Press Release

„SuperMUC-NG" – Next Generation Supercomputer at Leibniz Supercomputing Centre

On December 14, 2017, Leibniz Supercomputing Centre (LRZ) of the Bavarian Academy of Sciences and Humanities and Intel have signed a contract for the delivery of a new supercomputer at LRZ. SuperMUC-NG will be the „Next Generation"to the currently operated SuperMUC, and will provide an impressive computational power of 26.7 PFlop/s to a wide-ranging scientific community.

SuperMUC-NG will not only significantly improve the compute power, but also enable the handling of tremendous amounts of data („Big Data") accumulated in today's experiments and simulations. A further aim is to give users the flexibility to deploy their own software and visualisation environments for analyzing the the data generated by simulations and sharing the results. For better integration with modern concepts of handling and visualisation of huge amounts of data, SuperMUC-NG will be linked to separately operated cloud components delivered with the system.

SuperMUC-NG: high-capacity, flexible, energy efficient

The new supercomputer at LRZ will be equipped with more than 6.400 Lenovo ThinkSystem SD650 DWC compute nodes based on the Intel Xeon Scalable processor. They will be connected by Intel's Omni-Path high-speed interconnect, using a „fat tree" topology. The overall more than 300,000 compute cores will deliver 26.7 Pflop/s (26,700,000,000,000,000 floating point operations per second) peak performance. 700 TByte main memory and more than 70 PByte disk storage will be available.

„We are happy to contribute an essential part to this important project, thereby supporting LRZ's service efforts. Handling huge amounts of data is vital", says Hannes Schwaderer, Head of Enterprise Sales Intel Deutschland GmbH. „Processing these data requires immense computational power. Intel's state-of-the-art processor architecture provides an important basis and ensures that all demands for high performance computing can be optimally fulfilled."

Just like SuperMUC, SuperMUC-NG will be cooled using warm water. Lenovo, the system integrator, has developed a cooling concept that will further reduce power consumption and reuse the waste heat of the supercomputer to generate cold water. „As a leading technology provider for high-performance data centers we focus our innovations on performance, reliability and sustainability", states Scott Tease, Executive Director, HPC and AI, Lenovo Data Center Group. „All of this contributes to the cooperation with Leibniz Supercomputing Centre and Intel regarding SuperMUC-NG."

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Personalized Medicine, origin of the universe and flood protection in Bavaria

Up to now, cosmology and astrophysics, solid-state physics and fluid dynamics have been the classical domains of supercomputing. During the last years other scientific domains have entered the field, mainly projects from life sciences as well as environmental and disaster research.

Just two recent examples where SuperMUC has enabled scientific breakthrough: An international team studying personalized medicine figured out which treatment for breast cancer will be efficacious for which specific patient. And a simulation of the Sumatra-Andaman Earthquake causing the tsunami in 2004 was awarded „Best Paper"at the Supercomputing Conference in Denver, Colorado, USA.

Researchers also use the supercomputer to predict environmental hazards: Together with their colleagues from Canada, scientists at Ludwig-Maximilians-Universität and Technical University Munich and LRZ performed comprehensive simulations of the effects of global warming on extreme rainfalls and floodings in Bavaria.

Dieter Kranzlmüller, Chairman of the Board of LRZ, sees the Supercomputing Centre well equipped for the future: "The new supercomputer SuperMUC-NG will provide more compute power for scientists, but also will require more expertise. Researchers will be able to tackle problems that are more complex. The LRZ experts assist them, providing an interface between the scientific community and computer science. We are well prepared to support scientists in achieving the next level of supercomputing. As part of the project we will again extend our user support team."

Joint funding from Berlin and Bavaria

The funding of SuperMUC-NG is shared to equal parts by the federal government of Germany and by the Free State of Bavaria through a strategic plan of the Gauss Centre for Supercomputing (GCS). The total cost of the project sums up to 96 Million Euro for 6 years including electricity, maintenance and personnel. Bavaria's Minister of Science Dr. Ludwig Spaenle: „Excellent research and development need excellent working conditions. With the next supercomputer SuperMUC-NG, we meet these demands and establish the prerequisites for continuation of state-of-the-art scientific research in this field in Bavaria."

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The Leibniz Supercomputing Centre (Leibniz-Rechenzentrum, LRZ) of the Bavarian Academy of Sciences and Humanities is the IT Service Provider for the Munich universities and colleges as well as a growing number of research organisations in Munich and throughout Bavaria. In addition to this regional focus, the LRZ also plays an important role as a supercomputing centre on the national as well as the European stage. The LRZ was founded in 1962 in Munich and is now located on the Research Campus in Garching.