



# WLCG Ops Coordination landscape

GDB meeting, Nov 11, 2020

Julia Andreeva, Maarten Litmaath

v1.1

# Mandate

From the WLCG Operations Portal:

*To coordinate activities across WLCG stakeholders in order to keep the WLCG infrastructure **dependable** and direct its **evolution** toward new technologies and paradigms where such is deemed desirable.*

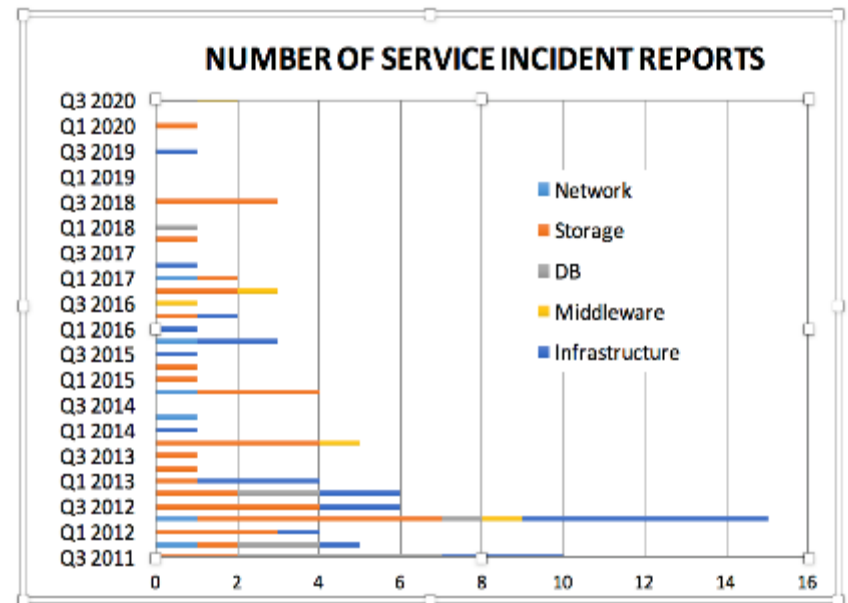
# Collaborative effort

- WLCG operations coordination is performed by the WLCG Operations Coordination team in **close collaboration** with
  - Computing teams in the experiments
  - Infrastructure provider projects: EGI, OSG, NDGF
  - Site admins
  - Developers of WLCG SW stack components
- Coordination goes via weekly and monthly meetings and joint activities in task forces and working groups

# WLCG infrastructure evolution

WLCG infrastructure has matured over the last decade. One of the indicators is the number of the Service Incident Reports per quarter.

- On the other hand, the infrastructure is becoming more complex, dynamic and heterogeneous (HPC, clouds, new architectures). Operations need to adapt to this evolution.
- In addition to the usual operational tasks, recently the main focus has shifted toward preparations for Run 3 as a step-up stage for HL-LHC.



# Goals

- Sustainability of the WLCG infrastructure and implementation of the WLCG strategy for its evolution
- Examples:
  - Storage and protocol consolidation
    - Massive upgrade campaigns required by DOMA TPC
    - Moving towards SRM-independent storage accounting
    - DPM future
  - Integration of new types of resources (HPC, clouds, accelerators...)
    - Changes in WLCG Information Systems, Pledges and Accounting will be required

# Development activities

- Development of systems and services which are required for Operations Coordination or may benefit site or experiment operations:
  - **CRIC**
    - Topology, pledges, accounting, ...
  - **WLCG Accounting Utility (WAU) and WLCG Storage Space Accounting (WSSA)**
  - **SIMPLE framework**
    - Ease the deployment of grid services at sites
  - **Operational Intelligence Framework**
    - Log mining, anomaly detection, alerting

# Operations activities

- Weekly Ops meetings
  - Followup of issues as needed
- Monthly Ops Coordination meetings
  - Featuring dedicated topics
  - Plus standard round-table reports
    - Experiments, task forces & working groups
- Special matters
  - COVID-19 impact
  - GDPR and privacy notices
  - SAM migration to MONIT
  - Critical services overhaul
  - Preparations for Storage WS
  - ...
- Monthly and half-yearly reports to the MB

