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Tool for utilizing idle resources of computing clusters in volunteer computing

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In the last 10 years a significant progress in volunteer computing was achieved mainly due to the improvement of the open BOINC platform. There are volunteer computing projects based only on desktop PCs that have performance greater than 1 PFLOPs. Despite this fact there are some reasons why resources of computing clusters can be useful in volunteer computing. Firstly, a computing cluster is quite reliable device, so results obtained on it can be taken as a reference when checking the results. Secondly, computing cluster can significantly help to increase performance of a new volunteer project with low amount of participants.

We have implemented a CluBORun tool (Cluster for BOINC Run) aimed at utilizing idle resources of computing clusters in volunteer computing projects based on BOINC. The key feature of CluBORun is that it utilizes only idle resources of computing clusters (just as BOINC-manager does it for computers) and uses only ordinary cluster's user rights. When tasks from another user appear in a cluster queue, CluBORun stops BOINC tasks in queue if new tasks can be launched on freed resources.

The CluBORun tool was launched on the computing cluster MVS-100k (Joint supercomputer center of RAS) on December 2013 to include the resources of this cluster in volunteer computing project SAT@home. As a result the performance of the project increased by 40 % in some periods of time. At the moment CluBORun can work with the Cleo and the SUPPZ job scheduler systems. We plan to make a version for the SLURM system in the nearest future.

Primary author: Mr MANZYUK, Maxim (ISDCT SB RAS)

Co-authors: Dr POSYPKIN, Mikhail (IITP RAS); Dr ZAIKIN, Oleg (ISDCT SB RAS)

Presenter: Dr ZAIKIN, Oleg (ISDCT SB RAS)

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