



User Guide

ARCAD Dashboard

Version 24.0

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Preface

Document purpose

This document is intended to guide you through the installation, configuration and use of ARCAD Dashboard.

Intended Audience

This document is intended for all ARCAD Dashboard users.

Related Documentation

ARCAD technical documentation can be accessed from the product's online help or by logging into the [Customer Portal](#) on our website.

Related Documentation
Release Notes
ARCAD Glossary

Table 1: Related Documentation

Unless stated otherwise, all content is valid for the most current version of ARCAD Dashboard listed as well as every subsequent version.

Product Version	Document Version	Publication Date	Update Record
≥ 24.0	1.5	January, 2024	No functional changes
23.0	1.4	January, 2023	Documentation updated for product evolution. New features and enhancements: <ul style="list-style-type: none"> • New data warehouse compatibility with MS SQL Server support • Compatibility with Grafana v9.1 • Added support of applications using the same data model in Grafana

Table 2: ARCAD Dashboard User Guide Publication Record

Contact ARCAD

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Table 3: Contact ARCAD

Contents

Preface	3
Contact ARCAD	4
Contents	5
Tables	7
Figures	8

ABOUT ARCAD DASHBOARD

1 About ARCAD Dashboard	10
2 Main concepts	11

INSTALLATION

3 System requirements	13
3.1 Windows.....	13
3.1.1 Hardware requirements.....	13
3.1.2 Software requirements.....	13
3.2 Linux.....	13
3.2.1 Hardware requirements.....	13
3.2.2 Software requirements.....	13
4 Upgrade Notes	15
5 Installing ARCAD Dashboard	16
5.1 Windows.....	17
5.1.1 Install.....	17
5.1.2 Update.....	18
5.1.3 Uninstall.....	19
5.2 Linux.....	20
5.2.1 Install.....	20
5.2.2 Update.....	21
5.2.3 Uninstall.....	21
6 Configuring MySQL Server settings	22
6.1 Windows.....	22
6.2 Linux.....	23

GETTING STARTED

7 Connecting to Dashboard Web Studio	25
8 Overview of ARCAD Dashboard	26
8.1 New application.....	27
8.2 Run data loader.....	27
8.3 Dashboard ARCAD app configuration.....	28
8.4 Data loaded by app.....	28

8.5 Main menu.....	28
--------------------	----

USER ADMINISTRATION

9 Configuring users.....	30
---------------------------------	-----------

SETUP

Introduction to setting up ARCAD Dashboard.....	32
--	-----------

10 Data source connectors.....	33
---------------------------------------	-----------

11 Dashboard application connectors.....	35
---	-----------

12 Data warehouse connectors.....	37
--	-----------

13 Data models.....	39
----------------------------	-----------

13.1 About ARCAD data models.....	39
-----------------------------------	----

13.2 Creating a data model.....	40
---------------------------------	----

13.3 Mapping source data.....	40
-------------------------------	----

13.4 Defining models options.....	41
-----------------------------------	----

14 Variables.....	42
--------------------------	-----------

LOADING DATA

Introduction to loading data.....	44
--	-----------

15 Loading data.....	45
-----------------------------	-----------

15.1 Loading all data for a model.....	45
--	----

15.2 Selecting data to be imported.....	46
---	----

15.3 Viewing data in Dashboard Web Studio.....	47
--	----

16 Scheduling data imports.....	48
--	-----------

16.1 Defining schedule parameters.....	48
--	----

16.2 Starting and stopping the scheduler.....	48
---	----

17 Campaigns.....	49
--------------------------	-----------

DATA VISUALIZATION

18 Dashboards with Grafana.....	51
--	-----------

19 Dashboards with Kibana.....	55
---------------------------------------	-----------

APPENDICES

Glossary.....	59
----------------------	-----------

Tables

Table 1: Related Documentation	3
Table 2: ARCAD Dashboard User Guide Publication Record	3
Table 3: Contact ARCAD	4
Table 4: ARCAD Dashboard Hardware Requirements - Windows	13
Table 5: ARCAD Dashboard Software Requirements - Windows	13
Table 6: ARCAD Dashboard Hardware Requirements - Linux	13
Table 7: ARCAD Dashboard Software Requirements - Linux	14
Table 8: The ARCAD Dashboard solution configurations	16

Figures

Figure 1: Presentation of the Healthcheck application.....	10
Figure 2: Connecting to Dashboard Web Studio.....	25
Figure 3: Dashboard Web Studio.....	26
Figure 4: ARCAD Dashboard - New application.....	27
Figure 5: ARCAD Dashboard - Run data loader.....	27
Figure 6: ARCAD Dashboard - App configuration.....	28
Figure 7: ARCAD Dashboard - Data loaded.....	28
Figure 8: ARCAD Dashboard - Main menu.....	28
Figure 9: User management.....	30
Figure 10: Dashboards connectors.....	35
Figure 11: Data warehouse.....	37
Figure 12: Models settings options.....	41
Figure 13: Variables.....	42
Figure 14: Model mapping.....	46
Figure 15: Campaign settings.....	49
Figure 16: Example of dashboard for Healthcheck Model.....	52
Figure 17: Choose information to be displayed.....	52
Figure 18: Tooltip describing the information displayed.....	53
Figure 19: Link to display a more specific dashboard.....	53
Figure 20: Viewing a panel in large format.....	53
Figure 21: Panel in large format.....	54
Figure 22: Example of dashboard for Healthcheck Model in Kibana.....	55
Figure 23: Choose information displayed in Kibana.....	55
Figure 24: Results displayed on click in Kibana.....	56
Figure 25: Exporting a graphic.....	56



ABOUT ARCAD DASHBOARD

1 About ARCAD Dashboard

Gain insights into the maintainability of your IBM i application source code.

The ARCAD Dashboard solution provides ready-made models of data that covers all you need to analyze your IBM i DevOps flow and view results in the form of easy-to-understand dashboards.

- Monitor application health: Evaluate your IBM i application assets and report in real-time the state of your source code, environment and development workflow. Compare against industry-standard metrics and customize for local needs.
- Track and tune DevOps flow: Keep track of team performance at each stage in the DevOps process. Detect bottlenecks in the value stream and tune processes to optimize flow.

You gain quantitative and qualitative insight into the overall health of your IBM i applications and measure your DevOps performance on IBM i according to industry-standard metrics.

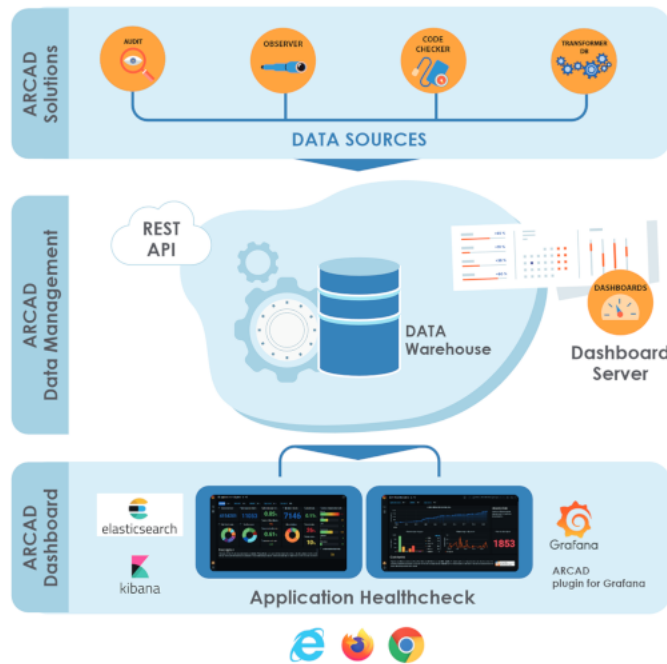


Figure 1: Presentation of the Healthcheck application

The ARCAD Dashboard solution as a whole has three elements:

- The Dashboard Server with a web-client called the Dashboard Studio.
- The data warehouse which is the database used to store the data from the monitored applications. Different databases can be used in the ARCAD Dashboard solution: MySQL Server, MS SQL Server, Postgre SQL, or Elasticsearch.
- The dashboard application that manages the visual display of the monitored data: Grafana or Kibana.

The ARCAD Dashboard solution display dashboards from multiple ARCAD data sources: ARCAD CodeChecker, ARCAD Verifier, ARCAD iUnit, DROPS, DOT Anonymizer. It can also use other sources of data such as JIRA or Adelia.

2 Main concepts

The ARCAD Dashboard solution is intended to manage ARCAD application data so that it can be exploited by data visualization dashboards. The visualization is provided by open-source dashboard applications, and ARCAD Dashboard manages and serves the data to these applications.

The main steps required to set up the ARCAD Dashboard solution are the following:

1. Define the connections to the data source, where the monitored data is extracted from.
[Data source connectors on page 33](#)
2. Define the connection to the data warehouse, where the data to display is stored.
[Data warehouse connectors on page 37](#)
3. Define the data you want to display and create a data model.
[Data models on page 39](#)
4. Import data from the data source to the data warehouse, in order to display them in the dashboard application (Grafana or Kibana).
[Loading data on page 45](#) and [Scheduling data imports on page 48](#)

Your data is ready to be displayed in Grafana or Kibana.

[Dashboards with Grafana on page 51](#), and [Dashboards with Kibana on page 55](#)

 **Note**

Any other steps required to set up the ARCAD Dashboard solution in the source applications or in the dashboard applications are not described in this documentation. Refer to their respective documentations.



