TCP Extended Data Offset Option

draft-ietf-tcpm-tcp-edo-03
IETF 93 - Prague

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Status summary

- 02/03 update – April 2015 (post IETF 92)
  - New motivation Section 3
  - Added variant with Segment_Length to detect middlebox split/merge (See Sec. 5.3 detail)
  - Update to header size discussion
  - Added discussion of offload engine issues
Implementation status

• Two Linux implementations underway
  – USC/ISI student project
    • http://www.isi.edu/touch/tools
    • Tested using an additional JUNK option
  – Pasi’s code
    • https://github.com/PasiSa/linux
    • Tested using NOPs to exceed DO limit
ISI implementation

• Status (no change from IETF 92)
  - Linux 3.13 patches available
    • http://www.isi.edu/touch/tools
  - ISI tech report:
  - Student graduated 5/15, new students resuming work 9/15

• Results
  - Supports options up to a total of 272B
    (including a single option up to the max)
  - NOT yet compatible with GRO
    • But GRO also currently merging headers with differing options, which should never occur
  - Perf. of 932 Mbps (GRO off, EDO on)
    (vs. 940 with GRO on and EDO off, with no measurable change in CPU load)
Issues from Bonaventure IDs

• Blind echo of unknown options
  – Should be flagged as major bug
  – Trivial to address within EDO if desired
  – *Bad idea to address in each TCP option*
    • Costs extra byte or extra codepoint *per option*
    • Sets up TCP as needing byzantine protection, rather than following the declared specification

• Reaction to failed Segment_Length
  – Currently silent discard with “inform”
  – Other possibilities:
    • Send RST and shutdown
    • Stop using EDO on return path and allow either side to keep using non-EDO or shutdown via RST (which to use as default?)
More issues…

- All other issues are already known and documented in Section 7.3
  - Modified SYN-ACK addressed in 01
  - Blind removal addressed in 02
  - Splitting/coalescing addressed in 02
  - Modified data affects all solutions (incl. in-band)
  - In byzantine environments, use IPsec or TCP-AO, as already noted in Section 7.2
Feedback requested

• As always
• Please start with e-mail to TCPM
  – Where this is a WG item
• Esp.
  – Seg_Length errors via default drop and continue or RST?
  – Fix silent echo issue or declare a bug?
    • Fixing requires either another Kind codepoint or another byte in the SYN option – which one?