Contribution ID: **174** Type: **Sectional reports**

The use of distributed clouds for scientific computing

Friday, 9 July 2021 11:15 (15 minutes)

Nowadays, cloud resources are the most flexible tool to provide access to infrastructures for establishing services and applications. But, it is also a valuable resource for scientific computing. In the Joint Institute for Nuclear Research computing cloud was integrated with the DIRAC system. That allowed submission of scientific computing tasks directly to the cloud. With that experience, the cloud resources of some organizations from the JINR Member States were integrated in the same way. That increased the total amount of cloud resources accessible in a uniform way through the DIRAC - in the scope of the so-called distributed information and computing environment (DICE). Folding@Home tasks related to the SARS-CoV-2 virus were submitted to all available cloud resources. Apart from useful scientific results, such experience was also helpful in getting information about the performance, limitations, strengths, and weaknesses of the united system. Based on the gained experience, the DICE infrastructure was tuned to successfully complete real user jobs related to Monte-Carlo generation for the Baikal-GVD experiment.

Summary

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Session Classification: Virtualization

Track Classification: 7. Virtualization