



# Installation Guide

# Contents

# Chapter 1

# Development Environment

## 1.1 Prerequisites

### 1.1.1 Java

Java SE 6 or later is required. The setup and installation of Java SE 6 is typically operating system specific, so consult your OS provider.

### 1.1.2 MySQL

MySQL is required to support the installation of the Openfire XMPP server. Download and Installation information is available at :

http://www.mysql.com

### 1.1.3 Openfire

The Openfire XMPP server is required to support the construction of virtual networks within the TINOS platform. Download and Installation information is available at :

http://www.igniterealtime.org/projects/openfire

### 1.1.4 Virgo WebServer

TINOS is loaded and executed within the Virgo WebServer platform. It is recommended that the Virgo WebServer is installed in the DEV_HOME directory as TINOS users will need to interact with this server directly in order to load and execute TINOS nodes. Download and installation information is available at :

http://www.eclipse.org/virgo/download

### 1.1.5 WireShark

WireShark is a tool that is used to examine TINOS network trace logs. Download and installation information is available at :

http://www.wireshark.org

## 1.2 Post Installation Steps

### 1.2.1 Set environment variables

#### JAVA_HOME

TINOS uses the JAVA_HOME environment variable to locate the java executable. Configure this environment variable to point to the home directory of the Java 5 or 6 installation on your computer.

#### SERVER_HOME

As a convenience it is recommended that you create an environment variable that points to the Virgo Web Server installation directory. Note that the Virgo Web Server does not required that such an environment variable has been set. This variable may have any name of your choosing.The following documentation assumes that the variable is named SERVER_HOME.

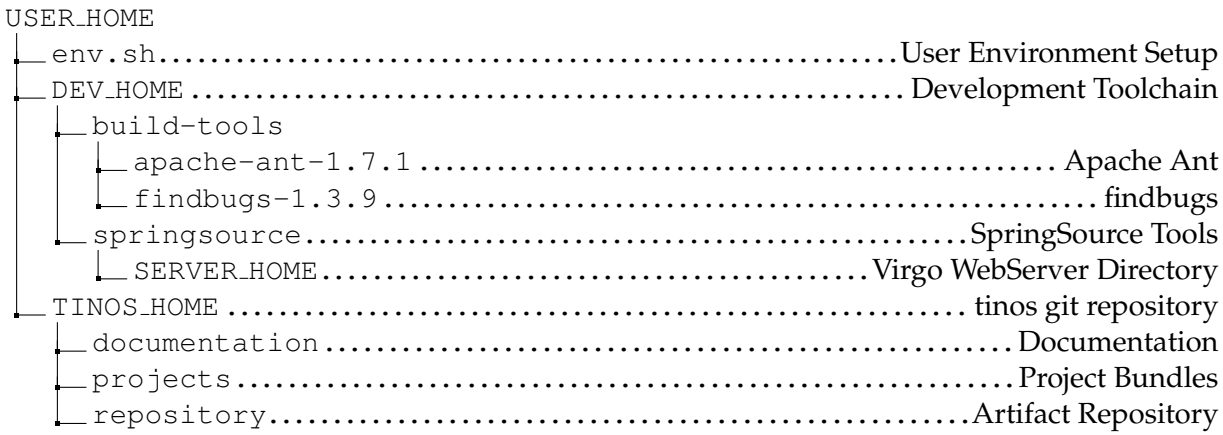



**Figure 1.1:** High Level Installation Layout

#### DEV_HOME

As a convenience it is recommended that you create an environment variable that points to the directory that contains the development environment tooling. This variable may have any name of your choosing.The following documentation assumes that the variable is named DEV_HOME.

#### TINOS_HOME

As a convenience it is recommended that you create an environment variable that points to the directory that contains the tinos git repository. The following documentation assumes that the variable is named TINOS_HOME.

## 1.3 Directory Layout

## 1.4 Environment Settings

Generally we attempt to isolate environments from each other as a matter of course. This supports the idea of multiple environments being available for a user dependent upon what they want to do.

To support this idea, all the enviroment settings for TINOS development are written into the file env.sh in the development directory. This file can be sourced within the shell of the user to append the relevant settings to their default shell.

In doing so, the user tailors this shell for the TINOS development environment and platform. Listings of the relevant settings under the various headings of the installation are provided just to help join the dots for the reader. A complete env.sh file is also listed at the end of the document.

## 1.5 Ant

The current version of Ant is apache-ant-1.7.1.

### 1.5.1 Installation

**Task** Download the Apache Ant from Apache.Org.

**URL** http://ant.apache.org/bindownload.cgi

**$** cd $HOME/development

**$** mkdir build-tools

**$** cd build-tools

**$** unzip $HOME/installation/packages/apache-ant-1.7.1-bin.zip

**Note** This will extract the ant into the directory: apache-ant-1.7.1

### 1.5.2 Environment Settings

***Ensure you add the ANT_OPTS environment variable, it is needed to workarounda Java JVM issue in relation to the churn of the PERM cache.***

```
# Ant Settings
export ANT_HOME=$DEV_HOME/build-tools/apache-ant-1.7.1
export ANT_OPTS="-Xms64m -Xmx512m -XX:PermSize=128m -XX:MaxPermSize=756m"
export ANT_EXEC=$ANT_HOME/bin
```

## 1.6 Findbugs

The current version of Findbugs is findbugs-1.3.9.

### 1.6.1 Installation

**Task** Download the findbugs from

**URL** http://findbugs.sourceforge.net/downloads.html

**$** cd $HOME/development/build-tools

**$** tar xzvf $HOME/installation/packages/findbugs-1.3.9.tgz

**Note** This will extract the ant into the directory: findbugs-1.3.9

### 1.6.2 Environment Settings

```
export FINDBUGS_HOME=$DEV_HOME/build-tools/findbugs-1.3.9
export PATH=$FINDBUGS_HOME/bin:$PATH
```

## 1.7 Ruby

The current version of Ruby is 1.8.7, with the "choices" and "xml-simple" rubygems. In previous installations, this part of the toolchain has been built from source code but now it has standardised enough to use the OS provided packages.

### 1.7.1 Installation

**$** export GEM_HOME=$HOME/.gem

**Task** Install "choice" gem (Project Template Tool Requirement)

**$** gem install $HOME/installation/packages/choice-0.1.3.gem

**Task** Install "xml-simple" gem (Project Template Tool Requirement)

**$** gem install $HOME/installation/packages/xml-simple-1.0.12.gem

## 1.8 Build System

Install the core Build System files.

**Task** Install Core Build System Files

**URL** Contact TSSG - Version Controlled Files.

**$** cd $HOME/development

**$** tar xzvf $HOME/installation/packages/tssg-build-core.tgz

**Note** This will extract into the following directory : tssg-build-core

**Joy** This directory provides the Template Generators/Ivy for development.

## 1.9 Spring DM Server

Install the Spring DM Server.

**Task** Download SpringSource DM Server.

**URL** http://www.springsource.com/download/dmserver

**$** cd $HOME/development

**$** mkdir springsource

**$** cd springsource

**$** unzip $HOME/installation/packages/springsource-dm-server-2.0.0.RELEASE.zip

**Note** This will extract into the following directory : springsource-dm-server-2.0.0.RELEASE

## 1.10 SpringSource Tool Suite

Install the Spring Tool Suite (Branded *Eclipse*), it is invoked on the command line as "STS".

