Weather Report

Links:

https://github.com/Ordner123/CLC6WeatherReport

https://hub.docker.com/u/dortner

Run in minikube

Prepeare Environment in windows:

```
docker context use default
minikube start
kubectl config set-context --current --namespace=weather-report
```
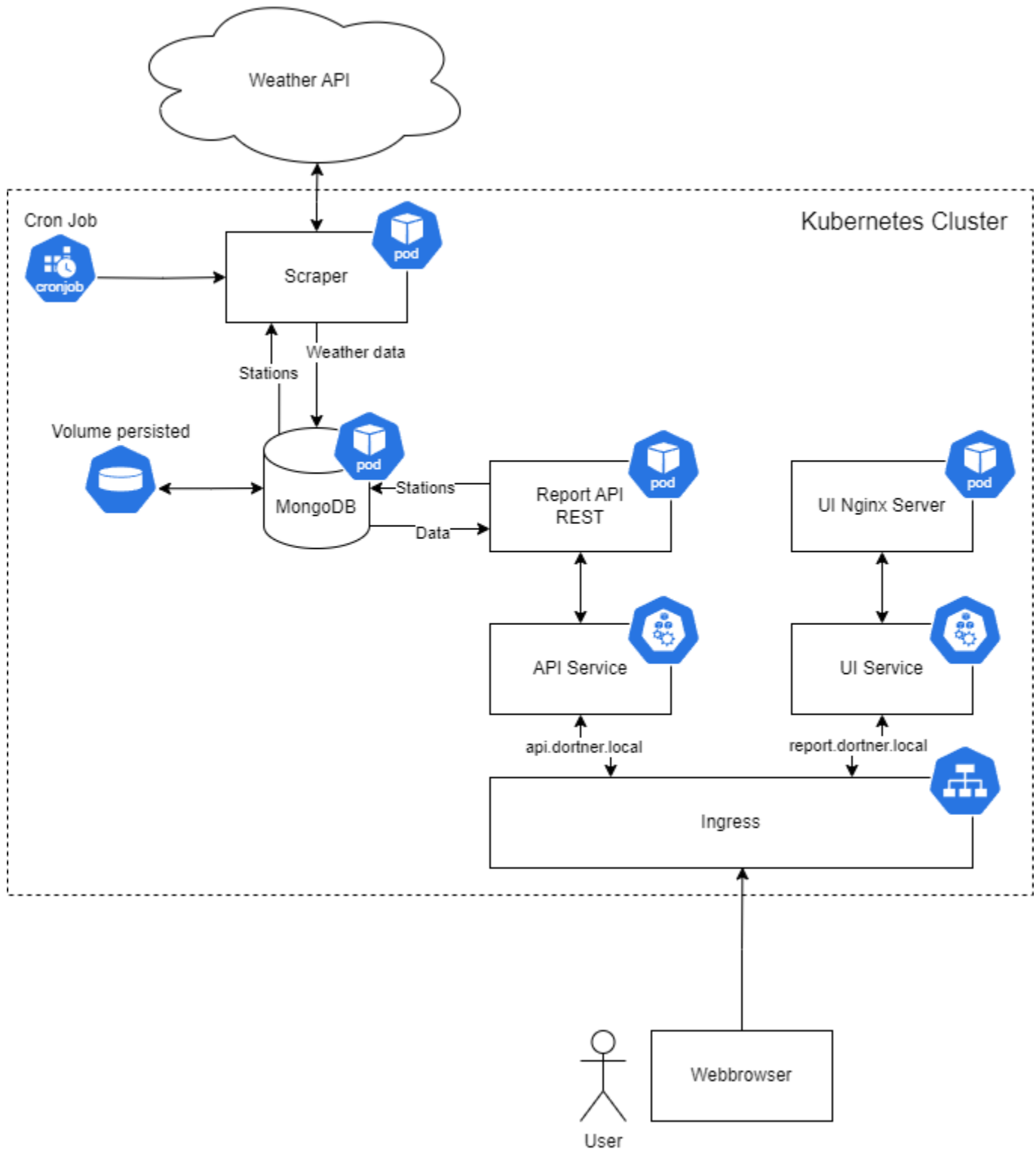
Apply all files from `./kubernetes`

Add the following entries to your hosts file (`C:\Windows\System32\drivers\etc\hosts` or `/etc/hosts`):

```
127.0.0.1 report.dortner.local
127.0.0.1 api.dortner.local
```

UI is available at `http://report.dortner.local`

Architecture

Python is used in all backend code as it is quite easy to use. Furthermore, a Metar and TAF library is available.

