Network Coding Research Group - NWCRG
- proposed -

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Agenda

- (Re)Introduction of Network Coding proposed Research Group

    – Victor Firoiu (BAE Systems), Brian Adamson (NRL)

- RMT and FecFrame Retrospective – Brian Adamson (NRL), Vincent Roca (INRIA)

- Not so random, random linear codes – Kazuhisa Matsuzono, Vincent Roca (INRIA)

- Content Coding in an experimental ICN (Information Centric Network)

    – Mario Gerla, YT Yu, J. Joy (UCLA)

- Loss Tolerant TCP – Koushik Kar (RPI), Bishwaroop Ganguly (Lincoln Labs)

- Multi-source network error correction with distributed Reed Solomon codes

    – Tracey Ho (CodeOn)

- Network Coding Taxonomy – Victor Firoiu (BAE Systems), Brian Adamson (NRL)

- Discuss NWCRG Charter and establishing NWC as IRTF Group

(Re)Introduction of

Network Coding Research Group - NWCRG
- proposed -

Victor Firoiu   Brian Adamson
BAE Systems   NRL

Motivation

- Research proved performance gains and practical algorithms

  - From: Netcoding multicast achieves max flow-min cut

  - To: Coding scheme for reliable communication over packet networks

  - To: results in capacity of wireless networks using network coding

  - And many others

  - Much research remains to be done.

- Mature Implementations

  - Full network coding systems have been demonstrated

  - Network coding has begun "popping up" in various IRTF, IETF, and other forums

  - More general applicability and opportunity seen with new paradigms such as Information Centric Networking and Software Defined Networking

Some Open Research Areas

- Aspects of packet network systems

  - Control, Routing / forwarding, Transport, Physical layers

- How can network coding be effectively and pragmatically applied to a scalable, distributed network like the Internet?

  - Congestion control, End vs. Intermediate System, Edge (wireless)

- Where does network coding provide benefit and where does it not?

- Architecture, operation and applications

  - End-to-end vs. hop-by-hop

  - Intra-flow and inter-flow

  - Application-layer use

  - Service paradigms: Best Effort, Content, Multimedia

Areas for Standardization

- Common encoding algorithms

- Protocols:

  - Network Coding Transport

  - Routing: subgraph construction

  - Forwarding on subgraphs

- Service descriptions

- Packet formats

Candidate 2013 - 2014 Activities

- Approve NWCRG charter

- Network coding taxonomy

  - Consensus on key terminology and concepts

  - I.e., establish a language for IRTF interaction

- Research architectures for Network Coding protocols

- Build a repository of shared information (wiki)

  - Research results and open problems

  - Architectures, algorithms, protocols, software