LHC computing stability emphasized at CHEP '07

As preparations for the LHC proceed, this year's main conference on computing in high-energy physics focused on getting ready for the fast-approaching onslaught of data.

A CHEP '07 plenary session. This year, the conference was held in Canada for the first time. (Courtesy Albert Pace.)

The latest in the series of conferences devoted to computing in high-energy and nuclear physics, CHEP '07, took place in Victoria, Canada, on 2–7 September. This was the first time that this conference, which takes place every 18 months, had visited Canada. TRIUMF and the University of Victoria hosted the meeting at the Victoria Conference Centre, and more than 470 people attended from all over the world. There were 400 presentations during the week, split evenly between talks and posters.

Prior to the conference, almost 200 people attended a two-day workshop on the Worldwide LHC Computing Grid (WLCG). Following a review of the status of WLCG and its various components, storage services were identified as one of the biggest issues affecting many of the sites. The need for improvements in stability and reliability as sites ramp up for the start-up of the LHC was also a major topic. Nevertheless, the readiness of the WLCG service, individual sites and experiments has shown great improvements since previous reviews, although much remains to

be done to reach production levels. The ATLAS and CMS collaborations have proposed a Common Computing Readiness Challenge (CCRC) in which all LHC experiments should participate, and work is underway to prepare this for early 2008. Meanwhile, there will be another workshop at CERN during the week starting 26 November to discuss the service reliability of WLCG.

The directors of the two hosting organizations opened the conference with the welcome address, followed by CMS spokesperson Jim Virdee who gave a talk on the status of the LHC and the experiments. He presented the latest news on the timetable and discussed what physics could be expected and how computing was vital in understanding the data. Les Robertson of CERN then spoke on the progress of WLCG. Talks on the different components of, and experience with, WLCG formed a major part of the week's remaining programme. These included contributions from the experiment collaborations on their preparations for production running. WLCG now runs some 2.5 million jobs a month, but the ▷

Participants get away from it all with a spot of whale-watching, including this orca. (Courtesy P Mato Vila and U Schwickerath.)

target for LHC beam conditions is 9 million, meaning that WLCG still needs a great increase in installed capacity. Nevertheless, Robertson concluded: "We are getting there."

Other plenary talks covered different aspects of LHC computing; experiment data-acquisition systems; Grid computing (where Miron Livny of the University of Wisconsin noted that the era of easy funding for Grid projects is drawing to a close); and high-performance networking. Richard Mount of SLAC gave an interesting view of how SLAC is transforming itself from a purely high-energy physics institute into a laboratory supporting different sciences, and the challenges this creates. Invited speakers from the sponsoring industrial partners gave an insight into some of the future technologies that they are developing, which may be of interest to high-energy physics in the future. Also on the technology track, Sverre Jarp of CERN presented some thought-provoking ideas on how to extract more performance from advanced chip and CPU designs that are currently entering the market.

The programme also included talks on projects other than the LHC. Frank Wuerthwein of San Diego described the benefits of Grid technology for experiments currently up and running. He gave examples of how Grid technologies are benefiting PHENIX and STAR at Brookhaven National Laboratory, CDF and DØ at Fermilab, and experiments at DESY and SLAC. Looking to the future, one presentation considered advanced computing being used in studies for the proposed International Linear Collider.

Apart from the morning plenary sessions, there were parallel sessions held on most afternoons, covering (in more detail) Grid middleware, distributed data analysis, event processing, online computing, collaborative tools, software components and computer facilities. Poster displays took place over two sessions, presenting more than 100 at a time, with each session on display for two days. During extended coffee breaks, poster authors made themselves available for discussions on their material.

The summary talks at the end of the conference noted that there appeared to be more emphasis at this conference than at previous meetings on stability, ramp-up and getting computing systems ready for production. There was not so much that was "new", but perhaps this was to be expected as the experiment and software development teams are all fully occupied with installation and commissioning, including their computing facilities. It is by design that most of the current work is going into bug fixing,

reliability improvements and service stability, rather than new developments or extra features. Efforts are also ongoing to make the different Grids interoperate, and the experiments are now exploiting Grids to perform real work.

Matthias Kasemann, of CERN and DESY, reminded the audience in his conference summary that the LHC should be operational next summer, and that the experiments must therefore be ready to take data by spring 2008. He concluded that there is already quite good experience on the Grid, but all is not yet perfect. However, he agreed with Robertson's comment at the start of the week that we are getting there, albeit slowly.

All of the summary speakers agreed that the conference facilities had been excellent, the programme interesting and that there had been plenty of opportunity for useful interactions. It was also agreed that the social events, whale-watching afternoon and a buffet in the Royal British Columbia Museum, had been most enjoyable.

● The next CHEP will be in Prague in spring 2009, see www.particle.cz/conferences/chep2009.

Further reading

For access to most of the material presented at CHEP '07, see www.chep2007.com. For the WLCG workshop, see http://indico.cern.ch/conferenceTimeTable.py?confId=20080.

Résumé

CHEP '07 met l'accent sur la stabilité de l'informatique LHC

La dernière en date des conférences sur l'informatique en physique nucléaire et des hautes énergies, CHEP '07, s'est tenue à Victoria (Canada) du 2 au 7 septembre. La mise en service du LHC devenant imminente, relativement peu de nouveautés ont été présentées à l'édition de cette année, qui a surtout traité des préparatifs pour l'énorme quantité de données que produiront les expériences LHC et du besoin de fiabilité et de stabilité. Les sessions ont porté sur divers aspects de l'informatique LHC, les systèmes d'acquisition de données pour les expériences, l'informatique de la grille de calcul et la création de réseaux hautes performances. La conférence a été précédée par un atelier de deux jours sur la Grille de calcul mondiale pour le LHC.

Alan Silverman, *CERN.*