



蘭州大學
LANZHOU UNIVERSITY

Lanzhou University computing cluster status

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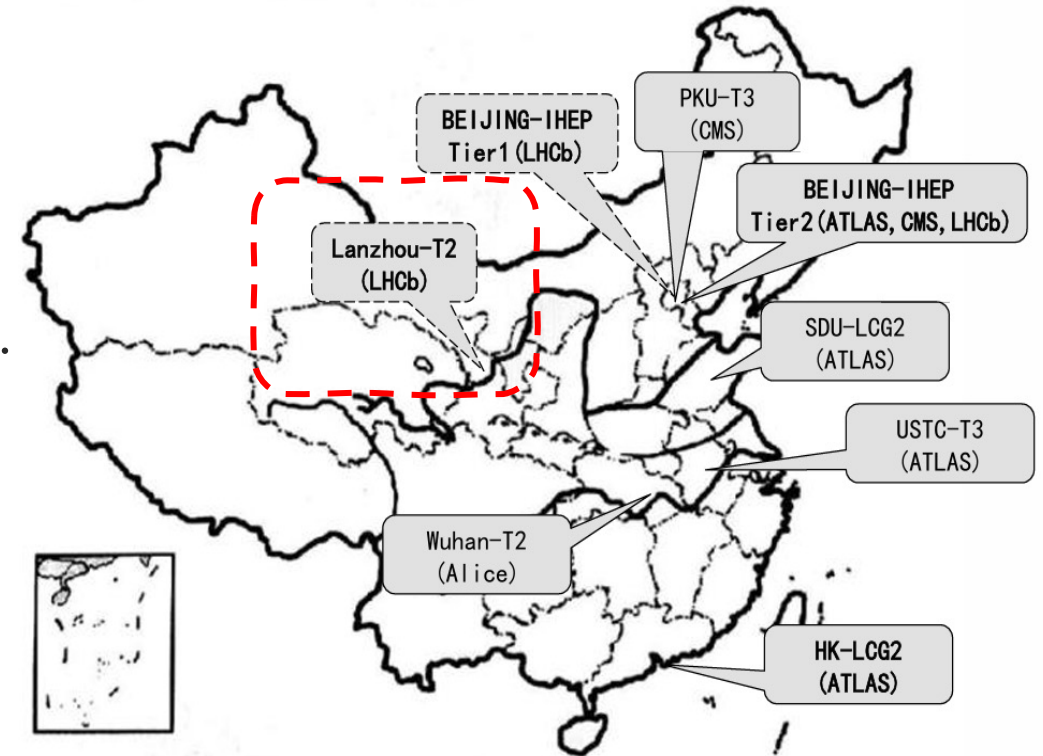
Outline

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- ✓ Summary

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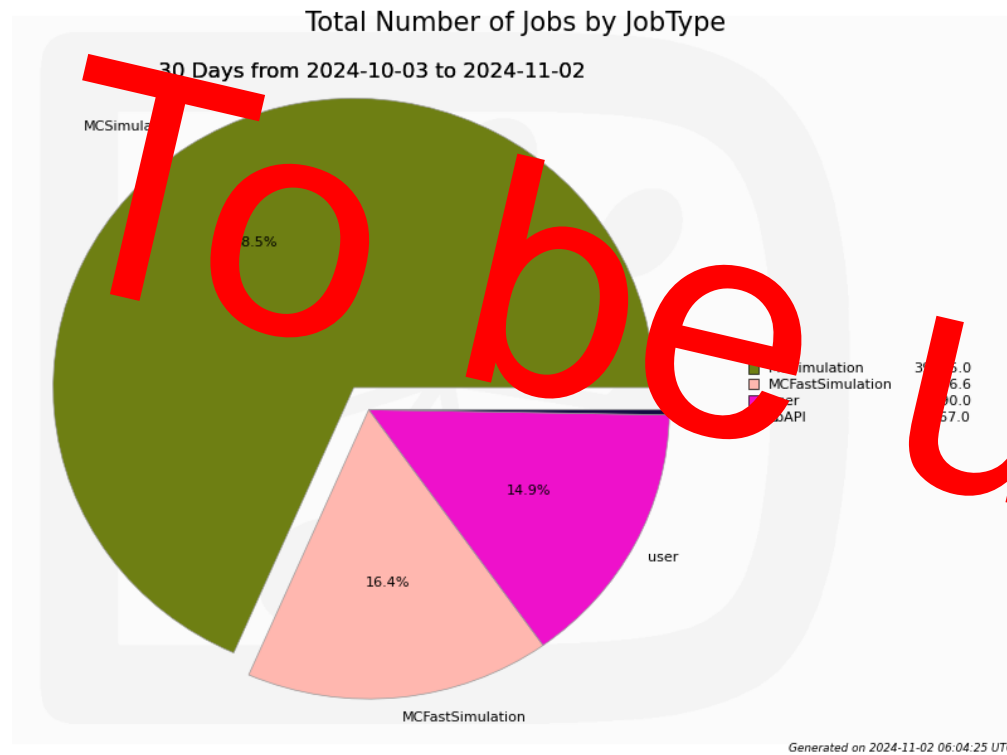
Tier-2 Site in Lanzhou University

- Tier-2 site is constructed in Lanzhou University in 2024
 - ~3500 CPU cores
 - ~3.4 PB disk storage
 - 100% contribute to LHCb
- Funds from LZU approved by the end of 2023: ¥ 60M.
- A dedicated 2 Gbps network link between LZU and IHEP.
- CC-IHEP is responsible for software deployment and maintenance.
- The MoU agreement of Tier-2 site is not signed yet but expected to be implemented soon.

