

ATLAS Computing Report

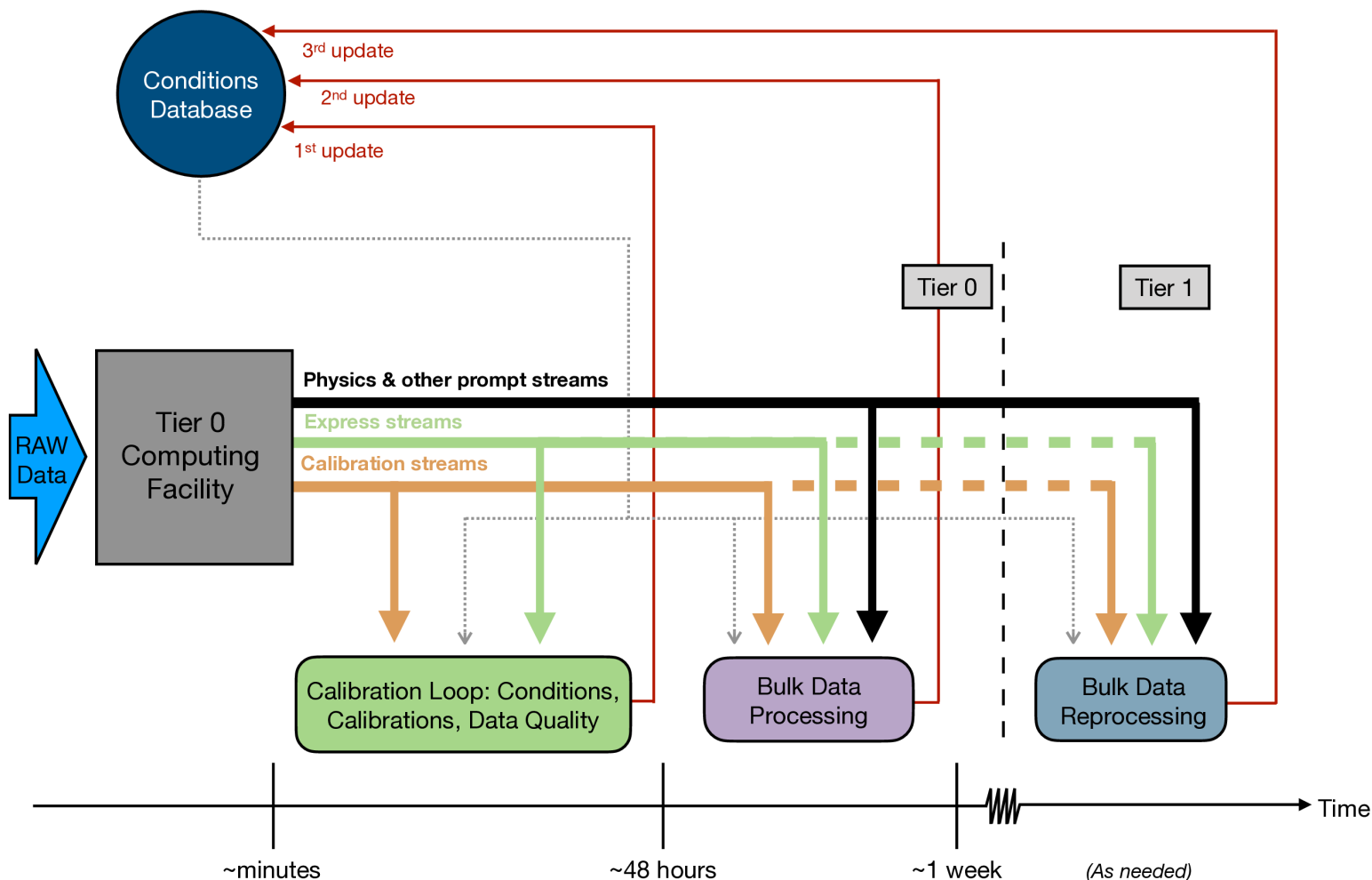
Lianyou Shan(IHEP)

Xiaofei Yan(IHEP)

