Phase 2

User documentation for AGATA Array Database dashboard tool

Metabase dashboard tool

24/11/2021

The AGATA Array Database Team

Version / Date	Comments	ATRIUM Link
1 – 24/11/2021	First version	https://atrium.in2p3.fr/163af31f-07e5-4d52-b4a2-3636d6190263

Introduction: why a dashboard tool

The AGATA Array DataBase (AADB) is managed by the tool BigBrowser: you can insert, update, visualize data with BigBrowser, and it remains the reference tool to act on the AADB.
But this tool has to be installed on your laptop, and you don't have at one glance the status of the AADB. We found a dashboard tool called Metabase, which is a web application accessible from your browser (so you have nothing to install).

Here is a general dashboard for AADB via Metabase:

Figure 1: AADB general dashboard

Ps: Metabase is used to visualize data only, you can't update things in the AADB with this tool.

General overview of the dashboard tool

Metabase is a Java application and is Open source: it's free if we host the server ourselves. The CCIN2P3 (Computing Center of IN2P3) has accepted to host our instance of Metabase.

The application is divided in different parts (figure 2):
- The Metabase server itself which is on the cluster Kubernetes of the CCIN2P3 (the name of their cluster is WoK for Work on Kubernetes)
- Metabase works with an internal database (for metadata): the CCIN2P3 has accepted to host it on its Postgresql cluster
- Metabase retrieves data from different external databases, in our case AADB is hosted on the oracle cluster of CCIN2P3
- On the user side, you visualize in your browser the dashboards that have been created in the application; the application is responsive, that is to say you can display dashboards from your computer, your tablet or you smartphone in the same way
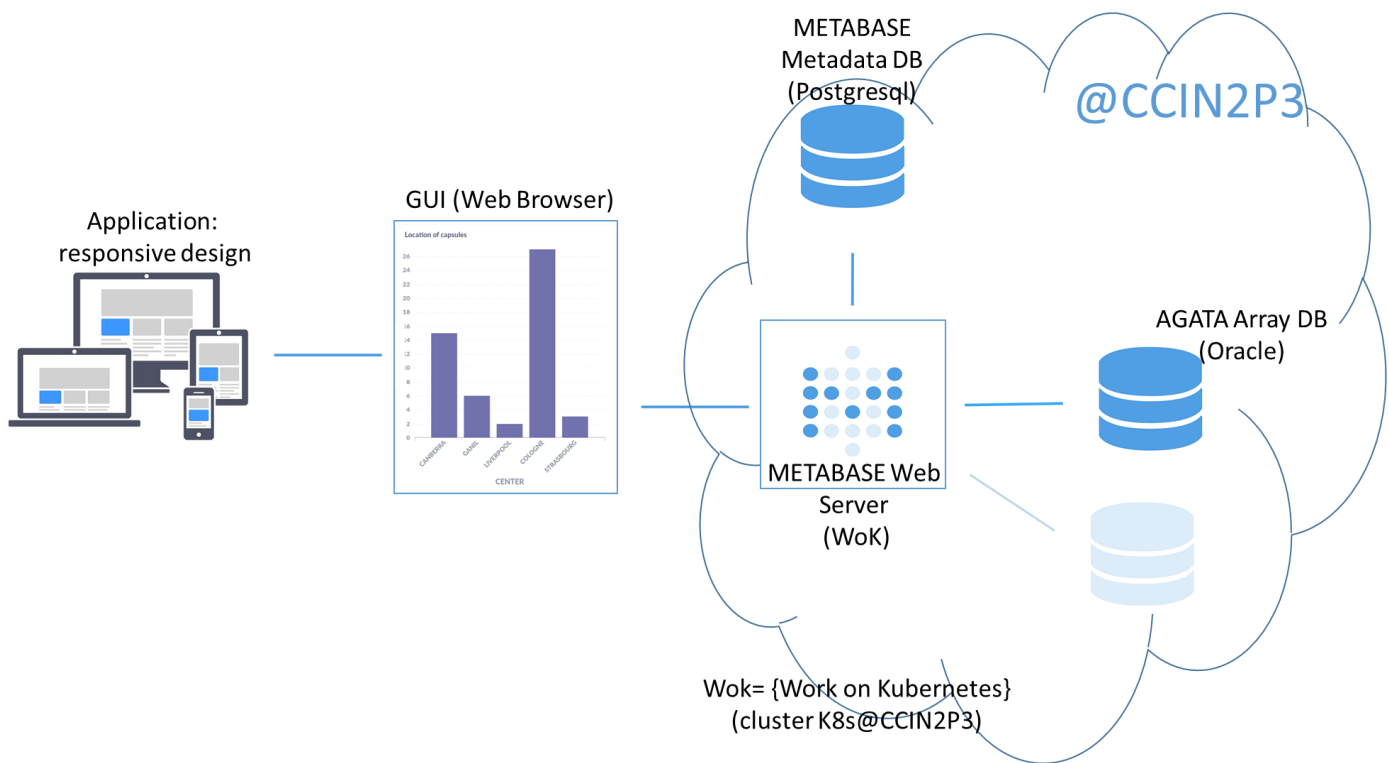

