



Alflytics

Open Source Business
Intelligence solution over Alfresco

Version 5.0 Early Access

<https://github.com/fcorti/Alflytics>

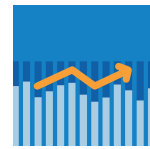
@ 2013-2017 Francesco Corti

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Index

1. Introducing Alflytics	3
1.1 About the project	3
1.1.1 Open Source	3
1.1.2 Free of charge	3
1.1.3 License	3
1.1.4 Goals	3
1.2 The history	4
1.3 Overview of the architecture	5
1.4 The components	5
1.5 Compatibility matrix	6
1.6 References and resources	7
2. How to use Alflytics	7
2.1 Extracting from Alfresco	8
2.2 Publishing reports into Alfresco (optional)	10
2.3 Using analytics	10
3. How to install Alflytics	12
3.1 Preparing the installation	13
3.1.1 Minimum requirements	13
3.1.2 Installing Pentaho Analytics platform	13
3.1.3 Installing Saiku analytics (optional)	14
3.2 Getting Alflytics	18
3.2.1 Getting Alflytics using the Pentaho marketplace	18
3.2.2 Downloading Alflytics	19
3.2.3 Checking Alflytics	19
3.3 Installing Alflytics	20
3.3.1 Accessing the Alflytics wizard	20
3.3.1 Installing Alflytics using the wizard	21
3.3.2 Configuring the access to Alfresco	24
3.3.3 Troubleshooting	24
3.4 Manual installation of Alflytics (advanced)	24
3.4.1 Installing Alflytics on PostgreSQL	24
3.4.1.1 Prerequisites	25
3.4.1.2 Creating the Alflytics schema	26
3.4.1.3 Creating the Alflytics data source on Pentaho Analytics platform	26
3.4.1.4 Importing the Pentaho repository	27
3.4.1.5 Updating the jobs to work with PostgreSQL	28



3.4.2 Installing Alflytics on MySql	28
3.4.2.1 Prerequisites	28
3.4.2.2 Creating the Alflytics schema	29
3.4.2.3 Creating the Alflytics data source on Pentaho Analytics platform	29
3.4.2.4 Importing the Pentaho repository	30
3.4.2.5 Updating the jobs to work with MySql	31
3.4.3 Installing SQuirreL SQL client for HyperSQL	31
3.5 About scheduling extractions and publications	34
4. Customizing Alflytics	34
4.1 Customizing reports	34
4.2 Customizing dashboards	34
4.3 Customizing free analysis	35
4.4 Customizing the warehouse and the ETL	35
4.4.1 How to extract Alfresco custom models	35
4.4.2 How to extract custom Alfresco audit trails	35
4.4.3 How to integrate other sources	35
5. Scalability	35
5.1 The Alflytics Data Warehouse on PostgreSql or MySql	35
5.2 Tuning the Pentaho Analytics platform	36
5.3 Using the Pentaho Data Integration for ETL	36
5.3.1 Installing Pentaho Data Integration	36
5.3.2 Creating the connection to the Alflytics repository	36
5.3.3 Creating the JNDI connection to the Alflytics repository (for publishing reports only)	37
5.3.4 Creating and scheduling the scripts to run the ETLs	37
6. How to contribute to the project	38
7. Support and contacts	38
7.1 Disclaimer	38
7.2 Preparing the request of support	38
7.3 How to get support from the community	38
7.4 How to get professional support	38
Appendix - FAQs	38
Appendix II - Previous versions	38



1. Introducing Alflytics

Alflytics is the Open Source Business Intelligence (OSBI) solution over Alfresco content and processes, built using the Pentaho platform. With Alflytics is provided a pure Business Intelligence solution to extract, store and enquiry content data (documents, folders, metadata, tags, categories, etc.), audit trail and workflows at a very detailed level, with the goal to be easily customized and extended with other entities coming from external Services like: ERP, CRM, custom Applications, etc.

Alflytics uses the data coming from Alfresco platform, the ability of the Pentaho platform to build reports, dashboards and free analysis, and the latest techniques in Data Warehousing, to define a complete set of analytics and insights on top of your preferred ECM+BPM solution.

1.1 About the project

Alflytics is invented, designed, developed and maintained by Francesco Corti, Developer and member of the Alfresco and Pentaho communities. Below some high level characteristics, defining the solution, to better understand the project and its nature.

1.1.1 Open Source

Alflytics is purely an **Open Source** project. This means that every source code, script or configuration is available and given as included in the release/distribution. Also the frameworks and platforms used by Alflytics are Open Source, even if the precise details depend on the Vendor and the Owner of the solution itself.

1.1.2 Free of charge

Alflytics is **free of charge** and not related to number of user, dimension of the repositories or any other detail of the final solution.

1.1.3 License

Alflytics is released under the **GNU Lesser General Public License (LGPL) Version 2.1**. This license has been selected to make easier the adoption of the solution from final users and Companies interested to use Alflytics in a vertical solution, for specific needs or specific use cases.

1.1.4 Goals

The goal of Alflytics is to become more adopted and make it **the most reliable Business Intelligence solution** over the entire Alfresco platform. To reach that goal we kindly ask you to contribute to the project (as described into one of the following chapters).



1.2 The history

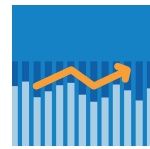
The origins of Alflytics as a project are in a similar project called Alfresco Audit Analysis and Reporting (A.A.A.R.). A.A.A.R. was born in 2012, when Francesco Corti was talking with a bunch of Customers and all of them were asking for more analytics capabilities on Alfresco. In that period Alfresco didn't cover that topic at all, even if the interest around reporting where high. At that time, Francesco was working with Pentaho Suite and had the idea to experiment an integration between the two frameworks (in 2012 both Alfresco and Pentaho were emerging Open Source frameworks in their respective fields).



In 2013 Francesco released the very first version of A.A.A.R. and decided to show it at the [Alfresco Summit in Barcelona](#). The same year, the solution has been presented to the [Pentaho Community Meeting](#) and few months later it has been published as one of the first addons in the Pentaho Marketplace. Since then, each four/six months a new release has been published, with new features and enhancements and the solution has been regularly presented in public initiatives in both the Alfresco and Pentaho communities.

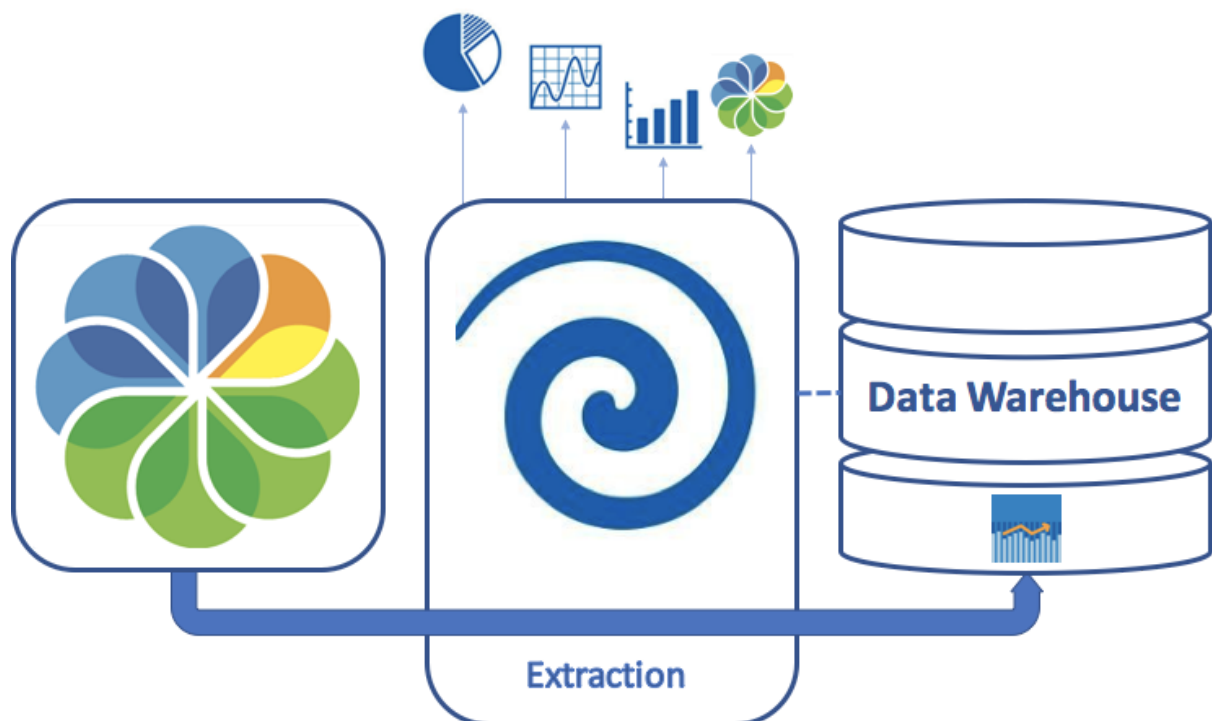
In 2017, during the complete refactoring of the fifth version of the solution, A.A.A.R. has been renamed in Alflytics: with the same idea (still considered a success as solution), a new logo and of course new enhancements.

Today Alflytics is a mature and complete Business Intelligence solution over Alfresco platform and continue to be (proudly) a community project, totally (and really) Open Source.



1.3 Overview of the architecture

One key concept of the solution is that is built as an integration of existing platforms (Alfresco and Pentaho), instead of “reinvent the wheel” and everything from scratch, one more time. The main idea is that Alflytics: 1) extracts audit data, content repository and processes from Alfresco, 2) stores the data in a Warehouse (a database), 3) creates a set of analytics on top of the Data Warehouse using the Pentaho platform. Optionally, static versions of reports can be published into Alfresco in well-known formats (pdf, xlsx, csv, etc.).





