

# BIM Server

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*Installation Document*

*Version 1.0*

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## Revision History

Date	Version	Description	Author
31.08.2018	1.0	Windows BIM Server installation	Subash Janarthanan

# **1. Introduction**

This document is provided to serve as a template for contractors when they create installation instructions for a software delivery that is to be installed on the Publications Office technical infrastructure, and to provide guidelines on the general rules governing the contents. The contractor is free to use their own documentation template.

## **2. Purpose of the document**

### **2.1 Purpose**

The purpose of this document is to provide the installation instructions for installing BIM Server software infrastructure, and to provide guidelines on the general rules governing the contents. The contractor is free to use their own documentation template.

### **2.2 Scope**

This document is intended for the Publications Office software development contractors and their team, in order to comply with general admitted rules from both parties, concerning the use of correct, well formed, up to date, relevant and clear install documents.

It will not cover detailed aspects such as the acceptance or validation procedures, nor the technical environment. Should you need further and complete information about these topics, please refer to the reference documents, mentioned in this document.

## 3. Installation manual

### 3.1 Pre-requisites

#### 3.1.1 Operating System

- Windows 7
- Windows 8 and
- Windows 10

#### 3.1.2 Database

The database engine of the BIMserver is BerkeleyDB and has a setting for the amount of heap memory it can use for caching.

#### 3.1.3 Software

- Eclipse IDE (For code base server starter)
- Java 8 (or higher) for running the stand alone BIM Server.
- Tomcat 8 or higher, Jetty 8 or higher for deployment of WAR files

#### 3.1.4 Memory

The amount of required heap memory depends on what plugins you install, the size of your models and the amount of concurrent users of BIMserver. A rule of thumb is that you need about 15 times the size of the largest (unzipped) IFC file you want to be able to upload, times the maximum number of concurrent users

#### 3.1.5 JRE/JDK

You can download a JRE or JDK [here](#) (Java 1.8 or above). Make sure you install a 64bit JRE/JDK if you have a 64bit system. The main advantage will be that you are going to be able to reserve more than 1300MB of memory, which you probably will want to.

For advanced queries you will need to use a JDK, for all other features a JRE will suffice.

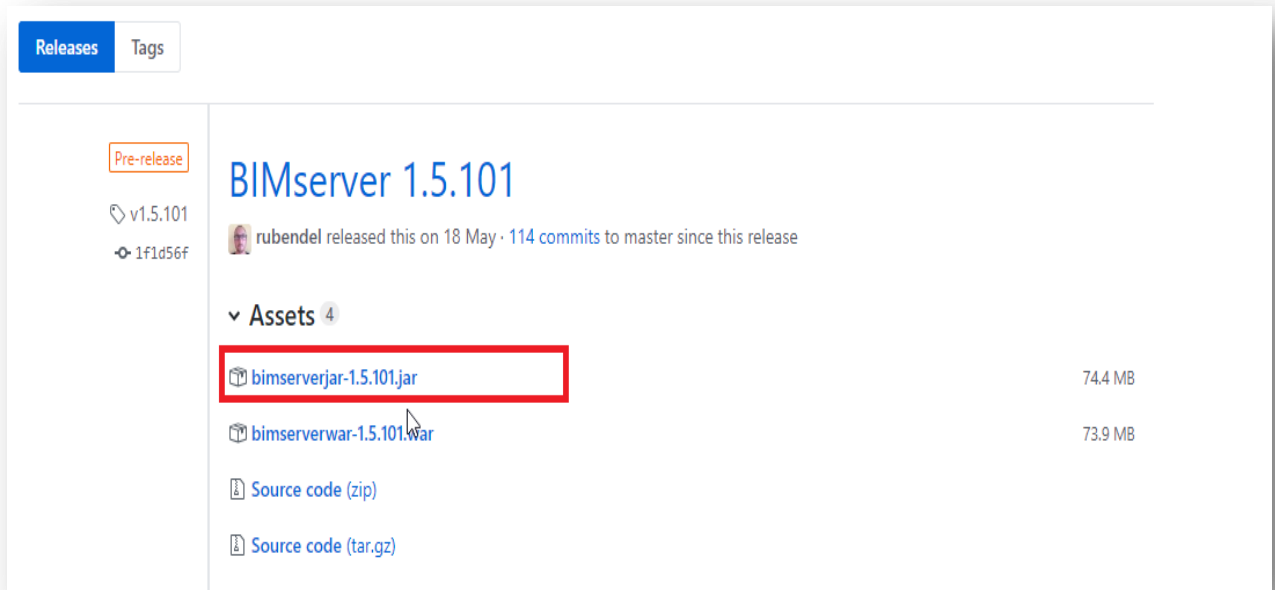
#### 3.1.6 WAR

A Servlet Specification 3.0 or higher based Container with WebSocket support (Tomcat 8 or higher, Jetty 8 or higher)

