64-bit Sequence Numbers

- draft-looney-tcpm-64-bit-seqnos-00
- IETF 98 - Chicago, IL
Problem Statement

• High-performance networking is changing life:
  • Larger window sizes?
  • Higher precision timestamps?
  • Both?

• How are we going to safely support this?
Assumptions

• TCPng is a non-starter, so must be backwards compatible

• 64-bit SNs required in about 10 years

• It takes about 10 years to roll out major TCP changes
Proposed Solution

• Use 64-bit sequence numbers

• Place the upper 32-bits in an option

• Generally, try to leave the TCP frames “looking the same” and make TCP “work the same” from the perspective of middleboxes

• Provide automatic negotiation on session startup and backwards compatibility for hosts that only understand 32-bit SNs
What Are You Thinking?

- The proposed solution is simple in theory, hard in practice:
  - Changes 35+ years of assumptions in RFCs, implementations, etc.
  - Just what option space do we have for this?
  - So, this is non-trivial and not something to be taken lightly
No, I Really Mean It

• It looks like we will need something, and the time to start thinking about this is now

• This *seems* like a workable approach, but there may be other, better approaches

• So, yes, hard, but necessary (to do something, even if not this exact proposal)