

USE MSSQL AS PRODUCT DATABASE

1. Install MSSQL

As per wso2 documentation WSO2 APIM only Microsoft SQL Server 2017. Tested with MSSQL Server 2022 too.

Ref:

<https://apim.docs.wso2.com/en/4.0.0/install-and-setup/setup/reference/product-compatibility/#api-m-runtime-compatibility>

1.1 Windows environment

- Download and install SQL Server from <https://www.microsoft.com/en-us/sql-server/sql-server-downloads>
- Once the installation is completed, install Microsoft SQL Server Management Studio (Microsoft SSMS)

1.2 Linux environment

<https://learn.microsoft.com/en-us/sql/linux/quickstart-install-connect-ubuntu?view=sql-server-ver16>

2. Download the latest mssql jdbc driver and put it inside <pack>/repository/components/lib

Can be downloaded here.

<https://learn.microsoft.com/en-us/sql/connect/jdbc/download-microsoft-jdbc-driver-for-sql-server?view=sql-server-ver16>

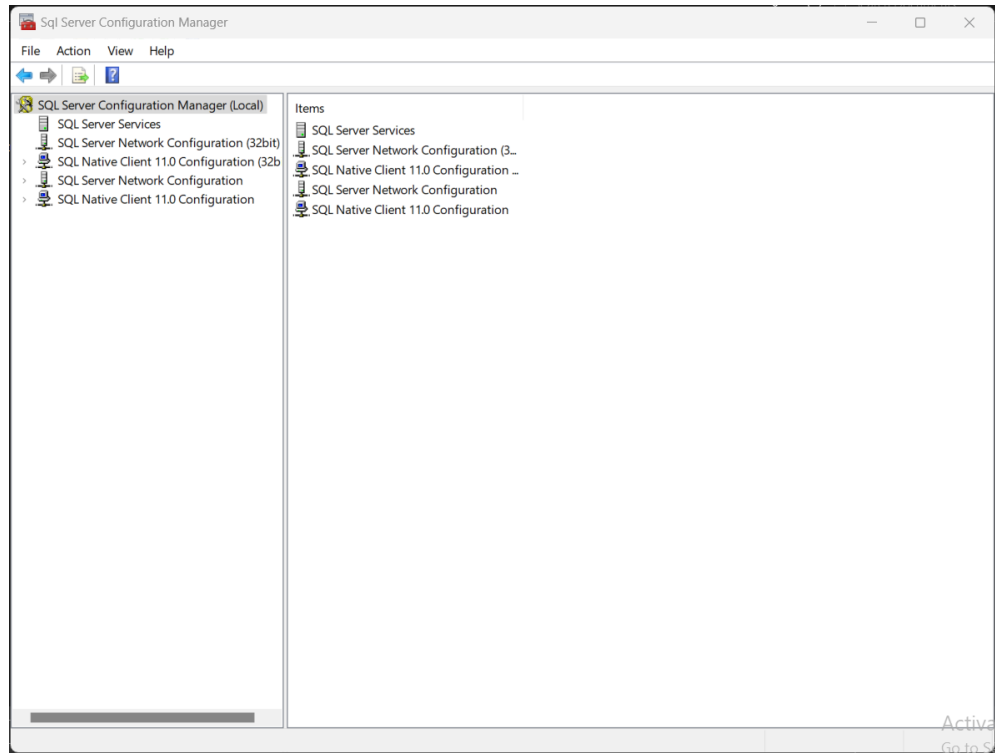
Tested driver: mssql-jdbc-12.4.1.jre8.jar