Figure 2: general overview of AADB dashboard tool

Who is in charge of what

It was the first time that the CCIN2P3 opened their cluster for a project outside the CCIN2P3 (but it was for a collaboration where IN2P3 is involved).
It was a real opportunity for us:
- Kubernetes is an open-source container orchestration platform, it facilitates the installation, configuration and maintenance of our application

- All parts are hosted at the CCIN2P3: latency time is also reduced, the Kubernetes infrastructure was ready, and the WoK team helped us to set up the application on this big infrastructure; the maintenance/backup of the different databases is made by the CCIN2P3, the administration of the cluster WoK is also made by the CCIN2P3

The IP2I AADB team is responsible for the installation, configuration, maintenance of the application itself on Wok. For example an update of the version of Metabase is made by the team. The administration of the tool itself is made by the team too.

Reminder: IP2I AADB team can be contacted via agatadb_AT_ip2i.in2p3.fr

Metabase Principle

Metabase dashboards is composed of questions. Each question is based on an SQL request. Depending on the returned values, the tool proposes different vizualisations (Figure 3).
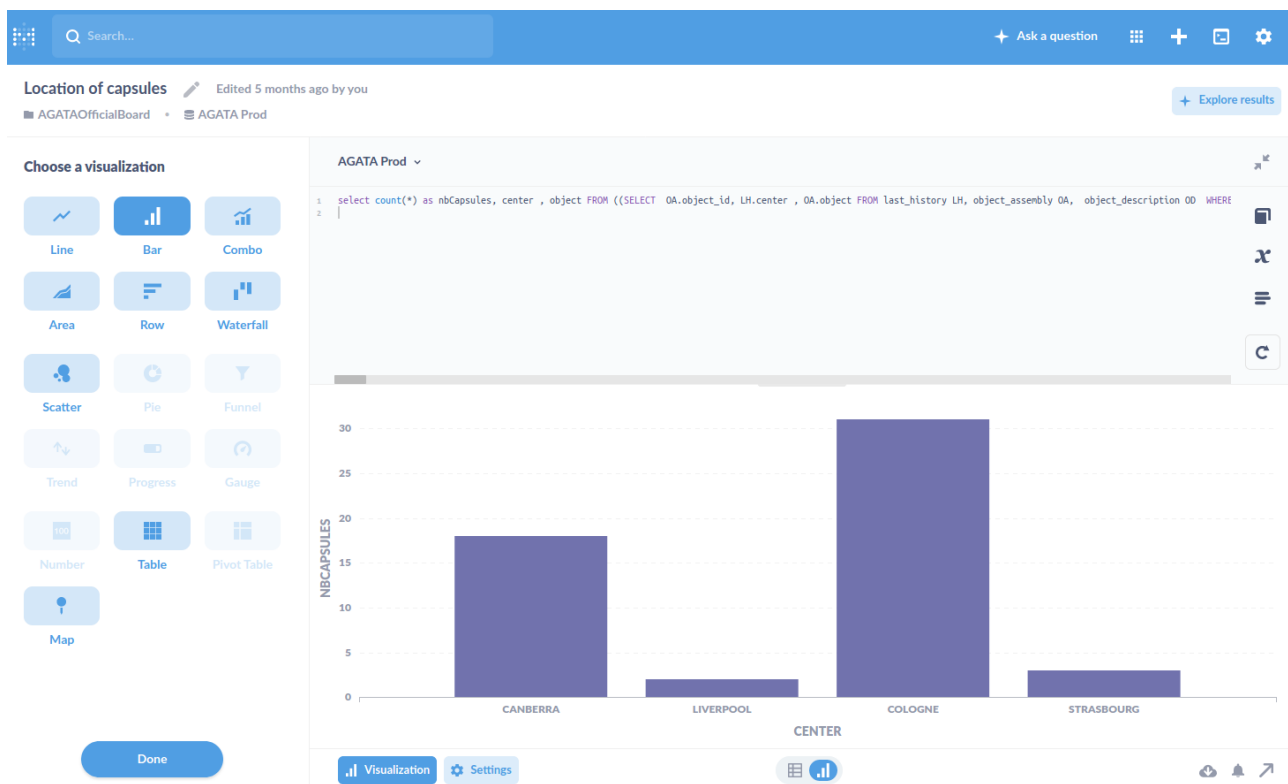

