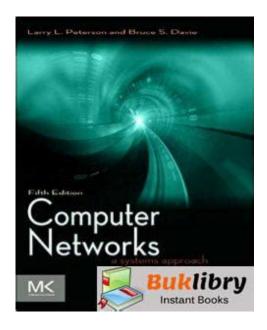
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Other address attributes that might be relevant are xedlength v. variablelength, and absolute v. relative like le names. 2 Chapter 1If you phone a tollfree number for a large retailer, any of dozens of phones may answer. Arguably, then, all these phones have the same nonunique address. A more traditional application for nonunique addresses might be for reaching any of several equivalent servers or routers. 11. Video or audio teleconference transmissions among a reasonably large number of widely spread sites would be an excellent candidate unicast would require a separate connection between each pair of sites, while broadcast would send far too much trafc to sites not interested in receiving it. Trying to reach any of several equivalent servers or routers might be another use for multicast, although broadcast tends to work acceptably well for things on this scale. 12. STDM and FDM both work best for channels with constant and uniform bandwidth requirements. For both mechanisms bandwidth that goes unused by one channel is simply wasted, not available to other channels. Computer communications are bursty and have long idle periods; such usage patterns would magnify this waste. FDM and STDM also require that channels be allocated and, for FDM, be assigned bandwidth well in advance. Again, the connection requirements for computing tend to be too dynamic for this; at the very least, this would pretty much preclude

using one channel per connection. The answer is in the book. 20. a The effective bandwidth is 10 Mbps; the sender can send data steadily at this rate and the switches simply stream it along the pipeline. Strassen's multiplication algorithm. Computer Networks A System Approach, Larry L. Peterson, Bruce S. Davie, Morgan Documents MARKS DISTRIBUTION DISTRIBUTION ACCORDING TO AUTONOMY FOR ALL THEORY COURSES 40.

All rights Reserved Documents GENI Global Environment for Network Innovations March 10, 2006 Larry Peterson Princeton University Documents Computer Networks A Systems Approach Fifth Edition. The Essentials Edition 3e. Networks A Systems Approach 2011 4th Edition ISBN10. SOLUTIONS MANUAL Computer Networks A Systems Approach 4 ed by Peterson The Instructor Solutions manual is available in PDF format for the following textbooks. SOLUTIONS MANUAL A First Course in the Finite Element Method, 5th SOLUTIONS MANUAL Accounting Information Systems 12th Edition. Edition 5th Edition 5e, 5th Edition 5e, 3rd Edition 3e, 3rd Edition 3e. Larry Peterson and Bruce Davie Exercises are sorted roughly by section, not difficulty. While some exercises are more difficult than others, none are intended to be fiendishly tricky. Where appropriate, relevant supplemental files for these solutions e.g. programs have been placed on the textbook web site, Useful other material can also be found there, such as errata, sample programming assignments, PowerPoint lecture slides, and EPS figures. If you would like to contribute your own teaching materials to this site, please contact our Associate Editor Rachel Roumeliotis, We welcome bug reports and suggestions as to improvements for both the exercises and the solutions; these may be sent to Larry Peterson Bruce Davie February, 2007 The following are representative examples Mbone ATM MPEG IPv6 Ethernet 5. We will count the transfer as completed when the last data bit arrives at its destination. Telephone numbers are more similar to network addresses although phone numbers are nowadays apparently more like network host names than addresses they are geographically hierarchical, fixedlength, administratively assigned, and in moreorless onetoone correspondence with nodes. One approach for this is to make addresses hierarchical. Another property might be administratively assigned, versus, say, the factoryassigned addresses used by Ethernet.