**Task** Download SpringSource Tool Suite.

**URL** http://www.springsource.com/products/springsource-tool-suite-download

**$** cd $HOME/development/springsource

**$** unzip $HOME/installation/packages/sts-Jan28.tgz

**Note** This will extract into the following directory : sts-2.3.0.RELEASE

**Note** Workaround for STS (Eclipse 3.5 variants) support on linux

**$** export GDK_NATIVE_WINDOWS=1

**Note** This tarball was constructed from my installation based off the offical 2.3.0.RELEASE but with plugins for Spring DM Server 2.0 pulled directly from the nightly builds.

## 1.11 Environment

All of the environmental settings from above combined and integrated. Typically this file is imported into the users shell whenever they wish to use the environment.

**Task** Append the CBNE Environment settings.

**$** cd development

**$** . ./env.sh

**Joy** Ready to rock and roll!.

```
# Development Environment Settings
export DEV_HOME=$HOME/development

# Java JDK/JRE
export JAVADEV_HOME=$DEV_HOME/java-sdk
export JAVA_HOME=$JAVADEV_HOME/jdk1.6.0_17
export JRE_HOME=$JAVADEV_HOME/jdk1.6.0_17/jre

# Ruby Settings
export GEM_HOME=$HOME/.gem
export RUBYOPT=rubygems

# Ant Settings
export ANT_HOME=$DEV_HOME/build-tools/apache-ant-1.7.1
export ANT_OPTS="-Xms64m -Xmx512m -XX:PermSize=128m -XX:MaxPermSize=756m"
export ANT_EXEC=$ANT_HOME/bin

# FindBugs
export FINDBUGS_HOME=$DEV_HOME/build-tools/findbugs-1.3.9

# Spring DM Server
export SPRING_DM=$DEV_HOME/springsource/springsource-dm-server-2.0.0.RELEASE

#STS Settings
export STS_HOME=$DEV_HOME/springsource/sts-2.3.0.RELEASE
# Workaround for STS (Eclipse 3.5 variants) support on linux
export GDK_NATIVE_WINDOWS=1

# Setup Path(in the document)
export PATH=$JAVA_HOME/bin:$ANT_EXEC:$FINDBUGS_HOME:$PATH
export PATH=$SPRING_DM/bin:$STS_HOME:$PATH
```

```
# Alias
export EDITOR=vim
alias vi='vim'
```

## 1.12 Openfire Database Installation

Before the installation of Openfire, a database user and database for the Openfire server must be created.

**Task** Create database user and database

**Note** Create a database

**$** mysql -u root -p

**mysql$** create database openfire character set utf8;

**Note** Create a user

**mysql$** grant all on openfire.* to openfire@localhost identified by 'openfire';

**mysql$** commit; exit;

## 1.13 OpenFire 3.6.4

Install the OpenFire server as instructed on their website. Once this is completed, start the server and then follow the instructions below to configure the server.

## 1.14 OpenFire Configuration

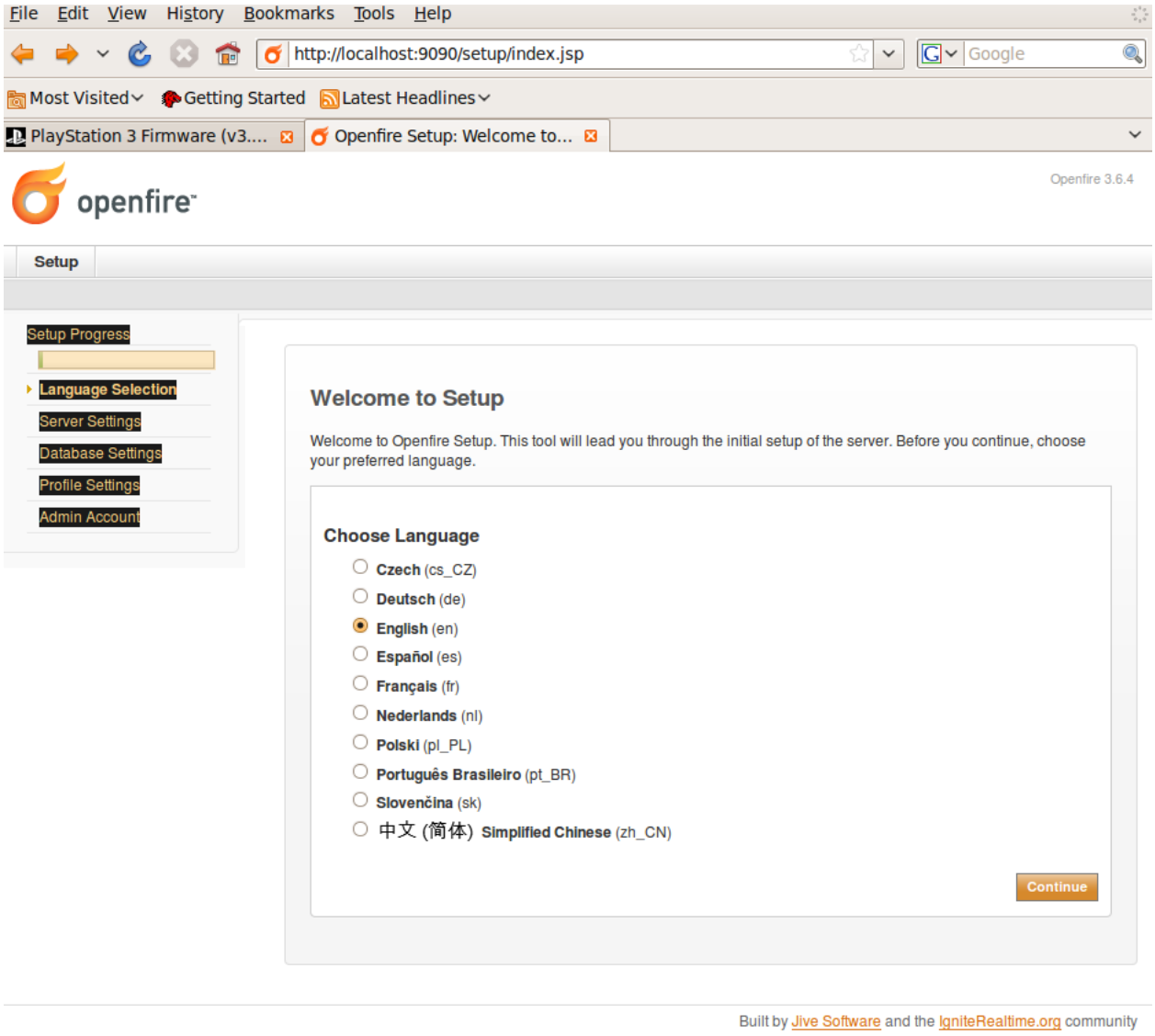
In order to complete the configuration of the OpenFire server, a web browser must be used to step through the server setup screens.