3. Create a new database for device management in your mysql database

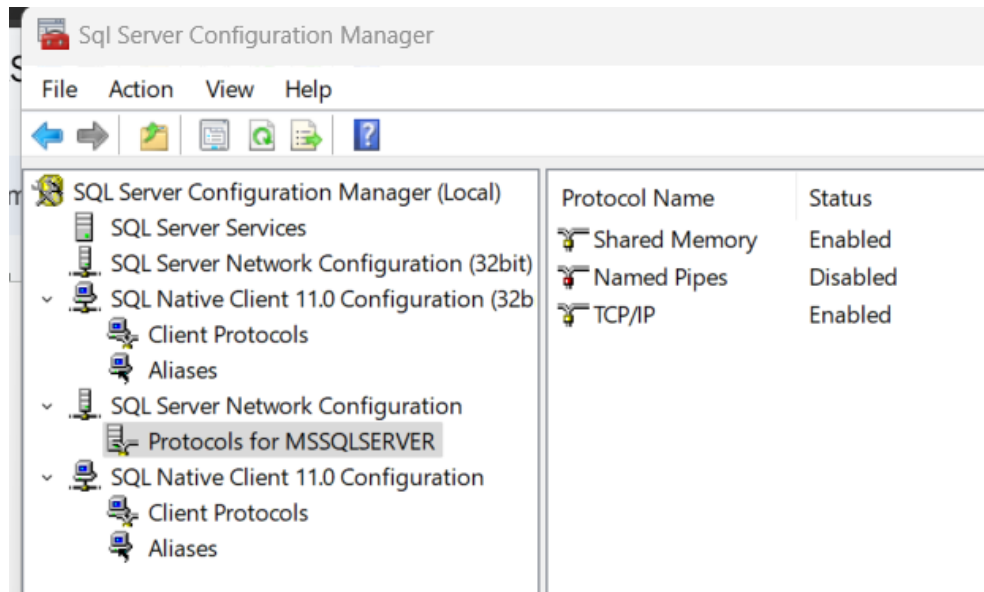
3.1 Windows environment

Enable TCP/IP protocols

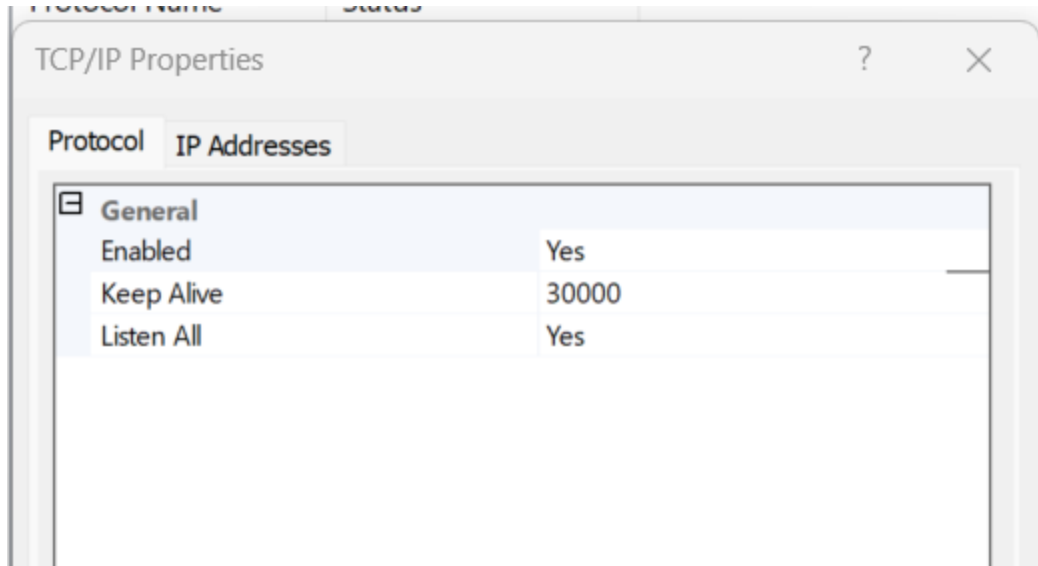
- Open SQL Server Configuration Manager



