



MONIT Data and Usage

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Overview

- **WLCG data in MONIT**
- **Experiments data in MONIT**
- **Other datasets in MONIT**
- **Using the MONIT infrastructure**
 - Ingestion and Access
 - Storage and Processing

WLCG in MONIT

- **WLCG transfers**

- Monitoring of site transfers as reported by FTS and XRootD
- Dashboards: global site transfers, FTS transfers, XRootD transfers

- **WLCG site monitoring**

- Monitoring of sites as reported by ETF (and ALICE producer)
- Dashboards: historical views of profiles computations and raw tests
- Reports: monthly availability and reliability in PDF format

WLCG Transfers

FTS Transfers
Transfers



WLCG Transfers
Transfers



XRootD Transfers
Transfers



WLCG Site Monitoring

WLCG SiteMon Historical Profiles
SiteMon



WLCG SiteMon Historical Tests
SiteMon



WLCG SiteMon Latest Tests
SiteMon



WLCG Accounting

Tape Reporting
Accounting



WLCG Accounting Utility (Comparison)
Accounting



WLCG Accounting Utility (Generated)
Accounting



WLCG Accounting Utility (Validated)
Accounting



WLCG Storage Space Accounting
Accounting



WLCG CRIC

CRIC Pledges
CRIC



CRIC Site Capacities
CRIC



Experiments data in MONIT

- **ATLAS data**
 - Job Monitoring from Panda and CERN T0 databases
 - DDM Transfers from Rucio events and Rucio traces
 - DDM Accounting from Rucio accounting in HDFS
 - K8s Rucio Prometheus metrics and logs
 - Site Status Board metrics (SSB)
 - Services availability metrics (SLS)
 - Others: Event Index metrics, Event Service metrics

ATLAS Organization

The dashboards in the ATLAS organization are split in three different types:

- **Production:** only tested and stable dashboard will be included in the production folder. Dashboards should be changed rarely and only admins can do it after they have been tested and evaluated.
- **Development:** new ideas and functionality for production dashboards can be tested in dashboards in the development folder.
- **Playground:** anyone can add and change dashboards in the playground folder. Here users can create their own dashboards or copy over production dashboards and change them.

Production

ADC Live Page Stats Production	☆
DAOD distribution Production	☆
DDM Global Accounting (Historical) Production	☆
DDM Global Accounting (Snapshot) Production	☆
DDM Site Accounting Production	☆
DDM Transfers Production	☆
DDM Transfers (Historical data) Production	☆
Derivation Production Production	☆
Derivation Production IDB Production	☆
EventIndex Production	☆
Harvester Production	☆
Helmut Site Status Board DDM Production	☆

Development

= Jobs Monitoring IG Development	☆
== IG Success Efficiency Development	☆
[Dev] DDM Error code Development	☆
ADC Live Page Stats [DEV] Development	☆
ADC Live Transfers (1 week) Development	☆
ADC Live Transfers (48h) Development	☆
ATLAS Job Monitoring ES (Historical) Development	☆
Cardinality DB view Development	☆
ClusterLogs Development	☆
DAOD distribution [eschanet dev] Development	☆
DDM Dashboard Alerts Development	☆
DDM Matrix Development	☆

Experiments data in MONIT

- **CMS data**

- Job Monitoring from Condor metrics
- Data Transfer from AAA and Rucio metrics
- Site Readiness metrics (SST)
- More metrics: TZero, WMAgent, WMArchive, etc.
- Logs: SI-Factory, CMSWeb, CMSWebk8s, Crab
- Services availability metrics (SLS)



Welcome to the CMS Monitoring project

cms-comp-monit@cern.ch | [CMSMONIT_JIRA](#) | [DOCUMENTATION](#)



[CMSSDT](#) [CMSWEB](#) [CRAB](#) [Jobs](#) [P&R](#) [DM Ops](#) [SI](#) [Sites](#) [SLS](#) [Tier0](#) [VOCMS](#) [WMA](#) [XrootD](#) [k8s](#) [Alerts](#) [Others](#)

[Production](#) [Development](#) [Playground](#) [Contacts](#) [Meetings](#) [Migrations](#) [Data popularity](#) [CRSG Plots](#)

Tier0

- CMS Tier0 Jobs ☆
Production
- CMS TIER0 Production ☆
Production
- CMS TIER0 Replay vocms001 ☆
Production
- CMS TIER0 Replay vocms015 ☆
Production
- CMS TIER0 Replay vocms047 ☆
Production

Jobs

- CMS Job Monitoring - 12m ☆
Production
- CMS Job Monitoring - 12m (Bars) ☆
Production
- CMS Job Monitoring - ES agg data - OFFICIAL ☆
Production
- CMS Job Monitoring - ES agg data - OFFICIAL (Bars) ☆
Production
- CMS Task Monitoring - Task View ☆
Production
- CMS Tasks Monitoring GlobalView ☆
Production
- JobMonitoring Historical Data - ES source ☆
Production

