MAX IV

Webjive

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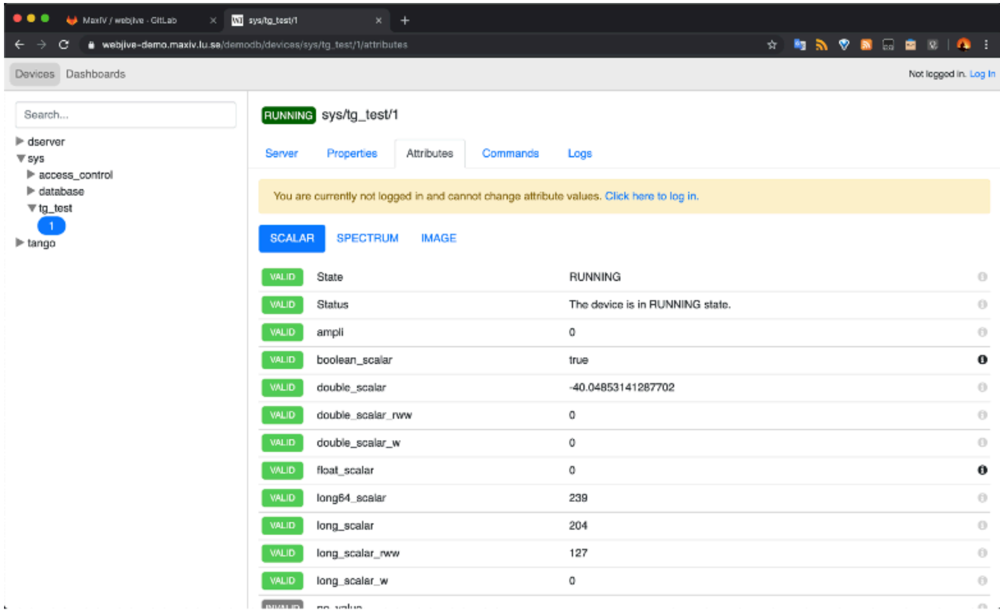
On behalf of the KITS group

WebJive is not Jive

WebJive is a Device explorer built on TangoGQL

With WebJive you can:

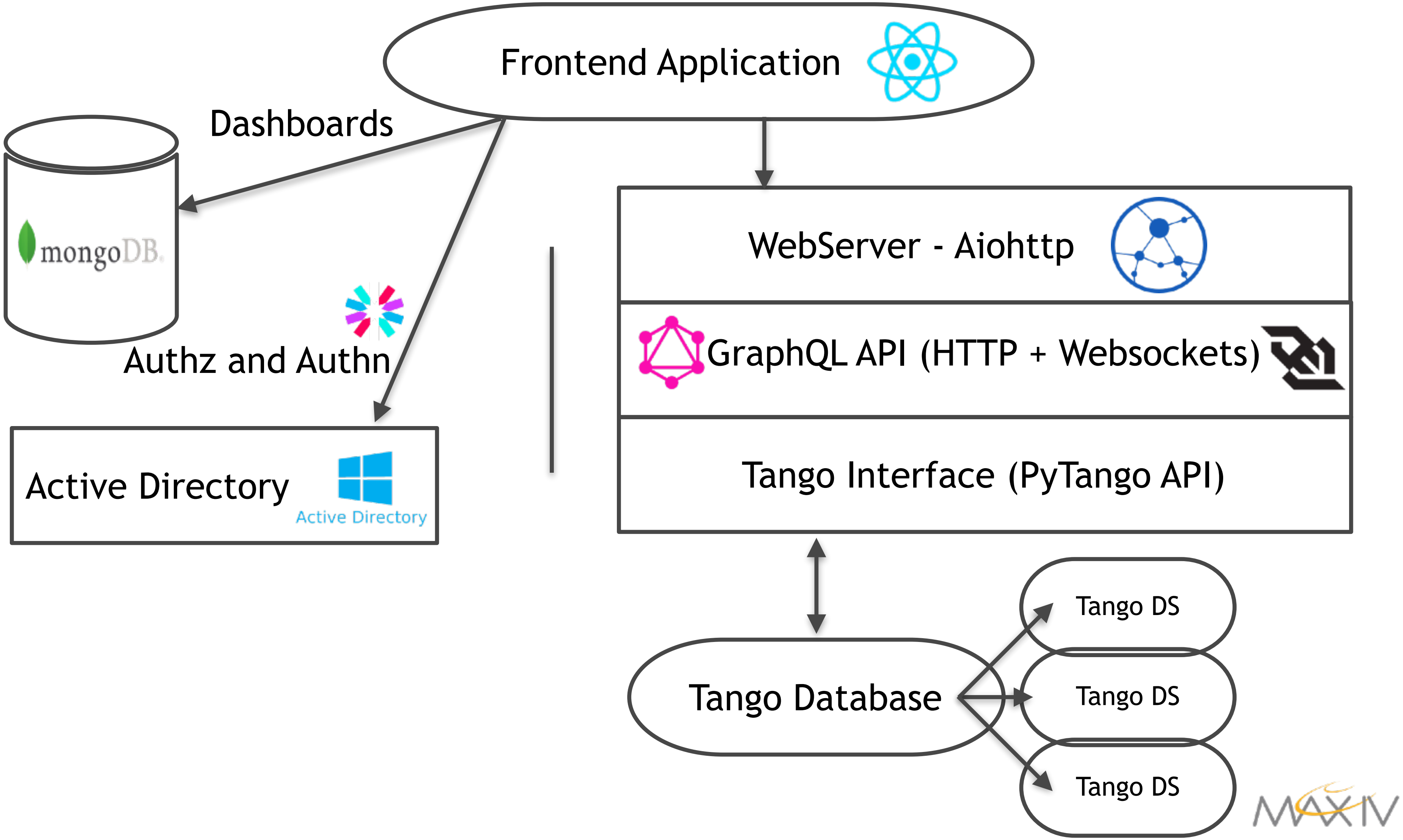
- View a list of all Tango devices
- View and modify device properties
- View and modify device attributes
- View and execute device commands
- Create web interfaces for interacting with Tango devices (on /<tangoDB>/dashboard)



