WIS2 Node implementation: hosting, networking, security and maintenance

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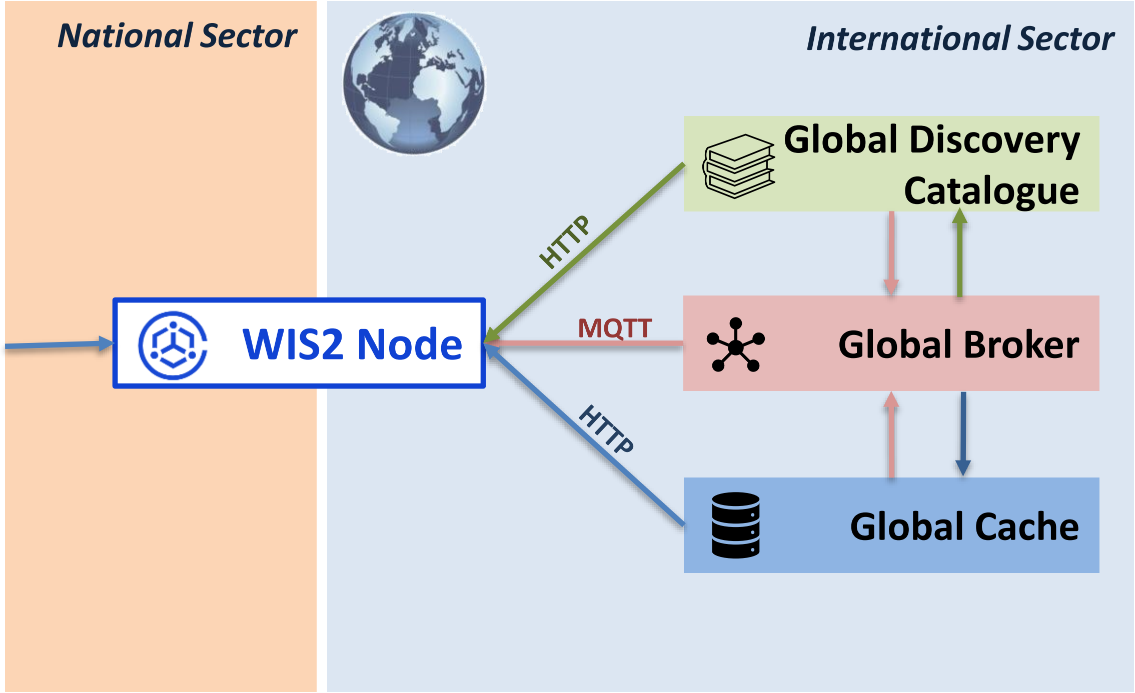
Reminder: what is a WIS2 Node ?

The WIS2 node is composed of 2 endpoints that need to be exposed over the public Internet:

- MQTT broker: to publish WIS2 notifications for metadata and data
- HTTP endpoint: to enable the download of data files and metadata records



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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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 or GISC Casablanca