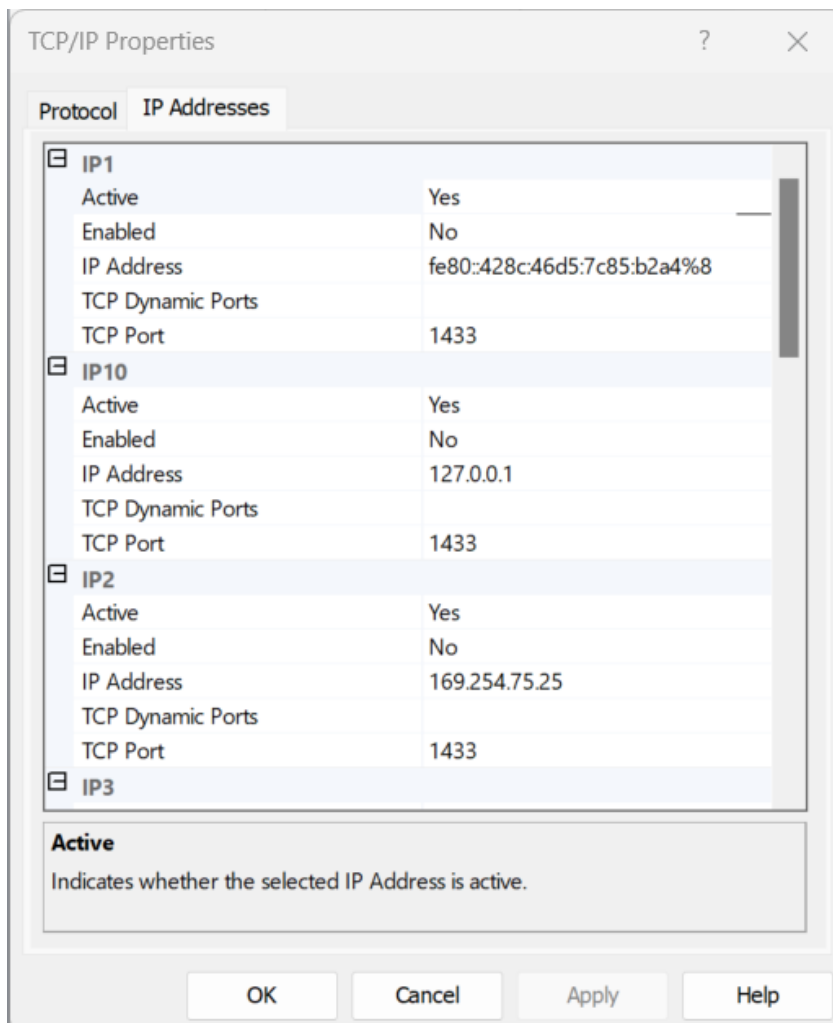
- Enable TCP/IP and disable Named Pipes from all protocols



- Double click TCP/IP to open the TCP/IP properties window and set Listen All to Yes on the protocol tab