Bo Liu (NKU)

Big thanks to our computing colleagues

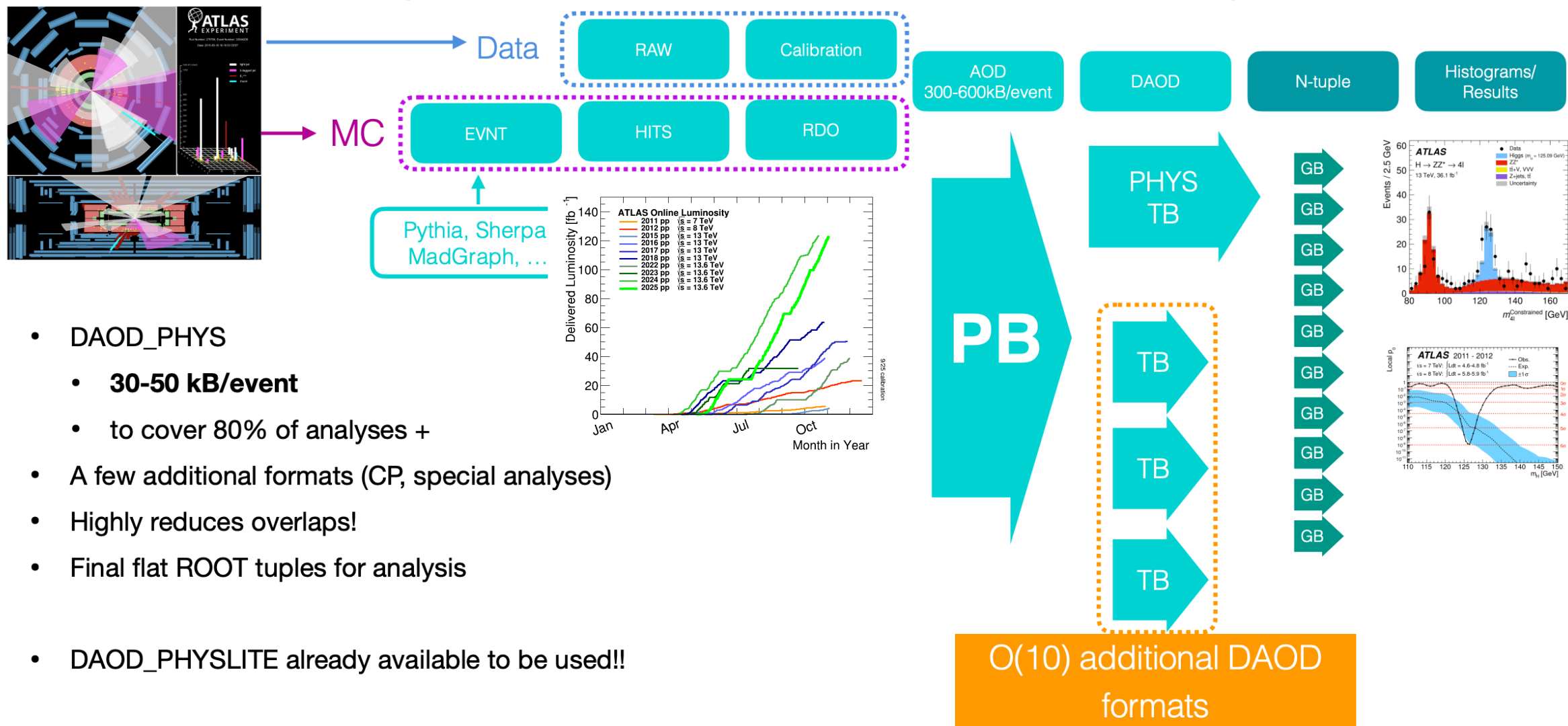
ATLAS data processing flow



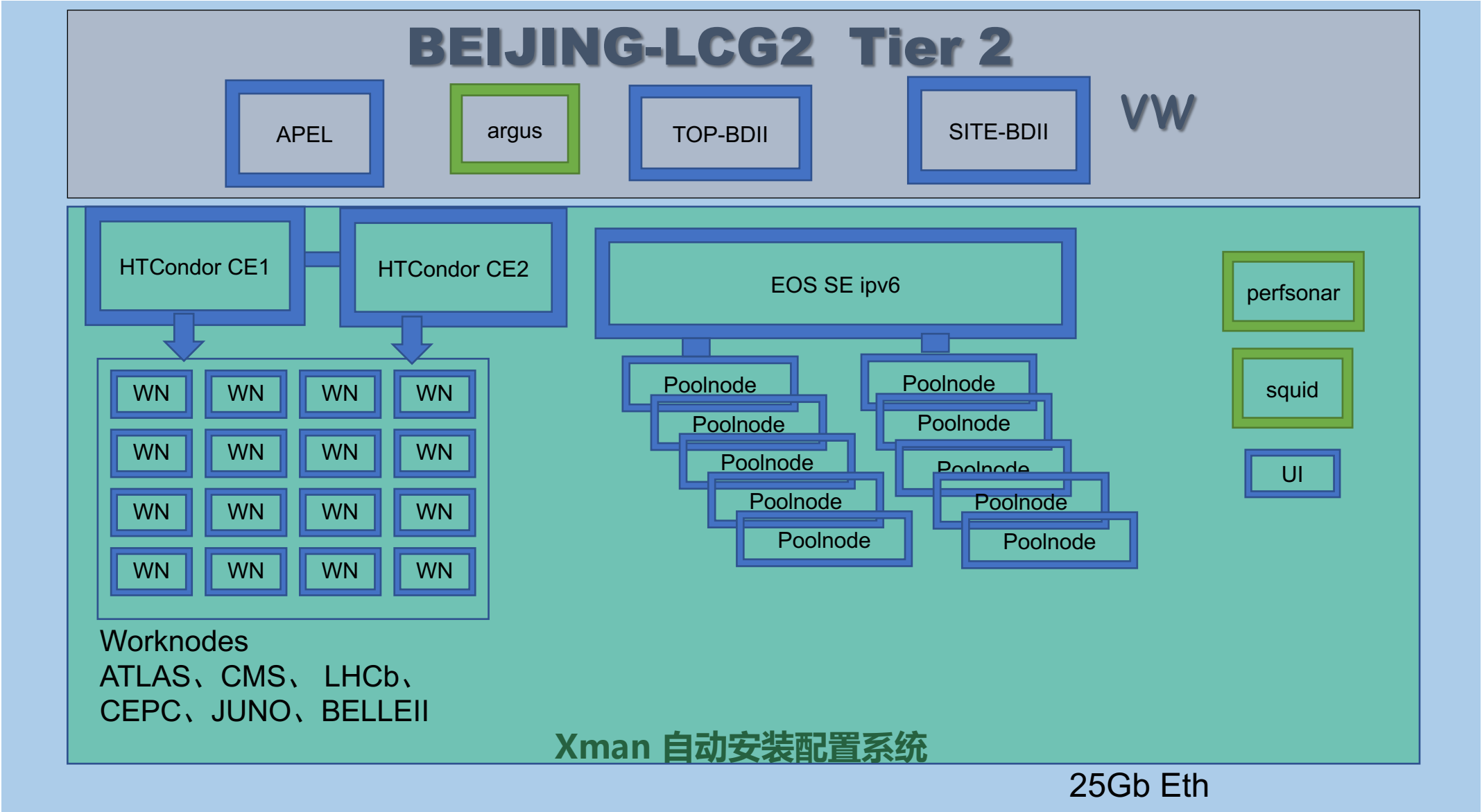
- **Bulk reconstruction** uses the majority of the Tier0 resources
- Processes the RAW data using updated calibrations determined in the Prompt Calibration
- Produces many outputs used for a variety of purposes, the most important being the AOD
- Reprocess the existing raw data with the improved software/ conditions
- This has to be done on the Grid since the Tier-0 will be busy with prompt data processing
- Once we start a reprocessing, we also switch the Tier-0 to the new software to ensure a consistent dataset