## 3.2 Installation Procedure

### *Stand-alone BIMserver (JAR):*

1. Make sure you have the latest version of Java (1.8 or higher version)
2. Visit the BIM Server GitHub page for downloading the latest BIM Server jar (<https://github.com/opensourceBIM/BIMserver/releases>)
3. Once you reach the above link download the JAR file named “**bimserverjar-1.5.101.jar**” highlighted as shown in the below **figure 1.1**.



**Figure 1.1**

Once the file has been downloaded double click on the jar file and it should pop up the **BIMserver Starter window** as shown in the below figure 1.2.

### *Inputs in the BIMServer Starter window:*

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- JVM → Always make “**default**” if you have installed the Java version 1.8 or above. If you have lower versions then point to the location for the specific JVM version.
- Home directory → Location of the home directory, this is where the database, log files etc... are stored. If you have ran a previous version of BIMserver on the same home directory, the database cannot always be migrated successfully.
- Address → The address the server will be binding on, if you want the BIMserver to be available on other machines than your own, you will have to change this to a real IP address or a hostname pointing to the right IP address
- Port → The port must be free, and the firewall must be configured to allow listening on this port
- Max Heap Size → The amount of heap memory appointed to the instance JVM of the BIMserver, more heap means larger models can be stored/retrieved. The amount of heap is limited by the amount of memory available on your machine, but be sure to always save a few hundred of MB's to your OS and other applications. On 32-bit Windows computers, the limit is around 1500MB. A Typical BIMserver will need at least 2GB
- Stack Size → The amount of stack size available for every thread, you are probably not ever going to need more than 512KB. With a stack size that is too low, you will be getting StackOverflowError messages
- Force IPv4 → On some operating systems binding will happen automatically on the IPv6 address of a machine, even if the user is not using IPv6. With this option you can override to use IPv4, only use this option if you have problems with this specific issue
- Use proxy server → You can check this option if you need to use a proxy server for outgoing connections
- Wait for BIMserver to expand all the files and configure itself and until the phrase "Server started successfully" appears.
- Click the Stop button to stop the BIMserver.


The screenshot shows the 'BIMserver Starter' application window. It features a title bar with a blue icon, the text 'BIMserver Starter', and standard window controls (minimize, maximize, close). The main area contains several configuration fields: 'JVM' with a dropdown menu set to 'default' and a 'Browse...' button; 'Home directory' with a text field containing 'C:\Users\username\Downloads\home' and a 'Browse...' button; 'Address' with a text field containing 'localhost'; 'Port' with a text field containing '8082'; 'Max Heap Size' with a text field containing '4234m'; and 'Stack Size' with a text field containing '1024k'. Below these fields are two checkboxes: 'Force IPv4' (unchecked) and 'Use proxy server' (unchecked). At the bottom right, there are two buttons: 'Start' and 'Launch Webbrowser'. A mouse cursor is visible over the 'JVM' dropdown menu.

JVM	default	Browse...
Home directory	C:\Users\username\Downloads\home	Browse...
Address	localhost	
Port	8082	
Max Heap Size	4234m	
Stack Size	1024k	
Force IPv4	<input type="checkbox"/>	
	<input type="checkbox"/> Use proxy server	
Start Launch Webbrowser		

Figure 1.2



- Click the Start button to start BIMserver. You will be getting a message “**Server started successfully**” once the BIMserver has started, click Launch Browser. If the above steps are followed correctly, you should have BIMserver launched successfully on a browser. If failed, restart BIMserver with another port number, e.g. <http://localhost:8082>
- The first time BIMserver is launched, you will need to set up the administration login like shown in the below figure 1.3
- Provide the **Site Address** with port number like for example <http://localhost:8082>
- Provide a custom server name like “**My\_BIM\_Server**”.
- Provide a custom server description and choose custom icon to the server if you would like to add one. Click Next button.



