

SOP: IQCare to KenyaEMR system migration v.20th Jun 2020

Tasks:	Perform database migration from IQCare to KenyaEMR system
Objective:	Support a single EMR platform across the country
Who:	KenyaHMIS/ Service Delivery Partners/ MoH/ Facilities
Required Materials:	Functional IQCare System, Working KenyaEMR environment, Migration toolkit, Backup disk, Internet

Overview:

The migration SOP is intended to provide a user with stepwise guidance on how to carry out a successful IQCare to KenyaEMR migration at a facility. The document includes notes on procedures and detailed screenshots for illustration. It is imperative to pay special attention to the listed prerequisites and the essential steps you need to take prior to commencing the migration.

Prerequisite:

- MySQL5.6
- Microsoft SQL v2014+
- Java JDK 8+
- Workbench latest
- Pentaho Data Integration (PDI) Tool
- IQCare Database preinstalled
- Minimum version IQCare version 2.2.x

Before you begin.

1. Ensure all the preliminary data quality checks and validations procedures have been carried out. (See data validation section).
2. Backup IQCare Database on an external drive
3. Ensure IQCare is at version 2.2.1. if not, do upgrade first.
4. Refresh IQTools
5. Execute the validation script (Provided with the toolkit)
6. Upload data into DWH using DWAPI for all the three docketts i.e. MPI, C&T, HTS
7. Generate MoH731 reports in IQTools and keep a copy separately

SECTION 1: PREPARATIONS

STEP

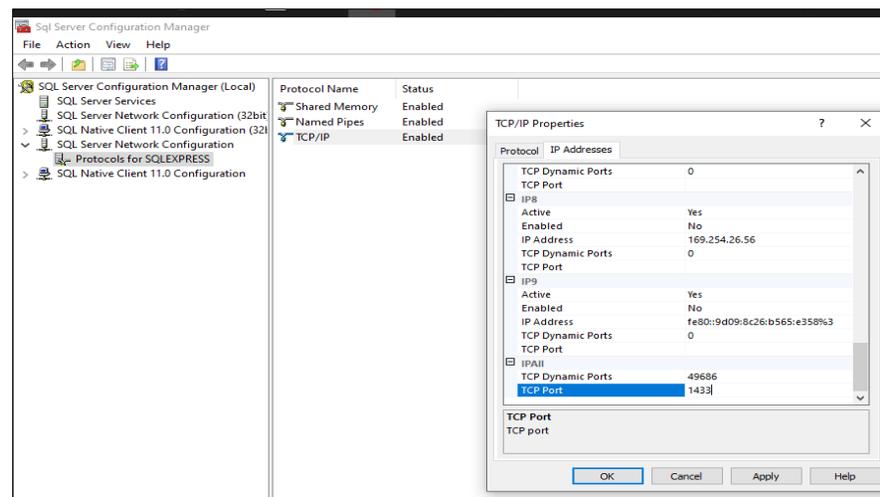
SCREENSHOT

Before installation:

- i. Enable Shared memory
- ii. Enabled Named pipes
- iii. Allow TCP/IP connection to the host on port 1433 and enable Named Pipes

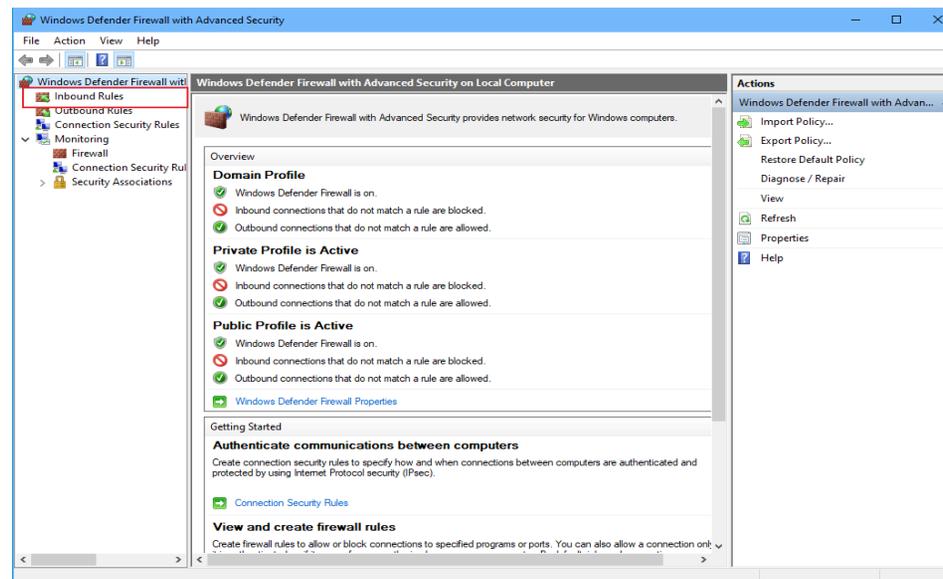
Procedure:

- i. On the Start menu, click Run, type SQL Configuration Manager and then click OK to open.
- ii. Expand SQL Server Network Configuration
- iii. Go to shared memory and set it to **Enabled**
- iv. Go to Named Pipes and set Status to **Enabled**
- v. Go to Protocol and Enable TCP/IP on the Right box
- vi. Double Click on TCP/IP and go to IP addresses and put port 1433 under IP ALL for TCP port.
- vii. On SQL Native Client select client protocol and enable TCP/IP



2. Open 1433 port in the Windows firewall for TCP access

- i. On the Start menu, click Run, type `wf.msc`, and then click OK.
- ii. In the Windows Firewall with Advanced Security, in the left pane, right-click Inbound Rules
- iii. Click New Rule in the action pane (upper right corner).
- iv. In the Rule Type dialog box, select Port, and then click Next
- v. In the Protocol and Ports, type 1433 TCP. Select Specific local ports then Next,
- vi. In the Action dialog box, select Allow the connection and then click Next
- vii. In the Profile dialog box check the three options: Domain, private and public. Click Next.
- viii. In the Name dialog box, type "Allow SQL 1433 Inbound" and add a description
- ix. Finish.

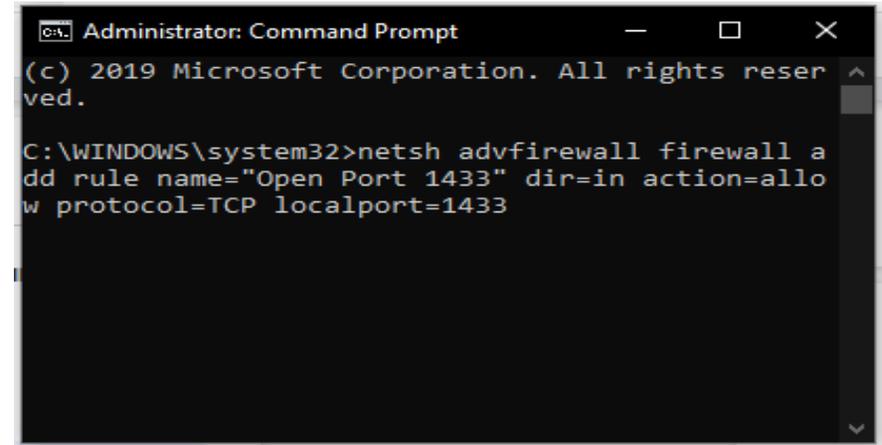


Alternatively:

You can use the command terminal as follows:

- i. Right-click on the windows icon and open PowerShell as admin / or **cmd** as admin and past the following command

```
netsh advfirewall firewall add rule name="Open Port 1433" dir=in action=allow protocol=TCP localport=1433
```



```
Administrator: Command Prompt

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C:\WINDOWS\system32>netsh advfirewall firewall add rule name="Open Port 1433" dir=in action=allow protocol=TCP localport=1433
```

3. Set Java Path

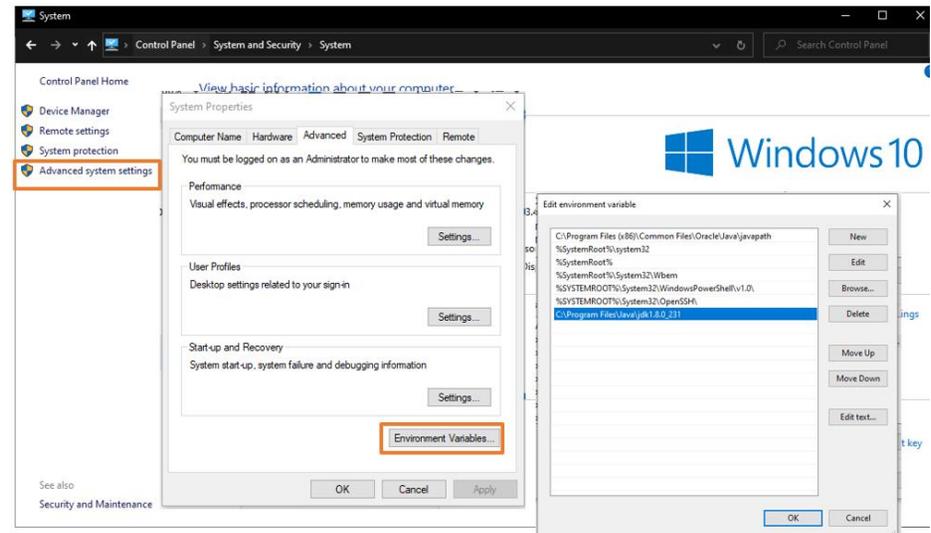
Procedure:

- i. On Drive C:\ copy the java path e.g
`C:\Program Files\Java\jdk1.8.0_231\bin`
- ii. Click on start -> Control Panel->Advanced System Setting->Environment Variable
- iii. Under System Variable, Double Click Path -> Click on New -> Past the java path->
- iv. Click OK and exit.

