TCP Friendly Rate Control Protocol (TFRC) and Faster Restart – Some Issues

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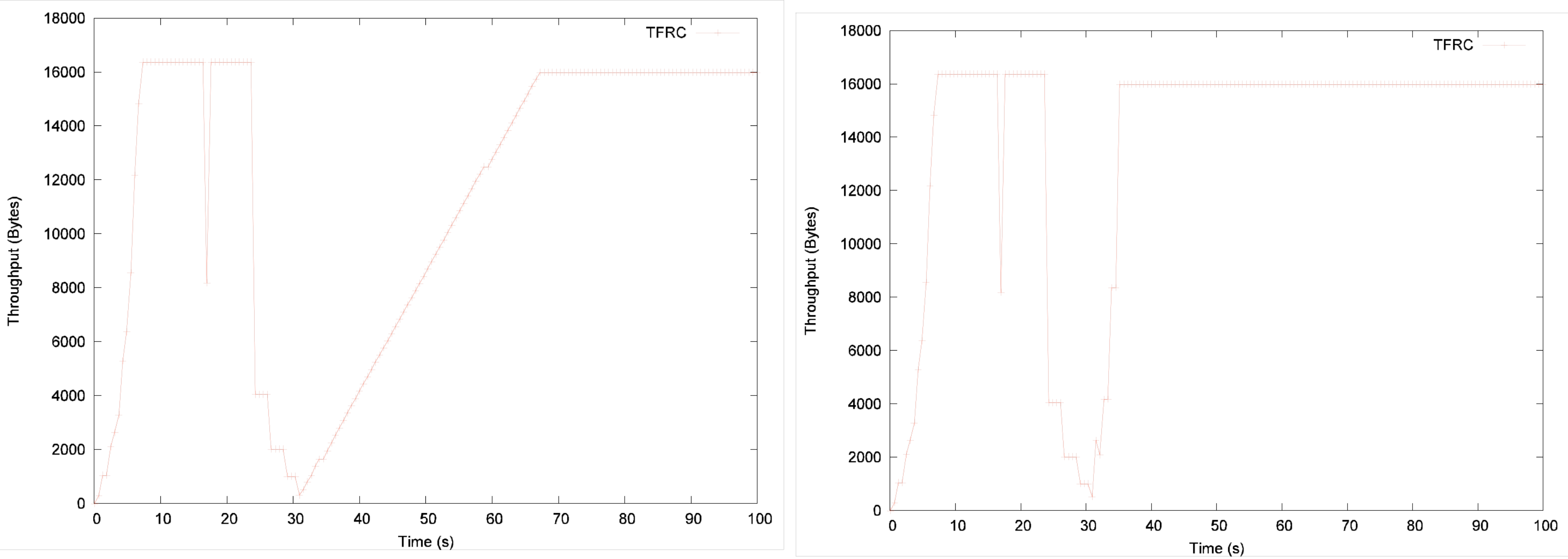
Discrepancy between ns-2 and RFC 3448

- Current ns-2 (2.28) implementation of TFRC does not calibrate with RFC 3448.
  - Sender behaviour after a silence period when nofeedback timer expires.
  - RFC 3448 states that the sender is allowed to slow-start while the implementation enters the congestion avoidance phase.
- Growing send rate linearly in a long (e.g. 100’s ms) link is detrimental for media applications.
- Could take up to 30 seconds for sender to reach encoding rate of application.
- ns-2.30 also has some additions.

Slow Start



a) TFRC-SP conforming to current ns-2 implementation.

b) TFRC-SP conforming to RFC 3448.

Some issues in Faster Restart

- Faster Restart draft should also consider the case of a nofeedback timer expiry during slowstart when loss event rate p = 0.
  - Currently the draft has been changed to reflect this case.

- Faster Restart draft does not consider "edge case" scenario.
  - Even if application is idle, there may be backlog of packets in the buffer.
  - Sender sends these backlog of packets based on the allowed sending rate.
  - Could lead to a small X_active_recv during the last active period – the sender may have sent small number of "remaining" packets.
  - Possible solution: Set X_active_recv to maximum over two measured periods ?

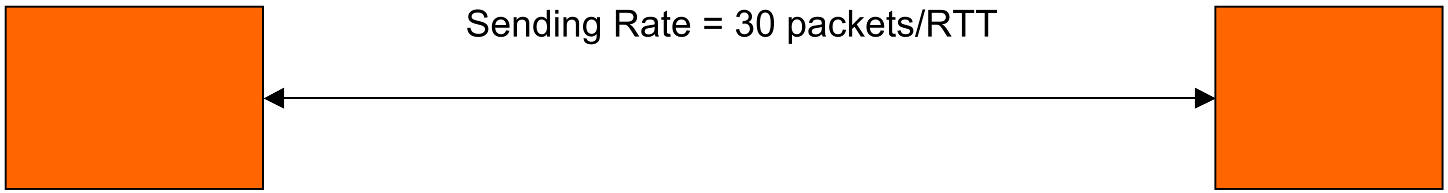
Example Scenario

- **Application is currently silent. TFRC still has data in its buffer to send.**

Buffer = 65

Buffer = 35

Buffer = 5



Sending Rate = 30 packets/RTT

X_active_recv = 30

X_active_recv = 30

X_active_recv = 5 **X_Fast_Max = F * 5!!!**

30 packets received

30 packets received

5 packets received