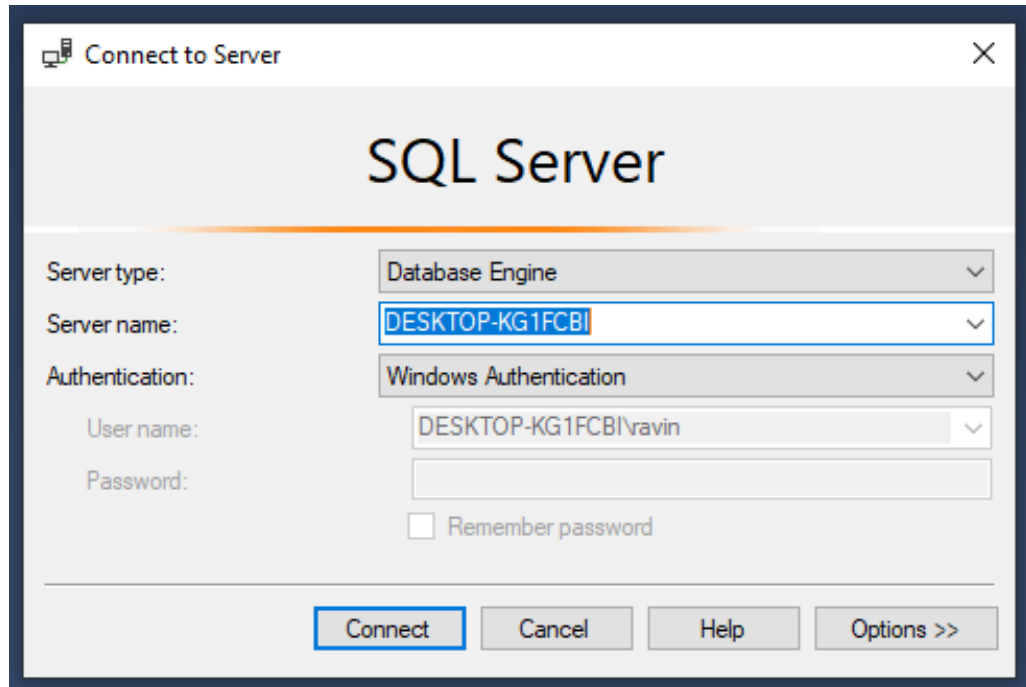
- On the IP Address tab, disable TCP Dynamic Ports by leaving it blank and give a valid TCP Port, so that Microsoft SQL server will listen on that port



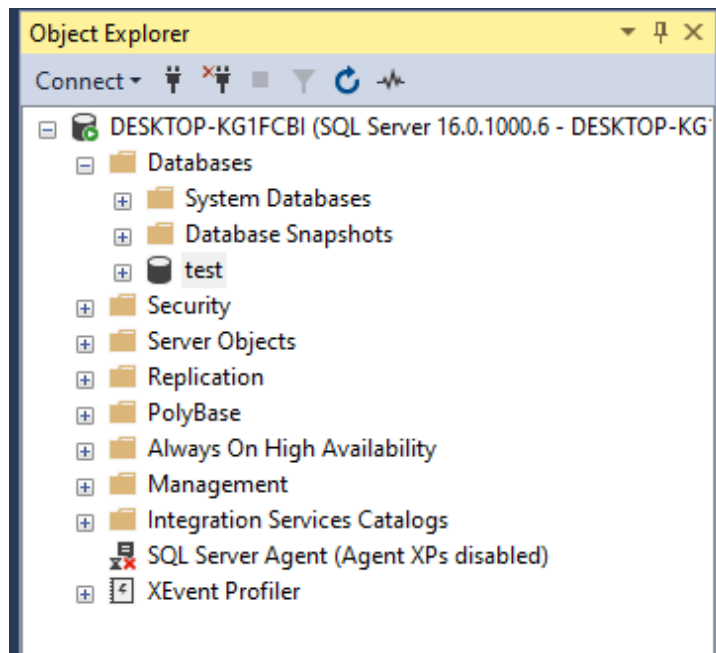
- Restart Microsoft SQL server

Create the database and user

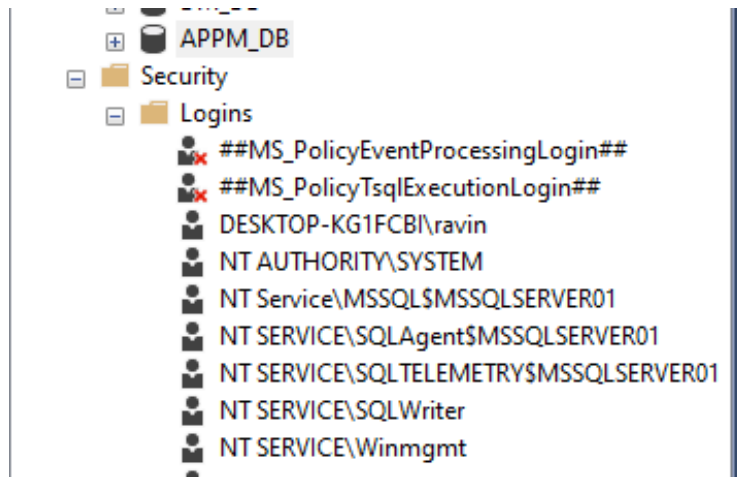
- Open Microsoft SQL Server Management Studio and connect to SQL server