You are currently not logged in and cannot change attribute values. Click here to log in.

VALID	State	RUNNING
VALID	Status	The device is in RUNNING state.
VALID	ampli	0
VALID	boolean_scalar	true
VALID	double_scalar	-40.04853141287702
VALID	double_scalar_rww	0
VALID	double_scalar_w	0
VALID	float_scalar	0
VALID	long64_scalar	239
VALID	long_scalar	204
VALID	long_scalar_rww	127
VALID	long_scalar_w	0
INVALID	no_value	

Architecture

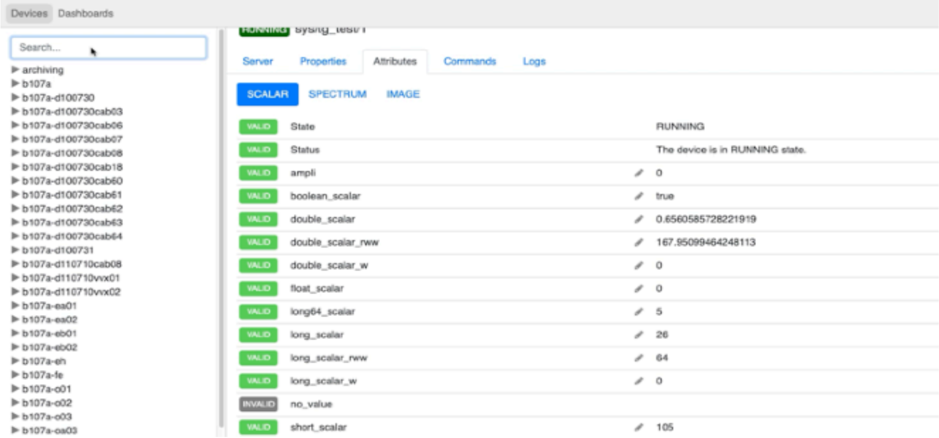


Frontend

- Built using React, Redux, Typescript.
- Bunch of utility libraries for API calls, plotting etc.
- Follows most-recent development techniques and guidelines in React world.
- Updates and maintenance are expected to be quick and pain-free.
- Tango attribute subscriptions, event-based, auto-updates using websockets.
- Two root level-views; Devices and Dashboards.

The Devices View

- Control of all the devices in the control system in treelike hierarchy.
- All attributes, commands and properties.
- Automatic detection for inputs.
- Search bar for devices.
- Generic implementation for all the devices.

