Real-Time Bridge Monitoring Installation Guide

Version 1.1

Revision History

Date	Version	Description	Author
2002-00-00	0.01	Initial Draft	
2013-12-12	1.0	First Setup of the document	Andrea Bottoli
2014-01-06	1.1	Added prerequisites, configuration chapter	Lorenzo Pagliari
2014-01-13	1.2	Added Database-Setup	Jörn Tillmanns

Table Of Contents

1. Introduction

1.1 Purpose of this document

The purpose of this document is to provide a first guide to the installation of our product and help to the first system configuration.

1.2 Document organization

The document is organized as follows:

- Section 1, *Introduction,* describes contents of this guide, used documentation during developing process etc.
- Section 2, *Prerequisites*, describes the minimum and recommended system requirements needed to run the product.
- Section 3, *Linux OS (Debian based)*, describes how to install the product on a machine whit a Linux Debian based Operating System.
- Section 4, *Windows OS*, describes how to install the product on a machine whit a Windows Operating System.
- Section 5, *Configuration*, describes how to configure the various part of the system.
- Section 6, *SQL-Script,* contains the full sql-script.

1.3 Intended Audience

The intended audience is:

- The customers
- Anyone that want to install and configure this product

1.4 Scope

The purpose of this document is to provide a first guide to the installation of our product and help to the first system configuration. This document doesn't talk about how to use the product and its functionalities; for that consult the user manual.

1.5 Definitions and acronyms

1.5.1 Definitions

Keyword	Definitions

1.5.2 Acronyms and abbreviations

Acronym or abbreviation	Definitions
NTR	Nothing to Report. There is no information to a specific topic available or necessary.
IF	Installation folder. Is the folder in which the system has been installed.
DSP	Default Sources Path. Is the default path to the sources folder.

1.6 References

Apache-Tomcat:
- http://tomcat.apache.org/

MySQL:
- http://www.mysql.it/

Quartz Schedule:
- http://www.quartz-scheduler.org/

Java:
- http://www.java.com/it/

Java Technologies:
- http://www.oracle.com/technetwork/java/index.html

2. Prerequisites

2.1 System Requirements

Minimum

- CPU: Desktop cpu Quad Core
- Hard Disk: 50 GB
- RAM: 4 GB
- Media: CD-ROM
- Interfaces: Gigabit Ethernet
- Input: USB ports
- Network: 2Mbps Symmetric connection

Recommended

- CPU: Server cpu Quad Core
- Hard Disk: 100 GB
- RAM**:** 16 GB
- Media: CD-ROM
- Interfaces: Gigabit Ethernet, Wireless b/g/n
- Input: USB ports
- Network: 4Mbps Symmetric connection

2.2 Software Requirements

- Apache-Tomcat web server 6.0 or newest
- Java version 1.6 or newest
- JRE version 6 or newest
- Javascript version 1.0 or newest
- MySQL Server version 5.0 or newest
- Quartz version 2.2 or newest

2.3 Linux (Debian based) OS

2.4 Windows OS

3. Linux OS (Debian based)

4. Windows OS

5. Configuration

5.1 Database

After the MySQL-Server is successfully installed, you have to create on special User for the RTBM-Site. Also you should create a dedicated Schema "RTBM". After this the SQL-Script "RTBM_DB.sql" has to be performed on the server.

5.2 Tomecat Server

First add the *mysql-connector-java-5.1.27-bin.jar*[1] to the lib-folder of your tomcat-server.

Also you need to modify your server.xml in order to use the UserAuthentication. Please insert following xml-item:

```
<Realm
              className="org.apache.catalina.realm.JDBCRealm"
              driverName="com.mysql.jdbc.Driver"
              connectionURL="jdbc:mysql://server-adress:3306/RTBM"
              connectionName="db-user-name"
              connectionPassword="db-user-password"
              userTable="users"
              userNameCol="username"
              userCredCol="password"
              userRoleTable="users_roles"
              roleNameCol="role" />
```

Please make sure only to change the connectionURL, the connectionName and the connectionPassword.

5.3 Source folder configuration

To configure the source folder, you have to edit the configuration file of the system. Go to the **IF** and then go into the "*EngineConfig*" folder; here there will be the configuration file named "*source_path.cfg*". Edit this file with a text editor and change the source path folder that you want.