**Task** Configure the OpenFire server with a web browser.

**Browser** Enter the following URL to start the configuration.

**URL** http://localhost:9090

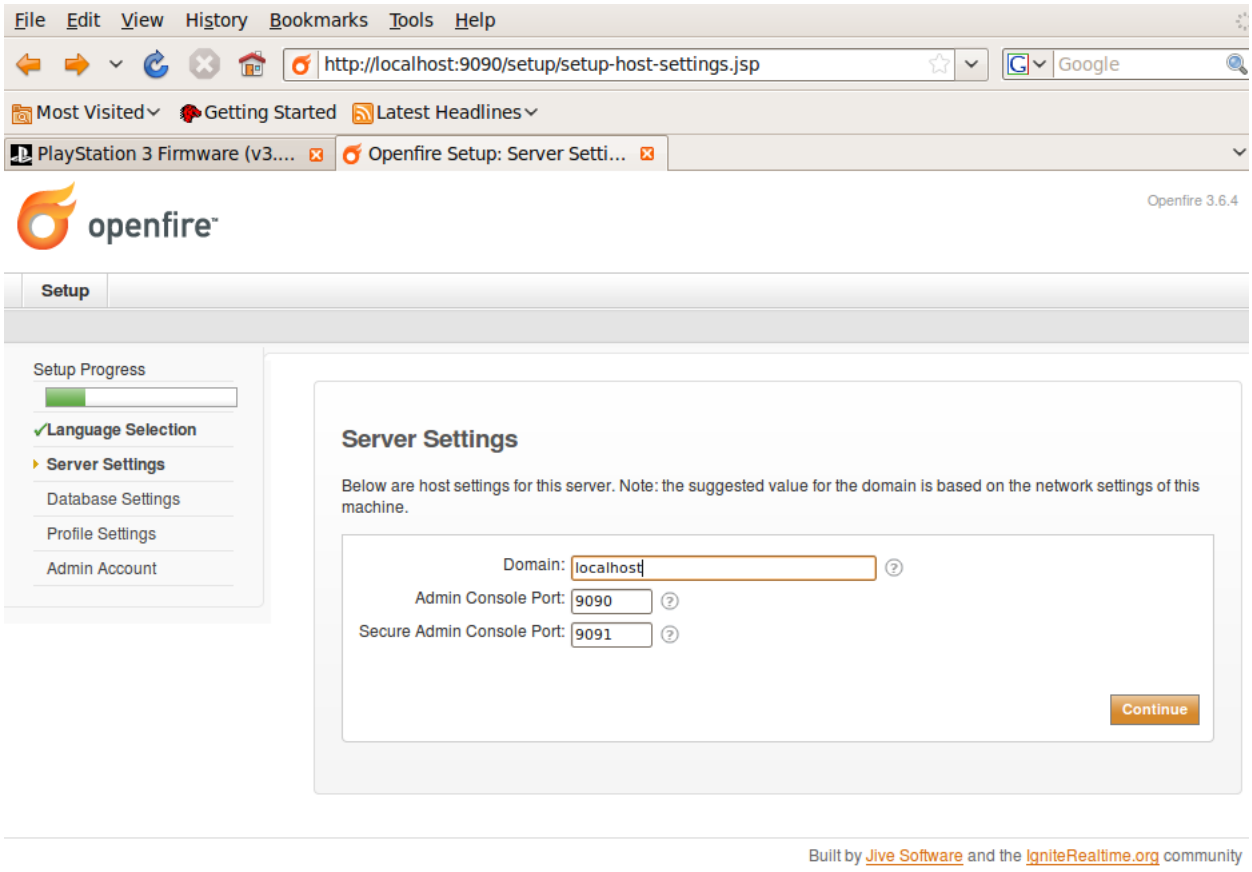
**Browser** Select the English language and click Continue.