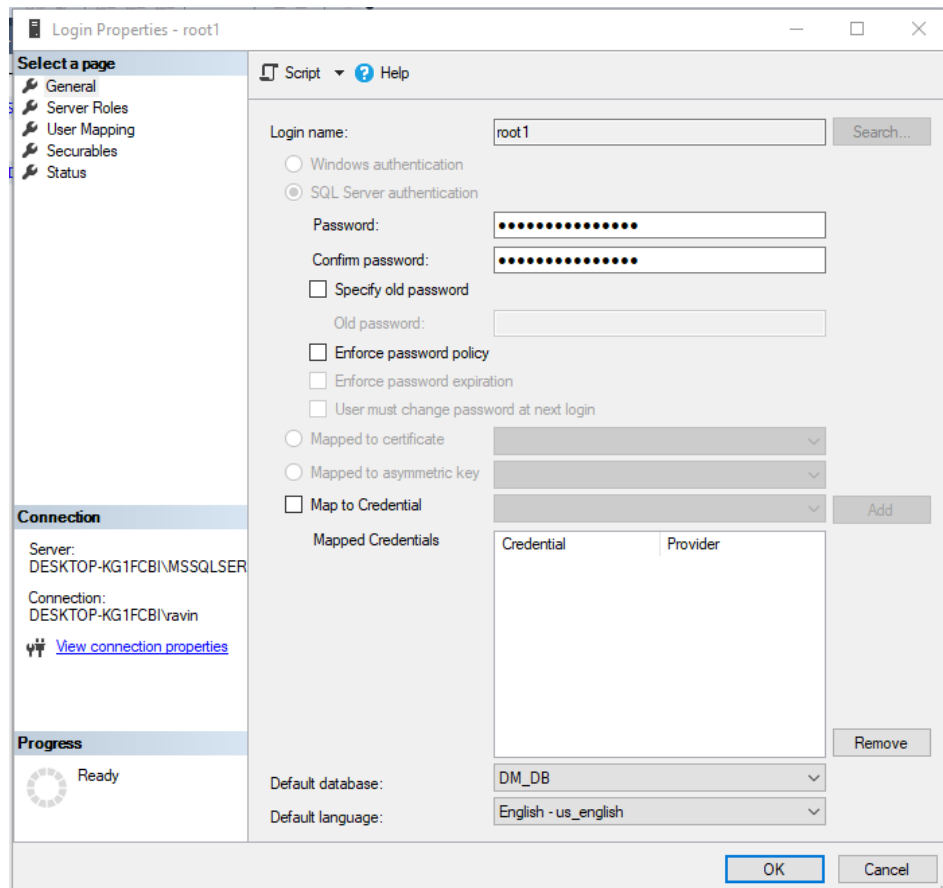
- Right click on Databases option in Object Explorer in left corner and create databases DM_DB, APPM_DB, APIM_DB & SHARED_DB