ATLAS data processing flow

Figure: J. Catmore



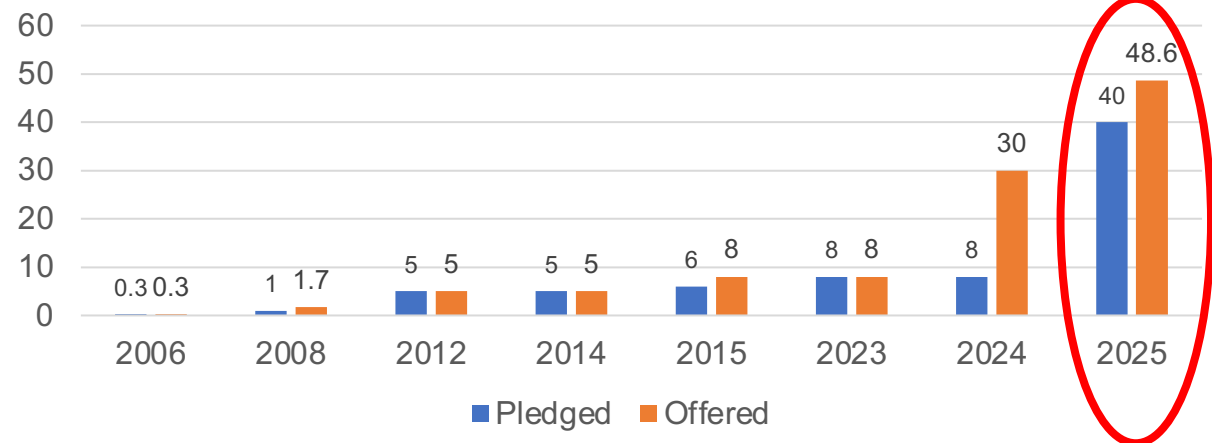
BEIJING-LCG2 GRID Site Services



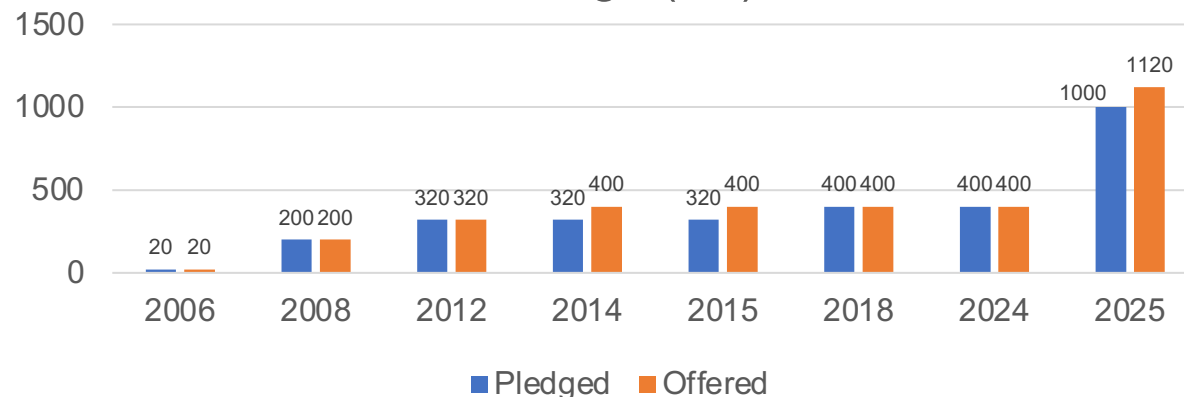
ATLAS BEIJING-LCG2 Tier-2 site deployed at IHEP

- ATLAS Beijing T2 resource
 - CPU: 1728 cores with 48,600 HepScore23
- Storage: 1120TB
 - 20TB * 84 slots 1680T RAW DISK
- ATLAS and CMS Tier2 Upgrade in 2024
 - Total budget: RMB 3Million
 - Plan:
 - CPU: 58.6K HS06
 - Disk storage: 2PB
 - To replace old resources provisioned in 2011 and 2015.
 - 8k HS23, 400 TB for ATLAS.
 - 8k HS23, 600 TB for CMS.
 - Upgrades have been done in 2024.
 - Add 48.6k HS23 and 1.12 PB for ATLAS.
 - Add 48.6k HS23 and 1.12 PB for CMS.