**Task** Configure the Server Settings

**Browser** Enter ”localhost“ as the domain and leave the other settings unchanged.

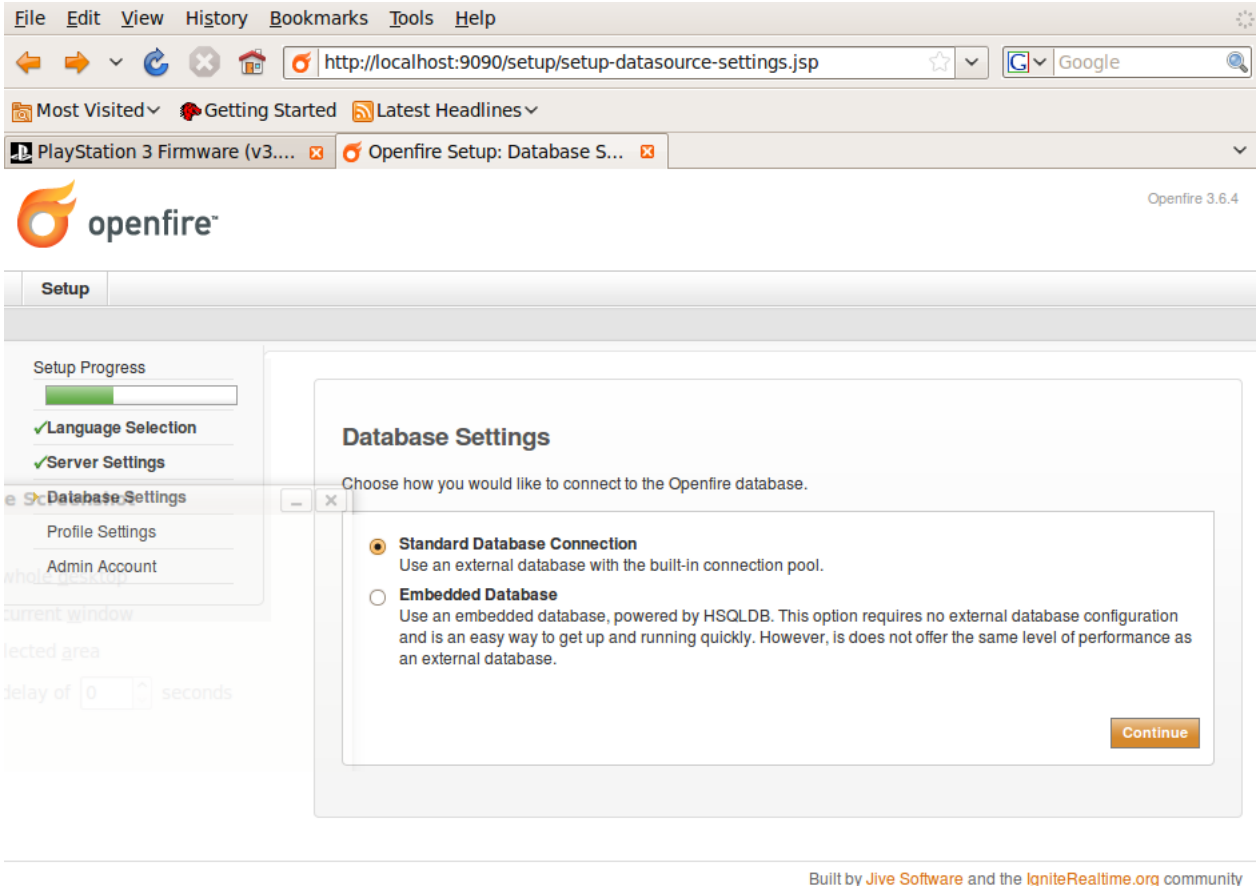
**Browser** Click Continue




**Task** Configure the Database Settings

**Browser** Select ”Standard Database Connection“

**Browser** Click Continue




**Task** Configure the Standard Database Settings

**Browser** Select ”MySQL“ in the Database Driver presets.

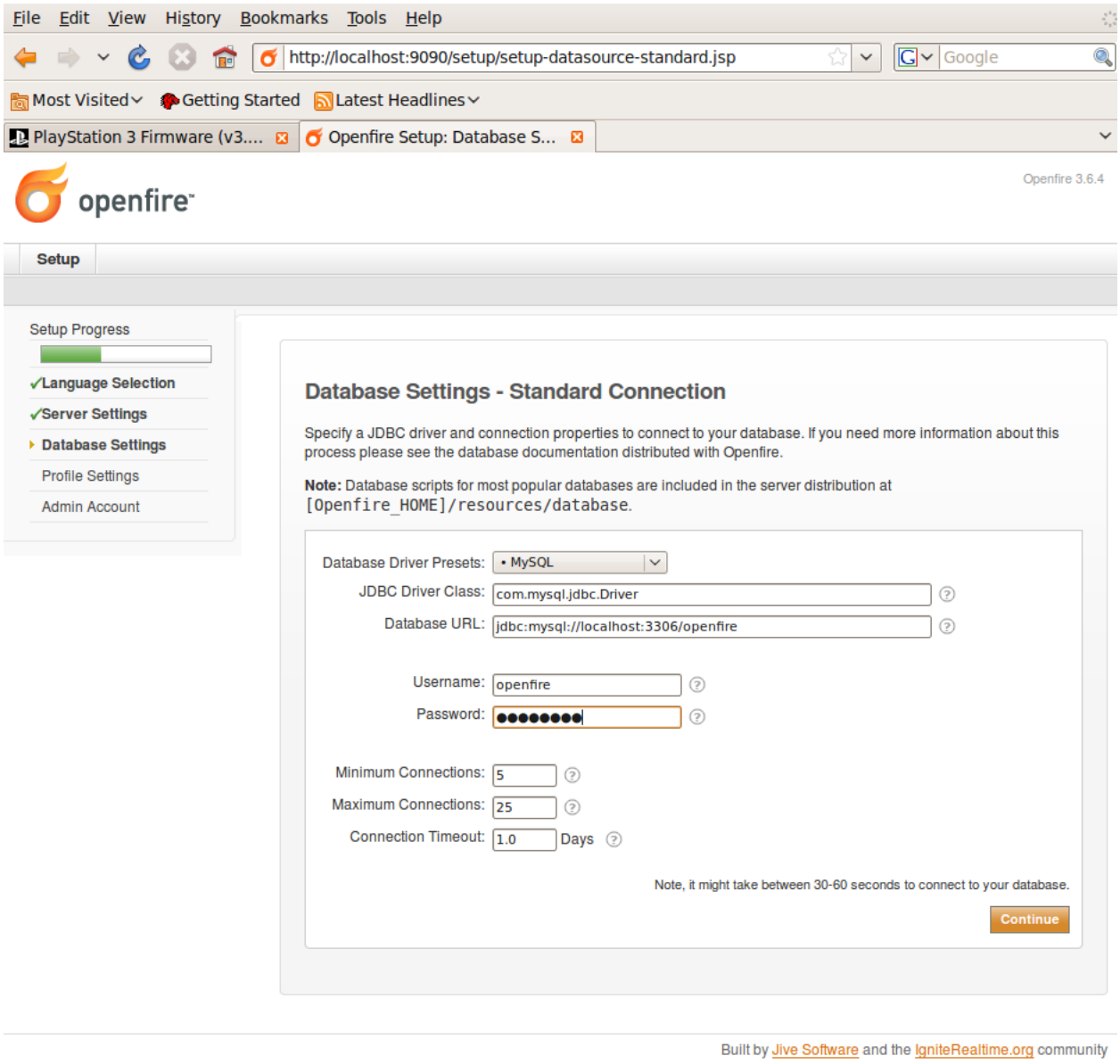
**Browser** Edit the Database URL to ”jdbc:mysql://localhost:3306/openfire“

**Browser** Edit the Username to ”openfire“

**Browser** Edit the Password to ”openfire“

**Browser** Click Continue

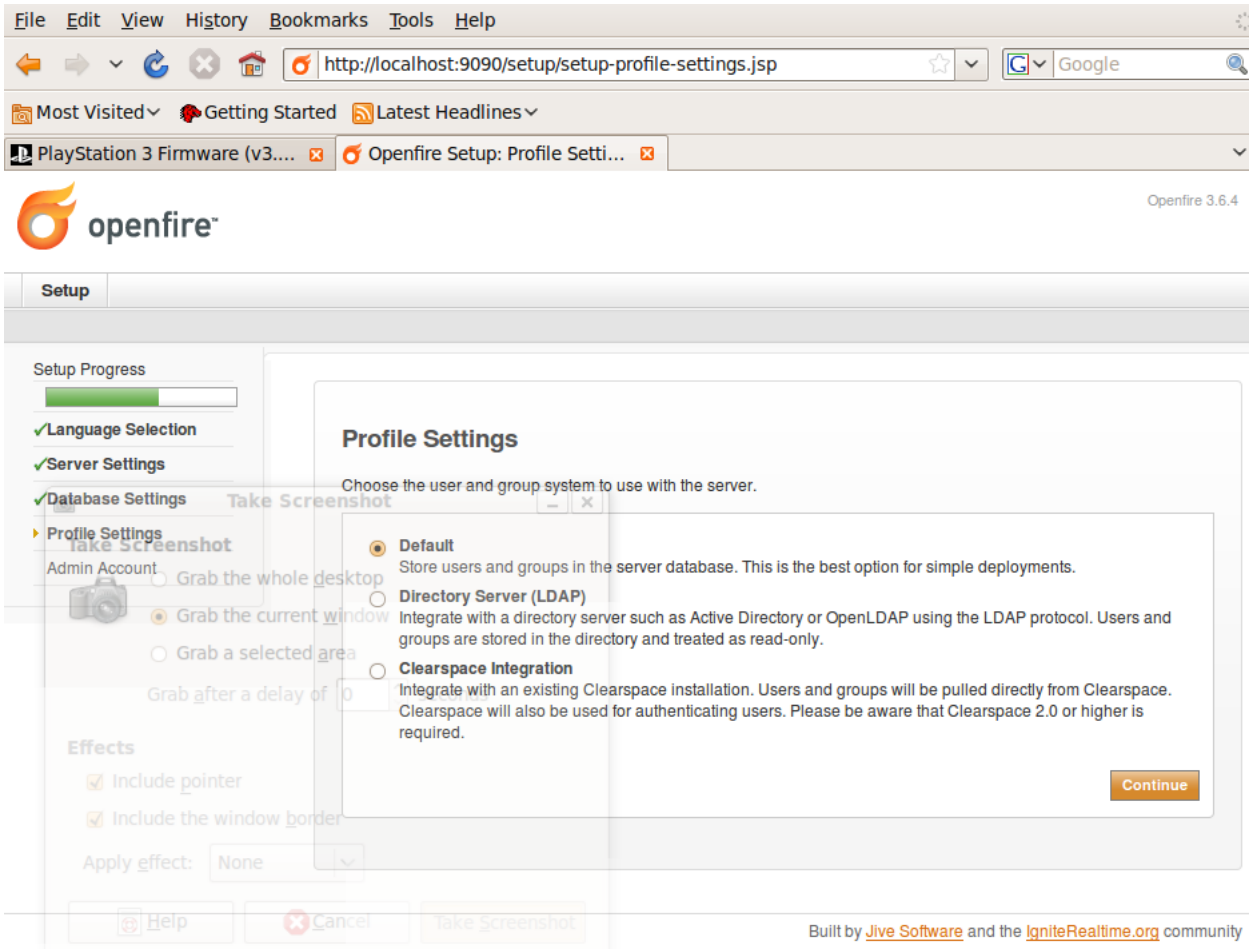
**Note** The database settings reflect those configured earlier.




