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**NEWS RELEASE**

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**FOR IMMEDIATE RELEASE**

**February 16, 2006**

**TRIUMF researchers team up with successful gigabyte-per-second network computing challenge** (Vancouver, B.C.) – At the international Computing for High Energy and Nuclear Physics 2006 conference (CHEP'06) in Mumbai, India, the Worldwide LHC Computing Grid collaboration (WLCG) officially announced the successful completion of a data network speed challenge. The challenge involved sustaining a continuous flow of physics data on a worldwide “Grid” network at up to 1 gigabyte per second. *The maximum sustained data rates achieved correspond to transferring a DVD worth of scientific data from CERN every five seconds.*

The data was transferred from CERN<sup>i</sup> in Geneva to 12 major computer centres<sup>ii</sup> around the globe, including TRIUMF in Vancouver, B.C.. The completion of this challenge is a key milestone on the way to establishing the necessary computing infrastructure for the Large Hadron Collider (LHC), the world’s largest scientific instrument, which is scheduled to startup in 2007 at CERN. Canada has made a major commitment at the LHC with high-tech equipment for both the accelerator and the ATLAS detector.

Commenting from Mumbai on the significance of the results, Jos Engelen, the Chief Scientific Officer of CERN, said “Previously, components of a full Grid service have been tested on a limited set of resources, a bit like testing the engines or wings of a plane separately. This latest service challenge was the equivalent of a maiden flight for LHC computing. For the first time, several sites in Asia were also involved in this service challenge, making it truly global in scope. Another first was that real physics data was shipped, stored and processed under conditions similar to those expected when scientists start recording results from the LHC.”

The WLCG endeavors to coordinate the established world-wide scientific Grid infrastructures to provide sufficient computational, storage and network resources to exploit the scientific potential of the LHC experiments. These experiments will study the fundamental properties of subatomic particles and forces, providing insight into the origins of the Universe. They are expected to generate in total some

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15 million gigabytes of data *each year*, enough to fill up a stack of DVDs over 3 kilometres high.

WLCG uses a range of national and international Grid infrastructures, including the advanced 10 gigabit-per-second CA\*net 4 network in Canada. Scientists designed a series of service challenges to ramp up to the level of computing capacity, reliability and ease of use that will be required by the world-wide community of over 6000 scientists working on the LHC experiments. During LHC operation, the major national computing centres involved in the Grid infrastructure, so-called "Tier-1" centres, will collectively store the data from all LHC experiments. Much of the data analysis will be carried out by scientists working at the much more widely distributed system of "Tier-2" centres located at universities and research labs and linked into the higher level national Tier-1 centre. Today, these centres provide a combined effective computing power of over 20,000 PCs, and will reach 50,000 PCs by 2007.

Canadian physicists are actively engaged in the ATLAS experiment at the LHC, involving Faculty, Scientists, Engineers, and students from the University of Alberta, the University of British Columbia, Carleton University, McGill University, l'Universite de Montreal, Simon Fraser University, the University of Toronto, the University of Victoria, York University as well as TRIUMF and the Institute of Particle Physics, with the support of the Natural Sciences and Engineering Research Council of Canada and the National Research Council. The high-speed network between the TRIUMF Laboratory and CERN has been provided by CANARIE and BCNET. TRIUMF is a critical participant in the service challenges, marking an important milestone in the development of the TRIUMF ATLAS Tier-1 facility. Canada has proposals with the Canadian Foundation for Innovation to build said Tier-1 centre at TRIUMF, as well as Tier-2 centres distributed throughout the member universities.

"We welcome this important development in the progress towards a full computing and analysis centre for ATLAS" said Robert McPherson, Associate Professor at the University Victoria and Deputy Spokesperson of the ATLAS Canada collaboration. "It represents a significant step towards ground breaking studies of new physics by Canadians, and re-enforces the commitment of the TRIUMF laboratory supporting this goal."

The current service challenge is the third in a series of four leading up to LHC operations in 2007. The next challenge, scheduled for the summer, will extend to many other computing centres and aim at continuous, stable operations. That challenge will allow many of the scientists involved to refine their computing models for handling and analyzing the data from the LHC experiments, in anticipation of the start of real data taking in 2007.

