TCP and SCTP RTO Restart
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TCPM WG
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RTO Restart

• As the RTO timer is restarted on an incoming ACK (RFC 6298, RFC 4960), the effective RTO often becomes
  \[ RTO = RTO + t \]
  – Where \( t \approx RTT [+delACK] \)
• RTO restart adjusts the RTO so that retransmissions are performed after exactly RTO seconds
• The modified restart is only used when
  – the number of outstanding segments < 4;
  – and there is no unsent data ready for transmission.
  – Thus, only flows incapable of FR can use modified RTO restart
Updates to draft (1)

• New section that discusses the applicability of and problems related to the RTO restart mechanism
  – Reduces the loss detection time and thereby increases the risk of spurious timeouts in some situations
  – Impact of spurious RTO is negligible for short flows and thin streams
  – Spurious RTO can be a problem for flows with multiple bursts, as cwnd is reduced
  – Further experience related to spurious RTOs required to move specification from experimental to proposed standard
Updates to draft (2)

- Removed the possibility for a connection limited by the receiver's advertised window to use RTO restart
  - Gain for this scenario unclear
  - Decreasing the risk of spurious timeouts
Updates to draft (3)

• Improved wording throughout the document
• Updates to the text that describe RTO restart's relation to TLP
• Acknowledgments added
Implementation

• Updated for the 3.12 Linux kernel