Computing (kHS06/kHS23)



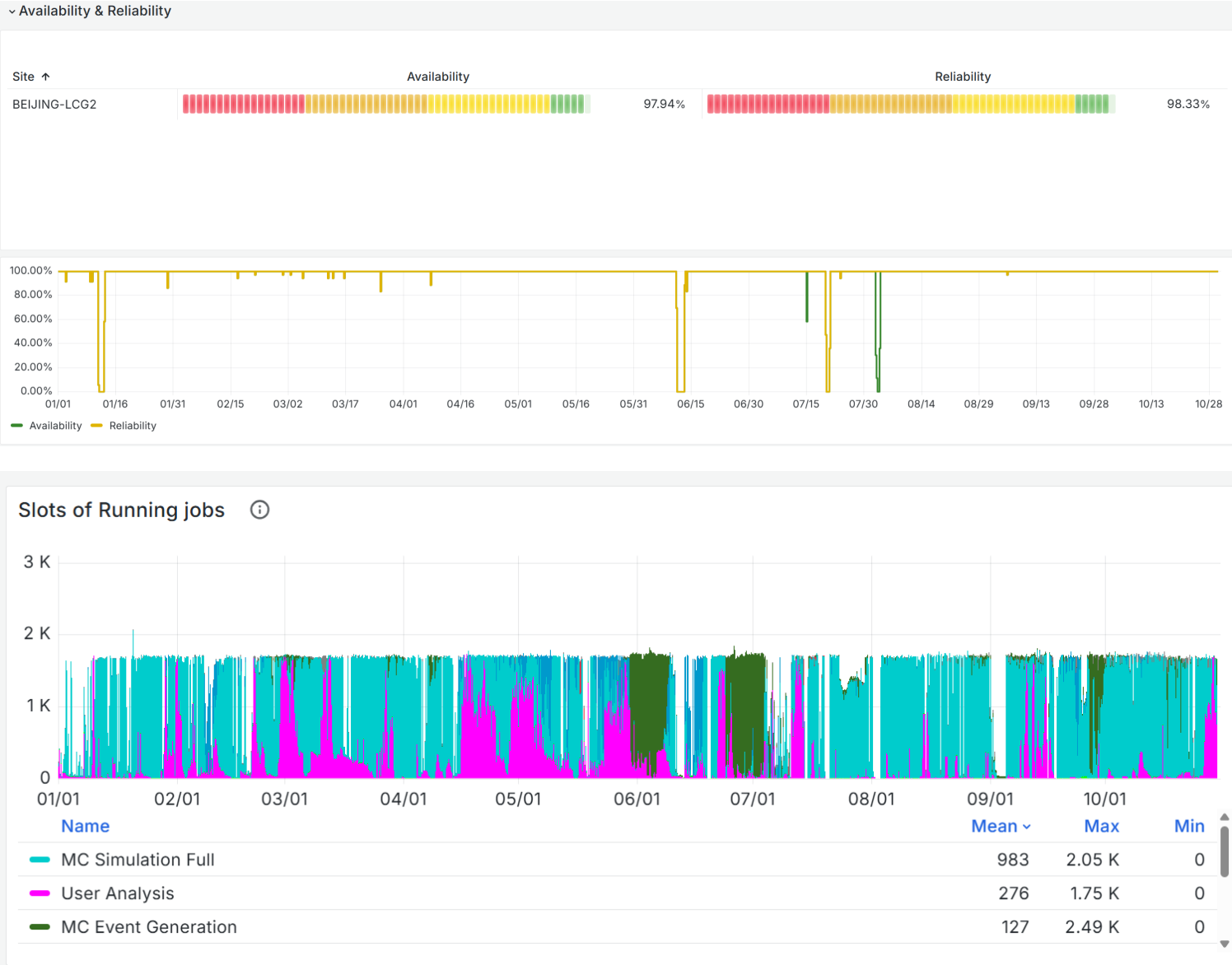
Storage (TB)