If you edit wrong the path, the system will be setup again the source folder path to the default source path.

DSP: "<**IF**> / *Sources*"

Wrong edit means:

Delete or forgot to insert a path

- Insert something that is not a path
- Insert a "new line" character before the path
- Insert a not valid path.

In all these cases the system will put the source path at the **DSP**.

Also in cases of:

- "source_path.cfg" file missing
  - the configuration file is real missing into the folder
  - the configuration file has been renamed
- "EngineConfig" folder missimg
  - the folder is real missing
  - the folder has been renamed

the system will create again the missing folder and the missing configuration file, and will set the source path to the **DSP**.

[1] http://dev.mysql.com/downloads/connector/j/

N.B.: Do not put any newline after the comments and before the source path, do not put space before the path, do not put any numerical characters before the path, do not put any alphabetic character before the path if is not part of the path, otherwise the system will not detect the path and will set the path to the DSP. Is recommended to not delete or modify the configuration folder and configuration file.

5.4 Connection RTBM-SITE with DB

For the connection between the RTBM-Site and the Database you have to change the SQL-Data in *WebContent/META-INF/context.xml*.

The necessary configuration for the communication between the tomcat-server and the MySQL-Server is descripted in chapter 5.2.

6. SQL-Script

```
-- phpMyAdmin SQL Dump
-- version 4.0.9
-- http://www.phpmyadmin.net
--

SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
SET time_zone = "+00:00";


/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
/*!40101 SET NAMES utf8 */;

--
-- Database: `RTBM`
--

-- --------------------------------------------------------

--
-- Table structure for table `movies`
--

CREATE TABLE IF NOT EXISTS `movies` (
  `ID` int(11) NOT NULL AUTO_INCREMENT,
  `path` varchar(250) NOT NULL,
  `type` smallint(3) NOT NULL,
        `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  `camera` tinyint(4) NOT NULL,
  PRIMARY KEY (`ID`),
  UNIQUE KEY `path` (`path`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8 AUTO_INCREMENT=1 ;

-- --------------------------------------------------------

--
-- Table structure for table `m_n_domain`
--

CREATE TABLE IF NOT EXISTS `m_n_domain` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `N` float NOT NULL,
  `M` float NOT NULL,
  PRIMARY KEY (`ID`)
) ENGINE=MyISAM  DEFAULT CHARSET=latin1 AUTO_INCREMENT=32 ;

-- --------------------------------------------------------

--
-- Table structure for table `parameters`
--
```

```
CREATE TABLE IF NOT EXISTS `parameters` (
  `ID` int(11) NOT NULL AUTO_INCREMENT,
  `name` varchar(100) NOT NULL,
  `abbreviation` varchar(30) NOT NULL,
  `unit` varchar(20) NOT NULL,
  `constant` tinyint(1) NOT NULL,
  `category` int(4) NOT NULL,
  PRIMARY KEY (`ID`),
  UNIQUE KEY `paramter` (`name`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=114 ;

-- --------------------------------------------------------

--
-- Table structure for table `parameter_data`
--

CREATE TABLE IF NOT EXISTS `parameter_data` (
  `ID` int(11) NOT NULL AUTO_INCREMENT,
  `parameters_id` int(11) NOT NULL,
  `value` float NOT NULL,
  `user_id` int(11) NOT NULL,
      `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=841 ;

-- --------------------------------------------------------

--
-- Table structure for table `parsed_input_files`
--

CREATE TABLE IF NOT EXISTS `parsed_input_files` (
  `ID` int(11) NOT NULL AUTO_INCREMENT,
  `name` varchar(100) NOT NULL,
  `type` tinyint(4) NOT NULL,
  `stored_path` varchar(200) NOT NULL,
  `successfully_parsed` tinyint(1) NOT NULL,
