PORT OF SPAIN WIS2 TRAINING WORKSHOP · June 2026

Updating, maintenance and security

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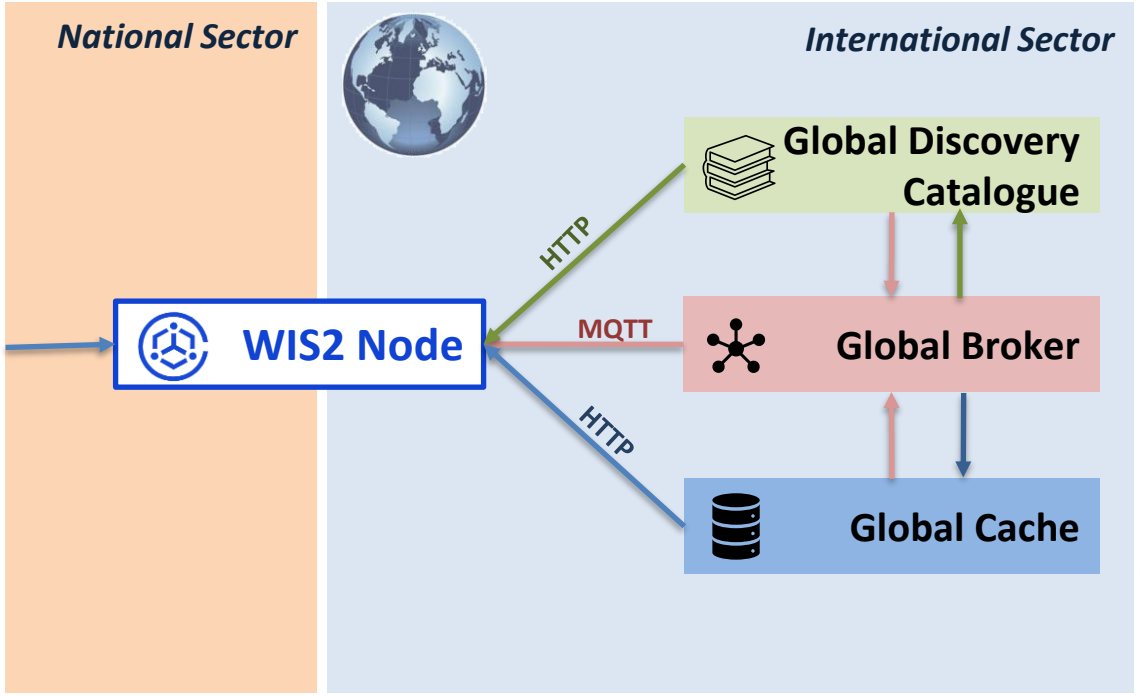
Introduction

A WIS2 Node is an **operational service** providing web-services **exposed over the public internet**



Security recommendations:

- Only open ports for HTTP and MQTT to external connections
- Read-only access to HTTP and MQTT
- Encrypt HTTP and MQTT using TLS
- Use firewall limit access to trusted incoming connections (Global Services and local partners)

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Using wis2box-software to operate a WIS2 Node

The wis2box provides free open-source software solution to enable you to run a WIS2 Node
This is not a commercial service
The wis2box-user is responsible for updates, maintenance and security

When using wis2box to operate a WIS2 Node, you are responsible for:

- Providing the hosting and network solution
- Ensuring the host does not run out our disk-space
- Updating the Operating System
- Updating the wis2box-software
- Monitoring data-flow
- Keeping the discovery metadata up-to-date

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Hosting a WIS2 node

ON-PREMISE

- hosting services provided by local servers
- managed by local IT service
- accessible over the local network

CLOUD

- hosting services provided by remote servers
- managed by a 3rd party
- accessible over the Internet

Public Cloud: Remote servers hosted by commercial cloud service providers, for example: Amazon Web Services, Microsoft Azure or Google Cloud Platform

Private Cloud: Remote servers hosted in a private data centre, for example: European Weather Cloud