CRAB

- CRAB ASOMetrics ☆
Production
- CRAB ASOMetrics OLD ☆
Production
- CRAB Metrics ☆
Production
- CRAB Overflow via JobRouter ☆
Production
- CRAB Schedds Instant Load ☆
Production

WMAgent

- CMS WMAgent Monitoring ☆
Production

Sites

- CMS T2 Facilities Use Cases ☆
Production
- Events By Site ☆
Production
- HS06 report ▲

Facilities & Services

- [Site Readiness Report](#)
- [Site Status Board](#)

cmsweb

- cmsweb FE k8s cluster ☆
Production
- cmsweb k8s BE production nginx ingress ☆
Production
- cmsweb k8s prod services ☆
Production
- CMSWEB Node Metrics ☆
Production
- CMSWEB timber k8s ☆
Production
- cmsweb usage ☆
Production
- cmsweb-prod k8s FE DBS cluster ☆
Production
- cmsweb-prod k8s nginx ingress ☆
Production
- cmsweb-testbed k8s cluster ☆
Production
- CouchDB ☆

AAA Infrastructure

- CMS FTS metrics ☆
Production
- Overview / Service Availability ☆
Production
- Site subscription ▲

StatusBoards

- CMS Monitoring Data Source Status ☆
Production
- CMS Monitoring K8S Clusters Status ☆
Production

OTHERS ▾

[WLCG Grafana Dashboards](#)

Kibana dashboards

[Running cores by campaign \(Dima Plot\)](#)

[User jobs \(webjob2\)](#)

[Spider error messages \(visible only inside CERN\)](#)

CERN Based (custom apps)

[CMS Frontier status](#)

[Production Monitoring PdmV](#)

[GWMS Condor monitoring](#)

[cmsweb Analytics](#)

personal dashboards

[Data and MC Production Overview](#)

Other datasets in MONIT

- **CERN and WLCG Network**

- LHCONE metrics
- LHCOPN metrics
- Perfsonar metrics

- **CERN Data Centre**

- Host metrics and alarms (HW + OS + services)
- Services availability, KPIs, and SLIs
- Syslog data and several service logs

Base Metrics/Alarms

Active Alarms

Alarms



Alarms History

Alarms



Host Metrics

Metrics



Host Metrics (Simple)

Metrics



Kubernetes Cluster

Metrics



OpenStack VMs

Metrics



Service Overview

IT Overview

Service Overview



Service Availability

Service Overview



Service Availability (Now)

Service Overview



Service SLIs

(Overview SLIs)

KPIs & SLIs



Batch SLIs

KPIs & SLIs



Data Centre SLIs

KPIs & SLIs



Database SLIs (WIP)

KPIs & SLIs



Infrastructure SLIs

KPIs & SLIs



Interactive SLIs

KPIs & SLIs



Network SLIs

KPIs & SLIs



Storage SLIs

KPIs & SLIs



Service KPIs

(Overview KPIs)