1.4 The components

As a Pentaho addon, Alflytics uses different components with the goal to request the lowest effort for the developers and the best result for the users. Below a list of the possible components that can be used, with a brief description and some further details, for example if they are mandatory to be used or optional.

- **Alfresco platform.** It is, at the same time, source and target for the flow. As source, Alfresco is enquired using the standard REST APIs to extract the full list of audit trails, content repository (documents and folders) and processes (with definitions, processes, tasks, items, etc.). As target for the flow, static versions of the reports can be published in the Alfresco folders, to be used by the final users according to the Alfresco permits and roles.







- **Pentaho Analytics platform.** This is the hosting web application where Alflytics really acts as a so called [Sparkl Application](#). This component covers the core back-end and front-end capabilities. It also stores: the [ETL jobs](#), reports, dashboards and free analysis. 
- **Alflytics data warehouse.** It is a pure database, storing the extracted data, organized in a specific manner, following the best practices in literature about Data Warehousing and Business Intelligence. From a physical point of view the Alflytics warehouse is a Relational DBMS composed by dimension tables and fact tables. Alflytics solution supports Hyper SQL, PostgreSQL, MySQL. 
- **Saiku Analytics** (optional). It is a third party tool used to “pivot” data stored into the Alflytics data warehouse. Saiku Analytics let the final user able to execute the so called “free analysis” into real [OLAP sessions](#) and dive deep into the data in the way they will want.
- **Pentaho Reporting** (optional). It is a great tool of the Pentaho suite, used to develop Pentaho reports with an easy User Interface (called Pentaho Reporting Designer). Pentaho Reporting is used in the development environment only and let the developers able to customize and create nice reports on top of the Alflytics data warehouse.
- **Pentaho CTools** (optional). CTools are a set of tools and components created to help you build custom dashboards on top of Pentaho. There are specific CTools for different purposes. Pentaho CTools are used in development only and let the developers able to customize and create nice dashboards on top of the Alflytics data warehouse.
- **Pentaho Data Integration** (optional). It is a great tool of the Pentaho suite, used to manage the [ETL jobs](#) stored in the Pentaho repository (into the Pentaho Analytics platform). The Pentaho Data Integration tool is scalable from several points of view and gives to Alflytics the ability to scale on huge repositories and architecture. Pentaho Data Integration is not mandatory to be used. It is recommended for scalability only.

1.5 Compatibility matrix

Below the matrix to understand which Alflytics version to use depending on your Alfresco and Pentaho versions.



 Alfresco	 Pentaho 7.0
Community Edition 5.2	Alflytics 5.0
Content Services (ex One) 5.2	Alflytics 5.0

Previous versions and the compatibility matrix can be found in Appendix II (previous versions). We always recommend to move to the latest versions.

1.6 References and resources

Below some references to the Alflytics project.

- Source code: <https://github.com/fcorti/Alflytics>
- Sourceforge: <https://sourceforge.net/projects/aaar/>
- Documentation and official website: <http://fcorti.com>

2. How to use Alflytics

Alflytics is designed to be easy to use, easy to be customized/extended and ready to scale on huge repositories. In this section we are going to see how to use Alflytics and what does it means that its use it is easy.

Using Alflytics means doing the following tasks.

- **Extracting** data from the sources (by default Alfresco) into the Alflytics Data Warehouse. This task is mandatory to see the data into the Alflytics reports, dashboards and free analysis.
- **Publishing** static reports directly into your Alfresco platform with your preferred format (pdf, xlsx, txt, cvs, ecc.). You can avoid this task if you want to have interactive reporting.
- **Using analytics** on top of the Data Warehouse, using Pentaho and in particular: interactive reports, dashboards and free analysis.



2.1 Extracting from Alfresco

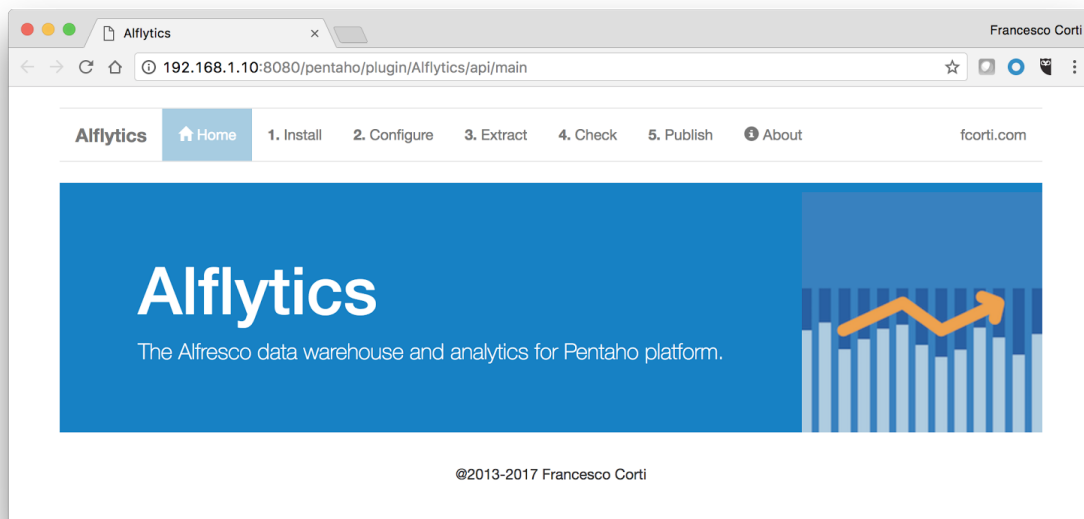
With the extraction task, a batch gets the data out from Alfresco into the Alflytics Data Warehouse. This task is mandatory to see the data into the interactive reports, dashboards and free analysis.

The extraction is requested through a web page, in a default installation, or executing a [Pentaho Job](#) if [Pentaho Data Integration](#) is used. In the following description, we will see how to extract data using a default installation and the Alflytics Administration Web pages.

The Alflytics Administration Web pages can be easily accessed using the following url, after the Alflytics solution is correctly installed (for further details on how to install Alflytics, check the related chapter).

```
http://<server>/pentaho/plugin/Alflytics/api/main
```

In the following screenshot, the Alflytics Administration Home page, used as starting point to manage the whole instance of Alflytics.



If you take a look at the upper menu, the item called `3.Extract` is the one used to get data from Alfresco. Click on it, to have access to the extraction page. As you can see directly in the target page, the extraction is very straightforward and does not require any difficult setup or question. Simply fill the Pentaho administrator login and password (by default `admin` and `password`) and click the `Extract` button to start the process.



The `Extract` button only starts the extraction process, that could require few seconds or some minutes to be completed. If the web page replies with a result,

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The Open Source Business Intelligence solution over Alfresco



this does NOT mean the extraction process is finished. The duration of the extraction process depends (mainly) on the Alfresco repository and the network. Always check the `catalina.out` file stored into the `<pentaho-server>/tomcat/logs`, for further details on the extraction task.

Once the extraction task is finished, you can check how the extraction went, using the Alflytics Data Quality dashboard. You can access to the Alflytics Data Quality dashboard using the upper menu of the Administration Web pages. More in particular clicking the `4.Check` item.

The Alflytics Data Quality web page is available to check how the extractions went, with a easy to understand dashboards. In the dashboard you can select the Alfresco instance, the period to filter extractions and each extraction from an identifier, quite easy to read because based on a timestamp. Once the extraction id is selected, two tables show you the duration of the sub-extractions (Alfresco users, audits repository and processes) with their success/failure and a detail of the number of entities extracted. Below a screenshot showing how the Alflytics Data Quality web page look like.

Extraction logs

Task	Start	End	Result
Alfresco users in staging	2017-04-12 18:49:50.0	2017-04-12 18:49:53.0	Success
Alfresco users in operational	2017-04-12 18:49:54.0	2017-04-12 18:49:55.0	Success
Alfresco users in warehouse	2017-04-12 18:49:56.0	2017-04-12 18:49:57.0	Success
Alfresco audit trail in staging	2017-04-12 18:49:57.0	2017-04-12 18:50:08.0	Success
Alfresco audit trail in operational	2017-04-12 18:50:09.0	2017-04-12 18:50:10.0	Success
Alfresco audit trail in warehouse	2017-04-12 18:50:11.0	2017-04-12 18:50:14.0	Success
Alfresco repository in staging	2017-04-12 18:50:17.0	2017-04-12 18:50:22.0	Success
Alfresco repository in operational	2017-04-12 18:50:23.0	2017-04-12 18:50:25.0	Success
Alfresco repository in warehouse	2017-04-12 18:50:26.0	2017-04-12 18:50:34.0	Success
Alfresco processes in staging	2017-04-12 18:50:37.0	2017-04-12 18:50:43.0	Success
Alfresco processes in operational	2017-04-12 18:50:44.0	2017-04-12 18:50:47.0	Success
Alfresco processes in warehouse	2017-04-12 18:50:49.0	2017-04-12 18:50:52.0	Success

Data quality

Entities	Alfresco	Staging	Operational	DataMart	Check
Users	8	8	8	8	Checked
AuditTrail	Cannot check	6245	6245	6245	Not checked
Nodes	279	279	279	279	Checked
Categories	337	337	337	337	Checked
OpenTasks	3	3	3	3	Checked
Processes	3 (not completed only)	4	4	4	Not checked

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You can check into this Alflytics Data Quality web page every time you want to understand how the extraction task went, also if the extraction is scheduled as an automatic job.

2.2 Publishing reports into Alfresco (optional)

Once the data are updated into the Alflytics Data Warehouse, you can decide to use the analytics (see the following paragraph) or publish a static version of your reports (usually in PDF or Excel format), directly into the Alfresco repository.