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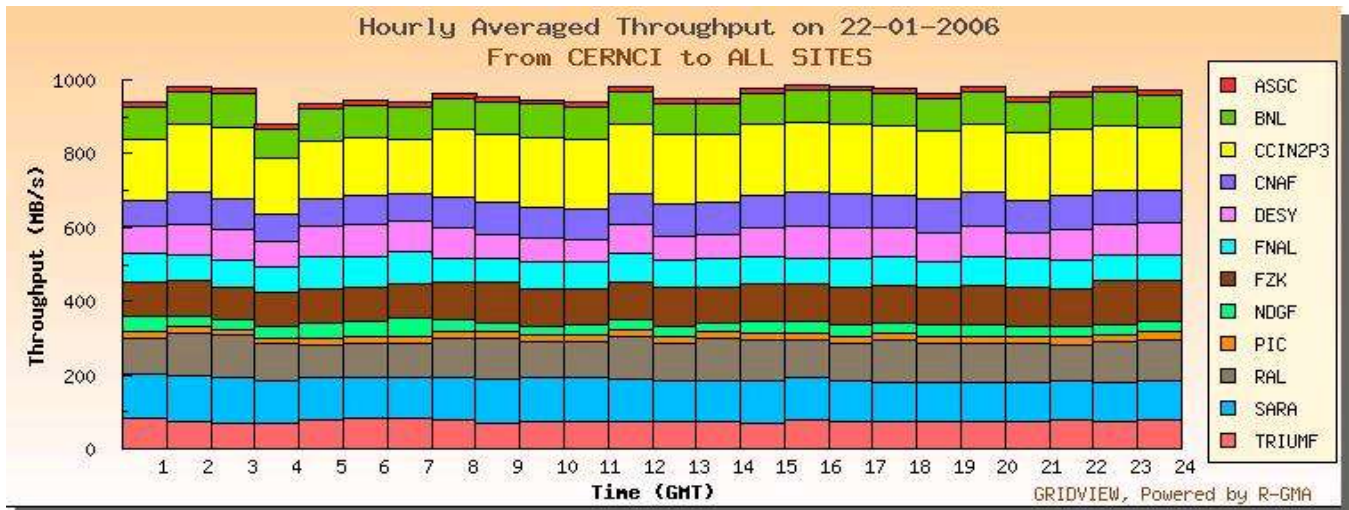


Figure 1: Histogram monitor by the Bhabha Atomic Research Centre, Mumbai, India, showing data transfer from CERN to 12 major computing centres [see footnote 2 ] during the service challenge, demonstrating data rates up to 1 gigabyte per second.

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<sup>ii</sup> CERN, the European Organization for Nuclear Research, has its headquarters in Geneva. At present, its Member States are Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom. India, Israel, Japan, the Russian Federation, the United States of America, Turkey, the European Commission and UNESCO have Observer status.

<sup>ii</sup> The computing facilities involved in this service challenge were: Academia Sinica Grid Center (ASGC) in Taipei; Brookhaven National Laboratory (BNL) in Brookhaven, NY, USA; CCIN2P3, the Computing Center of the National Institute of Nuclear Physics and Particle Physics (CCIN2P3) in Lyon, France; the German Electron Synchrotron Laboratory (DESY) in Hamburg, Germany; Fermi National Accelerator Laboratory (FNAL) in Batavia, Illinois, USA; Forschungszentrum Karlsruhe (FZK) in Karlsruhe, Germany; the National Center for Research and Development in Technology, Computer Science and Data Transmission (INFN-CNAF) in Bologna, Italy; the Nordic DataGrid Facility (NDGF) a distributed facility in Denmark, Finland, Norway and Sweden; Port d'Informació Científica (PIC) in Barcelona, Spain; the National Center for Computing and Networking Services and the National Institute for Nuclear Physics and High Energy Physics (SARA-NIKHEF) both based in the Netherlands; the Rutherford Appleton Laboratory (RAL) in Oxfordshire, UK; the National Laboratory for Particle and Nuclear Physics (TRIUMF) in Vancouver, Canada.