      `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  UNIQUE KEY `name` (`name`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=33667 ;

-- --------------------------------------------------------

--
-- Table structure for table `pictures`
--

CREATE TABLE IF NOT EXISTS `pictures` (
  `ID` int(11) NOT NULL AUTO_INCREMENT,
  `path` varchar(500) NOT NULL,
```

```
      `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  `camera` int(11) NOT NULL,
  PRIMARY KEY (`ID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8 AUTO_INCREMENT=1 ;

-- --------------------------------------------------------

--
-- Table structure for table `sensor_data_1_day`
--

CREATE TABLE IF NOT EXISTS `sensor_data_1_day` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `wind_speed` float NOT NULL,
  `wind_direction` float NOT NULL,
  `wind_speed_max` float NOT NULL,
  `wind_direction_max` float NOT NULL,
  `hydrometer` float NOT NULL,
  `hydrometer_variance` float DEFAULT NULL,
  `sonar` float DEFAULT NULL,
  `sonar_variance` float DEFAULT NULL,
  `sonar_perc_correct` float DEFAULT NULL,
  `sonar_perc_wrong` float DEFAULT NULL,
  `sonar_perc_outOfWater` float DEFAULT NULL,
  `sonar_perc_error` float DEFAULT NULL,
  `sonar_perc_uncertain` float DEFAULT NULL,
  `safety_factor_00` float DEFAULT NULL,
  `safety_factor_01` float DEFAULT NULL,
  `safety_factor_10` float DEFAULT NULL,
  `safety_factor_11` float DEFAULT NULL,
  `water_speed` float DEFAULT NULL,
  `water_flow_rate` float DEFAULT NULL,
      `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=1379 ;

-- --------------------------------------------------------

--
-- Table structure for table `sensor_data_1_hour`
--

CREATE TABLE IF NOT EXISTS `sensor_data_1_hour` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `wind_speed` float DEFAULT NULL,
  `wind_direction` float DEFAULT NULL,
  `wind_speed_max` float DEFAULT NULL,
  `wind_direction_max` float DEFAULT NULL,
  `hydrometer` float DEFAULT NULL,
  `hydrometer_variance` float DEFAULT NULL,
  `sonar` float DEFAULT NULL,
  `sonar_variance` float DEFAULT NULL,
  `sonar_perc_correct` float DEFAULT NULL,
```

```
  `sonar_perc_wrong` float DEFAULT NULL,
  `sonar_perc_outOfWater` float DEFAULT NULL,
  `sonar_perc_error` float DEFAULT NULL,
  `sonar_perc_uncertain` float DEFAULT NULL,
  `safety_factor_00` float DEFAULT NULL,
  `safety_factor_01` float DEFAULT NULL,
  `safety_factor_10` float DEFAULT NULL,
  `safety_factor_11` float DEFAULT NULL,
  `water_speed` float DEFAULT NULL,
  `water_flow_rate` float DEFAULT NULL,
      `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=44674 ;

-- --------------------------------------------------------

--
-- Table structure for table `sensor_data_10_min`
--

CREATE TABLE IF NOT EXISTS `sensor_data_10_min` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `wind_speed` float DEFAULT NULL,
  `wind_direction` float DEFAULT NULL,
  `wind_speed_max` float DEFAULT NULL,
  `wind_direction_max` float DEFAULT NULL,
  `hydrometer` float DEFAULT NULL,
  `hydrometer_variance` float DEFAULT NULL,
  `sonar` float DEFAULT NULL,
  `sonar_variance` float DEFAULT NULL,
  `sonar_perc_correct` float DEFAULT NULL,
  `sonar_perc_wrong` float DEFAULT NULL,
  `sonar_perc_outOfWater` float DEFAULT NULL,
  `sonar_perc_error` float DEFAULT NULL,
  `sonar_perc_uncertain` float DEFAULT NULL,
  `safety_factor_00` float DEFAULT NULL,
  `safety_factor_01` float DEFAULT NULL,
  `safety_factor_10` float DEFAULT NULL,
  `safety_factor_11` float DEFAULT NULL,
  `water_speed` float DEFAULT NULL,
  `water_flow_rate` float DEFAULT NULL,
      `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=130324 ;

-- --------------------------------------------------------

--
-- Table structure for table `sensor_data_raw`
--

CREATE TABLE IF NOT EXISTS `sensor_data_raw` (
```

```
