SIMULATION APPROACH FOR IMPROVING THE COMPUTING NETWORK TOPOLOGY AND PERFORMANCE OF THE CHINA IHEP DATA CENTER (PRELIMINARY RESULTS)

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The goal of the project is to improve the computing network topology and performance of the China IHEP Data Center [1] taking into account growing numbers of hosts, experiments and computing resources including cloud computing. The analysis of the computing performance of the IHEP Data Center in order to optimize its distributed data processing system is a really hard problem due to the great scale and complexity of shared computing and storage resources between various IHEP divisions. Therefore, we decide to utilize the simulation approach and adopt as a simulation tool the simulation program CloudSim Plus [2] which enables researchers rapidly evaluate the efficiency, performance and reliability of their computing network. The simulation uses input parameters from the data base of the IHEP computing infrastructure, besides we use some data of the BESIII [3] experiments to indicate workflow and data flow parameters. The first simulation results show that the proposed approach allows us to make an optimal choice of the network topology improving its performance and saving resources.

References.

1. Computing Center—-Institute of High Energy Physics [Electronic resource]: http://english.ihep.cas.cn/doc/251.html
2. CloudSim Plus [Electronic resource]: http://cloudsimplus.org/
3. BESIII Experiment [Electronic resource]: http://bes3.ihep.ac.cn/