Open source Building Information Modelserver

Welcome Admin Account Email Plugins Extended Data Schemas Finish

Welcome,  
This wizard will help you setup your BIMserver.

**Address**  
The address your BIMserver will be available from. It will be pre-filled, but this is not necessarily the right address. If you are using a domain name, make sure to use it here.

**Name/Description/Icon**  
Information that identifies this specific BIMserver instance. Remote servers will show this information for a user to identify this BIMserver.


**Site address**

**Server name**

**Server identifier**

**Server description**

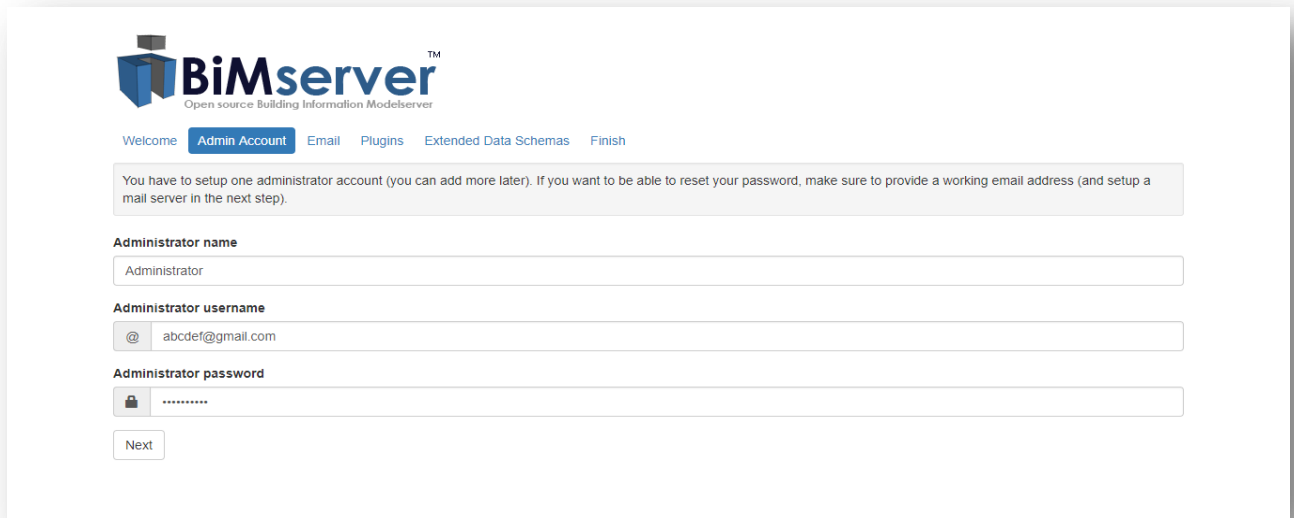
**Server icon**



Next

**Figure 1.3**

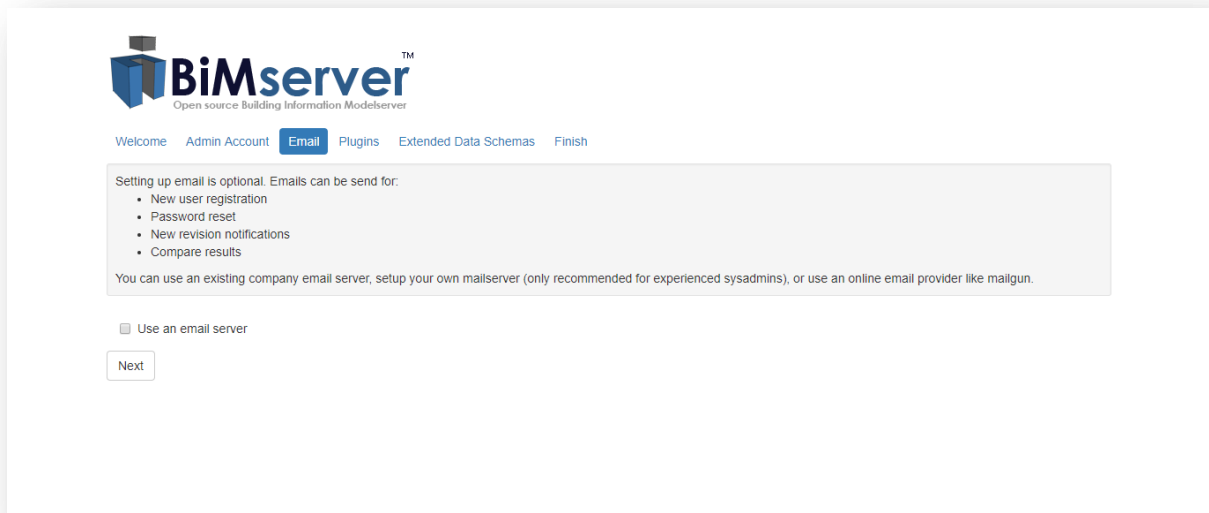
In Admin Account page, provide the name of the Administrator account and email followed by password like shown in the below **figure 1.4**. Remember this account information since it will be useful later for creating Admin users as well as other users.



