

CS4410 Homework 5

HW5 WILL NOT BE GRADED. SOLUTIONS WILL BE POSTED ON TUESDAY APRIL 1

- 1. (10 points).** Describe a situation in which your computer might have multiple IP addresses over the course of a single day.
- 2. (10 points).** Suppose that you and your friend both check your respective IP addresses at the exact same moment in time. Could both claim to have IP address 196.168.1.27? Explain.
- 3. (10 points).** Suppose that someone is using a packet snooper technology such as “ethereal” on the Ethernet while you read or write a file called “homework 5 solutions” which is stored on the NFS server in your department. Furthermore, assume that Sun’s proprietary NFS cryptographic security features are not in use. What could the intruder learn, if anything?
- 4. (10 points).** Summarize the security properties of NFS when Sun’s proprietary NFS cryptographic security is turned off, as is the “default” for this file system. (Recall that in many settings, NFS is used with a mixture of other technologies, and that this can preclude use of the NFS cryptographic security. Also, NFS security relies on a cryptographic protocol that cannot be exported from the United States. This is why NFS cryptographic security is often disabled.)
- 5. (10 points).** Suppose that two different users, on different computers, nearly simultaneously open a file on an NFS server. The open from user A occurs just before the open from user B. They use the same file name and both opens succeed. Now both users write 10 blocks into the file, concurrently. Later you print the file. What would you expect to see in it?
- 6. (10 points).** Suppose that you had a private, dedicated, 10 Gbit link from New York to Bangalore, round-trip-time 200ms. Would you expect that a TCP connection from a machine in New York to a machine in Bangalore could run at the full speed of the link? What factors would limit performance?
- 7. (10 points).** Just as you start to download a video to your computer over a wireless link, your roommate decides to make a fruit frappe and runs the blender. The blender generates a lot of electronic noise and 50% of the wireless packets are corrupted and dropped. Assume that she runs the blender until your file transfer finishes. If it normally takes T seconds to download the video, would you expect it to take more, less, or exactly $2T$ seconds under these conditions? Why?
- 8. (10 points).** An application uses TCP to talk to a remote machine but it sends data in bursts with long delays between the bursts. Sketch a graph of the likely throughput for this application.
- 9. (10 points).** Suppose that you are viewing a web page from your bank. Describe some reasons that some of the things shown on the web page might actually not have come from your bank.
- 10. (10 points).** Read about the new services associated with the Google internet telephone platform, Google Voice. List some things that you might normally think of as private that Google might be in a position to learn about if you adopt Google Voice as your standard telephone service.