Alternatively:

- Click on the windows logo and on "Windows search" type advanced system settings
- Under System Variable, Double Click Path -> Click on New -> Past the java path->
- Click OK and exit.

NB: Restart machine for changes to take effect.

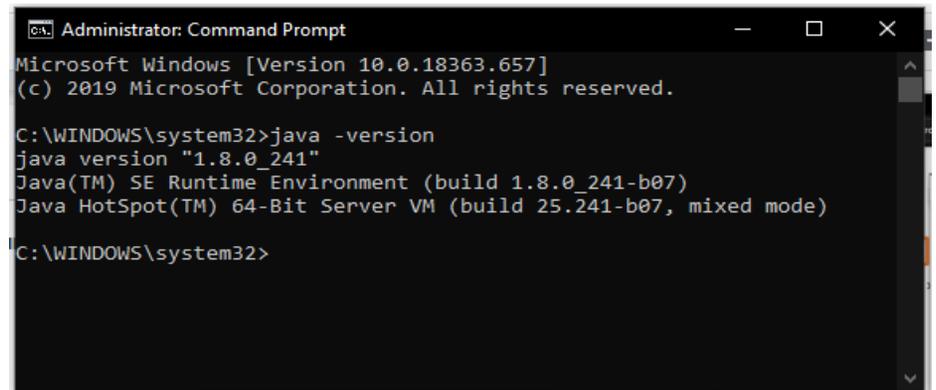


4. Checking the current Java Version

After configuring the java path, you need to confirm the version of the current java installed to ascertain if the changes took effect.

Procedure:

- Click start
- Type 'cmd' and click on it
- Type java -version
- Press ENTER as shown →



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18363.657]
(c) 2019 Microsoft Corporation. All rights reserved.

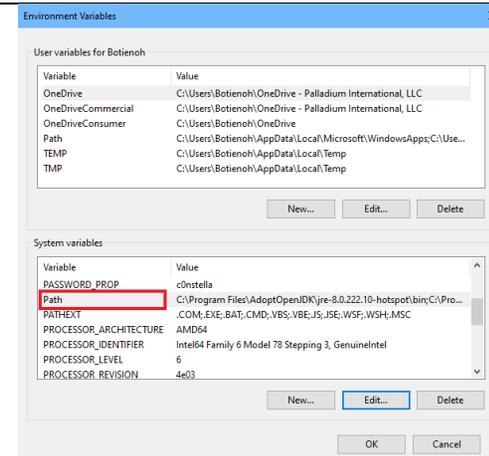
C:\WINDOWS\system32>java -version
java version "1.8.0_241"
Java(TM) SE Runtime Environment (build 1.8.0_241-b07)
Java HotSpot(TM) 64-Bit Server VM (build 25.241-b07, mixed mode)