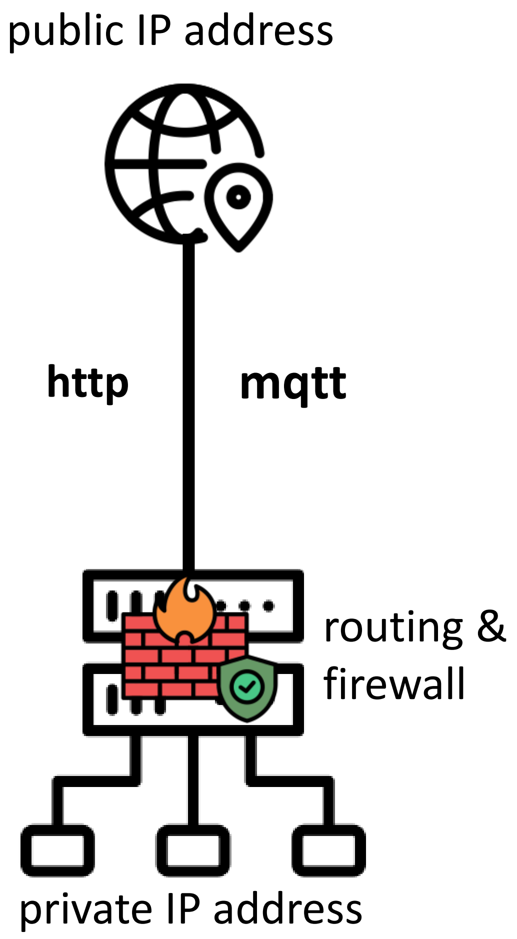
Network and security

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

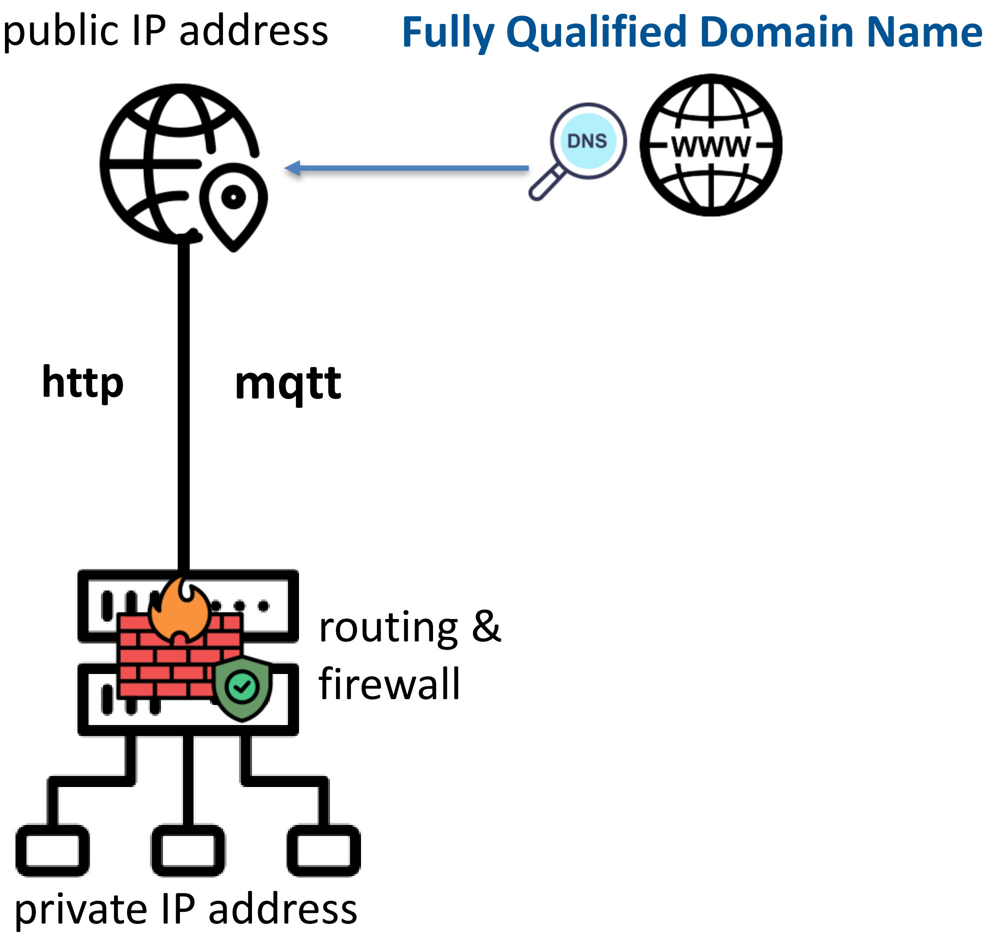


Setting up a web address for your WIS2 Node

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



public IP address

Fully Qualified Domain Name

http

mqtt

routing & firewall

private IP address

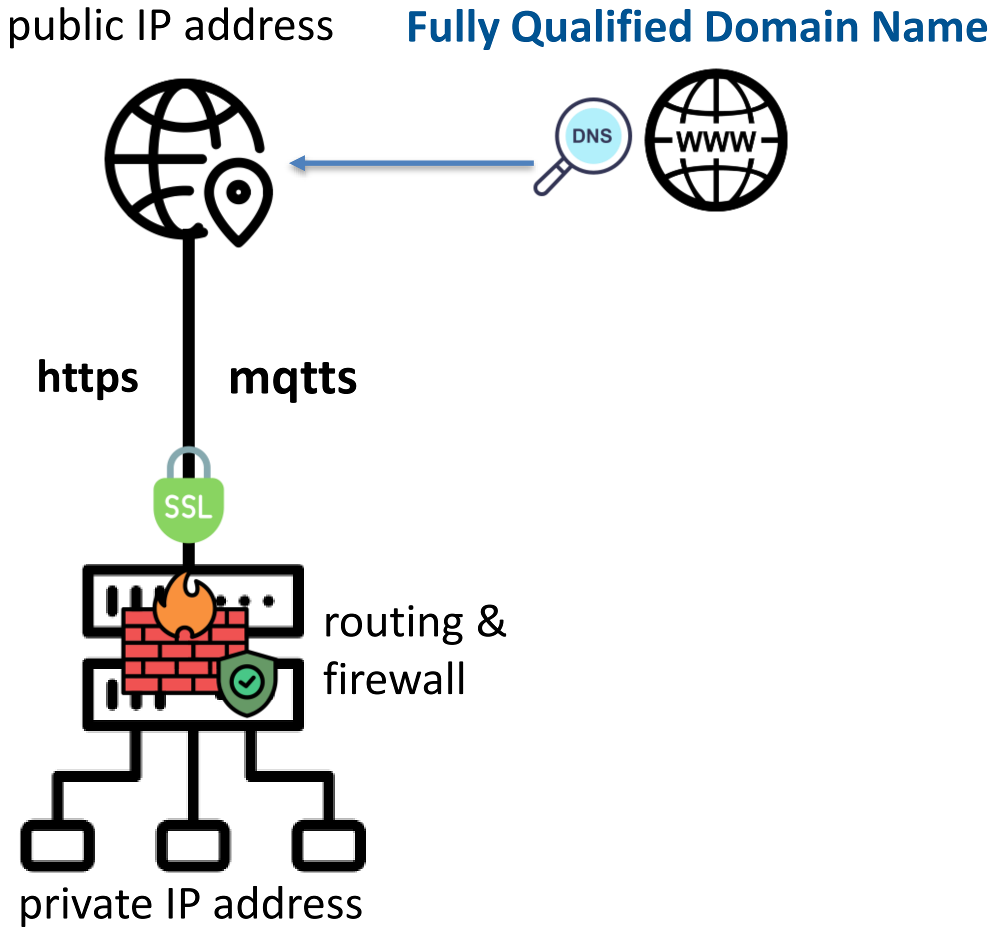
TLS/SSL Certificates for HTTP and MQTT encryption

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

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