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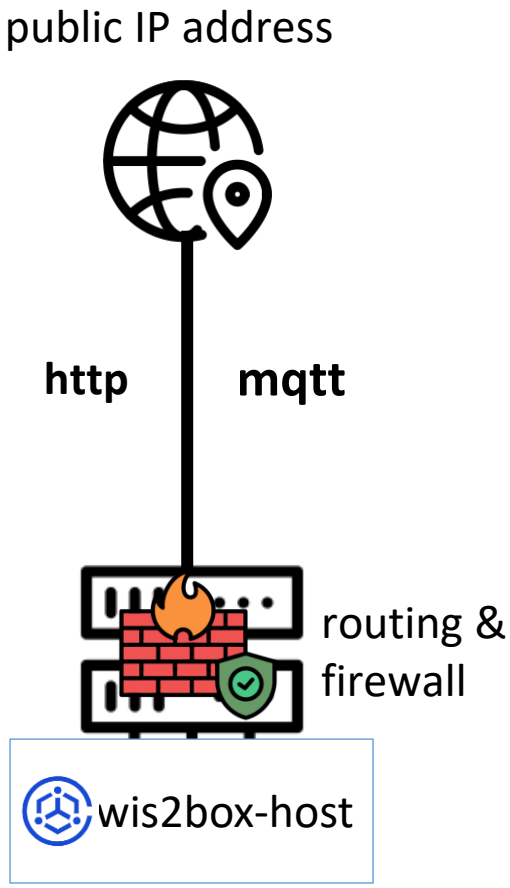
Network and security

Traffic of your WIS2 node needs to be routed to a public IP address

Incoming connections limited to MQTT and HTTP ports

Cloud: use cloud interface to request a public IP address and manage the allowed incoming connections via security groups

On-premise: work with local IT/Network Team to provide public IP address and manage routing and firewall



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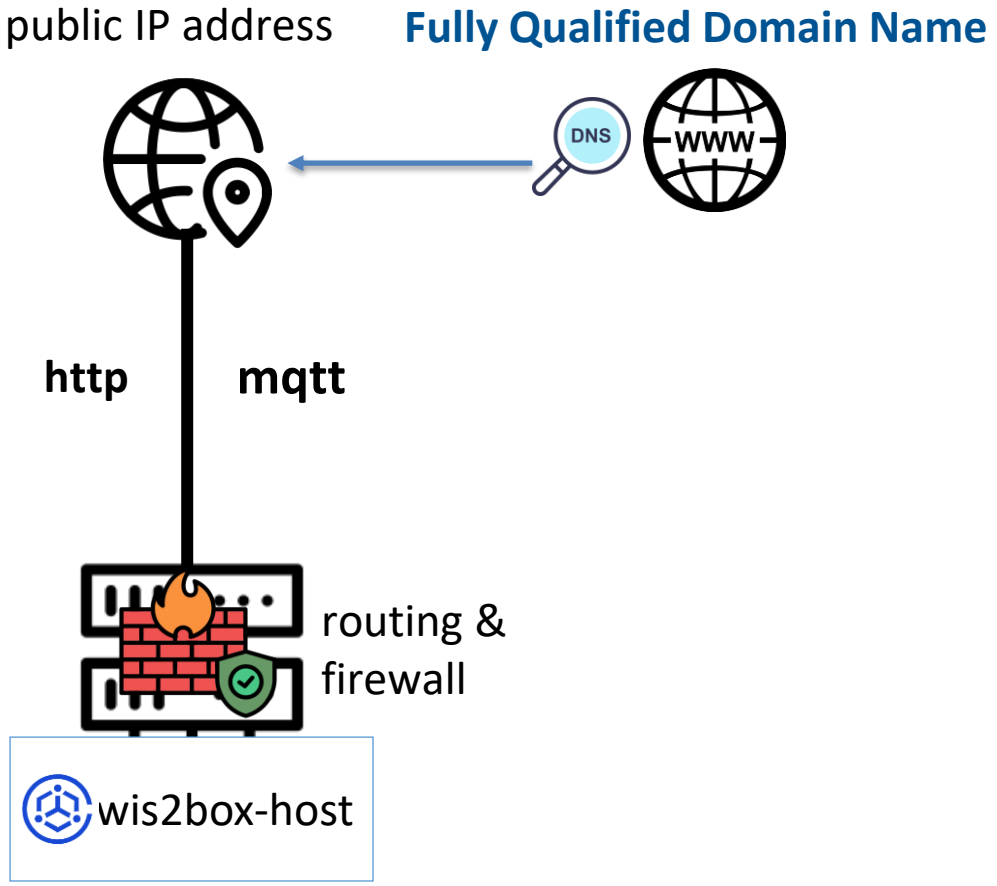
Setting up a web address for your WIS2 Node

