PORT OF SPAIN WIS2 TRAINING WORKSHOP · June 2026

Monitoring and debugging data-flow in wis2box

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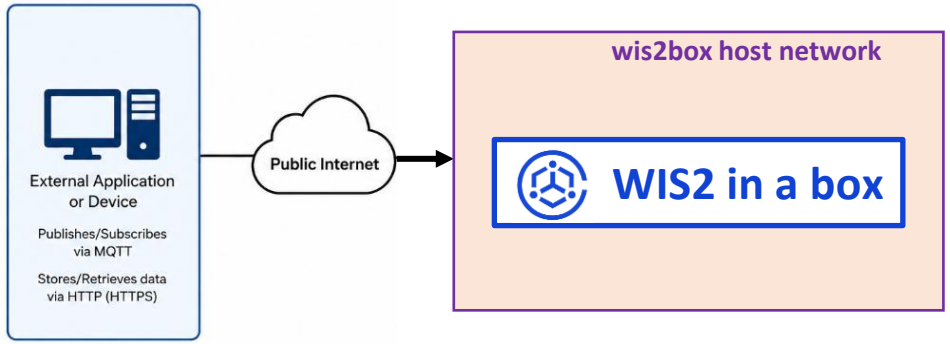
Data publishing checklist

Once datasets are configured data can be uploaded to start the wis2box publishing process
Upload your data into wis2box (pushing data into MinIO or using the interfaces in the wis2box-webapp)

wis2box is correctly configured if:
1. WIS2 data notification is published on your MQTT-endpoint after you upload (new) data
2. The data-URL in your WIS2 data notification enables you to download the (converted) data

Both steps should function from an external network (outside your internal network)



