



# Retransmission Timeout Requirements

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# History

- `draft-ietf-tcpm-rto-consider-05.txt`
- Started eons ago as a way to relax TCP RTO spec (RFC 6298)
  - we have learned what is important ...  
... and what is not
  - so, explicitly give implementers latitude
  - reality check: they take the latitude anyway!

# Status wrt TCP

- It seems that document has—-for a good long while—had solid consensus
- converged on the technical meat
  
- But ...

# History, part 2

- The requirements in the document actually seem quite general
  - i.e., what *would not* apply to some other protocol as a general statement?
- Hmm....
  - so, hacked on the draft to make it broad and general
  - i.e., no longer TCP specific
    - ... although still applicable to TCP

# History, part 2

- Document was foundation of a small subset of the UDP Guidelines document (RFC 8085)
- RFC 8085 & rto-consider agree in normative statements
- ...except RFC 8085 does not call for exponential backoff
- ... hmm ... <grumble>  
(yes, I reviewed RFC 8085 extensively ... alas)

# Quick Overview

- Initial RTO **MUST** be at least 1sec
- RTO **SHOULD** be based on recent measurements of feedback time
- RTO **SHOULD** be based on regular measurements of the feedback time
- feedback time **MAY** be measured with non-data segments (e.g., heartbeats)
- ambiguous feedback time sample **MUST NOT** be used

# Quick Overview

- Exponential backoff **MUST** be used for repeated retransmissions
- Exponential backoff **SHOULD** be removed after successful repair of loss
- a maximum RTO **MAY** be used, but **MUST NOT** be less than 60sec
- Retransmissions triggered by the RTO **MUST** be taken as indications of congestion and trigger a some standard response

# History, part 2

- Recent changes to relax a couple of MUSTs to SHOULDs
  - to explicitly give a little wiggle room to implementers
  - to sync w/ the UDP guidelines



# The Plan We Agree On

- Get some feedback from non-TCP folks
  - SCTP feedback from Tuexen already (thanks!)
- WGLC ...
  - ... in TCPM because that is where this all started
  - ... in TSVWG because the scope has widened
- Ultimately the more reviewing the better

# The Unknown Part of The Plan

- For TCP? UDP? SCTP? DCCP? Etc.
- General game plan:
  - write what we know to be our best advice
  - trust implementers to apply the advice as faithfully as possible within their own constraints
  - (suggested by Mirja)



**Questions? Comments?**

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