Exam preparation

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January 16, 2018

Internet Design Goals

1. Internet communication must continue despite loss of networks or gateways.
2. The Internet must support multiple types of communications service.
3. The Internet architecture must accommodate a variety of networks.
4. The Internet architecture must permit *distributed management* of its resources.
5. The Internet architecture must be cost effective.
6. The Internet architecture must permit host attachment with a low level of effort.
7. The resources used in the internet architecture must be accountable.

(David Clark, 1988)

Are those design goals suitable for our society?

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- Payment model? DARPA!

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Phone companies charge where they can, not where it makes technical sense!

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Should business models be regulated?

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- Reduce quality of VoiP calls via artifical drops

⇒ Force customers to pay extra for voice service

- Reduce bandwidth for P2P traffic

⇒ Entice users to pay for services

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How can we circumvent them?

Can enough of society understand the problem?

Will society establish laws to ward against this?

Exam Study Guide

General rules:

- Bring a calculator and a pen
- No notes, no textbooks
- No need to learn packet layouts by heart
- But: know the semantics of the different fields and how they are used in protocols!
- No need to know formulas by heart
- But: need to know how and when to apply which one!

Timing

- Exam designed for 90 minutes
- Deadline “soft” like last time

1. Woche

- Anwendung und Ausdehnung von Netzwerken: no
- Rechnernetze: Strukturen / Basiskonzepte: indirekt
- ISO/OSI: yes

2. Woche

- Bandbreiten limitierte signale: yes[1]
- Zeichensätze: no

[1] But no need to perform Fourier transforms.

3. Woche

- Informationstheorie: yes[2]
- Übertragungsmedien: yes

[2] Including being able to use it!

4. Woche

- Bitübertragungsschicht: yes
- Sicherungsschicht: yes[3]

[3] Including being able to apply it to problems!

6. Woche

- HDLC/PPP: no
- LAN: yes[4]

[4] How does Ethernet work?

7. Woche

- Geschichte: no
- Internet Gremien und Organisationen: yes[5]
- Internet Standards: indirekt

[5] Who does what.

8. Woche

- IP protocol family: indirekt
- IPv4 packet format: yes
- ICMP: indirekt

9. Woche

- IPv4 Addressierung: yes[6]
- IP routing: no

[6] Including special ranges.

10. Woche

- IPv4 Fragmentierung: no
- ARP: no

11. Woche

- IPv4 multicast: yes
- UDP: no

12. Woche

- Client-server: indirekt
- TCP segment header: yes
- TCP funktionsweise: yes

13. Woche

- TCP extensions: yes
- TCP congestion control: no
- TCP socket programmierung: yes

14. Woche

- tcpdump: indirekt
- libpcap: no

But...

- IP routing essential for 7072
- Zeichensäetze/ARP/UDP/TCP congestion control are all essential in practice

$\Rightarrow$ Ill-advised to just ignore!