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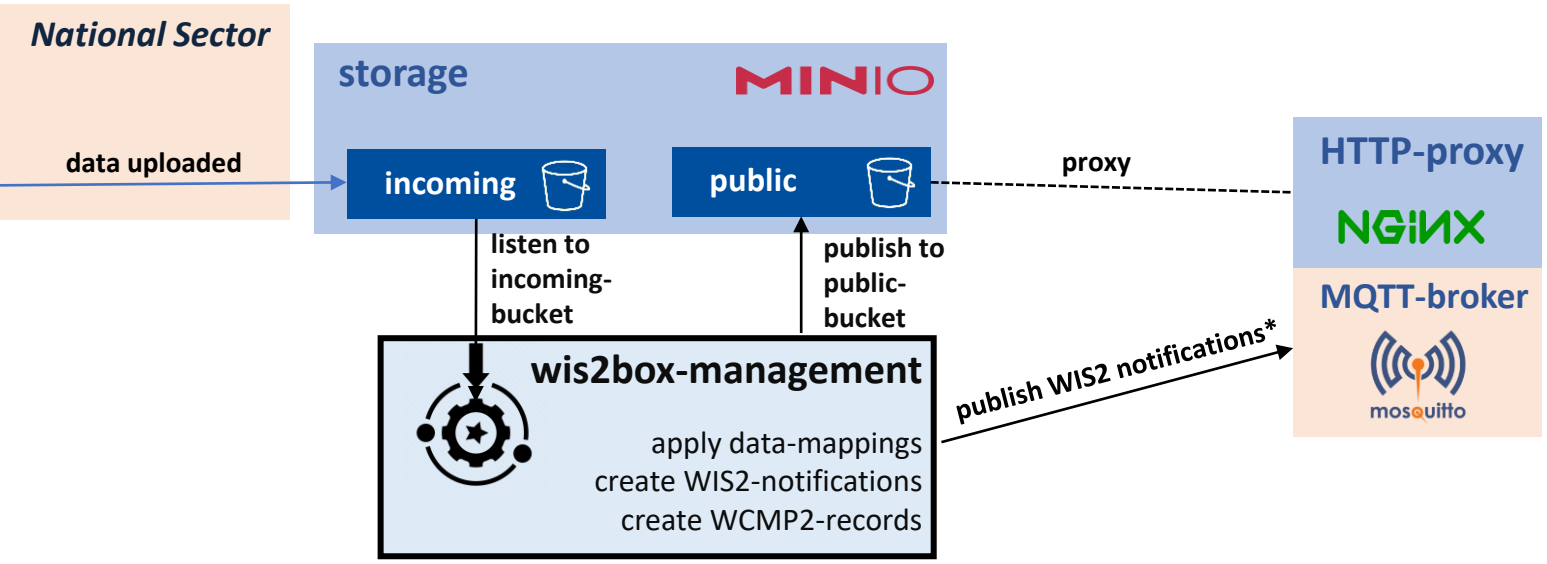
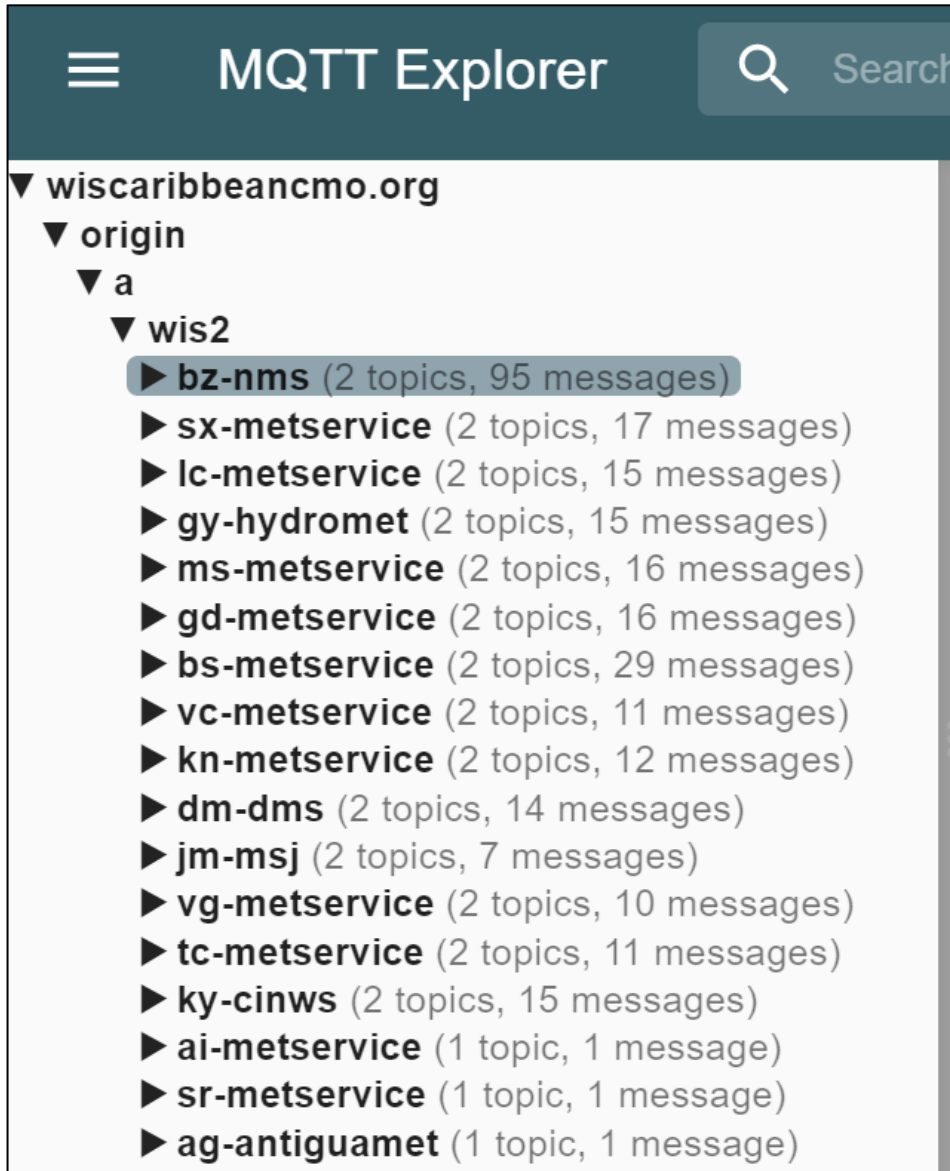
1. Check MQTT Notification