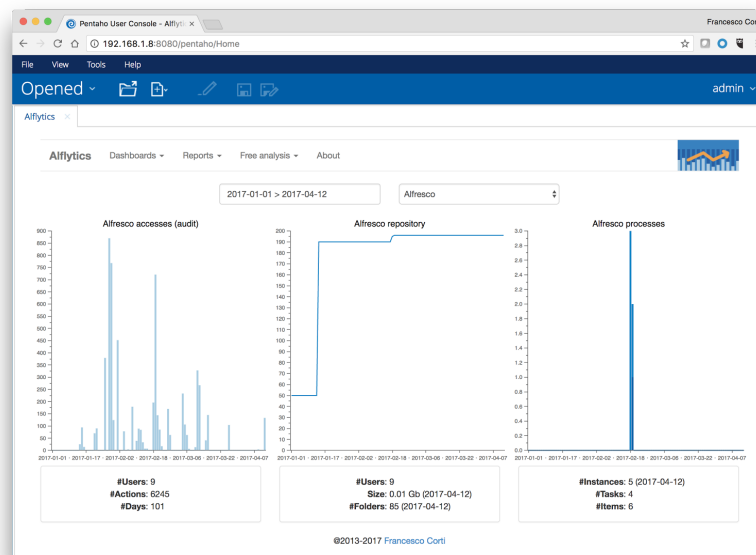
The publication of the reports can be done using a web interface or a command, launched from the terminal. The launch of the publication process from the web interface, is again very straightforward using the `5.Publish` item of the upper menu in the Alflytics Administration Home page.

Also in this case, the publication button only starts the process and you should always check the `catalina.out` file stored into the `<pentaho-server>/tomcat/logs`, for further details on the task.

2.3 Using analytics

Using a real Business Application you can benefit of several advantages like, for example, having a full featured platform available for your needs. Alflytics is released with a set of dashboards, interactive reports and free analysis, but these are only examples a solid starting point. You can easily build your own analytics tools, to better cover the use cases.

The starting point of you discovery is the main dashboard. The main dashboard is available using the Pentaho User Console, more in particular clicking the upper menu at the item `Tools`, and then `Alflytics`. Below a screenshot showing how the dashboard looks like.





If you want to integrate this dashboard into an external application or use it without the Pentaho User Console, you can have direct access using the following URL.

```
http://<server>/pentaho/api/repos/%3Apublic%3AAlflytics%3ADashboards%3Amain.wcdf/generatedContent
```

Directly into the dashboard you can see an upper menu, listing also reports and free analysis. Below a list of each available report and free analysis, as a first introduction.

- Reports
 - Alfresco users
 - Most active users
 - Audit per user (Excel)
 - Repository per creator
 - Repository per modifier
 - Repository per owner
 - Alfresco audit trail
 - Audit per actions
 - Most accessed content
 - Audit per day
 - Audit per hour
 - Audit trail (Excel)
 - Alfresco repository
 - Repository summary
 - Most used categories
 - Most used tags
 - Repository per category
 - Repository per tag
 - Repository per node type
 - Content per mime type
 - Creations per day
 - Modifications per day
 - Alfresco processes
 - Process instances
 - Process tasks



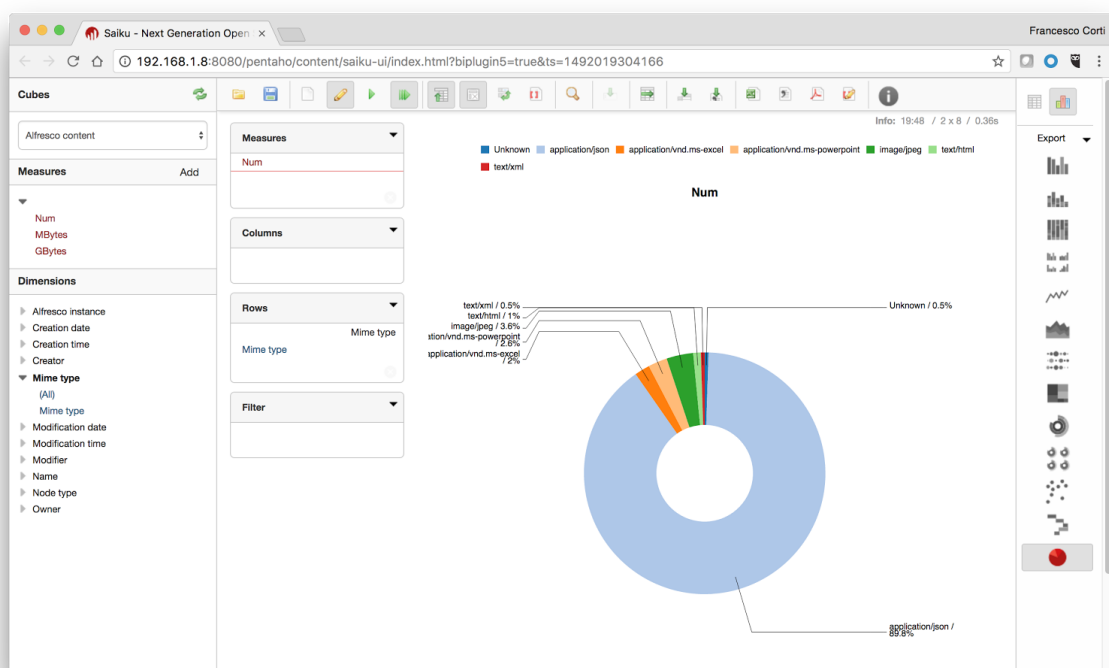
Free analysis will be available, if and only if the Saiku Analytics is installed.

- Free analysis
 - Alfresco audit trail
 - Alfresco audit trail (alfresco-access)
 - Alfresco repository
 - Alfresco content



- Alfresco folders
- Alfresco categories
- Alfresco tags
- Alfresco processes
 - Alfresco process instances
 - Alfresco process tasks

Please remember all the analytics are available for customizations and copies. This means the variety of analytics don't start and stop with this set, but can be improved (and customized) as much as your fantasy will require.



3. How to install Alflytics

Installing Alflytics is very straightforward because it is released as a so called “Pentaho Application”, containing everything is requested to correctly configure and use the solution. No installations or configurations are requested on the Alfresco side and it can work on top of Pentaho Analytics platform, with an HyperSQL, PostgreSQL or MySQL database. In this section we are going to described how to install it, using the wizard (simplest) or manually (advanced), depending on your needs.



3.1 Preparing the installation

As discussed above, Alflytics is a Pentaho Application developed using Sparkl (the application builder). In this section we are going to describe the setup of the working environment, to prepare the real installation of the Alflytics application.

3.1.1 Minimum requirements

Being a Pentaho Application deployed into the Pentaho Analytics platform, Alflytics minimum requirements are strictly related to the Pentaho version. Alflytics 5.0 in particular, runs on the Pentaho 7.0 platform and for this reason the minimum requirements are explicitly described into the [Pentaho's official documentation](#) and copied below as reference.

Hardware

Processor: Intel EM64T or AMD64 Dual-Core
RAM: 8 GB with 4 GB dedicated to Pentaho servers
Disk Space: 20 GB free after installation
(Data Warehouse is not included and can vary)

Operating System (64 bit)

Ubuntu Server 14.04 LTS & 16.04 LTS
CentOS 6 & 7
Red Hat Enterprise 6 & 7
SUSE Linux SLES 11 (SP3+)
Microsoft Windows 2008 Server R2 & 2012 Server R2



Alflytics is developed (and mainly tested) using a Linux platform, in particular Ubuntu Server 16.04 LTS. The adoption of a Linux based Operating System is highly recommended (because experienced as more stable) even there aren't reasons why the solution should not work on a Windows based OS.

3.1.2 Installing Pentaho Analytics platform

Installing Pentaho Analytics platform is very straightforward, very close to an “unzip” command of the distribution package. If you'd prefer a step by step tutorial, a simple [blog post](#) is what you need.

The only prerequisite for installing the Pentaho Analytics platform is having Java 8 on board. If you don't have it already or you don't how to install it, you can easily ask Google. It is a very basic task and there are a lot of tutorials in the web for every Operating System and distribution. If you are lazy to search, [this tutorial](#) is what can help you for a Linux platform.



After Java 8 is available into your environment you can go ahead downloading the Pentaho Analytics platform 7 from the [official website](#) or the [sourceforge web page](#). In our case, we are going to install the Pentaho Analytics platform 7 Community Edition.

Once the `pentaho-server-ce-7.0.0.0-25.zip` file is downloaded, you can unzip it into the desktop or everywhere else you will like (usually the `/opt` path is suggested for Linux Operating System). All the Pentaho Analytics platform is now available in the `pentaho-server` folder.

Probably you cannot believe it, but this is enough to install Pentaho Analytics platform 7 into your environment.

Before considering completed this task, you should consider to reduce the default RAM, Pentaho is going to use. By default the Pentaho platform starts with 6Gb of RAM and in most cases is more than enough. If you don't have so much RAM into your environment, or you want more, you can tune it editing the `start-pentaho.sh/start-pentaho.bat` script, depending on your Operating System.

Pentaho Analytics platform 7 is mainly a web application deployed in a tomcat servlet container. You can easily run the Pentaho Analytics platform 7, opening a terminal and executing the `start-pentaho` script stored in the `pentaho-server` folder (the one with the `sh` extension for the Linux based Operating Systems and the one with the `bat` extension for the Windows based Operating Systems).

To check what is happening always look at the log file described below.

```
<pentaho-server>/tomcat/logs/catalina.out
```

Once, the application is started, you can access to the user interface using a web browser at the link below.

```
http://<server>:8080/pentaho
```

With Pentaho Analytics platform Community Edition is suggested to use Mozilla Firefox or Google Chrome instead of MS IE Explorer (not well supported today). To access as administrator you can use the `admin` user with password `password`.

