

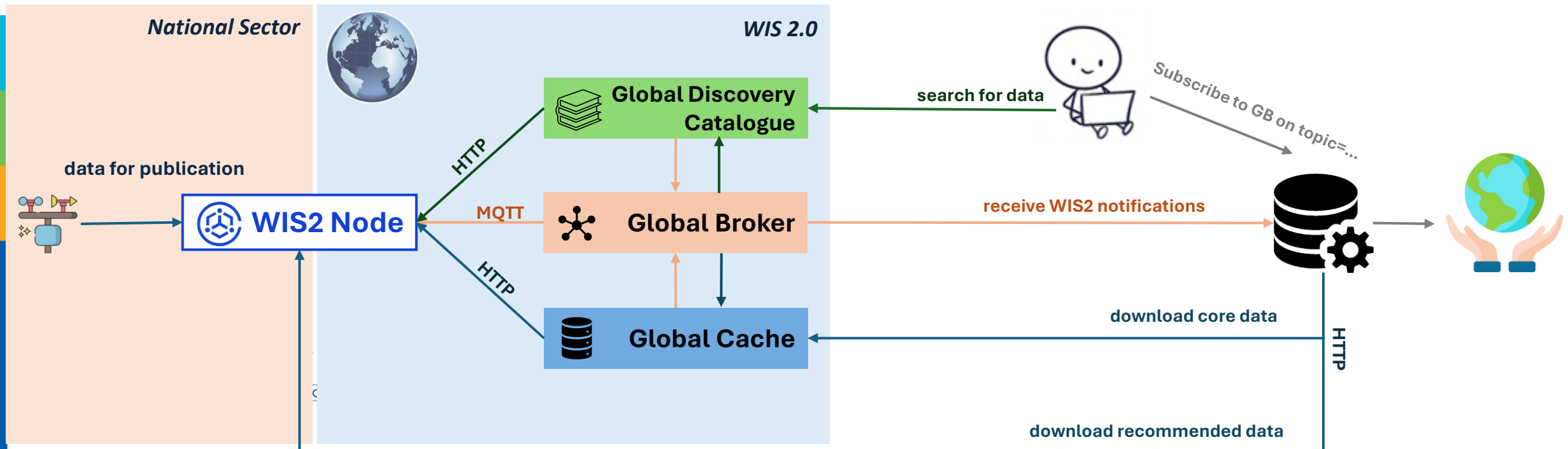
Introduction to WIS2 Notifications

Sharing data on WIS 2.0

Data Publishers operate a WIS2 Node to **publish WIS2 Notifications** and enable data access over HTTP

Data Consumers find datasets in the Global Discovery Catalogue and subscribe to a Global Broker to **receive WIS2 Notifications**

