Advanced Networking 2013/14

June 16, 2014, 1st session of the summer term

Instructions:

The solution time is 90min (1h:30). The time you have is limited, but the correction process keeps this into account: in any case sometimes you have to take decisions and include what is more important, leaving out details or less important issues.

The correction of the exam and the oral will be published on the course web site within tomorrow, Tuesday, at noon. The orals will be this week, if you have special needs send me an e-mail with the request and motivation.

Exercise 1

Consider the network of a data-center where hundreds of servers exploiting thousands of CPUs and cores continuously serve web requests, web-services in general and all the other services privates and businesses use daily. In light of your knowledge on IP and modern LAN networks, discuss a possible architecture for the network justifying your choices.

Note: the topology of the networks should be defined, how single-point of failure are avoided, the type of devices you would use, etc.

Exercise 2

TCP is used not only to obtain reliable transfers on the Internet, but also to control congestion and share resources among users. Discuss fairness issues of TCP making examples of potential sources of unfairness and situations where TCP will lead to clearly biased performance favoring one or more connection over the others.