An FQDN (Fully Qualified Domain Name) specifies the **web address** for your WIS2 Node

Coordinate with your IT/Network Team:

- Choose a specific subdomain for your WIS2 node on your organization primary domain: e.g *wis2node.knmi.nl*
- Request to create a DNS record pointing the subdomain to the public IP address of your WIS2 Node



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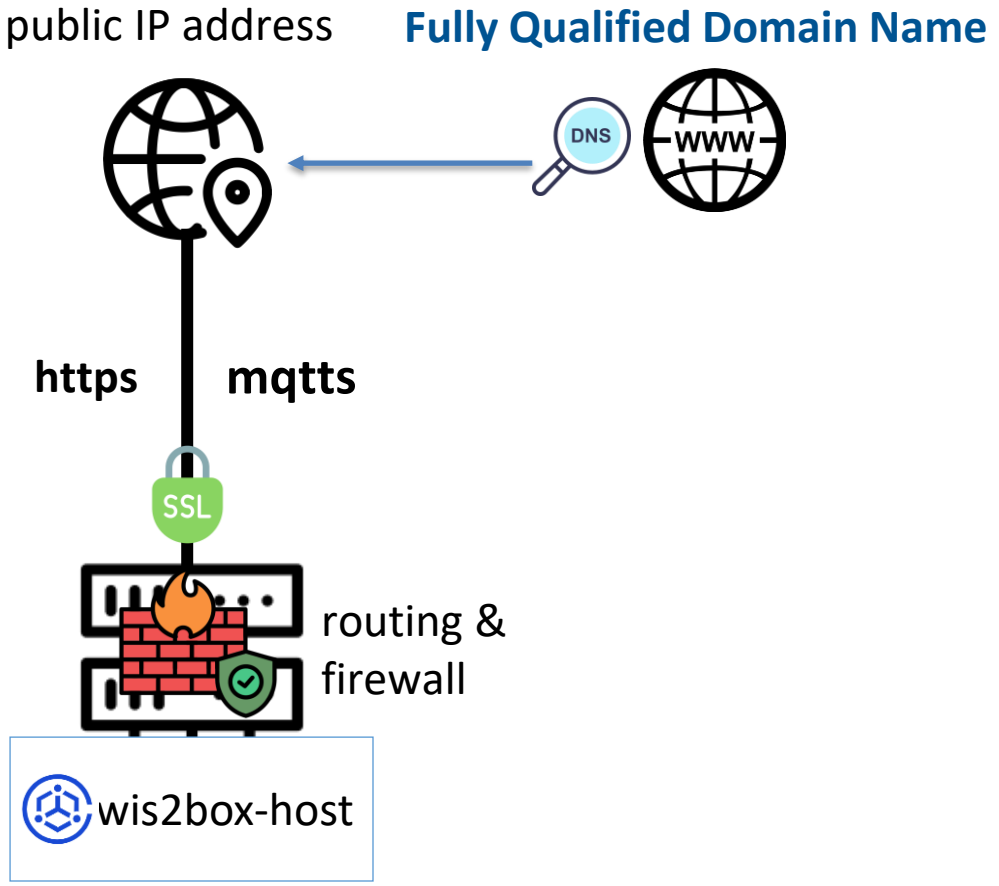
SSL Certificates for HTTP and MQTT encryption