Kubernetes is used as I never really worked with it and I wanted to test it.

Scraper

Fetches the stations from the database and requests the Metar and TAF data from the Weather API. The responses are parsed using the `metar-taf-parser-mivek` Python library. Once the raw Metar and TAF string is parsed, an easier to access data structure is created. This structure is then saved to the database.

MongoDB

Stores three collections:

- `station`: All stations which are supported. Consists of a code and a more readable name
- `metar_conditions`: Parsed metar conditions with station code and issue time as unique value pair.
- `taf_conditions`: Parsed taf conditions with trends. Code and issue time is a unique value pair.

MongoDB was used as it is easily integrated with Python and not all objects have to look the same. Especially the TAF data not always contains the same data, therefore a equal relational database would contain many null values.

Report API

Pyhton FastAPI webserver which provides a REST API. It is used to access and modify the stations. Also the parsed Metar and TAF data is further refined into a readable sentence before it gets returned.

UI

The UI is a simple nginx server with a HTML, CSS and JavaScrip combo. It accesses the Report API and provides a more or less user friendly interface.

Building

Execute the build powershell scripts in the src folder to build and push the containers.

The following images are to be built:

- `dortner/clc6-weather-report-ui`: Ngnix webserver used to serve the UI
- `dortner/clc6-weather-report-scraper`: Python with scraper code
- `dortner/clc6-weather-report-api`: Python with REST API code

Legacy

Start API: `minikube service weather-api-service -n weather-report` Open UI: `minikube service weather-report-service -n weather-report`
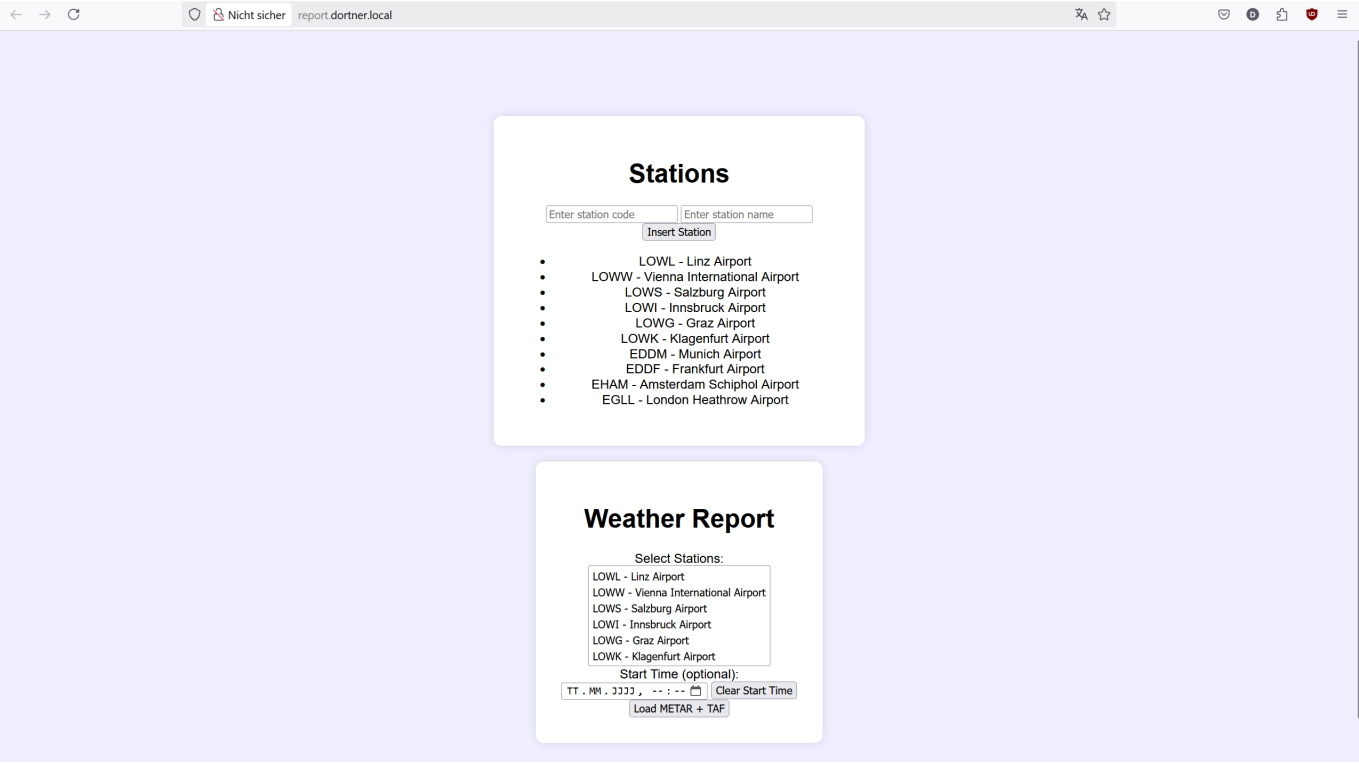
Fehler

