HOCHSCHULE SRH HEIDELBERG

SRH University Heidelberg

Professional Technical Report

Task 1 – Simulation Project

Go-Back-N protocol

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Abstract:

The second Layer of the OSI Model of a computer network is the Data Link Layer. This layer, which is a protocol layer, securely transmits data via physical links. This layer's primary duty is to ensure that data is sent over the physical layer from one node to another without mistake. It is in charge of media access, data frame detection, and multiplexing data streams. Additionally, it sends frames with the appropriate flow control, error control, and synchronization. In this project, we primarily focuses on the implementation of Go Back N protocol on Omnet++ Software.

Introduction:

The data connection layer's flow control mechanism allows two stations operating at various speeds to interact with one another while transmitting data. In order to prevent a fast sender from overwhelming a slow receiver, a series of controls are put in place to limit the quantity of data that a sender delivers.

A sender (sending computer) in a flow control system has the ability to transfer information (data) more quickly than a receiver (destination computer) can receive and analyse it. This could occur if the transmitting computer has a higher traffic load than the receiving systems, or if the receiving systems have less processing capability.

There are two types of sliding window protocol.

1. Go-Back-N ARQ
2. Selective Repeat ARQ

Flowchart:

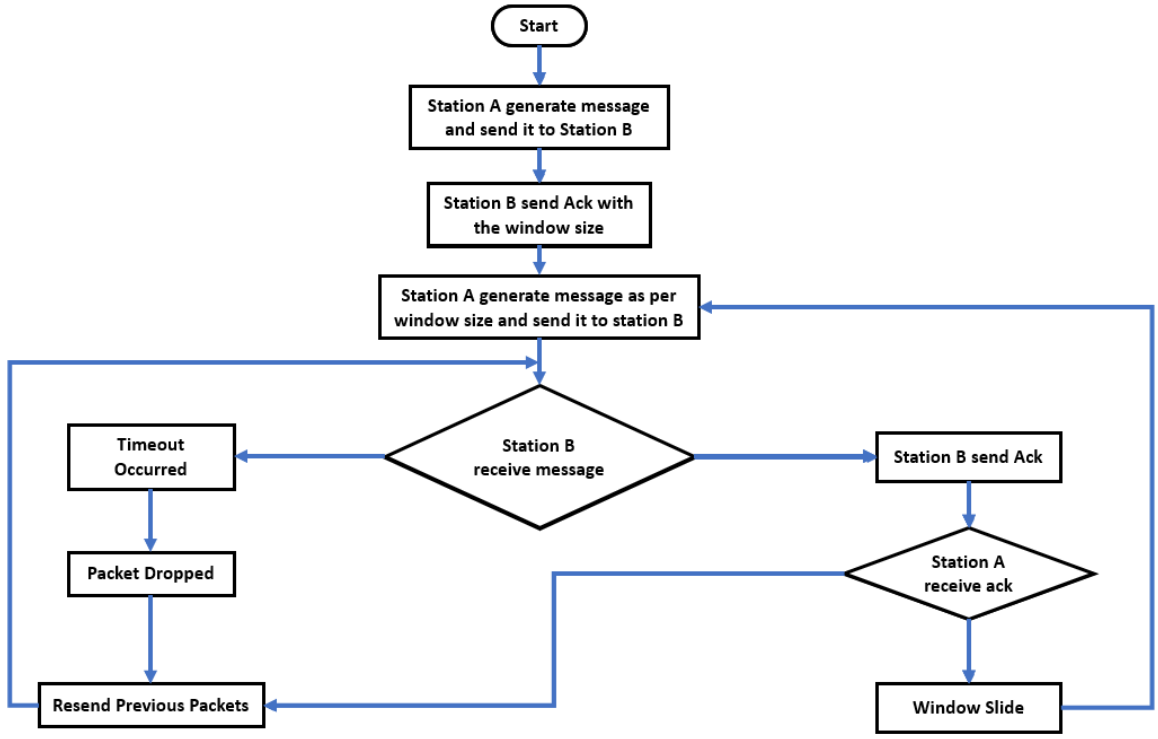


Figure 1: Flowchart of the Protocol

Go Back N Protocol:

