

OpenEMR Insights Configuration Instructions

OpenEMR Insights provides ETL and Dashboards to enhance your OpenEMR intelligence backed by Pentaho CE and Saiku Analytics CE.

To see OpenEMR Insights in action, head over to www.oemr.org. There you will find examples of ad hoc query output using Saiku Analytics CE. You will also be able to check out the configuration details on how you can put this to use on top of your own OpenEMR instance using Pentaho CE. Out-of-the-box, you can implement a data mart that unlocks services and referrals, plus [view sample parameterized dashboards](#).

To get started with OpenEMR Insights, follow the instructions on www.oemr.org to access the download.

Five Steps to Seeing Your Patients in a Whole New Way

1. Download the OpenEMR Insights Package
2. Setup Pentaho Business Analytics Server
3. Configure Connections
4. Configure Data Sources
5. Build Your Cubes

Then you can [query your data](#) or [view sample dashboards!](#)

System Recommendations

OS: Linux and Ubuntu - 14.04.1 LTS

Browser: Google Chrome Version 39

Database: MySQL

Installation Instructions

Install Open JDK on a new/existing Ubuntu Instance:

1. Setup a Pentaho user and install OpenJDK:
 - a. `adduser pentaho`
 - b. `sudo su pentaho`
 - c. `sudo apt-get install openjdk`

Setup and configure Pentaho Data Integration and Pentaho Business Analytics server

1. Ensure Pentaho Data Integration is installed in /opt:
 - a. `cd /opt/`
 - b. `wget http://downloads.sourceforge.net/project/pentaho/Business%20Intelligence%20Server/5.2/biserver-ce-5.2.0.0-209.zip` .
 - c. `unzip pdi-ce-5.2.0.0-209.zip`
 - d. `sudo chown -R ubuntu:ubuntu data-integration/`

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2. Ensure installation of Pentaho Business Analytics in /opt:
 - a. `cd /opt/`
 - b. `wget`
`http://downloads.sourceforge.net/project/pentaho/Data%20Integration/5.2/pdi-ce-5.2.0.0-209.zip` .
 - c. `unzip biserver-ce-5.2.0.0-209.zip`
 - d. `sudo chown -R ubuntu:ubuntu pentaho/`
 - e. `cd /opt/pentaho/biserver-ce/`
 - f. `sh start-pentaho.sh`
3. Ensure that the Pentaho user owns the files under Data Integration and the BI Server
 - a. `chown -R pentaho:pentaho data-integration/ biserver-ce/`
4. Setup crontab:
 - a. `# m h dom mon dow command`
 - b. `00 00 * * * ~/bin/run_build_fact_client_services.sh`
 - c. `01 00 * * * ~/bin/run_fact_product_sales.sh`

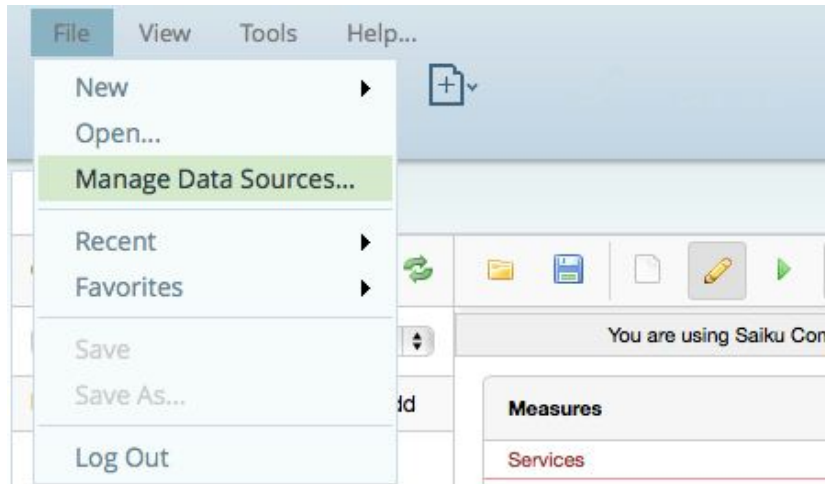
Configure Pentaho Data Integration JNDI connections