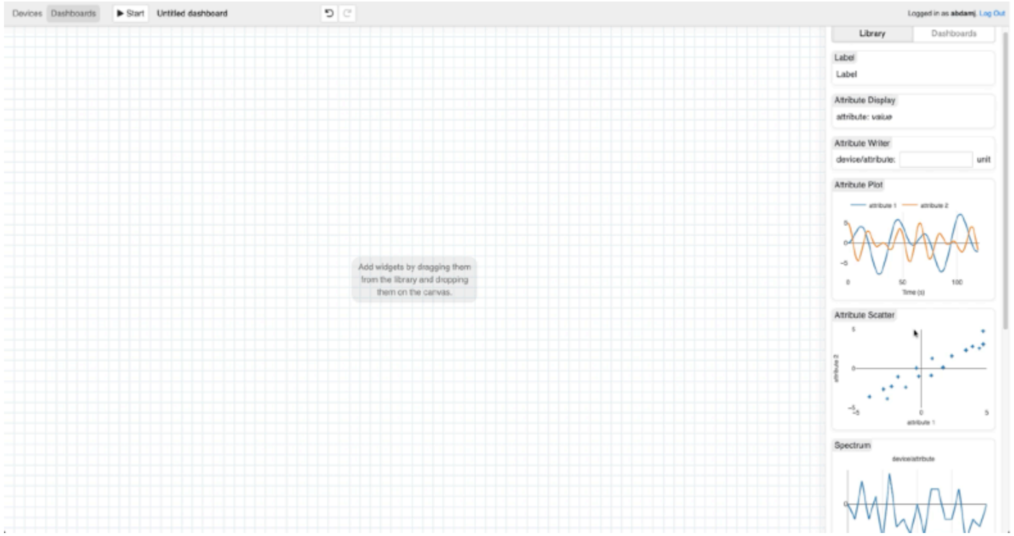


▶ archiving
▶ b107a
▶ b107a-d100730
▶ b107a-d100730cab03
▶ b107a-d100730cab06
▶ b107a-d100730cab07
▶ b107a-d100730cab08
▶ b107a-d100730cab18
▶ b107a-d100730cab60
▶ b107a-d100730cab61
▶ b107a-d100730cab62
▶ b107a-d100730cab63
▶ b107a-d100730cab64
▶ b107a-d100731
▶ b107a-d110710cab08
▶ b107a-d110710vvx01
▶ b107a-d110710vvx02
▶ b107a-ea01
▶ b107a-ea02
▶ b107a-eb01
▶ b107a-eb02
▶ b107a-eh
▶ b107a-fe
▶ b107a-o01
▶ b107a-o02
▶ b107a-o03
▶ b107a-oa03

VALID	State		RUNNING
VALID	Status		The device is in RUNNING state.
VALID	ampli	✎	0
VALID	boolean_scalar	✎	true
VALID	double_scalar	✎	0.6560585728221919
VALID	double_scalar_rww	✎	167.95099464248113
VALID	double_scalar_w	✎	0
VALID	float_scalar	✎	0
VALID	long64_scalar	✎	5
VALID	long_scalar	✎	26
VALID	long_scalar_rww	✎	64
VALID	long_scalar_w	✎	0
INVALID	no_value		
VALID	short_scalar	✎	105

Dashboards

- Customizable, intuitive and shareable views.
- Drag-and-drop from default widgets and connect them to devices and/or attributes.
- Edit mode and run mode.



Add widgets by dragging them from the library and dropping them on the canvas.

Installation

Clone the repository from https://gitlab.com/MaxIV/webjive.

