CSE-322 : NS2 Project Proposal

(Implementing the ASRAN Algorithm)

Tanjeem Azwad Zaman
1805006

Reference:

Paper: *Adaptive TCP Transmission Adjustment for UAV Network Infrastructure*

Authors: *Lee, J.Y.; Lee, W.; Kim, H.; Kim, H.*

Journal: *Applied Sciences (https://www.mdpi.com/journal/applsci)*

Year of Publication: *2020*

Link:
Lee, J.Y.; Lee, W.; Kim, H.; Kim, H. Adaptive TCP Transmission Adjustment for UAV Network Infrastructure. Appl. Sci. 2020, 10(3), 1161; https://doi.org/10.3390/app10031161

Concept:

1. Deal with Congestion Control in Flying Ad-Hoc Networks
2. Congested Network:
    a. Caused by traffic overflow
    b. Causes Packet losses
    c. Recovered by reducing transmission speed
3. Transient Link instability:
    a. Unstable link due to
        i. Frequent node movement
        ii. Routing update
    b. Transmission speed reduction is undesirable

Main Aim

Prevent/recover unnecessary reduced throughput in a UAV network. After properly Identifying cause of Segment loss

- Packet loss due to Transient Link (environmental factors)
- Mistaken for Congestion
- Throughput reduced
- Prevent this throughput reduction/ Recover quickly from this reduction

Current Implementation

TCP NewReno

- Cannot differentiate between loss due to transient link and due to congestion.
- Introduces congestion control protocols in both cases.
- Undesirable Transmission rate reduction for transient link loss

Keywords:
Slow Start, ssthresh, cwnd, Congestion Avoidance Phase

Proposed Solution

Adaptive Ssthresh Receiver for flying Ad-hoc Network (ASRAN)

- An algorithm to differentiate between cause of loss.
- Imposes condition on Ssthresh
- Exponentially increase transmission rate if cause is transient link
- Linearly increase transmission rate if actual congestion