

JUDGE: Continued success of Forschungszentrum Jülich's GPU Cluster

Jülich takes a crucial step towards Exascale computing with the introduction of hybrid clusters using Tesla 20-series GPUs

Munich, Germany, May 2012 – The GPU computing cluster JUDGE (Juelich Dedicated GPU Environment) continues its success at the Jülich Supercomputing Centre (JSC). At the second stage of expansion, the cluster consists of 206 IBM iDataPlex nodes and provides a total of 412 NVIDIA Tesla M2050/2070 GPUs. Each compute node has an impressive 96 GB of main memory making JUDGE particularly well suited to CPU-intensive problems in the arenas of biology, medicine and environmental research. The latest expansion will serve astronomy.



Source: Forschungszentrum Jülich GmbH

The use of graphics processing units (GPUs) can dramatically increase the performance of supercomputing

clusters for select problem types, without corresponding increase in power consumption and capital expenditure. GPUs are now seen as important components in supercomputers of the future. “Only with these technological advances can the peak performance of supercomputers, currently set at a few Petaflops, be increased to Exascale (1000 fold increase) by the end of this decade”, says Prof. Thomas Lippert, director of the Jülich Supercomputing Centre.

ParTec Cluster Competence Center GmbH, played, and continues to play, a vital role in the commissioning and day-to-day operation of the JUDGE cluster. Key parts of the installation were carried out using ParTec's ClusterTools suite which provided installation configuration management, update management and batch system configuration. These tools enabled system administrators to respond to user requests for new software packages in a quick, efficient and safe fashion.

The ParaStation MPI, already proven in challenging environments such as JuRoPA, was also demonstrated to work well in these hybrid cluster environments. By enabling users to pin processes to CPU cores, PSMPI provides a key control mechanism that enables optimal use of the GPUs attached to a given CPU.

The monitoring facility ParaStation GridMonitor reports irregularities of the system in a timely manner and enables administrators to take the appropriate steps to keep the system up and running and maintain the users productivity.

“We are proud that ParTec GmbH was chosen by the Forschungszentrum Jülich and IBM to contribute with ParaStation Software Tool Suite to the onsite and remote management of the GPU cluster JUDGE ,” said Hugo R. Falter, Chief Operating Officer of ParTec Cluster Competence Center GmbH.