

Introduction to the Global Services of GISC Beijing

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GISC Beijing

National Meteorological Information Centre (NMIC)

China Meteorological Administration (CMA)

September 15th, 2025

Overview

- Introduction of RTH Beijing & GISC Beijing
- Global Broker of GISC Beijing
- Global Cache of GISC Beijing
- Global Discovery Catalogue of GISC Beijing
- Global Monitoring of GISC Beijing
- WIS2-GTS Gateway

RTH Beijing

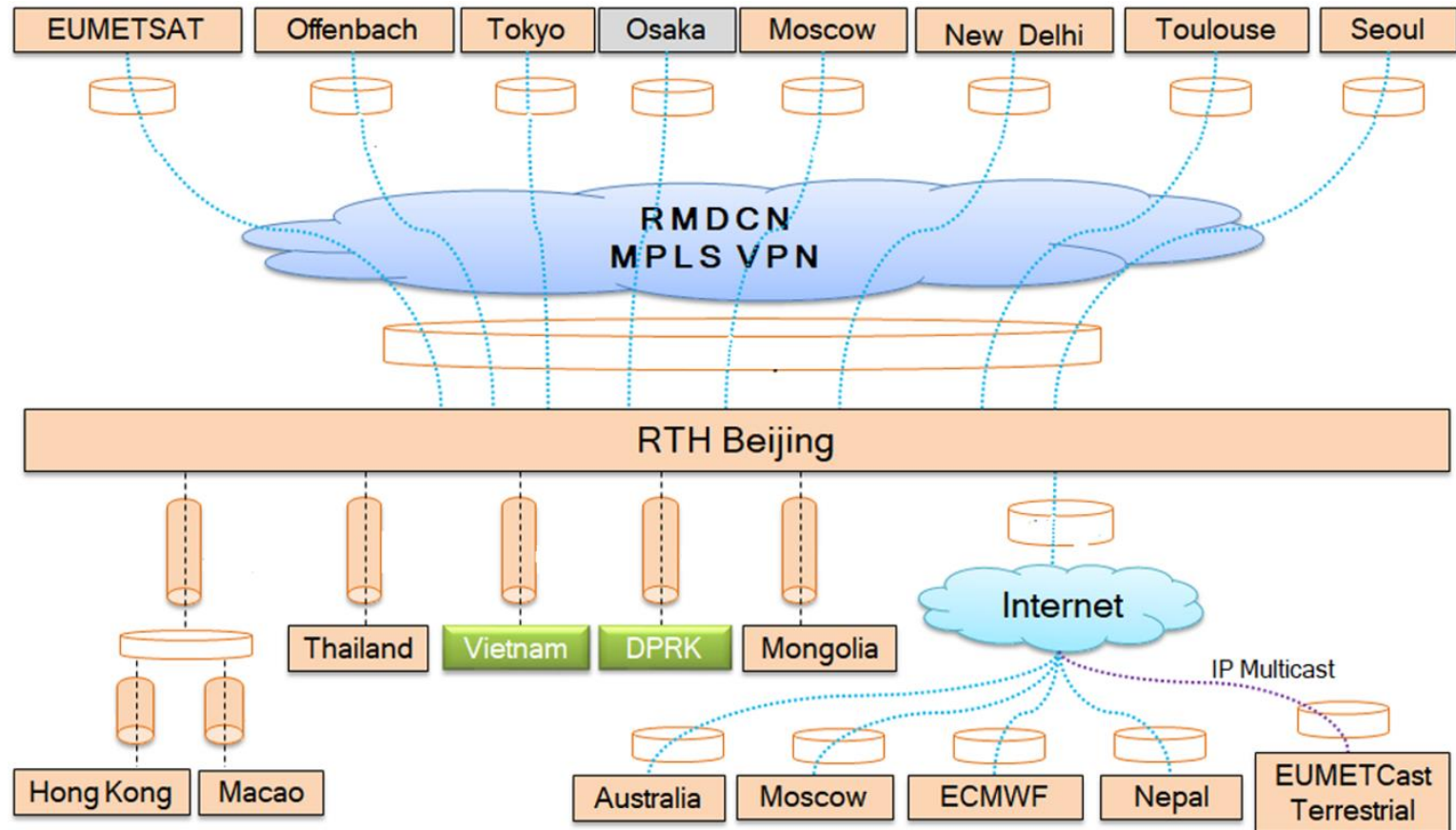
CMA assumes the responsibility of RTH in Region II of WMO, collects and exchanges GTS data among CMA, other RTHs and NMCs in Area of Responsibility via GTS main network (RMDCN), bilateral dedicated lines as well as Internet.

GTS data exchange includes:

- surface
- upper-air
- ocean/ship/buoy
- satellite
- NWP products
- ...

Daily volume:

- Collection: **~34GB**
- Dissemination: **~20GB**



GISC Beijing

CMA is endorsed by WMO in 2011 as one of the WIS GISCs to collect from and disseminate information to WIS centers in its Area of Responsibility and with the global WMO community, and it provides a portal with the services of data discovery, data cache and data subscription.