KPIs & SLIs



Batch KPIs

KPIs & SLIs



Data Centre KPIs

KPIs & SLIs



Database KPIs

KPIs & SLIs



Infrastructure KPIs

KPIs & SLIs



Interactive KPIs

KPIs & SLIs



Network KPIs

KPIs & SLIs



Storage KPIs

KPIs & SLIs



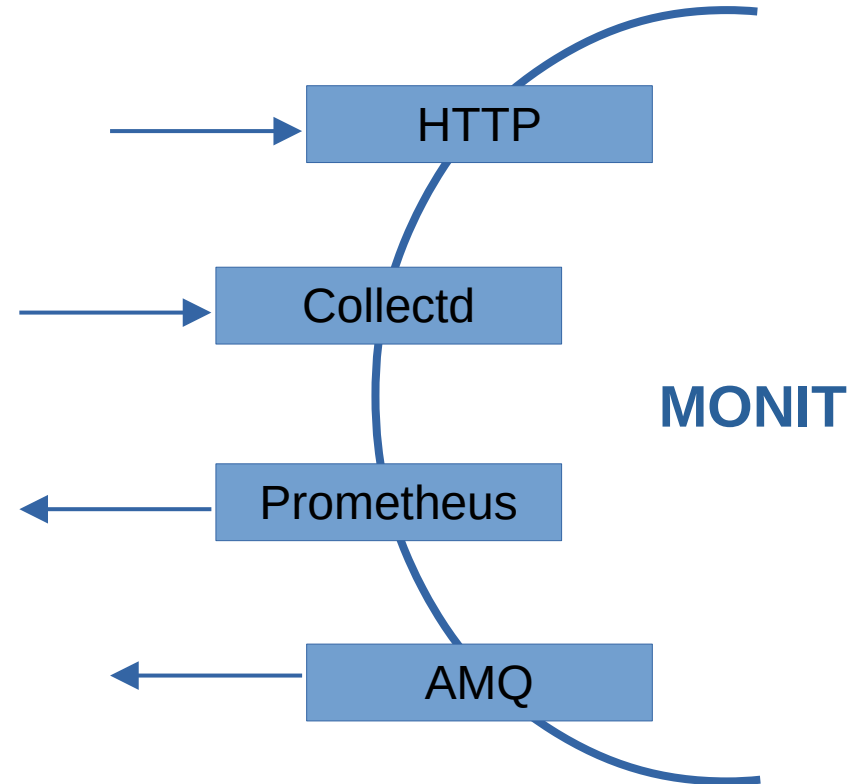
Web Services KPIs

KPIs & SLIs

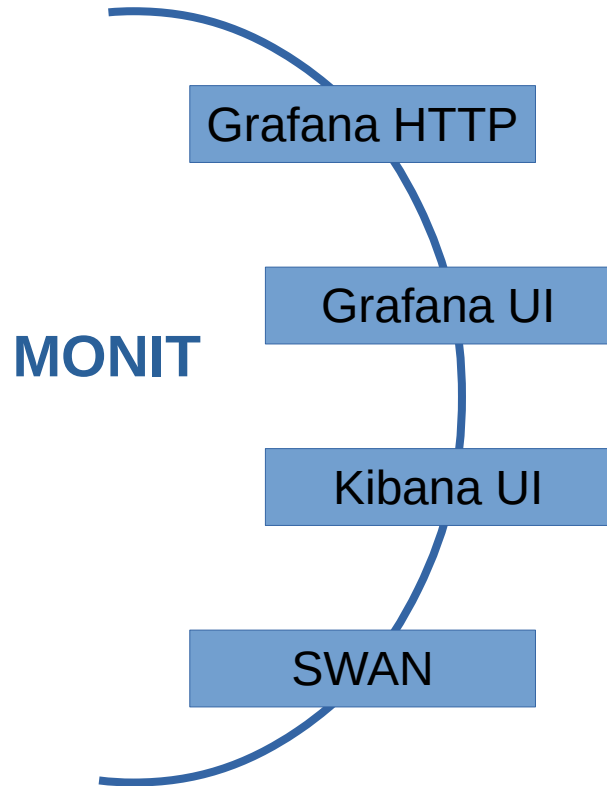


Using MONIT - Ingestion

- **You can send metrics, alarms, or logs**
- **Several endpoints available**
 - You send your data via HTTP
 - You use or write a Collectd plugin
 - You expose Prometheus data for scrapping
 - You put your data in a Messaging Broker
 - *(from outside CERN only AMQ is supported)*
- **Free to choose your client**



Using MONIT - Access



- **For plotting and dashboards**
 - Use Grafana UI
- **For data discovery**
 - Use Kibana UI
- **For programmatic access**
 - Use Grafana HTTP Proxy or SWAN
- **Kibana and SWAN are services managed by other IT teams**

Using MONIT - Storage



kafka

(raw data)

3 days



elastic

(raw data)

1-3 months



(agg. data)

5-10 years



influxdb

(agg. data)

5-10 years



(raw data)

13 months



Using MONIT - Processing

- **Optional step mainly used for:**

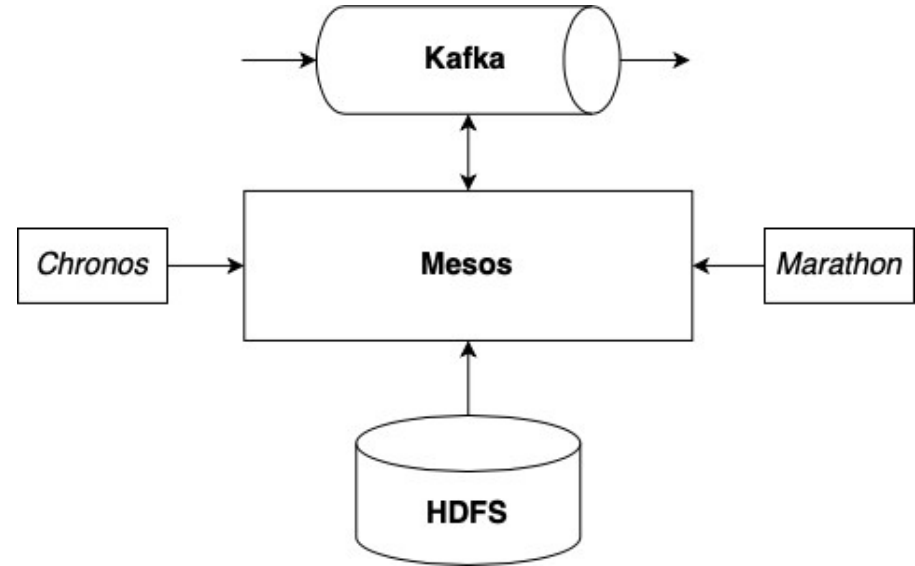
- Enrichment, Aggregation, ETL

- **Most jobs are Spark based**

- Can run in streaming or batch mode
- Few Logstash jobs for simple cases

- **Managed by MONIT or Users**

- Today MONIT runs jobs for WLCG use cases and large Experiment use cases



Thank you !

<http://cern.ch/monit-support>

<http://cern.ch/monit-docs>



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