The screenshot shows the 'Admin Account' setup page for BiMserver. The page has a navigation bar with links: Welcome, Admin Account (active), Email, Plugins, Extended Data Schemas, and Finish. A message box states: 'You have to setup one administrator account (you can add more later). If you want to be able to reset your password, make sure to provide a working email address (and setup a mail server in the next step).' Below this, there are three input fields: 'Administrator name' with the value 'Administrator', 'Administrator username' with the value '@ abcdef@gmail.com', and 'Administrator password' with masked characters. A 'Next' button is at the bottom.

**Figure 1.4**


If you want to set up an email server please check and provide the details with an existing company email server **(or)** leave it unchecked and Click on Next page.



The screenshot shows the 'Email' setup page for BiMserver. The navigation bar includes: Welcome, Admin Account, Email (active), Plugins, Extended Data Schemas, and Finish. A message box explains: 'Setting up email is optional. Emails can be send for:' followed by a list: 'New user registration', 'Password reset', 'New revision notifications', and 'Compare results'. It also states: 'You can use an existing company email server, setup your own mailserver (only recommended for experienced sysadmins), or use an online email provider like mailgun.' Below this, there is a checkbox labeled 'Use an email server' which is unchecked. A 'Next' button is at the bottom.

**Figure 1.5**

- Select all the plugins that are required for your server. If you do not have an internet connection then you can download the JAR file for the respective plugins and install them later but it is not recommended.
- Do select all the recommended plugins as shown in the below **figure 1.6** and click Next.

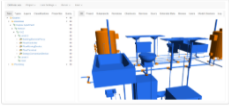

Open source Building Information Modelserver

[Welcome](#)
[Admin Account](#)
[Email](#)
[Plugins](#)
[Extended Data Schemas](#)
[Finish](#)

A BiMserver without plugins will be pretty useless, so we have selected a few plugins that you might want to install. You can install more plugins after the setup. Please note that for installing plugins this way, your BiMserver will have to have a working (outgoing) internet connection.

For all selected plugins the latest version available will be downloaded and installed. Make sure you are running the latest version of BiMserver as well because otherwise the plugins may not be compatible with your version of BiMserver.


**No internet connection** You can also [upload JAR files of plugins](#) to install them, this is not the recommended way.

☒


**BIMvie.ws**  
A web application that has the following features:


- BiMserver administration (add users, install plugins, manage server settings, create projects etc...)
- Project-tree viewer
- 3D viewer (BiMsurfer)
- Object browser
- Query tools
- Upload/download models

**Not installing** Access to BiMserver functionality will be limited to the technical interfaces JSON, SOAP and Protocol Buffers and no GUI will be available if this plugin is not installed.

☒



**IfcOpenShell**  
The open source ifc toolkit and geometry engine.

**Not installing** Without this plugin BiMserver will not be able to convert IFC geometry to triangles, and thus no viewers will be able to visualize the model in 3D

☒



**IfcPlugins**  
Contains serializers and deserializers for IFC and IfcXML and IfcJSON

**Not installing** Without this plugin BiMserver will not be able to read/write IFC

☒



**BinarySerializers**  
Contains binary serializers required for loading geometry ov

**Not installing** Without this plugin BiMsurfer will not be able to load 3D geometry


☒


**BimServerJavaScriptApi**  
JavaScript API for BiMserver.


**Not installing** Without this plugin all JavaScript based plugins will not be able to communicate with BiMserver (BIMvie.ws, BiMsurfer, Console).