INSTALLATION

3 System requirements

3.1 Windows

3.1.1 Hardware requirements

The following table lists the hardware components that are required for the ARCAD Dashboard on Windows.

Requirement	Value
CPU	DUAL Core processor minimum
Physical memory (RAM)	2GB minimum, 4GB recommended
Disk Space	40GB of available disk space
Network	Any TCP/IP capable network interface

Table 4: ARCAD Dashboard Hardware Requirements - Windows

3.1.2 Software requirements

The following table lists the software requirements for the ARCAD Dashboard on Windows.

Requirement	Value
Operating system	Microsoft Windows 10
Network protocol	TCP/IPv4

Table 5: ARCAD Dashboard Software Requirements - Windows

3.2 Linux

3.2.1 Hardware requirements

The following table lists the hardware components that are required for the ARCAD Dashboard on Linux.

Requirement	Value
CPU	DUAL Core processor minimum
Physical memory (RAM)	2GB minimum, 4GB recommended
Disk Space	40GB of available disk space
Network	Any TCP/IP capable network interface

Table 6: ARCAD Dashboard Hardware Requirements - Linux

3.2.2 Software requirements

The following table lists the software requirements for the ARCAD Dashboard on Linux.

Requirement	Value
Operating system	Linux
Network protocol	TCP/IPv4

Table 7: ARCAD Dashboard Software Requirements - Linux

4 Upgrade Notes

 **Important!**

Please read carefully the following information if you are upgrading ARCAD Dashboard **from version 13.2 to version 22.0 and above.**

Upgrading existing configuration

When installing the ARCAD Dashboard solution for the first time, the configuration is delivered as follows:

- The variables necessary for the supplied data models are initialized.
- The source connectors configuration and data warehouse configuration are empty.
- The users configuration contain only the admin users.

When upgrading ARCAD Dashboard, your configuration is not impacted by the update:

- Users (*users.json*)
- Variables (*variable_conf.json*)
- Data source connectors (*connector_conf.json* and data warehouse connectors *datawarehouse_conf.json*)

Furthermore, some older configuration becomes obsolete.

Obsolete configuration after upgrade

Grafana configuration is now done from the Dashboard Studio. The Grafana / Kibana connector configuration module allow to declare the connectors of Grafana or Kibana and to create the API key required for Grafana.

It is now unnecessary to edit the *.env* file to save the API key of Grafana, therefore the variable `GRAFANA_TOKEN` are obsolete and deleted.

Also the creation of these connectors imply the deletion of the `GRAFANA_HOST` and `KIBANA_HOST` variables in the variable page configuration.

Mirror data source configuration in Grafana is also not necessary anymore, as it is done automatically when loading the data from the Dashboard Studio.

Required update of existing configuration after upgrade

Some existing configuration requires an update after upgrading version.

For DB2 for i connectors, a new mandatory parameter has been added. Existing DB2 for i connectors must be updated to specify the connector type: SSH or JDBC.

Specific model configuration is not updated during the upgrade because this configuration can be customized. Each client should assess its own configuration to decide which solution to choose for the upgrade (replace or merge). Contact ARCAD for more information about updating data models.

5 Installing ARCAD Dashboard

Chapter Summary

5.1 Windows.....	17
5.2 Linux.....	20

Important!

Before installing or updating ARCAD Dashboard, first read carefully the Release Notes.

In these release notes, you will find all the information specific to each release of ARCAD Dashboard, especially specific warnings you should be aware of before installing or upgrading the product (compatibility breaks, exceptional migration procedures, etc.).

Before proceeding to install and to know which software(s) you will have to install, determine beforehand the configuration of the ARCAD Dashboard solution you wish to use.

Dashboard displayed with Grafana use a MySQL, a MS SQL Server, or a Postgre SQL database and dashboard displayed with Kibana use an Elasticsearch database.

The ARCAD Dashboard solution is installed with an executable file on Windows and an archive on Linux.

Reference

For more information about the System Requirements, refer to [System requirements on page 13](#).

Choose the appropriate type of installation for your needs.

ARCAD Dashboard [v24.0] or above	
Grafana [v9.1] + MySQL Server [v8.0.x] or above or Postgre SQL [4.1] or above or MS SQL Server [15.x] or above	Kibana + Elasticsearch [v7.17.x] or above

Table 8: The ARCAD Dashboard solution configurations

Reference

For more information about installing the following:

- Kibana, refer to the [Kibana official documentation](#).
- Elasticsearch, refer to the [Elasticsearch official documentation](#).
- Grafana, refer to the [Grafana official documentation](#).
- MySQL Server, refer to the [MySQL official documentation](#).
- Postgre SQL, refer to the [Postgre SQL official documentation](#).
- MS SQL Server, refer to the [MS SQL Server official documentation](#).

Important!

The MySQL Server requires specific settings to be configured before starting working with the solution. Refer to [Configuring MySQL Server](#)

 settings on page 22.

5.1 Windows

The installation process takes approximately 5 minutes. It is a simple procedure similar to most other Windows applications. For trouble-free installation, it is recommended that you close all active Windows applications before beginning the installation.

Note

If the tool is already installed on your computer, reinstalling it will update it to the new version automatically.

5.1.1 Install

Follow the subsequent steps to install ARCAD Dashboard on Windows:

Warning!

A Microsoft Visual C++ Runtime installation window may appear depending on the computer configuration. In this case, **accept the terms and conditions** and click **Install**.

Step 1 Copy the .exe file to your machine and execute it to launch the wizard. Your profile must have administrator privileges to run the execution file.

Step 2 From the **Select Setup Language** window, select the language for the installation.

Step 3 Review and accept the license agreement.

The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully. When you have reviewed the agreement, select **I accept the agreement**.

Click **Next >** to continue.

Step 4 Confirm the installation location.

The **Select Destination Location** screen displays the default location where ARCAD elements will be installed. If you prefer to install the software elements in a different location, either type in the location, or click **Browse...** to navigate to and select the alternate location.

The default location is *C:\Program Files(x86)\arcad-dashboard*.

Warning!

The access rights to this folder can then be restricted to the user used to run the Server's Windows service.

Click **Next >** to continue.

Step 5 Install.

The **Ready to Install** screen enables you to review and change or confirm the setup parameters provided and to launch the installation.

To change a setup parameter, click **< Back** and return to the necessary screen.

If you agree with the installation parameters displayed, click **Install** to start the copy phase of the installation process. The process may take a moment while the windows services are launched.

As the installation proceeds, a status bar displays its progress. Each element copied appears above the status bar. Click **Cancel** to interrupt the installation.

 **Note**

A Microsoft Visual C++ Runtime installation window may appear depending on the computer configuration. In this case, **accept the terms and conditions** and click **Install**.

Step 6 Complete the setup process. The final page of the wizard displays confirmation that the setup was a success. Click **Finish** to close the setup wizard.

Result ARCAD Dashboard is installed and available for use.

5.1.2 Update

Updating ARCAD Dashboard is similar to the installation process in that it is launched via the installation `.exe`.

 **Reference**

For more information about updating the ARCAD Dashboard solution, refer to the [Upgrade Notes on page 15](#).

Follow the subsequent steps to update the ARCAD Dashboard.

Step 1 Stop the ARCAD Dashboard service.

Step 1 Copy the `.exe` file to your machine and execute it to launch the wizard. Your profile must have administrator privileges to run the execution file.

Step 2 From the **Select Setup Language** window, select the language for the installation.

Step 3 Review and accept the license agreement.

The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully. When you have reviewed the agreement, select **I accept the agreement**.

Click **Next >** to continue.

Step 4 Confirm the program's shortcut location.

The **Select Start Menu Folder** screen displays the default location where a shortcut will be created in your computer's Start menu. If you prefer to install the shortcut under a different group, either type the location here, or click **Browse...** to navigate to and select the alternate location.

The default location is `C:\Program Files(x86)\arcad-dashboard`.

If you do not want to create a start menu folder, select the **Don't create a Start Menu folder** checkbox.

Step 5 Install.

The **Ready to Install** screen enables you to review and change or confirm the setup parameters provided and to launch the installation.

To change a setup parameter, click **< Back** and return to the necessary screen.

If you agree with the installation parameters displayed, click **Install** to start the copy phase of the installation process. The process may take a moment while the windows services are launched.

As the installation proceeds, a status bar displays its progress. Each element copied appears above the status bar. Click **Cancel** to interrupt the installation.

Step 6 MySQL Server: If you have already MySQL Server on your computer, click **No**.

Result ARCAD Dashboard is updated and available for use.

5.1.3 Uninstall

Note

To uninstall MySQL Server or Grafana: please refer to the documentation for these products.

Follow the subsequent steps to uninstall ARCAD Dashboard on Windows.

Step 1 Log into the system with an administrator account.

Step 2 Either launch the *uninstall.exe* located in the installation directory

- or -

Open **Add or Remove Programs** (*Start > Control Panel*), find the module in the list of installed software and select **Uninstall**.

Step 3 Remove any remaining files in the installation path and remove any remaining configuration files in the user directory.

Result ARCAD Dashboard is completely uninstalled.

5.2 Linux


5.2.1 Install

Follow the subsequent steps to install ARCAD Dashboard on Linux.

Step 1 Transfer the *.tar.gz* to the */tmp* directory on the target system.

Step 2 Open a terminal session and go to the installation directory.

 **Example**
`cd /opt`

 **Note**
By default, the server is intended to be installed in the */opt* directory. If you install it in a different directory, you will have to update the server's scripts (see [Step 8 Edit the scripts.](#)).

