

Compiled by Hannelore Hämmerle and Nicole Crémel

LHC COMPUTING

French LCG steadily ramps up

More than 70 members of the LHC Computing Grid (LCG) project in France gathered in March to discuss the progress of the French part of the global Grid infrastructure for the LHC accelerator. The meeting was divided into several sessions of presentations by Grid experts, highlighting the challenges of the Grid for the LHC experiments and the progress made during recent months. It was also an occasion to reinforce communication between the representatives of the experiments and the LCG sites.

As the start-up of the LHC approaches, new members have joined the French part of the LCG Grid. Indeed, the data-processing capacity required and the complexity of the installation and management of the equipment, as well as the effort needed to provide and operate a reliable platform for the experiments, have led to a significant increase in the number of staff and the number of French sites.

Several Tier-3 sites have recently joined the ranks of LCG-France. Today, the project is composed of a Tier-1 centre and an analysis facility operated by the IN2P3 Computing Centre (CNRS/CEA), three Tier-2



Members of the French section of the LHC Computing Grid project during one of the sessions that discussed the progress of the Grid infrastructure for the impending LHC.

centres and four Tier-3s. In addition, several sites associated with the French Tier-1 are located in other countries including Belgium, China, Japan and Romania. The four major LHC experiments are supported at all of the sites, which also provide computing resources for non-LHC-related experiments, projects and research fields, mainly in the context of the Enabling Grids for E-science project.

In 2006, the French infrastructure of the LCG Grid was successfully tested during the data-transfer exercises. All the French sites contributed to the exercises and all goals were reached.

For its part, the French Tier-1 centre has to carry out work to resolve problems with

electric installation and air conditioning so as to cope with the planned increase of its computing capacity. Despite several difficulties, all of the appropriate measures have been taken to maintain Tier-1 operations while this work on underlying service infrastructure is in progress.

The meeting was also the occasion for site representatives to meet members of the ALICE, ATLAS, CMS and LHCb experiments to exchange views and information, so strengthening links between them. The sites received a clear presentation of the needs of the experiments, not only in terms of computing and data-storage capacity, but also in terms of quality of service and bandwidth requirements.

AWARDS

CERN wins prize for storage systems implementation

CERN is one of the winners of this year's *Computerworld* Best Practices in Storage awards in the category of Systems Implementation for the success of the ALICE data-acquisition system (DAQ). *Computerworld*, a weekly online publication

focusing on technology news, announced the recipients of the awards on 18 April at the Storage Networking World Conference.

The Systems Implementation category recognizes the successful design, implementation and management of an

interoperable environment and may also demonstrate the ability to source from multiple vendors. Case studies were required to substantiate a successful strategy to maintain a heterogeneous storage network.

The ALICE DAQ team developed their system to buffer up to eight hours of data, reading and writing in a randomized way. Since randomization is much less effective than writing to disks linearly, the ALICE DAQ team used storage software to separate the two data streams to different disks, turning the traffic into a linear recording.

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SUPERCOMPUTING

PACE makes way for European collaboration

Supercomputing centres from 15 European countries have come together to form the Partnership for Advanced Computing in Europe (PACE) initiative to ensure access to a world-class high-performance computing infrastructure for European researchers. At a ceremony in Berlin on 17 April, the partners signed a Memorandum of Understanding for the new initiative.

The need for a high-performance computing service was highlighted in last October's report from the European Strategy Forum for Research Infrastructures. The central idea behind the new European

initiative is the joint usage of the capacities of several supercomputers.

According to the terms of the memorandum, the partners will spend the next two years putting together concrete proposals on how best to combine their equipment and expertise to implement the project. In the preparation phase, which will run until 2010, the necessary organizational structures will be created, and clear guidelines will be drawn up concerning the hardware needed at the different locations. When the infrastructure is up and running, a peer-review process will ensure that only

scientifically excellent projects gain access to the supercomputer.

