

Shandong University Computing Site Report

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Overview of SDU Computing Resource

- ❖ The SDU HEP team (Research Center for Particle Science and Technology) has a dedicated computing cluster
 - To support various R&D activity, theoretical computation and data analysis
 - Most of them are managed together, and shared by all group members
- ❖ Resources
 - ~1500 CPU cores (expected to be expanded to a few thousands in the next few years)
 - ~2 PB storage
 - 66 GPU cards
 - Most of these resources are shared. Some (448 CPU cores and ~1.0 PB are prioritized for Belle II, as a cluster)
- ❖ Supported experiments and groups
 - BESIII、Belle II、LHC、LHAASO、STCF、STAR... via CVMFS or locally installed software

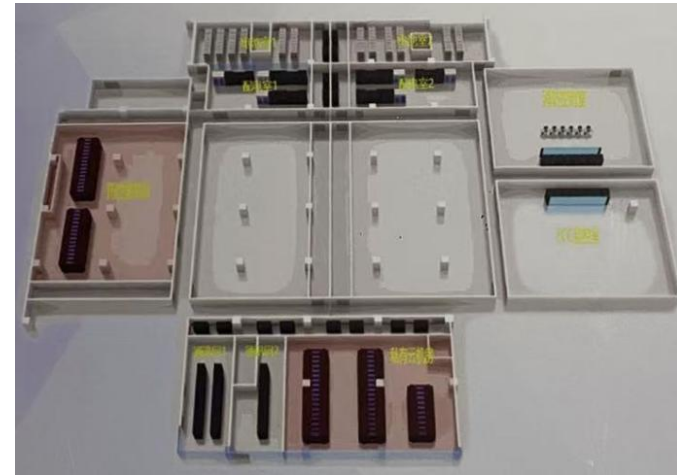
2024 Operation Summary

- ❖ The computing cluster has been heavily used
- ❖ During the the year of 2024:
 - 160+ users
 - 1,250,317 jobs are executed (~3500 jobs per day)
 - 2,325,620 CPU hours are spent
 - Storage:

目录	用途	访问入口 (客户端)	空间大小
/sdufs	实验数据	所有节点	336TB
/sdufs2	实验数据	所有节点	460TB
/belle2fs/home	用户数据	所有节点	500TB
/belle2fs/bes3	bes3实验数据	所有节点	250TB
/belle2fs/belle2	belle2实验数据	所有节点	200TB
/belle2fs/sdu_hep	hep实验数据	所有节点	45TB

SDU Computing Cluster

- ❖ At the moment, most of the kits are hosted by the Shandong University Data Center



~3600 m² in total
4 server rooms with 157 server racks

- ❖ Servers are managed remotely by the IHEP computing center
- ❖ A dedicated server room (~200 m²) for the high energy physics group is being planned in the new building

SDU GPU Cluster

- ❖ To support various R&D work, a high performance GPU cluster has been created in the past two years.
 - Including 17 nodes with 66 GPU cards and ~0.5 PB storage
 - 18 NVIDIA Tesla A40 48GB
 - 16 NVIDIA A800 80GB
 - 32 HYGON DCU K100
 - Currently these machines are managed separately from the main cluster
 - We are planning to integrate them together with the main cluster

Summary

- ❖ Summary of the SDU HEP computing cluster
 - Currently with ~1500 CPU cores and ~2 PB storage
 - We are expecting these numbers to increase dramatically in the next few years, to provide more computing power for future experiments
 - The cluster is under heavy load. Many experiments are supported (BESIII、Belle II、LHC、LHAASO、STCF、STAR)
 - Most of the servers are managed remotely by IHEP computing center (currently most of the are running CentOS7. We hope to keep up with IHEP to el9)
 - A dedicated server room is being planned, to host more racks in the next few years
 - A high performance GPU cluster with 66 GPU cards is now present