Step 3 Execute the following command to extract the *tar.gz* archive into the current directory:

```
tar xzf arcad-dashboard-[version number].tar.gz
```

Step 4 [*Optional*] If you need to change the listening port(s) for the server, you must do so now.

The ARCAD Dashboard Web Server's default HTTP port is 5353.

To change the ports, open the *env* file in a text editor and change the following properties:

- `EXPRESS_PORT=<new HTTP or HTTPS port number> -or- <0>` to disable the HTTP or HTTPS port
- `HTTP_TYPE=<http> -or- <https>` to use the secured port

Step 5 Run the following script with administrator privileges to initialize the installation of Dashboard Studio:

```
cd server/bin && ./init_install.sh
```

Step 6 Create a specific user and group to run the server's process with the command:

```
adduser --system --no-create-home --group name
```

Step 7 Change the ownership of the installation directory to give it to the user and group that will run ARCAD Dashboard:

```
chown username:groupname -R /opt/arcad-dashboard
```

Step 8 Edit the scripts.

Open the following scripts in a text editor to set the variables to match your execution environment:

- *arcad-dashboard*
 - Set **NODEJS_HOME** to the installation directory if it was not installed in */opt/...* by default.
 - Set **NODEJS_USER** to the new user.

- *arcad-dashboard.service*
 - Update the paths so they match the installation directory.
 - Set the user to the new user.
 - Set the group to be the new user's or any group of your choice.
- configuration files in the *configuration* folder

Step 9 [*Optional*] Execute the following commands to install ARCAD Dashboard as a systemd service:

```
cd /etc/systemd/system
systemctl link /opt/arcad-dashboard/arcad-dashboard.service
systemctl enable arcad-dashboard
systemctl start arcad-dashboard
```

Result ARCAD Dashboard is installed and available for use.

5.2.2 Update

Follow the subsequent steps to update ARCAD Dashboard on Linux.

Step 1 Transfer the *.tar.gz* on the ARCAD Dashboard directory.

Step 2 Open a terminal session in administrator mode, and go to the ARCAD Dashboard directory.

Step 3 Stop the server using the *./stop* command.

Step 4 Execute the following command to extract the *tar.gz* archive into the current directory:

```
tar zxvf arcad-dashboard_Linux.tar.gz
```

Note

When updating ARCAD Dashboard, some personal configuration is kept during the update.

The following items are not impacted by the update:

- Users (*users.json*)
- Variables (*variable_conf.json*)
- Data connectors (*connector_conf.json* and *datawarehouse_conf.json*)

Result ARCAD Dashboard is updated and available for use.

5.2.3 Uninstall

To uninstall ARCAD Dashboard on Linux, follow the subsequent commands, in administrator mode.

Step 1 Stop the server from the ARCAD Dashboard directory:

```
./stop
```

Step 2 Remove the software:

```
rm -rf arcad-dashboard
```

Result ARCAD Dashboard is completely uninstalled.

6 Configuring MySQL Server settings

Chapter Summary

6.1 Windows.....	22
6.2 Linux.....	23

After installing the MySQL Server, you need to change the following settings to be able to run the ARCAD Dashboard solution.

6.1 Windows

Follow the subsequent steps to configure the MySQL Server settings on Windows.

Step 1 Edit MySQL Server file *my.ini*.

Note
Your profile must have administrator privileges to modify this file.

my.ini is located in this directory: `C:\ProgramData\MySQL\MySQL Server 8.0`

`C:\ProgramData` is by default a **hidden directory**. To access it, type the following path directly into your Windows Explorer address bar manager: `C:\ProgramData\MySQL\MySQL Server 8.0`, then press **Enter**.

Step 2 Search the **max_allowed_packet** variable to find the following line and replace the 4M value by 64M.

```
my.ini

# The maximum size of one packet or any generated or intermediate string,
or any parameter sent by the
# mysql_stmt_send_long_data() C API function.
max_allowed_packet=4M
```

Step 3 Then add the following line:

```
sql_mode="STRICT_TRANS_TABLES,ERROR_FOR_DIVISION_BY_ZERO,NO_ENGINE_
SUBSTITUTION"
```

in order to obtain:

```
# The maximum size of one packet or any generated or intermediate string, or any parameter
sent by the
# mysql_stmt_send_long_data() C API function.
max_allowed_packet=64M
sql_mode="STRICT_TRANS_TABLES,ERROR_FOR_DIVISION_BY_ZERO,NO_
ENGINE_SUBSTITUTION"
```

Step 4 Save changes.

Warning!

If the MySQL Server is running, restart the MySQL Server Service to apply the changes.

6.2 Linux

Follow the subsequent steps to configure the MySQL Server settings on Linux.

Step 1 Edit MySQL Server file *my.cnf*.

Note

Your profile must have administrator privileges to modify this file.

my.cnf is located by default in the */etc/mysql/* directory.

Step 2 To edit the file, enter the following command:

```
gedit my.cnf
```

Step 3 Add the following lines at the end of the file:

```
[mysqld]
max_allowed_packet=64M
sql_mode="STRICT_TRANS_TABLES,ERROR_FOR_DIVISION_BY_ZERO,NO_ENGINE_
SUBSTITUTION"
```

Step 4 Save the file.

Result The MySQL Server is correctly configured.

Tip

To verify that the MySQL Server takes these new values, enter in a command line interpreter:

```
mysql --verbose --help
```

and check the returned values.

```
max_allowed_packet=67108864 (64M in bytes)
sql_mode="STRICT_TRANS_TABLES,ERROR_FOR_DIVISION_BY_
ZERO,NO_ENGINE_SUBSTITUTION"
```



GETTING STARTED

7 Connecting to Dashboard Web Studio

Access the Dashboard Web Studio from any web browser. Click the ARCAD Dashboard shortcut to open the Dashboard Web Studio in your default web browser, or enter the following address in the web browser's address bar: `http://<systemname>:<port>`

By default, the port used to connect to ARCAD Dashboard is 5353.

ARCAD Dashboard Studio login

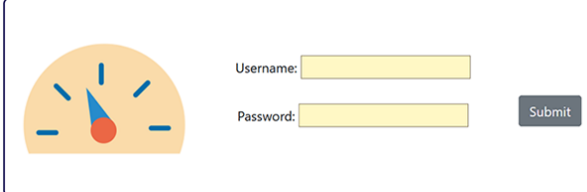


Figure 2: Connecting to Dashboard Web Studio

Enter the **Username** and **Password** to connect to the app and click **Submit**. The default username/password is: admin/quadra.

8 Overview of ARCAD Dashboard

Once the ARCAD Dashboard is installed, the Dashboard Web Studio is accessible from any web-browser.

The navigator provides access to all of the elements required to manage and generate dashboards data, as well as all the administration tools.

Click the Toggle Menu icon at the top left to open the main menu.

Click the ARCAD icon at the top right to return to the homepage.

Use the language selector to switch the language of the interface. Dashboard Studio is available in English and French.

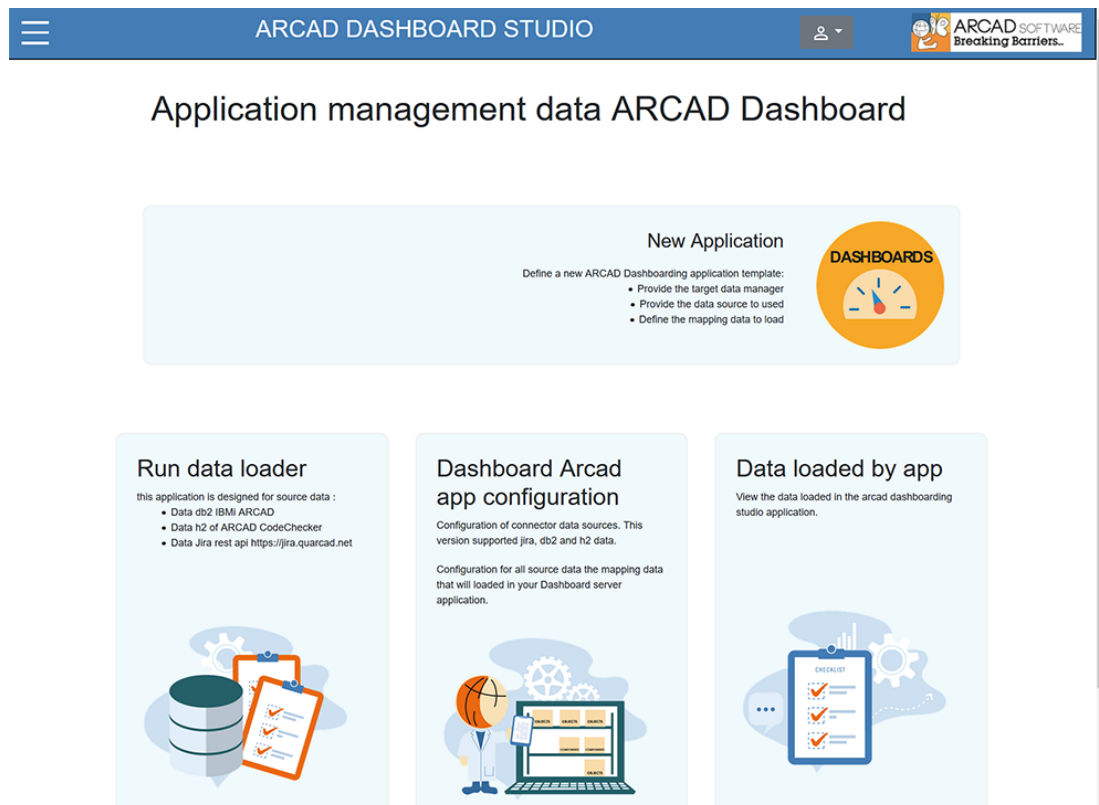


Figure 3: Dashboard Web Studio

The **homepage** contains four main accesses.

