Coding for QUIC Reference Implementation

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Coding for QUIC ver. 3

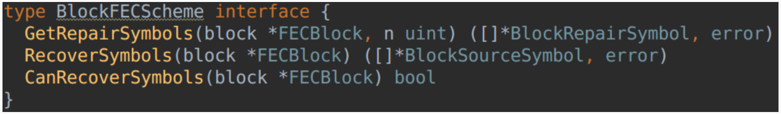
- The draft changed a lot compared to its previous version
- Our homemade version at UCLouvain was frozen on an old version of `mpquic-go` (complicated to maintain).
- We decided to propose a new simple, small version of a QUIC implementation supporting the Coding For QUIC extension.
    - restarted from scratch, supports most of the features of `coding-for-quic-03`
    - the goal is to stay up-to-date with the `quic-go` upstream.

Coding for `quic-go`

- The source code is available here: `https://github.com/francoismichel/coding-for-quic-go`
- Currently only supports block codes: XOR and Reed-Solomon, in a modular way
- Uses `RECOVERED` frames to avoid hiding the packet losses to the QUIC loss-detection machanism
- `REPAIR` frame, source symbol medatada and `RECOVERED` frame can be defined differently by each FEC Scheme

Adding a new block code

Currently, all block codes (XOR and RS) implement this interface



```
type BlockFECScheme interface {
  GetRepairSymbols(block *FECBlock, n uint) ([]*BlockRepairSymbol, error)
  RecoverSymbols(block *FECBlock) ([]*BlockSourceSymbol, error)
  CanRecoverSymbols(block *FECBlock) bool
}
```

If you want to implement a new block code, you just need to implement these three methods.

What to do next

- Adding a sliding-window FEC Scheme !
    - Wire the implem with the SWIF codec once it is done
- Add a proper test suite
- More clever symbols scheduling and use new applications above this implementation (An example is already present for HTTP/3+FEC)

Other interesting implems to look at

- rQUIC (see the presentation in $<$ 5min !)
- We will present a new QUIC implem at SIGCOMM 2019, revisiting the way an extension such as FEC can be deployed and used, stay tuned !

Thank you very much ! Questions ?