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Current Status and Planning of High Energy Physics Data Storage System

With the expansion of high-energy physics experiments and the improvement of precision, the amount of data generated in high-energy physics has increased dramatically. The design of data storage systems plays a crucial role in the efficiency of data analysis and processing. This report will introduce the current situation of the data storage system at IHEP, including disk, tape, and grid storage, to provide references for the future design of the data storage system for the Circular Electron Positron Collider.

For disk storage, IHEP currently employs two distributed file systems: Lustre and EOS. EOS, an open-source disk storage system developed by CERN, has been in use at IHEP since 2017. It supports data storage for the LHAASO, JUNO, and HXMT experiments. EOS has already been deployed at CERN with a storage capacity exceeding 500PB.

For tape storage, IHEP utilizes EOS+CTA to provide long-term preservation of raw data. The current storage capacity is close to 100PB.

For grid storage, IHEP employs EOS SE, which serves as the Tier-1 site for the LHCb experiment and as a Tier-2 site for WLCG.

This report will provide a detailed overview of the usage, operation, and future plans for the aforementioned storage systems.

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