SCHOOL IN HIGH PERFORMANCE COMPUTING ON LINUX CLUSTERS

31 JANUARY - 15 FEBRUARY 2002

Miramare - Trieste, Italy

(co-sponsored by the Istituto Nazionale per la Fisica della Materia - I.N.F.M.)

A two-week School in "High Performance Computing on Linux Clusters" will be held at the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, from 31 January to 15 February 2002, with the co-sponsorship of the Istituto Nazionale per la Fisica della Materia (INFM), Italy. The School will be directed by Stefano Cozzini (INFM, udr SISSA, Italy), with Alvise Nobile (ICTP) as the local organizer.

PURPOSE AND NATURE

The availability of high-speed networks and increasingly powerful commodity microprocessors are making the usage of clusters (or networks of computers) an appealing vehicle for cost effective parallel computing. Clusters, built using commodity-of-the-shelf (COTS) hardware components, as well as free, or commonly used, software, are playing a major role in redefining the concept of high performance computing. The School aims at providing the skills needed to benefit from this generation of HPC solutions, giving a basic knowledge of programming, administering and tuning, as well as building Linux-based clusters.

Provisionally, lectures will be on:

- Designing and building linux clusters
- Network solutions for linux clusters (characteristics and performances)
- Parallel programming techniques
- Optimization and profiling techniques for PC-based clusters
- System Management of a linux cluster
- Advanced Operating system issues: parallel file systems and I/O

These lectures will be complemented by hands-on lab sessions where participants, grouped in small teams, will build their own cluster from scratch. During the first week of the school these clusters will be assembled, configured and tested. In the second part of the course, some representative parallel programmes in the areas of computational condensed matter, engineering and weather forecasts will be distributed to the participants. These parallel codes will be presented in a series of tutorials illustrating their usage and the parallelisation strategies they adopt. During the lab sessions, the participants will be asked to install, analyse and profile some of these codes on the previously built clusters.

This course is specially meant for strongly motivated graduate students and young post-doctoral scientists. A background in high performance computing and in the Linux operating system would be very desirable. Students and young scientists from all countries that are members of the UN, UNESCO or IAEA can attend the School. The main purpose of the Centre is to help researchers from developing countries through a programme of training activities within a framework of international co-operation. However, scientists from developed countries are also strongly encouraged to apply. As the School will be conducted in English, participants should have an adequate working knowledge of that language. Due to the number of PCs available, the total number of participants is limited.

As a rule, travel and substistence expenses of the participants are borne by their home institutions. However, limited funds are available for some applicants from developing countries, to be selected by the organizers. As scarcity of funds allows travel to be granted only in a few exceptional cases, every effort should be made by candidates to secure support for their fare (or at least half-fare) from their home country. Such financial support is available only to those attending the entire activity. **There is no registration fee for attending the School**.

Candidates should complete and return the "**Request for Participation**" form, to be found at the back of the Bulletin (also obtainable via e-mail: **smr1395@ictp.trieste.it** by typing on the subject line "get announcement", or via the WWW server which will be constantly updated: **http://agenda.ictp.trieste.it/smr.php?1395**), <u>before 20 October 2001</u>, to:

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School in HIGH PERFORMANCE COMPUTING ON LINUX CLUSTERS
                c/o Ms. Patrizia Passarella
  the Abdus Salam International Centre for Theoretical Physics
                   Strada Costiera 11
                   34014 Trieste, Italy
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If sending an application by e-mail, please save and send file attachments in RTF format.

<u>DEADLINE FOR RECEIPT OF APPLICATIONS: 20 OCTOBER 2001</u>

The decision of the Organizers will be communicated to all candidates as soon as possible thereafter.

Telephone: **+39-040-2240231**
Telefax: **+39-040-2240304**
Email: **passarel@ictp.trieste.it**
World Wide Web: **http://agenda.ictp.trieste.it/smr.php?1395**