Status of BEIJING-LCG2 ATLAS Tier-2

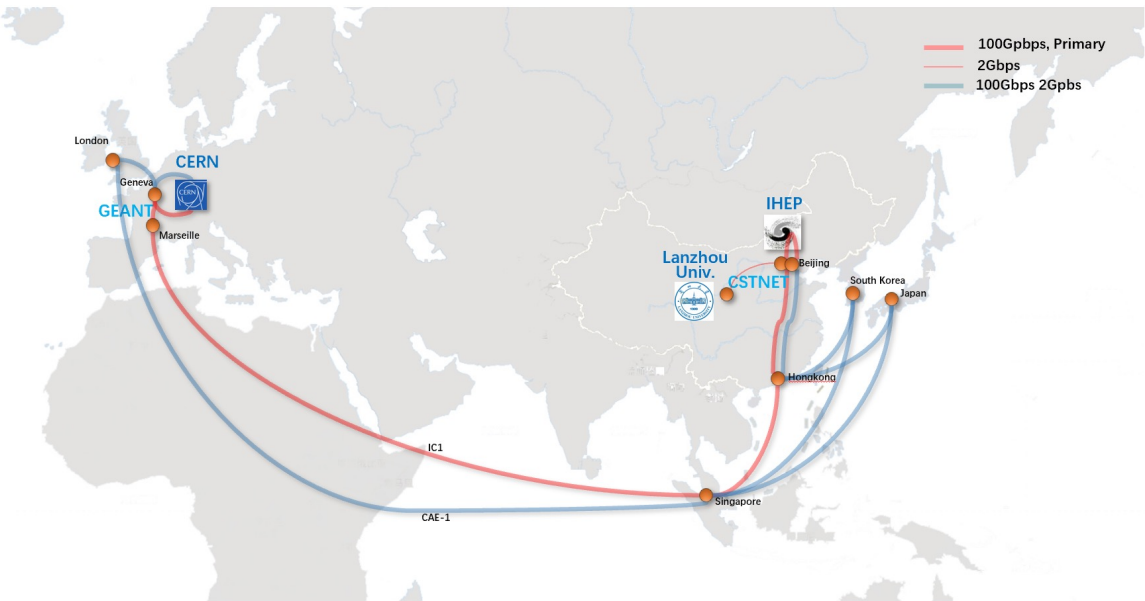
- Site Running Status this **years**:

	Resource	Rank
Computing	48600 H23	Tier2: 20st/40
Storage	1120TB	Tier2: 33st/40
Availability	97.94%	Tier0,1,2,3: 32st/100
Reliability	98.33%	