1. Add the following properties to the `jdbc.properties` file. Modify the properties as needed based on your MySQL username and password setup for both Source and Target JNDI connections (and port if necessary).
 - a. `vim /opt/data-integration/simple-jndi/jdbc.properties`
2. **#EMR Source**
 - a. `emr_source/type=javax.sql.DataSource`
 - b. `emr_source/driver=com.mysql.jdbc.Driver`
 - c. `emr_source/url=jdbc:mysql://localhost:3306/source_database_name`
 - d. `emr_source/user=source_database_user`
 - e. `emr_source/password=source_database_password`
3. **#EMR Target**
 - a. `emr_target/type=javax.sql.DataSource`
 - b. `emr_target/driver=com.mysql.jdbc.Driver`
 - c. `emr_target/url=jdbc:mysql://localhost:3306/target_database_name`
 - d. `emr_target/user=target_database_user`
 - e. `emr_target/password=target_database_password`
4. Ensure the MySQL Driver is available for the Data Integration server:
 - a. `cd /opt/data-integration/lib/`
 - b. `wget`
`http://dev.mysql.com/get/Downloads/Connector-J/mysql-connector-java-5.1.35.tar.gz` .
 - c. `gzip -d mysql-connector-java-5.1.35.tar.gz`
 - d. `tar -xf mysql-connector-java-5.1.35.tar`
 - e. `mv mysql-connector-java-5.1.35/mysql-connector-java-5.1.35-bin.jar` .
 - f. `rm -r mysql-connector-java-5.1.35/`

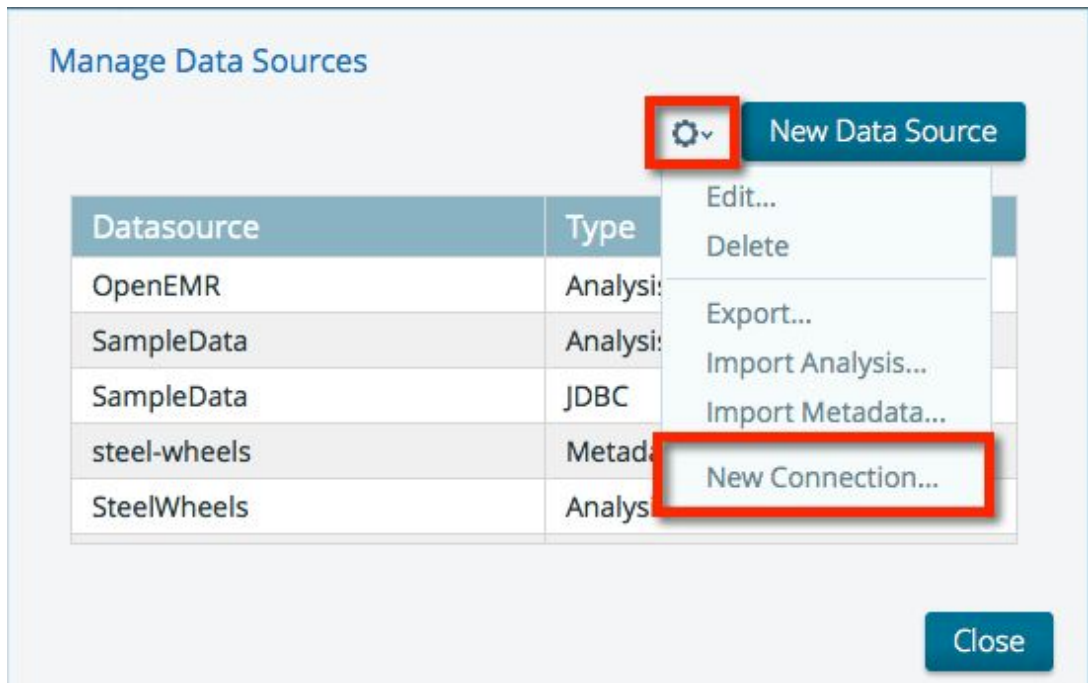
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Configure Pentaho Business Analytics Data Sources

1. Login to Pentaho
 - a. In a browser navigate to : `http://_your_url_:8080/pentaho/Home`
 - b. Login with username = admin and password = password
 - c. *Note: For security purposes it is recommended to change the password for the 'admin' user account by navigating to Administration (from the Home drop down in the upper left). This is also location where you can setup additional user roles.*
2. Manage Data Sources
 - a. Select File\Manage Data Sources



- b. In the Manage Data Sources dialog box, click the cog icon and select New Connection. *Note: The SampleData and SteelWheels are example data that are automatically installed. You can delete these if desired.*



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- c. In the Database Connection window, enter the Connection Name, Database Type, Access (Native JDBC), Host Name, Database Name, Port Number, User Name, Password for the warehouse database

Database Connection

General
Advanced
Options
Pooling

Connection Name:
your_connection_name

Database Type:
Generic database
H2
Hadoop Hive 2
Hadoop Hive
Hypersonic
Impala
MS SQL Server
MonetDB
MvSQL

Access:
Native (JDBC)
ODBC
JNDI

Settings
Host Name:
localhost
Database Name:
target_database_name
Port Number:
3306
User Name:
target_database_user
Password:
.....

