



Distributed Computer Systems Lab

<http://disco.cs.uni-kl.de>



Worst-Case Analysis of Distributed Systems

Organization

Prof. Dr.-Ing. Jens B. Schmitt
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Introduction

- Prof. Dr. Jens Schmitt / Dipl.-Math. Michael Beck
 - Room 36/4{29,40} (Secretary Fr. Erlewein)
 - E-Mail: [jschmitt,beck}@cs.uni-kl.de](mailto:{jschmitt,beck}@cs.uni-kl.de)

- DISCO Lab – AG Verteilte Systeme
 - Web: <http://disco.cs.uni-kl.de>

- Research Areas
 - Internet Base Technologies: Routing, QoS, TCP, Overlays, ...
 - **Performance Modeling/Analysis/Control of Distributed Systems**
 - Security in Wireless Networks
 - Wireless Sensor Networks
 - ...

Organizational Issues

■ Course Notes & Information

□ Web

- <https://disco.informatik.uni-kl.de/index.php/teaching/wocads-ws14-15>

■ Course Mode

□ 2+1

□ Lectures: Jens Schmitt

- Tuesdays, 11.45 h – 13.15 h, Room 48-379

□ Lab Exercise: Michael Beck

- accompanying the lecture
- no registration necessary

□ Oral exam

■ (Desirable) Prerequisites

□ Communication systems

□ Some maths ...

Overview of Lecture

1. Introduction
2. Min-Plus Algebra Primer
3. Network Calculus Basics
4. Advanced Network Calculus

Lecture Philosophy & Background

- Some Maths
 - If you really really hate it, leave it ☹
- Rather deep than broad
- Why and how, less what
- In science → basic tool
- In industry? ... little expertise & time
- Performance analysis not only for distributed systems, but here particularly important

Literature

- Jean-Yves Le Boudec, Patrick Thiran. *Network Calculus*, Springer, 2001.
- Cheng-Shang Chang. *Performance Guarantees in Communication Networks*, Springer, 2000.