Figure 3: A question in Metabase

You build your dashboard with those questions.
The questions and dashboards are stored in collections (a collection is a kind of repertory).
Each collection can have sub-collections, you can then construct a tree structure.

Users and groups can be created in Metabase: a user belongs to one or several groups, and you can define different permissions for those groups:
- Data permissions: it manages the access for a group to the data of the external databases themselves and the possibility for the group to create raw queries (=SQL queries) in Metabase on these databases

- Collection permission: it manages the access to the collections/sub-collections and their contents

That means that the tool gives possibilities to define different dashboards with different permissions: a global one as above, more specific one's (one by laboratory or by AGATA group for instance), some mixed dashboards (ex: AGATA+NEDA), some personal dashboard and so on…

There are also possibilities to send alerts or to create dashboard subscriptions, which can send periodically by email some reports to chosen people.

AADB Metabase organization

The server web of the Metabase instance at the CCIN2P3 is https://metabase.ip2i.in2p3.fr

The application can be used for several projects. We have a collection specific for AGATA called AGATA. In this collection, we have defined some sub-collections:
- AGATAOfficialBoard that contains AGATA official public dashboards
- AGATAUnofficialBoard that contains more specific dashboards for AGATA

In each of those collections, we can create sub-collections which are dedicated to AGATA groups for instance (DAQ, Detector…) or others depending on user needs.

Different groups are created for AGATA:

- agatareader: you'll have readonly access to the collection AGATAOfficialBoard. With this permission, you'll be able to see the list of public dashboards in this collection and retrieve their https address. You'll also be able to define dashboard subscriptions, that is to say configure the sending of periodic reports on those dashboard to chosen people. You'll be able to duplicate those dashboards in your personal collection and do modifications on it (modify the layout for instance). But you won't have the permissions to access the data of AADB and you won't be able to create questions on AADB, only use existing ones' defined in AGATAOfficialBoard if you want to create your own dashboards in your personal collection.
- agataexpert: you'll have readonly access to the collection AGATAOfficialBoard (as the group agatareader) AND write access to the collection AGATAUnofficialBoard. You'll be able to create and modify specific dashboards for AGATA in the latest collection. You'll have also the permissions to access the data of AADB (always in readonly mode in Metabase). In particular you'll be able to visualize the content of the tables of AADB and to create your own questions (including raw queries=SQL queries/native queries) in the collection AGATAUnofficialBoard and by that way configure dashboards in that collection according to your needs.

In the same way as for collections, other groups can be created depending on user needs.

How to have an account to AADB Metabase

If you're interested to have an account to AADB Metabase, please send an email to agatadb_AT_ip2i.in2p3.fr and specify your needs.

We'll create for you an account and assign this account to the groups corresponding to your needs (an account can belong to one or several groups)

Once the account is created, you'll receive an email with the subject: "You're invited to join IP2I's Metabase". Please click on the "Join" link in this mail, and configure your password. You'll then be able to connect to the Metabase instance at https://metabase.ip2i.in2p3.fr with your email and password.

According to your permissions, you'll be able to do different things on Metabase.

Here is the complete user guide of Metabase for more details:
https://www.metabase.com/docs/latest/users-guide/start.html