T-110.5111 Computer Networks II - Advanced Features

Exam 07.12.2015
No auxiliary material (books, notes, computers, etc.) allowed
Each question is worth 2 points
Justify your answers but try to keep them brief and to the point.
Duration 3h
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1. What is the network architecture of the Internet?

2. What are the North Bound and South Bound APIs in Software Defined Networking (SDN)?

3. How does the multiple access control scheme of Wi-Fi differ from those used in cellular networks (3G and/or LTE)? Just outline the main difference(s).

4. Give two examples of how currently used Internet applications try to improve the quality of experience that they provide to the user.

5. You want to download a large file from a distant server over the Internet using your laptop that is connected to a Wi-Fi network. You can manually configure your operating system to use one of the following transport protocols: TCP NewReno, TCP Vegas, CUBIC TCP. Which one do you choose and why?

6. Explain the fundamentals of the congestion control in the Internet, i.e., where it is done and how (no protocol details, just the main principles).

7. Describe two major functional (i.e., not performance) differences between Bluetooth and Wi-Fi.

8. You are developing a mobile app that you wish to distribute on one of the market places. The app usage involves a certain amount of wireless communication that cannot be avoided. Describe (at least) one thing that you can do to reduce the wireless communication induced energy consumption of the smartphones of the users who have installed and use your app. Explain also why and when (if not always) that technique reduces the energy consumption.

9. What is the objective of CoDel? Outline also the way it tries to achieve it.

10. Which main factors determine the most suitable type of datacenter network architecture for a specific datacenter?