SOLUTIONS TO SECTION 5 PROJECT 2

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ANSWER 1

Jitter: is the variation in the inter arrival time of successive packets, packet switched networks this is called packet delay variation can be measured using Root Mean Square value.

Causes of Jitter: Jitter may be caused by electromagnetic interference in wireless networks, or cross talk with different carriers in wired networks, in the physical layer. Errors detected in packet at the data link layer and due to packet losses at intermediate nodes due to congestion, change of path, packet scheduling delay, in the Networks layer.

Eliminating Jitter: jitter is significant and measures can be taken to mitigate jitters by using Anti jitter Buffers (AJB). AJB is used to counter the jitter produced by queuing in packet switched networks so that a continuous transmission of data stream to the client over a network can be guaranteed. The maximum jitter that can be eliminated by AJB is equal to the buffering delay before transmission of the data stream begins. Buffer delay can be adaptive to changing network characteristics for example taking the mean arrival rate into consideration. Another way is to use a de jitter buffer where the packets are stored temporarily and retransmitted at the rate which is equal to the mean arrival rate at the destination.

ANSWER 2

UDP is a connection less protocol and the messages that are transmitted over UDP will have no guarantee of delivery and packets may reach destination via different paths. UDP can be used in applications where the loss of a packet having certain state information will be substituted with the packet containing the updated latest state information and the previous state being less relevant. Example video streaming applications like skype where loss of a video frame will be replaced with the next video frame packet and in application where number of active members in the chat window needs be updated with latest active member state. Also RIP used UDP to exchange the latest state information like distance vector among the nodes for the same reason.