The start-up costs of the project have been calculated at €400 million, while annual running costs are likely to be around €100 million. The member states involved in the project will cover most of these costs, with additional funds coming from the EU's Seventh Framework Programme.

The countries involved in the project are Austria, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey and the UK.

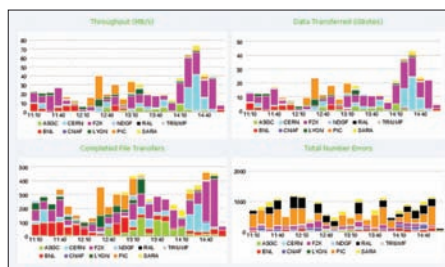
COLLABORATION

CERN openlab gains new contributor

In April, the information-technology service provider EDS joined CERN openlab as a new contributor. CERN openlab is a framework for collaboration between CERN and information-technology companies, in a pre-competitive spirit based on open standards. Partners in CERN openlab typically engage in broad-based 3 year collaborations, while contributors work in a more focused 1–2 year collaboration.

EDS provides a broad portfolio of business and technology solutions to its clients, and is credited with having founded the information-technology outsourcing business. The company has joined CERN openlab to gain further experience with the type of Grid technology that is being developed by the LHC Computing Grid (LCG) and Enabling Grids for E-Science (EGEE) projects. EDS has already been a member of the EGEE Industry Forum for two years.

In CERN openlab, EDS will contribute to the development and enhancement of tools and systems to monitor Grid services. Grid projects such as EGEE and LCG currently provide a variety of monitoring systems. These range from classical fabric monitors to a relatively new type of monitor activity on the Grid-applications side. The *ad hoc* evolution of these monitors means that there is a risk that important information is not gathered or that multiple monitors store



The ATLAS distributed data-management monitoring from Experiment Dashboard.

redundant data.

Data repositories and transport mechanisms have been developed to accumulate sensor data. However, understanding how to present high-level views in an intuitive and useful way, while providing the ability to understand the underlying problems, remains an open issue. EDS engineers will work together with experts and tool providers to evaluate existing solutions. A CERN fellow sponsored by EDS will implement solutions by adapting existing tools, including the Experiment Dashboard, an aggregator of monitor information that has been developed through a collaboration of the EGEE and LCG projects.

● The partners in CERN openlab are HP, Intel and Oracle; contributors are EDS, F-Secure and Stonesoft.

COMPUTERS

Thin clients use less energy at work

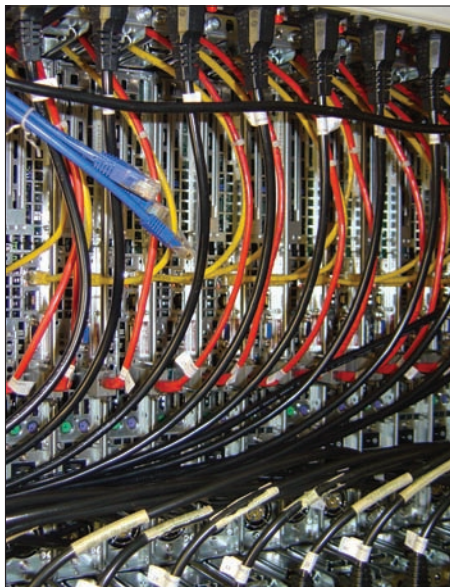
Savings achieved by reducing the electricity consumption of computers may seem insignificant, but in companies with several-hundred employees the kilowatt hours can mount up to a huge electricity bill – not to mention significant CO₂ emissions. In two studies, researchers at the Fraunhofer Institute for Environmental, Safety and Energy Technology in Oberhausen, Germany, have investigated the extent to which “thin clients” can save energy and reduce costs.

Thin clients consume up to 50% less electricity. They are “slimmed down” computers that are used solely to input and output data, i.e. computers limited to the functions of the mouse, the keyboard and the screen. The data that are accessed are stored on a central server along with most of the operating system. The advantage is that if a new program is installed on the server or an update is loaded, the software automatically runs on all of the thin clients that can access the server.