**Task** Configure the Profile Settings

**Browser** Select "Default"

**Browser** Click Continue

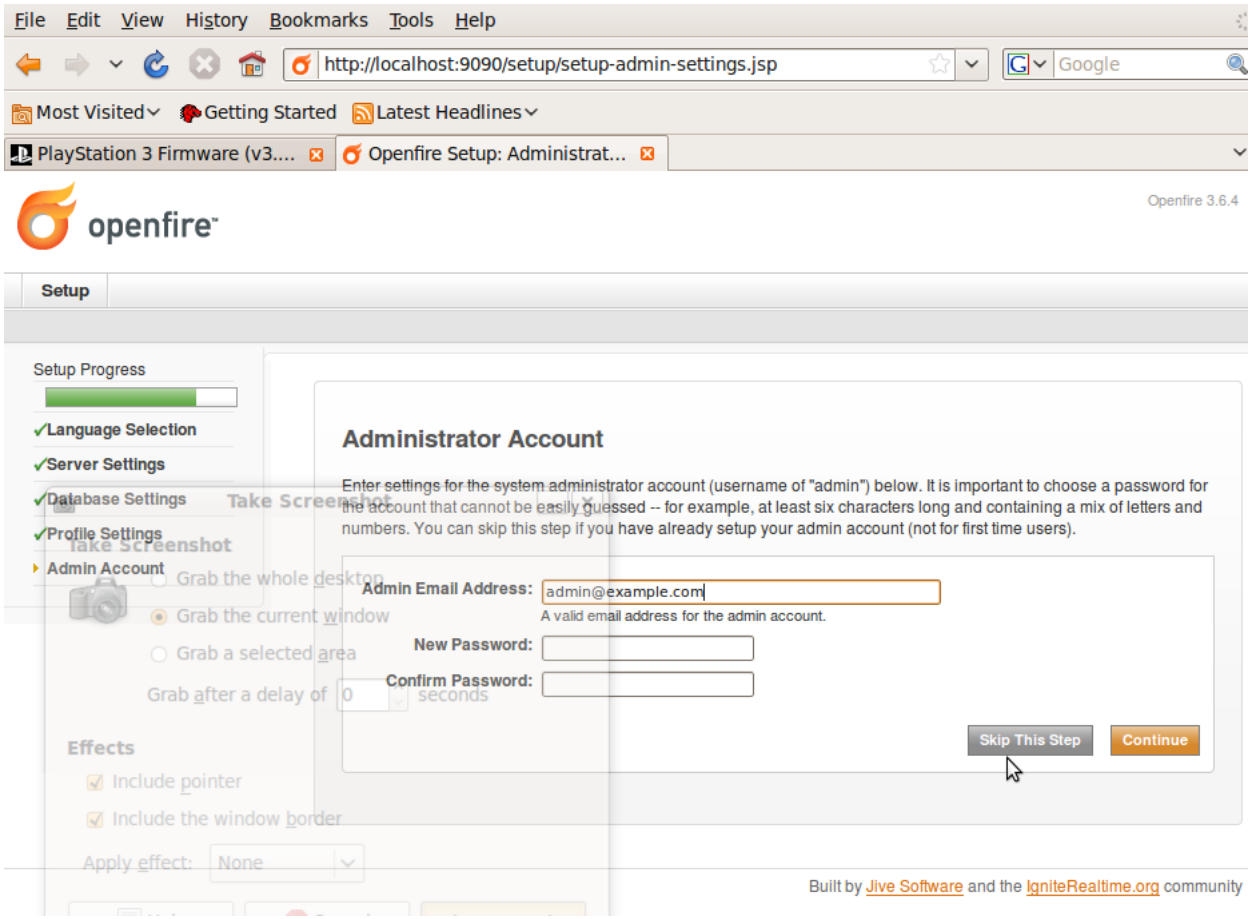



**Task** Configure the Administrator Settings

**Browser** Enter an Admin Email Address - You can pick whatever you want.

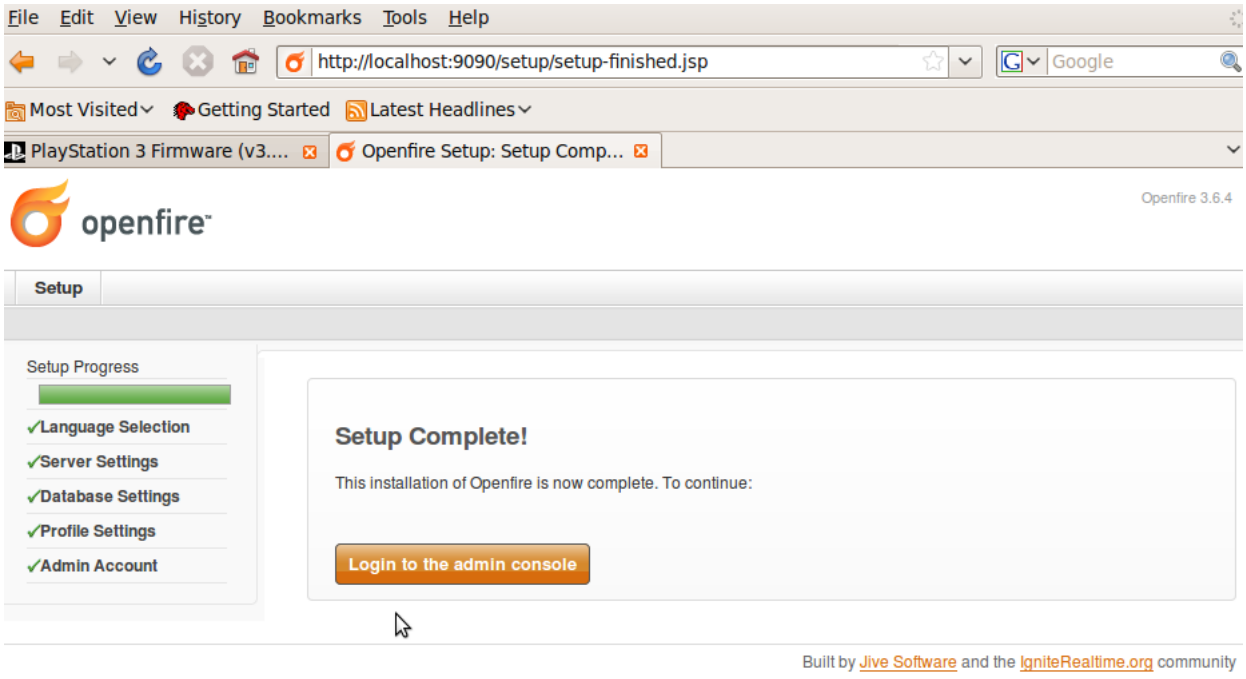
**Browser** Click ”Skip this step“

**Note** This is only to complete the installation configuration. In the next steps a database import with change this value to the default.




