国家高能物理科学数据中心
National HEP Science Data Center

高能所計算中心
IHEP Computing Center

IHEP Site Report

SHI Jingyan

On Behalf of IHEP Computing Center

2024-11-16

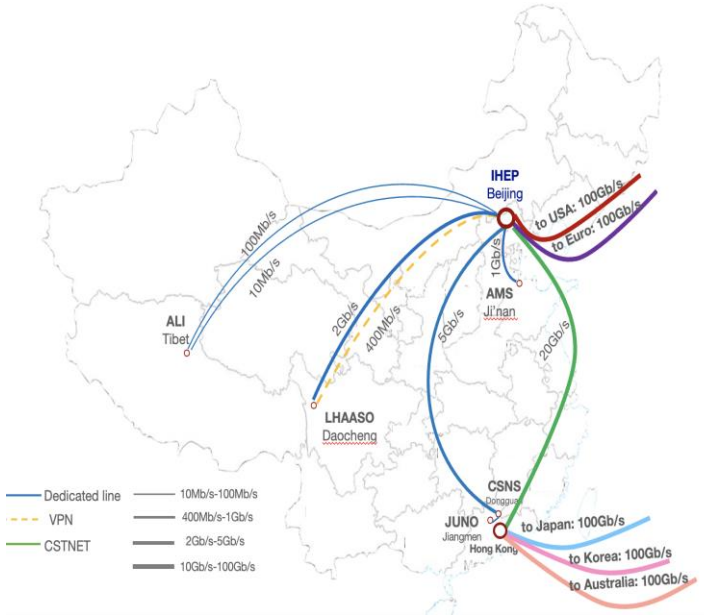
Outline

Overview of IHEP Computing Center

- IHEP CC at main compus of IHEP :
  - Local cluster: HTC,HPC
  - Grid site
- CSNS at Dongguan
  - Local cluster: HPC
- HEPS at Huairou of Beijing: to be ready
  - Interactive
  - Local cluster: slurm
- Remote sites:
  - Cluster running for Exp.
- Network
  - WAN Bandwidth: 100 Gbps
  - IHEPCC-HEPS: 100Gbps
  - IHEPCC-CSNS: 20G