Use MQTT explorer to see the WIS2-notifications for your data



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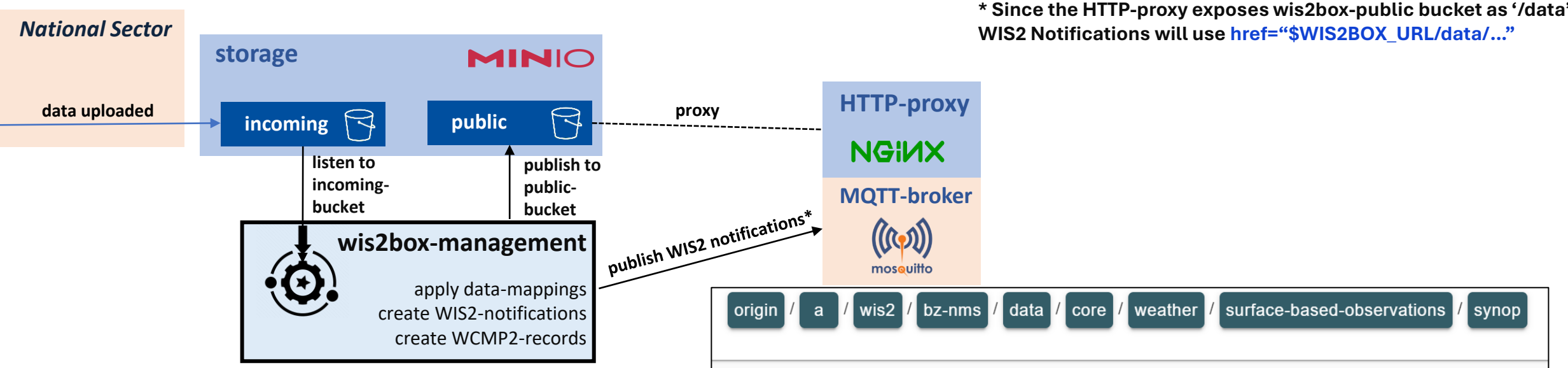
2. Check data can be downloaded



* Since the HTTP-proxy exposes wis2box-public bucket as '/data', WIS2 Notifications will use href="$WIS2BOX_URL/data/..."

origin / a / wis2 / bz-nms / data / core / weather / surface-based-observations / synop

Value

QoS: 0

06/04/2026 4:46:18 PM


```
  },
  "wigos_station_identifier": "0-20000-0-78583"
},
"links": [
  {
    "rel": "canonical",
    "type": "application/bufr",
    "href": "https://wiscaribbeancmo.org/data/2026-06-04/wis/urn:wmo:md:bz-nms:belize-hou
    "length": 316
  },
  {
    "rel": "via",
```


Find the data-URL in your notification and check it enables you to download the data

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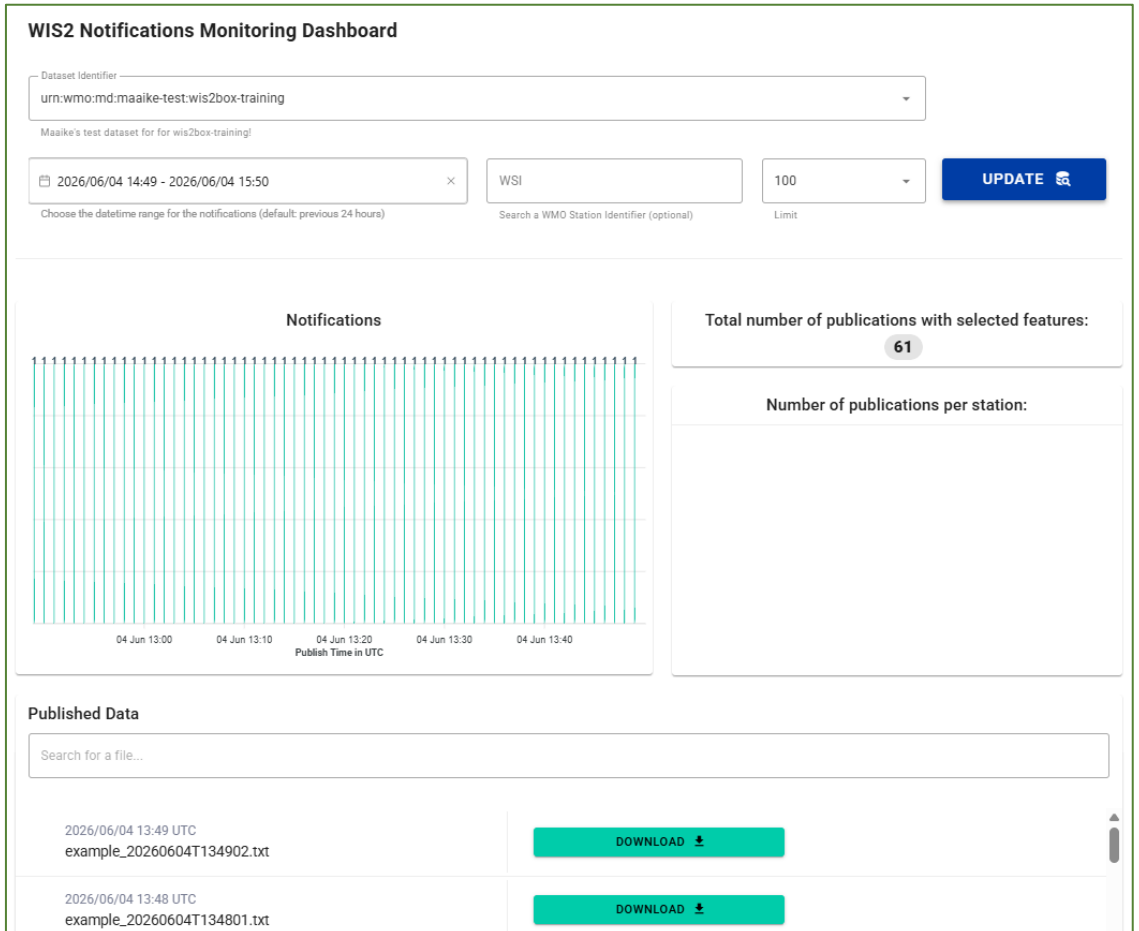
Check data publication history

