

100 Gigabits/s Connection Accelerates Transatlantic Research

At the SC13 Supercomputing Conference in Denver, KIT Demonstrates 100 Gigabits/s Connection between North America and Europe – Cooperation with DFN

KIT researchers have established the first international 100 gigabits/s connection for German science. It will be the basis of better cooperation in data-intensive sciences in the future. At the SC13 International Supercomputing Conference in Denver, KIT's Steinbuch Centre for Computing (SCC) successfully demonstrated this technology.

"As in an orchestra we have now combined the various instruments such that this record speed from end user to end user can be used for the first time in German science," Professor Dr. Bernhard Neumair, Managing Director of SCC, says. Interaction of user software and connecting stations was controlled and optimized for this purpose.

The connection is to foster the development of advanced network technologies and to support data-intensive high-end projects, such as the experiments at the LHC in Geneva, at the ITER fusion reactor in France, and in other international programs. At the SC13 International Supercomputing Conference in mid-November, the Steinbuch Centre for Computing (SCC) of KIT successfully demonstrated the exchange of LHC experiment data via the high-speed connection between Karlsruhe and Denver. The German National Research and Education Network, DFN, provided a 100 gigabits/s line from KIT to Amsterdam. The transatlantic 100 Gbits/s network connection named "Advanced North Atlantic 100G Pilot project (ANA-100G)" from Amsterdam to New York will now be made available by a consortium of six international science networks for a period of twelve months.

"The worldwide LHC computing grid has proved to be suited for the exchange of the LHC data in the first years. This 100 gigabits/s transatlantic network test now is an important step in the extension of this distributed computing environment for coping with the much larger data volumes of the next LHC data acquisition and future experiments," Professor Dr. Christian Zeitnitz, deputy chairman of the Committee for Elementary Particle Physics (KET), says.

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Apart from the transmission of LHC data, SCC also succeeded in demonstrating in a showcase that currently available computer systems really fill the bandwidth of 100 gigabits/s and the data are processed in real time. "In view of the length of the transatlantic connection, this certainly is a technical challenge," Professor Dr. Bernhard Neumair, Managing Director of SCC, emphasizes.

The science networks Internet2 (USA), NORDUnet (Nordic countries), ESnet (U.S. Department of Energy), SURFnet (the Netherlands), CANARIE (Canada), and GÉANT (Europe) are parts of the high-speed connection. Establishment of this connection once again illustrates that current top research is increasingly based on large-scale scientific data, the management and analysis of which are keys to new findings and innovations. Complex projects are performed in international cooperation, with the researchers expecting rapid and secure access to data distributed all around the globe.

Dr. Takanori Hara from the Japanese High-energy Accelerator Research Organization KEK, who is computing coordinator of the Belle II experiment that is planned to measure the properties of bottom quarks with highest precision in the future, also congratulated the SCC on the successful demonstration of their 100 gigabits/s technology. He underlined that this test is a milestone on the way towards the distributed computing infrastructure for the Belle II experiment, in which the KIT and in particular the Grid Computing Centre Karlsruhe (GridKa) of SCC will play an important role.

Karlsruhe Institute of Technology (KIT) is a public corporation according to the legislation of the state of Baden-Württemberg. It fulfills the mission of a university and the mission of a national research center of the Helmholtz Association. Research activities focus on energy, the natural and built environment as well as on society and technology and cover the whole range extending from fundamental aspects to application. With about 9000 employees, including nearly 6000 staff members in the science and education sector, and 24000 students, KIT is one of the biggest research and education institutions in Europe. Work of KIT is based on the knowledge triangle of research, teaching, and innovation.

This press release is available on the internet at www.kit.edu.