Use TLS/SSL certificates to encrypt your data and ensure clients can validate the identify of your host

Purchase an SSL certificates from a trusted Certificate Authority (CA) or use a free CA like Let's Encrypt

SSL certificates can be installed in a proxy routing the HTTP traffic from your wis2box-host to the public Internet
...or wis2box can use SSL certificates installed in your host



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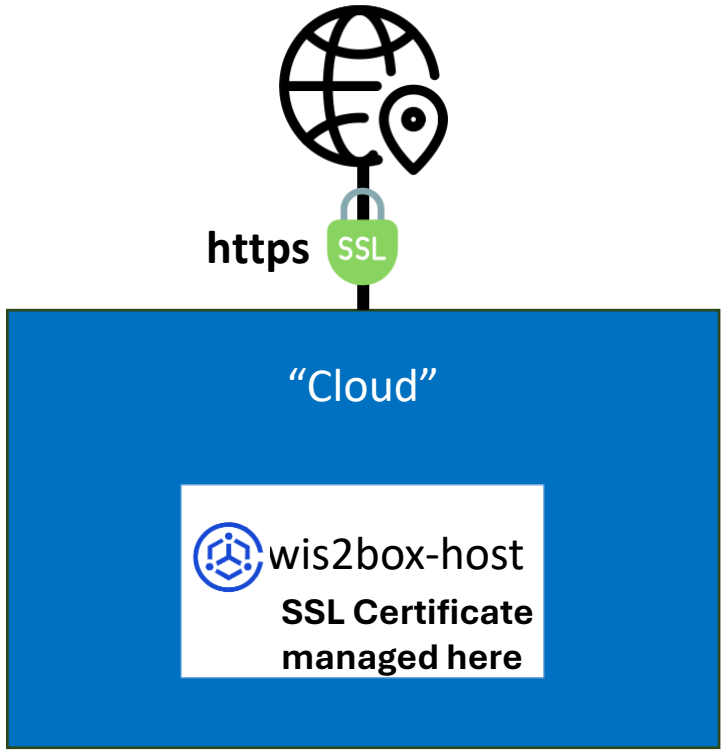
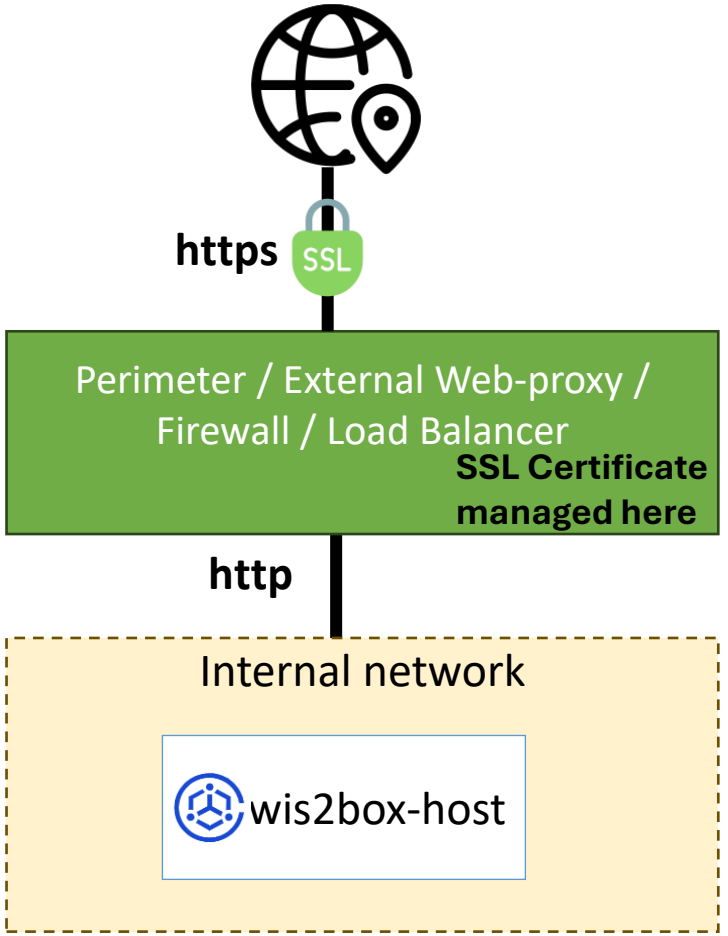
SSL setup in different scenario’s