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `wind_speed` float NOT NULL,
  `wind_direction` float NOT NULL,
  `hydrometer` float NOT NULL,
  `sonar` float NOT NULL,
  `sonar_type` int(2) NOT NULL,
        `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=26283590 ;

-- --------------------------------------------------------

--
-- Table structure for table `settings`
--

CREATE TABLE IF NOT EXISTS `settings` (
  `ID` int(11) NOT NULL,
  `name` varchar(100) NOT NULL,
  `value` varchar(100) NOT NULL,
  PRIMARY KEY (`ID`),
  UNIQUE KEY `name` (`name`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

-- --------------------------------------------------------

--
-- Table structure for table `users`
--

CREATE TABLE IF NOT EXISTS `users` (
  `ID` int(11) NOT NULL AUTO_INCREMENT,
  `username` varchar(50) NOT NULL,
  `surename` varchar(50) DEFAULT NULL,
  `lastname` varchar(50) DEFAULT NULL,
  `password` varchar(250) NOT NULL,
  `email` varchar(50) DEFAULT NULL,
  PRIMARY KEY (`ID`),
  UNIQUE KEY `username` (`username`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=13 ;

-- --------------------------------------------------------

--
-- Table structure for table `users_roles`
--

CREATE TABLE IF NOT EXISTS `users_roles` (
  `ID` int(11) NOT NULL AUTO_INCREMENT,
  `username` varchar(50) NOT NULL,
  `role` varchar(50) NOT NULL,
  `userID` int(11) NOT NULL,
  PRIMARY KEY (`ID`)
) ENGINE=InnoDB  DEFAULT CHARSET=utf8 AUTO_INCREMENT=13 ;
```

```
-- --------------------------------------------------------

--
-- Table structure for table `worst_case_00`
--

CREATE TABLE IF NOT EXISTS `worst_case_00` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `pylon_number` int(11) NOT NULL,
  `N` float NOT NULL,
  `Tx` float NOT NULL,
  `Ty` float NOT NULL,
  `Mx` float NOT NULL,
  `My` float NOT NULL,
  `M` float NOT NULL,
  `cs` float NOT NULL,
  `comb_number` int(11) DEFAULT NULL,
        `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=MyISAM  DEFAULT CHARSET=latin1 AUTO_INCREMENT=410305 ;

-- --------------------------------------------------------

--
-- Table structure for table `worst_case_01`
--

CREATE TABLE IF NOT EXISTS `worst_case_01` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `pylon_number` int(11) NOT NULL,
  `N` float NOT NULL,
  `Tx` float NOT NULL,
  `Ty` float NOT NULL,
  `Mx` float NOT NULL,
  `My` float NOT NULL,
  `M` float NOT NULL,
  `cs` float NOT NULL,
  `comb_number` int(11) DEFAULT NULL,
        `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=MyISAM  DEFAULT CHARSET=latin1 AUTO_INCREMENT=410293 ;

-- --------------------------------------------------------

--
-- Table structure for table `worst_case_10`
--

CREATE TABLE IF NOT EXISTS `worst_case_10` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `pylon_number` int(11) NOT NULL,
```

```
  `N` float NOT NULL,
  `Tx` float NOT NULL,
  `Ty` float NOT NULL,
  `Mx` float NOT NULL,
  `My` float NOT NULL,
  `M` float NOT NULL,
  `cs` float NOT NULL,
  `comb_number` int(11) DEFAULT NULL,
        `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=MyISAM  DEFAULT CHARSET=latin1 AUTO_INCREMENT=410275 ;

-- --------------------------------------------------------

--
-- Table structure for table `worst_case_11`
--

CREATE TABLE IF NOT EXISTS `worst_case_11` (
  `ID` int(10) NOT NULL AUTO_INCREMENT,
  `pylon_number` int(11) NOT NULL,
  `N` float NOT NULL,
  `Tx` float NOT NULL,
  `Ty` float NOT NULL,
  `Mx` float NOT NULL,
  `My` float NOT NULL,
  `M` float NOT NULL,
  `cs` float NOT NULL,
  `comb_number` int(11) DEFAULT NULL,
        `timestamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
  PRIMARY KEY (`ID`),
  KEY `timestamp_index` (`timestamp`)
) ENGINE=MyISAM  DEFAULT CHARSET=latin1 AUTO_INCREMENT=410263 ;

/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
```