☒


**Console**  
Webbased user interface for calling methods of the BiMserver API and reading the documentation

☒


**Console**  
glTF 1 (with binary extension) and glTF 2 (glb) serializers

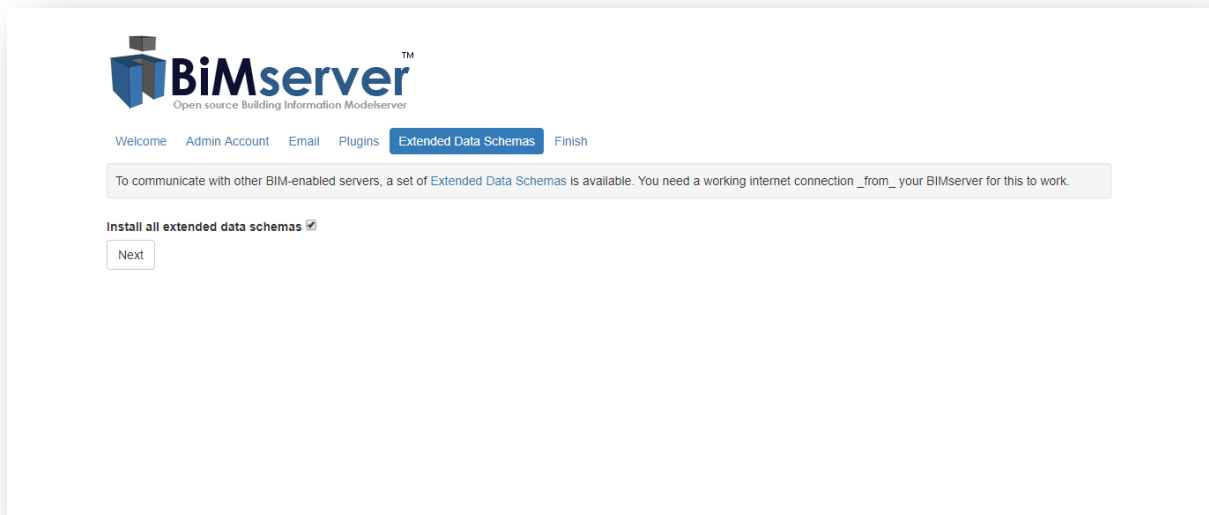
☒


**Console**  
Default merger plugins, used for combining multiple IFC models into one IFC model

Next

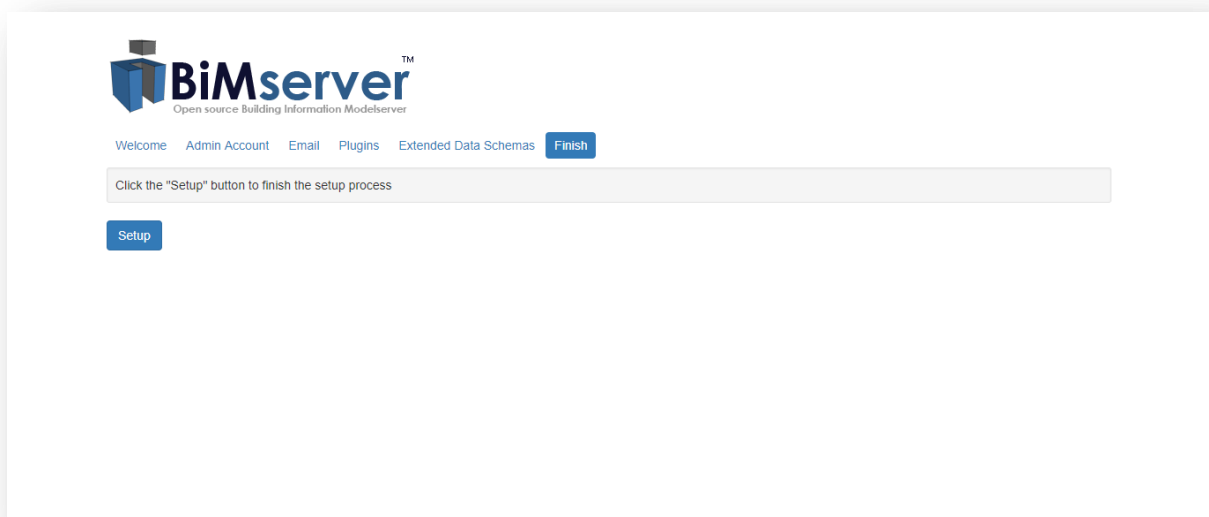
**Figure 1.6**

Do check the “**Install all extended data schemas**” like shown in the below **figure 1.7** and click Next.



