

Updates on Coding and congestion control in transport

draft-irtf-nwcrp-coding-and-congestion-02

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Main changes since *-00

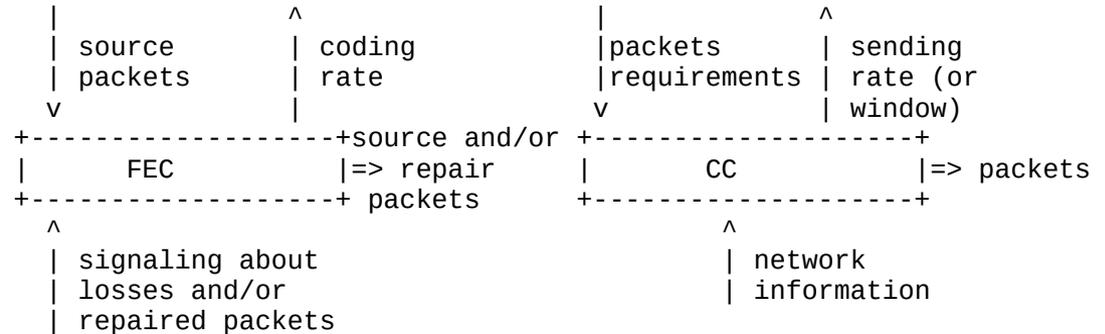
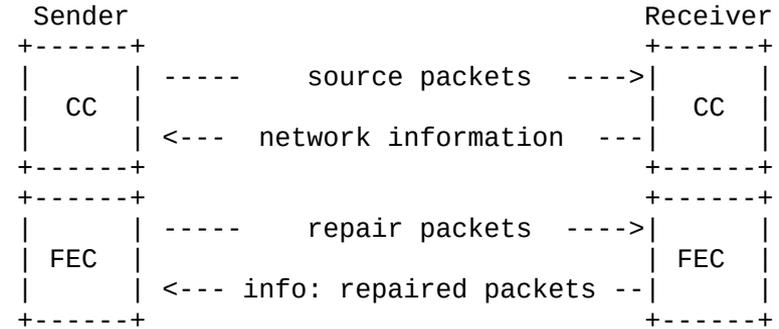
- Received comments from Spencer (and Gorry)
- Received comments from Vincent
- Questions for some wording from Lloyd
- Now a research group document
 - draft-irtf-nwcrq-coding-and-congestion-02

Context and objective of *-02

- FEC coding: a reliability mechanism (distinct and separate from the loss detection of congestion controls)
- + : FEC coding to deal with
 - transfer tail losses
 - Networks having non-congestion losses
- - : FEC coding should not hide congestion signals
- This memo :
 - discussion of how FEC coding and congestion control can coexist.
 - encourage the research community to also consider congestion control aspects when proposing and comparing FEC coding

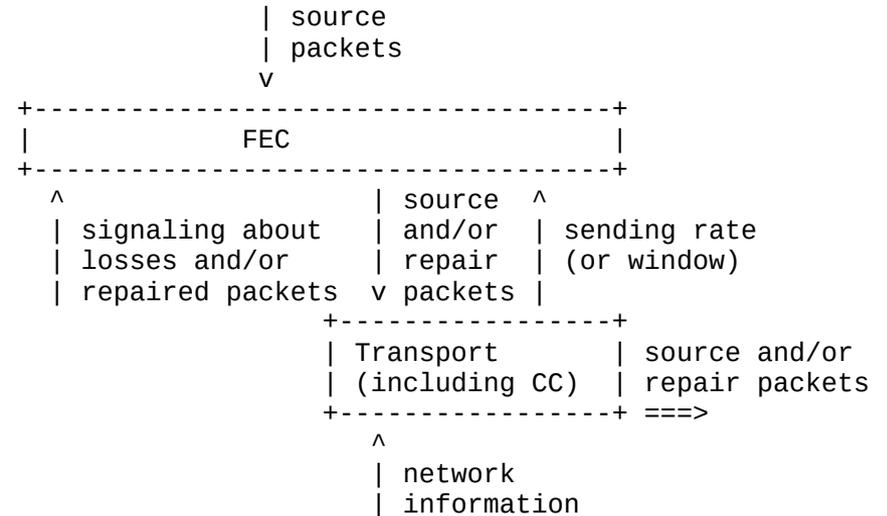
Separate channels, separate entities

- Congestion Control channel carries
 - source packets from a sender to a receiver
 - packets signaling information about the network (number of packets received vs. lost, ECN marks, etc.)
- Forward Erasure Correction channel carries
 - repair packets (from the sender to the receiver)
 - potential information signaling which packets have been repaired
- There are cases where these channels are not separated
- More details on the content of each message in the draft