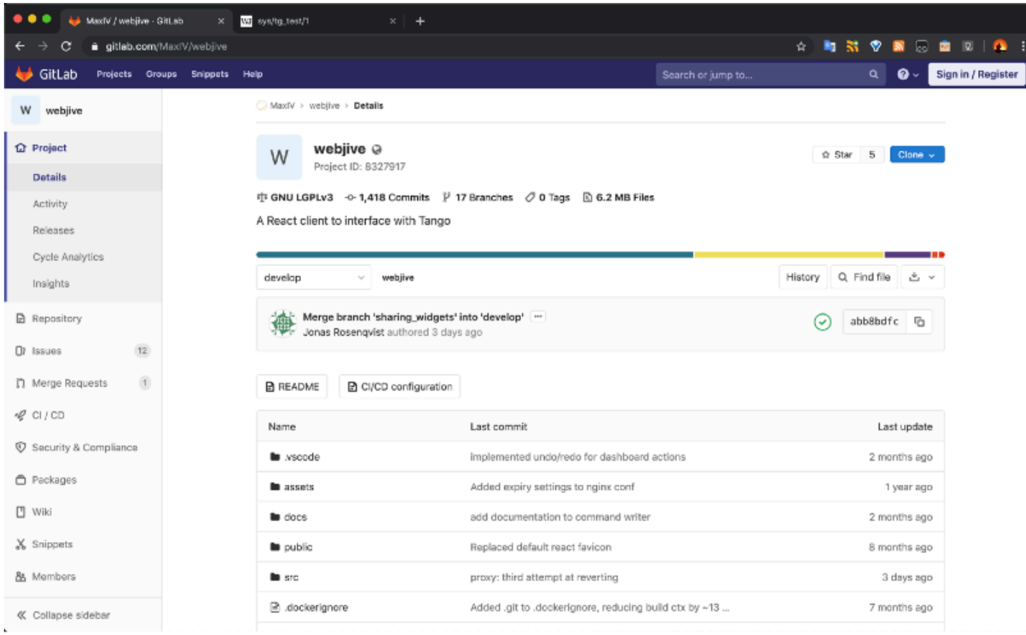
```
$ npm install
```

```
$ npm start
```

(Point to correct endpoints in webjive/src/setupProxy.js)

Minimum node version: 7.6 (introduced async/await)

Verified working node version: 9.11.2 (currently used by the Dockerfile)



webjive

Project ID: 8327917

GNU LGPLv3 · 1,418 Commits · 17 Branches · 0 Tags · 6.2 MB Files

A React client to interface with Tango

Merge branch 'sharing_widgets' into 'develop'
Jonas Rosenqvist authored 3 days ago · abb8bdfc

Name	Last commit	Last update
.vscode	implemented undo/redo for dashboard actions	2 months ago
assets	Added expiry settings to nginx conf	1 year ago
docs	add documentation to command writer	2 months ago
public	Replaced default react favicon	8 months ago
src	proxy: third attempt at reverting	3 days ago
.dockerignore	Added .git to .dockerignore, reducing build ctx by ~13 ...	7 months ago

Backend

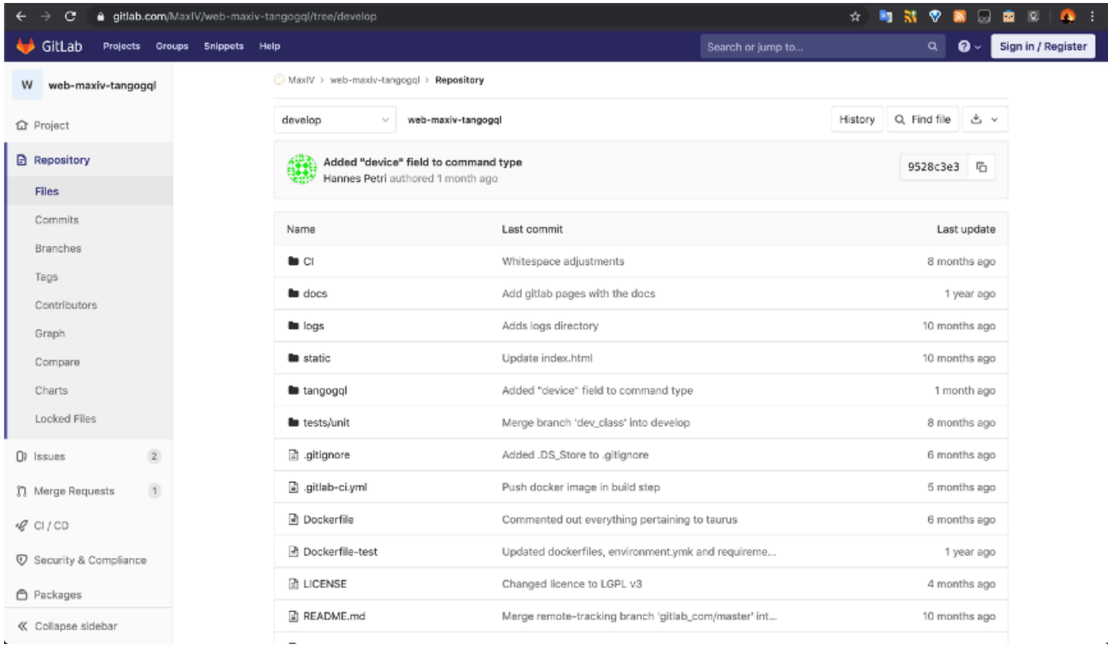
- Aiohttp server with GraphQL API.
- Graphene, python library for GraphQL implementation.
- Client asks explicitly what he needs reducing number of calls.
- One call for nested data instead of multiple calls on multiple end-points (next slide).
- Query: fetch data via resolvers.
- Mutation: ~~create~~, update and ~~delete~~.
- Subscription: real-time connection with the server, events from tango through websockets.