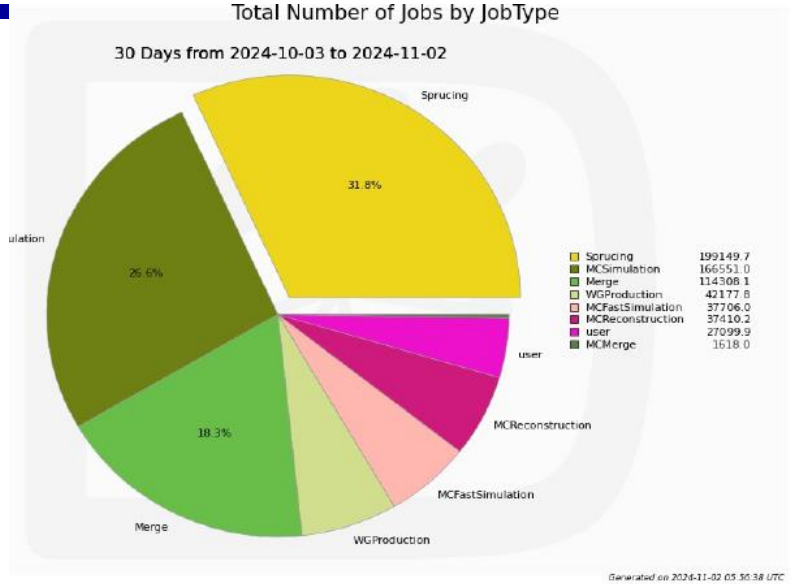
International Network of IHEP

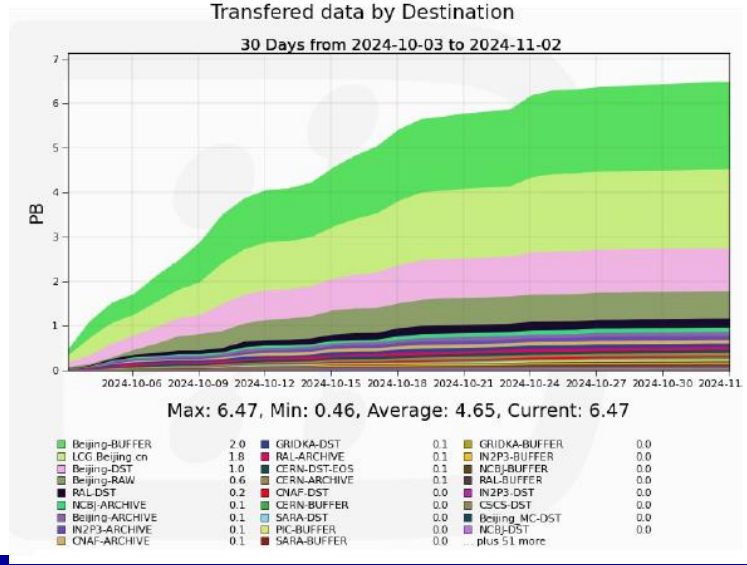
- International network link upgraded to 100Gbps in 2023
  - With the help from CSTNET, GEANT and CERN
  - The data transfer test showed the peak performance between IHEP and Europe reach to 50Gbps
- Dedicated links between IHEP and domestic remote sites
  - HEPS-IHEP: 100 Gbps
  - CSNS-IHEP: 20 Gbps
  - Lanzhou Univ-IHEP: 2 Gbps
  - …..



LHCb Tier 1

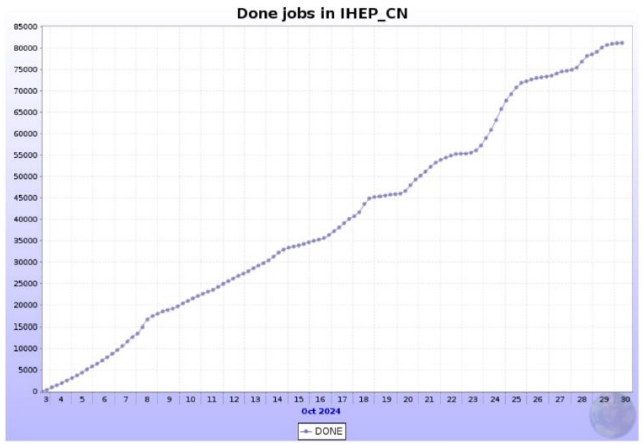
- Started construction in Oct. 2023
- Fully official Tier-1 site NOW
  - Passed the site review in WLCG OB meeting in Jun. 2024
  - Started running LHCb jobs in Jun. 2024
  - Retired LHCb Tier 2 in Jun. 2024
  - Fully functional support for LHCb in Sept. 2024
- Resources
  - 3200 CPU cores (will be doubled to ~6500 CPU cores)
  - 5.75 PB disk storage (~6.5PB will be added in next two weeks)
  - 3 PB Tape storage (~6PB will be added)



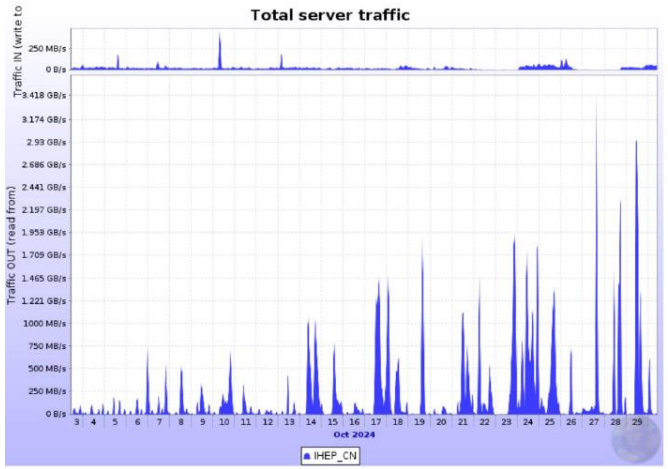


Alice T2

- The first Alice Tier2 site in China.
  - Resources are provided by Fudan University.
  - 1152 CPU cores, ~800TB Disk Storage
  - Infrastructure provided by IHEP
  - Maintained by IHEP
- Services in production from Sept. 2024



