The verification of the Science Data and Computing System for HEPS

The Science Data and Computing System is designed for High Energy Photon Source (HEPS), which is responsible for automating the organization, processing, persistent store, analysis and distribution of the data produced from experiments. It consist of several sub-systems, including storage system, network, computing system, data analysis integrated software system (Daisy) and data management system (DMS). Since this July, the design schemes of all these sub-systems have passed the peer review and the development work has almost been finished. In order to verify the functions and interfaces of the system, we set up a testbed at beamline 3W1 of Beijing Synchrotron Radiation Facility (BSRF), which is a running synchrotron radiation facility and provides the technology R&D and test platforms for HEPS.

The 3W1 beamline, which is dedicated to test high-throughput instruments for HEPS, uses an Andor detector and generates data at a relatively high rate, making it is an ideal candidate to set up the testbed where we can deploy the system and verify the functions and the whole process of data acquisition, data processing, data transfer, data storage and data access.

In this paper, we start with a brief introduction to the design of the IT services that will be provided for experimental users before, during and after the experiment at HEPS. Next, the architecture of the system will be given, that illustrates the correlation and the data flow among sub-systems. Then the implementation detail of the integration and the verification of the Science data and Computing system is described. Finally, some deficiencies are listed which exposed via the integration test at the testbed and the improving plans are put forward.

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