3.1.3 Installing Saiku analytics (optional)

[Saiku Analytics](#) allows business users to explore complex data sources, using a familiar drag and drop interface and easy to understand business terminology, all within a browser. Saiku analytics is used by the Alflytics solution to enable the user to the so called "free analysis". It is not mandatory to install (and use) the

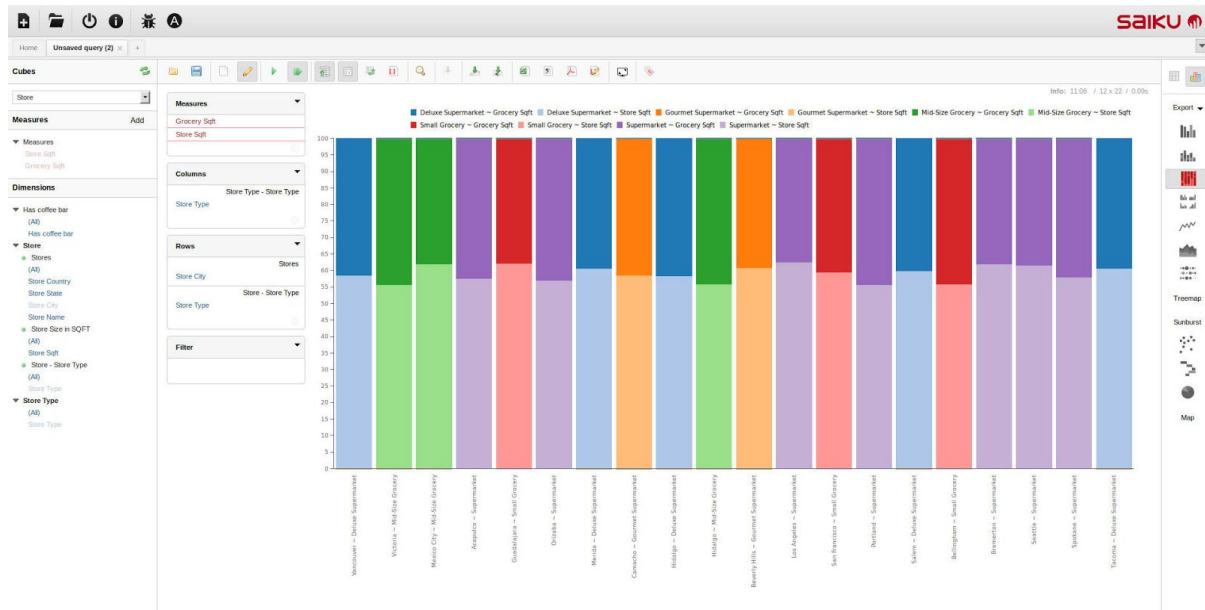


Alflytics v5.0 Early Access

The Open Source Business Intelligence solution over Alfresco

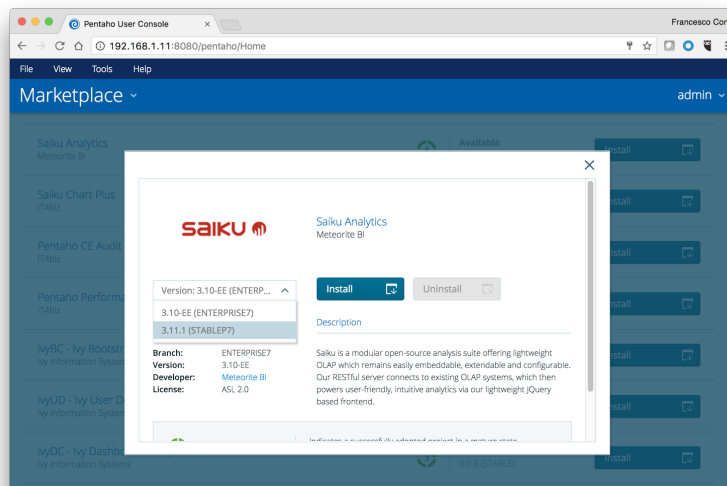


Saiku Analytics but it's recommended if you will want to use [OLAP](#) and [pivoting](#) over the data.



Saiku Analytics is released with a Community Edition and an Enterprise Edition. You can start evaluating the features of the Community Edition (free of charge) and upgrade to the Enterprise Edition later on.

Saiku Analytics installation is very straightforward, starting from an existing Pentaho Analytics platform. First of all access to the Pentaho User Console as administrator (otherwise you will not have permits to access to the marketplace). Click on the **Home** button and then on **Marketplace**. In the marketplace list, search for the Saiku Analytics and be sure you are installing the latest Community Edition, not the Enterprise Edition. Below a screenshot showing how the user interface look like.



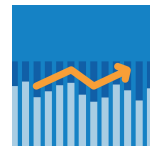


After selecting the latest Community Edition, click on the `Install` button. Once the Saiku Analytics is installed, a message box will tell you the result. As clearly described, a JAR library linked directly in the message box must be downloaded and copied into the `<pentaho-server>/tomcat/webapps/pentaho/WEB-INF/lib` folder.

Now it's time to stop the Pentaho Analytics platform, executing the `stop-pentaho` script stored in the `pentaho-server` folder.

Once the Pentaho Analytics platform is stopped, edit the file `<pentaho-server>/pentaho-solutions/system/importExport.xml`, adding the lines in bold described below.

```
...
<bean id="IRepositoryContentConverterHandler" ... >
  <constructor-arg>
    <util:map id="convertersMap">
      <entry key="mondrian.xml" value-ref="streamConverter"/>
      <entry key="jpeg" value-ref="streamConverter"/>
      <!-- Add the line below here!-->
      <entry key="saiku" value-ref="streamConverter"/>
    </util:map>
  </constructor-arg>
</bean>
...
<bean id="DefaultExportHandler" ... >
  <property name="repository" ref="unifiedRepository" />
  <property name="localeExportList">
    <list>
      <value>.xanalyzer</value>
      ...
      <!-- Add the lines below here! -->
      <value>.saiku</value>
    </list>
  </property>
</bean>
...
<bean
class="org.pentaho.platform.plugin.services.importer.LocaleImport
Handler">
  <constructor-arg>
    <list>
      <value>xaction</value>
      ...
      <!-- Add the lines below here! -->
      <value>saiku</value>
    </list>
  </constructor-arg>
</bean>
```



```
</list>
...
```

Then edit the file `<pentaho-server>/pentaho-solutions/system/ImportHandlerMimeTypeDefinitions.xml`, adding the lines in bold described below.

```
...
<ImportHandler
class="org.pentaho.platform.plugin.services.importer.RepositoryFileImportFileHandler">
  <MimeTypeDefinitions>
    ...
    <MimeTypeDefinition mimeType="text/xml">
      ...
    </MimeTypeDefinition>

    <!-- Add the lines below here! -->
    <MimeTypeDefinition mimeType="application/json">
      <extension>saiku</extension>
    </MimeTypeDefinition>

  </MimeTypeDefinitions>
</ImportHandler>
```

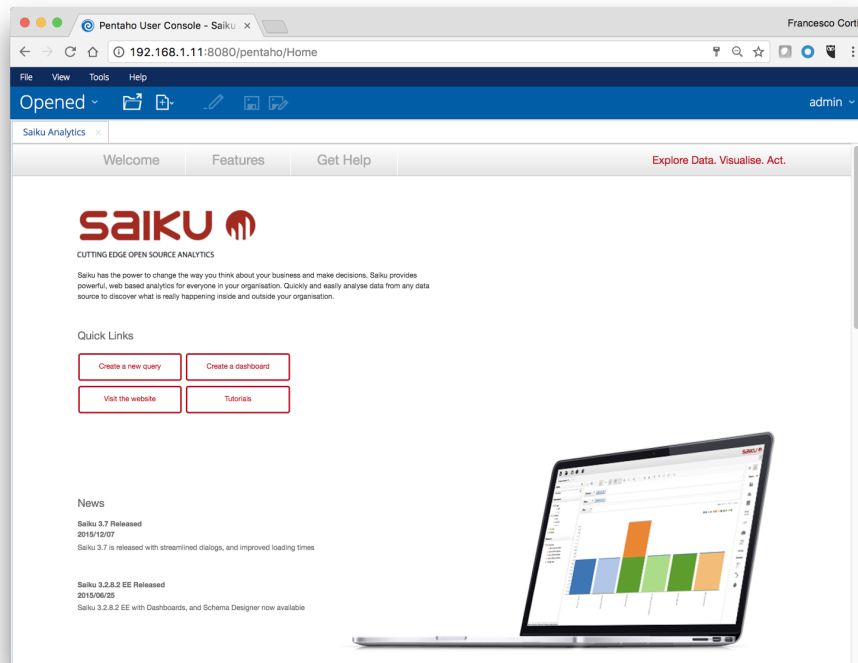
Last, but not least, there is the (free of charge) license to download and install into the `<pentaho-server>/pentaho-solutions/system/saiku` folder. Save the license file with name `license.lic`. To get the (free of charge) license, you can access directly to the url <http://licensing.meteorite.bi>. All the registration process and request of licenses for Community Edition is free of charge.

After this tasks are done, start again the Pentaho Analytics platform, executing the `start-pentaho` script stored in the `pentaho-server` folder.

To check if everything is working fine, access to the Pentaho User Console (<http://<server>:8080/pentaho>) and click on File, then New, then Saiku Analytics. Below a screenshot describes what the browser look like.

Alflytics v5.0 Early Access

The Open Source Business Intelligence solution over Alfresco



3.2 Getting Alflytics

There are two possible ways to get Alflytics: using the Pentaho Marketplace and downloading it manually. Below a brief description of each possible way. Both the possible paths get Alflytics into your Pentaho Analytics platform, with exactly the same result. Feel free to choose your preferred one, according to your network limitations and preferences.

3.2.1 Getting Alflytics using the Pentaho marketplace

Not published yet!

Getting Alflytics using the Pentaho marketplace is similar to what we described for installing Saiku analytics.

First of all access to the Pentaho User Console as administrator (otherwise you will not have permits to access to the marketplace). Click on the `Home` button and then on `Marketplace`. In the marketplace list, search for the Alflytics. Click on the `Install` button and wait for the message box sharing the result of downloading.

