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High Energy Physics Scientific Data Transfer System (Remote Presentation)

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The Institute of High Energy Physics has constructed multiple large-scale scientific facilities, including BSRF, HEPS, LHAASO, JUNO, AliCPT, which generate a large amount of data requiring high-performance data transfer services. According to the strategic plan of the Computing Center's "One Platform, Multiple Centers", data needs to be moved between multiple data centers, thus necessitating high-performance data transfer services. The National High Energy Physics Scientific Data Center receives data from various research projects and requires data submission and long-term preservation, also requiring high-performance data transfer services. To meet the data transfer needs of different experiments, a High Energy Physics Scientific Data transfer System has been designed. This system adopts a cluster-based design and management, with the transfer cluster consisting of a control master node and transfer sub-nodes. The control master node implements functions such as transfer task discovery, message queues, and web service support. The transfer sub-nodes provide scientific data transfer services and metadata interactions. The system has been deployed in multiple experiments and has achieved stable operation and good performance. This report will provide a detailed description of the various functional modules of the transfer system, as well as the deployment and application scenarios in different experiments.

Primary author: BO, zhuang (IHEP)

Co-authors: HU, Hao (Institute of High Energy Physics); ZENG, SHAN (IHEP)

Presenter: BO, zhuang (IHEP)

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