

T-110.5111 Computer Networks II - Advanced Features

Exam 16.12.2013

No written material allowed

Each question is worth 2 points

Try to keep your answers brief and to the point.

Justify your answers.

Duration 3h

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1. Explain the difference between *space path (SP)* and *space/time path (S/TP)* in wireless mobile networks. Which are the key factors that determine the type of paths (SP or S/TP) that exist in a given network?
2. When and why is non-persistent addressing problematic with TCP/IP protocol suite? Give at least two examples.
3. Explain what happens when so called *bufferbloat* phenomenon is present in the context of the Internet and what are the implications of it to the end user.
4. Is TCP a fair protocol?
5. Why is topology discovery useful and how can it be done (just describe the main idea of at least one approach)?
6. Is it currently possible to guarantee a certain quality of service for Internet applications? If so, how? If not, why not?
7. Outline the different communication phases of the Bluetooth standard from the time a (slave) device intends to join a piconet to the time it can start to exchange data with the master.
8. Explain what is *tail energy* in wireless communication and its importance for mobile devices.
9. Shortly describe the two main mechanisms that make it possible for many devices to communicate at the same time using the same 802.11 (WLAN) network. *Hint: Consider separately multiple client devices communicating with a single access point (AP) and multiple APs in the same geographical area.*
10. Explain the key differences of Data Center TCP (DCTCP) compared to regular TCP (Reno) and why we need DCTCP.