Screenshot



Once the message box will come with a positive answer, it's time to restart the Pentaho Analytics platform executing the `stop-pentaho` script and the `start-pentaho` script later on. Both the scripts are stored in the `pentaho-server` folder.

3.2.2 Downloading Alflytics

Downloading and plugging Alflytics into the Pentaho Analytics platform is very straightforward.

To download the latest Alflytics distribution you can check into the [GitHub](https://github.com/fcorti/Alflytics/releases) project at the link below.

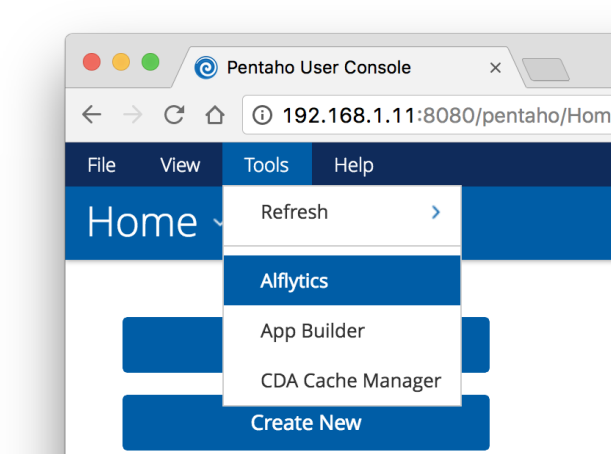
<https://github.com/fcorti/Alflytics/releases>

Download the `zip` file called `Alflytics_vX.X.zip` from the Downloads section and unzip it into the folder `<pentaho-server>/pentaho-solutions/system`. You should find then, a new folder called `Alflytics`.

Once the Alflytics distribution is plugged, it's time to restart the Pentaho Analytics platform executing the `stop-pentaho` script and the `start-pentaho` script later on. Both the scripts are stored in the `pentaho-server` folder.

3.2.3 Checking Alflytics

If you downloaded Alflytics using the Pentaho Marketplace or the manual setup, you can easily check the existence of Alflytics into your Pentaho Analytics platform, accessing to the Pentaho User Console and checking into the `Tools` item in the upper menu. If everything has been properly setup, the menu should contain an `Alflytics` item, as shown in the image below.



Clicking on the `Alflytics` item, a blank panel will be shown and an error will be logged into the `catalina.out`. In case you did it, don't worry, this is regular behaviour, considering you have not installed the dashboards yet.



3.3 Installing Alflytics

Now that Alflytics is plugged into the Pentaho Analytics platform, it's time to install everything is requested to have your fully featured Open Source Business Intelligence solution.

By default Alflytics comes with the Data Warehouse stored on a [HyperSQL \(or HSQL\)](#) database. HSQLDB is a lightweight RDBMS written in Java, extremely useful for small databases and/or evaluation purpose. HSQLDB is particularly interesting for our use case because it is distributed in the Pentaho Analytics platform and does not require external or different installations.



[HyperSQL](#) is recommended to be used on evaluation use cases only. If you plan to experiment Alflytics or to develop a POC on a small Alfresco repository, there are no concerns on using the default release. If you plan to use Alflytics in a production environment or a large repository, you should consider to use PostgreSQL or MySql instead.

Below a detailed description of the tasks to follow to install the easiest version of Alflytics.

3.3.1 Accessing the Alflytics wizard

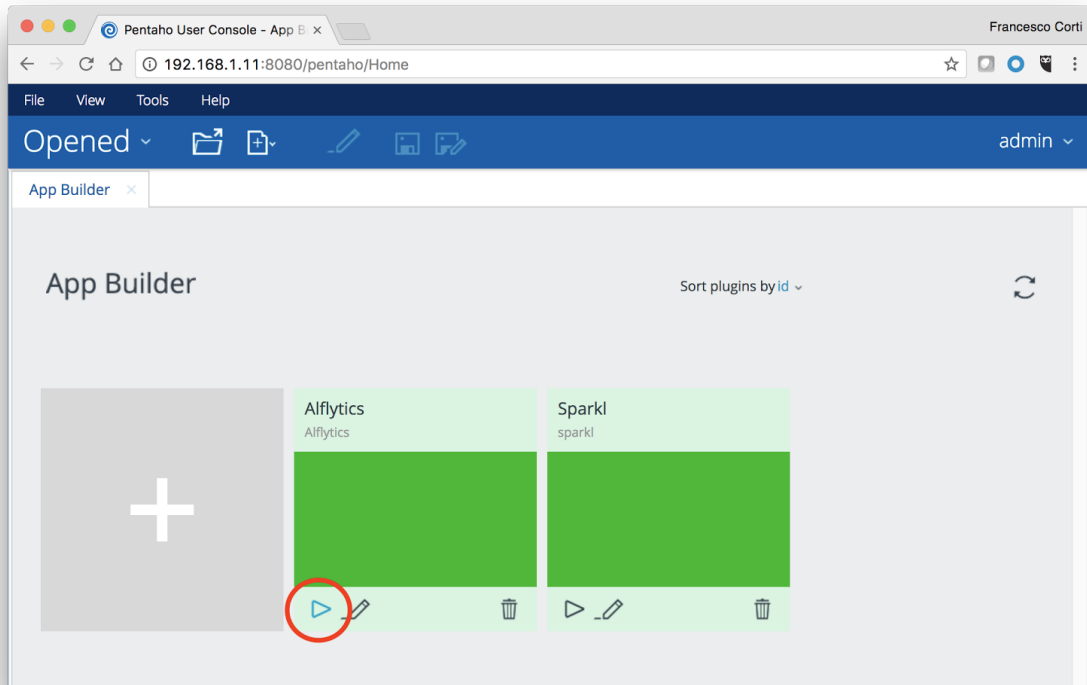
Alflytics has a wizard to make the installation task extremely easy. To access the installation wizard you simply have to access to the Administration Web pages, at the link below.

```
http://<server>/pentaho/plugin/Alflytics/api/main
```

As alternative, click on the `App Builder` item of the menu shown in the previous image (in the Checking Alflytics paragraph). Once the `App Builder` item is clicked, a panel will appear as described in the screenshot below.

Alflytics v5.0 Early Access

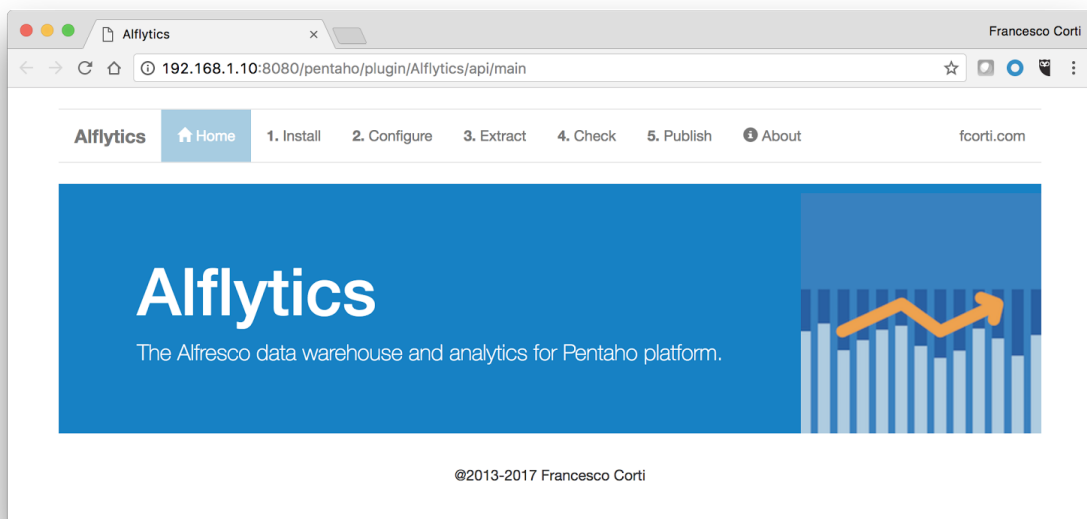
The Open Source Business Intelligence solution over Alfresco



To access to the Alflytics wizard, click on the arrow, as highlighted in the screenshot.

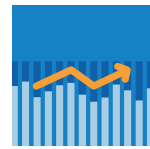
3.3.1 Installing Alflytics using the wizard

The Alflytics Administration Web pages can easily be used, starting from the upper menu shown in the screenshot below.



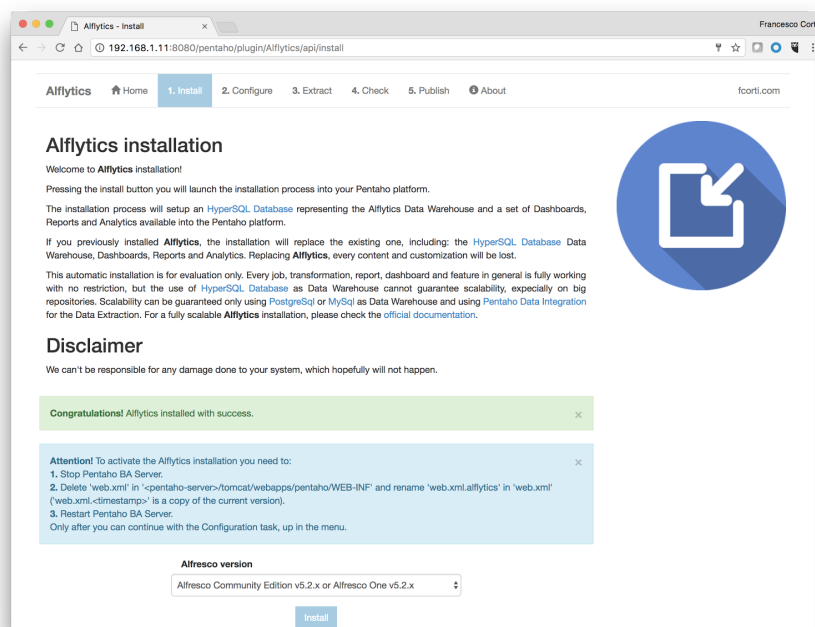
Alflytics v5.0 Early Access

The Open Source Business Intelligence solution over Alfresco



Each task is numbered to define the right order in terms of execution. The first task to follow, on the right of the `Home`, is about installing Alflytics. Click on the `1. Install` item to access to the installation page. As you can see directly in the page, the installation is very straightforward and does not require any difficult setup or question. Simply select the Alfresco version you are going to use as source of your data, and click the `Install` button.