C:\WINDOWS\system32>
```

5. Set MySQL Path

Procedure:

- On Drive C:/->Program files->Mysql->Mysqlserver->bin (copy path) i.e.
`C:\Program Files\MySQL\MySQL Server 5.6\bin`
- Click on start -> Control Panel->Advanced System Setting->Environment Variables
- Under System Variable, locate and double click Path -> Click on New -> Past the mysql path->Click OK and exit.



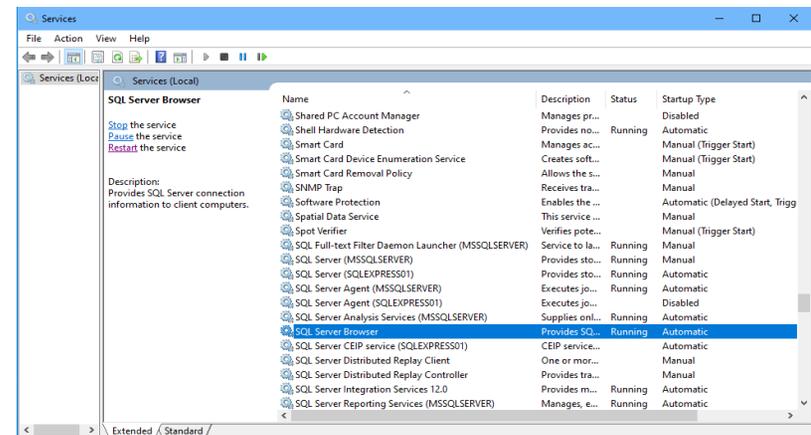
6. Ensure SQL Server Browser service is running

Open the service windows by :

- Open "Run" dialogue box
- Type "services.msc"
- Click OK

On the services window,

- Locate SQL Server Browser
- Double click
- On the properties window, click "Start"
- Click "OK"
- Verify that the status is set to "Running"

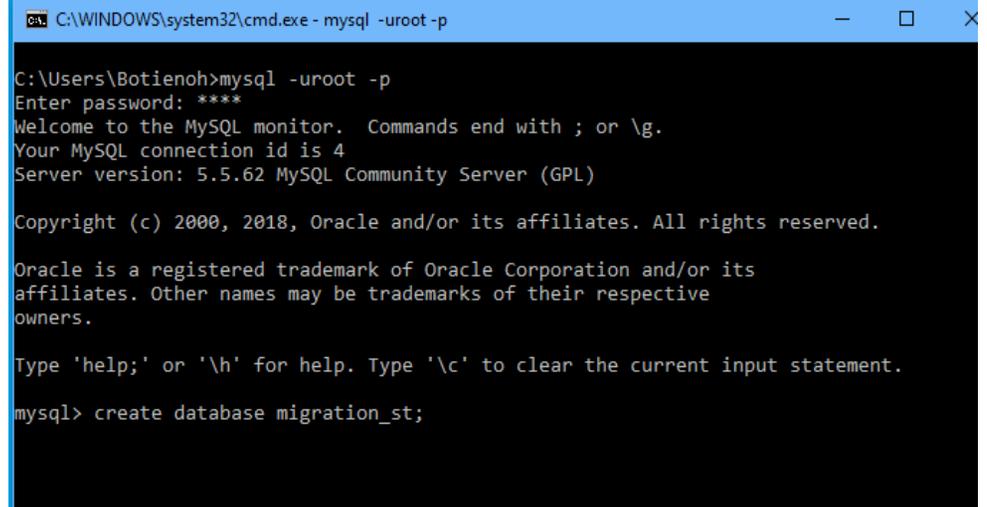


SECTION 2: DATA EXTRACTION USING PENTAHO PDI

STEPS

1. **Create MySQL database.**
 - i. On start ->type `cmd` and press Enter
 - ii. On that path login to mysql by typing “`mysql -uroot -p`” and enter
 - iii. Type in MySQL password and press enter
 - iv. On MySQL create database by typing “`create database migration_st;`” and press enter,
 - v. Create another database by typing “`create database migration_tr;`” and press enter.
 - vi. Exit MySQL

SCREENSHOT



```
C:\WINDOWS\system32\cmd.exe - mysql -uroot -p

C:\Users\Botienoh>mysql -uroot -p
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 4
Server version: 5.5.62 MySQL Community Server (GPL)

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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> create database migration_st;
```

Alternatively:

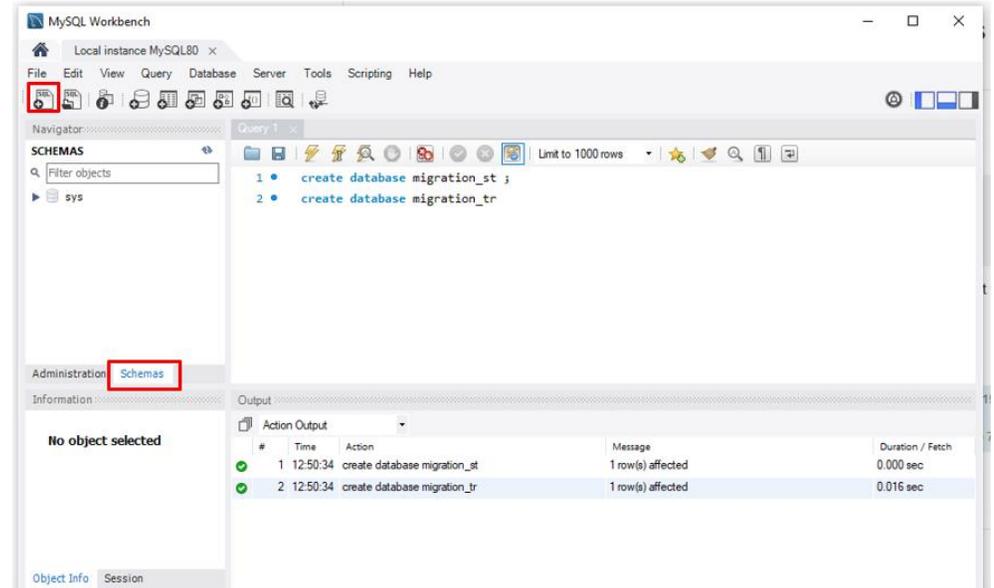
You can use the workbench application as follows:

- Open workbench application
- Double click on **Local Instance MySQL**
- Enter password and click OK
- Write the database creation scripts as shown ->

NB: Remember to include semi-colon at the end of each line i.e.

