

About FEC Scheme, signaling and protocol in NWCRG

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Why this discussion?

- **A number of I-Ds of interest:**
- **Tetrys (draft-detchart-nwcrg-tetrys-04)**
 - a full solution: protocol, signaling/headers, sliding window FEC
 - detailed but un-finished
- **RLNC (draft-heide-nwcrg-rlnc-00)**
 - a set of coding solutions, including protocol considerations (but not specification), and signaling/header
 - very detailed in parts, evasive on other aspects
 - more work needed

Why this discussion? (2)

- **RLC for FECFRAME (TSVWG, passed WGLC)**
 - two FEC Schemes for a well defined protocol
 - full specification, with all required details
- **RLC for QUIC (work in progress)**
 - leverages on the other one for code specification
 - specifies a different signaling (for QUIC headers) and mechanisms (e.g., application data to symbol mapping)
- **and potentially a BATS I-D in near future?**

Moving forward?

- **Divide and conquer**

- keep code specification, signaling, and protocol aspects separate

reusable across
several contexts

mostly specific
to a protocol

nwcrg protocol
remains TBD

Moving forward? (2)

- Is the FEC Scheme approach appropriate?
 - i.e., specify code internals + signaling in order to have a working solution for a **specific target protocol**
 - ... but we could also limit ourselves to the **code internals + signaling requirements** (without considering a specific format)

what has been done so far

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-----+-----+-----+-----+-----+-----+-----+-----+
| Stream ID (i) | ... |
+-----+-----+-----+-----+-----+-----+-----+-----+
| [Offset of First Source Symbol in EW (i)] | ... |
+-----+-----+-----+-----+-----+-----+-----+-----+
| [Length (i)] | ... |
+-----+-----+-----+-----+-----+-----+-----+-----+
| Repair_Key | DT | NSS (# src symb in ew) |
+-----+-----+-----+-----+-----+-----+-----+-----+
| Stream Data | ... |
+-----+-----+-----+-----+-----+-----+-----+-----+
```



a better approach for nwcrng?

RLC needs:

- coding window description, e.g., (if no gap)
1st symbol id + number symbols
- repair key (necessarily a 16-bit value)
- density threshold (necessarily in {0 ; 15})

Moving forward? (3)

- Investigate key questions

- is a **universal signaling and header format** feasible? Probably not but if we just focus on code requirements, perhaps ☺
- what does **inter-flow coding** imply? What type of synchro does it require? Should it be an option for more complex use-cases or something that's worth to support by default?
- investigate **code parameter derivation**. E.g., RLC for FECFRAME tries to elaborate on this question, but there's probably more to say

Moving forward? (4)

- design a **protocol** for sliding window codes, e.g., “à la Tetrys” (with a different name). Should be (mostly) code agnostic.
- other? <add your own topic here>