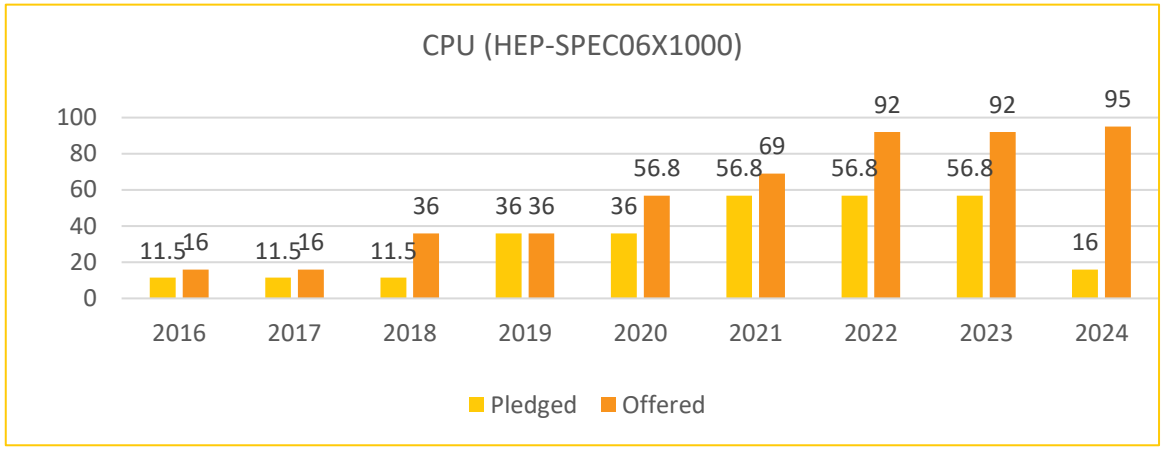
Done Jobs

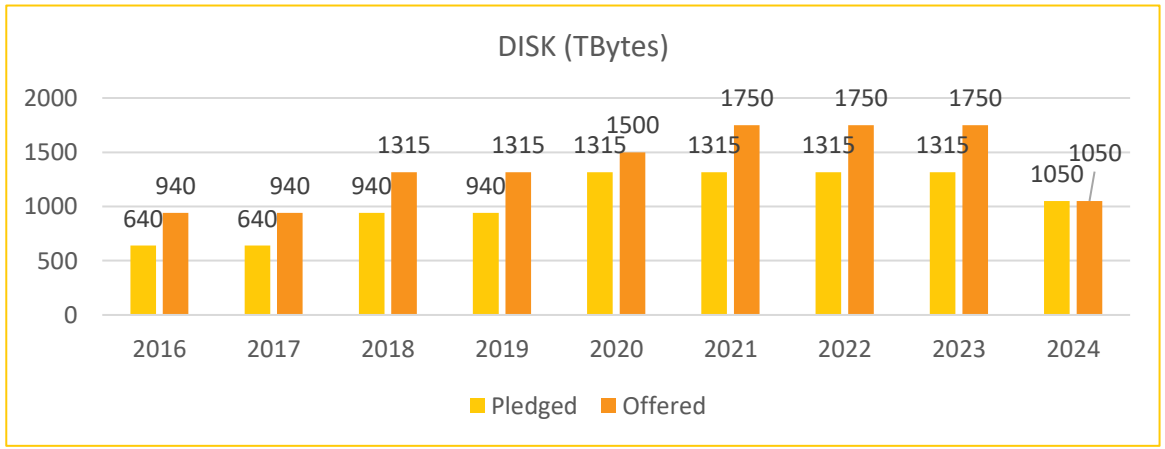


Network Traffic

Chinese Tier-2 Site Federation

- Exp. supports
  - ATLAS, CMS, LHCb, BELLEII, JUNO, CEPC
  - Running ATLAS and CMS T2 nearly 20 years
  - Running LHCb T2 since 2018
- CPU Resource
  - 4472 cores with 95,000 HepScore
- Storage Resource
  - 1050TB
- Got new budget for upgrading ATLAS and CMS Tier-2 in 2024
  - CPU： 60,000 HepScore
  - Disk storage： 2.5PB
  - Will be upgrade soon