Adding Databases

Test

OK Cancel

- d. Click the Test button to ensure the database parameters work properly before continuing.
- e. Click Ok to save the connection and return the Manager Data Sources dialog box.
- f. In the Manage Data Sources dialog box, click the cog icon and select Import Analysis.

Manage Data Sources

Datasource	Type
OpenEMR	Analysis
SampleData	Analysis
SampleData	JDBC
steel-wheels	Metadata
SteelWheels	Analysis

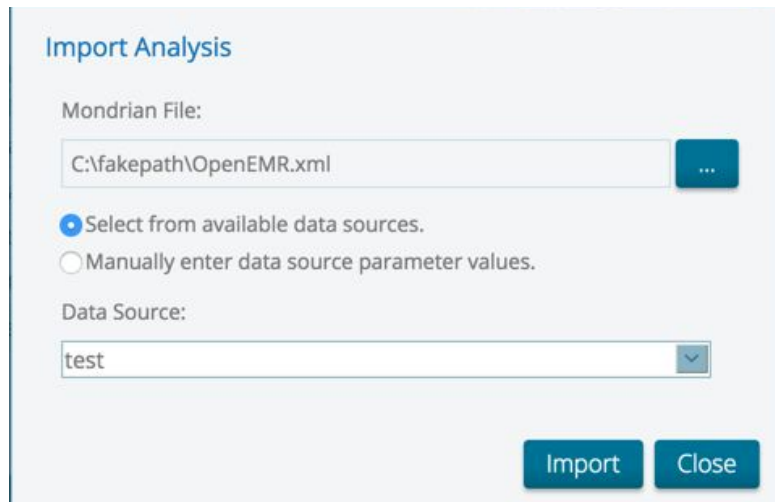
New Data Source

- Edit...
- Delete
- Export...
- Import Analysis...
- Import Metadata...
- New Connection...

Close

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- g. Select the Mondrian schema from mondrian/OpenEMR.xml, select the newly created database connection and click Import.



Import Analysis

Mondrian File:
C:\fakepath\OpenEMR.xml

Select from available data sources.
 Manually enter data source parameter values.

Data Source:
test

Import Close

- h. Click Close to close the Manage Data Sources dialog box.

3. Refresh Caches

- a. Go to Tools\Refresh\ and clear the following caches:
 - i. Mondrian Schema
 - ii. Reporting Data Cache
 - iii. CDA Data Cache