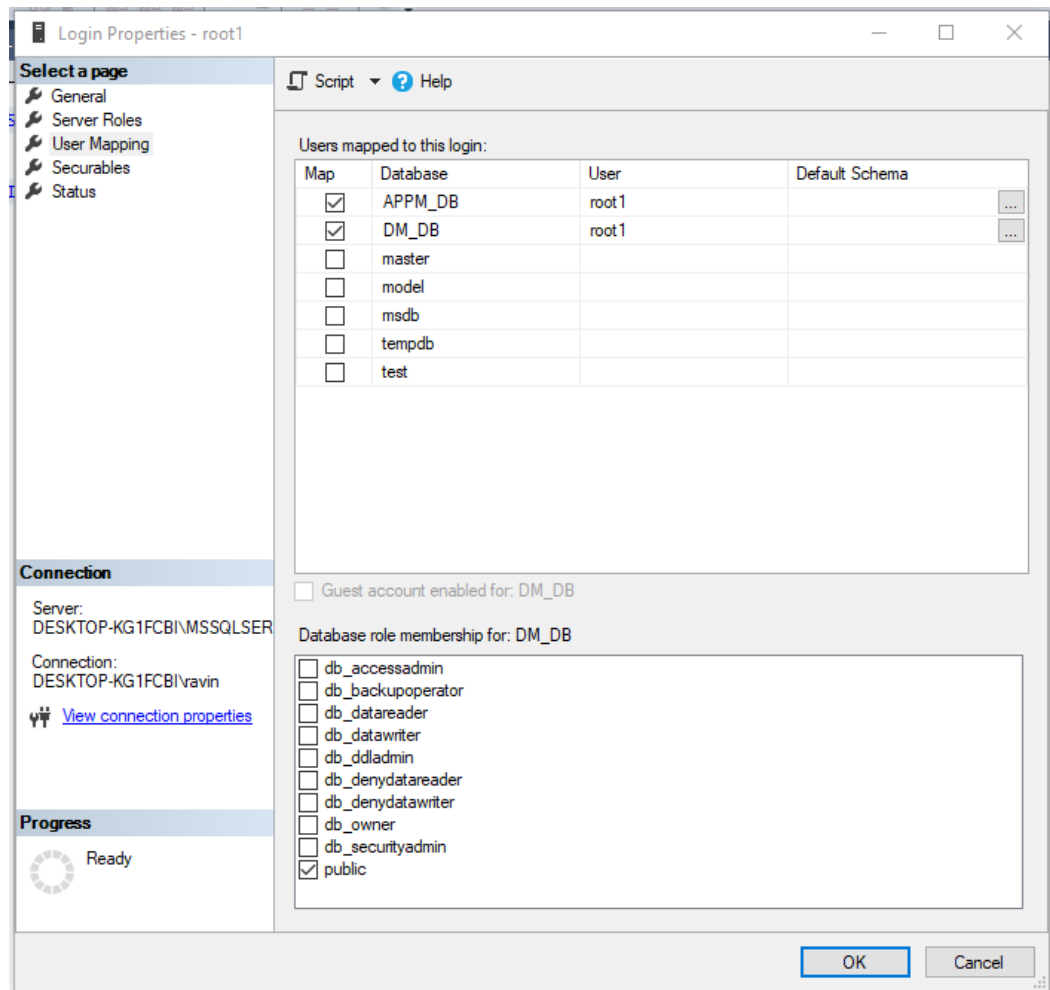
- Right click on Security > Logins option in Object Explorer and create a new user to access DM_DB, APPM_DB, APIM_DB & SHARED_DB