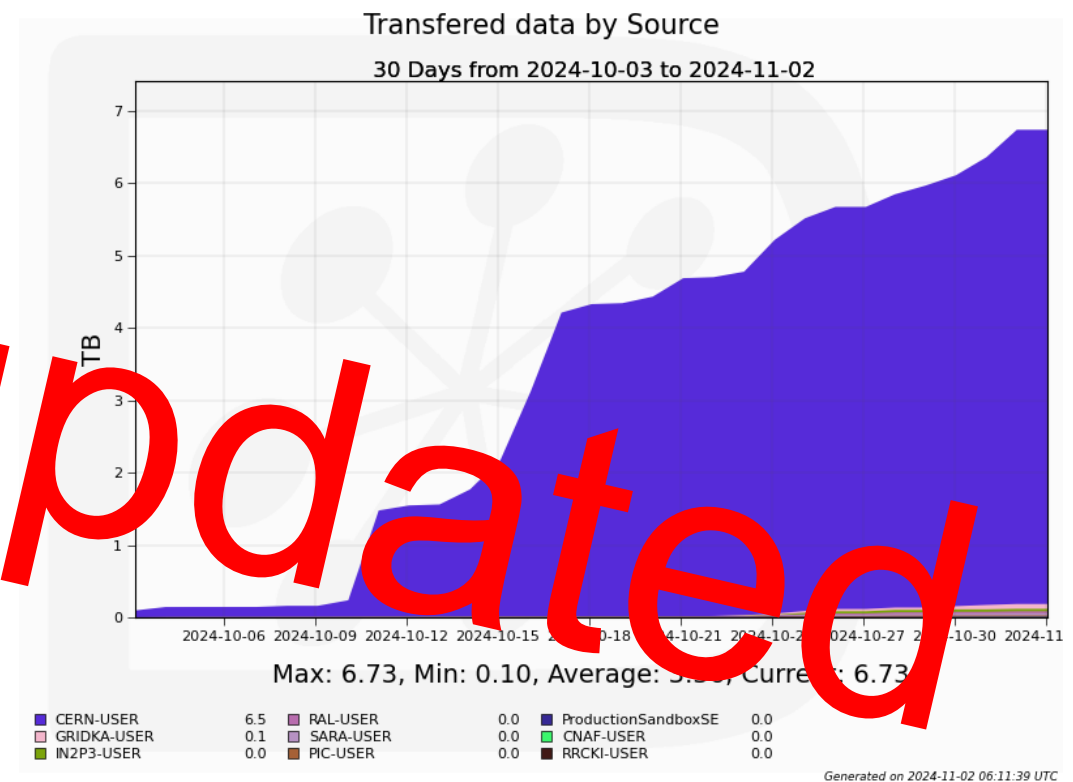


Tier-2 Site in Lanzhou University

- The services are in production for over 1 year.
- Mainly responsible for the MC simulation production.



