The detailed proposal for ECN and IP:

K. K. Ramakrishnan,
Sally Floyd

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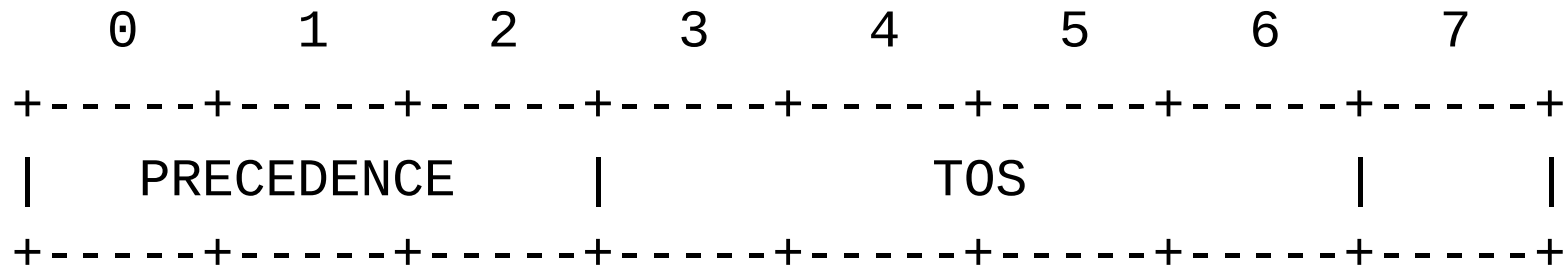
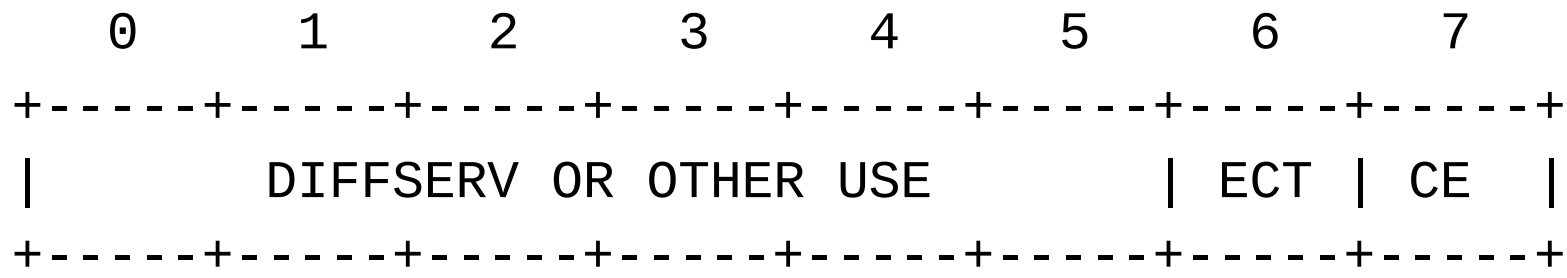
Details of ECN and IP:

• The IPv4 TOS byte is currently defined as follows. This byte is under discussion in the Differentiated Services (diffserv) Working Group (tonight at 1930-2200).



- Our proposal is as follows:



ECT: ECN-Capable Transport

CE: Congestion Experienced

The Semantics of the ECN-Capable Transport (ECT) Bit:

The ECT bit can be set in the packet if the sending and receiving entities (e.g., transport protocol, multicast application, etc.):

- use some acceptable form of congestion control (i.e., together respond to packet drops by reducing the arrival rate of traffic from these entities at the congested link); and

- in terms of congestion control, respond to packets with the CE bit set as they would to a single packet drop.

The Semantics of the Congestion Experienced (CE) bit:

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IF you would normally drop this packet
   (e.g., from RED's probabilistic packet dropping policy)
    AND (your queue is not actually full
         or in imminent danger of overflowing)
THEN
    IF the packet is marked ECN-Capable
        SET the packet's CE bit.
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(ECT, CE) pairs:

(0, 0): Not an ECN-Capable Transport.
(1, 0): ECN-Capable Transport, but no Congestion Experienced.
(1, 1): ECN-Capable Transport and Congestion Experienced.

(0, 1): Not defined.

(ECN-Capable Transport, Congestion Experienced)

Why not just use 1 bit?

- In this case, ”Not an ECN-Capable Transport” and ”ECN-Capable Transport and Congestion Experienced” would be a single bit.

ECN and incentives for TCP applications to ignore congestion control:

- The presence of ECN does not make it easier for TCP applications or users to disable TCP congestion control.

- In the absence of network mechanisms to encourage end-to-end congestion control, ECN would make it slightly more attractive for TCP applications to disable end-to-end congestion control (or to lie about being ECN-capable).

ECN and incentives for UDP applications to ignore congestion control:

- It is already easy for UDP applications to not use end-to-end congestion control.

- In the absence of network mechanisms to encourage end-to-end congestion control, and in the absence of application-level FEC, ECN would make it somewhat more attractive for UDP applications to not use end-to-end congestion control.