Network Coding for Content-Centric Networking / Named Data Networking: Requirements and Challenges

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Draft history

- Document in the Network Coding Research Group (NWCRG), will be presented on Thursday

- v0 initially presented in Singapore.

- v1 updated according to feedback from presentations in ICNRG and NWCRG

- Still evolving.

Key idea

- Both NC and ICN use orthogonal methods to improve content distribution → combine them!

- Create prefix names for coded content
  - Network coding info embedded in name or header

- Use ICN to retrieve this content

- Receive encoded packets, decode, voila.

- Session-less nature of ICN well suited for ICN, can leverage multiple interfaces, can receive packets from multiple sources, etc.

- As always, devil is in the details

Requirements/Challenges

- What are the requirements:
  - Content naming
  - Transport
  - In-Network caching
  - Seamless mobility
  - Security and privacy
- What are the challenges:
  - Convolutional coding
  - Rate and Congestion control
  - Security and Privacy
  - Routing Scalability

Deltas

Open issues

- More detailed presentation in NWCRG

- Security section, mobility section need to be beefed up

  - Still work in progress

- Still some place holders (say on routing) to be filled up

- Welcome feedback and contributions