



**The Abdus Salam
International Centre for Theoretical Physics**



2068-1

**Advanced School in High Performance and GRID Computing -
Concepts and Applications**

30 November - 11 December, 2009

Introduction to the school

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**Advanced School in
High Performance
and GRID Computing:
concepts and applications**



**INTRODUCTION TO
the school**

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ICTP HPC/GRID School 2009 – Trieste, Italy - November 30- December 11, 2009

Our Goals



- To provide an overview of HPC and GRID computing concepts required for computational science.
- How to get the most out of (limited) computational resources.
- For those who will be facing careers in computational science to provide them with a list of what they will need to know well to be able to build or interact with a computational infrastructure.
 - to raise general awareness of IT issues amongst researchers in computational science.
 - To provide knowledge base to facilitate communication with people working in IT.

Structure of the school: 1st week

- First week will focus on introductory and intermediate skills.
 - Lab exercises will be uniform among participants and provided by the staff.
 - lectures are mandatory
 - Every day in the early morning a short discussion/review of the previous day.
- Long days:
 - lectures in the morning
 - lab in the afternoon
 - Home work in the evening
- Long Week: saturday morning is a working day..

Structure of the school: 2nd week

- Second week will present advanced topics:
 - Plenary Lectures on the first part of morning mandatory
 - Rest of the day people will be split into three different labs:
 - Hardware Lab: oriented to sys.adm and people requested to build cluster infrastructure
 - Software/Optimization/GPU labs: people interested in optimizing and parallezing their applications and port/play with GPU cards
 - Grid Lab: people interested in exploring this kind of infrastructures and the chances offered
 - work will be more individual.
- More information on next Monday and by Axel



Survival tips

- Lectures will focus on introduction to most important IT topics for high performance Computing (HPC) and GRID
- Only basics are covered: we only help you know “**what you need to know**”.
- Best source of detailed info: the web (encyclopedia Google, wikipedia)
- Many concepts in the course are extensively applied in the lab-which is ***mandatory***.

Moodle e-learning platform

- the official and authoritative place where program, exercises and lessons slides are posted.
- your main tool to give feedback to us
- you are requested to report **daily** during the school by means of the blog provided
- We will show you how to use it at the beginning of the lab this afternoon.
- Tutors will check your contribution in order to better tune exercises and lectures.

Again on moodle:

- You should already have enrolled in our course and you should also have taken the first preliminary things:
 - Quiz on Linux
 - Survey to let us know your interested and expectation about the school
 - Lessons on basic linux
- If you do not have an account yet contact us during coffee break.
- For any problem related to moodle send an email to albecamp@democritos.it

Labs for the first week:

- Beginners:
 - people with little or no experience using Linux
- Intermediate
 - more experienced people
- Materials/Exercises will almost be the same but presented at different pace
- You should already know which lab to join based on the results of the preliminary tests.
- Lists are in any case posted on the door of the lab

More on the lists



- If you are NOT on the lists fill in the questionnaire ASAP and then contact us (Stefano&Axel)
- If you consider our choice inappropriate please contact us (Stefano&Axel) to discuss.
- **DO NOT CHANGE LAB without informing us**
- Arrangements can also be possible by the end of today..

In the lab:

- Try to use always the same computer for all the exercises and all the days.
- Strictly follow what is presented on moodle pages
- If you have suggestion/improvement on the exercises tell us: we will do our best to bring them in..
- If the pace is too slow for you do not go ahead but try to help other people to keep up
- Exercises requires some written report: take your time to do this.

homeworks:

- Take the quiz at the end of the day
- Blog about the day activities and your impressions
- Contribute to the glossary
 - Each day selected students should define a list of terms related to lectures/exercises.
 - Today list of terms:
CPU / GHz / parallel computing / peak performance /
NUMA Architecture /
MegaFLOP/ cluster computing / top500
sustained performance
- List of students announced in labs

Glossary on moodle

A glossary for technical terms used during the HPC school

Search

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H

HPC:

High-Performance Computing:

An area where computers are used to solve problems in science, engineering, finances, and entertainment, that require a substantial amount computation. This includes the knowledge of building and running facilities, as well as writing and applying system and application software in the most effective way, and finally research into new algorithms and paradigms to solve problems even more efficiently is done.

X 

How to get your certificate

- Attendance is mandatory. If you need to be somewhere else please clear it with us first.
- Participants will be asked to keep a blog on moodle. This blog will be monitored by course staff to keep them up to date on the progress of each student.
- Lab participants: must write a brief 1-2 paragraph description of what they did on their blog. Some students will be asked to make a small presentations.
- **IF you are caught using ICTP resources for hacking purposes you will be expelled from the course without being awarded a certificate as well as other punitive measures.**

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