The LNM Institute of Information Technology, Jaipur

Computer Networks Lab

Lab Assignment 3

Objective: **Performance measure of Stop-and-Wait ARQ in Noisy channel environment**

Tasks 1: Behavioural Design

1. Update behavioural design of network implemented in Lab 2: Task 2 (Stop-and-Wait ARQ) with following functionality:

    1. Application Layer: Send in-order 26 packets, each packet contains a single English alphabet (A-Z)

    2. Application Layer: Add a counter as state variable (Hint: TicToc Tutorial: Step 3)

    3. Data-Link Layer: Implement timer (Hint: TicToc Tutorial: Step 8)

    4. Data-Link Layer: Include processing delay (Hint: TicToc Tutorial: Step 6)

        1. Sender side processing delay: 30% packet with Two (2) unit processing delay and rest with one (1) unit processing delay

        2. Receiver side processing delay: 40% packet with Two (2) unit processing delay and rest with 1 unit processing delay

    5. Physical Layer: Include packet loss (Hint: TicToc Tutorial: Step 7)

        1. Sender side: 10% packet loss

        2. Receiver side: 15% packet loss

    6. Data-Link Layer: Retransmission of packet if packet loss (Hint: TicToc Tutorial: Step 9)

    7. Characterised Channel parameters with delay of 100ms (Hint: TicToc Tutorial: Step 11)

Tasks 2: Measure performance parameters

1. Enable event logging in omnetpp.ini file and visualise packet tracing

2. Network data collection for performance analysis:

    a. Number of packets sent by each layer (Hint: TicToc Tutorial: Step 14)

    b. Collect Delay of each packet and visualize (plot) this with min, max, and average information (Hint: TicToc Tutorial: Step 15 and part 5)