Rwanda EMR Server Monitoring Tool Documentation

Overview

The EMT (EMR Monitoring Tool) is currently an Ubuntu OpenMRS EMR server tool that's distributed in two components which automatically monitors and reports crucial data elements/indicators of a configured OpenMRS EMR instance after its installation and configuration such as;

1. Total Patients (Active and newly added), Total Users, Total Visits, Total Encounters which are the basic objects of an OpenMRS instance. This reports aggregate numbers or counts for each of these indicators.
2. System uptime including OpenMRS instance uptime which reports as percentage (%) the system uptime for the (current and last) week and last month.
3. Memory usage status such as free, total and used memory in Mega Bytes (MB).
4. Server details from which the above data is observed such as ubuntu server id, OpenMRS application name, Primary Clinic Work Days, Primary Clinic Hours.

The two packages under which EMT is distributed include;

- EMT Ubuntu back-end tool which is all that is required.
- EMT front-end OpenMRS module which is not required but extends and depends on the backend package.

This documentation focuses on setting up the required back-end package for each health center identified for the CDC Study Project.

Reporting

As mentioned in the overview above; EMT through its two components supports two forms of reporting which include;

- Generating a report document (PDF / Portable document format / .pdf) which can be done using any of the two packages. If the current user has no access to the server onto which the back-end is installed, then try contacting the system administrator who will install the front-end module which allows generating this same document.
- Graphical view reporting through a configured external HMIS/DHIS2 server.
    - District Health Information Software - version 2 (DHIS2) is a flexible, web-based open-source information system with visualization features including GIS, charts and pivot tables.
        - EMT uses this for better graphical reporting as will be illustrated below

Downloads

Download EMT

- EMT back-end 1.1.2 represents revision: a62a91d
    - Downloadable Debian installable package
    - Or else Run

```
wget --content-disposition https://goo.gl/RHJYZe
```

- EMT front-end 1.1 represents revision: a363f3d
    - OpenMRS Module

System Requirements

1. Only installable to an Ubuntu system/server
2. The ubuntu system must already have an existing OpenMRS EMR installed onto it.
    1. OpenMRS System requirements therefore do apply.
3. Your ubuntu Server/system date must be corrected
4. Install curl for ubuntu versions such as 12.04;

```
sudo apt-get install curl
```

Installation

1. If MySQL was installed using an external package such as Xampp, Add MySQL binary folder to the system Path
   1. Add the lines below to either your **~/.bashrc** or **~/.bash_profile** file

   ```
   export MYSQL_BIN_DIR=/Applications/XAMPP/bin;
   export PATH=$PATH:$MYSQL_BIN_DIR
   ```

2. To install EMT back-end;
   1. After Downloading a Debian package (.deb), Open terminal and change directory to where it was downloaded and run

   ```
   sudo dpkg -i openmrs-emt_1.1.2_all.deb
   ```

   2. The above command should install the package.
      1. This package will in the near-by future be installable through apt-get (Advanced Packaging Tool)

Configuration

EMT can monitor and report separately several OpenMRS EMR instances running on the same server as long as each of them is configured from the back-end/command line

- To set-up any of the existing OpenMRS instance to be monitored, run;

   ```
   sudo openmrs-emt openmrs /var/lib/OpenMRS http://localhost:8080
   ```

- Where; openmrs is the OpenMRS application name or war file name excluding the .war extention
- /var/lib/OpenMRS is the OpenMRS data directory
- http://localhost:8080 is the Tomcat server Root URL
- Each of these should be replaced with the right parameters for each of the OpenMRS instances on the server which the user wishes to monitor
- In-case the user has mis-configured or wrongly setup any of the instance
  - Such a mis-configured instance can be re-setup by running

   ```
   sudo openmrs-emt -reconfigure openmrs /var/lib/OpenMRS
   http://localhost:8080
   ```

- Going through the configuration for each OpenMRS instance on the current server.
  - The installation will ask if your DHIS data elements are well configured.

   ```
   Are your DHIS Data elements for each EMT indicators well mapped?
   (Y/N)
   ```

   Enter **y** or **Y** or **Yes** or **YES** if true else manually edit the mappings file as advised by the installation

  - Enter fosid for the current server on which EMT is being installed

```
    Please enter fosaid or DHIS Organization unit code or Uniquely
    assigned ID for this server!!!
```

This is required for each installation since each EMT Rwandan site is assigned one fosid that identifies it and unifies it from others, please follow instruction provided when nothing is entered for fosid if you don't know what fosid is.

- When fosid is entered, the installation will ask for DHIS server details;

```
    Enter DHIS Server DataValueSets API URL (eg.
    http://localhost:8080/dhis/api/dataValueSets):
    Enter DHIS Server Login UserName :
    Enter DHIS Server Login Password :
```

Provide the right values for each of the above three parameters, http://localhost:8080 only replace in the DataValueSets API URL.

- The back-end installable tool is well built to guide the user through the configuration process

Validation steps

To validate the above installation and more so configuration, EMT back-end provides several options

- To validate the configuration, run;

```
    sudo openmrs-emt -status
```

- To generate sample pdf report(s), run;

```
    sudo openmrs-emt -generateLocalReport 20140501 20160131
    emtReportName.pdf
```

Replace 20140501 with the startDate and 20160131 with the endDate which define the date range to report about

- This generates reports for all the configured instances which are by default stored at /root
  - These documents/reports/files can be copied to any preferred location on the server's file system by running.

```
    sudo openmrs-emt -copyLocalReportsTo
    /path/to/directory/to/copy/to
```

- To send the report to an HMIS/DHIS2 server instance whose configurations were provided, run;

```
    sudo openmrs-emt -pushToDHIS
```

This command will run for all the OpenMRS instances configured

Setting up DHIS2/HMIS for better graphical reporting

DHIS2/HMIS as already mentioned above is the external tool/system to which EMT automatically sends its data which displays the data

- Jembi exported its Data elements which match EMT indicators. Download Jembi's metadata pack which only includes the data elements or EMT indicators.
- Import the above metadata pack into your DHIS2 instance by referring to the DHIS metadata import documentation
- If the above two steps are missed, then the user must re-create the data elements in his/her DHIS2 instance and edit the data elements mappings manually; see the the Configuration section.
- Jembi set-up a testing DHIS instance for the Rwanda EMR package from which the graphical data illustrations below were captured.
  - See Sample graphical views from Jembi's DHIS instance
  - The user can setup similar charts etc for his/her DHIS2 instance as well or better ones
  - Refer to the DHIS documentation on how to setup Data Visualisers and getting them to show up on the user's dashboard.
  - Login details to the Jembi above DHIS server are;

```
URL: http://82.196.9.250:8080/

user: admin, password: district
user: jembi, password: Jembi123
```

Building installable Debian package Or PPA for Developers

- Clone EMT backend from github by running;

```
git clone git@github.com:jembi/openmrs-emt-ubuntu.git
```

- Install the required tools to package EMT or any debian installable package

```
sudo apt-get install devscripts dh-make
```

- Run the packaging script through either of these two commands;

```
./buildDeb.sh;
bash buildDeb.sh
```

Un-Installation

To remove or uninstall EMT, run either one of these command

```
sudo apt-get remove openmrs-emt;
sudo dpkg -r openmrs-emt
```