Current challenges for parallel graph partitioning

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Résumé

Graph partitioning is a technique used for the solving of many problems in scientific computing, such as the decomposition of a mesh into domains so as to evenly balance the compute load on the processors of a parallel architecture. Because of the ever increasing size of the meshes to handle, partitioning tools themselves had to be parallelized. The parallel versions of these software provide good results for and on several thousands of processors, but the advent of architectures comprising more than a million processing elements raises new problems. Not only do the partitioning results produced by these software have to take into account the heterogeneity of these architectures, but also does the efficient execution of the partitioning software on these architectures require much more sophisticated algorithms. The purpose of this talk is to present the challenges to overcome in order to reach these goals.

Mots-Clés: graph, partitioning, static mapping, parallel computing

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