

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. Define source and destination address as parameters in *omnetpp.ini*
2. 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: 3.3)
 3. Data-Link Layer: Implement timer (Hint: TicToc Tutorial: 3.8)
 4. Data-Link Layer: Include processing delay (Hint: TicToc Tutorial: 3.6 and 3.7)
 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: 3.7)
 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: 3.9)
 7. Characterised Channel parameters with delay of 100ms (Hint: TicToc Tutorial: 4.2)

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: 5.1)
 - b. Collect Delay of each packet and visualize (plot) this with min, max, and average information (Hint: TicToc Tutorial: 5.2)