Coding for efficient NetWork Communications Research Group (NWCRG)

Marie-José Montpetit, Vincent Roca
July 19 2018, IETF 102, Montréal

Welcome!

- Our goal:

  Foster research in network and application layer coding to improve network performance

- Codes and coding librairies
- Protocols to facilitate the use of coding in existing systems
- Real-world use cases and work in progress

Note Well (IRTF)

This is a reminder of IETF policies in effect on various topics such as patents or code of conduct. It is only meant to point you in the right direction. Exceptions may apply. The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set forth in BCP 79; please read it carefully. The IRTF follows the IETF's policies.

As a reminder:

- By participating in the IRTF, you agree to follow IETF processes and policies.
- If you are aware that any IETF or IRTF contribution is covered by patents or patent applications that are owned or controlled by you or your sponsor, you must disclose that fact, or not participate in the discussion.
- As a participant in or attendee to any IRTF activity you acknowledge that written, audio, video, and photographic records of meetings may be made public.
- Personal information that you provide to IRTF will be handled in accordance with the IETF Privacy Statement.
- As a participant or attendee, you agree to work respectfully with other participants; please contact the ombudsteam (https://www.ietf.org/contact/ombudsteam/) if you have questions or concerns about this.

Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to the RG Chairs or IRTF Chair:

- BCP 9 (Internet Standards Process)
- BCP 25 (Working Group processes)
- BCP 25 (Anti-Harassment Procedures)
- BCP 54 (Code of Conduct)
- BCP 78 (Copyright)
- BCP 79 (Patents, Participation)
- https://www.ietf.org/privacy-policy/ (Privacy Policy)

I R T F

Administrivia

- **Charter and documents**
  - https://datatracker.ietf.org/group/nwcrg/charter/

- **Wiki**
  - https://trac.ietf.org/trac/irtf/wiki/nwcrg

- **Mailing list**
  - subscription: https://www.irtf.org/mailman/listinfo/nwcrg

- **Today's slides**
  - https://datatracker.ietf.org/meeting/102/session/nwcrg/

- **Remote participation**
  - Meetecho: http://www.meetecho.com/ietf102/nwcrg
  - about...
    http://ietf.org/how/meetings/102/remote/

Agenda (1)

- 00- Welcome, administrative and general matters, information for new participants (Chairs)

PART I: NC building blocks
==

01- "BATS codes" (Raymond W. Yeung, remotely) NB: no I-D for the moment

02- Discussion concerning symbol signalling and FEC Scheme design (Vincent Roca, all) (5+10')

- Question: what about draft-heide-nwcrg-rlnc?

03- "Generic API for Sliding Window FEC Codes" (Vincent Roca) draft-roca-nwcrg-generic-fec-api-02

04- Feedback from TSVWG draft-ietf-tsvwg-fecframe-ext and draft-ietf-tsvwg-rlc-fec-scheme work (Vincent Roca)

- Question: what about "Network Coding and Congestion Control" topic?

Agenda (2)

PART II: Use-cases for NC
=======================================

05- "Coding for QUIC"
draft-swett-nwcrg-coding-for-quic-01 and draft-roca-nwcrg-rlc-
for-quic-00 (M.J. Montpetit/I. Swett/V/ Roca)

06- "Quick status on Network coding and satellites I-D"
(Nicolas Kuhn, remotely) (5+5')
Question: should draft-kuhn-nwcrg-network-coding-satellites be
WG Item?

- Question: what about draft draft-matsuzono-nwcrg-nwc-ccn-
  reqs? Should draft-matsuzono-nwcrg-nwc-ccn-reqs be a WG Item?

07- What's next? (chairs, all) (10')
- Discussions on RG Milestones
- Do we need an interim mid-September? Sept. 25th Boston +
  virtual meeting?
- Do we plan a hackathon for IETF103 for an open-source sliding
  window FEC codec?

Our First RFC!

- **RFC 8406**
  - Taxonomy of Coding Techniques for Efficient Network Communications

Quick status about active I-Ds

- **Individual I-Ds:**
    - **Tetrys**
        - draft-detchart-nwcrg-tetrys-04
    - **RLNC**
        - draft-heide-nwcrg-rlnc-00
    - **Network Coding and Satellites**
        - draft-kuhn-nwcrg-network-coding-satellites-05
    - **Network Coding for Content-Centric Networking / Named Data Networking: Requirements and Challenges**
        - draft-matsuzono-nwcrg-nwc-ccn-reqs-01
    - **Generic Application Programming Interface (API) for Window-Based Codes**
        - draft-roca-nwcrg-generic-fec-api-02
    - **Coding for QUIC**
        - draft-swett-nwcrg-coding-for-quic-01
        - draft-roca-nwcrg-rlc-for-quic-00

Charter and Milestones

- **Milestones**

  - Document existing NC solutions (code + basic protocol if applicable)
    - **No update to Tetrys**
    - **No update to RLNC initial draft**
    - **Needs attention from the authors**

  - NC and QUIC use-case
    - **Initial drafts exists**
    - **Initial implementation planned**

  - NC and satellite use-case: an overview and associated research challenges
    - **No update but potential WG item status**

Charter and Milestones

- **Milestones**

  - NC and ICN use-case: an overview and associated research challenges
    - **Update and potential WG item status**

  - Common coding API
    - **Update**

  - NC adoption challenges
    - **To be started for interim/IETF 103**

  - **Pushed to the future**
    - NC and Congestion Control
    - NC and robust tunnelling use-case

Future meetings

- **NWCRG will meet during IETF 103, Bangkok**

- **Hackathon for IETF103 for an open-source sliding window FEC codec?**

- **Interim meeting to advance milestones?**
  - tentative date: **Tuesday Sept. 25th, 2018**

    (announced at the ICNRG!)
  - location: virtual and/or Boston area