But it needs TangoGQL

WebJive is unable to speak with Tango

WebJive speaks only GraphQL

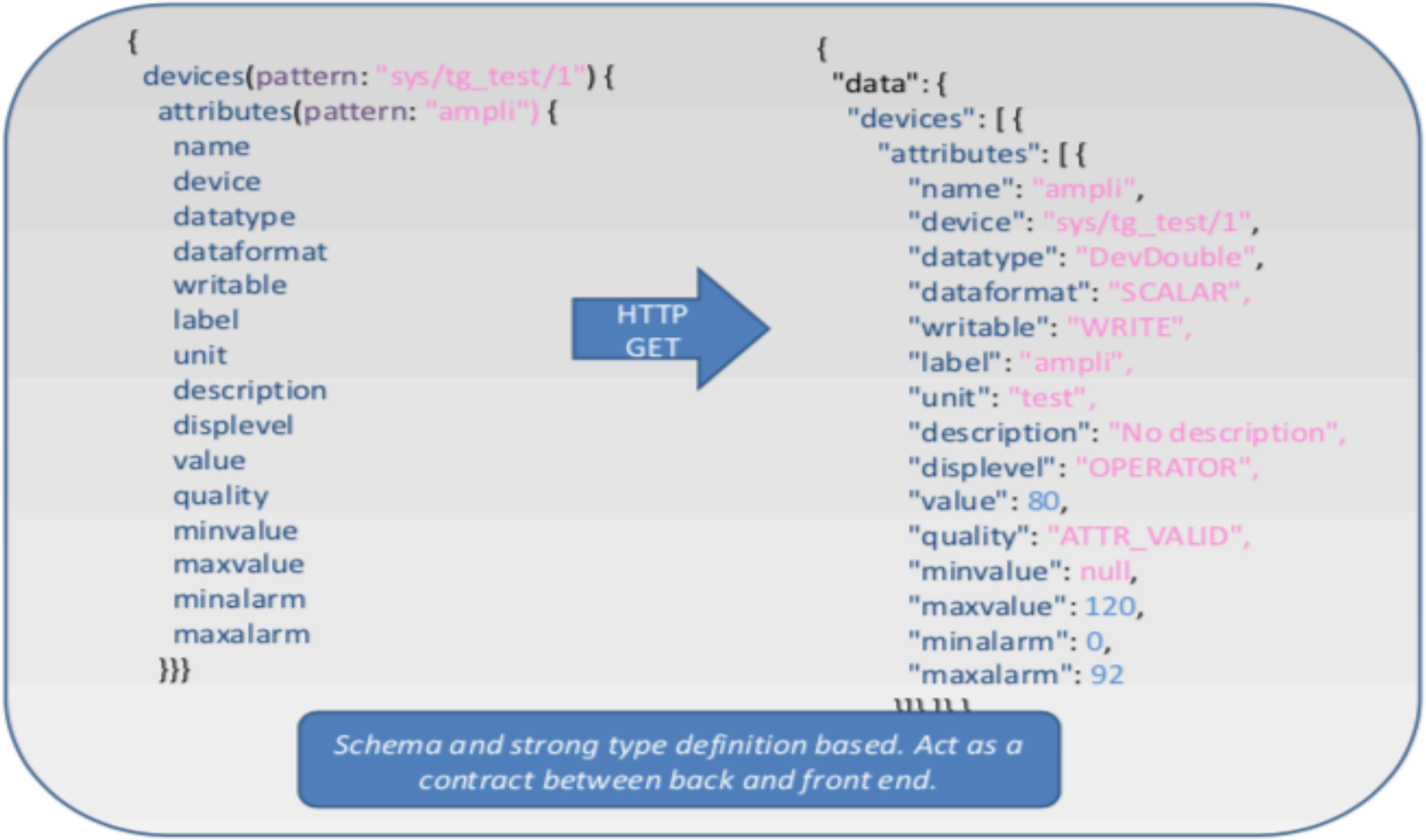
And TangoGQL translate Tango to GraphQL…