Please refer to  
the directory

# Dedicated topics in 2020 so far

- AVX2 on the WLCG infrastructure - Collecting CPU flags
- CERN Ceph incident followup
- CERN Grid CA OCSP incident
- CERN ORACLE outage followup
- COVID-19 impact on WLCG operations
- CREAM Migration TF update
- ETF update
- Migration of SAM to MONIT infrastructure (4x)
- SRR deployment
- VOMS upgrade and usage of VOMS legacy clients
- WLCG Critical Services overhaul (5x)
- WLCG computing resources for COVID-19 research
- WLCG storage workshop



# Active task forces (1)

- Accounting
  - Moved critical functionality from REBUS and EGI Accounting Portal to CRIC
    - Pledges
    - Accounting validation through CRIC GUI
    - Accounting report generation
  - WLCG Accounting Utility (WAU)
  - Significant progress with storage accounting
    - Enabled tape reporting at all archive sites
    - SRR deployment (topology + accounting)
    - WSSA service & GUI

# Active task forces (2)

- Information System Evolution
  - Coordination of CRIC development and deployment for various customers and purposes
  - WLCG CRIC - central entry point for WLCG topology information
    - WLCG resource topology
    - Network topology
    - Accounting and pledges
    - Generic CRIC API replacing experiment VO feeds
  - Dedicated instances with VO-specific info
    - Experiments: ATLAS, CMS, DUNE
    - Projects: ESCAPE

# Active task forces (3)

- Storage upgrade task forces
  - dCache
  - DPM
  - StoRM
  - As needed: XRootD, ...
  - Goals: to make desired new features available everywhere
    - DOMA TPC requirements for XRootD, HTTP
    - SRR deployment

# Active task forces (4)

- IPv6 deployment
  - Large overlap with HEPiX IPv6 WG
  - Current main objective: get all data handling services to become *dual stack*
    - Future: prepare phaseout of IPv4
  - T1 sites and services mostly done
  - T2 sites ~80% done, now facing a long tail

# Active task forces (5)

- CREAM Migration
  - To track and assist sites with migrating toward other solutions (ARC, HTCondor, ...) for providing computing resources
    - Official deadline: Dec 2020 (CREAM EOL)
  - Status as of Nov 5:
    - 32 done out of 90: 16 ARC, 16 HTCondor CE
    - Most of the remaining sites working on it
    - No big concerns: the vast majority of the resources will have been migrated on time

# Active working groups (1)

- Archival Storage
  - Under DOMA umbrella
- Network Throughput
  - Large overlap with various, particularly US-based, network R&D projects
    - Looking into SDN, NFV, ...
  - Concerned with development and operations of PerfSONAR infrastructure
  - Assisting with investigation and resolution of network incidents affecting our infrastructure

# Active working groups (2)

- Security WG – usually initiated by MB or GDB
  - **Traceability**
    - Waiting for containerization (i.e. isolation) of ~all workflows in ALICE and LHCb
    - Challenge exercise foreseen for next year
  - **Authorization**
    - Defining guidelines for and coordinating the implementation of support for *WLCG tokens* that ultimately should replace X509+VOMS in the next years
    - Steady progress, in collaboration with DOMA TPC WG
  - **Federated Operations**
    - Aims to develop and implement guidelines to allow interested sites to have their *edge* resources operated remotely by grid experts

# Active working groups (3)

- Containers

- Main goal was to get Singularity working with the features we desire → done!
  - Particularly *unprivileged* namespaces
- To do: guidance for scalable handling of user images in CVMFS

- Kubernetes

- Looking into where WLCG services and workflows can profit from moving to K8s
  - For easier deployment & operations, more robustness & scalability, etc.



# Special matters (1)

- COVID-19 impact
  - Coordination of impact assessments and ad-hoc activities by experiments for Folding@Home
- GDPR and privacy notices
  - Lists of services to be considered
  - Experiment privacy notices
  - Waiting for CERN IT *Records of Processing Operations* to be published in production

# Special matters (2)

- SAM migration to MONIT
  - Coordination between all stakeholders
  - Overall process took ~2 years → now done!
- Critical services overhaul
  - New summary page with more practical definitions and purposes
- Preparations for the Storage WS, Nov 19-24
  - Organizing the 4 sessions with all stakeholders

# Conclusions & outlook

- WLCG Operations Coordination activities serve to help keep the infrastructure **reliable** and **evolve** it towards HL LHC
- We have new **challenges** ahead of us
- In order to succeed, a **joint effort** of all parties is required: WLCG central operations, experiments, sites and infrastructure providers
- Please get in touch if you would like to **contribute** in some way!