Other address attributes that might be relevant are fixedlength v. variablelength, and absolute v. relative like file names. If you phone a tollfree number for a large retailer, any of dozens of phones may answer. A more traditional application for nonunique addresses might be for reaching any of several equivalent servers or routers. 11. Video or audio teleconference transmissions among a reasonably large number of widely spread sites would be an excellent candidate unicast would require a separate connection between each pair of sites, while broadcast would send far too much traffic to sites not interested in receiving it. Again, the connection requirements for computing tend to be too dynamic for this; at the very least, this would pretty much preclude using one channel per connection. The answer is in the book. 20. a The effective bandwidth is 10 Mbps; the sender can send data steadily at this rate and the switches simply stream it along the pipeline. So the question really asks how many packet headers does it take to exceed 2048 bytes, which is 86. The following table show the latency results of varying the parameters by solving for the n where circuits become faster, as above. This table does not show how rapidly the performance diverges; for varying p it can be significant. The model only considers the network implications, and does not take into account usage of processing or state storage capabilities on the switches. We could not necessarily tolerate higher jitter, though; see Section We might accept an audible error in voice traffic every few seconds; we might reasonably want the error rate during music transmission to be a hundredfold smaller. Audible errors would come either from outright packet loss, or from jitter a packet s not arriving on time. Latency requirements for music, however, might be much lower; a severalsecond delay would be inconsequential.

Latency is relevant only if it dominates bandwidth; jitter and average bandwidth are inconsequential.

No lost data is acceptable, but without realtime requirements we can simply retransmit lost data, b A print server needs less bandwidth than a file server unless images are extremely large. We may be willing to accept higher latency than a, also. c A file server is a digital library of a sort, but in general the world wide web gets along reasonably well with much less peak bandwidth than most file servers provide. d For instrument monitoring we don t care about latency or jitter. If data were continually generated, rather than bursty, we might be concerned mostly with average bandwidth rather than peak, and if the data really were routine we might just accept a certain fraction of loss. e For voice we need guaranteed average bandwidth and bounds on latency and jitter. Some lost data might be acceptable; e.g. resulting in minor dropouts many seconds apart. f For video we are primarily concerned with average bandwidth. We could tolerate multisecond latency delays; the primary restriction is that if the monitoring revealed a need for intervention then we still have time to act. Considerable loss, even of entire frames, would be acceptable. g Fullscale television requires massive bandwidth. Latency, however, could be hours. Jitter would be limited only by our capacity absorb the arrivaltime variations by buffering. Some loss would be acceptable, but large losses would be visually annoying. 31. In STDM the offered timeslices are always the same length, and are wasted if they are unused by the assigned station. The roundrobin access mechanism would generally give each station only as much time as it needed to transmit, or none if the station had nothing to send, and so network utilization would be expected to be much higher. 32.

a In the absence of any packet losses or duplications, when we are expecting the Nth packet we get the Nth packet, and so we can keep track of N locally at the receiver. b The scheme outlined here is the stopandwait algorithm of Section 2.5; as is indicated there, a header with at least one bit of sequence number is needed to distinguish between receiving a new packet and a duplication of the previous packet. c With outoforder delivery allowed, packets up to 1 minute apart must be distinguishable via sequence number. Otherwise a very old packet might In each case we assume the local clock starts at a Latency 100. The others will be ignored; eventually they will time out. When the first client exits, any queued connections are processed. 36. Note that UDP accepts a packet of data from any source at any time; TCP requires an advance connection. Thus, two clients can now talk simultaneously; their messages will be interleaved on the server. There are two sequences, and 00100, that do both. Thus there would have been enough 5bit codes meeting the stronger requirement; however, additional codes are needed for control sequences. 5. The stuffed bits zeros are in bold The marks each position where a stuffed 0 bit was removed. There were no stuffing errors detectable by the receiver; the only such error the receiver could identify would be seven 1 s in a row The answer is in the book, DLE, DLE, DLE, ETX, ETX 9. a X DLE Y, where X can be anything besides DLE and Y can be anything except DLE or ETX. In other words, each DLE must be followed by either DLE or ETX. b. Thus, if station B s clock ran faster than station A s by one part in 480,000, A would accumulate about one extra frame per minute. 11. Suppose an undetectable threebit error occurs. The three bad bits must be spread among one, two, or three rows. If these bits occupy two or three rows, then some row must have exactly one bad bit, which would be detected by the parity bit for that row.