Area of Responsibility

NCs (7):

- China
- Hong Kong, China
- Macao, China
- Democratic People's Republic of Korea
- Mongolia
- Nepal
- Pakistan

DCPCs (6):

- WWIS (Hong Kong, China)
- WMC (CMA)
- RSMC (CMA)
- BCC/NCC (CMA)
- NSMC (CMA)
- RTH (CMA)

Global Services of GISC Beijing

WIS2 Global Service instances

Global
Broker



Brazil
China
France
USA

Global
Discovery
Catalogue



Canada
China
Germany

Global
Cache



China
Germany
Japan
Korea
Saudi Arabia
UK/USA

Global
Monitoring



China
Morocco



WORLD
METEOROLOGICAL
ORGANIZATION

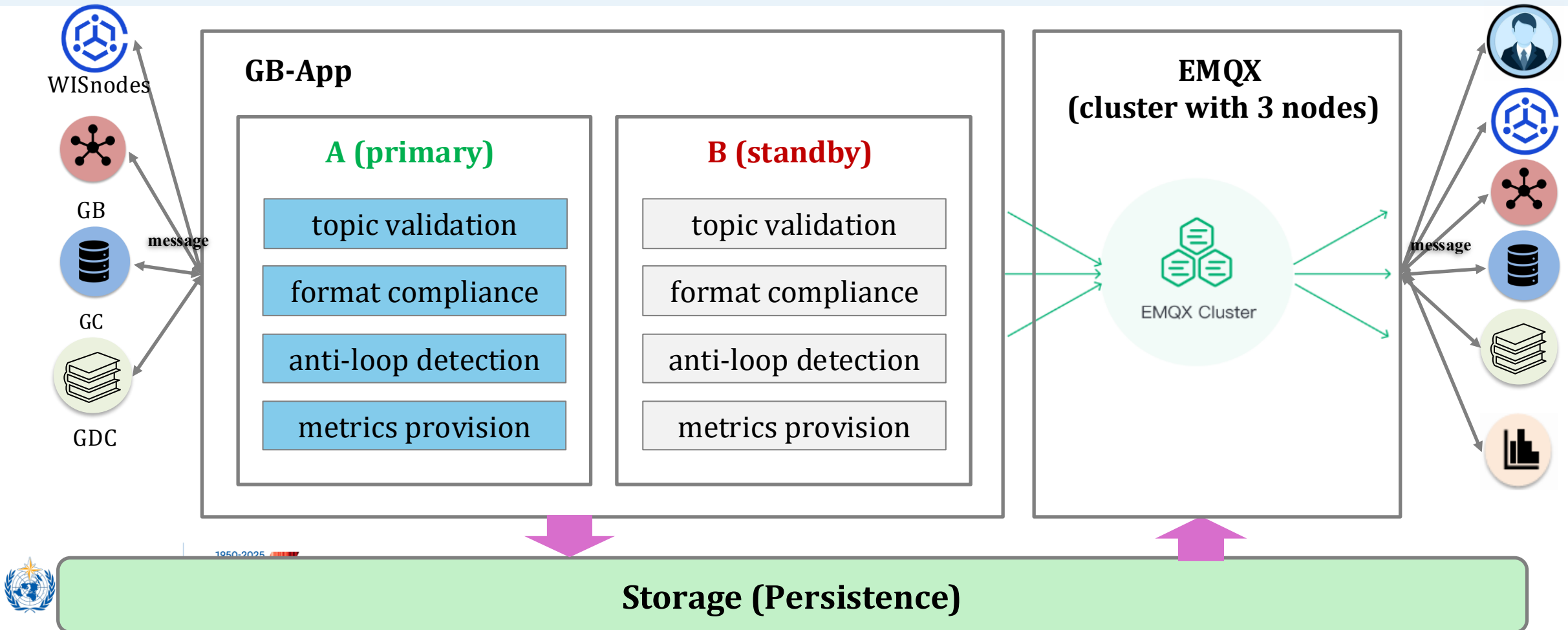


WORLD
METEOROLOGICAL
ORGANIZATION



Global Broker of GISC Beijing

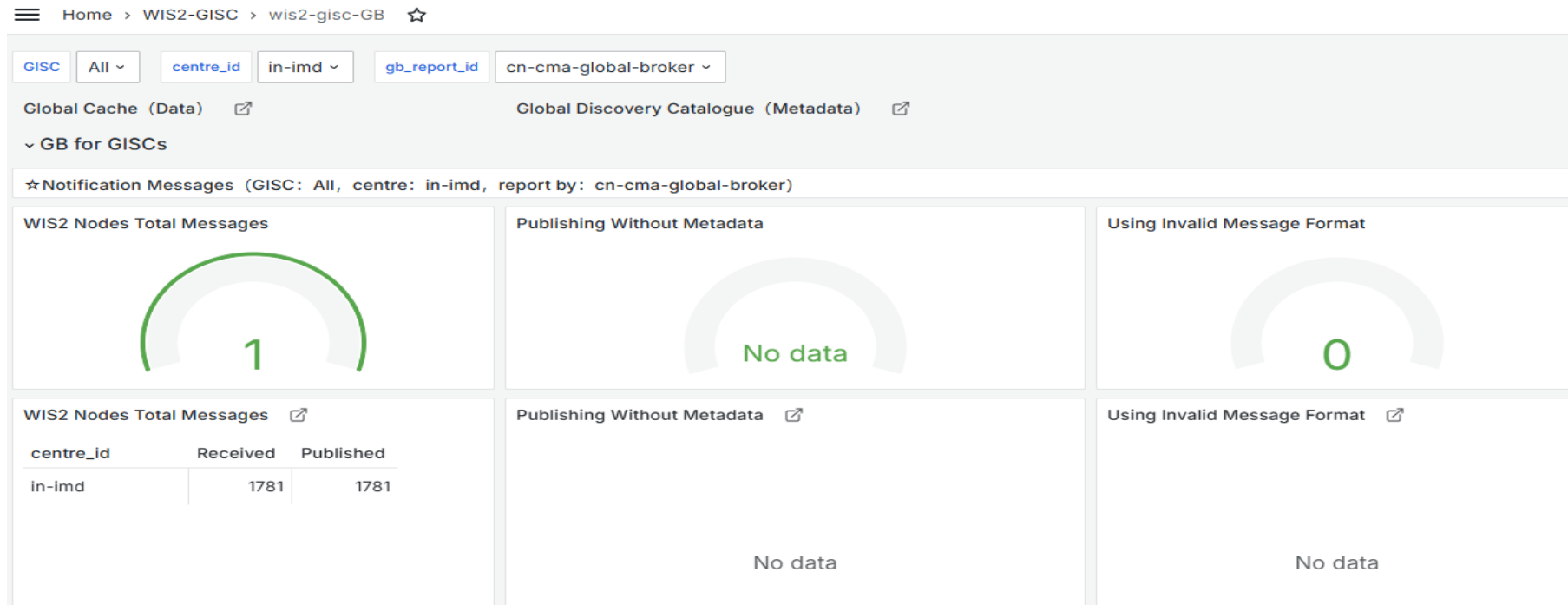
GB CMA is built around two software components, one is off the shelf broker - EMQX, the other one is called GB-App, which is used to implement the additional features. The GB-App is highly available, with a primary node and a standby.



