Communication Networks
Spring Semester 2012

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- Adapted slides of Prof. B. Plattner (plattner@tik.ee.ethz.ch)
 Goals

- To understand **pertinent concepts** of computer networks as one pillar of information technology
  - E.g.: Scalability of a network, network architecture

- To understand **how the Internet works**, the Internet being THE infrastructure for the information society and a prototype of future computer and information networks

- To be able to extrapolate from today‘s examples (Internet) to **future research and development issues and topics**
How to reach these goals

- Lecture: Slides and talk
- Discussion during and around the lecture
- Theoretical assignments
- Laboratory assignments

- Reading material
  - Text book
      Larry L. Peterson, Bruce S. Davie
      Morgan Kaufmann Publishers, 2011
  - Scientific papers
  - Personal interest and experiments
Lecture topics

Prerequisites (as treated in ‘Technische Informatik 2’, ‘Vernetzte Systeme’):
Network building blocks, point-to-point links, reliable service over unreliable channels

1. Shared (broadcast) direct links
   1. Local Area Networks, Ethernet
   2. Wireless LAN technology

2. Packet switching and internetworking

3. Routing

4. End-to-end (transport) protocols

5. Examples of (distributed) Internet applications (DNS)

6. Network security

7. IP next generation

8. Outlook: research topics in computer networks

Lecture schedule: See lecture’s webpage
CN 2012 Team

- Lecturers
  - Prof. Bernhard Plattner, sabbatical leave
  - Dr. Xenofontas Dimitropoulos
  - Dr. Stephan Neuhaus
  - Dr. Karin Anna Hummel

- Teaching assistants
  - David Gugelmann (co-ordinator)
  - Mahdi Asadpour
  - Ehud Ben Porat
  - Gabriel Popa
  - Ilias Raftopoulos
  - ... plus tutors (‘Hilfsassistenten’) for lab work
Theoretical and laboratory exercises

Theoretical exercises: 5 out of 6 TE

- TE1 - Shared medium access and WLAN
- TE2 - Packet switching
- TE3 - Routing
- TE4 - Transport layer
- TE5 - IPv6
- TE6 - DNS, network security

Laboratory exercises

- P1 - Basic network connectivity, analysis of protocols
- P2 - Addressing and routing
- P3 - Applications (DNS, e-mail, WWW)
- P4 - Network security: Building a firewall with Linux tools
- P5 - IP version 6
Laboratory equipment
Material on the net

- Lecture homepage
  http://www.csg.ethz.ch/education/lectures/CN/SS2012/

- Material, assignments and support for lecture in the *Moodle* Learning Management System (LMS)

- Invitation with access key will be sent this week (after registration via myStudies)

- Various other resources may be found on the Internet:
  - The text book’s web page
    http://booksite.mkp.com/9780123850591/index.php
  - Connected: An Internet Encyclopedia
    http://www.freesoft.org/CIE/index.htm
    (unfortunately not maintained since 2001)
Lecture recordings

- All lectures are recorded (audio, video, slide presentations).
- 2012 will follow
- By participating in the lecture you implicitly agree that you may appear in the recording and on the web
- No formal agreement required
- Please switch off your mobile phones!
Exam

- Written exam during autumn session (Aug/Sep)
- Reading list will be provided
- Three hours covering topics of lecture, exercises and lab, including topics in reading list
- Any material allowed (exception: communication equipment like laptops and mobile phones)

Note:
- Repetition exam: Autumn 2013
Other networking-related courses during SS 12

- Dr. U. Widmer: **Recht der Informationssicherheit**, Thu 10:15 – 12:00 (in German)
  - Course catalog: 851-0734-00L
  - GESS course

- Prof. S. Capkun: **System Security**, Thu 13-15, exercises Fr 10-12
  - Course catalog: 252-1414-00 V/U

- Both are recommended!