CSE-433 Computer Networks

End Semester Examination

Submitted by

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Ques 1

a)

A lot of peak bandwidth is needed by a file server. Jitter and average bandwidth are irrelevant unless latency dominates bandwidth.

Although no data loss is appropriate, we will easily retransmit missing data if there are no time constraints.

b)

Unless files are incredibly wide, a print server requires less bandwidth than just a file server. We may be able to put up with more lag than normal.

c)

Since a file server is essentially a digital archive, the world wide web can get by with far less peak capacity than most file servers can have.

d)

We don't worry about lag or jitter when tracking instruments. If data was delivered continuously rather than in bursts, we would be more worried with mean bandwidth rather than max, and if the data was really routine, we would be willing to tolerate a certain amount of loss.

e)

We require confirmed mean bandwidth and latency and jitter bounds for voice. Any data loss might be permissible, resulting in small dropouts spaced several seconds apart, for example. Resulting in minor dropouts.

f)

We're more concerned with average bandwidth when it comes to recording. For the purposes of this basic monitoring application, a simple video of Exercise could suffice. We might also go monochrome (one bit per pixel), which would be fantastic! 12KB/sec is needed for 60x 120x5 frames per second. We were willing to put up with multi-second latency delays. The other constraint is that we still have time to respond if the testing reveals a need for action. A significant amount of Joss, even across whole frames, would be appropriate.

g)

Full-scale television necessitates a large amount of bandwidth. Latency, on the other hand, might be hours. Just our ability to absorb arrival time fluctuations by buffering will reduce jitter. Any loss would be sufficient, but significant losses would be distracting.

Ques 2

The preamble of the colliding packet will disrupt clock recovery when the hosts are not precisely coordinated. That is the reason why we can’t wait for the CRC at the end.

Ques 3

a)

The packet collides with itself if any host transmits.

b)

Sending status packets is problematic or impractical since they will self-collide. Since repeaters do not inspect packets until transmitting them, they will be unable to identify status packets.

c)

Since collisions happen any time any host transmits, a hub may find a loop. After seeing this, the hub can send a special signal out one application during an unusual moment of idleness to see whether it is returned by another. For eg, the bub could try to check that if a signal was sent out of port I, a signal was sent out of port 3 as well. We now wait a random amount of time to stop a scenario where a nearby hub notices the loop and disables ports as well, and if the problem continues, we disable one of the looping ports.Another choice is to add a distinguishing signal that does not correlate to the start of any packet and use it for hub-to-hub communication.

Ques 4

a)
The probability of losing both transmissions of the packet would be 0.1 X 0.1 = 0.01.

b)
The chance of loss now refers to the likelihood that a pair of matching fragments will be destroyed together. The probability of missing all instances for every given fragment is 0.01 x 0.01 = 10-4, and the probability that this occurs at least once for any of the 10 fragments is thus around 10 times this, or 0.001.

Ques 5

a.) Inbound traffic follows a single route to the company's address node, which corresponds to the company's "official" address. This assumes that even though there are much shorter alternative roads, all traffic reaches the enterprise at a single stage.

b.) For outbound traffic, the company could enter any of the highest-level spatial blocks for the outside world into its own tables, enabling it to direct traffic to the exit that is nearest to the destination geographically.

c.) To make a solution like the one above function for inbound traffic, the enterprise will have to be split internally into geographically dependent subnets, with the outside world having to consider routing entries for each of these subnets. It will be Jost to combine these subnets into a single external entry.

Ques 6

a.) The receiver might declare a rate at which it could receive data in a rate-based TCP, and the sender would then restrict itself to that rate, perhaps using a token bucket filter with a small bucket depth. Congestion-control mechanisms will also be renamed "throttling back the volume" rather than "throttling back the window size.Notice that a window-based model sending one window-full per RIT sets the rate inversely proportional to the RIT, while a rate-based model does not. Also, if an ACK for a large amount of data is sent, a window-based mechanism can send a burst of correspondingly large new data; a rate-based mechanism will certainly smooth this out.

b.) A router-centric TCP will send and receive data in the same way as it did previously.
Feedback packets are constantly sent out by the routers. Both routers are impacted.
must participate, perhaps through a connection-oriented packet-delivery system, in a model TCP strategy for forecasting congestion based on RIT shifts.
All will disappear.

TCP might still receive some feedback from the receiver about its rate, but the receiver would only do so as a "router" of data to an application; this is where flow control would take place.