Global Broker of GISC Beijing

GB CMA subscribes to GB MF and all the GCs. Additionally, GB CMA subscribes to the Message Broker operated by each WIS2 node and republishes notification messages.

Through the GM CMA, we can check the message status of WIS2 nodes received and published by GB CMA as well as review metadata and message verification details.



Global Broker of GISC Beijing

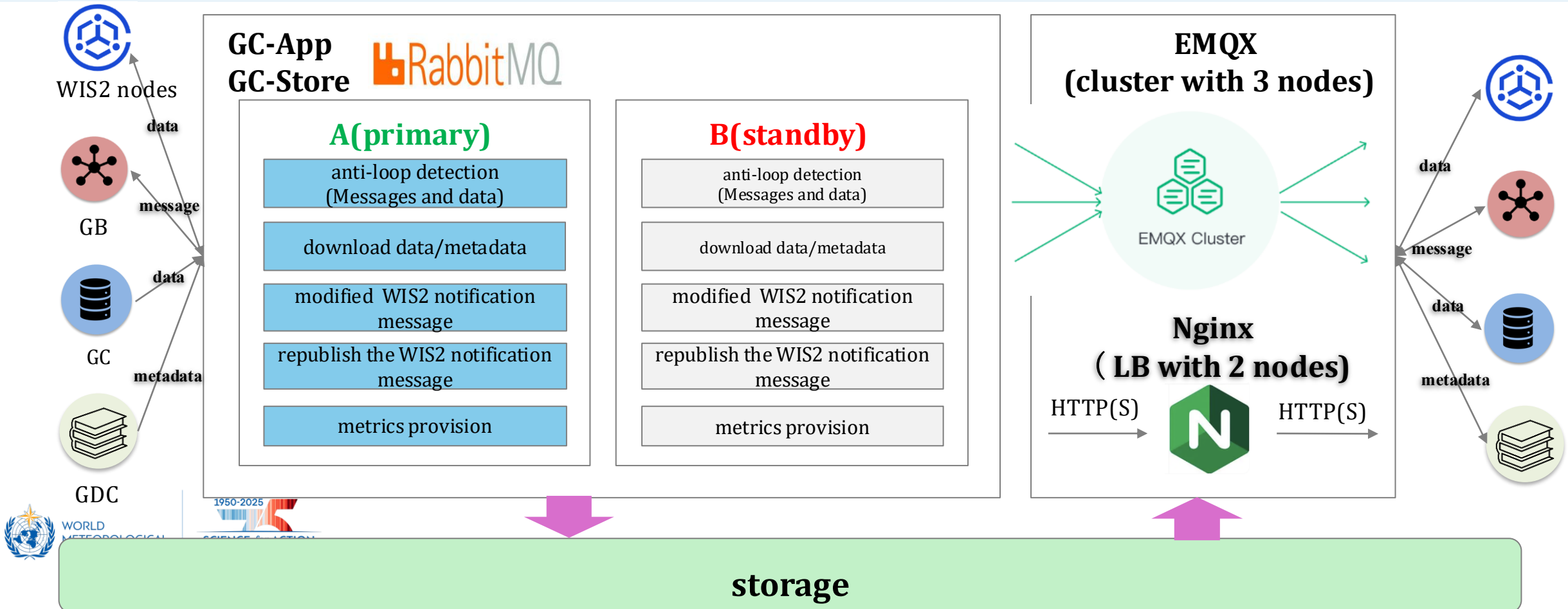
GB CMA is also being subscribed by other countries and regions such as Australia, Bangladesh, Brazil, Canada, Finland, France, Germany, Hong Kong, Italy, Japan, Malaysia, Poland, Russia, Saudi Arabia, South Korea, Singapore, United Kingdom, United States

The number of messages published by GB CMA.

