

# HW2 Writeup

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## 4.2.2 Task #2: Attack details

- What are the parameters used for each of the following and why? (max 1-2 sentences per point).
  - Attack period: 1 second. The attack launches every 1 second.
  - Burst duration: 0.2 second. Each attack lasts 0.2 second.
  - Burst rate: 10Mbps. Each attack has a burst rate of 10 Mbps.
  - Explanation: The attack code is `iperf -c 10.0.0.1 -p 6001 -u -b 10M -t 0.2 & and sleep 0.8`. The attack periodically launches every 1 second, and the attack could last 0.2 second with the burst rate of 10 Mbps.
  - See more explanation in answers for 4.3.1.

## 4.3.1 Task #1: Understanding the attack period

- Why did you choose that attack period from part #2?
  - As indicated in the *Section 3.1 & 3.2* and *Equation 2* in the paper, the outage duration should be longer than RTT. To achieve the shrew attack, the traffic rate should be reduced.
  - In the experiment, the minRTO is set to 1 second, and the burst rate is set to 10 Mbps. To fill up a buffer (queue) with size 20, the burst duration could be 0.2 second.
  - Also, as the minRTO should be divisible by the attack period  $T$ , with a minRTO (1 second), the maximum for  $T$  is 1 second.
  - Here, I set the attack period to 1 second and burst duration to 0.2 second, thus the sleep time should be  $1-0.2=0.8$  seconds.

## 4.3.2 Task #2: Increase buffer size

- Is the attack successful, explain why? If not, explain why?

- No, the attack is unsuccessful.
- Reason: According to the generated log file tcpprobe.txt, the packet rate of TCP connection from hr1 to hl1 is approximately 400 packets. To fill up the buffer (queue) size of 1000, it takes around 2.5 seconds. However, in this task, the attack duration is set to 1 second, which is much lower than the filling up time (2 seconds). Consequently, the attacker could hardly fill up the buffer and could hardly make the shrew attack successful.