You may need to check if your data was published <u>retroactively</u>
(without having had an active MQTT-subscription at the time…)

wis2box stores the published notification for each dataset in the API-backend

Check messages using the link to the oapi-endpoint on the wis2box homepage

Check messages using monitoring page in wis2box-webapp



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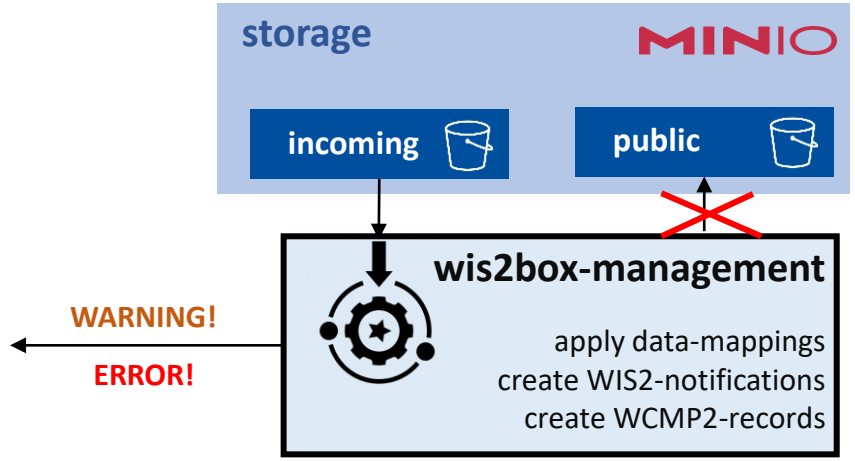
Debugging issues

If no MQTT notifications are made after you ingested some (new) data, something it is going wrong !

Various issue may prevent wis2box from successfully publishing data …

- One or more docker containers in the wis2box-stack are unhealthy or down
- Incorrect credentials are used when uploading data to MinIO
- File-path of incoming data can not be matched with any configured dataset
- Filename of incoming data does not match file-pattern for any configured data plugin
- Transformation of incoming data fails, for example:
  - synop2bufr: FM-12 invalid, or TSI not found in station-list, or can not parse year/month from file-pattern
  - csv2bufr: input CSV does not match columns in mapping-template, or value out of bound, or location in data does not match location of station
  - for all BUFR-plugins: the station is not associated to topic of the dataset in station metadata
  - bufr2bufr: input BUFR can not be decoded, or station-id missing, or location missing
  - CAPMessageData: input data does not match CAP v1.2 schema
  - UniversalData: can not parse datetime from file-pattern
- Same data is uploaded twice, discarded as duplicate