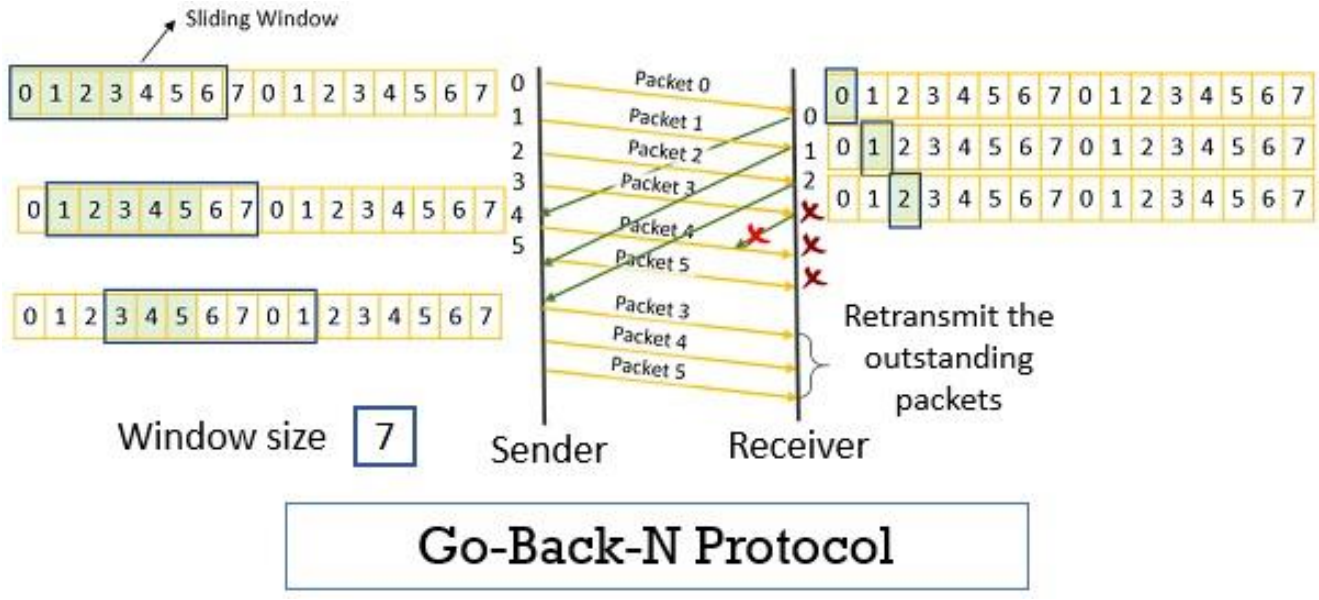
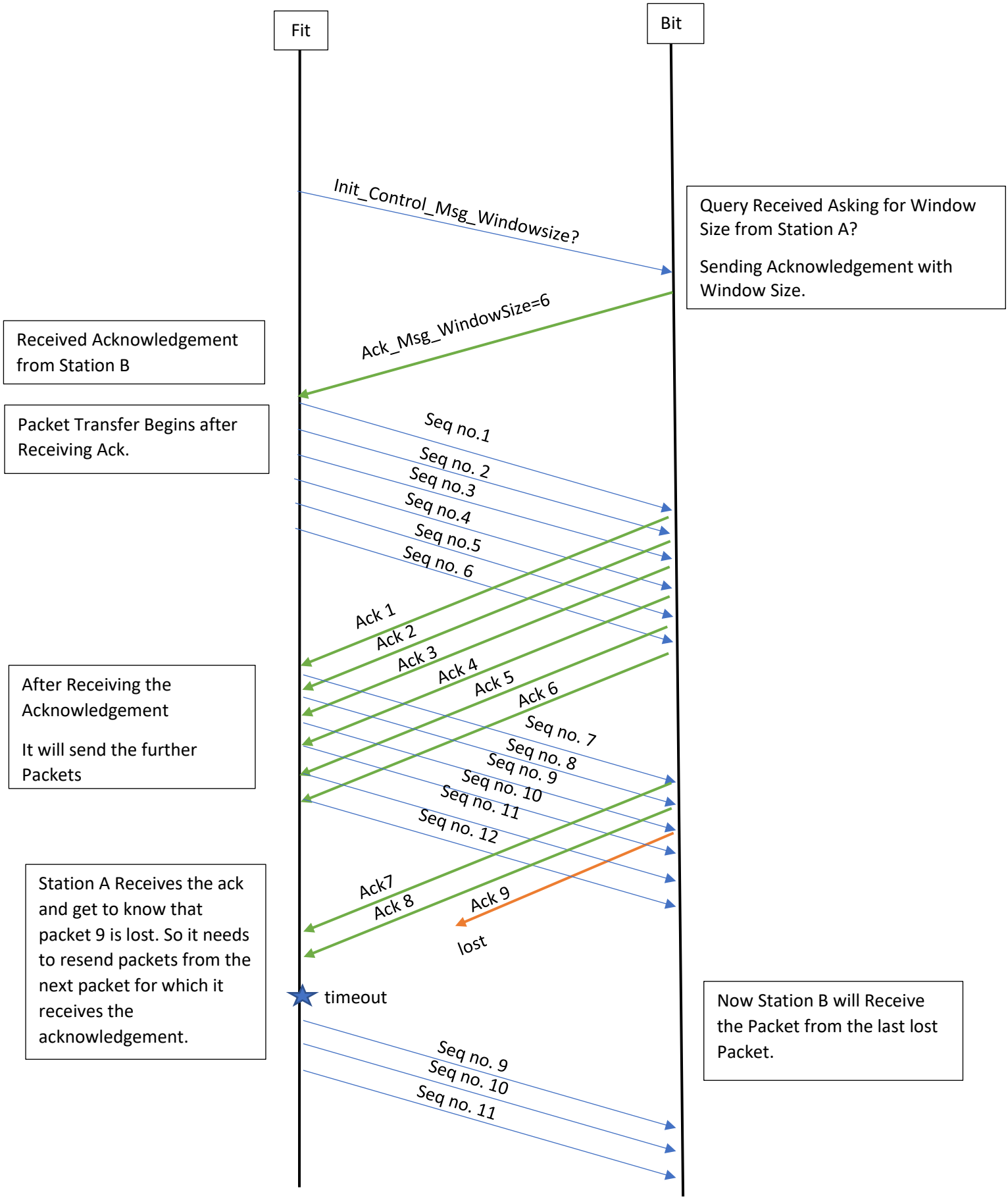