**Task** Setup Complete

**Browser** Setup should now be complete.




## 1.15 OpenFire Demo Configuration

The OpenFire server must be configured to match the requirements of the pre-canned demo applications. As such the existing database will be cleared and a valid configuration loaded in its place. This saves the long and tedious configurations required within OpenFire for all the users, groups and chatrooms.

**Task** Shutdown the OpenFire Server

**$** cd /etc/init.d

**$** sudo sh openfire stop

**Task** Clear the old database.

**$** mysql -u root -p

**mysql$** drop database openfire;

**mysql$** create database openfire character set utf8;

**mysql$** commit; exit;

**Task** Load the new database

**$** mysql -u openfire -p openfire < $HOME/installation/deploy/db/openfire.db

**Note** You will be prompted for the password : ”openfire“

**Task** Start the OpenFire Server

**$** cd /etc/init.d

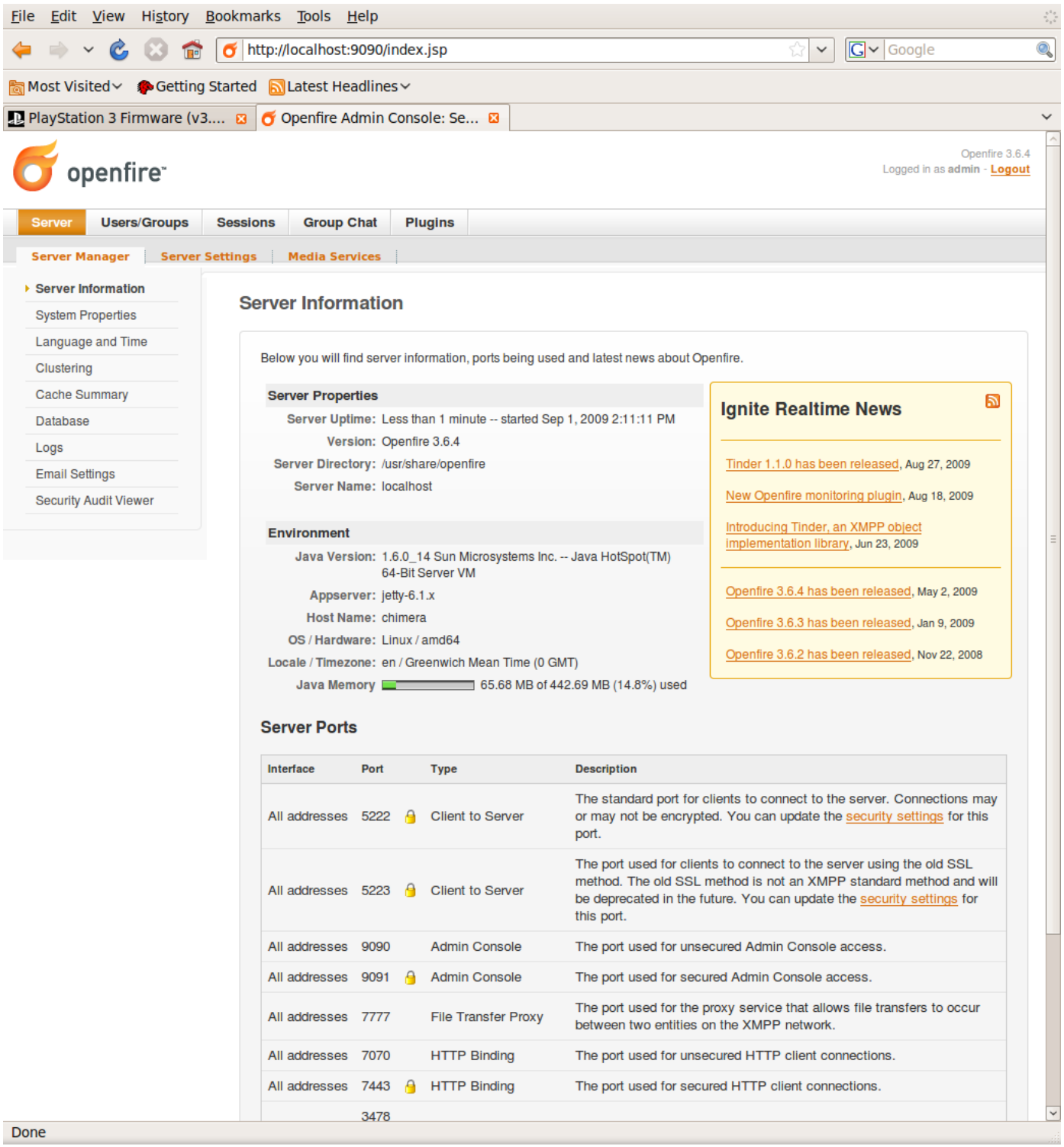
**$** sudo sh openfire start

**Task** Login to the OpenFire Administration Console

**Browser** Goto URL: http://localhost:9090

**Browser** Username : ”admin“, Password : ”12345“

**Note** You can change the password afterwards if you wish.


File Edit View History Bookmarks Tools Help
http://localhost:9090/index.jsp
Google
Most Visited
Getting Started
Latest Headlines
PlayStation 3 Firmware (v3....
Openfire Admin Console: Se...
openfire
Openfire 3.6.4
Logged in as admin - Logout
Server
Users/Groups
Sessions
Group Chat
Plugins
Server Manager
Server Settings
Media Services
Server Information
System Properties
Language and Time
Clustering
Cache Summary
Database
Logs
Email Settings
Security Audit Viewer
Server Information
Below you will find server information, ports being used and latest news about Openfire.
Server Properties
Server Uptime: Less than 1 minute -- started Sep 1, 2009 2:11:11 PM
Version: Openfire 3.6.4
Server Directory: /usr/share/openfire
Server Name: localhost
Environment
Java Version: 1.6.0_14 Sun Microsystems Inc. -- Java HotSpot(TM) 64-Bit Server VM
Appserver: jetty-6.1.x
Host Name: chimera
OS / Hardware: Linux / amd64
Locale / Timezone: en / Greenwich Mean Time (0 GMT)
Java Memory 65.68 MB of 442.69 MB (14.8%) used
Ignite Realtime News
Tinder 1.1.0 has been released, Aug 27, 2009
New Openfire monitoring plugin, Aug 18, 2009
Introducing Tinder, an XMPP object implementation library, Jun 23, 2009
Openfire 3.6.4 has been released, May 2, 2009
Openfire 3.6.3 has been released, Jan 9, 2009
Openfire 3.6.2 has been released, Nov 22, 2008
Server Ports
Interface Port Type Description
All addresses 5222 Client to Server The standard port for clients to connect to the server. Connections may or may not be encrypted. You can update the security settings for this port.
All addresses 5223 Client to Server The port used for clients to connect to the server using the old SSL method. The old SSL method is not an XMPP standard method and will be deprecated in the future. You can update the security settings for this port.
All addresses 9090 Admin Console The port used for unsecured Admin Console access.
All addresses 9091 Admin Console The port used for secured Admin Console access.
All addresses 7777 File Transfer Proxy The port used for the proxy service that allows file transfers to occur between two entities on the XMPP network.
All addresses 7070 HTTP Binding The port used for unsecured HTTP client connections.
All addresses 7443 HTTP Binding The port used for secured HTTP client connections.
3478
Done

## 1.16 Spring DM Server Configuration

**Task** Configure the Spring DM Server

**$** cd $HOME/development/springsource/spring-dm-server-2.0.0.RELEASE/configs

**Task** Configure a local bundle repository for build artifacts.

**$** cp $HOME/installation/deploy/config/com.springsource.repository.properties .

**Task** Configure logging/trace for the Jnode applications

**$** cp $HOME/installation/deploy/config/serviceability.xml .

**Task** Add support bundles

**$** cd $HOME/development/springsource/spring-dm-server-2.0.0.RELEASE/repository/usr

**$** cp $HOME/installation/deploy/bundles/* .

**Task** Add the Plan files

**$** cd $HOME/development/springsource/spring-dm-server-2.0.0.RELEASE

**$** cp $HOME/installation/deploy/plans/* .

**Task** Setup the local build artifacts repository

**$** cd $HOME

**$** mkdir jars

**$** cd jars

**$** cp $HOME/installation/deploy/jars/* .

## 1.17 IM Client - Human Buddy

Once configured you can use the IM Client to visually see the presence of the nodes within the demo networks, as well as sit in the networks (via chatrooms) and see the interactions. Super cheap and cheerful GUI.