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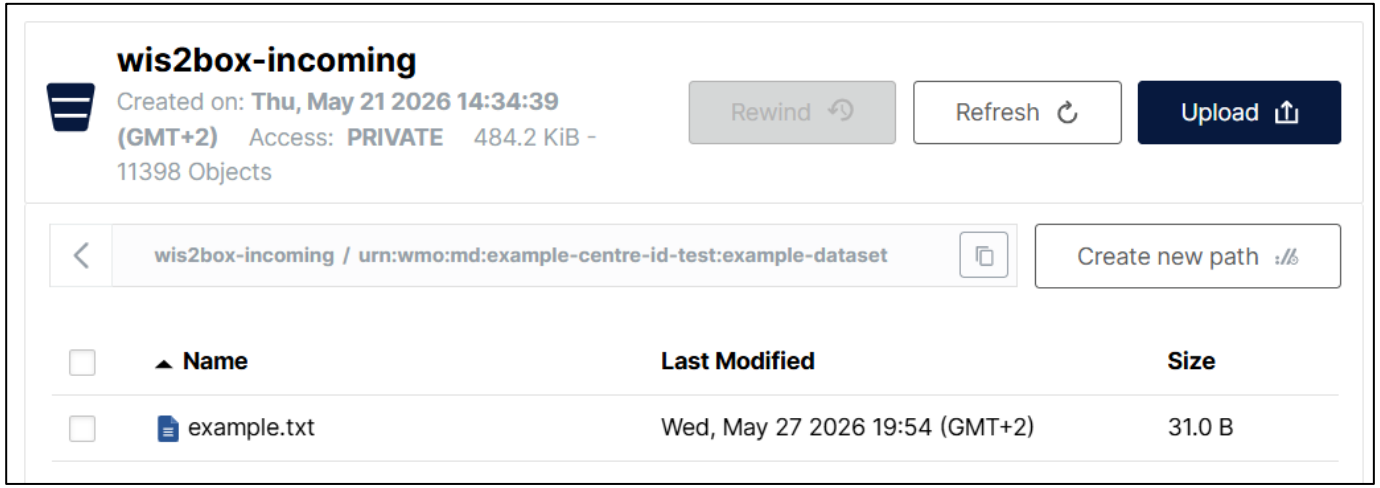
Debugging wis2box: the basics

Check that your container are running and healthy using "`python3 wis2box-ctl.py status`"

- If wis2box-management is not running no data uploaded in MinIO will be processed
- Watch out for containers that are restarting
- ElasticSearch container will become unhealthy when your host is low on disk-space

Be careful when editing wis2box.env manually as certain configuration changes can break the stack
Any changes in wis2box.env require a restart of the wis2box-stack before they take effect

When uploading data to MinIO, **check that data arrived in "wis2box-incoming"-**bucket using the MinIO User Interface at *http://<wis2box-host>:9001* login using WIS2BOX_STORAGE_USERNAME and WIS2BOX_STORAGE_PASSWORD
If no data arrived check for errors reported on the sender side ..