Date	origin/a/wis2	cache/a/wis2	Sum
2025-09-10	2,617,136	7,013,656	9,630,792
2025-09-11	2,673,648	7,166,553	9,840,201
2025-09-12	2,635,768	7,443,909	10,079,677

Global Cache of GISC Beijing

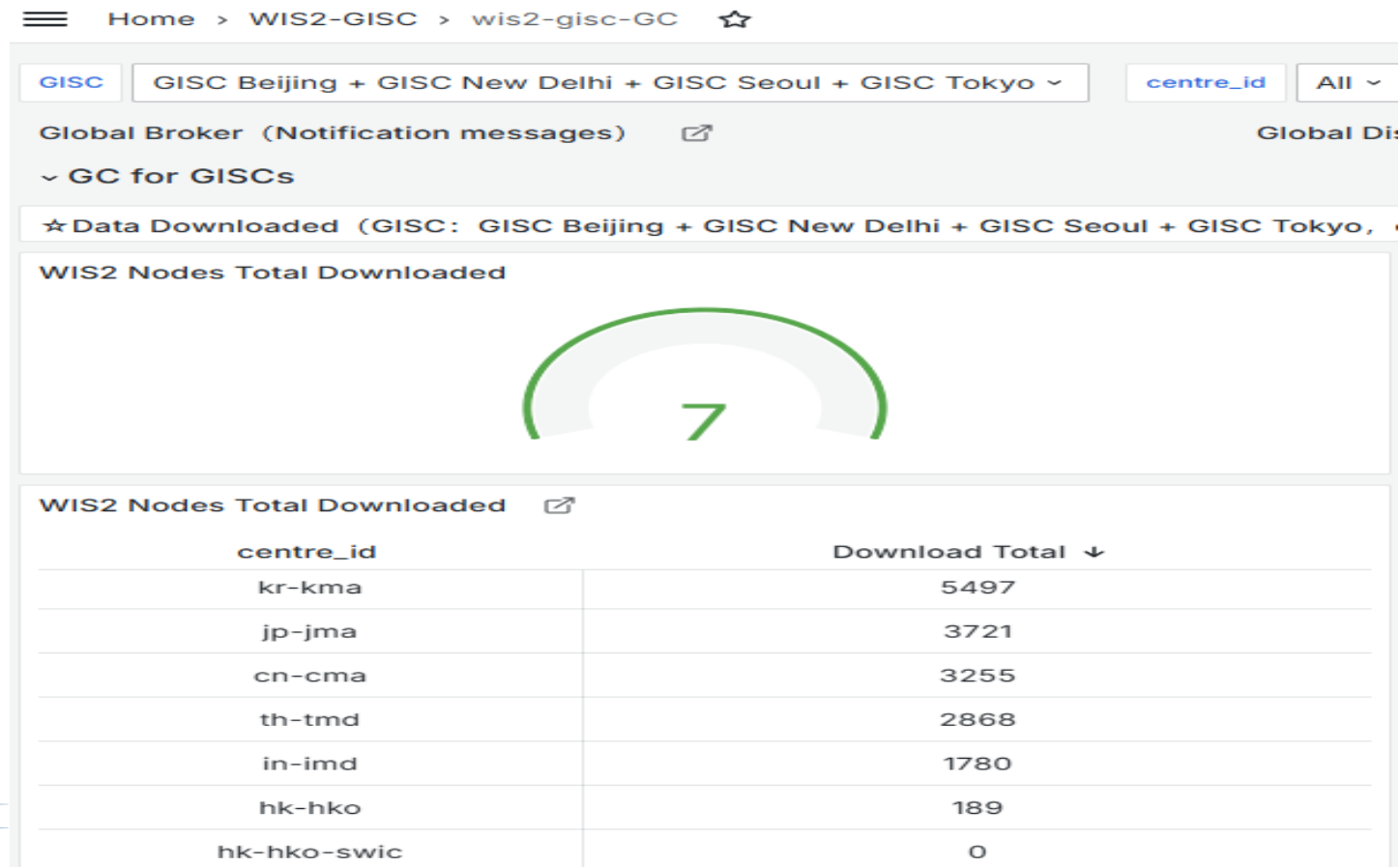
GC CMA is built around three software components, first is off the shelf broker - EMQX, the second is called GC-App, which is used to receive data from WIS2 Nodes and other Global Caches. the third is Nginx, which allowing Data Consumers to download cache resources with high bandwidth and low latency. The GC-App is highly available, with a primary node and a standby.



Global Cache of GISC Beijing

As of September 2025, GC CMA has downloaded data from **88** WIS2 nodes worldwide, with the number of downloaded and cached files exceeding **two million** every day.

We can find the statistical results of the data downloaded by GC CMA through the GM.