**Task** Configure Pidgin Client

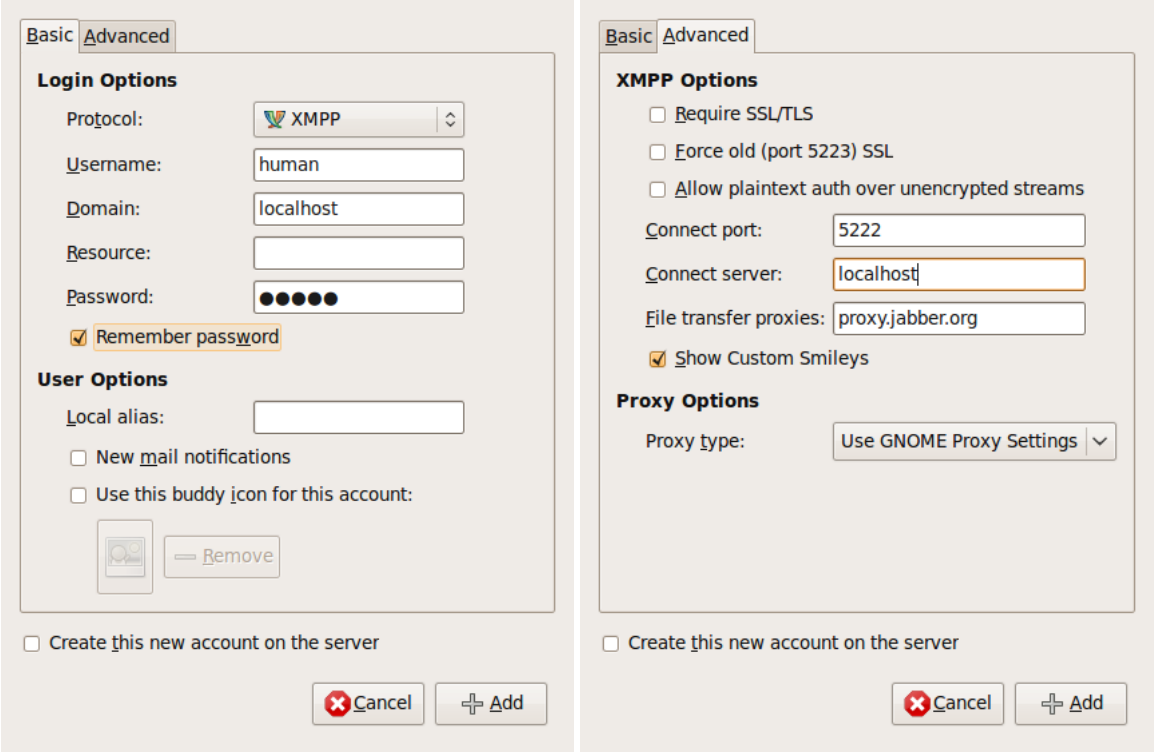
**GUI** Start Pidgin; (Applications > Internet > Pidgin Internet Messenger)

**Pidgin** Add Account

**Pidgin** Basic Tab > Protocol: XMPP, User: Human, Domain: localhost, Password: Human, Remember Password: Tick.

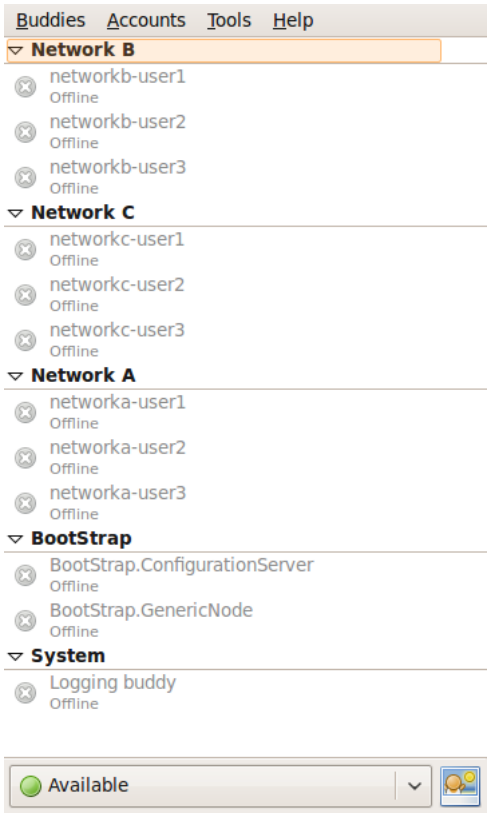
**Pidgin** Advanced Tab> Connect Server: localhost.

**Pidgin** Click Add.




**Task** Ensure you can see Offline Buddies

**Pidgin** Buddies > Show > Offline Buddies (Tick/Enable)




## 1.18 Jnodes Pre-Canned Application Demo

For the first initial loading of the demo - the following actions must be performed in exact sequence. This is primarily to make life easier for the person giving / viewing the demo as everything will start in an order that will match a presentation.

**Task** Start the Spring DM Server

**$** . $HOME/development/env.sh

**$** cd $SPRING_DM/bin

**$** ./startup.sh

**Note** Wait for this to complete.

*If you are doing a demo - it is most useful to have the IM Client open during the demo as you will be able to watch the bootstrap in progress (via presence) and also the nodes as they are configured and come online.*

*The demo scenario is the almost the most basic possible with a simple ping scenario being enacted between the nodes but in order to do this the nodes, drivers, stacks (IPv4/TCP/Socket API/Name Resolver/Routes) and simple traffic generator (ping) are configured and enabled within the OSGi environment.*