Added "device" field to command type
Hannes Petri authored 1 month ago
9528c3e3

Name	Last commit	Last update
CI	Whitespace adjustments	8 months ago
docs	Add gitlab pages with the docs	1 year ago
logs	Adds logs directory	10 months ago
static	Update index.html	10 months ago
tangogql	Added "device" field to command type	1 month ago
tests/unit	Merge branch 'dev_class' into develop	8 months ago
.gitignore	Added .DS_Store to .gitignore	6 months ago
.gitlab-ci.yml	Push docker image in build step	5 months ago
Dockerfile	Commented out everything pertaining to taurus	6 months ago
Dockerfile-test	Updated dockerfiles, environment.ymk and requireme…	1 year ago
LICENSE	Changed licence to LGPL v3	4 months ago
README.md	Merge remote-tracking branch 'gitlab_com/master' int…	10 months ago

GraphQL API call example



```
{
 devices(pattern: "sys/tg_test/1") {
  attributes(pattern: "ampli") {
   name
   device
   datatype
   dataformat
   writable
   label
   unit
   description
   displevel
   value
   quality
   minvalue
   maxvalue
   minalarm
   maxalarm
  }}}
```

```
{
 "data": {
  "devices": [ {
   "attributes": [ {
     "name": "ampli",
     "device": "sys/tg_test/1",
     "datatype": "DevDouble",
     "dataformat": "SCALAR",
     "writable": "WRITE",
     "label": "ampli",
     "unit": "test",
     "description": "No description",
     "displevel": "OPERATOR",
     "value": 80,
     "quality": "ATTR_VALID",
     "minvalue": null,
     "maxvalue": 120,
     "minalarm": 0,
     "maxalarm": 92
   }]}]}}
```

Schema and strong type definition based. Act as a contract between back and front end.

Installation

Clone the repository from https://gitlab.com/MaxIV/web-maxiv-tangogql.

```
$ pip install -r requirements.txt
```

```
$ python -m tangogql
```

(The $TANGO_HOST env variable should point to the Tango DB.)

Conda environment can be created using the environment.yml.

Dockerfile is provided and can be used to run the server.

Webjive Suite - Easy with Docker

- Clone from https://gitlab.com/MaxIV/webjive-develop.

- Make run

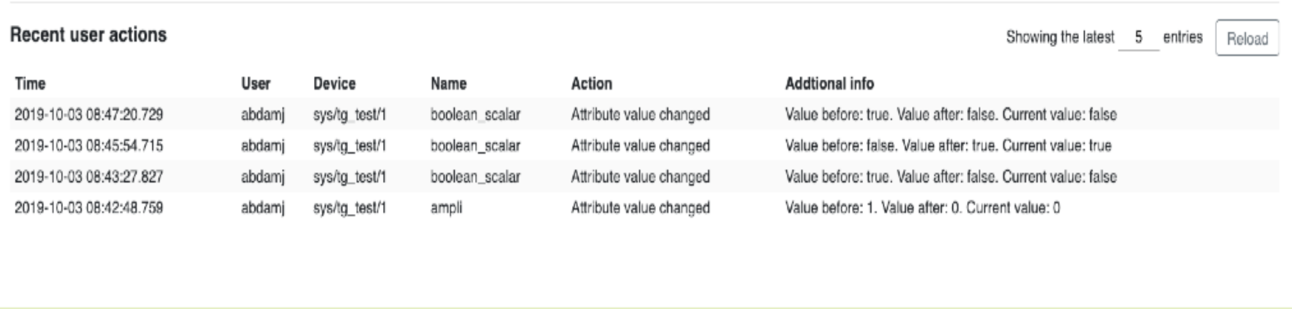
OR

- docker-compose build

- docker-compose run

Authentication and persistence

- Authentication and authorization through JSON web tokens (JWT) with AD as source of information.
- Persistence: saving of dashboards in Mongo DB.
- Logging for all the mutations in the Tango DB.