FEC above Transport

- Advantage
 - does not add congestion in the network.
- Drawback / Comment
 - CC is often embedded in reliable transfer protocols (e.g. TCP)
 - This approach requires that the transport protocol does not implement a fully reliable data transfer service (e.g., based on lost packet retransmission).
 - UDP is an example of a protocol for which this approach is relevant.



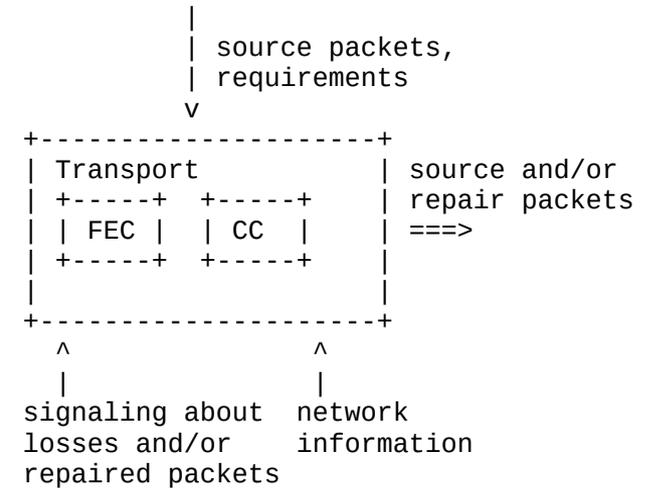
FEC within Transport

- Advantage

- Enable conjoint optimization between the CC and the FEC
- Transmission of repair packets does not add congestion in potentially congested networks but helps repair lost packets (such as tail losses)

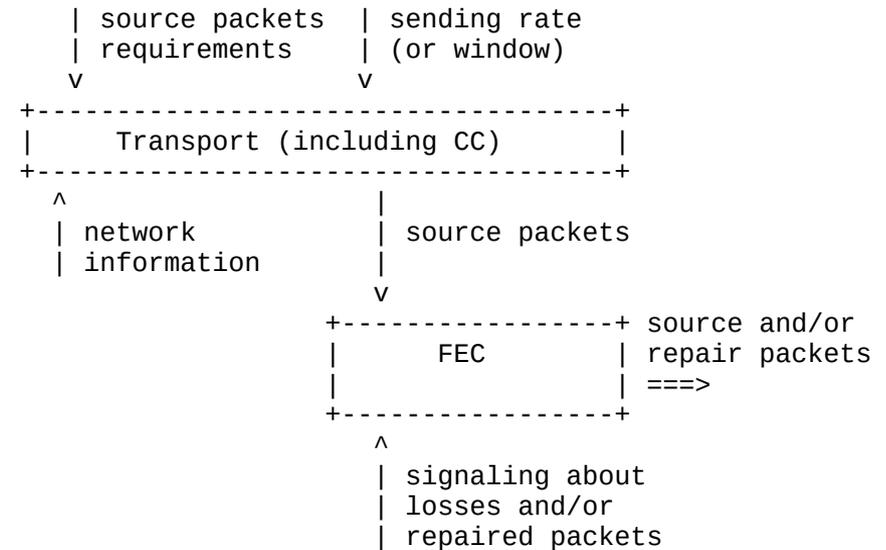
- Drawback

- Maybe not much gains as opposed to classical retransmission mechanisms
- Bandwidth cost that could have been exploited to transmit source packet
- Coding ratio needs to be carefully designed



FEC below Transport

- Advantage
 - Performance gains when there are persistent transmission losses
- Drawback
 - Add congestion in already congested networks.
 - Coding ratio needs to be carefully designed



Next steps

- Questions ?
- Please, review and comment