8.1 New application



Figure 4: ARCAD Dashboard - New application

An application is a set that includes both the **data model** and the **settings** that are specific to its functioning.

New application allows to:

- access the different data models prepared after the installation,
- create or modify one of these models,
- access their settings,
- automate and determine the frequency of their imports,
- access mapping definition and data launch.

8.2 Run data loader

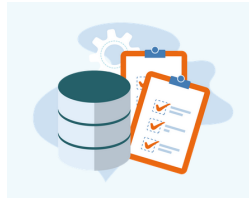


Figure 5: ARCAD Dashboard - Run data loader

Run data loader allows access to:

- the full loading of model data,
- the selection of the type of data to be loaded for a model (DB2, JIRA, REST API, etc.),
- the model loading.

8.3 Dashboard ARCAD app configuration



Figure 6: ARCAD Dashboard - App configuration

Dashboard ARCAD app configuration is a shortcut to access to:

- creation of connector data source in order to upload your data from a server,
- test connection with the server.

8.4 Data loaded by app

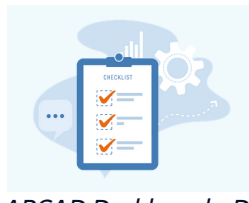


Figure 7: ARCAD Dashboard - Data loaded

Data loaded by app gives access to visualization of loaded data:

- by application (or model),
- by data source (DB2, JIRA, REST API, etc.),
- by data view (or tables).

8.5 Main menu

Figure 8: ARCAD Dashboard - Main menu

The **main menu** gives access to the same entries as the home page, and more:

- **Data warehouse connector** creation or modification, to define where data will be imported,
- **Variables**, used for the SQL Query of the table mapping configuration,
- **Users**, to configure which users can access the ARCAD Dashboard Dashboard Studio,
- **Logs server**, to display server connection messages and resolve any problems,
- **Open Kibana** and **Open Grafana**, to access directly the dashboards application.



USER ADMINISTRATION

9 Configuring users

Dashboard Studio Configuration → Users

Configure the users access to the Dashboard Studio. The initial user is **admin / quadra**.

Note

The users managed here can only be used to access the Dashboard Studio.

The Grafana and Kibana platforms have their own user management system.

The connection details to access the data sources are managed in the data source connectors view.

Users configuration

<input type="checkbox"/>	Name	E mail	login	password	
<input type="checkbox"/>	admin	quadra@arcadsoftware.com	admin	
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	ADD +

Rows per page: 10 ▾ 1-2 of 2 < >

UPDATE CONFIG

Figure 9: User management

To create a new user, enter the following details in a new line. Click the **ADD +** button and confirm.

Name

Enter a user name.

E-mail

Enter a user E-mail.

Login & Password

Enter a login and a password to connect to the Dashboard Studio.

To modify a user, enter the new values in the fields. Save the changes (click or **UPDATE CONFIG**).

To delete users, click the Delete icon.

Warning!

Deleted users cannot be accessed or recovered.



SETUP

Introduction to setting up ARCAD Dashboard

To set up the ARCAD Dashboard solution, you need to connect the different data sources to the data warehouse in order to load the data to display. The access to the data warehouse from the dashboard applications (Grafana or Kibana) must also be defined.

What to display in your dashboards is defined in ARCAD Dashboard. You create a model of data, mapping all the tables in the data source containing the data to display.

This section describes how to set up ARCAD Dashboard.

- [Data source connectors on page 33](#)
- [Dashboard application connectors on page 35](#)
- [Data warehouse connectors on page 37](#)
- [Data models on page 39](#)
- [Variables on page 42](#)

10 Data source connectors

Dashboard Studio**Configuration** → Data connector

A data source connector links your ARCAD software and references them, in order to import their data in ARCAD Dashboard. It contains all the information needed to establish the connection to a server or a database, and to provide authentication.

There are several data source connectors types:

- **ARCAD Db2 JDBC:** to connect a DB2 for i data source. That is the case for the ARCAD Repository and several ARCAD applications.
- **ARCAD Db2 SSH:** to connect a DB2 for i data source with SSH.
- **ARCAD Db2 Elias:** to connect a DB2 for i data source with an Elias Server.
- **CodeChecker REST API:** to connect to the ARCAD CodeChecker data source by means of REST APIs.
- **REST API:** to connect to any data source by means of REST APIs. That is the case for DROPS and DOT Anonymizer data sources.
- **JIRA:** to connect to a JIRA server.

To create a new data connector, enter the following details in a new line. Click the **ADD +** button and confirm.

Connector description

Enter a name to identify the connector.

Connector type

Select the type of connector that corresponds to your data source.

Protocol

[*Optional*] Select the protocol to use: HTTP or HTTPS for a secured connection.

Host

Enter the data source's host address.

Driver

[*Optional*] Enter a driver class if the data source requires one.



Port

[*Optional*] Enter a port if the connection requires one.

Login & Password

Enter the login and password to connect to the data source.

To modify a data connector, enter the new values in the fields. Save the changes (click  or **UPDATE CONFIG** .

To test the connection to the server, click the  Test connector button. A dialog displays the connection status: **Database connection is OK** or **Query failed. Please inspect server.log for details** if the connection is not correctly set up. Consult the  **Logs server** from the menu to view the details.

To delete a data connector, click the  Delete icon.

Warning!

Deleted data connectors cannot be accessed or recovered.

11 Dashboard application connectors

Dashboard Studio | **Configuration** → Grafana / Kibana connector

The dashboard application connectors are used to configure the connection to the Grafana or the Kibana dashboard applications. It contains all the information needed to establish the connection to Grafana or Kibana, and to provide authentication.

For Grafana, the necessary API key is created directly from the Dashboard Studio.

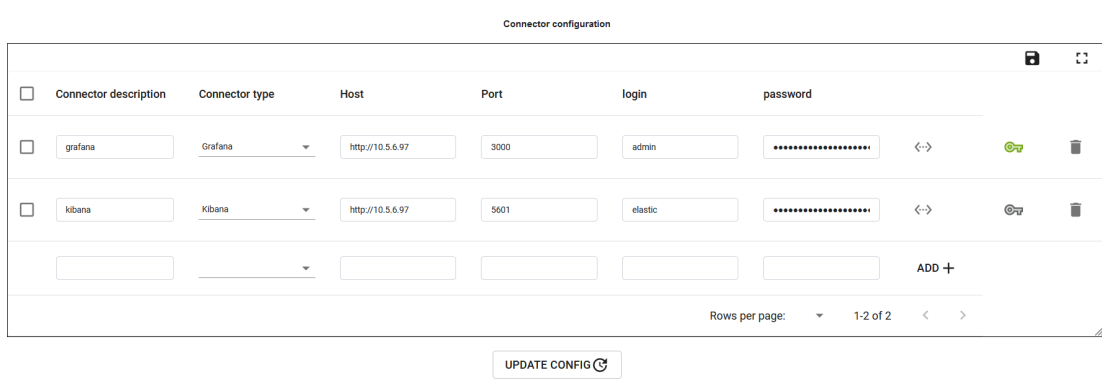


Figure 10: Dashboards connectors

To create a new dashboard application connector, enter the following details in a new line. Click the **ADD +** button and confirm.

Connector description

Enter a name to identify the connector.

Connector type

Select the type of connector that corresponds to your choice of dashboard application: Grafana or Kibana.

Host

Enter the dashboard application's host address.

Port

Enter the port if the connection requires one.

Login & Password

Enter the login and password to connect to the dashboard application.

API Key

[Only for Grafana] Click the Key icon to generate the **API key** to connect to Grafana. The key will be loaded to Grafana along with the data models. Refer to [Loading data on page 45](#).

To modify a dashboard application connector, enter the new values in the fields. Save the changes (click **UPDATE CONFIG**).

To test the connection to the dashboard application, click the **Test connector** button. A dialog displays the connection status: **Database connection is OK** or **Query failed. Please inspect server.log for details** if the connection is not correctly set up. Consult the **Logs server** from the menu to view the details.

To delete a dashboard application connector, click the **Delete** icon.

 **Warning!**

Deleted dashboard application connectors cannot be accessed or recovered.

12 Data warehouse connectors

Dashboard Studio | **Configuration** → Data warehouse connector

A data warehouse is used to store some of the functional data present in your software source. It relieves the operational databases of queries that could harm their performance.

Configure the data warehouse connectors in the Dashboard Studio. They contain the information required to connect to the databases where the data to display is stored. There are two connector types:

- **MySQL, MS SQL Server or Postgre SQL** to use **Grafana**,
- **Elasticsearch** to use **Kibana**.

