EGI: The Present and the Future of the Pan-European Grid Infrastructure

Ladislav Hluchý

Europe has invested heavily in e-science programs over the past years both at the National and the European levels with impressive results. Grid technology is recognized as a fundamental component for e-infrastructures. Many countries have launched National Grid Initiatives (NGI) to establish National grid infrastructures. Driven by the needs and requirements of European research community, the EGI Design Study represents a project for the conceptual setup and operation of a new organizational model of a sustainable pan-European grid infrastructure.

e-Infrastructures for Science and Industry - Clusters, Grids, and Clouds (the DEISA project)

Wolfgang Gentzsch

While Grids allow for direct access to and sharing of distributed resources, for good reasons, clouds are datacenters on the Internet which provide IT services as a utility, on a pay-per-use basis. while Grids stand out because of their flexible, dynamic, feature-rich resources and thus are complex by their very nature, Clouds provide an entirely new business model with its own set of value propositions for (currently mainly) enterprise computing environments, including application scalability, improved economies of scale, reduced costs, resource efficiencies, resource elasticity, faster deployment times, value-based pricing model, disaster recovery and an on-demand infrastructure enabling the truly dynamic data center.

Cloud applications will likely follow similar strategies as grid-enabling ones. Just as challenging, though, are the cultural, mental, legal, and political aspects of clouds. Building trust and reputation among the users and the providers will help in some simple scenarios. But it is still a challenge to imagine users easily entrusting their corporate assets and sensitive data to cloud service providers.

Another question which we will try to answer is how suitable the Cloud services model will be for the capability computing demands of the HPC community, in research and industry. Here, we will look at DEISA, the Distributed European Infrastructure for Supercomputing Applications, to analyze the resource requirements of HPC applications, and check their suitability for the Cloud. We will show how DEISA will have a good chance to be sustainable in the long term, as an e-infrastructure for the computational scientist. And then, we might end up with a DEISA Cloud which will become an external (or public) HPC node within your grid application workflow.

Thus, the aim of the talk will be to elaborate on the main differences between HPC centers, grids and clouds, analyze sustainability with the aid of the DEISA experience, and provide an HPC application check list for Clouds.

H_2O-H_2 interaction: An inter-play of supercomputers and grids

Jozef Noga

The ultimate goal of quantum chemistry is an a priori prediction. Despite indubitable achievements, precise predictions of molecular energies and properties still represent a challenge to method developers. This lecture is an attempt to introduce the world of highly accurate ab initio calculations of small molecules in the perspective of the author's contribution to it and from the perspective of the programmer. A link to astrophysical applications is outlined via an example of the full nine-dimensional potential energy surface of H_2O-H_2 interaction, which resulted from a combination of about 1000 intensive calculations using supercomputers with almost half a million less intensive calculations spread over within a grid environment.

Grid computing for Astronomy & Astrophysics

Claudio Vuerli

In the old days of photographic plates, producing 20 terabytes might take 60 years of observing time, and another ten years of digitization. Current digital sky surveys can produce 20 terabytes in a year. The newest generation of sky surveys will produce 20 terabytes every night for a decade. As data volumes increase dramatically, the importance of computation increases.

Preliminary program:

Monday	26.10.2009	13:00 – 13:30	Registration
		13:30 – 14:00	Opening session
		14:00 – 14:45	**Invited lecture 1** ***Claudio Vuerli***
		14:45 – 15:30	**Invited lecture 2** ***Wolfgang Gentzsch***
		15:30 – 15:45	Coffee break
		15:45 – 16:30	**Invited lecture 3** ***Jozef Noga***
		16:30 – 17:15	**Invited lecture 4** ***Ladislav Hluchý***
		17:15 – 18:15	**Vendor session**
		18:15 – 18:45	**Panel discussion**
		18:45	**Reception**
Tuesday	27.10.2009	9:00 – 9:40	Invited lecture 5
		9:40 – 11:40	Session 1
		11:40 – 11:55	Coffee break
		11:55 – 12:35	Session 2
		12:35 – 13:30	Lunch
		13:30 – 14:50	Session 3
		14:50 – 15:05	Coffee break
		15:05 – 16:25	Session 4
Wednesday	28.10.2009	9:00 – 9:40	Invited lecture 6
		9:40 – 10:40	Session 5
		10:40 – 11:20	Session 6
		11:20 – 11:35	Coffee break
		11:35 – 12:00	Consortium "SlovakGrid"
		12:00 – 12:30	Program committee meeting
		12:30	Closing ceremony
Wednesday	28.10.2009	11:30 – 12:40	Grid Tutorials
		12:40 – 13:30	Lunch
		13:30 – 16:00	Grid Tutorials

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5th International Workshop on Grid Computing for Complex Problems GCCP 2009

October 26-28, 2009
Institute of Informatics, Slovak Academy of Sciences, Bratislava, Slovakia
Website: http://conference.ui.sav.sk/gccp2009/

The yearly meeting place of top researchers and practitioners in e-Science related to Grid Technologies, GCCP is one of the largest conferences in Slovakia in its area organized in a yearly basis, where many top researchers are regularly presenting their work.
During its previous 4 years of existence, 18 distinguished keynote speakers were invited to attend and share their knowledge, thus reinforcing GCCP quality.

The aim of the conference is to inform the wide professional public, special and scientific workers from industry, research institutions, Academy of Sciences, project and supplying organizations, and technical universities and high schools about the newest knowledge in the area of grid computing and to ensure exchange of their experience.

We invite researchers and scientists interested in distributed high-performance computing to attend **invited lectures** given on **Monday, October 26, 2009** at 14^{00} in II SAS conference room. After the presentations, a **panel discussion** will be organized, which may continue during a **reception**.
Attendance to the first day events of the workshop is **free of charge** (for organizational reasons, please register by e-mail conference.ui@sav.sk up to October 15, 2009).