

The TOP500 Project of the Universities Mannheim and Tennessee

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Abstract

The TOP500 project was initiated in 1993 by Hans Meuer and Erich Strohmaier of the University of Mannheim. The first TOP500 list was published in cooperation with Jack Dongarra, University of Tennessee, at the 8th Supercomputer Conference in Mannheim. The TOP500 list has replaced the Mannheim Supercomputer Statistics published since 1986 and counting the worldwide installed vector systems.

After publishing the 15th TOP500 list of the most powerful computers worldwide in June 2000, we take stock:

In the beginning of the 1990s, while the MP vector systems reached their widest distribution, a new generation of MPP systems came on the market claiming to be able to substitute or even surpass the vector MPs. The increased competitiveness of MPPs made it less and less meaningful to compile supercomputer statistics by just counting the vector computers. This was the major reason for starting the TOP500 project.

It appears that the TOP500 list updated every 6 month since June 1993 is of major interest for the worldwide HPC community since it is a useful instrument to observe the HPC-market, to recognize market trends as well as those of architectures and technology.

The presentation will focus on the TOP500 project and our experience since seven years. The performance measure R_{max} (best Linpack performance) will be discussed and in particular its limitations. Performance improvements over the last seven years are presented and will be compared with Moore's law. Projections based on the TOP500 data will be made in order to forecast e.g. the appearance of a Petaflop/s system.

The 15th list published in June on the occasion of the SC2000 Conference in Mannheim will be examined in some detail. Main emphasis will be on the trends mentioned before and visible through the continuation of the TOP500 list during the last 7 years. Especially the European situation will be addressed in detail. At the end of the talk our TOP500 Web site, <http://www.top500.org>, will be introduced.