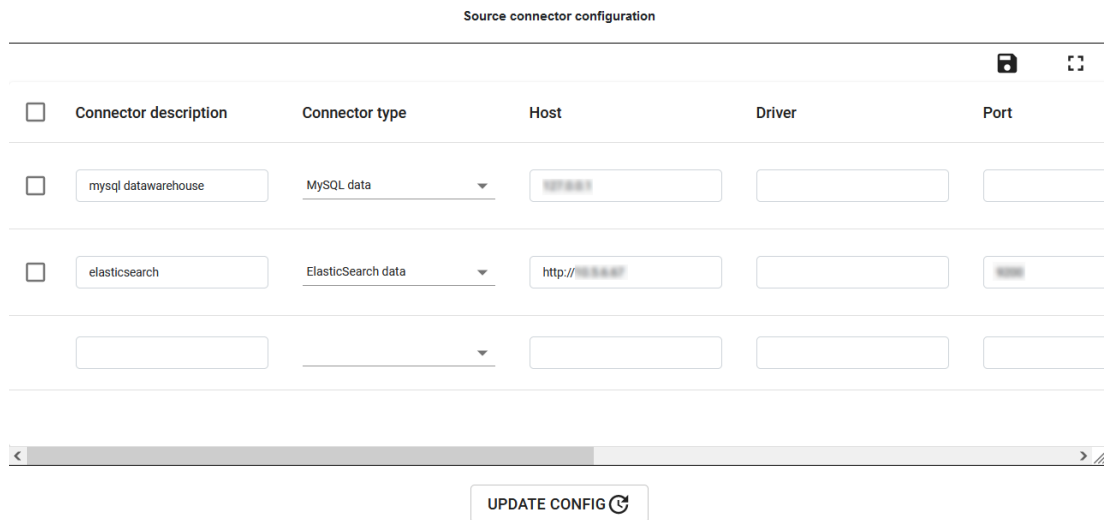


Figure 11: Data warehouse

To create a new data warehouse connector, enter the following details in a new line. Click the **ADD +** button and confirm.

Connector description

Enter a short name to identify the connector.

Connector type

Select MySQL, MS SQL Server or Postgre SQL for Grafana or Elasticsearch data for Kibana in the drop-down list.

Host

Enter the database server's address.

Driver



[Optional] Enter a driver class if your database connection requires one.



Port

[Optional] Enter a port if your database connection requires one.

Login & Password

Enter the login and password to connect to your database.

To modify a data warehouse connector, enter the new values in the fields. Save the changes (click  or **UPDATE CONFIG** .

To test the connection to the database, click the  Test connector button. A dialog displays the connection status: **Database connection is OK** or **Query failed. Please inspect server.log for details** if the connection is not correctly set up. Consult the  **Logs server** from the menu to view the details.

To delete a data warehouse connector, click the  Delete icon.

 **Warning!**

Deleted data warehouse connectors cannot be accessed or recovered.

13 Data models

Dashboard Studio**Configuration** → App identifier

Chapter Summary

13.1 About ARCAD data models	39
13.2 Creating a data model	40
13.3 Mapping source data	40
13.4 Defining models options	41

A data model is a package of data to display in a dashboard, corresponding to a set of related data you wish to monitor. ARCAD provides several data models corresponding to the business contexts targeted by the ARCAD applications.

13.1 About ARCAD data models

Healthcheck Model

The Healthcheck Model is a check-up of your ARCAD applications. It allows you to visualize different indicators concerning:

- Technical Inventory,
- Database and cross-reference checks,
- Quality of code.

It uses IBMi DB2 and CodeChecker REST API sources.

VSM model

VSM model is an overlay of Healthcheck Model. The data presented is even more detailed:

- Flow metrics are studied,
- JIRA information is also incorporated.

It uses IBMi DB2, JIRA and CodeChecker REST API sources.

Adelia Healthcheck model

The Adelia Healthcheck model is a check-up of your applications. It allows you to visualize different indicators concerning:

- Technical Inventory,
- Database and cross-reference checks,
- Quality of code.

It uses an Excel file exported from the Adelia software

DROPS model

The DROPS model is monitoring your deployment activities with DROPS. Connecting to the DROPS Server by REST API, it allows you to visualize different indicators concerning:

- imports and deployment events,
- deployed objects,
- environments,
- etc.

Anonymizer Model

The Anonymizer Model is monitoring your anonymization activities with DOT Anonymizer. Connecting to the Anonymizer Server by REST API, it allows you to visualize different indicators concerning:

- anonymization projects,
- execution performance and results,
- etc.

13.2 Creating a data model

Each model is used in its own configuration environment, called **application**. An application is a set that includes both the **data model** and the **settings** that are specific to its functioning.

To create a new data model, enter the following details in a new line. Click the **ADD +** button and confirm.

App Name

Enter a name to identify the data model.



App type

Select the data warehouse used to store the data (the warehouses configured in the Data warehouse view).

Model

[*Optional*] Apply an existing data model to the model you are creating. You can create a second version of a model, to obtain an alternative source of data for the same model in Grafana.

The data model set as **By default** is one that is pre-selected when you select the application to load in the data loading view.

To modify a data model, enter the new values in the fields. Save the changes (click  or **UPDATE CONFIG** .

To delete a data model, click the  Delete icon.

Warning!

Deleted data models and mappings cannot be accessed or recovered.

13.3 Mapping source data

To map the source data to the data model, click the  View icon. The data mapping view for the data model is displayed.


Select the form according to the data source you wish to map. Click the desired blue button under the model summary.

Note

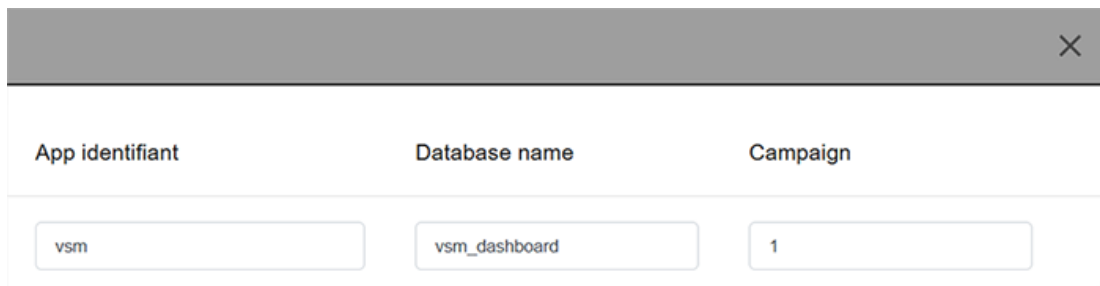
For Adelia, select XLSX File.

Depending on the type of data source, enter the details that allow to retrieve the data from the data source.

13.4 Defining models options

To edit the models options, click the  Edit icon to access the settings options. For each model, it is possible to define:

- an **App identifier**: tables prefix associated with the database,
- a **Database name**: associated with the model,
- a **Campaign**: allows to import data several times in versioning mode.



App identifiant	Database name	Campaign
vsm	vsm_dashboard	1

Figure 12: Models settings options

Enter the settings, close the window. Save the changes (click  or **UPDATE CONFIG** .

Important!

It is not recommended to change the **App identifier** because it will be necessary to redo all the tables mapping or to copy the mapping from the .json files associated which are located by default in this directory: `C:\Program Files (x86)\arcad-dashboard\server\conf`.

14 Variables

Dashboard Studio | **Configuration** → Variables

Define **Variables** that you will be able to use in the SQL Query when mapping tables. For example, libraries or schema names can be declared in a variable.

Variables configuration		
<input type="checkbox"/> Variable Name	Value	
<input type="checkbox"/> CAPP	'ARC','APR','HC','PECAM'	
<input type="checkbox"/> LIBRARY	ARCAD_AUD	
<input type="checkbox"/> REFDATEOBJ	18	
<input type="checkbox"/> LIBVSM	ARCAD_PRD	

Figure 13: Variables

To create a new variable, enter a **Variable Name** and its **Value** to a new line. Click the **ADD +** button and confirm.

To modify a variable, enter the new values in the fields. Save the changes (click or **UPDATE CONFIG**).

By default, several variables are pre-configured to execute SQL Queries on DB2 for i data source.

Warning!
It is not recommended to modify the variables or SQL Queries that are already defined by default. Create new variables or new SQL Queries if you require them.

- **CAPP:** corresponds to the application code to be analyzed. Surround the application code with quotes.

Example
CAPP values = 'ARC' corresponding to ARCAD Applications.
If several applications are required, use this syntax in the textarea:
'ARC','AP1','AP2','AP3'

- **LIBRARY:** variable used for libraries calls or SQL schema (used for Healthcheck Model).
- **REFDATEOBJ:** number of months to determine objects not used in production.
- **LIBVSM:** corresponds to library name or SQL schema (used for VSM model).

To delete variables, click the Delete icon.

Warning!
Deleted variables cannot be accessed or recovered.



LOADING DATA

Introduction to loading data

Once you have determined the data model you wish to display in your dashboard, you can start loading data. You can set ARCAD Dashboard to load data automatically and periodically with a scheduler. You can also decide to load specific data, within the data model you have defined. The data is loaded from your application's database (data source) and stored in the data warehouse from which the dashboard client (Grafana or Kibana) pulls what to display.

This section describes how to manage data with ARCAD Dashboard.

- [Loading data on page 45](#)
- [Scheduling data imports on page 48](#)
- [Campaigns on page 49](#)

15 Loading data

Chapter Summary

15.1 Loading all data for a model.....	45
15.2 Selecting data to be imported.....	46
15.3 Viewing data in Dashboard Web Studio.....	47

When the ARCAD Dashboard is configured, you can start to collect the data you wish to monitor. The data is collected from the applications and stored in the data warehouse.

You can decide to import all the data related to a type of model, or select one or more specific tables from a data source for a model. Once the data is loaded in the data warehouse, you can review the content in the Dashboard Web Studio.

Reference

For more information about data warehouse setting, refer to [Data warehouse connectors on page 37](#).

Loading data consist in collecting all the source data from the applications' data sources and create the model in the data warehouse. Then the model is loaded to the dashboard client (Grafana or Kibana).