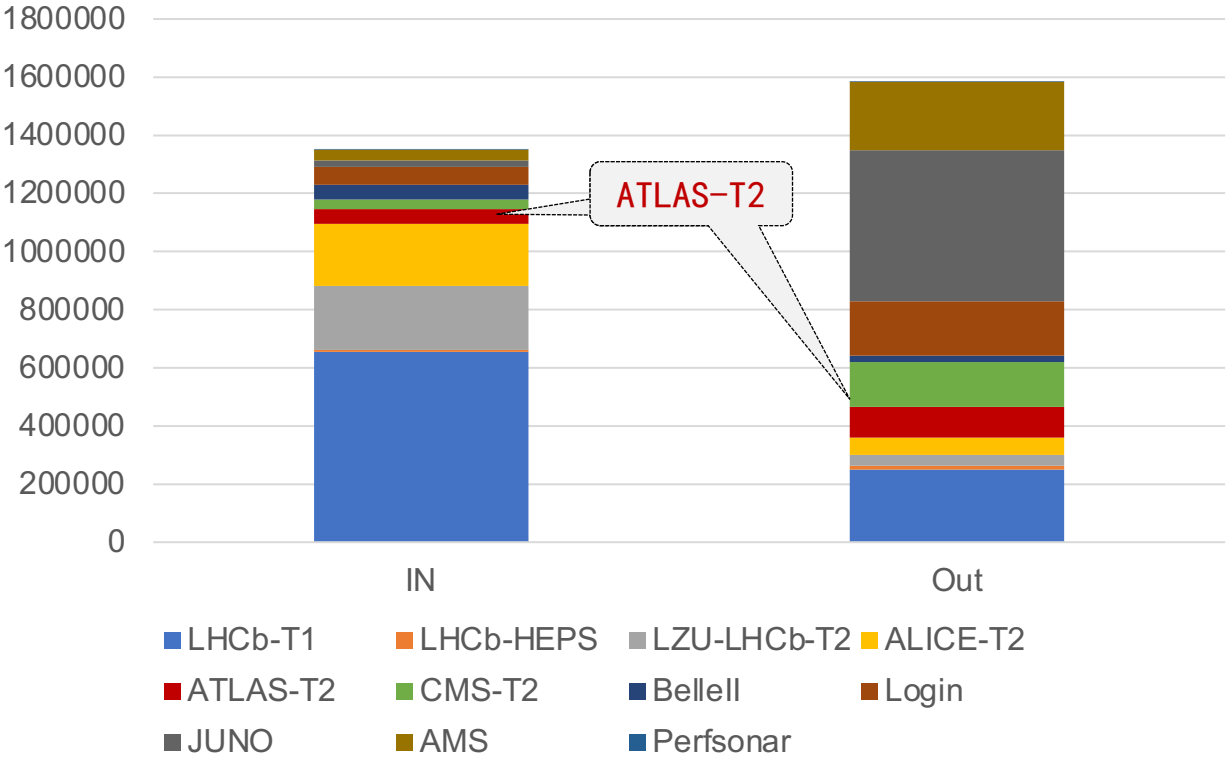
International Network Upgrade

- International network link is upgraded to 100Gbps in 2023
 - CSTNET (CNIC), GEANT, CERN and CN-IHEP collaborated on the upgrade
- LHCOPN: not less than 20Gbps
 - CSTNET: 20Gbps
 - GEANT: more than 20Gbps promised
- LHCONE: more than 20Gbps
 - IHEP is the main network user of CSTNET



