

Forschungszentrum Jülich inaugurated GPU-Cluster JUDGE

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

Munich, Germany, May 2011 – The new GPU computing cluster JUDGE (Juelich Dedicated GPU Environment) has now been put into operation at the Jülich Supercomputing Centre (JSC). The cluster consists of 54 IBM iDataPlex nodes and supports a total of 108 NVIDIA Tesla M2050 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.



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.