15.1 Loading all data for a model

Dashboard Studio

Run data loading

Follow the subsequent steps to load data:

Step 1 Import the data:

- Click **LOAD ALL DATA** ► if you want to import all the source (DB2 for i, JIRA, the REST API webservices, or XSLX files) at one time,
- Click one type of source if you want import only one source.

Confirm to continue, and wait until the import is complete. The data loading results (imported tables and number of records created) are displayed in a view.

Step 2 [*Optional*] Define the start time of the data import through the scheduler, in the **Start scheduler** section.

Important!

You must have previously activated the scheduler and defined a data import frequency.

Reference

To manage the scheduler, refer to [Scheduling data imports on page 48](#).

Step 3 Load the model.

Note This action is to be performed only at the first data import, and **for each model**: it allows to generate automatically the data for its graphic display in Grafana or Kibana.

To be able to consult the data in Grafana or Kibana, you must generate the corresponding model in the application. Select the application to load in the drop-down list and click the **LOAD MODEL OF DASHBOARD** button.

Result The data are generated in the data warehouse, and can now be viewed directly in Dashboard Web Studio, Grafana or Kibana.

15.2 Selecting data to be imported

Dashboard Studio App identifier → Model →

It is also possible to load only certain tables for a define source.

Note By default, the first source set is detailed. Use the green buttons to select another source.

Step 1 Scroll down to the following mapping:

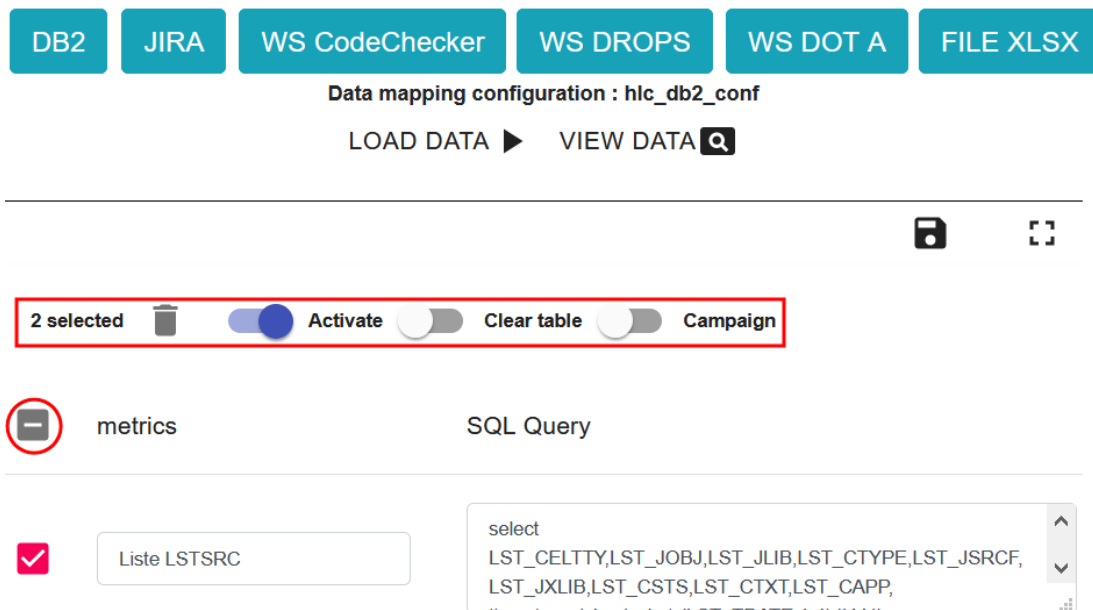


Figure 14: Model mapping

Step 2 Using green buttons to display the source mapping wanted.

Step 3 Click the checkbox to the left of the metrics heading to activate the settings options for all the tables or select table(s) to be set up.

Step 4 Choose an action to be applied and confirm.

Step 5 Click LOAD DATA ► **Example**

To import a single table from the model (to update its data):

1. Select all tables,
2. Disable "**Activate**" for all tables,
3. Select the table to be imported,
4. Enable "**Activate**",
5. Click LOAD DATA ►.

You can also decide by checking the corresponding option:

- to **Clear table**,
- to manage a **Campaign**. ARCAD Dashboard: App identifier > Option of the model

 **Warning!**

The setting is saved: remember to restore the initial setting to retrieve normal functioning.

 **Important!**

It is not recommended to modify the SQL queries: this can result in errors.

15.3 Viewing data in Dashboard Web Studio

Dashboard Studio**View data loaded**

Preview the data that has been collected from your data source directly in the Dashboard Web Studio.

To display the data, click  View data in the menu, or in the data model's view.

Step 1 Select a data model in the **Select application** drop-down list.

Step 2 Select a data source in the **Select data source** drop-down list.

Step 3 Select a table in the **Select data view** drop-down list.

Step 4 Click the ► **Data view** button.

Result All data are displayed in a table.

16 Scheduling data imports

Chapter Summary

16.1 Defining schedule parameters	48
16.2 Starting and stopping the scheduler.....	48

Use the scheduler to collect the source data periodically. The data is updated in the data warehouse with the regularity required to display your dashboard dynamically.

16.1 Defining schedule parameters

Dashboard Studio	Configuration → App identifier
-------------------------	---------------------------------------

For each data model, you can define the schedule of data imports.

To define the schedule of data imports, click the  Edit Scheduler icon to access to scheduler settings.

To be able to start the scheduled import of data, the scheduler needs to be activated. Activate or deactivate the scheduler in the dialog.

To set the import frequency, select a period in the drop-down list.

Save the changes (click  or **UPDATE CONFIG** .

16.2 Starting and stopping the scheduler

Dashboard Studio	Run data loading
-------------------------	-------------------------

To define the start time of the data import through the scheduler, go to the **Start scheduler** section, in the Run data loading page.

You must have previously activated the scheduler and defined a data import frequency.

Step 1 Select the start time of the scheduler. Click the **Select Start time** text box, then choose the day and time to start using the calendar.

Step 2 Click the **TASK SCHEDULER**  button to launch the scheduled loading of data.

Result The **TASK SCHEDULER** button is green when the scheduler is started.

To stop the scheduler, Click the **TASK SCHEDULER** button again. The **TASK SCHEDULER** button is red when the scheduler is started.

17 Campaigns

Dashboard Studio

Run Data Loading

Setting up campaigns allows you to keep different import versions for one or more tables, for comparison and refinement of your data analysis over time.

Example

For a model with three tables, it is possible to set up two tables without campaign management (**Clear table** and **Activate** options selected), and a third one with campaign option (without **Clear table**).

- Each time you load data from this model, the first two will be emptied and then reloaded.
- The third one will implement new data with a different campaign number at each loading.

Follow the subsequent steps to implement campaigns:

Step 1 Select your model in the drop-down list.

Step 2 Click the **App identifier** area at the bottom of the page to access the tables mapping view.

Step 3 To activate the campaign mode, you have two possibilities:

- **manage all the tables at once** if you want to version the whole model. Tick the checkbox on the left of metrics to display the options for all the data.

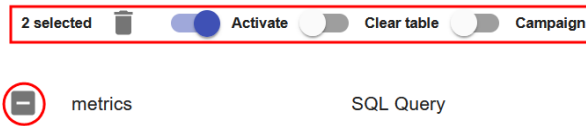


Figure 15: Campaign settings

- **set each of the tables** you want to keep in different versions. Click the  Edit table(s) parameters edition button.

Step 4 To manage a table in a campaign, enable the **Activate** and **Campaign** options, and disable **Clear table**.

Step 5 Save the changes (click  or **UPDATE CONFIG** .

Result Campaigns will be active for the next import of the model.

If necessary, you can change the campaign number manually to reload a campaign. The campaign number is set in the data model's options.



DATA VISUALIZATION

18 Dashboards with Grafana

Data models are configured from the Dashboard Studio and automatically created in Kibana when executing the loading.

This guide assumes that you are already familiar with the basics of Grafana.

To display ARCAD dashboards correctly in Grafana, you need to set up images in Grafana:

 **Important!**

Your profile must have administrator privileges.

Specific images are used to display dashboards in Grafana.

Step 1 Copy the following images located in the installation directory:

C:\Program Files (x86)\arcad-dashboard\build\img

- grafana_icon.svg
- arcad-software-logo-92.jpg
- Illustration2 inventaire technique]-01-01.png
- Illustration2 Qualité-01.png
- Illustration2 structure-01.png
- ADELIA.jpg

Step 2 Paste them in the following directory:

C:\Program Files\GrafanaLabs\grafana\public\img.

Step 3 Refresh your browser's Grafana page to display the images if necessary. Press **Ctrl + R** or click the **Refresh** button.

All dashboards use the same presentation. In order to describe how dashboards work, let's have a look at the **Healthcheck Model**.

By default, the Healthcheck Model provides a generic dashboard which summarizes all the data taken into account by the model, without any selection criteria.



Figure 16: Example of dashboard for Healthcheck Model

A **description** zone located at the bottom left gives you the first information about the model.

You can then choose to refine information displayed via the **drop-down lists** at the top of the page.

