European supercomputing. This system, which will be delivered by IBM and whose initial operation is planned for the second quarter of 2012, was explicitly designed to be as "standardized" as possible: It potentially allows running programs developed and built on a desktop system without any porting effort. The enormous performance results from having more than 6,900 compute nodes containing two Intel SandyBridge-EP sockets with 8 cores each. Compared to the migration system described above, the Infiniband interconnect will be updated to a newer technology release (FDR) which will provide a higher communication bandwidth. The large scale architecture of the system is described by a hierarchy dubbed "islands": within an island containing some thousand cores, a fully non-blocking fat tree interconnect is established, while connectivity

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Figure 2:
Dr. Reinhold Bader,
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Ultraviolet system.

between islands is pruned by a factor of 4 in bandwidth, while still having fat tree topology. Eighteen of these islands make up the complete system. For such a system, high-capacity and high-throughput disk storage is also needed: 10 PBytes of disk space operated with IBM's General Parallel File System (GPFS) will be available on SuperMUC.

Great effort is being invested to achieve as energy-efficient operation and usage of the system as possible: Firstly, high-temperature water cooling on the system board level will be used to reduce the total energy consumption by up to 30%. Secondly, Intel's processor technology allows running the CPUs at different frequencies, thereby controlling energy consumption on the system level; in conjunction with monitoring and scheduling software techniques, user's jobs can be tuned by the system to run at the lowest frequency possible without a significant impact on job performance. The following table compares the features of SuperMUC with those of its predecessor, the HLRB II.

Once SuperMUC is fully operational, the migration system will be integrated as a nineteenth "fat node" island, providing large shared memory nodes to applications which need this kind of facility.

News from PRACE: HPC Access Grants and Implementation Phase Projects

The Partnership for Advanced Computing in Europe (PRACE) is offering super-computing resources on the highest level (tier-0) to European researchers.

Jülich Supercomputing Centre (JSC), as one of the three members of the Gauss Centre for Supercomputing (GCS), is dedicating a 35% share of its Blue Gene/P system JUGENE.

Project Access is intended for individual researchers and research groups including multinational research groups and has a one year duration. Calls for proposals for project access are issued twice yearly (May and November).

The 2nd call for proposals, this time for computing time on JUGENE and Curie, the system hosted by CEA, Paris, France, closed January 11, 2011. Ten research projects have been awarded about 360 Million compute core hours on JUGENE. Three of those research projects are from the UK, two are from Germany, and one each from Denmark, Ireland, Spain, Sweden, and Switzerland. Three research projects are from the field of Astrophysics, two each from Fundamental Physics from Medicine and Life Sciences, and one each from Chemistry and Materials, Earth Sciences and Environment, and from Engineering and Energy. More details, also on the projects granted access to Curie, can be found via the PRACE web pages
www.prace-ri.eu/PRACE-2nd-Regular-Call

Evaluation for the 3rd call for proposals that closed June 22, 2011 is still under way, as of this writing. Details on the calls can be found on
www.prace-ri.eu/Calls-for-Proposals

The EC-funded PRACE implementation phase projects met in Barcelona from September 14 to 16, 2011. PRACE-1IP, focussing on the operation of the tier-0 infrastructure, application support and future HPC technologies, planned the work for its second year. PRACE-2IP which additionally focusses on the coordination and integration of national tier-1 HPC systems, building on the work of the DEISA projects, held its kick-off meeting. More than 150 participants from the 21 member countries attended the meetings.

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