Global Caches ensure highly available, rapid access to *core data*

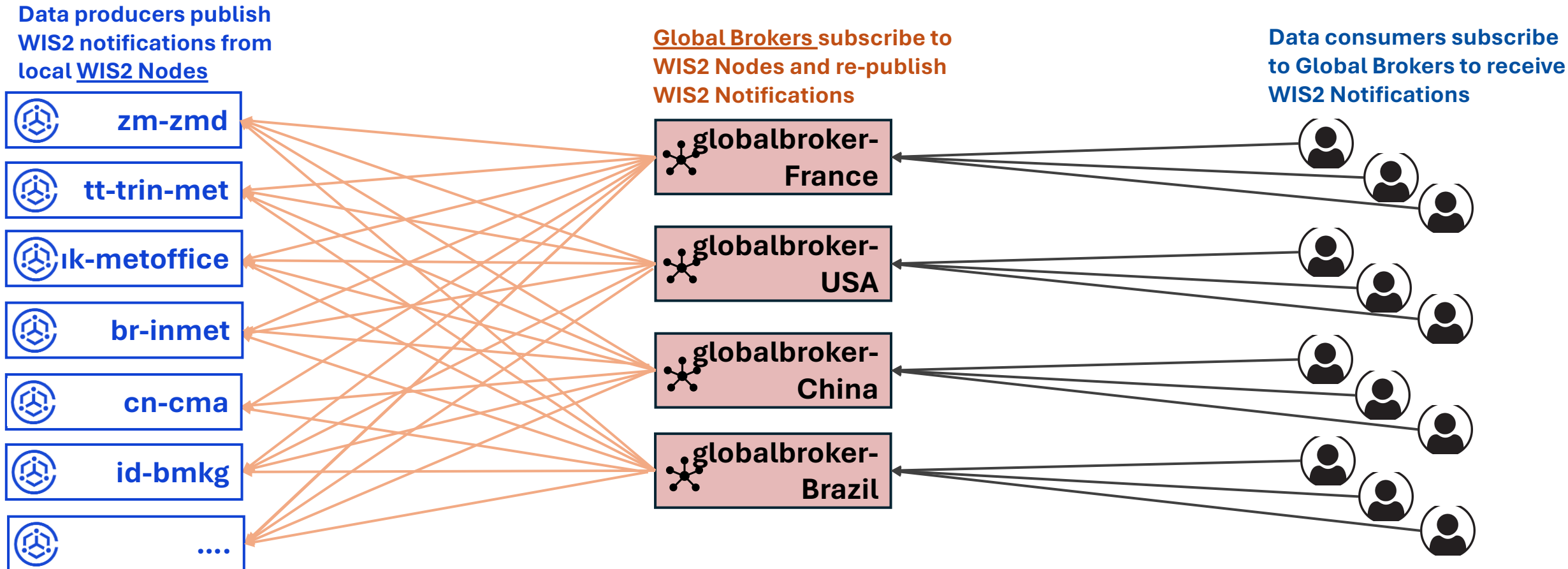


WIS 2.0: Publish-Subscribe (Pub/Sub) model

WIS 2.0 uses a "Publish-Subscribe" (Pub/Sub) model using the MQTT protocol

MQTT is a lightweight, machine to machine network protocol for message queuing service (commonly used for the Internet of Things)

The core components of the WIS 2.0 Pub/Sub model are the **WIS2 Topic Hierarchy** and **WIS2 Notification Message**



Setting up an MQTT client connection using MQTT Explorer

Broker host and port

Encryption: TLS or no TLS

Protocol: MQTT or websockets (HTTP)

Credentials: WIS2 Global Brokers use a default username/password of **everyone/everyone** to allow everyone to subscribe

The screenshot displays the MQTT Explorer interface for a connection named 'meteofrance'. The address bar shows 'mqtt://globalbroker.meteo.fr:8883/'. The 'Validate certificate' toggle is off, and the 'Encryption (tls)' toggle is on. The 'Protocol' is set to 'mqtt://' with a dropdown arrow. The 'Host' is 'globalbroker.meteo.fr' and the 'Port' is '8883'. The 'Username' is 'everyone' and the 'Password' is 'everyone', with a toggle icon to the right of the password field. At the bottom, there are four buttons: 'DELETE' with a trash icon, 'ADVANCED' with a gear icon, 'SAVE' with a floppy disk icon, and 'CONNECT' with a power icon.

MQTT Connection		mqtt://globalbroker.meteo.fr:8883/	
Name	meteofrance	Validate certificate	☐
		Encryption (tls)	☒
Protocol	mqtt://	Host	globalbroker.meteo.fr
		Port	8883
Username	everyone	Password	everyone
			☐
DELETE		ADVANCED	SAVE CONNECT