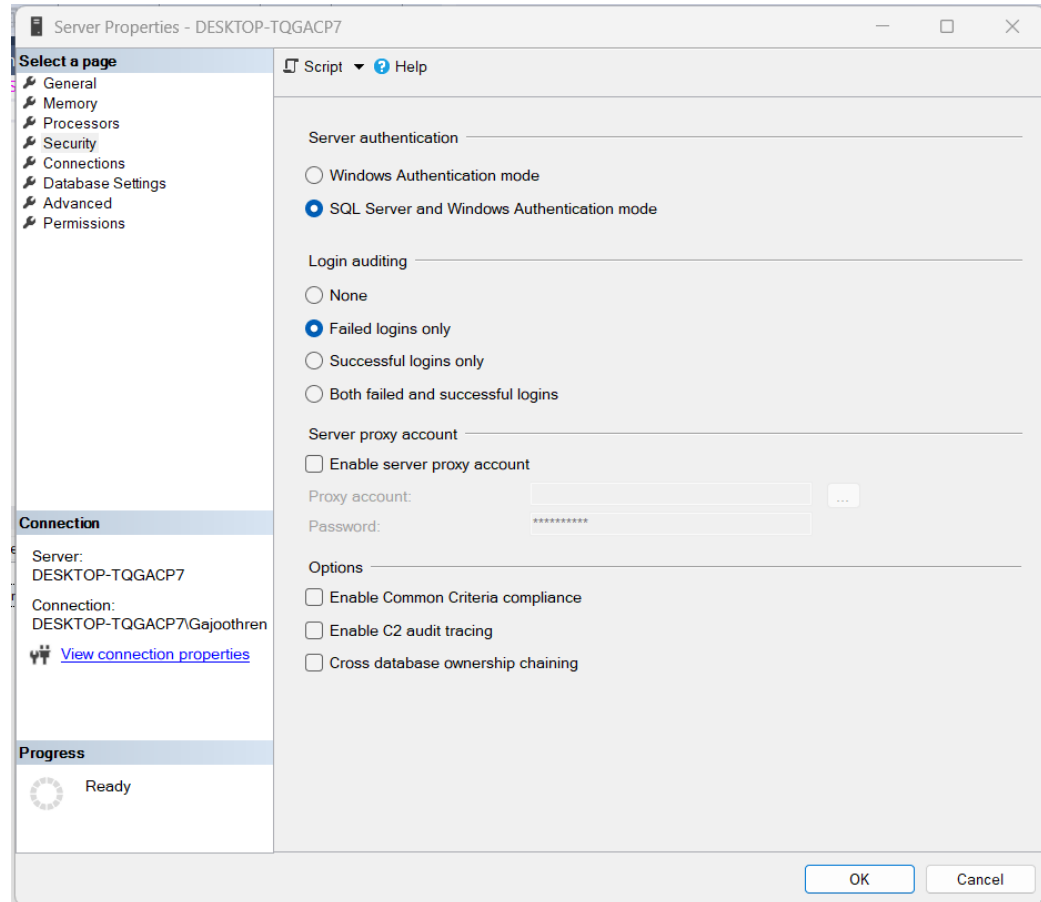
- Note:** When creating a user make sure to untick the below options
 - Enforce Password Policy
 - Enforce Password Expiration
 - User must change password at next login



- Click on User mapping option in Login Properties of the user and tick before DM_DB, APPM_DB, APIM_DB & SHARED_DB.



- Right click on the database server and go to properties. Select Security page. And Select option SQL server and Windows Authentication mode under server authentication section



Grant permission to user

- Write click on DM_DB and select new Query and execute the following command to give access to the created user. Do the same for all other dbs too.

```
USE DM_DB;
```

```
SET ANSI_PADDING OFF
GO
```

```
GRANT INSERT, UPDATE, SELECT, DELETE TO <root1>;
```

In here root1 is the user

3.2 Linux environment

- Connect to mssql db using sqlcmd
sqlcmd -U sa -P {PASSWORD}

Note:-

There can be a error occurring like below:

Sqlcmd: Error: Microsoft ODBC Driver 18 for SQL Server : SSL Provider: [error:1416F086:SSL routines:tls_process_server_certificate:certificate verify failed:self signed certificate].
Sqlcmd: Error: Microsoft ODBC Driver 18 for SQL Server : Client unable to establish connection.
For solutions related to encryption errors, see <https://go.microsoft.com/fwlink/?linkid=2226722>.

Use **sqlcmd -U sa -P {PASSWORD} -C** to overcome.