**Figure 1.7**

Once you have provided all the previous page information click on “**Setup**” button to start installing the plugins and other components required like shown in the below **figure 1.8 and 1.9**



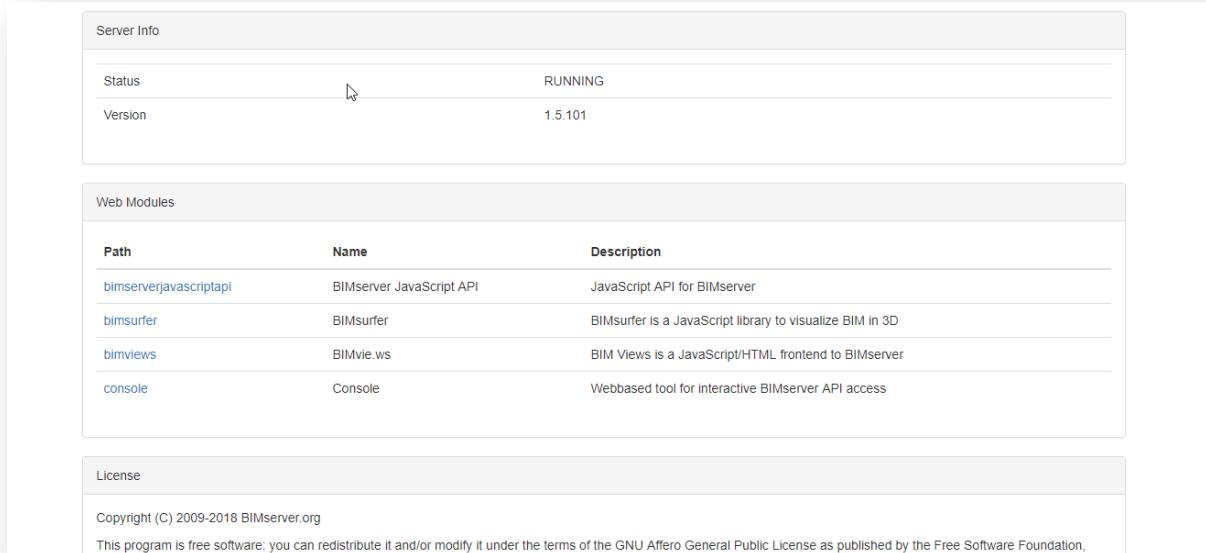
**Figure 1.8**

```
Setting up...
  Setting up admin account...
    Admin account successfully setup
  Skipping email setup...
  Checking internet connection _from_ your BiMserver...
    Internet connection OK
  Installing all extended data schemas...
    IFC_STEP_2X3TC1 installed OK
    IFC_STEP_4 installed OK
    IFC_XML_2X3TC1 installed OK
    IFC_XML_4 installed OK
    IFC_JSON_2X3TC1 installed OK
    IFC_JSON_4 installed OK
    IFC_JSON_GEOM_2X3TC1 installed OK
    IFC_JSON_GEOM_4 installed OK
    BCF_ZIP_1_0 installed OK
    BCF_ZIP_2_0 installed OK
    GLTF_1_0 installed OK
    GLTF_BIN_1_0 installed OK
    COLLADA_1_5 installed OK
    KMZ_2_2_0 installed OK
    BINARY_GEOMETRY_6 installed OK
    CITYGML_2_0_0 installed OK
    VIS_3D_JSON_1_0 installed OK
    LOD_CSV_1_0 installed OK
    VALIDATION_JSON_1_0 installed OK
    INFO_3D_EXCEL_1_0 installed OK
    UNSTRUCTURED_UTF8_TEXT_1_0 installed OK
    Extended Data Schemas installed OK
  Installing plugins...
    Installing bimsurfer...
```

**Figure 1.9**

## 3.3 Post Installation

Once all the plugins were downloaded and installed restart the page <http://localhost:8082/> and you should be able to view **Server Info** and **web modules** like shown in the below **figure 2.0**



The screenshot displays the BIMserver web interface. It features three main sections: 'Server Info', 'Web Modules', and 'License'. The 'Server Info' section shows the status as 'RUNNING' and the version as '1.5.101'. The 'Web Modules' section is a table listing various modules with their paths, names, and descriptions. The 'License' section at the bottom provides copyright information and the GNU Affero General Public License details.