Recent user actions

Showing the latest 5 entries Reload

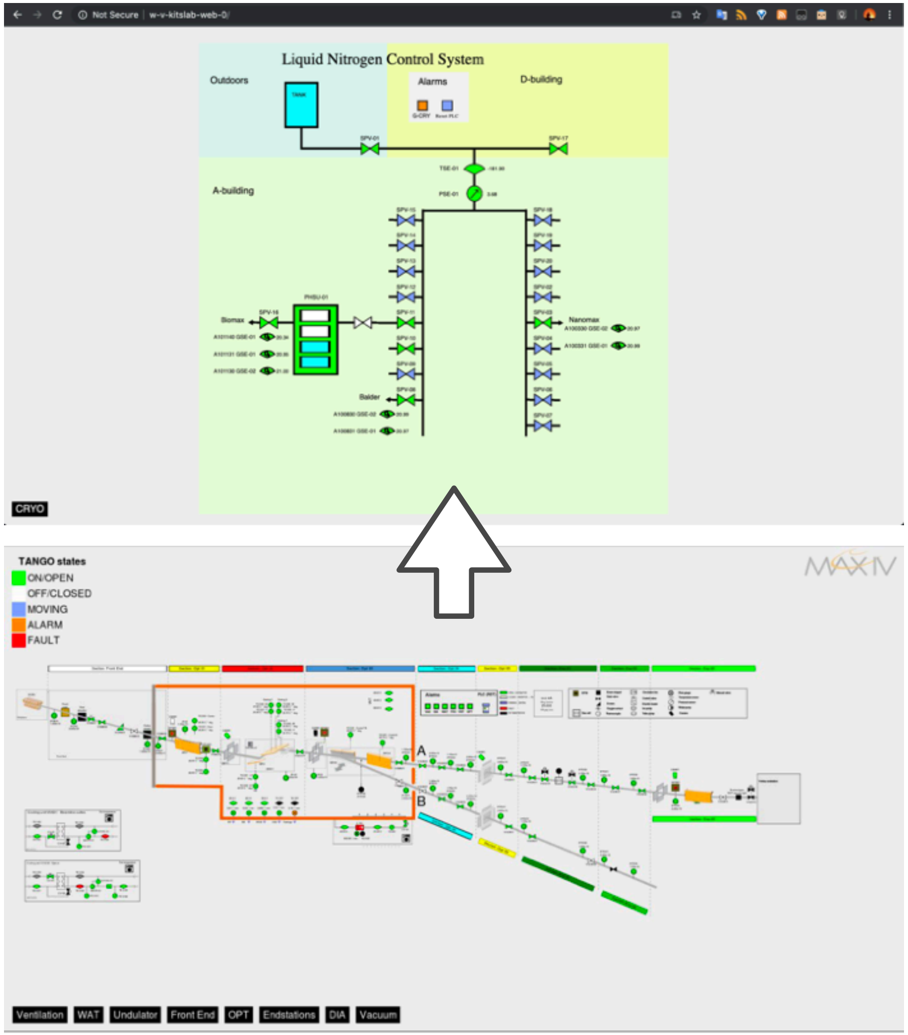
Time	User	Device	Name	Action	Addtional info
2019-10-03 08:47:20.729	abdamj	sys/tg_test/1	boolean_scalar	Attribute value changed	Value before: true. Value after: false. Current value: false
2019-10-03 08:45:54.715	abdamj	sys/tg_test/1	boolean_scalar	Attribute value changed	Value before: false. Value after: true. Current value: true
2019-10-03 08:43:27.827	abdamj	sys/tg_test/1	boolean_scalar	Attribute value changed	Value before: true. Value after: false. Current value: false
2019-10-03 08:42:48.759	abdamj	sys/tg_test/1	ampli	Attribute value changed	Value before: 1. Value after: 0. Current value: 0

Deployment

- All services within package are containerized.
  - Authentication, Mongo DB, Frontend, Backend
- CI/CD through Ansible.
- Traefik: reverse-proxy between frontend and backends for Tango Databases.
  - Accessible on webjive.maxiv.lu.se (internally)

Current Developments and Future

- Improving event-subscriptions.
- Extending widget library.
  - Especially for Image Attributes.
- Synoptic View.
- Central logging for user actions in Elasticsearch.
- Group-editable dashboards.
- Performance testing.



Conclusion

WebJive is a device tree.

WebJive is a collection of dashboards.

WebJive will be a synoptic.

WebJive is not only an application,

WebJive is an architecture for intuitively interacting with Tango.

Demo

Acknowledgements

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