Setting up a MQTT client subscriber using MQTT Explorer

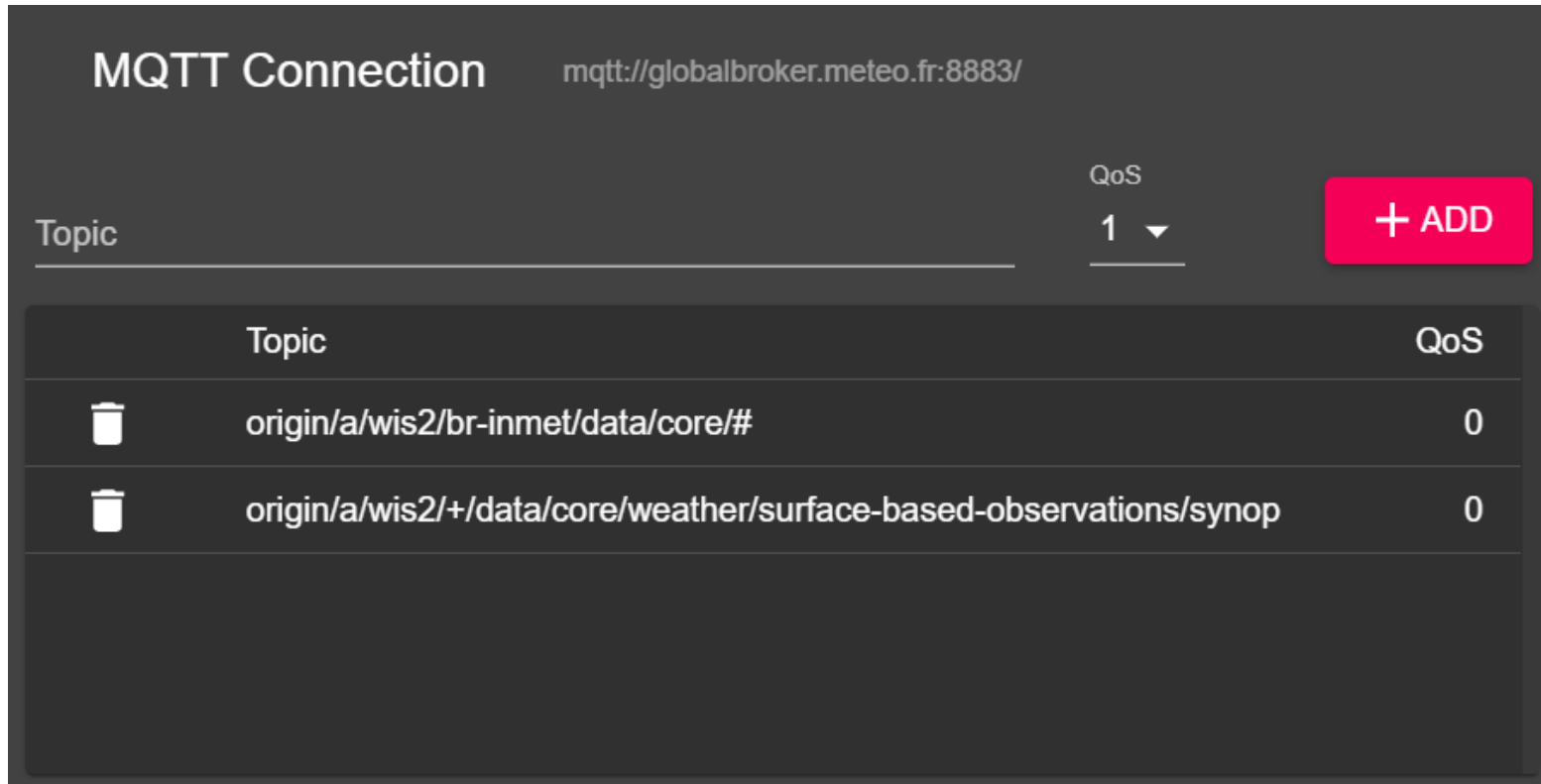
MQTT client should define one or more topics to subscribe to, where the following wildcards can be used:

Single-level wildcard represented by plus symbol (+)

- any topic that contains an arbitrary string in place of the wildcard will be matched

Multi-level wildcard represented by hash symbol (#)

- any topic that begins with the pattern before will be matched (must be placed as the last character)



The screenshot shows the MQTT Explorer interface. At the top, it displays 'MQTT Connection' and the broker address 'mqtt://globalbroker.meteo.fr:8883/'. Below this, there is a 'Topic' input field, a 'QoS' dropdown menu set to '1', and a red '+ ADD' button. A table below lists the subscribed topics and their QoS values.

	Topic	QoS
	origin/a/wis2/br-inmet/data/core/#	0
	origin/a/wis2/+/data/core/weather/surface-based-observations/synop	0

QoS (Quality of Surface)

0: "At most once"

1: "At least once" (recommended)

2: "Exactly once"

WIS 2.0 Notification Message (WNM)

[Link to WIS2 Notification Message](#)

The WIS2 Notification Message Encoding defines the payload of a WIS2 notification

```
{  "id": "1e2ee0a2-6b86-4bb4-9b20-11a8c5d1516b",
  "type": "Feature",
  "version": "v04",
  "geometry": {"coordinates": [-43.64827, -18.23105, 1359], "type": "Point"},
  "properties": {
    "data_id": "br-inmet/data/core/weather/surface-based-observations/synop/WIGOS_0-76-0-3121605000000209_20240521T110000",
    "datetime": "2024-05-21T11:00:00Z",
    "pubtime": "2024-05-21T11:30:03Z",
    "integrity": {
      "method": "sha512",
      "value": "nRdTEUaIF0i40VIs9k5wiu29/TJMAIsXIVJ4pn37YQ3/NeelY9hwtt+jElMwBuJAlg72VVPmXqD+mRjx4eo9Xw=="
    },
    "content": {
      "encoding": "base64",
      "value": "QIVGUgAA8AQAABYAACsAAAIAAAb/IQAH6AUVCwAAAAALAAABgMGWx1sAAMMAAATAAANDMxODkwMzAwMDAwMDIzN0uAACA0re...",
      "size": 240
    }
  },
  "links": [ {
    "rel": "canonical",
    "type": "application/x-bufr",
    "href": "http://wis2node.example/data//WIGOS_0-76-0-3121605000000209_20240521T110000.bufr4",
    "length": 240
  } ]
}
```

“links” contains a “canonical” link to download data

Thank you

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