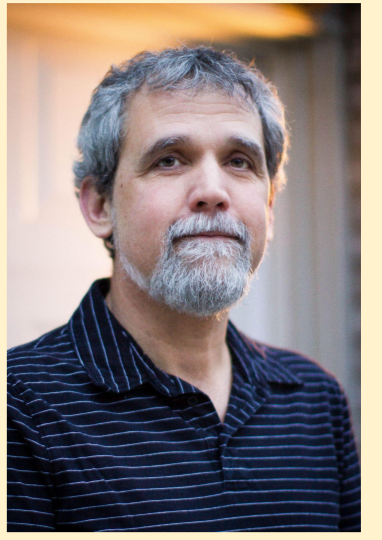


Preparing for the next WLCG Network Data Challenge: Site Network Monitoring

Julia Andreeva¹, Alessandra Forti², Shawn McKee³

For the WLCG Monitoring Task Force

¹CERN, ²University of Manchester, ³University of Michigan



Motivation and Context

During the first **WLCG Network Data Challenge** in fall of 2021 some shortcomings in the monitoring that impeded the ability to fully understand the results collected during the data challenge were identified. One of the simplest missing components was site specific network information which was needed to understand which sites are experiencing **bottlenecks** or might be **misconfigured** or **under utilized** based on their capacity.

To remedy this and other monitoring shortcomings, the **WLCG Monitoring Task Force** formed at the end of 2021.

The main task in site network monitoring is to **describe** and **instrument** the largest WLCG site networks before **Data Challenge 2024 (DC24)**, enabling the **WLCG DOMA** group to track site network performance before, during and even after the data challenge is run. This site specific information, in context with the rest of the monitoring and transfer information that will be gathered, will provide a much clearer picture of site performance, the location and type of bottlenecks or misconfigurations and determine the most effective upgrades and improvements before the next **DC**.

Goals and Activities

GOAL: The task force wants to have the largest WLCG sites **describe** and **instrument** their site networks in advance of the next data challenge.

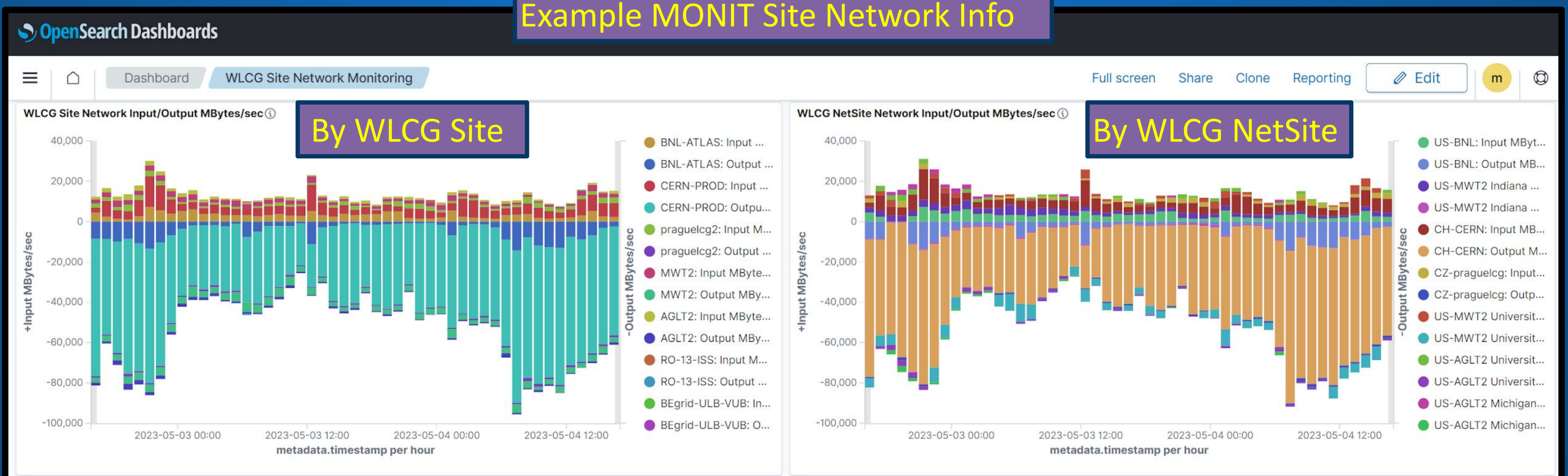
Sites will need to provide **two main items**:

1. A filled out **markdown template** uploaded to CERN Gitlab which describes their site network, its components and how it connects to the global network.
2. A **JSON file** with the defined schema, updated every 60 seconds, that is accessible by CERN MONIT and provides the total INPUT/OUTPUT to/from the site (Bytes/second)

The task force has provided detailed information about the format of the JSON file, including an example **Python3** script which can be used to gather the needed information via **SNMP**. Sites register the JSON file URL with **WLCG-CRIC**.

Sites are encouraged to describe their network by filling out the optional (as well as mandatory) components of the markdown template. Completed templates should be accessible via URL, uploaded to **Gitlab** and registered in **WLCG-CRIC**.

Example MONIT Site Network Info



Near-term Plans

The task force is preparing a campaign starting in **May 2023** to ensure the largest WLCG sites can provide site network information in advance of **DC24**

Sites are selected as "large" if their **HEPscore-hours** > **250 Million** during for the period **February-April 2023**.

The task force is already gathering data from the early adopters (see plots above) and plans to verify the correctness of the data and evaluate the provided markdown files to ensure usefulness.

For Further Information

WLCG Monitoring TF:

<https://twiki.cern.ch/twiki/bin/view/LCG/MonitoringTaskForce>

Opensearch MONIT Site network dashboard:

https://monit-opensearch.cern.ch/dashboards/goto/f0607fb8528ce6b7c9a336aef74be40b?security_tenant=global

CERN Gitlab Site Network Monitoring (Use QR code)



Acknowledgements

We would like to thank the **WLCG**, **HEPiX**, **perfSONAR** and **OSG** organizations for their work on the topics presented.

In addition we want to explicitly acknowledge the support of the **National Science Foundation** which supported this work via:

OSG: NSF MPS-1148698, IRIS-HEP: NSF OAC-1836650

