



Network Coding Research Group - NWCRG

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Agenda

- 25min "System and layer independent network coding architecture design",
Ángeles Vazquez-Castro, Universitat Autònoma de Barcelona
 - Proposed architecture design methodology.
 - Preliminary validation over DVB-S2/X/RCS2 and LTE-A.
- 15min draft-roca-nwcrg-fecframev2-problem-position, Vincent Roca, INRIA
- 15min draft-detchart-nwcrg-tetrys-02, Jonathan Detchart, ISAE
- 5min Survey of sliding window coding schemes and the resulting functional building blocks, Morten Pedersen, Aalborg University
- 25min Tutorial discussion.
- 25min Architecture discussion.



Tutorial Outline

1. Brief overview of the Network Coding potential, with an example
 - Show high-level how it works
 - Show benefits, e.g. resilience, reliability, low delay, exploiting multi-path
 - Point out components: coding, reliability protocol
1. Overview of the theoretical basis
 - Fields, linear coding, in-network recoding, the randomness benefit
 - Main theorems (max-flow min-cut, multicast capacity)
1. Benefits and costs of NC
2. Practical applications



Tutorial versions and audience

- Tutorial presented at IAB/ Plenary
 - 45-50min presentation/10min Q&A
 - High-level, goal is to spread the word in IETF
- Tutorial presented to the IETF practitioners – IETF Sunday
 - 1.5-2hrs, some more technical details
 - Show to practitioners of other WGs: what they can gain from NC, and what is needed for a practical NC-enabled application
- Tutorial as an Informational RFC
 - Introduction with references to main papers on theoretical and practical aspects

Survey of sliding window coding schemes

by Morten Pedersen



- Interfacing network coding with TCP: an implementation, Jay Kumar Sundararajan, Szymon Jakubczak, Muriel Médard, Michael Mitzenmacher, Joao Barros <http://arxiv.org/abs/0908.1564>
- Structured Random Linear Codes (SRLC): Bridging the Gap between Block and Convolutional Codes, Kazuhisa Matsuzono, Vincent Roca, Hitoshi Asaeda, <http://arxiv.org/abs/1408.5663>
- Low Delay Random Linear Coding Over a Stream, Mohammad Karzand, Douglas J. Leith
- Network Coding Over SATCOM: Lessons Learned, Jason Cloud, Muriel Médard, <http://arxiv.org/abs/1506.06154>)
- Layered Constructions for Low-Delay Streaming Codes, Ahmed Badr, Pratik Patil, Ashish Khisti, Wai-Tian Tan, John Apostolopoulos, <http://arxiv.org/abs/1308.3827>
- Others?