Below a screenshot showing the result, if everything is successfully installed. As usual, if something goes wrong or you want to be sure about the details of the task, check the `catalina.out` of the Pentaho Analytics platform.



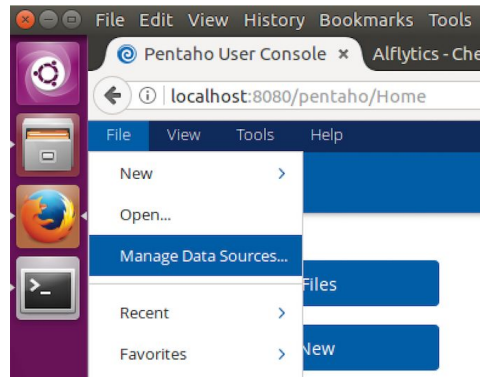
To activate the Alflytics installation, there are few tasks more to do. Below the list to follow.

First of all stop the Pentaho Analytics platform, executing the `stop-pentaho` script stored in the `pentaho-server` folder. Then delete the `web.xml` file in `<pentaho-server>/tomcat/webapps/pentaho/WEB-INF` and rename `web.xml.alflytics` as `web.xml` (`web.xml.<timestamp>` is a copy of the current version of the file). Restart Pentaho Analytics platform again, executing the `start-pentaho` script stored in the `pentaho-server` folder.



There is currently a not solved issue on the datasource creation. The good news is that it affects only the installation and can be easily solved with an extra-task. Below the step-by-step description of the extra-task mentioned above.

Access to the Pentaho User Console and click on the `Manages Data Sources` item in the upper menu.



Select the Alflytics data source of the JDBC type and edit it (using the gear icon). Once in the data source edit window, change all the fields according to the image below. The click on the test button to check everything is working fine, and then click on Ok.

Database Connection

General Advanced Options Pooling	Connection Name: Alflytics	
	Database Type: SparkSQL Cloudera Impala Impala Hadoop Hive 2 Generic database H2 Hypersonic MonetDB MySQL	Settings Host Name: localhost Database Name: alflytics Port Number: 9001 User Name: admin Password: *****
	Adding Databases	
	Access: Native (JDBC) ODBC JNDI	

Test

OK **Cancel**

Congratulations, your Alflytics environment is now installed into your Pentaho Analytics platform. Now it's time to configure the Alfresco source, clicking the `2.Configuration` item, up in the menu.



3.3.2 Configuring the access to Alfresco

The access to Alfresco is relevant to extract the data into the Alflytics Data Warehouse (a database schema into the RDBMS). To complete the task, click on the `2.Configuration` item, up in the menu, and complete the requested fields. Once correctly filled, press the `Save` button and a message will tell you the result.



The configuration wizard updates the `DWH_ALF_DIM_INSTANCES` table into the Alflytics Data Warehouse (a database schema into the RDBMS). You can manually setup the `DWH_ALF_DIM_INSTANCES`, if you want to change the settings and have a full control.



In some cases is experienced that the fields are not correctly updated in the form, after the `Save` button has been pressed. This is caused by the database caching done by the Pentaho platform. If you are sure you filled the fields with the correct values and pressed the `Save` button, feel free to ignore this behaviour. As alternative, to be sure, use your preferred database client and access directly to the `DWH_ALF_DIM_INSTANCES` table, to check (and eventually modify) the fields.

After the configuration has been completed, it's time to extract the data from Alfresco and only them using dashboards, reports and free analysis. To understand how to do it, follow the chapter dedicated to "How to use Alflytics".

3.3.3 Troubleshooting

If you have any kind of issue during the installation and/or configuration tasks, the suggestion is to check the `catalina.out` file of the Pentaho Analytics platform. The log file is very detailed and always reports a lot of useful information. Only after a deep study of the `catalina.out` file, if you don't know how to solve the issue, try to ask for support as described into the "Contacts and support" chapter.

3.4 Manual installation of Alflytics (advanced)

In this section we will see how to manually install Alflytics. The reasons why you could want to install it manually, could be different. For sure you could want to scale and adopt an Enterprise database, or simply you should want to control each component.

3.4.1 Installing Alflytics on PostgreSQL

Installing Alflytics using PostgreSQL is highly recommended as alternative to HyperSQL to store the Data Warehouse. Please note that adopting PostgreSQL some features won't work: we are talking about the web pages related to Alflytics Admin (except for the Data Quality that will continue to be supported).



Below the steps to follow to install Alflytics on PostgreSQL.

3.4.1.1 Prerequisites

Before moving to the Alflytics specific tasks, let's check the prerequisites of the environment to prepare the installation. The prerequisites to check are mainly about:

- Installing PostgreSQL and [PgAdmin3](#).
- Installing Pentaho Analytics platform.
- Getting Alflytics (without installing it).

Below one detailed description for each topic.

Installing PostgreSQL and PgAdmin3

If PostgreSQL is not installed you can proceed with the tasks below, according with the official documentation described [here](#). If you already have PostgreSQL installed, for example because an Alfresco instance is up and running, you can use it for your development purpose.

To install PostgreSQL, open a terminal and execute the commands below. Together with PostgreSQL we are going to install also [PgAdmin3](#) to administer it.

```
sudo apt-get install postgresql postgresql-contrib pgadmin3
sudo -u postgres psql postgres
\password postgres
// Digit 'postgres' (two times) to setup the user's password.
\q
sudo nano /etc/postgresql/9.5/main/pg_hba.conf
```

Change the line described below, setting peer to md5.

```
# Database administrative login by Unix domain socket
local    all             postgres
md5
```

To complete the installation, reload the database service executing the command below.

```
sudo /etc/init.d/postgresql reload
```

Last, but not least, execute `pgadmin3` and add the localhost connection to administer the database instances.

Installing Pentaho Analytics platform



You can follow the instructions on paragraph 3.1.2 Installing Pentaho Analytics platform.

Getting Alflytics (without installing it)

You can follow the instructions on paragraph 3.2 Getting Alflytics.

Please DO NOT install Alflytics but only download it into the Pentaho Analytics platform.

3.4.1.2 Creating the Alflytics schema

After checking the prerequisites, it's time to create a new database schema called `alflytics`. You can easily do it using the PgAdmin3 and executing the commands below.

```
DROP DATABASE IF EXISTS alflytics;  
CREATE DATABASE alflytics;  
ALTER DATABASE alflytics OWNER TO postgres;
```

After this you can execute the script called `alflytics.postgresql.sql` and stored into the path below.

```
<pentaho-server>/pentaho-solutions/system/Alflytics/endpoints/kettle/src/5.2/data/postgresql
```

Last but not least, update the table `DWH_ALF_DIM_INSTANCES` with the right data about connecting the Alfresco instance. Please be sure you update at least the following fields: LOGIN, PASSWORD, PROTOCOL, HOST, PORT.

3.4.1.3 Creating the Alflytics data source on Pentaho Analytics platform

Start Pentaho.

File => Manage DataSources => Gear => New connection.

Fill in the fields as described in the picture below.



Database Connection

General
Advanced
Options
Pooling

Connection Name:
Alflytics

Database Type:
Impala
Hadoop Hive 2
Generic database
H2
Hypersonic
MonetDB
MySQL
Pentaho Data Services
PostgreSQL

Adding Databases

Access:
Native (JDBC)
ODBC
JNDI

Settings
Host Name:
localhost
Database Name:
alflytics
Port Number:
5432
User Name:
postgres
Password:

Test

OK Cancel



Please pay attention to the capital letters in `Alflytics`. The data source are case sensitive depending on the tools you are going use and an error on the name could cause a lot of unpredictable issues.

Click Test to check and then Ok.

3.4.1.4 Importing the Pentaho repository

In this task we are going to import the ETLs, reports, dashboards and OLAP queries into the Pentaho repository.

Stop Pentaho.

Updating the data quality dashboard.

Copy the files from

```
<pentaho-server>/pentaho-solutions/system/Alflytics/endpoints/kettle/src/5.2/dashboards/postgresql  
to
```

```
<pentaho-server>/pentaho-solutions/system/Alflytics/dashboards
```

Copying the repository files.

Copy the files from



```
<pentaho-server>/pentaho-solutions/system/Alflytics/endpoints/kettle/src/5.2/repository
```

to

```
<pentaho-server>/pentaho-solutions/system/default-content
```

The files to copy are:

Alflytics.Dashboards.postgresql.zip

Alflytics.ETL.zip

Alflytics.OLAP.zip

Alflytics.Reports.postgresql.zip

(and Datasources?)

Restarting Pentaho.

3.4.1.5 Updating the jobs to work with PostgreSQL

Install Pentaho Data Integration into your development environment.

Update the default db as PostgreSQL in the jobs

Launch the build schema job.

3.4.2 Installing Alflytics on MySql

Installing Alflytics using MySql is highly recommended as alternative to HyperSQL to store the Data Warehouse. Please note that adopting MySql some features won't work: we are talking about the web pages related to Alflytics Admin (except for the Data Quality that will continue to be supported).

Below the steps to follow to install Alflytics on MySql.

3.4.2.1 Prerequisites

Before moving to the Alflytics specific tasks, let's check the prerequisites of the environment to prepare the installation. The prerequisites to check are mainly about:

- Installing MySql and MySql Workbench.
- Installing Pentaho Analytics platform.
- Getting Alflytics (without installing it).

