Specifying Alternate Semantics for the ECN Field

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draft-floyd-ecn-alternates-02.txt

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Status:

- Presented at August IETF.
- Approved to be a WG document.
- Discussion last time: BCP or Informational?
  - The goal is probably to be a BCP.
- I think this is ready for WG Last Call.

Changes from -01:

- Changed requirement for TCP friendliness, to a requirement of friendliness with IETF-conformant congestion control.

- Added to discussion of robustness to route changes.

- Added an explicit note that the ECN nonce is agnostic to the semantics of the other ECN codepoints, and could be used with alternate ECN semantics.

Viewgraphs from August 2005:

What is the problem?

- 1: How do routers know which ECN semantics to use with which packets?

- 2: Problems with incremental deployment?

- 3: For incremental deployment, co-existence with traffic using standard ECN?

- 4: Evaluating alternate-ECN semantics.

How do routers know?

- In most proposals, a diffserv field is used.
  - Out-of-band mechanisms have also been proposed.
- Note that RFC 3168 gives the default ECN semantics for all packets, regardless of the diffserv codepoint.
- Do all routers using the diffserv codepoint know that it indicates alternate ECN semantics?
- What if the diffserv codepoint is changed along the path?

Problems with incremental deployment?

- What if some routers along the path don't understand the alternate ECN semantics?

  How does the alternate-ECN traffic perform?

Co-existence with competing traffic (when some routers don't understand the alternate-ECN semantics)?

- There are three possibilities:
  - 1: Unsafe in the global Internet; or
  - 2: Methods to guarantee that all routers along the path understand the alternate semantics; or
  - 3: Alternate ECN semantics can co-exist with routers using default ECN semantics.
    - E.g., if a default-ECN router sets the ECT codepoint, the alternate-ECN traffic responds appropriately.

Evaluation of alternate ECN semantics:

(In an environment where all routers understand the alternate ECN semantics.)

- 1: Is the ECN nonce used?
  - If not, is there some way to verify feedback from receiver?

- 2: Co-existence with competing traffic (when all routers along the path understand the alternate ECN semantics).

- 3: General merits of the alternate-ECN semantics?