THIRRA

User Manual

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1.1 System Administration Manual

1.2 Introduction

The manual covers the administration of the Portable System for **T**elehealth and **H**ealth **I**nformatics in **R**ural & **R**emote **A**reas (THIRRA) application.

THIRRA is an Open Source project under the PAN Asian Collaboration for Evidence-based eHealth Adoption and Application (PANACeA), funded by the IDRC. The source codes are hosted by Sourceforge.

THIRRA is a web based application primarily for use over the narrowband Internet. As such, the user only needs to have internet connectivity and a web browser that supports XHTML, such as Mozilla Firefox, Opera, Google Chrome, etc.

The latest version of this documentation is available at http://202.9.99.47/wiki-thirra/.

1.3 Installation Guide

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1.4 Admin Section

The Admin Section is accessible after the user has successfully logged into THIRRA and possess rights to access the Admin Section.

2 Installation system requirements

2.1 SYSTEM REQUIREMENTS

1. GNU/Linux Operating System (preferred)
2. Apache Web Server
3. PHP scripting language version 5 and above with the following extensions installed: php-cli, php-pgsql and php-gd
4. PostgreSQL relational database management system version 8.0 and above
5. Netpbm
6. mpdf version 5.0 and above

3 Installation Steps

3.1 INSTALLATION STEPS

3.2 Standard installation

- Ensure that the system has the Apache webserver is running properly with PHP activated. The postgresql extension for PHP must be installed to allow Apache to access the database server. These components must be working first, before trying to install THIRRA, so that any installation error can be identified more easily.

- Obtain tar ball, e.g. svnthirra-150.tgz, or pull down via Subversion from Sourceforge

```
svn co https://thirra.svn.sourceforge.net/svnroot/thirra thirra
```

- Place "thirra" directory from thirra/trunk/ into web server document root

```
e.g. /var/www/thirra
```

- Edit the following database configuration file:

```
thirra/app_thirra/config/database.php
- change $db['default']['database'] = "thirra-samp"; to the correct database.
- make sure that the database user and password is correct.
```

- Create and restore database (available separately from Sourceforge or PCDOM) inside PostgreSQL, using either pgsql or PgAdmin3.

- Ensure that the database schema matches the correct version of THIRRA. There are 2 possible database backups - new clinics and sample database. For instance, thirra-samp-185-01.psql means it cannot be used for source codes earlier than Build 185. It is usable for newer version to the extent of the newer sample database version.

- To use PostgreSQL at the command line, i.e. pgsql, assuming backup file is located as below:

```
- cd /home/postgres
- createdb -U thirra -E UNICODE thirra-samp
- pg_restore --disable-triggers -d thirra-samp thirra-samp-185-01.psql
```

- Create the required directories (look inside the thirra/docs/directories_required.txt for the latest info.

```
- cp -r /var/www/thirra/uploads /var/www/thirra-uploads
```

- For pdf documents output, download mpdf from http://mpdf.bpm1.com/

- Unzip and move, renaming the whole mpdf directory to /var/www/mpdf so that all THIRRA installations can use this single copy. - Make a symbolic to the directory of mpdf

```
ln -s /var/www/mpdf /var/www/thirra/mpdf
```

- Copy /var/www/mpdf/mpdf.php to /var/www/thirra/codeigniter/system/libraries - Edit this file changing

```
if (!defined('_MPDF_PATH')) define('_MPDF_PATH', dirname(preg_replace('/\\\\/','/',_
if (!defined('_MPDF_PATH')) define('_MPDF_PATH', 'mpdf/'); // To adapt to CodeIgnite
```

- Change ownership of the whole "thirra" and "thirra-uploads" directories to web server user

- To launch THIRRA use the following URL in browser that supports XHTML:

http://www.example.com/thirra/

3.3 Installing in different directory

- You can run more than one instance of THIRRA on a server by running the other instances using a directory name other than the default thirra. For example,

```
- /var/www/train
```

- Edit the following application configuration file:

```
thirra/app_thirra/config/config.php
- $config['base_url']  = "http://" . $_SERVER['HTTP_HOST'] . "/train/";
```

- Edit the following database configuration file:

```
thirra/app_thirra/config/database.php
- change $db['default']['database'] = "thirra-train"; to the correct database.
- make sure that the database user and password is correct.
```

- Create the required directories (look inside the thirra/docs/directories_required.txt for the latest info.

```
- cp -r /var/www/train/uploads /var/www/train-uploads
```

- Change ownership of the whole "train" directory and train-uploads to web server user

- To access the application point the browser to:

http://www.example.com/train/

4 Installation Troubleshooting

4.1 INSTALLATION TROUBLESHOOTING

These are the few common errors encountered:

1. Page Not Found (Error 404)

```
– Ensure that the URL is correct, e.g. http://www.example.com/thirra/
– Ensure that the Apache web server is runninng
```

2. Unable to connect to database

```
– Ensure that the variable assigned in thirra/app_thirra/config/database.php is poi
– Ensure that there is sufficient rights for the user (e.g. thirra) as defined in d
```

3. Debugging mode is turned on - many incomprehensible data was displayed above the normal contents for all pages

```
– Turn off debugging mode in thirra/app_thirra/config/config.php. The variable is t
```

4. Error page after trying to log in

```
– On fresh or freshly updated installations, user may see an error page if there ha
– Once at least one successful log in is made, future incorrect usernames or passwo
```

5 EHR Admin

5.1 ADMIN SECTION

5.2 System Users Management

Use this section to add/edit users.

