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VARIOUS RUNTIME ENVIRONMENTS IN GRID BY MEANS OF VIRTUALIZATION OF WORKING NODES

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Grid systems are used for calculations and data processing in various applied areas such as biomedicine, nanotechnology and materials science, cosmophysics and high energy physics as well as in a number of industrial and commercial areas. However, one of the basic problems costing on a way to wide use of grid systems is related to the fact that applied jobs, as a rule, are developed for execution in a definite runtime environment specified by type and version of operating systems, auxiliary software (libraries), type of file system, presence or absence of facilities for parallel computing, etc. On the other hand, working nodes in the resource grid centers (where the jobs are executed) operate under control of a certain OS and offer a fixed runtime environment. Therefore if applied jobs were not developed initially for the particular runtime environment of the WNs, they cannot be directly processed in the grid.

In the framework of this work an approach [1] for batch processing of computer jobs prepared for various runtime environments in grid is proposed. This method is based on the virtualization of working nodes of grid resource centers and enables executing applied jobs irrespective of runtime environment it has been initially developed for. In particular, jobs developed for execution in the environment of the widespread OS Windows, can be processed in resource centers of the grid system whose working nodes operate under OS Linux.

The realization of the proposed approach was made under gLite MW in the EGEE/WLCG project and was successfully tested in SINP MSU resource center.

[1] V.A.Ilyin, A.P.Kryukov, L.V.Shamardin, A.P.Demichev, I.N.Gorbunov, A method for submitting and processing jobss prepared for various runtime environments in grid, Numerical Methods and Programming, v. 9, pp. 41-47, 2008 (in Russian)

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