

# DCCP: Updates on CCID2 and CCID3

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## Changes in CCID2: TCP-Like Congestion Control.

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- Said that the Acknowledgement Number reports the largest sequence number, not the most recent packet, for consistency with draft-ietf-dccp-spec.
- Added a sentence about piggybacked acknowledgements.
- Added another reason why the ECN Nonce is not used for DCCP-Ack packets.

## Changes still to make in CCID2:



- The document already says that the congestion window is not increased when a duplicate acknowledgement is received.
- Read the Experimental RFC 3465 on Appropriate Byte Counting to see how/if it should be adapted for CCID2.
- Add a sentence saying that for future changes to TCP that are tied to the byte-stream semantics of TCP, careful consideration will be needed for porting these changes to the packet-based DCCP.

## Problems with CCID-3: TFRC Congestion Control

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- The optional use of the ACK vector in CCID3 was not fully specified.
- The use of the ECN nonce was not fully specified.

## The ACK vector in CCID3:



- Added a separate section on "The Use of Ack Vectors".
- This section says that Ack-of-acks must be used when the Ack Vector is used.

## The ECN Nonce in CCID3:



- Renamed the "ECN Nonce Option" to the "Loss Intervals" option, and extended the Loss Intervals option to include up to eight loss intervals.
- Reason #1: This allows the sender to more precisely verify the receiver's feedback.
- Reason #2: This means that the sender could do without the receiver's report of the Loss Event Rate, if it so desirec.
- If the Ack Vector or the Loss Intervals option is used, the Loss Event Rate report is no longer a MUST.
- Added a section about using the ECN Nonce to verify the receiver's feedback.

## The Loss Intervals Option in CCID3:



- Added a section in the Appendix about "When should Ack Vector and Loss Intervals be used?"

## Other changes to CCID3:



- Added a sentence saying that the TFRC spec "separately specifies the minimum sending rate from rate reductions during an idle period."