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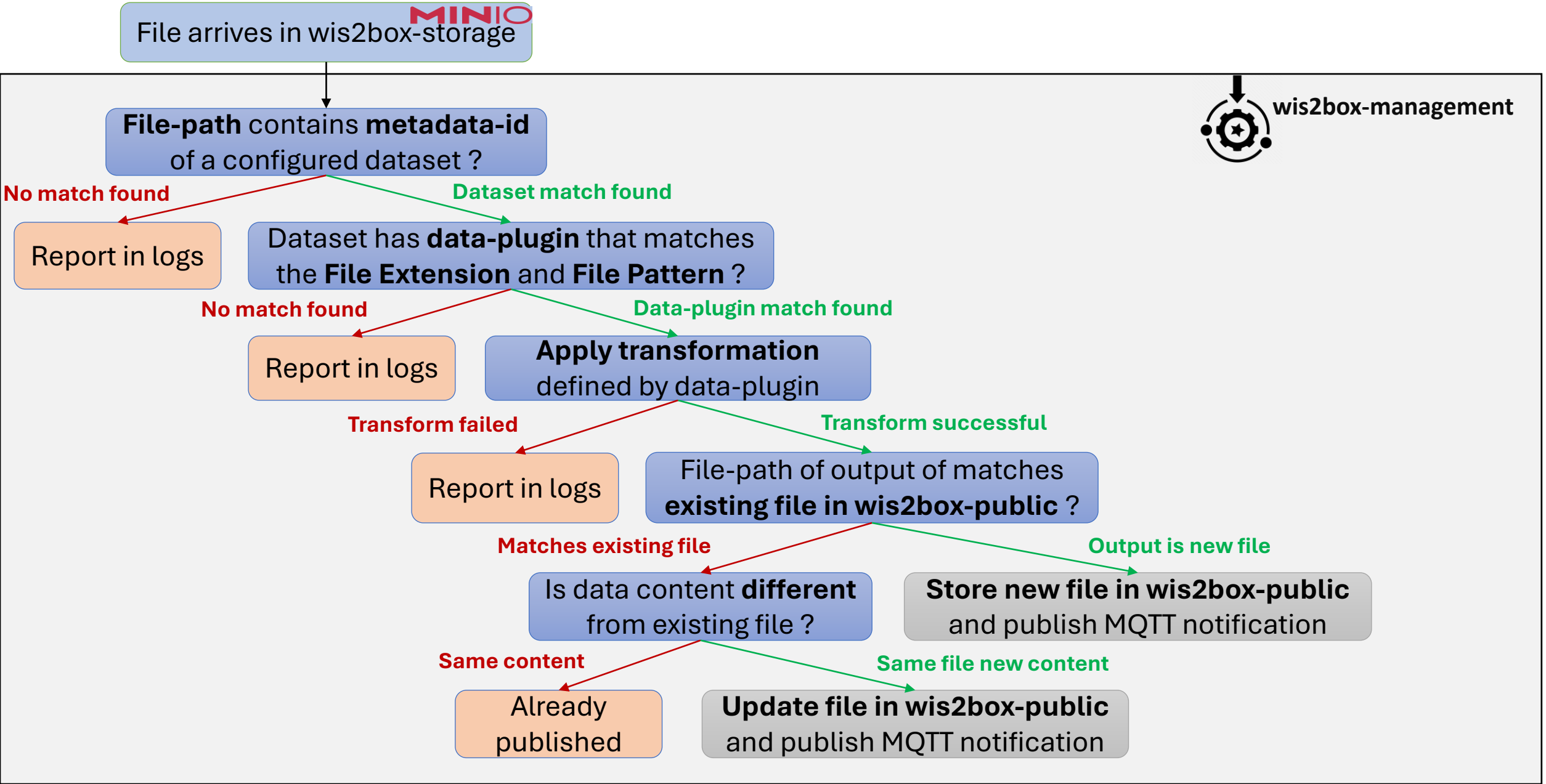
