

Introduction to the course

Computer Clusters for Large Real-Time Systems

3 study points

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1. Aim and Scope

The aim of this course is to provide the student with knowledge of cluster systems, including clusters as inexpensive and scaleable high performance computer platforms, and clusters as reliable computer platforms that provide high availability.

2. The Structure of the Course

The course consists of the following parts:

- Definition of and motivation for clusters
- Cluster hardware
- Cluster software
- System aspects on clusters

These parts correspond to the parts in Pfister's book (see below).

3. Course Material

3.1 Literature

We are going to use two books:

- Gregory F. Pfister, "In search of Clusters", Prentice Hall, ISBN 0-13-899709-8 (main book).
- Raykumar Buyya, "High Performance Cluster Computing, Vol. 1", Prentice hall, ISBN 013-013784-7.

3.2 Material on the Web

There is a web-page for the course on: <http://www.ide.hk-r.se/~lasse/courses/cluster-course.html>.

On this page there is a link to a small news-based electronic conference system for the course. The direct address to this conference system is <http://distans.ide.hk-r.se/cluster>.

A lot of the material will be in the form of PowerPoint presentations. We are planning to include sound in some of the presentations, and in order to listen to this you will (obviously) need some kind of speakers or a headset.

3.3 Meetings

We are planning for four to five meetings; each meeting will be two to three hours. Since some will obviously find it hard to travel to Ronneby, we will probably have to use teleconference studios. We will also offer the possibility to "meet" via NetMeeting. In order to use the voice capabilities in NetMeeting, you will need a microphone and speakers (or a headset). NetMeeting sessions will be planned on an individual basis. We will try to minimize the number of meetings in the course and instead use electronic conference systems.

4. Expected Background

The course is targeted to graduate students in Computer Systems Engineering (or similar). I expect a general background in computer architecture, and some basic skills in the C programming language and the Linux (Unix) operating system.

5. Examination

The examination of the course consists of three parts:

- A laboratory exercise (Beowolf)
- A report on a cluster system or on a cluster -related topic
- A small test (we will see if we need to have this or not).

6. Time Plan and Registration

The course starts in early February 2000 and it ends in April 2000. You will need exclusive access to a small cluster in Ronneby in order to do the laboratory exercises (you will be able to work remotely). At the start of the course we will therefore have to make a schedule for the labs.

You register for the course by sending an email to: Lars.Lundberg@ipd.hk-r.se

Include your name, address, email-address, phone- and fax-numbers in your registration mail.

Deadline for registration is January 21, 2000.

When you register for the course you need to indicate if you plan to come to Ronneby for the meetings or if you plan to attend via a teleconference studio (it would be nice if you could come to Ronneby at least for the first meeting). If you plan to use a teleconference studio we need to know which studio you plan to use. Our experience from teleconferencing is that it is often difficult to have a high quality conference with more than two nodes. Our plan is therefore to have separate meetings with each remote node. This will limit the number of remote nodes that we can handle, and you may therefore be requested to coordinate your meetings with other students living reasonably close to you.

We plan to have the first meeting sometime during week 6 of year 2000 (February 7 to February 11). Indicate if you prefer any particular day in that week.

You also need to indicate if you prefer English or Swedish during the meetings (these are the only two options ☺). All course material will be in English.