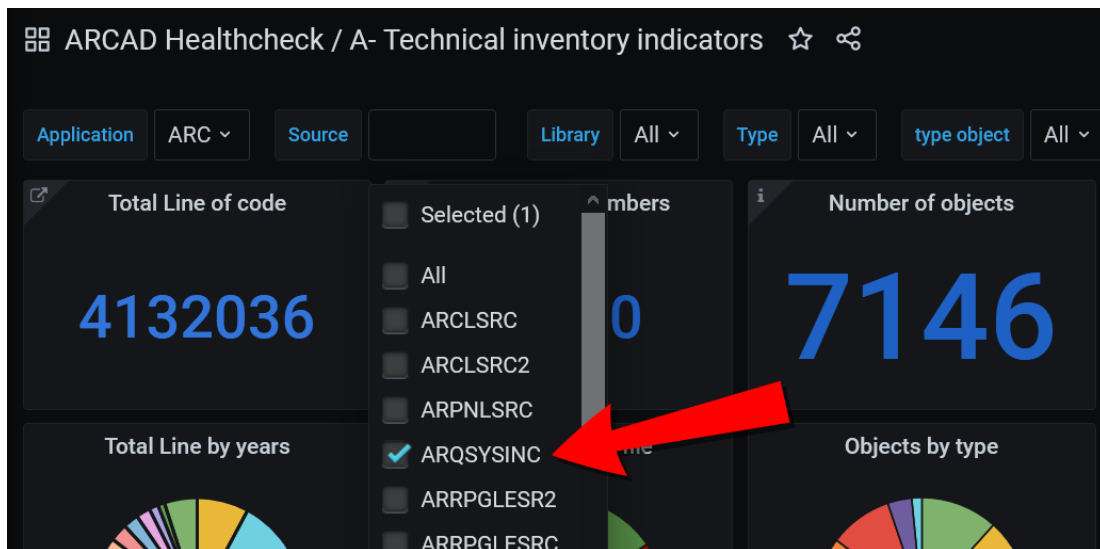


Figure 17: Choose information to be displayed

Data displayed are automatically refreshed on the selected criteria.

For each panel present on the dashboard, it is possible to display a **short description** on the nature of the information provided.



Figure 18: Tooltip describing the information displayed

You simply need to hover the mouse over the *"i"* located at the top left of each panel.

Each tool-tip includes a **Details** link that allows you to **explore further**, and redirects you to a new dashboard that will refine the information already displayed.

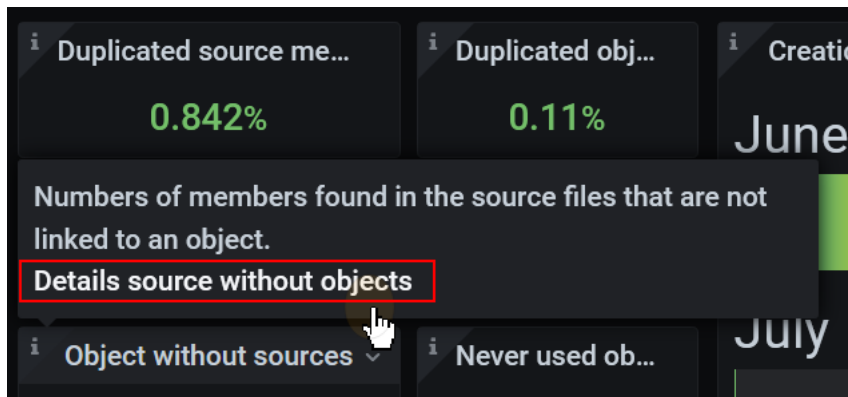


Figure 19: Link to display a more specific dashboard

To view a more detailed dashboard, click this **Details** link.

It is possible to enlarge each panel to view it in large format.

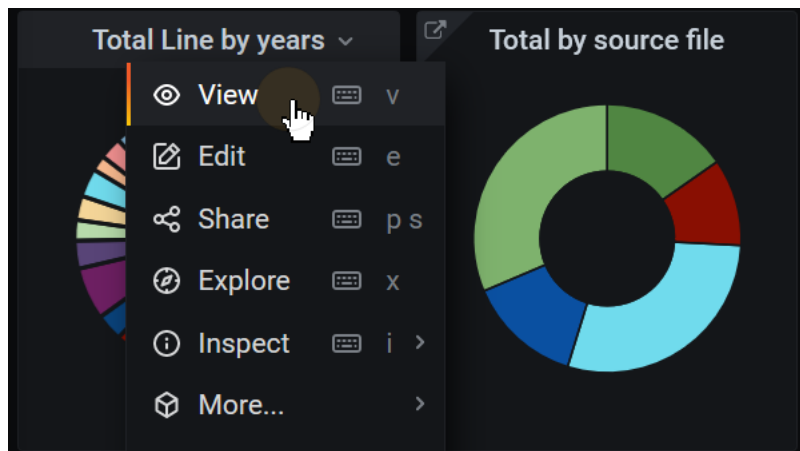


Figure 20: Viewing a panel in large format

Click the panel title to display the drop-down list, and select **View** for large display.

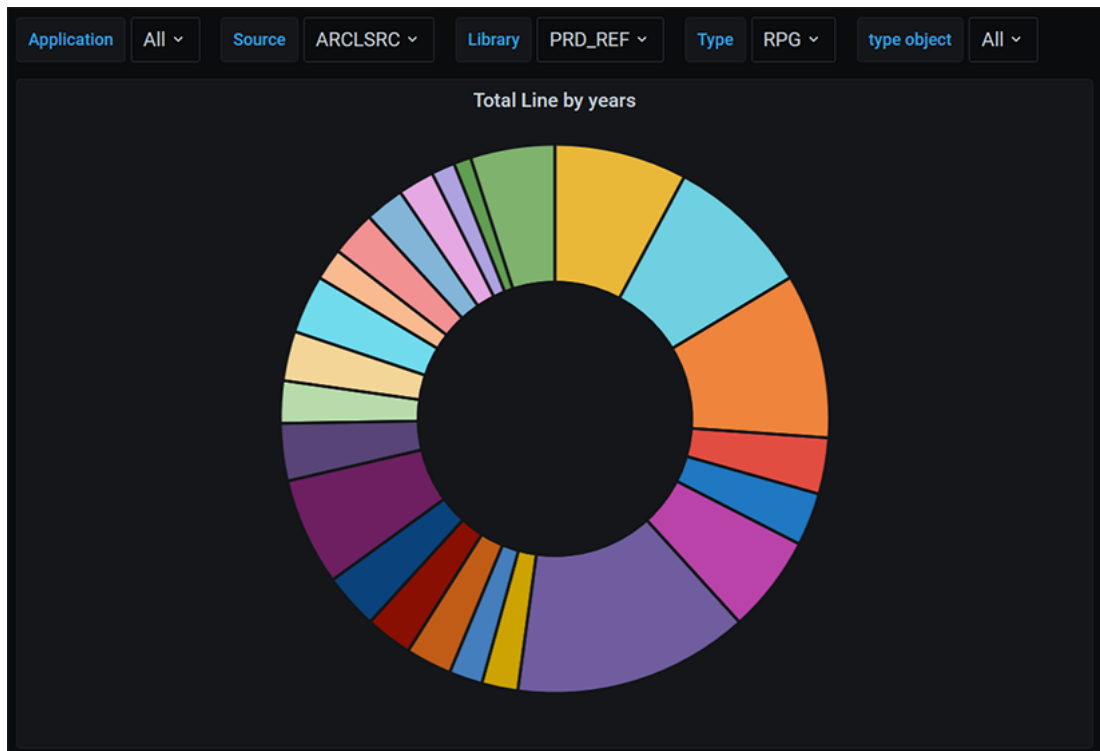


Figure 21: Panel in large format

You can then redefine new criteria using the drop-down lists above the panel.

19 Dashboards with Kibana

Data models are configured from the Dashboard Studio and automatically created in Kibana when executing the loading.

This guide assumes that you are already familiar with the basics of Elasticsearch and Kibana processes.

All dashboards use the same presentation. In order to describe how dashboards work, let's have a look at the **Healthcheck Model**.

By default, Healthcheck Model provides a generic dashboard which summarizes all the data taken into account by the model, without any selection criteria.



Figure 22: Example of dashboard for Healthcheck Model in Kibana

A **description** zone located at the bottom left gives you the first information about model.

You can view more information by clicking on the links named **Details** located above each column.

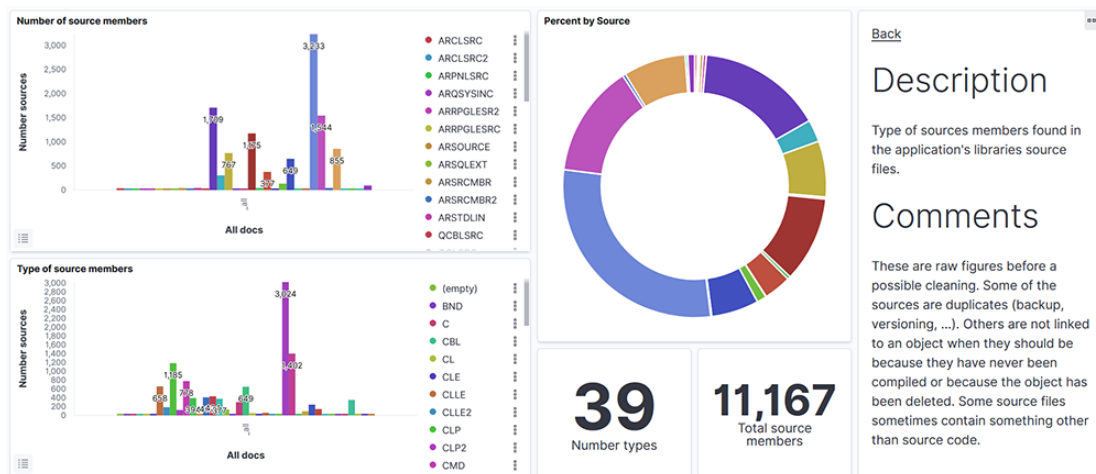


Figure 23: Choose information displayed in Kibana

A new panel is displayed with more detailed information. On the right side of the screen, a **description** and **comments** area gives you information about the data displayed.