Build the Client Services and Product Sales Cubes

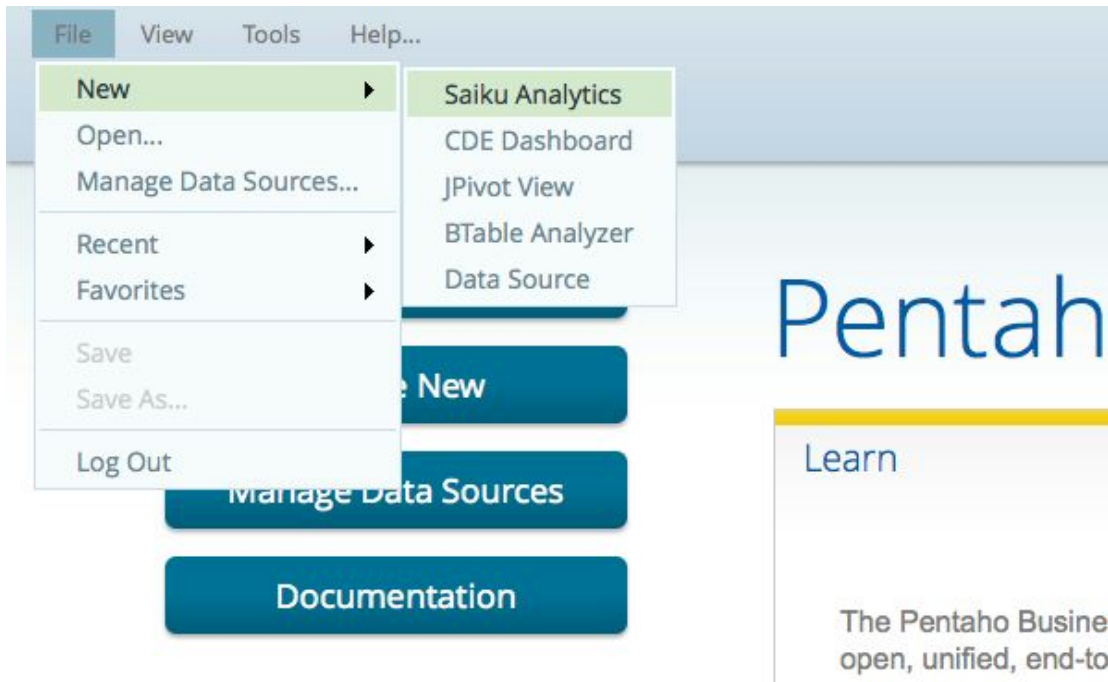
1. Run the following commands in /home/ubuntu/
 - a. git clone https://github.com/SoleaSolutions/MI2.Client-OpenEMR-Prototype.git
etl
 - b. Run: cp -r /home/pentaho/etl/bin /home/pentaho/
 - c. Run: mkdir /home/pentaho/log/
 - d. Run: /home/pentaho/bin/
 - e. Run: sh run_build_fact_client_services.sh
 - f. Run: sh run_fact_product_sales.sh

```
ubuntu@ubuntu-13:~$ pwd
/home/ubuntu
ubuntu@ubuntu-13:~$ whoami
ubuntu
ubuntu@ubuntu-13:~$ ls -l
total 16
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 27 21:12 bin
lrwxrwxrwx 1 ubuntu ubuntu 22 Jul 10 2014 data-integration -> /opt/data-integration/