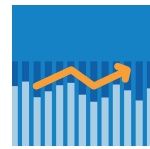
Below one detailed description for each topic.

Installing MySql and MySql Workbench

To install MySql proceed to get it using the commands below.

```
sudo apt-get install mysql-server mysql-workbench
```

This command will install also MySql Workbench for administration. During the installation process, the definition of the `root` password will be requested. Last, but not least, execute



`mysql-workbench` and add the `localhost` connection to administer the database instances.

Installing Pentaho Analytics platform

You can follow the instructions on paragraph 3.1.2 Installing Pentaho Analytics platform.

Getting Alflytics (without installing it)

You can follow the instructions on paragraph 3.2 Getting Alflytics.

Please DO NOT install Alflytics but only download it into the Pentaho Analytics platform.

3.4.2.2 Creating the Alflytics schema

After checking the prerequisites, it's time to create a new database schema called `alflytics`. You can easily do it using the MySQL Workbench and executing the script called `alflytics.mysql.sql`, stored into the path below.

```
<pentaho-server>/pentaho-solutions/system/Alflytics/endpoints/kettle/src/5.2/data/mysql
```

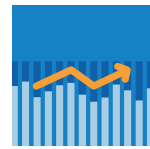
Last but not least, update the table `DWH_ALF_DIM_INSTANCES` with the right data about connecting the Alfresco instance. Please be sure you update at least the following fields: `LOGIN`, `PASSWORD`, `PROTOCOL`, `HOST`, `PORT`.

3.4.2.3 Creating the Alflytics data source on Pentaho Analytics platform

Start Pentaho.

File => Manage DataSources => Gear => New connection.

Fill in the fields as described in the picture below.



Database Connection

General
Advanced
Options
Pooling

Connection Name:
Alflytics

Database Type:
Impala
Hadoop Hive 2
Generic database
H2
Hypersonic
MonetDB
MySQL
Pentaho Data Services
PostgreSQL

Settings
Host Name:
localhost
Database Name:
alflytics
Port Number:
3306
User Name:
root
Password:
....

Access:
Native (JDBC)
ODBC
JNDI

[Adding Databases](#)

Test

OK Cancel



Please pay attention to the capital letters in **Alflytics**. The data source are case sensitive depending on the tools you are going use and an error on the name could cause a lot of unpredictable issues.

Click Test to check and then Ok.

3.4.2.4 Importing the Pentaho repository

In this task we are going to import the ETLs, reports, dashboards and OLAP queries into the Pentaho repository.

Stop Pentaho.

Updating the data quality dashboard.

Copy the files from

```
<pentaho-server>/pentaho-solutions/system/Alflytics/endpoints/kettle/src/5.2/dashboards/mysql  
to
```

```
<pentaho-server>/pentaho-solutions/system/Alflytics/dashboards
```

Copying the repository files.



Copy the files from

```
<pentaho-server>/pentaho-solutions/system/Alflytics/endpoints/kettle/src/5.2/repository
```

to

```
<pentaho-server>/pentaho-solutions/system/default-content
```

The files to copy are:

Alflytics.Dashboards.mysql.zip

Alflytics.ETL.zip

Alflytics.OLAP.zip

Alflytics.Reports.mysql.zip

(and Datasources?)

Restarting Pentaho.

3.4.2.5 Updating the jobs to work with MySQL

Install Pentaho Data Integration into your development environment.

Download the right mysql-connector-...jar library from the website and copy it into data-integration/lib

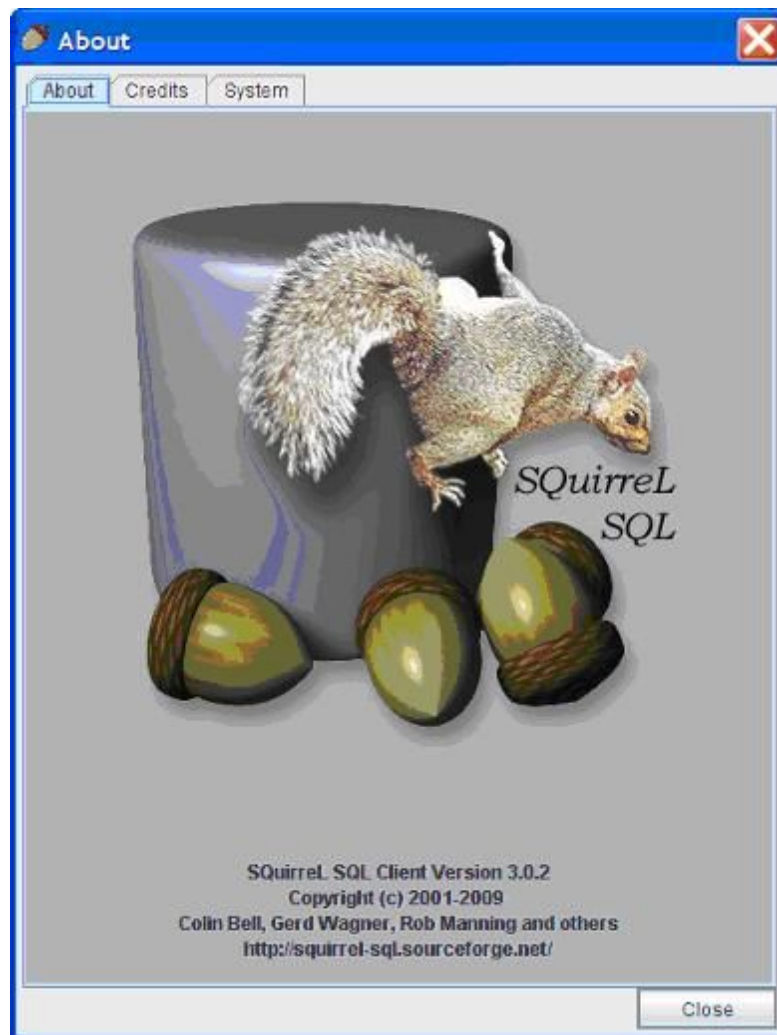
ATTENTION to download the correct version otherwise some you could experience unexpected results.

Update the default db as PostgreSQL in the jobs

Launch the build schema job.

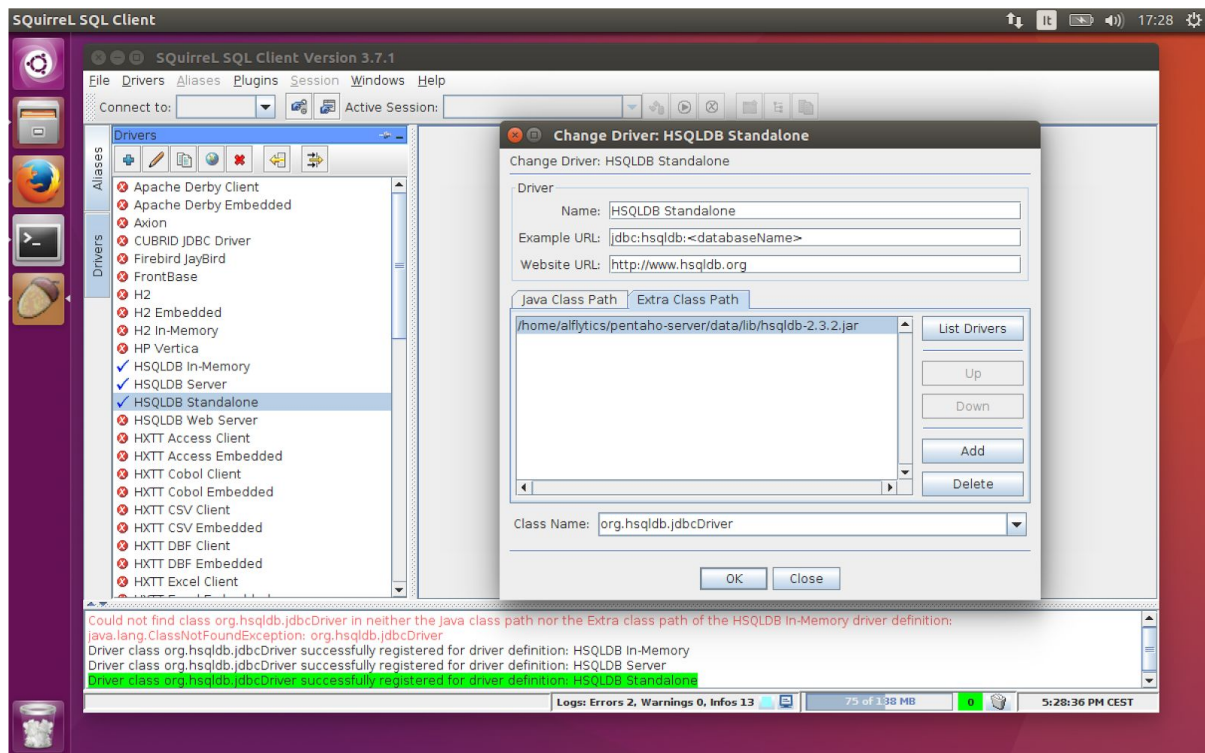
3.4.3 Installing Squirrel SQL client for HyperSQL

To have a full access to the Alflytics Data Warehouse on HyperSQL, you need a database client. There are several useful database clients, and honestly you can decide to use your preferred one, but here we are going to explain how to install (and use) [Squirrel Universal SQL Client](#).



The official website and documentation is extremely clear and straightforward. Below are shared some further details on specific configurations, useful to our use case.