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

wis2box can use TLS/SSL certificates installed in your host (see wis2box documentation)



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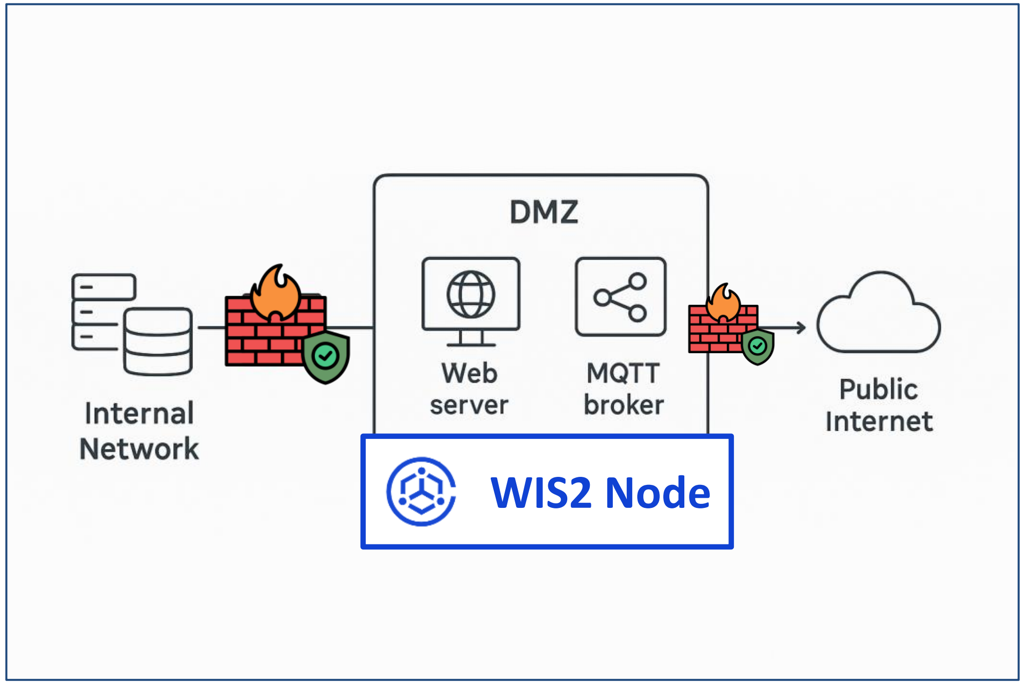
Network isolation

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



WIS2 Node Operations: Maintenance and monitoring

Host monitoring:

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

Software updates:

- WIS2 Node software (e.g. wis2box, IBL MW ...)
- 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

Thank you

wmo.int