SSL termination on the wis2box-instance (host with public IP)



SSL termination on the External web-proxy (host on internal network)



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wis2box-host

SSL Certificate managed here

Setting up SSL using Traefik

You can use Traefik to setup SSL with automated certificate renewal, powered by LetsEncrypt

- requires a DNS-record set to point to your IP

As of wis2box-1.3, the following steps allow you to add Traefik to the wis2box-stack:

1. Stop the wis2box-stack if it is running:

```
python3 wis2box-ctl.py stop
```

2. Update wis2box.env and set WIS2BOX_URL and WIS2BOX_API_URL to https instead of http

```
WIS2BOX_URL=https://wis2box-test.wis2dev.io
WIS2BOX_API_URL=https://wis2box-test.wis2dev.io/oapi
```

3. Copy the docker-compose file for Traefik to replace docker-compose.override.yml:

```
cp docker-compose.traefik.yml docker-compose.override.yml
```

4. Start the wis2box-stack:

```
python3 wis2box-ctl.py start
```

5. Check the wis2box homepage, OAPI and wis2box-webapp are now accessible at the https:// address

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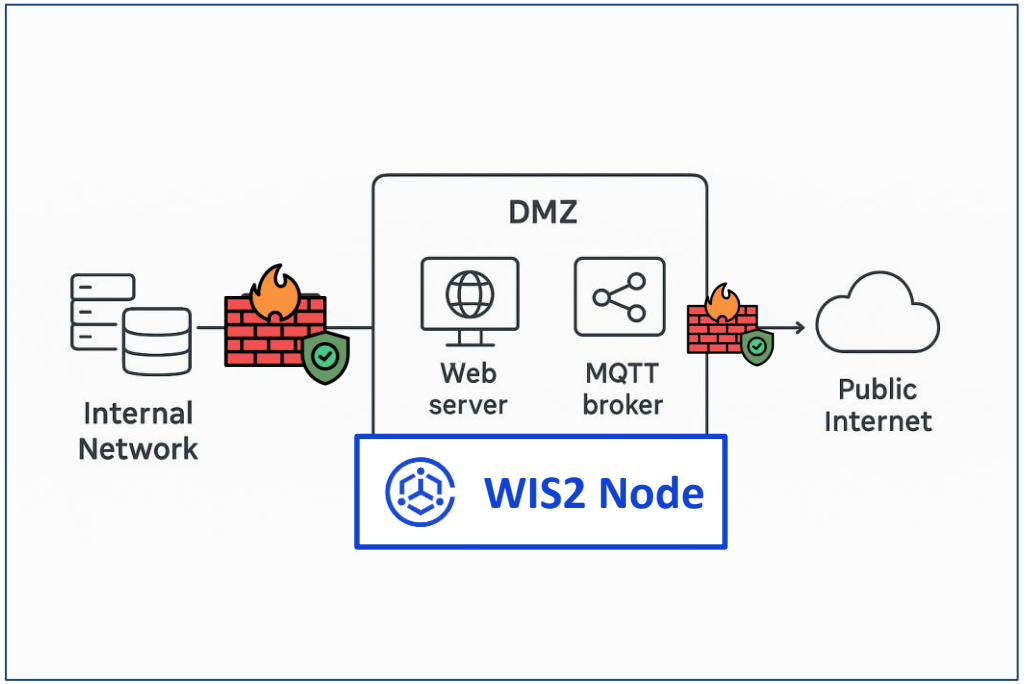
Network isolation