- Create databases for DM_DB, APPM_DB
CREATE DATABASE DM_DB;
CREATE DATABASE APPM_DB;
CREATE DATABASE APIM_DB;
CREATE DATABASE SHARED_DB;

4. Create tables in the database

- Go to <pack>/dbscripts/cdm/ (as for application management db, the path is <pack>/dbscripts/cdm/application-mgt) and execute the mssql.sql in the database you created at step 3.

DM_DB - <pack>/dbscripts/cdm/mssql.sql
- <pack>/dbscripts/cdm/plugins/android/mssql.sql
- <pack>/dbscripts/cdm/plugins/ios/mssql.sql
- <pack>/dbscripts/cdm/plugins/windows/mssql.sql

APPM_DB - <pack>/dbscripts/cdm/application-mgt/mssql.sql
APIM_DB - <pack>/dbscripts/apimgt/mssql.sql
SHARED_DB - <pack>/dbscripts/mssql.sql

4.1 Windows environment

- Open SSMS
- Right click on the DM_DB and select New query. Then copy paste the DM_DB sql script and execute it. (as for application management db, the path is <pack>/dbscripts/cdm/application-mgt)
- Do the same for APPM_DB, APIM_DB & SHARED_DB

4.2 Linux environment

- Can use this command to run mssql script file
sqlcmd -U root -P root -i {FILE_PATH}/mssql.sql

5. Add database configs to <pack>/repository/conf/deployment.toml

- Add configs for device_mgt, app_mgt, device_mgt_plugins, APIM_DB and SHARED_DB (User_mgt & Registry tables are added to same SHARED_DB)


```
[database.device_mgt]
type = "mssql"
url =
"jdbc:sqlserver://localhost:1433;databaseName=DM_DB;SendStringParametersAsUnicode=false;
encrypt=true;trustServerCertificate=true;"
username = "root"
password = "root"
```

```
[database.app_mgt]
type = "mssql"
url =
"jdbc:sqlserver://localhost:1433;databaseName=APPM_DB;SendStringParametersAsUnicode=fal
se;encrypt=true;trustServerCertificate=true;"
username = "root"
password = "root"
```

```
[database.android]
type = "mssql"
url =
"jdbc:sqlserver://localhost:1433;databaseName=DM_DB;SendStringParametersAsUnicode=false;
encrypt=true;trustServerCertificate=true;"
username = "root1"
password = "root1"
driver = "com.microsoft.sqlserver.jdbc.SQLServerDriver"
```

```
[database.ios]
type = "mssql"
url =
"jdbc:sqlserver://localhost:1433;databaseName=DM_DB;SendStringParametersAsUnicode=false;
encrypt=true;trustServerCertificate=true;"
username = "root1"
password = "root1"
driver = "com.microsoft.sqlserver.jdbc.SQLServerDriver"
```

```
[database.windows]
type = "mssql"
url =
"jdbc:sqlserver://localhost:1433;databaseName=DM_DB;SendStringParametersAsUnicode=false;
encrypt=true;trustServerCertificate=true;"
username = "root1"
password = "root1"
driver = "com.microsoft.sqlserver.jdbc.SQLServerDriver"
```

```
[database.apim_db]
type = "mssql"
url =
"jdbc:sqlserver://localhost:1433;databaseName=APIM_DB;SendStringParametersAsUnicode=fals
e;encrypt=true;trustServerCertificate=true;"
```

```
username = "root1"  
password = "root1"  
driver = "com.microsoft.sqlserver.jdbc.SQLServerDriver"  
validationQuery = "SELECT 1"
```

```
[database.shared_db]  
type = "mssql"  
url =  
"jdbc:sqlserver://localhost:1433;databaseName=SHARED_DB;SendStringParametersAsUnicode  
=false;encrypt=true;trustServerCertificate=true;"  
username = "root1"  
password = "root1"  
driver = "com.microsoft.sqlserver.jdbc.SQLServerDriver"  
validationQuery = "SELECT 1"
```

6. Start the pack

```
Windows    - Open iot-server.bat  
Linux      - iot-server.sh start
```