SCTP Sendbuffer Advertising

CS4089 Project
End Semester Evaluation

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Outline

Introduction

- Stream Control Transmission Protocol (SCTP):
  - Supports multiple logical channels called streams
  - Multi-homing
- Sendbuffer Advertising:
  - each segment will carry the amount of backlogged data present in the sender's buffer.

Problem Statement

- To propose a scheme to
  - advertise sendbuffer occupancy information in SCTP
  - implement it in the Linux kernel and
  - study the performance and security implications of the same.

Work Done in the previous semester

- Modified kernel module `sctp_probe` to measure sendbuffer.
- Explored Linux kernel SCTP implementation.
- Identified parameter to be advertised.

Design

- New chunk type with Chunk Type value between 128 to 190.
- Highest order 2 bits determine action to be taken if Chunk Type is unknown.
- This ensures that unmodified hosts won't send a Unrecognized Chunk Type Error chunk upon reception.

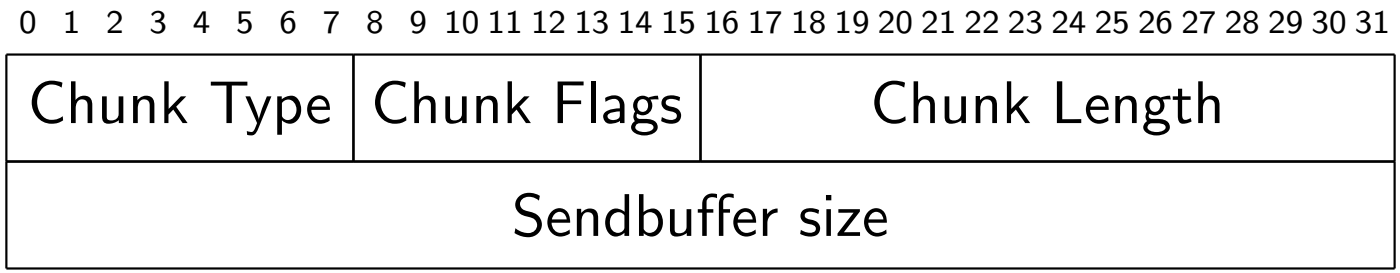

Figure: Proposed Chunk for sendbuffer advertisement

Work Done in the current semester

- A working prototype of sendbuffer advertisement was implemented in the Linux kernel.
  - Added a timer with appropriate modifications to the state machine function table.
- The interval for sending the sendbuffer advertisement chunk can be modified at runtime.
  - Added a procfs entry to change the sendbuffer advertisement interval

Future Work

- To test the prototype of sendbuffer advertising for SCTP in the Linux kernel in a network.
- There are several scheduling algorithms which prioritizes packets based on some criteria. One of these priority based scheduling algorithms can be modified to consider the sendbuffer information and to improve QoS for high volume flows.

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