drwxrwxr-x 13 ubuntu ubuntu 4096 Jan 21 17:03 etl
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 27 21:08 log
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 27 20:16 test
ubuntu@ubuntu-13:~$ ls bin/
jndi_test.ktr jndi_test.sh refresh_git.sh run_build_patient_services.sh run_dim_client.sh run_fact_client_services.sh
ubuntu@ubuntu-13:~$ ls etl/
bin build_client_services.kjb dimensions facts jndi log mondrian plugins reference scratch sql
ubuntu@ubuntu-13:~$ ls
```

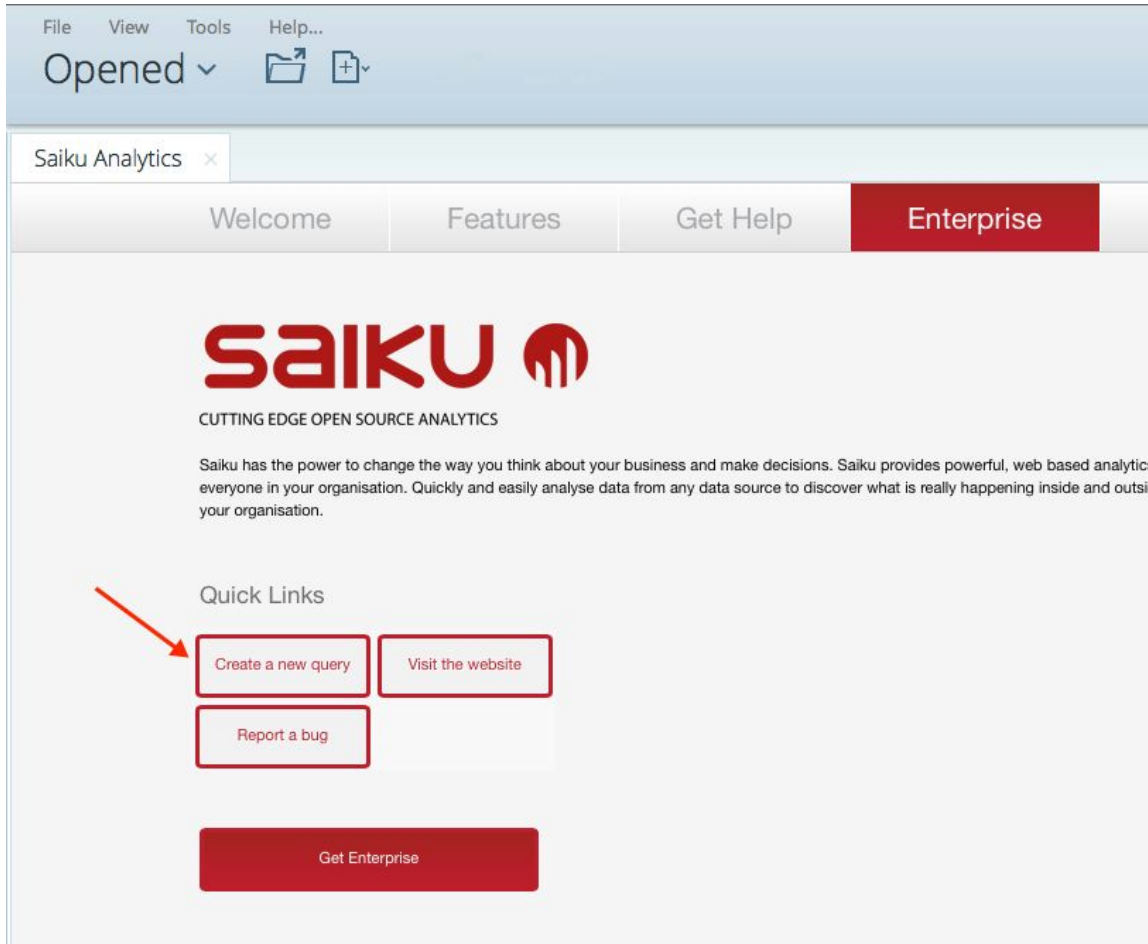
Congratulations! Your configuration is now complete! Now you are ready to see your data in a whole new way!