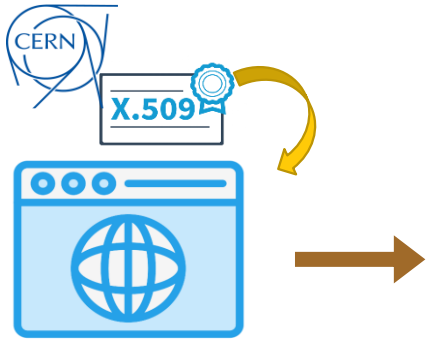


Computing and Storage Pledge of BEIJING LCG Tier- 2

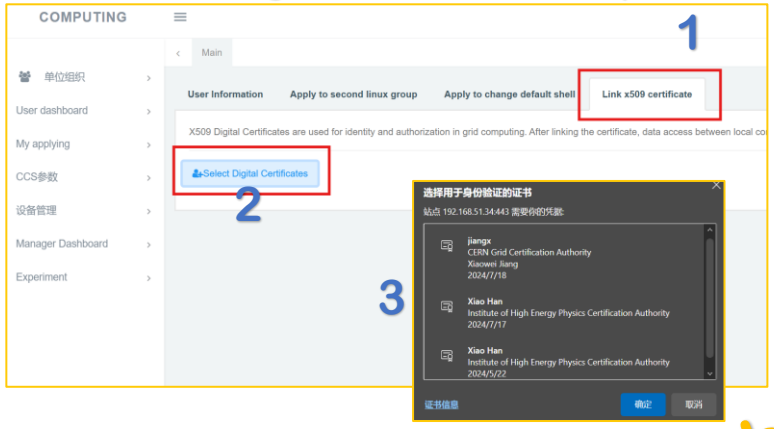
Solution for T2/T3 SE access

T2 jobs access T3 SE

1. upload certificate to browser



2. Register at ccsinfo.ihep.ac.cn



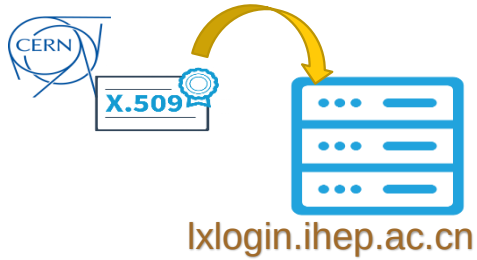
3. Submit jobs by WLCG command

$ voms-proxy-init
$ WLCG command

Will be available soon!

T3 jobs access T2 SE

1. Upload cert to login node



2. Submit jobs with cert proxy

```
$ voms-proxy-init
$ cp /tmp/x509up_u${UID} $HOME/
$ hep_sub … -cert x509 –in $HOME/x509up_u${UID}
```

Summary

- IHEP-CC has been running all 4 LHC grid sites with close cooperation of Chinese LHC phycists
  - LHCb T1 and Alice T2 in production in 2024
  - Atlas and CMS grid sites have been running since 2006
- IHEP-CC has been doing best to support LHC computing
  - Apply funds to upgrade ATLAS/CMS grid site
  - Help Lanzhou Univ. to build and maintain the LHCb grid site
- Provides more functions for the LHC physcists.
  - A solution to access T2/T3 storage based on Exp. requirement
  - More functions would be added
- Contact persons from IHEP-CC for each Exp.
  - Alice: Ran Du (duran@ihep.ac.cn)
  - ATLAS: Xiaofei Yan (yanxf@ihep.ac.cn)
  - CMS: Xuantong Zhang (zhangxuantong@ihep.ac.cn)
  - LHCb: Xiaowei Jiang (jiangxw@ihep.ac.cn)

Thanks!

Q&A

Backup

Solution for T2/T3 SE access