5.3 Staff Categories Management

Users with the same job functionalities or access rights can be grouped into Staff Categories.

5.4 Clinics

THIRRA supports the configuration of multiple clinics sharing the same database.

5.5 Departments

Each clinic must have at least one department. Rooms, created in the Queue Section, must belong to a department.

5.6 Referral Centres

These are the referral centres that the patients can be referred to in the consultation. Every referral centre must have at least a referral person defined. If no actual person is available, you may use departments, etc. for example Emergency Ward.

5.7 Synch Data

THIRRA allows data synchronisation via the transfer of data from offline servers to the central server.

1. Export Patients Data
2. Export Episodes Data

3. Export Antenatal Info Data
4. Export Antenatal Checkup Data
5. Export Antenatal Delivery Data
6. Export Immunisation Histories Data
7. Export Histories Data

1. Import Patients Data
2. Import Episodes Data
3. Import Antenatal Info Data
4. Import Antenatal Checkup Data
5. Import Antenatal Delivery Data
6. Import Immunisation Histories Data
7. Import Referrals Data
8. Import Histories Data

Exporting the data is done on the mobile offline server. It creates batches in XML format.

Importing the data is done on the central server using the exported XML files.

6 EHR Data Synchronisation

6.1 DATA SYNCHRONISATION

6.2 Overview

Users can deploy offline mobile clinics that can later be synchronised with the main database. Data can only be synchronised in one direction, i.e. single master. Multi-master setup is not possible and it introduces data complications that are too risky to implement, especially for Electronic Health Records System. There can be multiple slaves, i.e. offline mobile clinics, that all share the same database although virtually, they are different clinics.

Initially, a copy of the main database is copied to the offline mobile server, e.g. netbook. The netbook will have exactly the same information as the main server, at that point of time. Users can take the netbook to other locations to be used as usual. Over time, the netbook will accumulate patient information that the main server will not have, such as new patients and consultations. These additions are flagged for synchronisation.

Periodically, the offline mobile clinics will be synched back to the master database. All data flagged for synchronisation are exported into XML files. The XML files are used to import the data into the master database.

There may be cases where users continue to use the main online server, while the netbook is being used elsewhere. These information remains on the server and are not exported. As all the new data from the netbook are imported into the master database, the master database has the most complete information for all locations. This updated database is now used as the new master seed file for future deployments.

The prepare for subsequent deployment, the netbooks will now use the new master seed file as its database, making it also the most complete database for the time being. Thus, the databases on the offline mobile servers are temporal by nature.

6.3 Preparations

1. Ensure that all open consultations are closed. Tip: Print Clinic Consultation Report

2. Add all new users, drugs, locations, etc. that will be used by everyone
3. Ensure that all synch flags are cleared. Use Admin->Clear Synch Flags
4. Backup database to be the Master Seed file
5. On the offline mobile servers, create THIRRA application and restore Master Seed file to new database.
6. Ensure that the THIRRA application on the netbooks are set to Offline Mode, in the config.php file. The login screen as well as the banners would show the mode.

6.4 Periodic Synchronisation

1. Ensure that all open consultations are closed on the offline mobile servers. Tip: Print Clinic Consultation Report
2. Upgrade database schema to latest build (same build as online master server)
3. Export all data in the Admin Section
4. The XML files are located in the /var/www/xxx_uploads directory where xxx is the application folder name
5. Copy all the XML files to the online master server's /var/www/XXX_uploads directory
6. At the online master server, import all the data in the Admin Section, in the exact sequence as suggested
7. Clear all synch flags. Use Admin->Clear Synch Flags

6.5 Caution

The following actions are critical to the success of the offline mobile server:

1. Create all users, catalogues, drugs, referral centres, georgraphical locations, etc. that are common to all users
2. Clear all synch flags before creating the Master Seed file
3. Set the offline mobile server to offline mode

6.6 Recommended Practice

1. Create a new generation of the master database for each synchronisation exercise, for example:

```
clinic-002-0 as the master database
clinic-002-nb1-0 for netbook no.1
clinic-002-nb2-0 for netbook no.2
If in the future, there is a need to make changes to the live database, they can be
clinic-002-1, clinic-002-nb1-1, etc.
clinic-003-0 to be created from say, clinic-002-3's backup for latest synchronisatio
```

1. Perform all the synchronisation activity on the same server, so that it is easy to copy the XML files around.

7 Manual Metadata

7.1 MANUAL METADATA

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