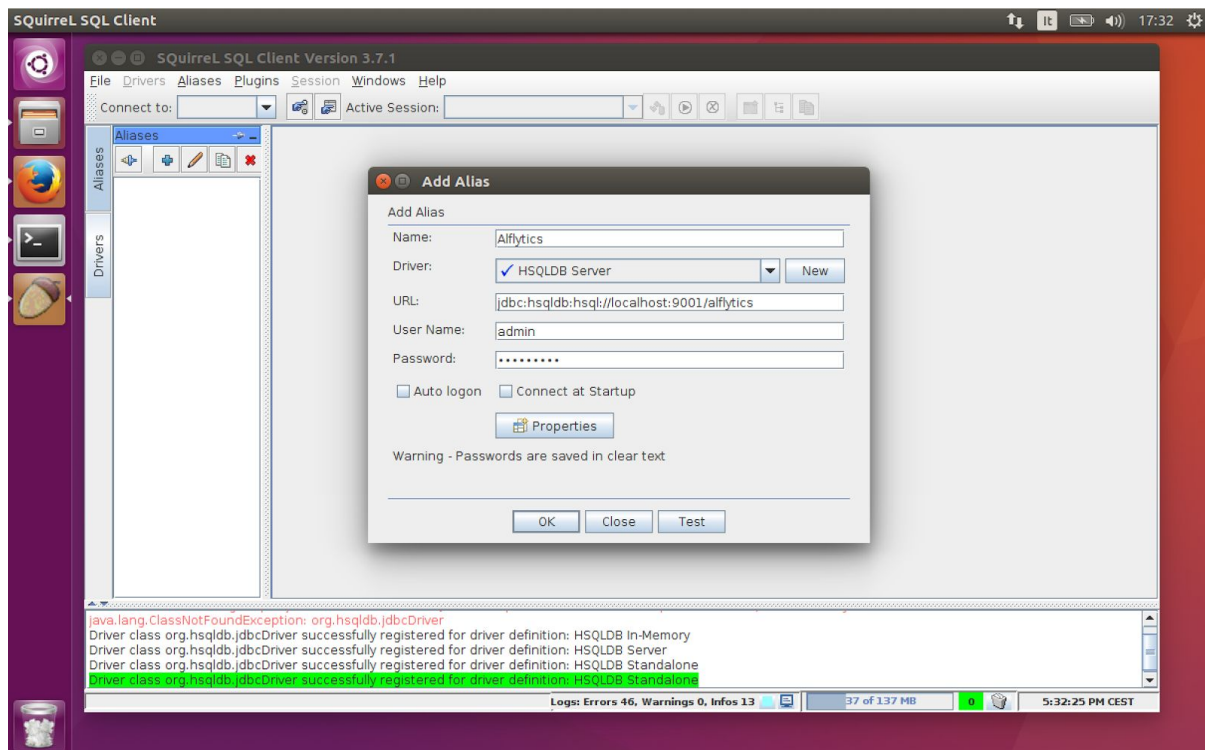
- The installation is a standard installation, as documented in the official [Squirrel SQL Client](http://squirrel-sql.sourceforge.net/) website.
- To have access to the Alflytics Data Warehouse on HyperSQL (or HSQLDB), you need to add few new drivers, using the Squirrel User Interface. From the driver list, identify the HSQLDB In-Memory, HSQLDB Server and HSQLDB Standalone. For each driver, modify it adding an extra class-path. The class-path to add is the JAR file in the `<pentaho-server>/data/lib/hsqldb-<version>.jar` path. Below a screenshot showing the user interface.



- To have access to the Alflytics Data Warehouse on HyperSQL (or HSQLDB), you need to add an alias, using the Squirrel User Interface. From the alias list, add a new one, with the settings below.

Name: Alflytics
Driver: HSQLDB Server
URL: jdbc:hsqldb:hsq://<server>:9001/alflytics
User Name: admin
Password: password

Clicking on the OK button and you will have access to the whole Alflytics Data Warehouse with a full control. Below a screenshot showing the user interface.



3.5 About scheduling extractions and publications

CURL under CRON.

4. Customizing Alflytics

Customizing Alflytics means not only one thing but could be on several different parts. First of all, you could want to customize reports, modifying the existing ones or adding new ones. You could also want to customize dashboards and free analysis. Last but not least you could want to extract data related to Alfresco custom models or include other sources in the Data Warehouse like: ERPs, CRMs and/or custom applications. In the following paragraphs we are going to cover the most common use cases.

4.1 Customizing reports

What customizing reports means

Installing Pentaho reporting

The available reports

Basis of Pentaho reporting

4.2 Customizing dashboards

TODO



4.3 Customizing free analysis

TODO

4.4 Customizing the warehouse and the ETL

TODO

4.4.1 How to extract Alfresco custom models

The customization is based on the database tables.

More in particular some tables are dedicated to store the configurations and settings and are useful to instruct the ETLs to extract the data accordingly.

The tables involved in the configuration are: ...

To customize the Data Warehouse:

1. Init the DWH
2. Modify the configuration tables.
3. Build the schema.
4. Use it, as usual.

4.4.2 How to extract custom Alfresco audit trails

TODO

4.4.3 How to integrate other sources

TODO

5. Scalability

Alflytics is fully scalable, thanks to the use of a pure (and Enterprise) Business Intelligence solution. The Alflytics scalability is possible following different paths. Each path gives to the architecture a “boost” on a specific topic or components. In the following paragraphs we are going to describe all the available paths, with dedicated descriptions and setup.

5.1 The Alflytics Data Warehouse on PostgreSQL or MySQL

This scalability is given by the use of a scalable database, storing the data coming from the sources. In the previous chapters we saw how to install Alflytics using a PostgreSQL database or a MySQL database. By their nature, those two databases are highly scalable and guarantee great performances on huge repositories.



We won't treat more than this here, the scalability topic using PostgreSQL or MySQL, but it is highly recommended to adopt them, especially in production environments or huge repositories (also in POC or evaluation tasks).

5.2 Tuning the Pentaho Analytics platform

We won't treat here all the possible tuning Pentaho platform has, but we would like to suggest how to make it work better for our purpose. The main tuning is through the `JAVA_OPTS` you can find into the `start_pentaho` script, inside the `<pentaho-server>` folder.

For further details, please check the Pentaho Official Documentation.

5.3 Using the Pentaho Data Integration for ETL

Why a PDI is useful

Introducing the ETL server using PDI.

5.3.1 Installing Pentaho Data Integration

Reference: <http://fcorti.com/2016/12/05/installing-pentaho-data-integration-7/>

Unzip the distribution package.

```
sudo apt-get install libwebkitgtk-1.0-0
```

If you are using MySQL as Data Warehouse, download the right `mysql-connector-...jar` library from the website and copy it into `data-integration/lib`

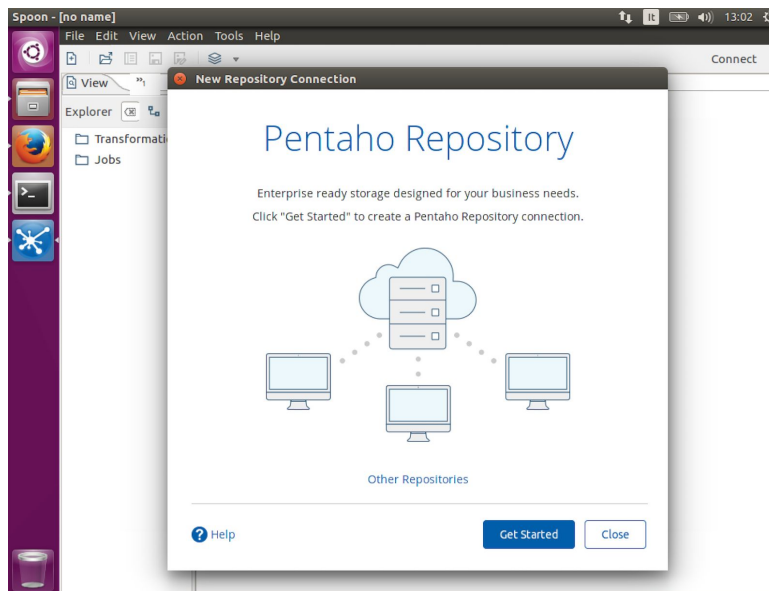
ATTENTION to download the correct version otherwise some you could experience unexpected results.

Run spoon script

5.3.2 Creating the connection to the Alflytics repository

Before using the Pentaho Data Integration for the first time, you have to setup the connection to the Alflytics repository. The task is extremely straightforward and can be done using the Spoon User interface.

From the main window, on the top right you should see a `Connect` button. Clicking on it, you will see a window appear, similar to the one in the following screenshot.



Click on `Get started` and fill the `Display name` (digit `Alflytics` or choose your preferred name) and URL. Be sure you digit the correct Pentaho Analytics Server URL. Click on the `Finish` button to complete the task. Don't connect immediately, but click on the `Finish` button to go to the main window of the Pentaho Spoon User interface.

Now click again on the `Connect` button on the top right of the main window, and select the new connection (in our case we named `Alflytics`). The login and password requested are the Pentaho Analytics ones (by default `admin` as user Name and `password` as Password).

Once connected, click on the `File` item in the upper menu and then `Open`. Under the following path you can find the root of all the jobs and transformations of the solution.

`/public/Alflytics/ETL`

`Get all` is the main job used to extract the whole Alfresco data. You can studying this, for a better comprehension of how Alflytics works.

5.3.3 Creating the JNDI connection to the Alflytics repository (for publishing reports only)

<https://help.pentaho.com/Documentation/5.3/0P0/0U0/010/010>

5.3.4 Creating and scheduling the scripts to run the ETLs

Introducing kitchen

Creating the scripts with kitchen

Extract and Publish



How to schedule the scripts.

6. How to contribute to the project

TODO

7. Support and contacts

TODO

7.1 Disclaimer

The software is given as is, no support or responsibilities

7.2 Preparing the request of support

Dump your alflytics database instance.

Zip the /tmp/Alflytics folder.

Zip the catalina.out file (or the part containing the error).

7.3 How to get support from the community

Write into the community.alfresco.com

Write an issue on the github repository

Write to Francesco.

7.4 How to get professional support

Write to Francesco.

Appendix - FAQs

TODO

Appendix II - Previous versions

TODO