Robust ECN Signaling with Nonces: Moving Forward

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Outline
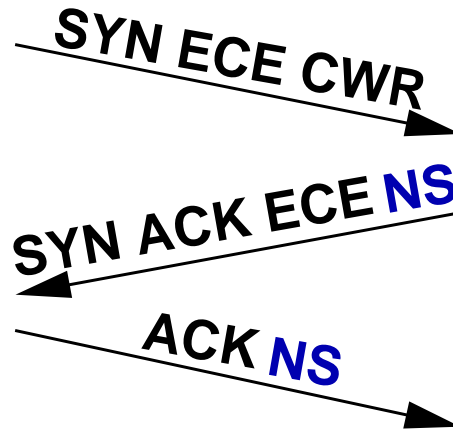
New in -01

Issues from March

Implementation

Action plan

New in -01

Initial nonce sum is 1:

SYN ECE CWR

SYN ACK ECE NS

ACK NS

Suggested responses to incorrect sum

Nonce applies to packets (not byte ranges)

Issues from March

Fragmentation:

- can't protect fragmented packets,

- for protection, set DF.

Negotiation:

- implicit via initial nonce sum

- each side tells the other its supported

- no behavior contingent on remote support.

SACKs: don't conceal congestion signals.

Added Bonus

- Detect gaming Eifel or DSACK which undo congestion actions after spurious retransmissions

- Need unmarked original transmission for correct nonce sum.

Implementation

Linux 2.4

No noticeable performance degradation

ECN code increased 3x, from 162 to 465 lines

- 100 lines maintaining expected nonce sums

- 25 lines generating random nonces

- comments, new events, detailed behavior, debugging

Unexpected cases:

- handle buffer "collapse"

- resynchronize after fragmentation required

Action plan

Advance to Proposed Standard?

Questions? Insults?

Doc: draft-ietf-tsvwg-tcp-nonce-01.txt

Offline: nspring@cs.washington.edu

Talk slides: `http://www.cs.washington.edu/`

`homes/nspring/talks/ietf-london.ps.gz`