```
Create database migration_st;
Create database migration_tr;
```

Execute the scripts to create.



2. Configuring the connection strings

- Locate your PDI folder
- Inside the PDI Folder open data-integration -> simple-jndi
- Open jdbc.properties file in edit mode
- Edit the URL, username and passwords for MySQL and MSSQL as appropriate based on the root credentials set during MySQL setup.
- Save the file and exit.

NB: SQL server path should point to the server that hosts IQCare System. Remember to include the instance name in the path.

```
mysql_st/type=javax.sql.DataSource
mysql_st/driver=com.mysql.jdbc.Driver
mysql_st/url=jdbc:mysql://127.0.0.1:3306/migration_st
mysql_st/user=root
mysql_st/password=
```

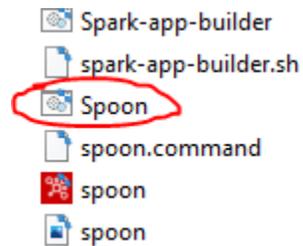
```
mysql_tr/type=javax.sql.DataSource
mysql_tr/driver=com.mysql.jdbc.Driver
mysql_tr/url=jdbc:mysql://127.0.0.1:3306/migration_tr
mysql_tr/user=root
mysql_tr/password=
```

```
mssql/type=javax.sql.DataSource
mssql/driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
mssql/url=jdbc:sqlserver://DESKTOP-5JJGBB4\SQLEXPRESS;databaseName=IQCare
mssql/user=sa
mssql/password=test123
```

3. Start Pentaho Tool

Inside the data-integration folder,

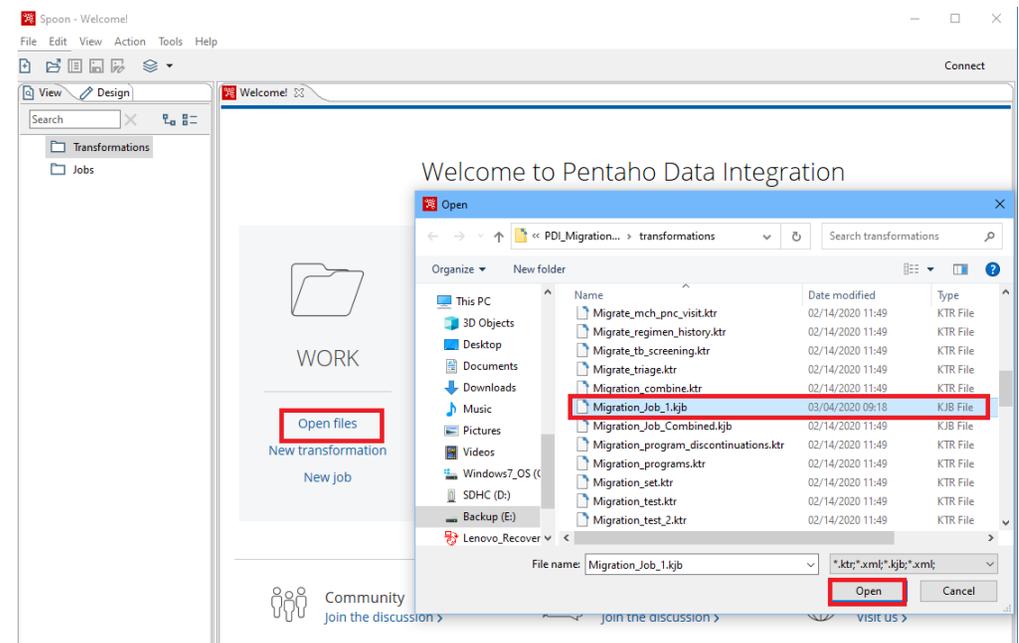
- Double-click on **Spoon.bat** shown below.



- Wait for the PDI tool to load.

4. Setting the migration job

- On the home page, click on Open files. File explorer dialogue box will appear as shown.
- Navigate into **PDI migration Tool folder > Data Transformations** folder.
- Select the migration file named Migration_Job_1.kjb as shown →
- Click Open.



5. Setting up PDI database connection

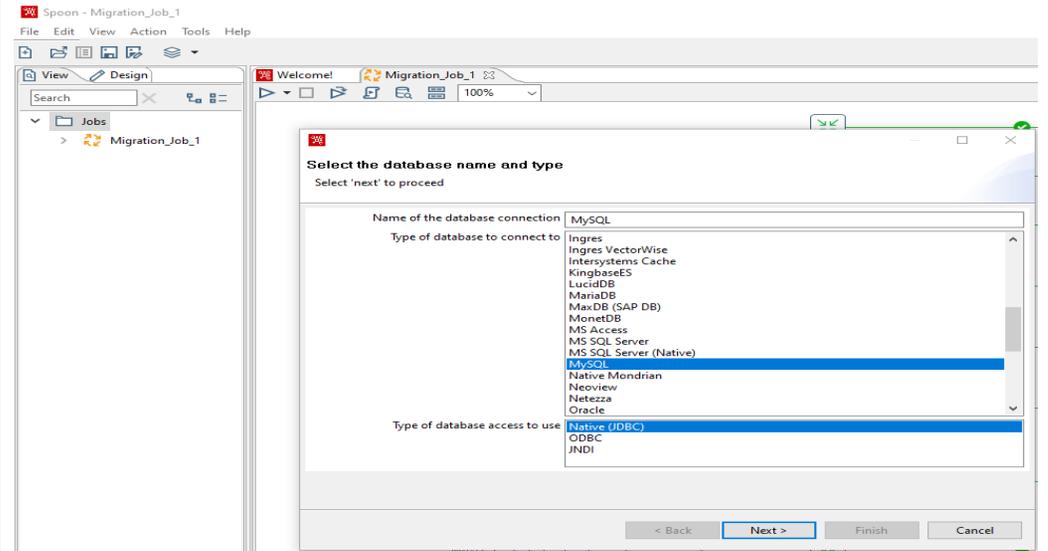
On the PDI Menu bar, click on:

Tools > Wizard > Create database connection.

Add and specify the database connection details as follows:

- Database connection name: MySQL
- Database type: **MySQL**
- Type of access: **Native (JDBC)**

Click Next when done.



Set the JDBC settings

Supply the JDBC settings as follows:

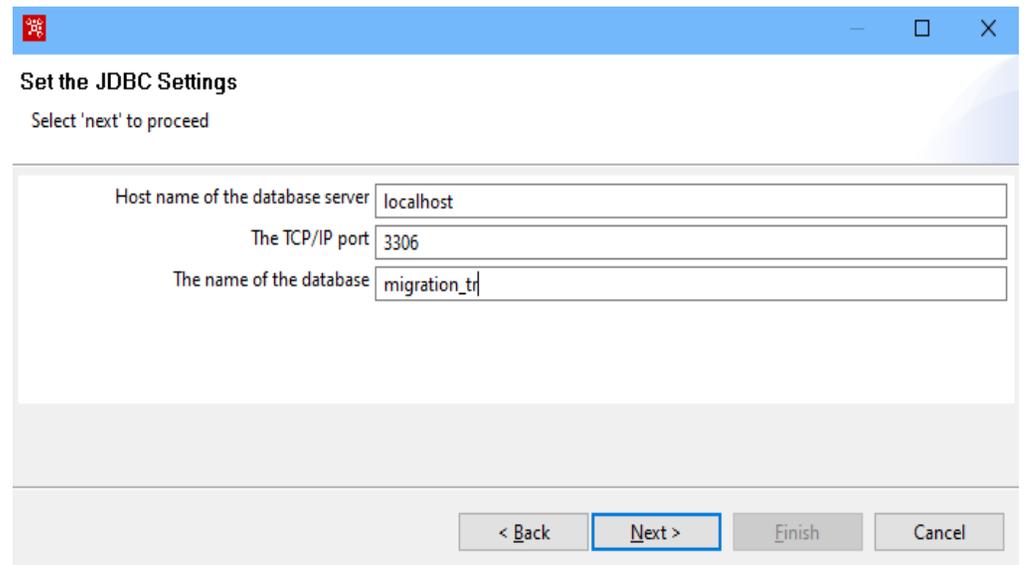
Enter Hostname: localhost

TCP/IP port: 3306

Database name: migration_tr

Click Next:

- Enter the username and password.
- Click **“test database connection”**
- Click OK if successful, otherwise review and correct the connection information supplied.
- Click **Finish** to exit



SECTION 3: RESTORE AND IMPORT DATA INTO KENYAEMR

Prerequisite:

- Ubuntu 16.04LTS (server version preferred)
- Functional KenyaEMR system (version 17.0.4 or later)
- OpenMRS spreadsheet Import module (>version 5.6.x)
- Blank KenyaEMR migration database
- Loaded data from IQCare (migration_tr.sql)

Step 1: Restore database into MySQL

- Using command window, log into MySQL
`mysql -uroot -p` (PRESS ENTER)
- Create migration_tr database as follows:
`create database migration_tr;`
- Set migration_tr as default database as follows:
`use migration_tr;`
- Restore the database dump that was backed up in **step 7** above.
`source databasepath/databasename.sql;`
- Wait for the database restore to complete.

NB: databasepath= path to the dump file.

databasename = name of the database backup file

```
botienoh@botienoh: ~  
botienoh@botienoh:~$ mysql -uroot -p  
Enter password:  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 53  
Server version: 5.6.16-1-expl (Ubuntu)  
  
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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> create database migration_tr;  
Query OK, 1 row affected (0.03 sec)  
  
mysql> use migration_tr;  
Database changed  
mysql> source /home/botienoh/migration_rongo.sql
```

Step 2. Restoring blank OpenMRS database

- On the terminal window, log into MySQL
`mysql -uroot -p` (PRESS ENTER)
 - Create OpenMRS database
`create database 'openmrs';` (ENTER)
 - Set openmrs as default database
`use openmrs;` (ENTER)
 - Restore blank openmrs database
`source
blankdatabasepath/databasename.sql;` (ENTER)
- NB:** See figure → for illustration
- Wait for the process to complete.