A WIS2 Node is ideally hosted in a DMZ (DeMilitarized Zone) to isolate the WIS2 external-facing services from the internal network



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Keeping up to date

The wis2box team reviews and address issues and prepares **new wis2box-releases (3-4 times a year)**

Daily vulnerability scans automatically run against all wis2box-code repository alerting the wis2box-team to possible security concerns and address them

To report an issue with wis2box please use the wis2box issue tracker on GitHub:
https://github.com/World-Meteorological-Organization/wis2box/issues

Subscribe to the wis2box-newsletter to be informed when a new wis2box-release is available:
WIS2 in a box Newsletter on the WMO Knowledge Hub

For updates related to WIS2 Operations subscribe to:
WIS2 Operational Newsletter on the WMO Knowledge Hub

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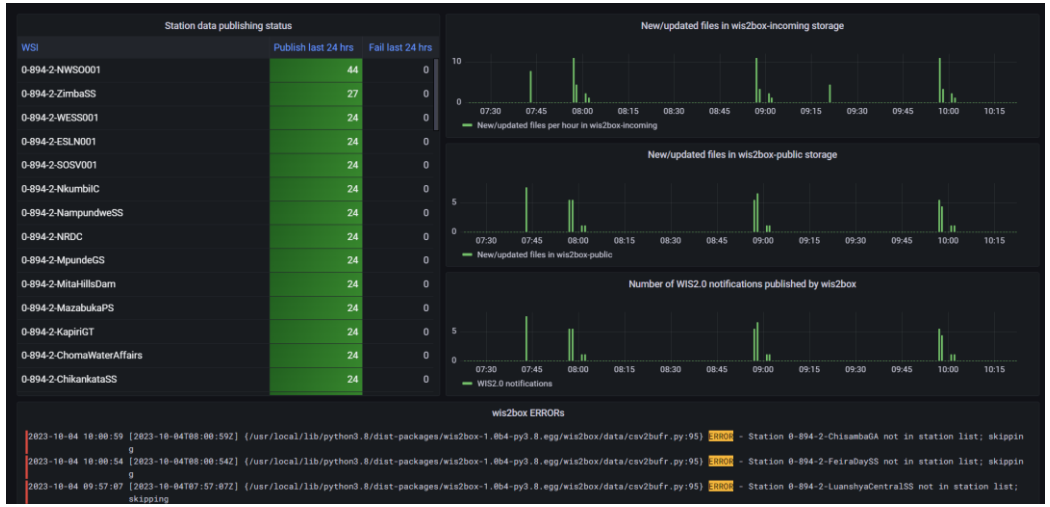
Monitoring and maintaining your configuration

Query the Global Discovery Catalogue for your centre-id to review your metadata is up to data:
https://wis2-gdc.weather.gc.ca/collections/wis2-discovery-metadata/items?q="bz-nms"

To remove an outdated metadata record you can issue the following command from the wis2box-management CLI:

```
wis2box data unpublish urn:wmo:md:bz-nms:bgfm37
```

Regularly check the Grafana dashboard to see data is ingested and published
Address any errors that are being reported



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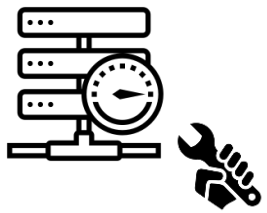
Check the published data in the WIGOS Data Quality Monitoring System
https://wdqms.wmo.int/

WIS2 Node Operations: Maintenance and monitoring

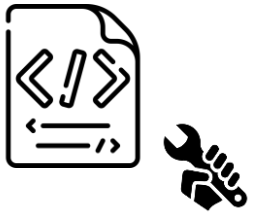


Host and network monitoring:

- Uptime
- Internet access
- CPU and memory
- Disk usage

Software updates:

- WIS2 Node software (e.g. wis2box-release updates)
- host operating system
- any other software dependencies



WIS2 Node configuration updates:

- Datasets and associated discovery metadata
- Station list and associated WIGOS station metadata
- Regularly review data quality of published data

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Thank you.

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