In an earlier study, the researchers examined the upfront and running costs of the slim devices. The team based its research on a typical institute, comparable with a small- to medium-sized company with a staff of 150–300 people, which can save up to 70% compared with “normal PCs”.

UK GRID

GridPP extends to deal with LHC data



Getting connected: a close-up of GridPP hardware at Queen Mary, University of London. (Courtesy QMUL/GridPP.)

Scientific computing in the UK received a boost at the end of March with the announcement by the Particle Physics and Astronomy Research Council (PPARC) of £30 million further funding for the UK's largest scientific Grid. The GridPP project is building a computing Grid to analyse data from the LHC. The new funding will allow GridPP to continue into its third phase, running until 2011 and covering the period when the LHC starts taking data.

The UK particle-physics Grid currently has more than 5000 processors at 17 sites across the country; with the new funding, this will increase to 20 000 by 2011. GridPP is also integrated with other Grids in the Worldwide LHC Computing Grid project, including more than 35 000 CPUs in 50 countries. This Grid will analyse the petabytes (millions of gigabytes) of data produced by the LHC each year in its study of the basic building blocks of matter.

The GridPP3 grant will cover areas including staff and hardware at the particle-physics Grid sites in the UK, and more general support such as security and operations management.

Calendar of events

June

4–8 TeraGrid '07 Madison, WI, US
www.union.wisc.edu/teragrid07/

5–8 Grid Asia 2007 Singapore
www.ngp.org.sg/gridasia/2007/

5–9 6th International Conference on Large-Scale Scientific Computations
 Sozopol, Bulgaria
<http://parallel.bas.bg/Conferences/SciCom07.html>

25–28 WorldComp'07 Las Vegas, NV, US
www.worldacademyofscience.org/worldcomp07/ws

25–29 International Conference on Distributed Computing Systems (ICDCS) 2007 Toronto, Canada
www.eecg.utoronto.ca/icdcs07/

26–29 ISC2007 Dresden, Germany
www.supercomp.de/

27–29 HPDC 2007 Monterey Bay, CA, US
www.isi.edu/hpdc2007/

July

5–8 6th International Symposium on Parallel and Distributed Computing
 Hagenberg, Austria
www.gup.jku.at/ispdc

9–12 2007 International Multi-Conference in Computer Science, Engineering and Information Technology
 Orlando, FL, US
www.PromoteResearch.org

August

28–31 Euro-Par 2007 Rennes, France
<http://europar2007.irisia.fr/>

September

2–7 International Conference on Computing in High Energy and Nuclear Physics (CHEP'07) Victoria, BC, Canada
www.chep2007.com/

October

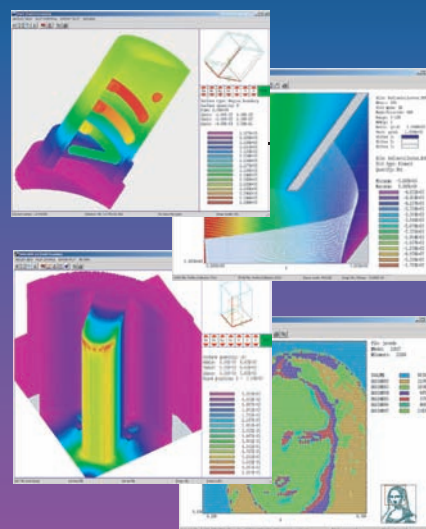
1–5 EGEE'07 Budapest, Hungary
www.eu-egee.org/egee07

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ASP Injection System commissioning according to schedule

Danfysik was awarded the contract to deliver the 3GeV Injector turnkey system to the Australian Synchrotron Project in Melbourne. Within the contractual time frame, 27 months after project start, the Injection System was running at 3 GeV, sending electrons into the Booster to Storage Ring Transfer Line.



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