Querying the Data

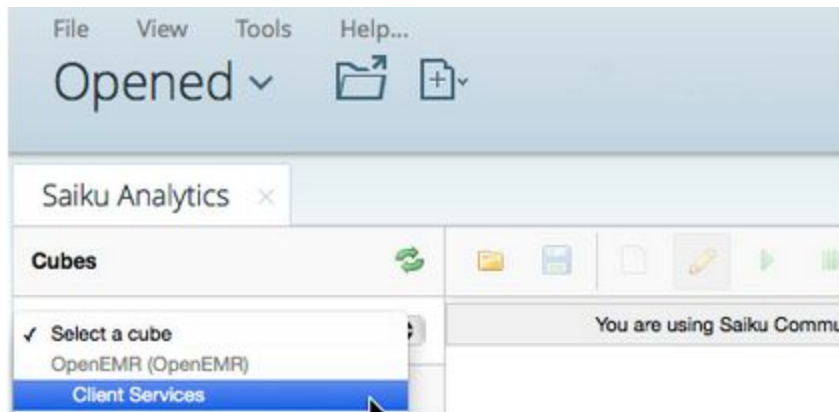
1. Login to your instance of Pentaho Business Analytics
2. Select File\New\Saiku Analytics



2. Click “Create a new query” from Quick Links section.

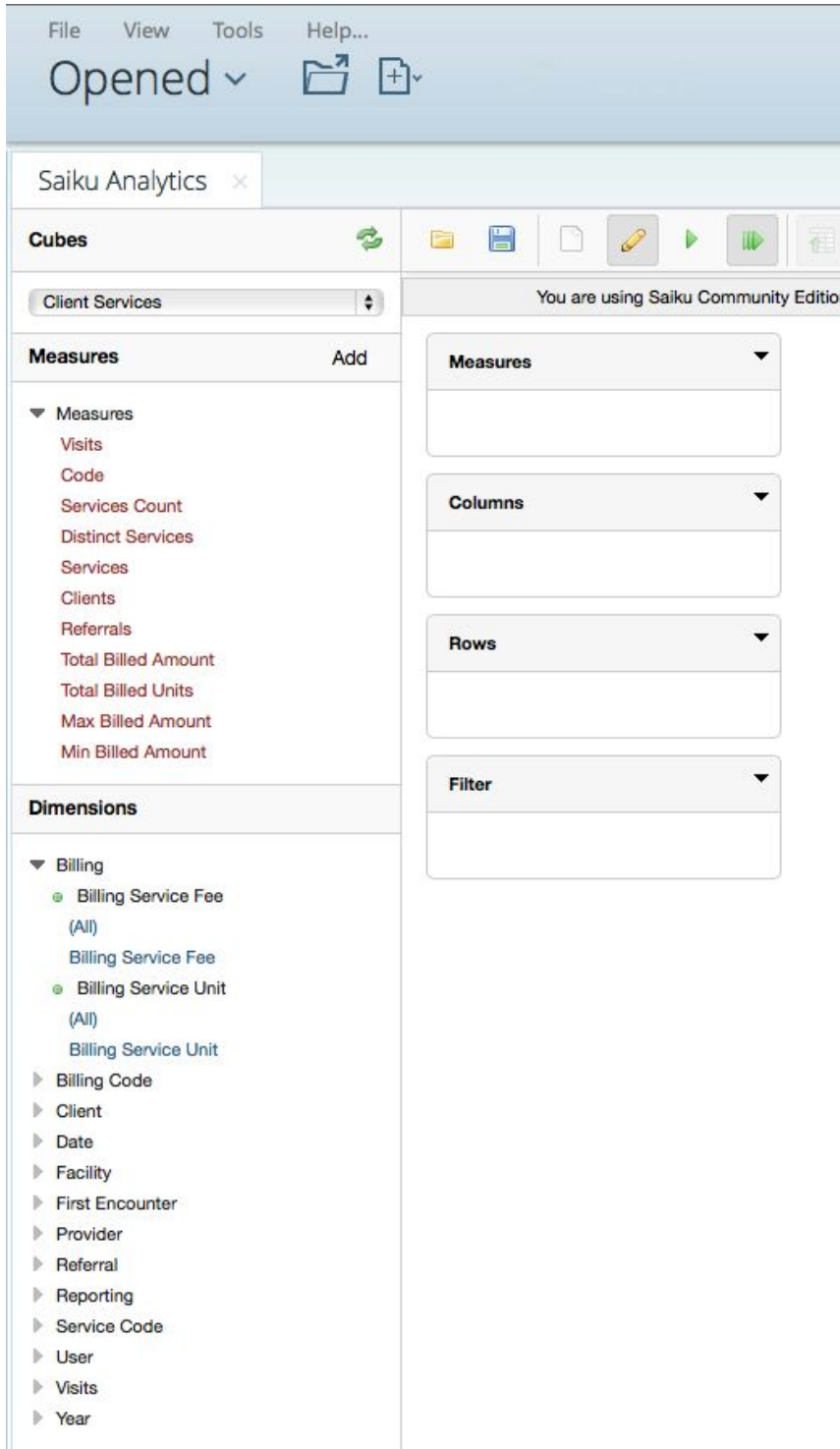


3. Select the Client Services cube from the Select a cube drop down list.



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4. Drag and drop the Measures and Dimensions from the left to the appropriate section on the right (Measures, Columns, Rows, Filter) to build your query. You will need to select at least one dimension in the rows drop down area, and either one measure in the measures drop down area, or another dimension in the columns drop down area. Once you have done this, the query will execute and the results will be displayed on the query canvas.



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5. Results return by default in Table Mode, but don't forget that you can always toggle to Chart Mode to visualize the data using various chart types.

The image shows two screenshots of the Saiku BI tool interface. The top screenshot displays the 'Table Mode' view, and the bottom screenshot displays the 'Chart Mode' view. Both screenshots show the same data for 'Visits' by 'Service - Code' for the years 2011 and 2012.

Table Mode Data:

Service - Code	2011 Visits	2012 Visits
TBT 01	1,365	1,458
99213	1,228	1,476
401.9	885	991
477.9	491	613
V20.2	362	252
99203	350	339
85025	245	427
36415	327	346
250.00	284	264
TBT 09	267	463

Chart Mode Data:

The chart is a stacked bar chart showing 'Visits' for each 'Service - Code' for the years 2011 and 2012. The y-axis represents the number of visits, ranging from 0 to 3,000. The x-axis lists the service codes. The legend indicates that the red portion of each bar represents '2011 - Visits' and the brown portion represents '2012 - Visits'.

The interface includes a top toolbar with various icons, a status bar at the bottom of each screenshot indicating 'Info: 15:37 / 3 x 12 / 0.36s', and a sidebar on the right with a 'Table Mode' or 'Chart Mode' toggle button. A red arrow in each screenshot points to the respective toggle button.

View Sample Dashboards

1. Select Tools\OpenEMR Reporting from the menu.
2. The Directory of Reports will appear with available sample dashboards.