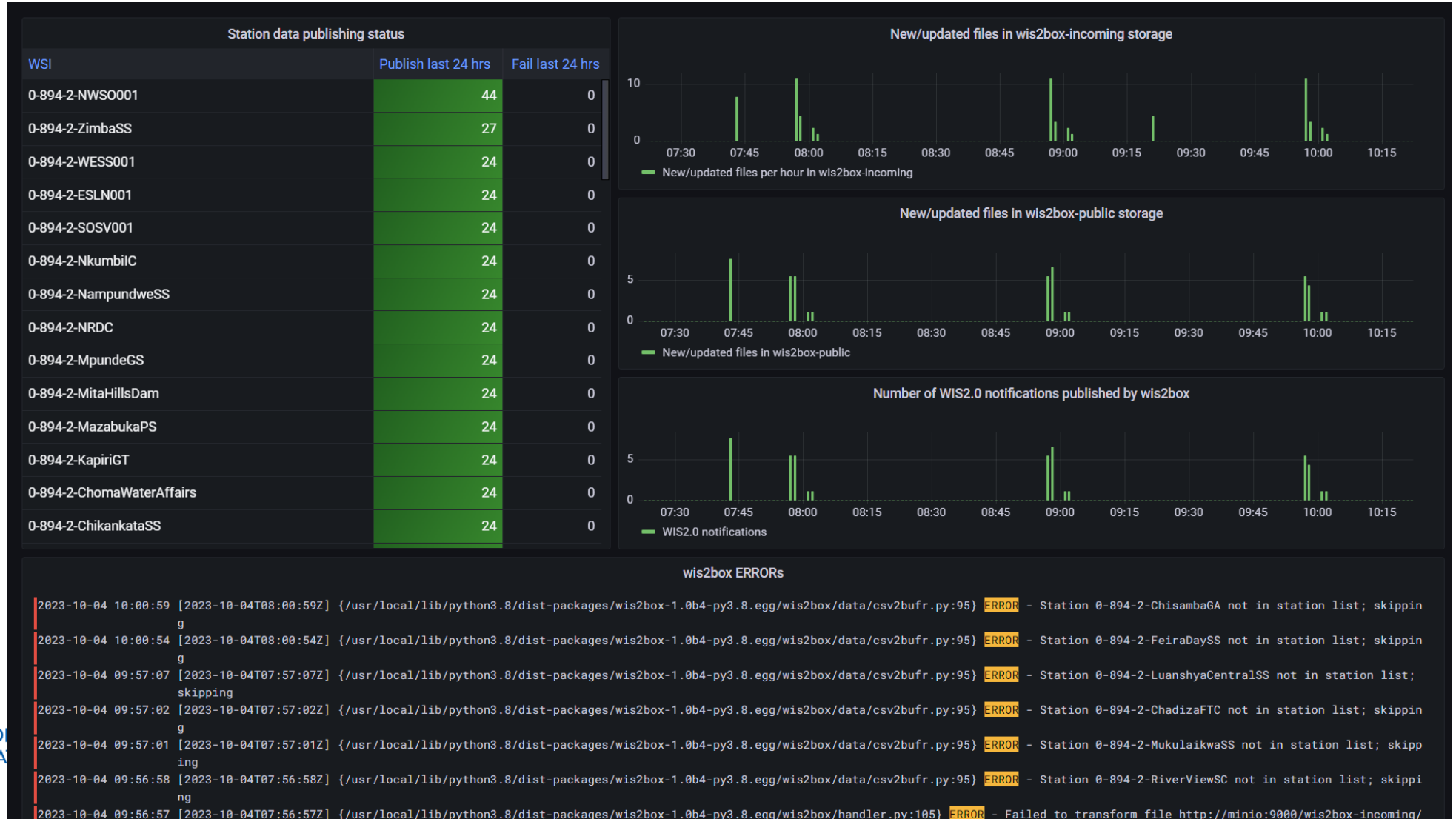
wis2box data publishing workflow



