



# PA2530

# Cloud Computing

## Course Formalia

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# Lars Lundberg

- Professor Lars Lundberg
- M.Sc. in Computer Science from Linköping University (1986)
- Ph.D. in Computer Engineering from Lund University (1993).
- Research interests include parallel and cluster computing, real-time systems and software engineering.
- Current work focuses on performance and availability aspects.



# Mikael Svahnberg

- Associate Professor Mikael Svahnberg
- Master's degree in Software Engineering @ BTH, 1998
- PhD in Software Engineering @ BTH, 2003
- Research Topics: Software Evolution, Software Architectures, Architecture Evaluation and Selection, Quality Attributes, Requirements Engineering, Requirements Engineering Decision Support, Empirical Software Engineering Research



# Course Homepage

- <http://micke.v.githu.b.io/PA2530-Spring2016/>
- View <http://youtu.be/flTwMSKe79I> for an introduction to the course homepage structure.



# Course Charter

The course comprises the following elements:

- Bakgrund till Cloud Computing
- Översikt över populära cloud-plattformar
- Design av cloud-applikationer
- Kvalitetsegenskaper i cloud-applikationer
- Designmönster för cloud-applikationer
- Testning och driftsättning av cloud-applikationer
- Övervakning av cloud-applikationer
- Konstruktion av en cloud-plattform



# Aims and Learning Outcomes

On completion of the course the participant will:

Kunskap och Förståelse:

- Kunna översiktligt presentera konceptet cloud computing och olika cloud-tjänster
- Kunna ingående förklara de grundläggande teknologier som används i cloud-system
- Kunna ingående resonera om privacy och security i cloud-system

Färdighet och förmåga

- Kunna designa och implementera en cloud-applikation
- Kunna driftsätta, testa, och övervaka en cloud-applikation
- Kunna optimera en cloud-applikation med avseende på relevanta kvalitetsegenskaper
- Kunna använda sig av en existerande hypervisor
- Kunna starta virtuella maskiner på en existerande hypervisor
- Kunna genomföra enkel lastbalansering på en existerande hypervisor som körs på ett serverkluster

Värderingsförmåga och förhållningssätt

- Kunna resonera om energianvändningen för en cloud-applikation
- Kunna resonera om den långsiktiga evolutionen av en cloud-applikation



# Literature



G. Reese.

*Cloud Application Architectures.*

O'Reilly, 2009.

ISBN-10: 0596156367 | ISBN-13: 978-0596156367



M. Rosenberg.

*The Cloud at your Service.*

Manning, 2010.

ISBN-10: 1935182528 | ISBN-13: 978-1935182528



# Assignments

- There are 4 tasks in this course, to be solved *individually*, unless otherwise explicitly granted.
  - Lab 1: Virtualisation, Deployment, and Cloud Provisioning
  - Lab2/Project: Build and Deploy a Cloud Application
  - Lab 3: Simple Loadbalancing
  - Reflective Report: Investigation of a Cloud Computing Topic





# Assignment Submission and Dates

- The course is offered during one study period (1/2 semester)
- During this time, you are expected complete all assignments and submit them for marking.
- Based on the marking, you *may* need to complement your submissions with additional material.
- Complementing assignments can be done during the study period, within four weeks of the end of the study period, or in August.
- Complementing assignments after the study period is only allowed if your original submissions were made during the study period and were non-trivial.
- An assignment may only be complemented twice.
- Given these constraints, you are free to plan your submissions as you see fit.



# Resubmissions

In a resubmission, please:

- highlight changes you have made!
- discuss, where applicable, the changes you make



# Assignment Cooperation

- Cooperate if you want and think you can.
- **However:** Each group/person must hand in a report that is uniquely produced by them.
- Use your own experience when writing the assignments
- Discuss
- Reflect
- **DO NOT COPY/CHEAT/PLAGIARISE**



# Where to draw the line?

## Example Assignment

The teacher says: “Choose company A, B, or C. You must investigate the advertising campaign which that company used in the past two years. Write a report that evaluates the campaign’s impact and make recommendations for future campaigns in that company. *Do your own work. Hand in an individual report.*”

Suppose 3 students do what is listed below and they do it in this order:

- 1 The three students discuss the task with other students.
- 2 They look at past examples of similar student reports. They discuss together what is good and bad about the other students’ work.
- 3 Each one chooses company B then discovers the other two have done the same. They decide to discuss ideas.



# Where to draw the line?

- ④ They all three decide to do a bit of research on advertising campaigns in general. They all look for information but agree to really go into depth on one aspect (one researches how to measure impact, another looks at design, another looks especially at cost etc.) Everyone makes notes from their research.
- ⑤ They report orally on no. 4 (above) [*Here is what I found out*']. They tell each other useful sources of information and which general sources were especially good.
- ⑥ They exchange research notes on what they have found so far, including sources.
- ⑦ The one person of the three who is really good at information retrieval collects information on company B's advertising campaign(s). He shares what he finds.



# Where to draw the line?

- 8 One person organises the report structure, makes headings and gives others a copy.
- 9 They all share out the writing. Each person writes two sections, using the shared notes from (6) above. Everyone contributes ideas to the 'conclusions' section and agree what to write.
- 10 They combine all the sections. Each student takes the combined draft away in electronic format. Each student, working alone, writes 'over the top' of the others' work. No person changes more than 5% of a fellow student's work.
- 11 Each student submit his or her final report and signs a statement that this is *'an individual report and this is my own work'*.



# The Secret Formula to passing this course

- Read the *course book(s)*.
- Do the *Readings* in each Course Module.
- Work through the *Experiential Learnings* in each Course Module.
- Attend the *lectures* to confirm your understanding, get a broader view, and to ask questions.
- If you still have questions: use the *discussion forum* or mail the teachers.
- Start with the assignments early, work regularly on them during office hours.
- Do a risk assessment early and plan your work accordingly.

*Good Luck!*