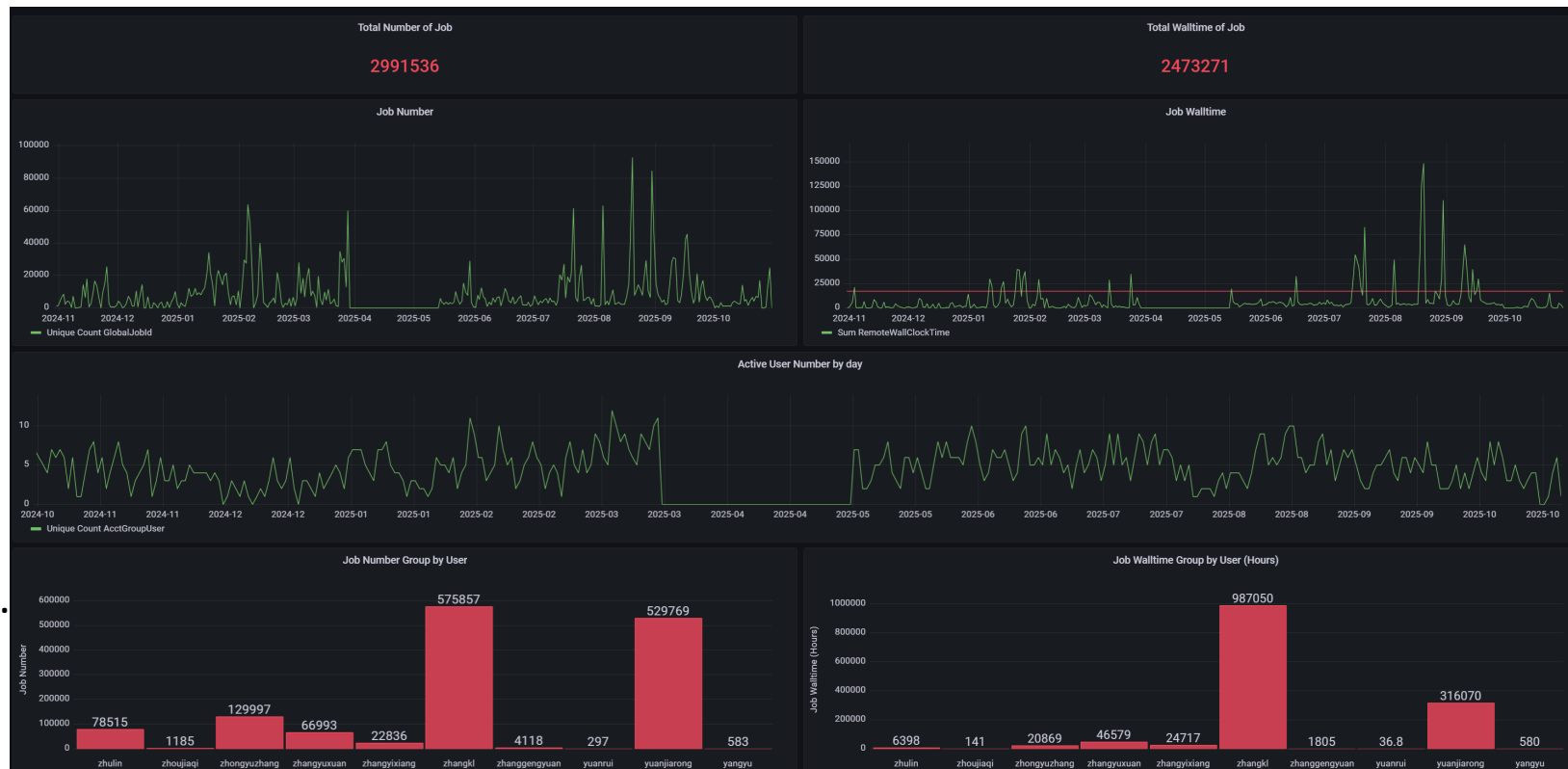
International network connection of IHEP

International data transfer 2025 (GB)



ATLAS T3 Status

- Tier3 Resource
- CPU:
 - Awsbm001-004 (2022-11) 256 core (64 cores 512GB)
 - aws001-aws006(2024-10) 1152 cores (192 cores 768GB)
- Resource in condor : 1408 4GB/core
- Storage:
 - /publicfs/atlas (1.4P, 603T used)
 - Hard drive failure has occurred, and data may be lost at any time. Please migrate your data to the new storage: /lustrefs/atlas.
 - /lustrefs/atlas (635T, 42T used)



https://omat-grafana.ihep.ac.cn/d/kzfk_Sb7k/atlas-job?orgId=1&from=now-1y&to=now

Cooperation with ATLAS ADC S&C.

- Three FTEs from IHEPCC participated in ATLAS ADC R&D at CERN.
- Established a good cooperative relationship with the ATLAS experiment.
- Hope we can continue this cooperation and keep sending colleagues to CERN
- Xuantong Zhang
 - Development of a generic Rucio module for load injection. This will be used as a new network link testing, and will serve as Rucio-community wide tool for the WLCG Data Challenges.
- Xiaofei Yan
 - Development on the functionality of the Configuration Management Database (CMDB) to lay the ground for future projects and developments
 - VMs resize for ATLAS central service hardware replacement campaign
- Chaoqi Guo
 - Management and Scheduling of Full Node by HTCondor and PanDA
 - Tuning of HTCondor clusters for ATLAS workloads

Summary

- Grid computing is very important for the ATLAS experiment
- Beijing-LCG2 Tier2 performs well last year
 - An upgrade on resources was finished last year
 - 250% increase for HS23 and 400% for storage
 - Extra budget need to enlarge IHEP Tier2
- Tier3 cluster also perform well last year
 - New CPU resource establish last year
 - New storage has been setup.
- IHEP-ATLAS computing team also actively participant ATLAS ADC R&D