



GLOBAL COLLABORATION HELPS ASTRONOMERS GET MORE COMPLETE VIEW OF THE UNIVERSE

EXPRéS project uses point-to-point services on GÉANT2 network to underpin high speed astronomy research

30 October 2007, Cambridge, UK Astronomers using the GÉANT2 network now have the ability to track transient events right at the edge of the known universe, through the European Union's (EU) EXPRéS project. GÉANT2 and its European National Research and Education Network (NREN) partners now connect four of Europe's biggest radio astronomy facilities using high-bandwidth point-to-point circuits. The four telescopes are located in Medicina, Italy; Torun, Poland; Jodrell Bank and Cambridge in the UK, and being connected via GÉANT2 allows them to work together simultaneously and create, in effect, a single telescope as large as Europe.

The EXPRéS project is amongst the first to deploy the point-to-point services on the European-wide GÉANT2 network, and plans to connect up to 16 of the most sensitive radio telescopes around the world. Point-to-point circuits guarantee the bandwidth and quality of connections between users.

Each telescope location will send vast amounts of data for processing at a central supercomputer. Using GÉANT2 to connect the telescopes in this way allows astronomers to work with greater speed between observation and publication, and allows them more control when problems occur. And because images can be created so quickly, observations are now possible on short-lived astronomical events, helping astronomers to get a far more complete view of the universe.

EXPRéS will enable realtime 'rapid response, target of opportunity' science which will allow astronomers to quickly react to unexpected events, such as

supernovae explosions and gamma-ray bursts. Led by JIVE (The Joint Institute for VLBI in Europe), the project will link radio astronomy institutes from across Europe, Asia, Australia, South America, South Africa and the USA.

"The EXPReS project has huge potential. By creating an internationally distributed electronic Very Long Baseline Interferometer (eVLBI) we will be able to chart evidence of previously unseen astronomical events. The GÉANT2 network managed by DANTE is both scalable and has the required speed to outperform our current capabilities," commented Dr Huib Jan van Langevelde, coordinator for the EXPReS project and director of JIVE.

Aside from GÉANT2, network connectivity for this project in Europe is provided by associated partner NRENs. In this particular case, the NRENs involved in connecting the four telescopes were GARR, Italy; JANET, UK; and PSNC, Poland. The GÉANT2 infrastructure is built, planned and managed by the research networking organisation, DANTE.

"GÉANT2 provides connectivity for a variety of projects, supporting research innovation right across the globe. Its point-to-point connectivity allows dedicated, high speed data transfer and the benefits it brings are available to a variety of education and science research projects. The astronomy network created through the EXPReS project is particularly impressive in both its size and geographic scope," said Dai Davies, general manager, DANTE.

EXPReS aims to establish 1 Gbps network connections between the central processor at JIVE to each of the partner telescopes involved. This will utilise GÉANT2 point-to-point connections across Europe. By providing extremely high quality connections between some of the world's most sensitive telescopes, the GÉANT2 network is proving the value of dedicated point-to-point network connections to the research and education community at large.

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About GÉANT2:

GÉANT2 delivers the next generation research and education network for Europe. With over 30 million research and education users in 34 countries across the continent, GÉANT2 offers unrivalled geographical coverage, high bandwidth, innovative hybrid networking technology and a range of user-focused services. GÉANT2 has links totaling more than 50,000km in length and its extensive geographical reach interconnects with other world regions to enable global research collaboration. Europe's academics and researchers can now exploit the power of dedicated GÉANT2 "point-to-point" links, creating optical private networks solely for their use, that connect specific research centres.

GÉANT2 is co-funded by the European Commission under the Sixth Research and Development Framework Programme. The project partners are 30 European National Research and Education Networks (NRENs), TERENA and DANTE. It is co-ordinated by DANTE, the research networking organisation that plans, manages and builds research networks all over the world. For more information visit www.geant2.net

About DANTE:

DANTE is a non-profit organisation whose primary mission is to plan, build and manage research and education networks. Established in 1993, DANTE has been fundamental to the success of pan-European research and education networking. DANTE has built and operates GÉANT2 which provides the data communications infrastructure essential to the success of many research projects in Europe. DANTE is involved in worldwide initiatives to interconnect countries in other regions to one another and to GÉANT2. DANTE currently manages projects focused on the Mediterranean, Latin American and Asia-Pacific regions through the EUMEDCONNECT, ALICE and TEIN2 (Trans-Eurasia Information Network) projects respectively. For more information, please visit www.dante.net

About EXPReS

Express Production Real-time e-VLBI Service (EXPReS, www.expres-eu.org) is a three-year project funded by the European Commission with the objective of creating a distributed, large-scale astronomical instrument of continental and intercontinental dimensions. This electronic Very Long Baseline Interferometer (e-VLBI) is achieved using high-speed communication networks operating in real-time and connecting together some of the largest and most sensitive radio telescopes on the planet. EXPReS is coordinated by JIVE, the Joint Institute for VLBI in Europe (www.jive.nl).

About JIVE

The Joint Institute for VLBI in Europe (JIVE, www.jive.nl) supports the operations of the European VLBI Network (EVN) in the widest sense. The major activity has been the development, construction and successful operation of the EVN Data Processor, a powerful supercomputer that combines the signals from radio telescopes located across the planet, creating a virtual telescope of intercontinental dimensions. Using this

technique of Very Long Baseline Interferometry (VLBI), astronomers can make detailed images of cosmic radio sources, providing astronomers with the clearest, highest resolution view of some of the most distant and energetic objects in the Universe.

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