Global Cache of GISC Beijing

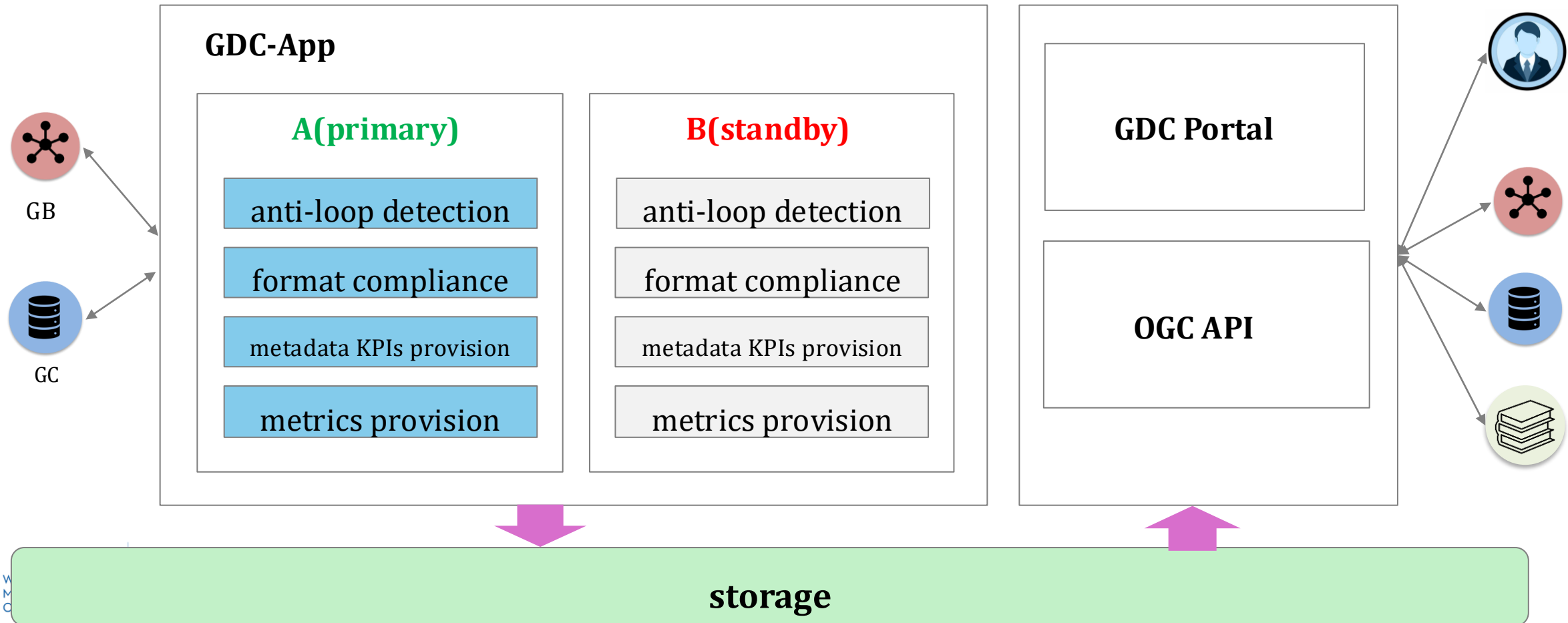
GC CMA is also being subscribed and downloaded data by other countries and regions, such as Austria, Ethiopia, the Faroe Islands, France, Germany, Hong Kong(China), India, Iran, Italy, Japan, Kyrgyzstan, Malaysia, Philippines, Poland, Rwanda, Russia, Slovakia, South Korea, Ukraine, the United Arab Emirates, The United States

Download Service Statistics for GC CMA on September 12

Wis2 Node	The total number of downloaded files	The sum of downloaded data
Hong Kong(China)	12,604	512 MB
India	52,467	4095 MB
...	...	...
Total	920,000	57.6 GB

Global Discovery Catalogue of GISC Beijing

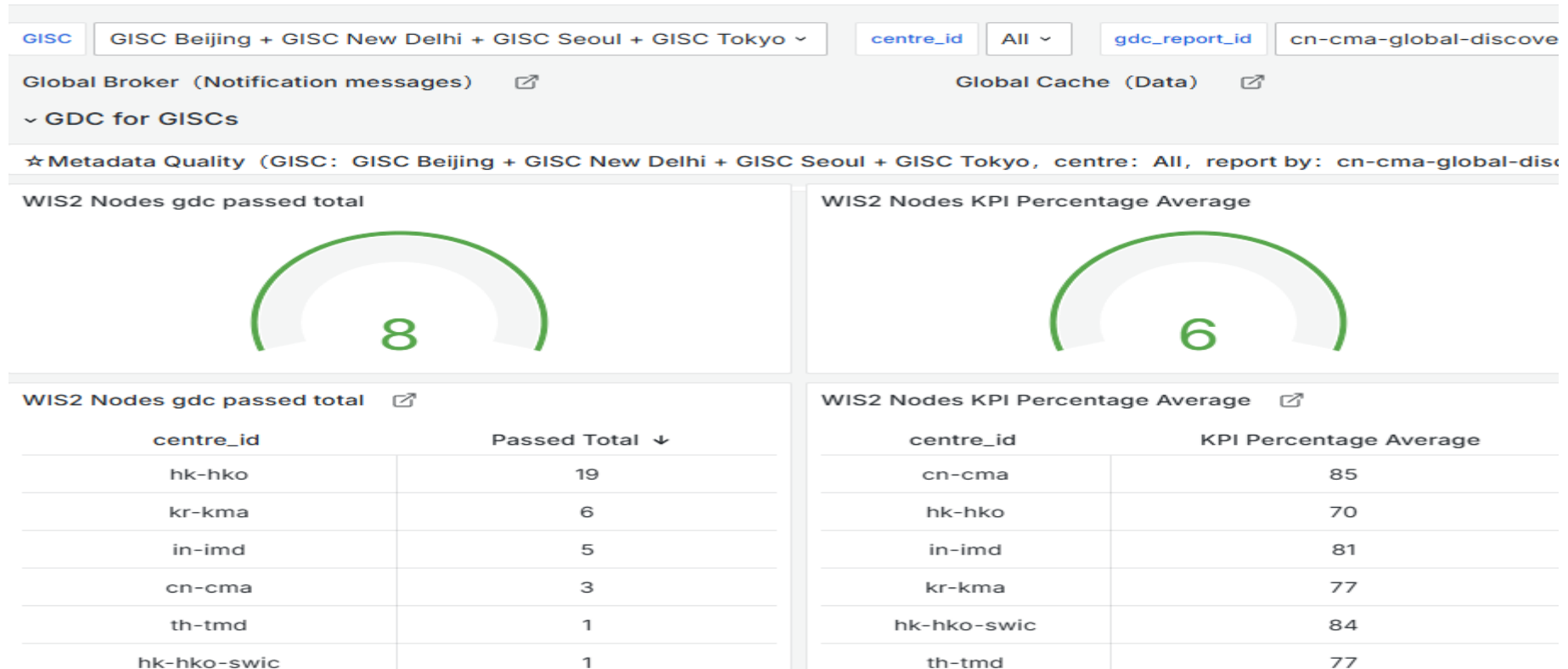
GDC CMA is built around three software components, one is called GDC-App, with a primary node and a standby. The other two are GDC Portal and OGC API, which are used to provide metadata services.