Figure 2: Working of Go Back N Protocol

Message Sequence Chart:



Output of the Code:

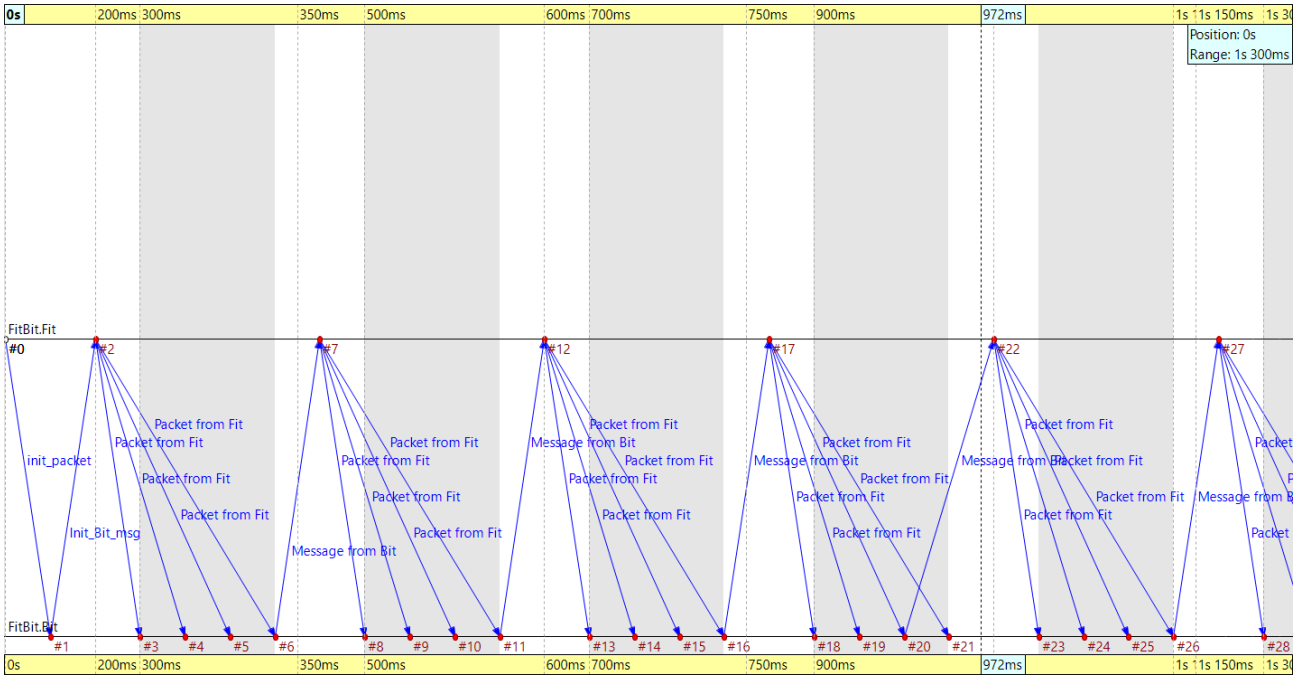


Figure 3: Simulation Output Graph

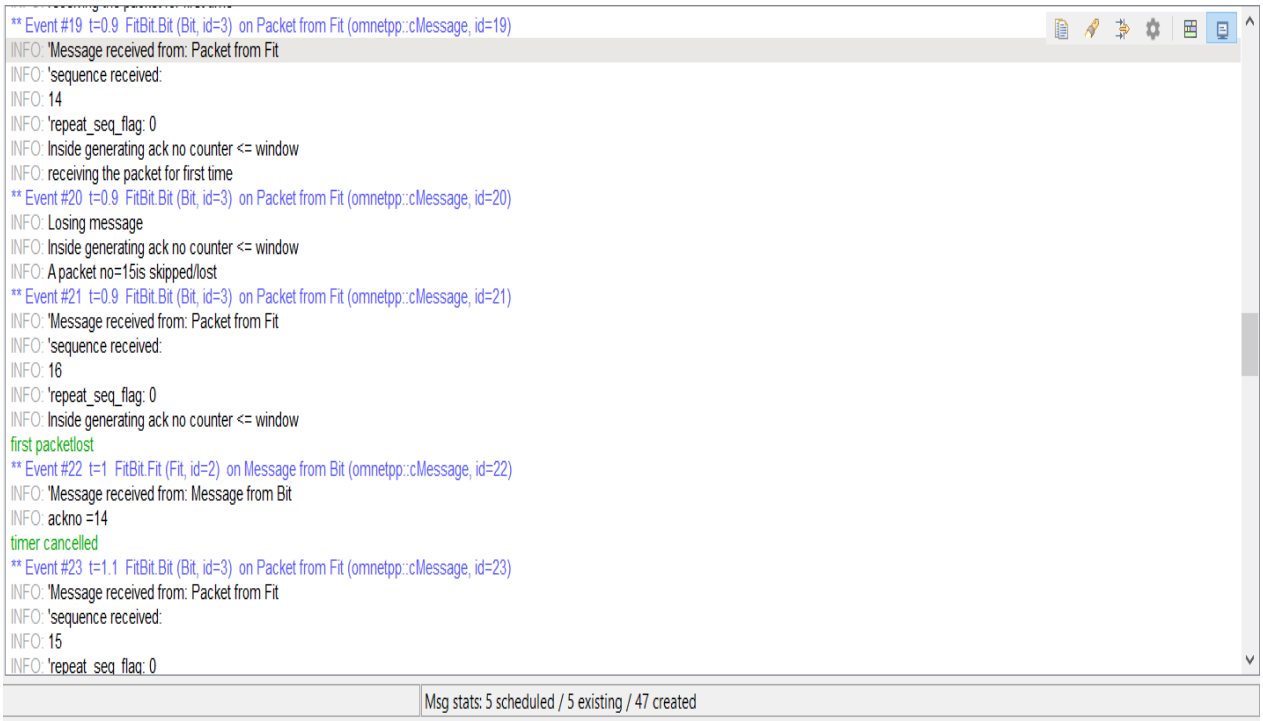


Figure 4: Simulation Output Packet Lost detection and reset

The simulation graphs for the Go-Back N protocol employed in a point-to-point network are shown in the following figures for various parameters including random packet loss function, window size, delay in channel, and sequence count. A simulation timer is operated by the transmitter. The lost packet is retransmitted together with the succeeding packets of the same frame when a packet loss or timeout event occurs. The transmitter sequence counter wraps around, which means it resets to 1 and begins broadcasting packets, when it hits the maximum count. We observe that the Go-Back N effectively uses the connection to convey data without taxing the receiver.

Bibliography:

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