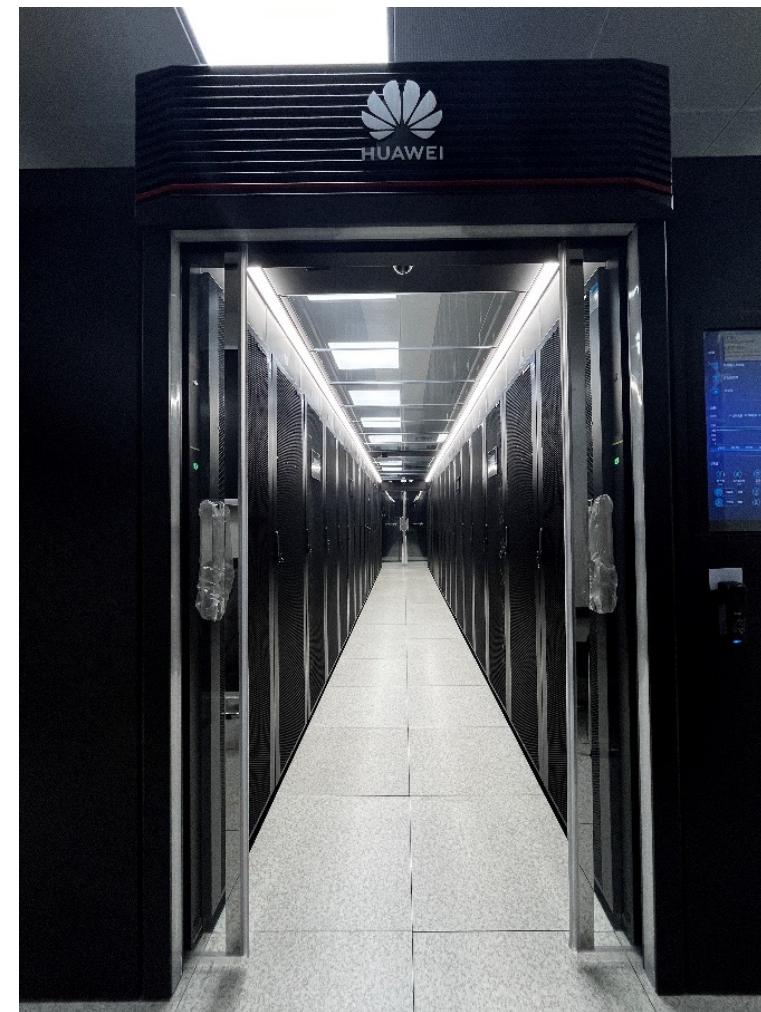
Total Number of Jobs at T2



Data Volume of Write In

Tier-3 Site in Lanzhou University

- Local cluster for user jobs with experiments including BESIII, LHCb and STCF etc.
 - ~4000 CPU cores
 - ~4 PB disk storage
 - ~90 NVIDIA GPUs (RTX2080Ti, RTX3080, and L20)
- Satisfy various computing environment of several experimental groups.
- Computing resources are managed by HTCondor.
- Around 300 regular users are working properly.
- Cluster maintenance:
 - Hardware: LZU local group
 - Software environment: IHEP computing group



Machine room

Tier-3 Site in Lanzhou University

- The local cluster is dedicated to supporting the research activities of HEP group.
 - Recently, it was actively used by STCF colleagues.
- Significant potential for diverse computing tasks.

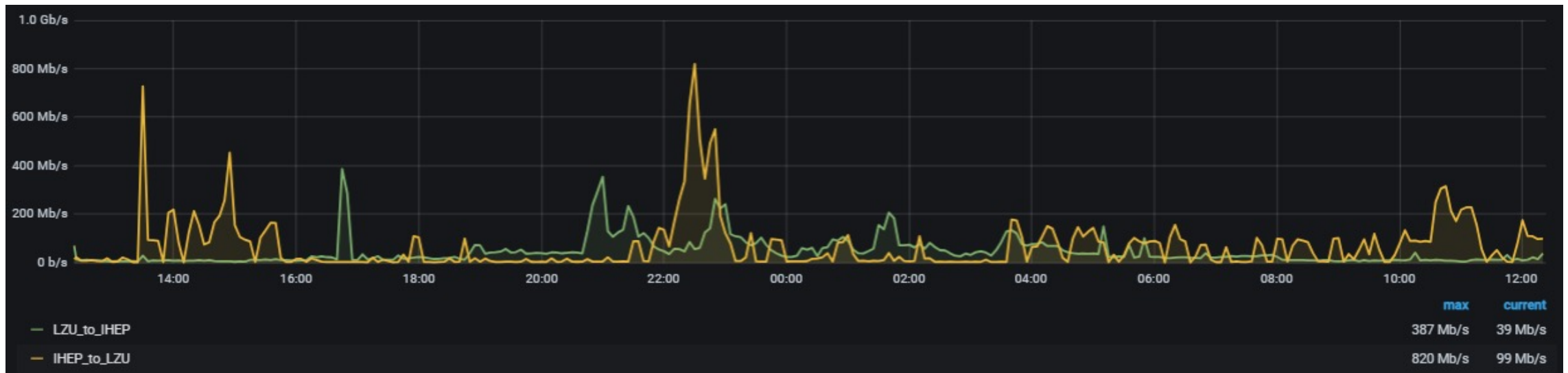


Current issues: maintenance

- Hardware requires regular replacement to maintain high performance.
Support from school funding is only one-time, the follow-up maintenance still requires a lot of investment:
 - CPU, GPU and disk: ¥ ~5.25 M / 6 years,
 - Network device: ¥ ~1.8 M / 10 years.
- Cost of other projects for the operation of the equipment is also a large expense, *e.g.*
 - Electricity power: ¥ ~0.66 M / year,
 - Network connection: ¥ ~0.4 M / year.

Current issues: network

- Tier-2 and local cluster shared the network connection (2Gbps to IHEP).
 - Intensive simulation production on Tier-2 can saturate this shared bandwidth.
 - Consequently, the network performance and usability of the local cluster are degraded.
 - Separate the bandwidth between Tier-2 and Tier-3.



Summary

- The Tier-2 site has been in stable operation since its deployment one year ago.
- The local computing cluster continues to operate reliably over the past years, offering dedicated computational support to the local HEP group.
- Cluster maintenance entails substantial and recurring costs
- Technical bottleneck in the network should be addressed.

Thanks