**This is a starting point for more elaborate scenarios - such as the 4WARD WP2 / 4 Integration demo**

### 1.18.1 Initial Run of the Demo

**Task** Start Pidgin IM Client

**GUI** Application > Internet > Pidgin

**Task** New Terminal Shell - Load the Demo Applications

**$** . $HOME/development/env.sh

**$** cd $SPRING_DM

**Task** Start the BootStrap configuration Manager

**$** mv org.tssg.config.manager.plan pickup

**Note** Watching the other terminal - wait until the application in successfully loaded.

**Task** Start the Logger Agent

**$** mv org.tssg.logger.plan pickup

**Note** Watching the other terminal - wait until the application in successfully loaded.

**Task** Start Jnode0

**$** mv org.tssg.node.plan pickup

**Note** Watching the other terminal - wait until the application in successfully loaded.

**Note** Wait for IM Buddy - networkb-user1 to come online (Jnode0 fully configured).

**Task** Start Jnode1

**$** mv org.tssg.node1.plan pickup

**Note** Watching the other terminal - wait until the application in successfully loaded.

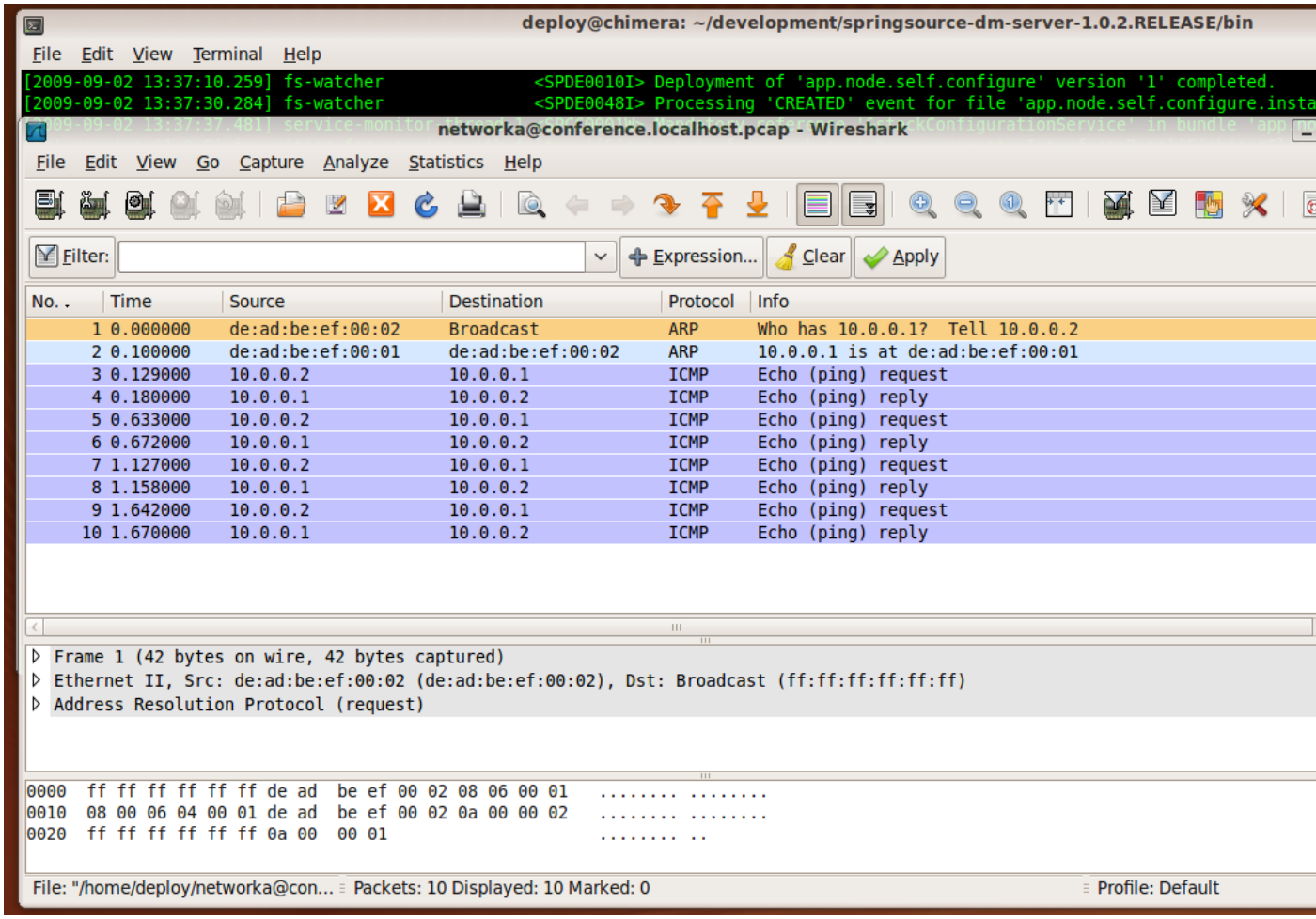
**Note** Wait for IM Buddy - networkb-user2 to come online (Jnode1 fully configured).

**Note** The logger application will produce PCAP files in the ”/tmp“ directory.

**Task** Start WireShark

**GUI** Applications > Internet > WireShark

**Note** The file to load into WireShark is "/tmp/networka@conference.localhost.pcap" as this will have the ARP/Ping traffic present in it.




### 1.18.2 Stopping the Spring DM Server

**Task** Stop the Spring DM Server

**Note** Simply CTRL-C in the shell you started the server.

### 1.18.3 Post-Initial Demo

**Task** Running it Again

**Note** Simply start the server. Do not copy demo plan files into the pickup directory. The server will automatically pick them up on all the subsequent server startups.

**Note** Delete the pcap files under the "/tmp" directory.

## 1.19 Development

### 1.19.1 Configuration of STS

Note: All packages/software installed under the linux user "demo". You may need to change the path entered depending on your installation.

**Task** Add a Server to the GUI

**STS** Select Window > Show View > Servers

**STS** Right Click within the Servers Panel

**STS** Select New > Server

**STS** Servers host name : "localhost"

**STS** Server Type: SpringSource > SpringSource dm Server v2.0

**STS** Click Next

**STS** Name : SpringSource dm Server (Runtime) v2.0

**STS** SpringSource dm Server installation directory : /home/demo/development/springsource/springsourc dm-server-2.0.0.RELEASE

**STS** JRE: jdk1.6.0_17

**STS** Click Finish

**Task** Start the Spring Server

**STS** Select the Servers Panel

**STS** Right-Click "SpringSource dm Server v2.0 at localhost", Select Start

**STS** In the console, you should see that the demo is started.

**STS** In the console, once the demo has completed.

**STS** Select the Servers Panel

**STS** Right-Click "SpringSource dm Server v2.0 at localhost", Select Stop

**Note** This verifies your configuration.

## 1.20 Useful Links

**Note** Free Book - OSGi in Practise

**URL** http://neilbartlett.name/blog/osgibook/

–

**Note** SpringSource Enterprise Bundle Repository

**URL** http://www.springsource.com/repository/app/

–

**Note** SpringSource dm Server Programmer Guide

**URL** http://static.springsource.com/projects/dm-server/1.0.x/programmer-guide/htmlsingle/programme guide.html

–

**Note** OSGi Service Platform R4 Specification

**URL** http://www.osgi.org/Download/Release4V41?info=nothanks

–

**Note** Tutorial for Spring Dynamic Modules (DM) for OSGi Service Platforms

**URL** http://springosgi.googlepages.com/

## 1.21 Tips Jar

### 1.21.1 Logging

Tracing and logging is configured at a server level. See the file : serviceability.xml in the $HOME/development dm-server-2.0.0.RELEASE/config.

#### Apache Commons

```
import org.apache.commons.logging.Log;
import org.apache.commons.logging.LogFactory;
:
private static final Log logger = LogFactory.getLog(ClassName.class);
:
logger.debug(message);
```

### 1.21.2 Eclipse wc-props warnings

```
Preferences -> Java -> Compiler -> Building
   Add .svn to the "Filtered resources" list -> "*.launch, .svn"
```