Global Discovery Catalogue of GISC Beijing

The GDC CMA is consistent with the metadata of the other two GDCs. Currently, the GDC contains over 270 metadata records.

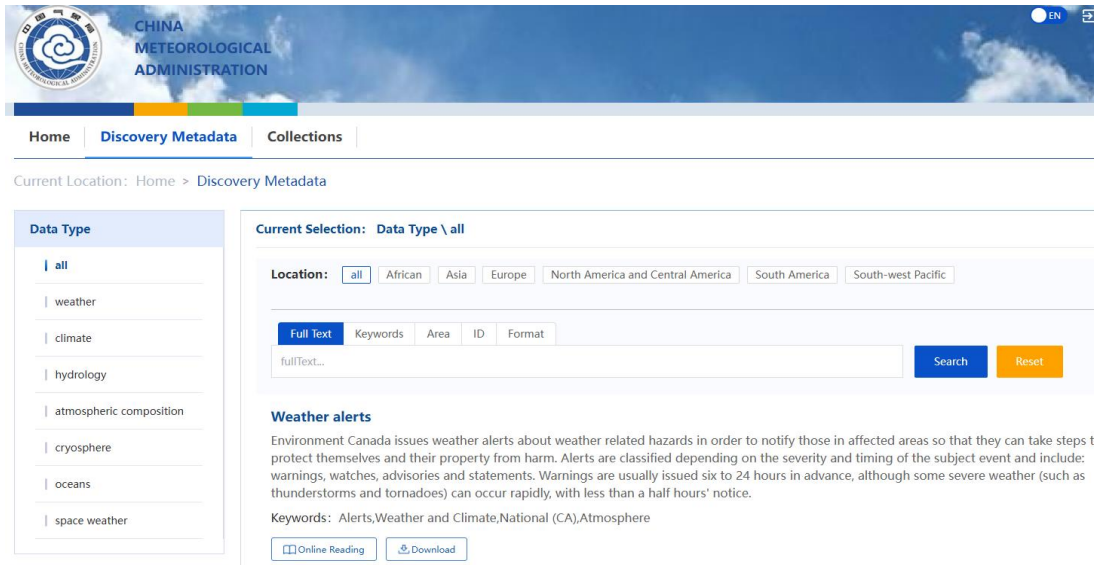
We can use GM to check the quality of the metadata published by each WIS2node



Global Discovery Catalogue of GISC Beijing

The GDC CMA offers metadata services via the portal website or through the OGC API interface.