Image not found when starting deployment

- In the deployment `imagePullPolicy: IfNotPresent` or `Always`
- Building the docker image in the minikube `& minikube -p minikube docker-env --shell powershell | Invoke-Expression`
- Last resort: `minikube image load weather-report-ui:latest`
- Last last resort: Use Dockerhub

Ingress not working

- Run `minikube tunnel` to make the ingress available to localhost
- Ensure the `hosts` file contains the domains pointing to `127.0.0.1`

Screenshots

Initial homepage:

Rename of `LOWL` to `Linz Flughafen`

Stations

| LOWL | Linz Flughafen |

Insert Station

- LOWL - Linz Airport
- LOWW - Vienna International Airport
- LOWS - Salzburg Airport
- LOWI - Innsbruck Airport
- LOWG - Graz Airport
- LOWK - Klagenfurt Airport
- EDDM - Munich Airport
- EDDF - Frankfurt Airport
- EHAM - Amsterdam Schiphol Airport
- EGLL - London Heathrow Airport

Stations

| Enter station code | Enter station name |

Insert Station

- LOWL - Linz Flughafen
- LOWW - Vienna International Airport
- LOWS - Salzburg Airport
- LOWI - Innsbruck Airport
- LOWG - Graz Airport
- LOWK - Klagenfurt Airport

- EDDM - Munich Airport
- EDDF - Frankfurt Airport
- EHAM - Amsterdam Schiphol Airport
- EGLL - London Heathrow Airport

Weather Report

Select Stations:

LOWL - Linz Flughafen
LOWW - Vienna International Airport
LOWS - Salzburg Airport
LOWI - Innsbruck Airport
LOWG - Graz Airport
LOWK - Klagenfurt Airport

Start Time (optional):

TT.MM.JJJJ, --:-- 📅 | Clear Start Time

Load METAR + TAF

New station `EDLW - Dortmund Airport`:

Stations

EDLW | Dortmund Airport

Insert Station

- LOWL - Linz Flughafen
- LOWW - Vienna International Airport
- LOWS - Salzburg Airport

- LOWS - Salzburg Airport
- LOWI - Innsbruck Airport
- LOWG - Graz Airport
- LOWK - Klagenfurt Airport
- EDDM - Munich Airport
- EDDF - Frankfurt Airport
- EHAM - Amsterdam Schiphol Airport
- EGLL - London Heathrow Airport

Weather Report

Select Stations:

LOWG - Graz Airport
LOWK - Klagenfurt Airport
EDDM - Munich Airport
EDDF - Frankfurt Airport
EHAM - Amsterdam Schiphol Airport
EGLL - London Heathrow Airport

Start Time (optional):

TT . MM . JJJJ , -- : -- 📅   Clear Start Time

Load METAR + TAF

Stations

Enter station code   Enter station name

Insert Station

- LOWL - Linz Flughafen
- LOWW - Vienna International Airport
- LOWS - Salzburg Airport
- LOWI - Innsbruck Airport
- LOWG - Graz Airport
- LOWK - Klagenfurt Airport
- EDDM - Munich Airport
- EDDF - Frankfurt Airport
- EHAM - Amsterdam Schiphol Airport
- EGLL - London Heathrow Airport
- EDLW - Dortmund Airport

Weather Report

Select Stations:

LOWK - Klagenfurt Airport
EDDM - Munich Airport
EDDF - Frankfurt Airport
EHAM - Amsterdam Schiphol Airport
EGLL - London Heathrow Airport
EDLW - Dortmund Airport

Start Time (optional):

TT . MM . JJJJ , -- : --   Clear Start Time

Load METAR + TAF

Get single latest report:

Weather Report

Select Stations:

- LOWL - Linz Flughafen
- LOWW - Vienna International Airport
- LOWS - Salzburg Airport
- LOWI - Innsbruck Airport
- LOWG - Graz Airport
- LOWK - Klagenfurt Airport

Start Time (optional):

`TT.MM.JJJJ, --:-- 📅`   Clear Start Time

Load METAR + TAF

Current conditions

At station LOWL on 2025-06-13 at 07:50 UTC the wind is blowing from E at 9 knots with visibility of > 10km and a temperature of 19°C with a dew point of 10°C.

