CSF 473 _	Introduction	to Com	mutor 1	Vetznor	kc
C3E 4/3 -	Introduction	w Com	puier i	neiwori	ĸБ

Jon Turner

Review Questions 20

Vour	Name

Please print out this form (two-sided, if you can) and write your answers *legibly* in the spaces provided. If you can't write legibly, type.

1. Consider an HD video with 720 lines per image and 1280 pixels per line. At a frame rate of 30 frames per second, how many pixels must be sent per second? How much data must be sent per second, assuming 8 bits per color component? What data rate is used by a typical video streaming service (like Hulu) to send a high definition video over the Internet (try it)? What does this tell you about the number of bits actually sent to represent each pixel?

2. Consider a UDP video streaming application, used to deliver video at a 1 Mb/s rate. What is the smallest playout buffer that can be used at the receiver, that will ensure that no packet arrives too late to be played out? Assume that the queuing delay in the network varies between 0 and 150 ms. Explain why a similar TCP application would require a larger playout buffer.

3.	Compare the distribution strategies used by NetFlix and YouTube, as described in the text. List at least two advantages and two drawbacks of each approach. Can you think of reasons why it makes sense for that NetFlix might prefer one approach, while YouTube/Google prefers another?