<https://gdc.wis.cma.cn/>



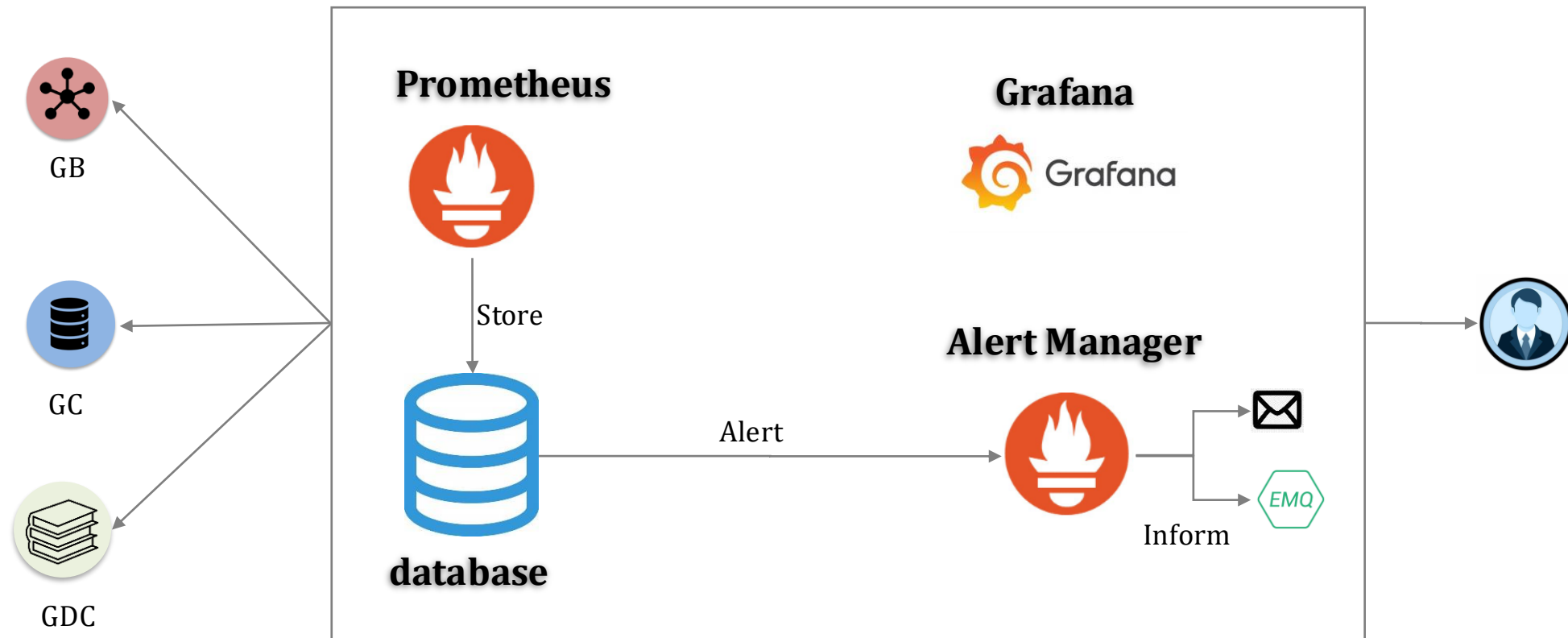
The screenshot shows the GDC CMA portal website. The header includes the China Meteorological Administration logo and the text 'CHINA METEOROLOGICAL ADMINISTRATION'. Below the header, there are tabs for 'Home', 'Discovery Metadata', and 'Collections'. The 'Discovery Metadata' tab is selected. The main content area shows the 'Current Location: Home > Discovery Metadata'. On the left, there is a 'Data Type' sidebar with a list of categories: 'all', 'weather', 'climate', 'hydrology', 'atmospheric composition', 'cryosphere', 'oceans', and 'space weather'. The 'all' category is selected. The main content area shows the 'Current Selection: Data Type \ all'. Below this, there is a 'Location' filter with buttons for 'all', 'African', 'Asia', 'Europe', 'North America and Central America', 'South America', and 'South-west Pacific'. The 'all' button is selected. Below the location filter, there is a search bar with the text 'Full Text...' and buttons for 'Full Text', 'Keywords', 'Area', 'ID', and 'Format'. The 'Full Text' button is selected. Below the search bar, there is a 'Weather alerts' section with a paragraph of text and a 'Keywords' section with the text 'Alerts, Weather and Climate, National (CA), Atmosphere'. At the bottom, there are buttons for 'Online Reading' and 'Download'.