Monitoring the wis2box data workflow: Grafana

Grafana home dashboard available at http://<wis2box-host>:3000

Grafana data-sources: **Prometheus** (time-series metrics) and **Loki** (logs)



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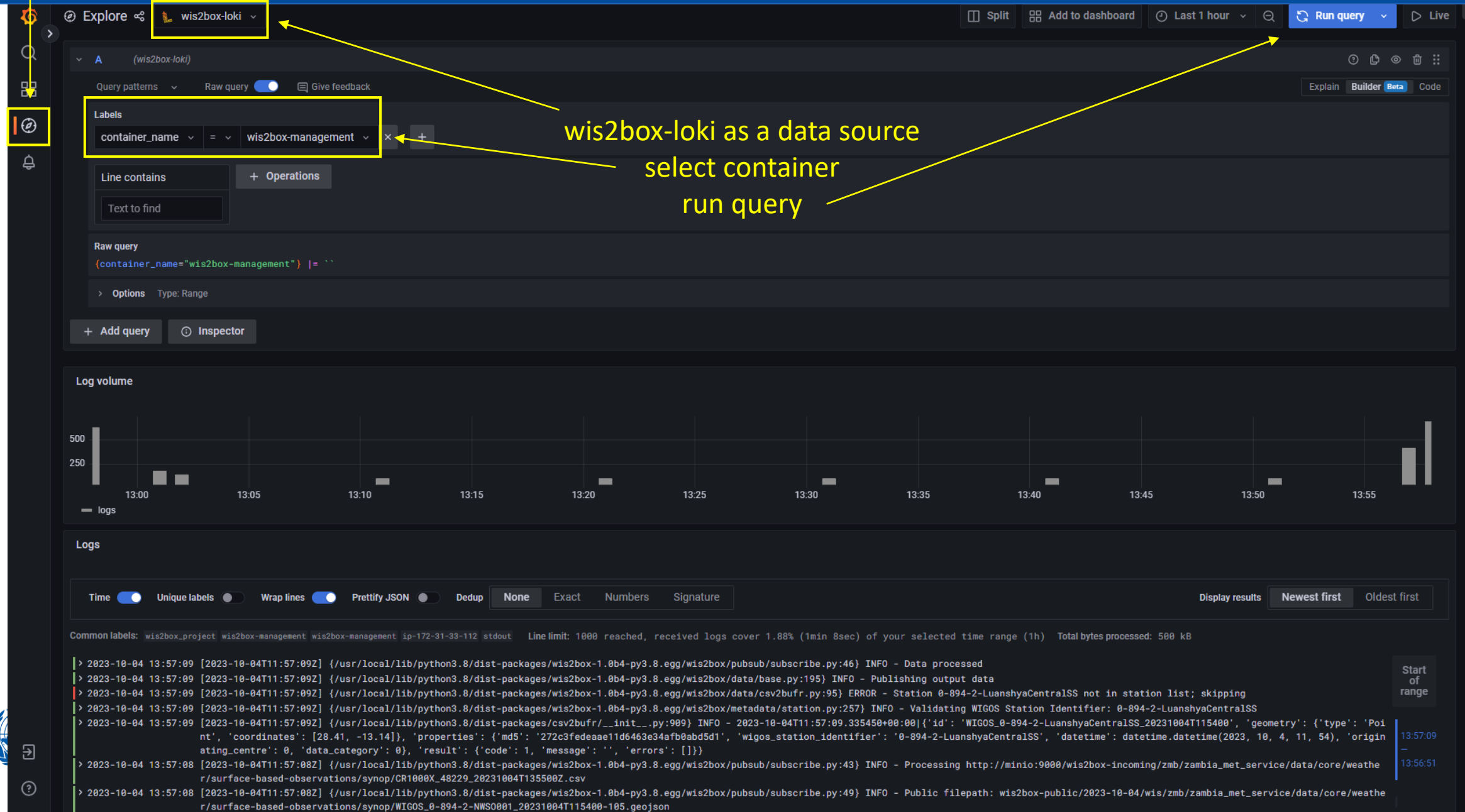
'explore' option In Grafana sidebar

Exploring logs stored in Loki



Monitoring and debugging data-flow in wis2box

After configuring dataset in wis2box, ingest data to trigger the data publication process

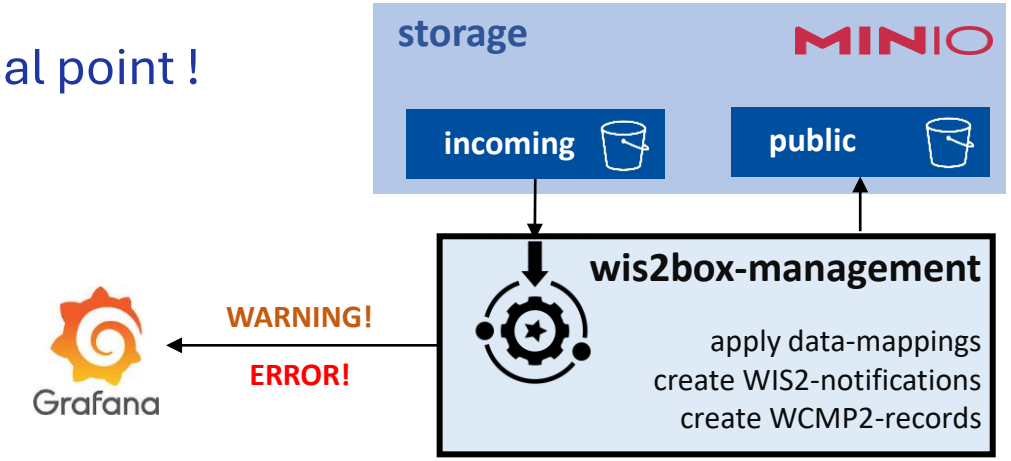
Check that your data is successfully published:

- Subscribe to our MQTT-endpoint using an MQTT-client (such as MQTT explorer)
- Check the data-URL enables you to download the data
- … or check retro-actively by querying the messages-collection

If no data is published:

- Check your wis2box stack is running correctly
- Check for errors reported while sending the data
- Check data was received in MinIO
- Check for errors and warnings in Grafana

If all else fails … contact your regional WIS2 support focal point !



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Thank you.

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