It is possible to select a category of data to be displayed by a simple click on the graphic, which allows to refresh all the panel data on this new criteria.

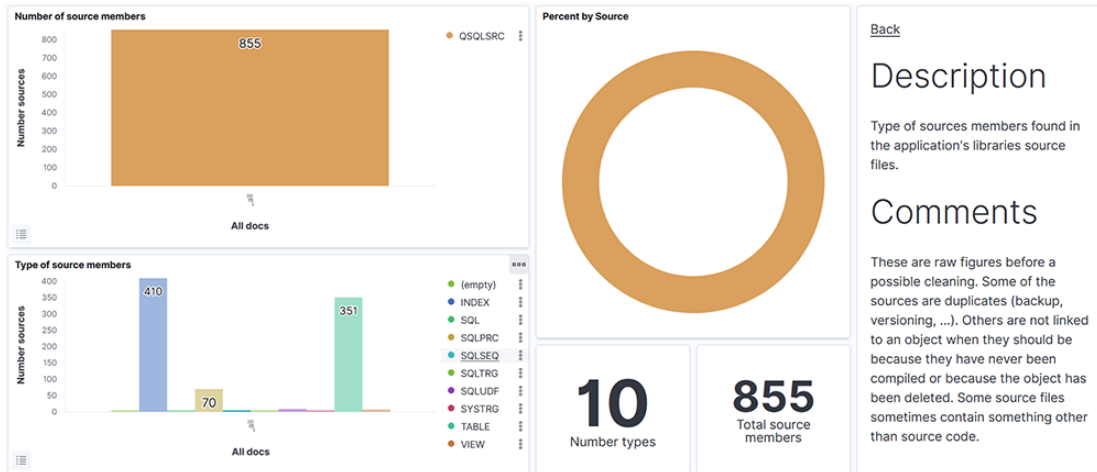


Figure 24: Results displayed on click in Kibana

You can also choose not to display certain data by clicking on the graphic legend.

Each panel is **exportable** in .csv format according to the criteria you have defined.

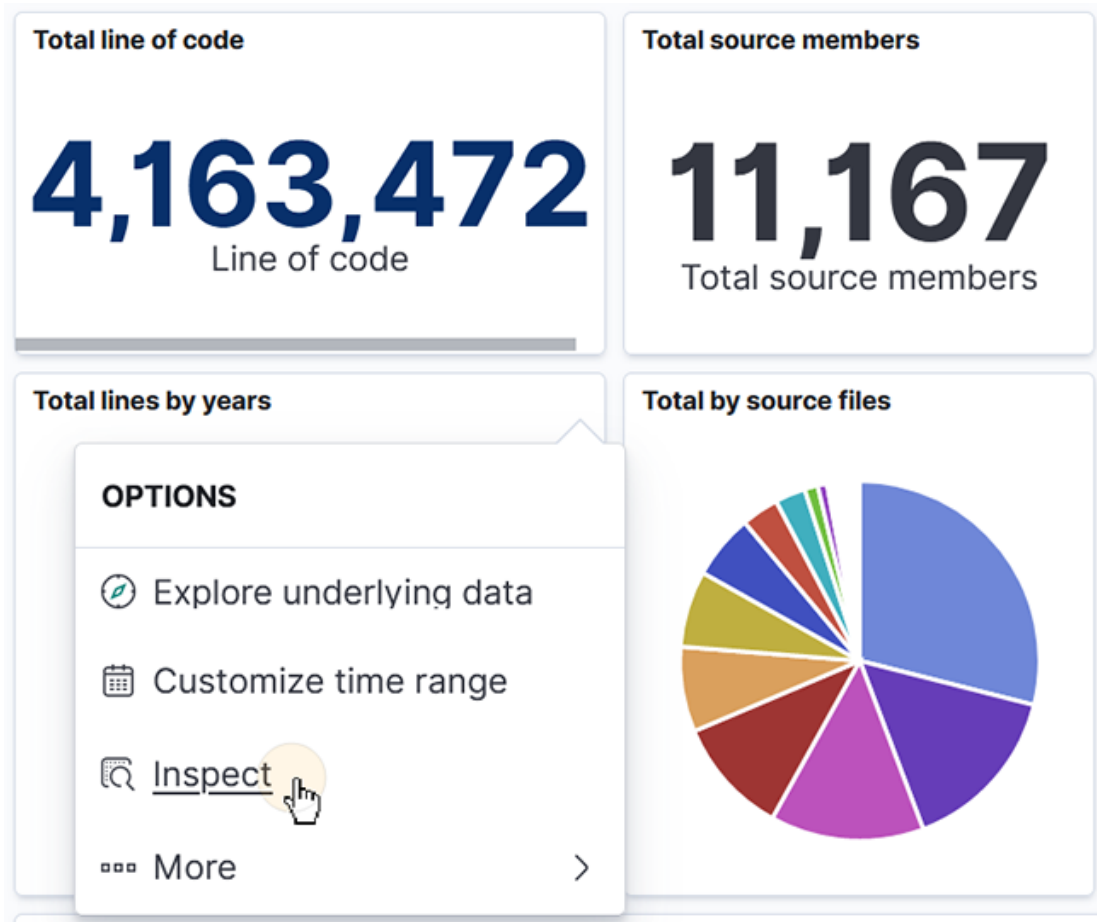


Figure 25: Exporting a graphic

From the options drop-down list, click **Inspect**.

All graphs are **customizable**. You can:

- change the colors,
- choose the data to display,
- redefine the time intervals.



APPENDICES

Glossary

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

Adelia Healthcheck model

The Adelia Healthcheck model is a check-up of your applications. It allows you to visualize different indicators concerning:

- Technical Inventory,
- Database and cross-reference checks,
- Quality of code.

It uses an Excel file exported from the Adelia software

Anonymizer Model

The Anonymizer Model is monitoring your anonymization activities with DOT Anonymizer. Connecting to the Anonymizer Server by REST API, it allows you to visualize different indicators concerning:

- anonymization projects,
- execution performance and results,
- etc.

API key

The key to pair Grafana and ARCAD Dashboard. This key is generated in the Dashboard Studio.

Application

An application is a set that includes both the data model and the settings that are specific to its functioning.

ARCAD Dashboard

A licensed software application that provides dashboards from the data source produced by the various ARCAD Dashboard analysis products of IBM i Computer Systems.

B

C

Campaign

Campaigns allow you to keep different import versions for one or more tables, for comparison and refinement of your data analysis over time.

D

Data connector

Data connectors define the connection to a data source. After a data connector is created, developers can reference the data source via the data connector. Each data connector is configured with which data source that data connector interacts, making it easy for developers to interact with technical data sources such as APIs.

Data model

Sets of data to display in a dashboard, corresponding to an ensemble of related data to monitor. There are several types of data models pre-configured in:

- Healthcheck Model and Healthcheck Model for Kibana. See [Healthcheck Model](#)
- VSM model and VSM model for Kibana. See [VSM model](#)
- Adelia Healthcheck model. See [Adelia Healthcheck model](#)
- DROPS model. See [DROPS model](#)
- DOT Anonymizer. See [Anonymizer Model](#)

Data source

A data source is the location where data to display in a dashboard originates from.

Data warehouse

Data warehouse is a storage location into which will be imported and centralized some of the functional data present in your ARCAD solutions. Its purpose is to provide a set of data used for decision-making through statistics and reports produced via reporting tools. From a technical point of view, it is mainly used to 'relieve' operational databases of queries that could harm their performance.

DROPS model

The DROPS model is monitoring your deployment activities with DROPS. Connecting to the DROPS Server by REST API, it allows you to visualize different indicators concerning:

- imports and deployment events,
- deployed objects,
- environments,
- etc.

E

Elasticsearch

Elasticsearch is a software package using Lucene for indexing and searching data. It provides a distributed and multi-entity search engine through a REST interface. Indexing and searching of data is done through a REST API. The data exchanged is in JSON format.

EMEA

A region. "Europe, Middle East & Africa".

F

G

Grafana

Grafana is an open source data visualization software. It provides visualization capabilities on indexed content in an SQL database (MySQL or Postgre SQL).

H

Healthcheck Model

The Healthcheck Model is a check-up of your ARCAD applications. It allows you to visualize different indicators concerning:

- Technical Inventory,
- Database and cross-reference checks,
- Quality of code.

It uses IBMi DB2 and CodeChecker REST API sources.

I

IBM i

IBM i is an operating system that runs on IBM Power Systems and on IBM PureSystems. This integrated operating environment brings together robust architecture, high security and business resilience.

J

K

Kibana

Kibana is a data visualization plug-in for Elasticsearch. It provides visualization capabilities on indexed content in an Elasticsearch cluster.

L

M

Model

See data models.

MySQL Server

MySQL is an open source, multi-threaded, multi-user SQL relational database server. MySQL Server can be used as a data warehouse for Grafana.

N

Node.js

Node.js is an open-source JavaScript platform for network applications. Node.js is a low-level environment for executing server-side JavaScript. To use ARCAD Dashboard, Node.js is required.

O

P

Q

R

S

T

U

V

VSM model

VSM model is an overlay of Healthcheck Model. The data presented is even more detailed:

- Flow metrics are studied,
- JIRA information is also incorporated.

It uses IBMi DB2, JIRA and CodeChecker REST API sources.

W

X

Y

Z