<https://gdc.wis.cma.cn/collections/wis2-discovery-metadata/items/urn:wmo:md:cn-cma:data.core.weather.surface-based-observations?f=json>

```
{
  "id": "urn:wmo:md:cn-cma:data.core.weather.surface-based-observations",
  "conformsTo": [
    "http://wis.wmo.int/spec/wcmp/2/conf/core",
    "http://www.opengis.net/spec/ogcapi-records-1/1.0/req/record-core"
  ],
  "type": "Feature",
  "geometry": {
    "type": "Polygon",
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        [135.05, 53.55],
        [135.05, 3.86],
        [73.66, 3.86]
      ]
    ]
  },
  "properties": {
    "identifier": "urn:wmo:md:cn-cma:data.core.weather.surface-based-observations",
    "title": "ISMN SYNOP reports - China : available from BABJ (PEKING (BEIJING)) at 00,06,12,18 .",
    "description": "Surface weather observations from China",
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            "id": "weatherObservations"
          }
        ],
        "scheme": "https://github.com/wmo-im/wis2-topic-hierarchy/blob/main/topic-hierarchy/earth-system-discipline/index.csv"
      }
    ]
  },
  "type": "dataset",
}
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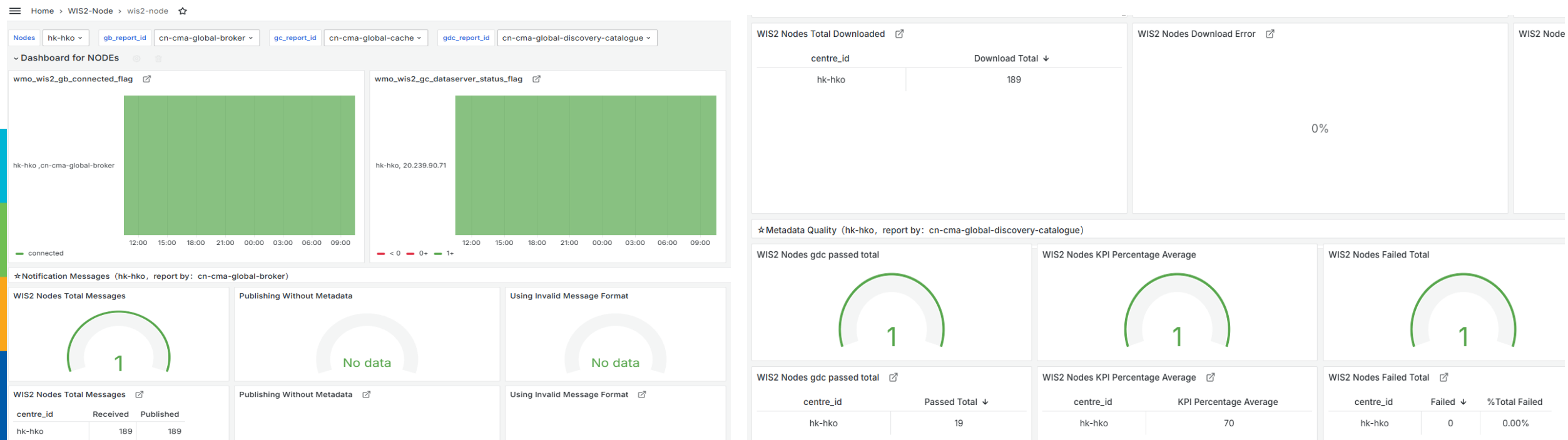
Global Monitoring of GISC Beijing

Global Services are providing metrics in an agreed format and those are collected at regular intervals by Prometheus. Prometheus stores the metrics in a database. If the metrics are either missing or have unusual values, Prometheus can trigger an alert.



Global Monitoring of GISC Beijing

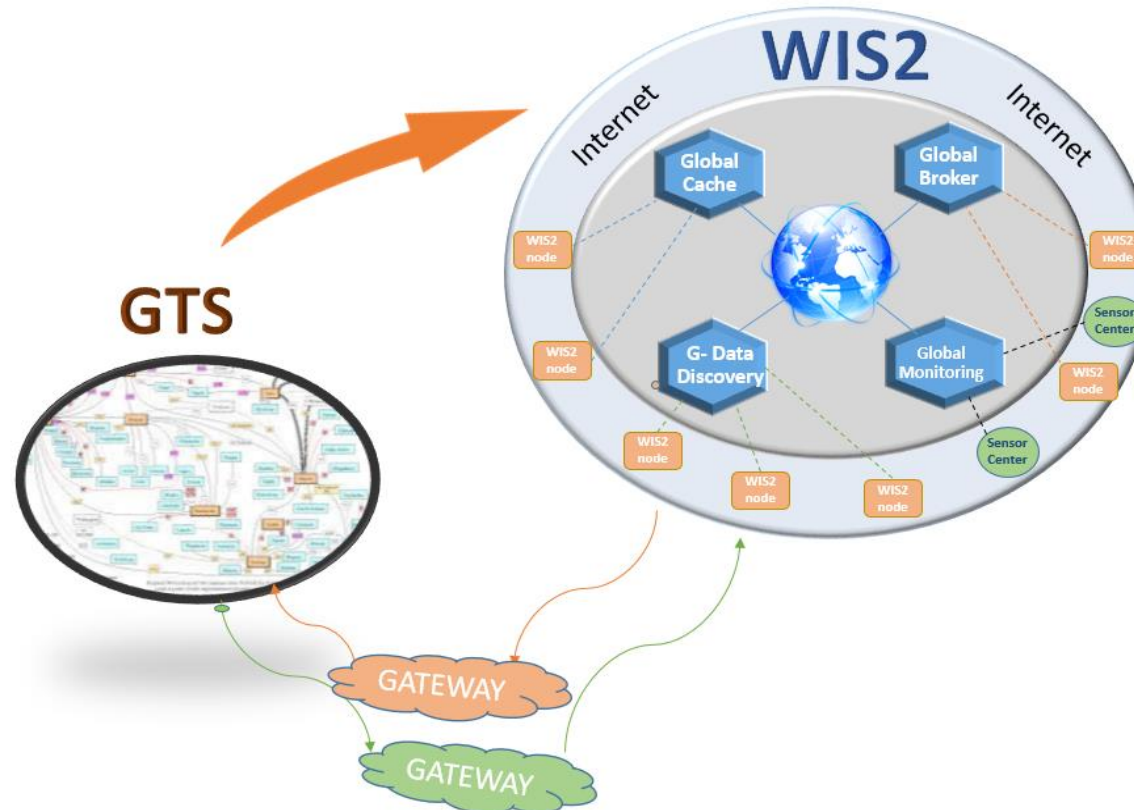
GM CMA can organize the metrics reported by Global Services and fully display information such as messages, data, metadata, and other relevant details for a specific site.



WIS2-GTS Gateway

According to the WIS2 implementation plan, the Global Telecommunication System (GTS) will be decommissioned by 2033, and National Meteorological and Hydrological Services NMHSs will use the WIS2 platform for data exchange.

The purpose of WIS2-GTS gateway is to enable GTS members who have not yet migrated to WIS2 to continue to receive GTS data from GTS members who have migrated to WIS2 and stopped their GTS systems.



Thank you
Merci
Gracias
شكرا
谢谢
Спасибо