Forecasts

The TAF report for station LOWL was issued at 2025-06-13 05:15 UTC. General forecast indicates wind from E at 4 knots with visibility around > 10km maximum temperature of 26°C and a minimum of 13°C

From 2025-06-13 07:00 utc to 2025-06-13 09:00 utc, expect wind from e at 10 knots

From 2025-06-13 18:00 utc to 2025-06-13 20:00 utc, expect wind from e at 4 knots

Get single since yesterday:

Weather Report

Select Stations:

```
LOWL - Linz Flughafen
LOWW - Vienna International Airport
LOWS - Salzburg Airport
LOWI - Innsbruck Airport
LOWG - Graz Airport
LOWK - Klagenfurt Airport
```

Start Time (optional):

`12 . 06 . 2025 , 17 : 00 📅`   `Clear Start Time`

`Load METAR + TAF`

Current conditions

At station LOWL on 2025-06-13 at 07:50 UTC the wind is blowing from E at 9 knots with visibility of > 10km and a temperature of 19°C with a dew point of 10°C.

At station LOWL on 2025-06-13 at 07:20 UTC the wind is blowing from E at 9 knots with visibility of > 10km and a temperature of 19°C with a dew point of 10°C.

At station LOWL on 2025-06-13 at 06:50 UTC the wind is blowing from E at 6 knots with visibility of > 10km and a temperature of 18°C with a dew point of 10°C.

At station LOWL on 2025-06-13 at 06:20 UTC the wind is blowing from E at 5 knots with visibility of > 10km and a temperature of 17°C with a dew point of 9°C.

At station LOWL on 2025-06-13 at 05:50 UTC the wind is blowing from E at 6 knots with visibility of > 10km and a temperature of 16°C with a dew point of 9°C.

At station LOWL on 2025-06-12 at 20:20 UTC the wind is blowing from E at 5 knots with visibility of > 10km and a temperature of 19°C with a dew point of 9°C.

At station LOWL on 2025-06-12 at 19:50 UTC the wind

is blowing from E at 5 knots with visibility of > 10km and
a temperature of 19°C with a dew point of 9°C.

At station LOWL on 2025-06-12 at 19:20 UTC the wind
is blowing from E at 5 knots with visibility of > 10km and

Multiple:

Weather Report

Select Stations:

```
LOWL - Linz Flughafen
LOWW - Vienna International Airport
LOWS - Salzburg Airport
LOWI - Innsbruck Airport
LOWG - Graz Airport
LOWK - Klagenfurt Airport
```

Start Time (optional):

`TT . MM . JJJJ , -- : -- 📅` `Clear Start Time`

`Load METAR + TAF`

Current conditions

At station LOWL on 2025-06-13 at 07:50 UTC the wind
is blowing from E at 9 knots with visibility of > 10km and
a temperature of 19°C with a dew point of 10°C.

At station LOWW on 2025-06-13 at 07:50 UTC the wind
is blowing from N at 4 knots with visibility of > 10km and
a temperature of 19°C with a dew point of 11°C.

At station LOWS on 2025-06-13 at 07:50 UTC the wind
is blowing from VRB at 2 knots with visibility of > 10km
and a temperature of 20°C with a dew point of 14°C.

Forecasts

**The TAF report for station LOWL was issued at
2025-06-13 05:15 UTC. General forecast indicates**

wind from E at 4 knots with visibility around > 10km
maximum temperature of 26°C and a minimum of
13°C
From 2025-06-13 07:00 utc to 2025-06-13 09:00 utc,
expect wind from e at 10 knots
From 2025-06-13 18:00 utc to 2025-06-13 20:00 utc,
expect wind from e at 4 knots

**The TAF report for station LOWW was issued at
2025-06-13 05:15 UTC. General forecast indicates
wind from N at 5 knots with visibility around > 10km
maximum temperature of 25°C and a minimum of
11°C**
From 2025-06-13 06:00 utc to 2025-06-13 08:00 utc,
expect wind from n at 10 knots
From 2025-06-13 19:00 utc to 2025-06-13 21:00 utc,
expect wind from vrb at 4 knots