DIRAC Interware as a service for high-thoughput computing in JINR

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DIRAC Interware is an open-source development platform for the integration of heterogeneous computing and storage resources. The service based on this platform was deployed and configured in Joint Institute for Nuclear Research in 2016. Now it is actively used for MPD, Baikal-GVD, and BM@N experiments. In JINR we have five big computing resources with uniform access via the DIRAC service: Tier1, Tier2, Govorun supercomputer, cloud, and NICA cluster. In particular, the DIRAC service was used as a tool for the integration of cloud resources of JINR member states. The overall performance of the united system is at least three times more efficient compared to the use of any single computing resource. Of course, using the united system adds complexity for users and requires additional effort to reach high performance. But, for the last three years of active use of the DIRAC, the approaches were elaborated to simplify the use of the system. Right now there are many tools and components developed to allow the fast construction of new workflows. The central system for high-throughput computing management also provides additional advantages in terms of resources accounting and job monitoring. Methods for performance analysis of the completed jobs were developed and used to compare different processors. The total number of completed jobs exceeds 1 million, and the total amount of computing work is around 4.5 million HS06days.

In this contribution, we will provide an overview of the system and its performance. We will describe newly developed instruments for the system behavior analysis and will present the results of their usage.

Authors: PELEVANYUK, Igor (Joint Institute for Nuclear Research); TSAREGORODTSEV, Andrei (CPPM-IN2P3-CNRS)

Presenter: PELEVANYUK, Igor (Joint Institute for Nuclear Research)

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