```
botienoh@botienoh: ~  
botienoh@botienoh:~$ mysql -uroot -p  
Enter password:  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 6  
Server version: 5.6.16-1-expl (Ubuntu)  
  
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owners.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
mysql> use openmrs;  
Reading table information for completion of table and column names  
You can turn off this feature to get a quicker startup with -A  
  
Database changed  
mysql> source  
ERROR:  
Failed to open file '': error: 2  
mysql> source /home/botienoh/openmrs_blank.sql;  
Query OK, 0 rows affected (0.01 sec)  
  
Query OK, 0 rows affected (0.00 sec)
```

Step 3: Upgrade KenyaEMR

- On the Ubuntu terminal, navigate into the migration upgrade folder
`$cd kenyaemr_17.1.0_migration_package/`
[ENTER]
- Execute the upgrade shell script
`$sh setup_script.sh` [ENTER]
- Wait for the automated upgrade to complete as shown →

```
botienoh@botienoh: ~/kenyaemr_17.1.0_migration_package
cBye
dbotienoh@botienoh:~$ cd
botienoh@botienoh:~$ cd kenyaemr_17.1.0_migration_package/
botienoh@botienoh:~/kenyaemr_17.1.0_migration_package$ sh setup_script.sh
script_directory: /home/botienoh/kenyaemr_17.1.0_migration_package
MySQL root password correct.

Stopping tomcat...