Server Info		
Status		RUNNING
Version		1.5.101

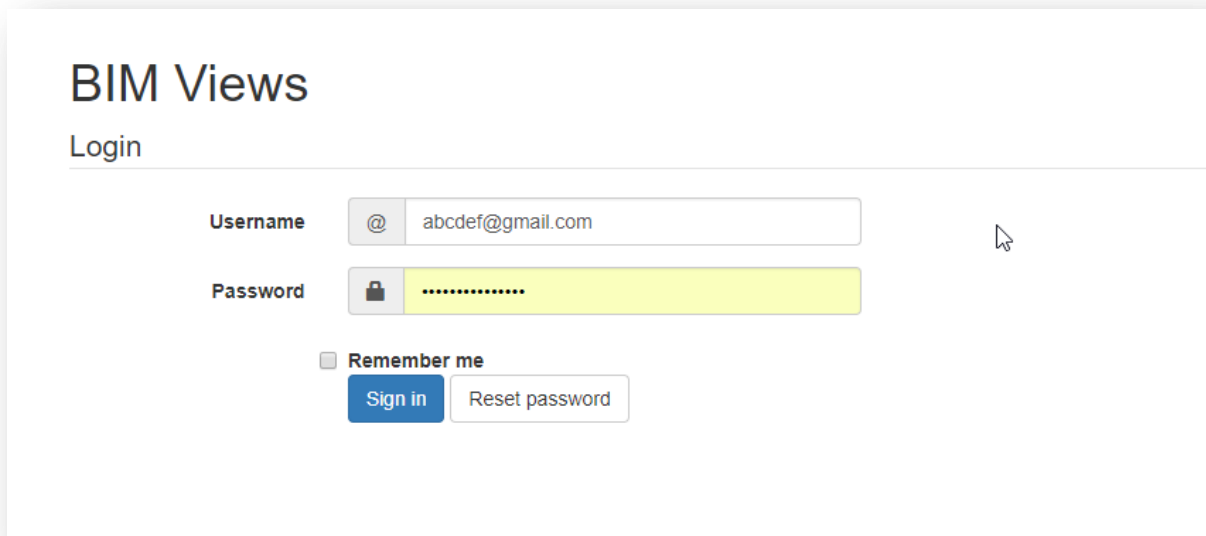
Web Modules		
Path	Name	Description
<a href="#">bimserverjavascriptapi</a>	BIMserver JavaScript API	JavaScript API for BIMserver
<a href="#">bimsurfer</a>	BIMsurfer	BIMsurfer is a JavaScript library to visualize BIM in 3D
<a href="#">bimviews</a>	BIMvie.ws	BIM Views is a JavaScript/HTML frontend to BIMserver
<a href="#">console</a>	Console	Webbased tool for interactive BIMserver API access

License
Copyright (C) 2009-2018 BIMserver.org This program is free software: you can redistribute it and/or modify it under the terms of the GNU Affero General Public License as published by the Free Software Foundation,

Figure 2.0

Click on **“bimviews”** Web Module and it should be asking for login credentials like shown in the below **figure 2.1**. Provide your login credentials and click **“Login”** where it will take you to the viewer where you can load custom 3D files.



The screenshot shows the 'BIM Views' login page. It has a title 'BIM Views' and a subtitle 'Login'. Below this, there are input fields for 'Username' and 'Password'. The 'Username' field contains '@ abcdef@gmail.com'. The 'Password' field is masked with dots. There is a 'Remember me' checkbox and two buttons: 'Sign in' and 'Reset password'.

**BIM Views**

Login

Username

Password

☐ Remember me

Figure 2.1

## 4. Additional Information

### 4.1 Abbreviations

BIM	Building Information Modeling
IDE	Integrated Development Environment
JDK	Java Development Kit
JRE	Java Runtime Environment
JAR	Java ARchive
WAR	Web Archive
JVM	Java Virtual Machine
IPv4	Internet Protocol version 4

#### References:

<https://github.com/opensourceBIM/BIMserver/releases/tag/v1.5.101>

<https://github.com/opensourceBIM/BIMserver/wiki/JAR-Starter>