authentication, select 'Standard'.
Limit to Hosts Matching:	%	% and _ wildcards may be used
Password:	••••••••••••••	Type a password to reset it.
	Strong password.	
Confirm Password:	••••••••••••••	Enter password again to confirm.

- In Administration roles tab, you can manage the privillege of the selected user, including most of the allowed key sql operation


aakoala
Users and Privileges

User Accounts

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client1	%
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mysql.infoschema	localhost
mysql.session	localhost
mysql.sys	localhost
newuser	%
root	%
root	localhost
yunning	%
ziping	%

Details for account newuser@%

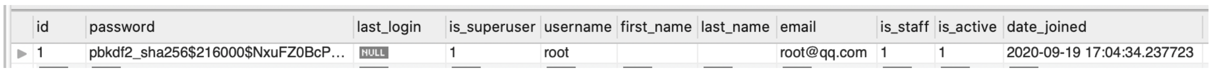
	Role	Description
✓	DBA	grants the rights to perform all tasks
✓	MaintenanceAdmin	grants rights needed to maintain server
✓	ProcessAdmin	rights needed to assess, monitor, and kill any u…
✓	UserAdmin	grants rights to create users logins and reset p…
✓	SecurityAdmin	rights to manage logins and grant and revoke s…
✓	MonitorAdmin	minimum set of rights needed to monitor server
✓	DBManager	grants full rights on all databases
✓	DBDesigner	rights to create and reverse engineer any data…
✓	ReplicationAdmin	rights needed to setup and manage replication
✓	BackupAdmin	minimal rights needed to backup any database

	Global Privileges
✓	ALTER
✓	ALTER ROUTINE
✓	CREATE
✓	CREATE ROUTINE
✓	CREATE TABLESPACE
✓	CREATE TEMPORARY TAB…
✓	CREATE USER
✓	CREATE VIEW
✓	DELETE
✓	DROP
✓	EVENT
✓	EXECUTE
✓	FILE
✓	GRANT OPTION
✓	INDEX
✓	INSERT
✓	LOCK TABLES
✓	PROCESS
✓	REFERENCES
✓	RELOAD
✓	REPLICATION CLIENT
✓	REPLICATION SLAVE
✓	SELECT
✓	SHOW DATABASES
✓	SHOW VIEW
✓	SHUTDOWN
✓	SUPER
✓	TRIGGER
✓	UPDATE

- click `Apply` at bottom right to make changes take effect.

(Not recommended to change) Manage backend users

- table `auth_user` is responsible for the users. If you do `select * from auth_user`, you can get the following



id	password	last_login	is_superuser	username	first_name	last_name	email	is_staff	is_active	date_joined
1	pbkdf2_sha256$216000$NxuFZ0BcP…	NULL	1	root			root@qq.com	1	1	2020-09-19 17:04:34.237723

- Currently there is only have one user, whose username is `root` and it is a superuser. The password displayed here is a SHA digest result of the actual password, threrefore it looks different from the password you use.

Sample Server

- There is a sample server running on `43.101.11.1`, the backend and MySQL database are already up on this server, you can play with it with the given local program. (Local program is already configured with default superuser access to this service)

More Information

Explaining deployment related files

- `dockerfile` : For dockerising backend service
- `docker-compose.yml` : Main file for dockerising backend service and MySQL server
- `docker-entrypoint.sh` : executes required commands (i.e migrate database, create super user) after the server starts
- `requirement.txt` : Specifiles all the required python libraries
- `wait-for-it.sh` : A shell script file used in docker compose to force the backend service start after the database finishes initialization