[sudo] password for botienoh:
upgrading Concept Dictionary to the latest
Warning: Using a password on the command line interface can be insecure.
```

Step 4: Launch Spreadsheet import module

- Launch KenyaEMR by entering the right URL into the address bar. i.e <http://localhost:8080/openmrs>
- Log in as Admin
- Got “Home” and click “Developer” then click “Legacy admin UI”
- On the OpenMRS admin window, under Spreadsheet Import Module, click **Migrate Data to KenyaEMR** as shown →

OpenMRS
Home | Find/Create Patient | Dictionary | Cohort Builder | Reporting | Appointments | Administration

Administration

- Users
 - Manage Users
 - Manage Roles
 - Manage Privileges
 - Manage Alerts
- Patients
 - Manage Patients
 - Find Patients to Merge
 - Manage Identifier Types
 - Manage Patient Identifier Sources
 - Auto-Generation Options
 - View Log Entries
- Person
 - Manage Persons
 - Manage Relationship Types
 - Manage Person Attribute Types
- Visits
 - Manage Visit Types
 - Manage Visit Attribute Types
 - Configure Visits
- Encounters
 - Manage Encounters
 - Manage Encounter Types
 - Manage Encounter Roles
- Providers
 - Manage Providers
 - Manage Provider Attribute Types
- Locations
 - Manage Locations
 - Manage Location Tags
 - View Location Hierarchy
 - Manage Location Attribute Types
 - Manage Address Template
- Observations
 - Manage Observations
- Concepts
 - View Concept Dictionary
 - Manage Concept Drugs
 - Manage Proposed Concepts
 - Manage Concept Classes
 - Manage Concept Datatypes
 - Manage Concept Sources
 - Manage Concept Stop Word
 - Manage Reference Terms
- Forms
 - Manage Forms
 - Manage Fields
 - Manage Field Types
 - Merge Duplicate Fields
- HL7 Messages
 - Manage HL7 Sources
 - Manage Queued Messages
 - Manage Held Messages
 - Manage HL7 Errors
 - Manage HL7 Archives
 - Migrate HL7 Archives
- Maintenance
 - Set Implementation Id
 - System Information
 - View Quick Reports
 - Settings
 - Advanced Settings
 - View Server Log
 - View Database Changes
 - Manage Locales And Themes
 - View Logged In Users
 - Search Index
- Modules
 - Manage Modules
 - Module Properties
- Groovy Module
 - Groovy Script Editor
 - Manage Groovy Scripts
- ID Generation
 - Manage Patient Identifier Sources
 - Auto-Generation Options
 - View Log Entries
- Spreadsheet Import Module**
 - Migrate Data to KenyaEMR**
 - Spreadsheet Import Template List
- Metadata Mapping
 - Configure *required*
- Metadata Sharing
 - Export Metadata
 - Import Metadata
 - Manage Tasks
 - Configure
- Calculation Module
 - Manage Calculation Registrations
- REST Web Services
 - Settings
 - Test
 - API Documentation
- Open Web Apps Module
 - Manage Apps
 - Settings
- HTML Form Entry
 - Manage HTML Forms
 - Preview HTML Form from File
- Ionic Module

- One the next screen, click Migrate all Datasets as shown →
- Wait until all datasets are processed successfully.

NB: This step might take longer depending on the number of records present in each dataset. Therefore, patience is advised. The progress is shown in percentage %.

OpenMRS
Currently logged in as Super User | [Logout](#) | [My Profile](#)

Home | Find/Create Patient | Dictionary | Cohort Builder | Reporting | Appointments | Administration

Admin | [New Import Template](#) | [Import Templates](#)

Migrate Data

Migrate all Datasets

Dataset Name	Total Records	Total processed
Demographics	70,213	3,609
Enrollment processor with person id	12,838	0
HIV Patient Program	14,420	0
Triage Processor	269,979	0
HTS Initial	14,985	0
HIV Retest	0	0
Regimen History for HIV	362	0
HIV Followup Visit	82,770	0
HIV Discontinuations	4,707	0
IPT Patient Program	6,594	0
IPT Followup	1,113	0

Step 5: Log into KenyaEMR and confirm records

- Once all datasets have been successfully migrated, click **Home** to launch the home page.

KenyaEMR 17.1.0-SNAPSHOT (10-Feb-2020 16:20), powered by OpenMRS
Tumaini Medical Centre (16551)

Government of Kenya
Ministry of Health

Home | Logged in as Super User | My Profile | Log Out | Help

Facility Dashboard

Care and Treatment | HTS | Appointments | Differentiated Care

Summary of Care and Treatment Statistics

Reporting Period: Feb-2020

Total Patients	Total enrolled in HIV	Current in Care	Current on ART	Newly Enrolled	New on ART
6346	455	110	106	0	0

Number of Patients

Viral Load Tracker

Reporting Period: Today

Total clients with viral loads (in last 12 months)	Total Unsuppressed	Total Suppressed
0	0	0

Number of Patients

Step 6: Refresh ETL

This step will ensure that the ETL reporting tables are populated with the latest data that has been migrated.

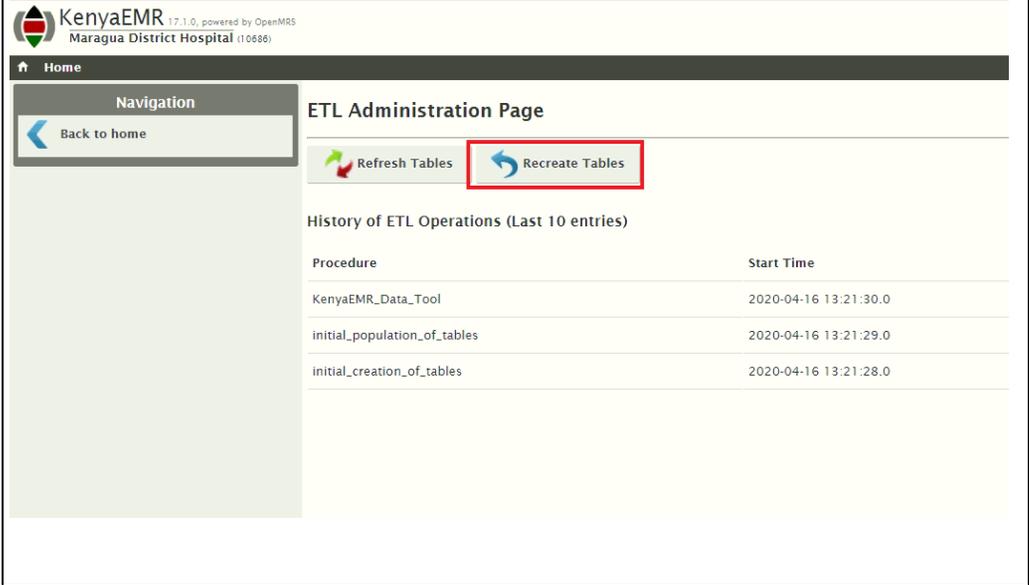
Steps:

- Click **Home**
- Locate and Click **ETL Admin**
- Click **Recreate Tables**

Wait for the process to complete

Note:

Migration process ends at this point and paves way to a comprehensive Data Quality verification and validation process. See separate SOP on migration DQA.



The screenshot displays the KenyaEMR interface for Maragua District Hospital. The page title is "ETL Administration Page". In the navigation area, there are two buttons: "Refresh Tables" and "Recreate Tables". The "Recreate Tables" button is highlighted with a red rectangular border. Below the buttons, there is a section titled "History of ETL Operations (Last 10 entries)" which contains a table with the following data:

Procedure	Start Time
KenyaEMR_Data_Tool	2020-04-16 13:21:30.0
initial_population_of_tables	2020-04-16 13:21:29.0
initial_creation_of_tables	2020-04-16 13:21:28.0