NC for CCN/NDN: Requirements and Challenges

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Introduction

• NC (Network Coding) for CCN/NDN is an attractive research topic
  – Good NC use cases
• Need to provide sufficient information and clarification of the requirements and challenges

• Meeting @Singapore (IETF-100)
  – Presented our initial draft at both NWCRG and ICNRG
• Previous meeting @Montreal (IETF-102)
  – Discussed regarding the adoption of this draft as a RG draft

• The draft has now become a RG draft of NWCRG
  – Thanks to the chairs and reviewers of both NWCRG and ICNRG
Structure (-00)

1. Introduction ................................................................. 2
2. Terminology ................................................................. 3
   2.1. Definitions ............................................................ 3
   2.2. NDN/CCN Background ............................................. 5
3. Advantage given by NC and CCN/NDN ................................ 6
4. Requirements ............................................................... 7
   4.1. Content Naming ..................................................... 7
   4.2. Transport ............................................................. 8
      4.2.1. Scope of Network Coding .................................. 9
      4.2.2. Consumer Operation ....................................... 9
      4.2.3. Router Operation ........................................... 10
      4.2.4. Publisher Operation ....................................... 11
   4.3. In-network Caching ............................................... 11
   4.4. Seamless Mobility ............................................... 12
   4.5. Security and Privacy ............................................ 12
5. Challenges ................................................................. 13
   5.1. Adopting Convolutional Coding ................................ 13
   5.2. Rate and Congestion Control .................................... 13
   5.3. Security and Privacy ............................................ 14
   5.4. Routing Scalability .............................................. 14
6. Security Considerations ................................................ 14
7. References ................................................................. 14
   7.1. Normative References ........................................... 14
   7.2. Informative References ......................................... 14
Requirements

1. Naming
2. Transport
3. In-Network Caching
4. Seamless Mobility
5. Security and Privacy

• Modified based on the obtained comments
  – Definition of the security envelope (NC in or out)
  – Design choice regarding who determines the encoding vector
  – New references
  – etc.
Challenges

• Adopting Convolutional Coding
• Rate and Congestion Control
• Security and Privacy
• Routing Scalability

• Describing specific protocols/solutions is out of scope of this document
  — Actual protocol proposal will be initiated in another draft.
Next Step

• Future updates of this draft
  – Requirements (sec. 3)
    • Any other NC-related requirements we should add?
  – Challenges (sec.4)
    • Refine potential challenges about security, routing.
    • Any other additional potential challenges?

• Welcome further comments and suggestions for improvements.

• Plan to initiate an actual protocol proposal
  – We’re now Implementing NC with CCN/NDN
  – We plan to experiment our implementation (e.g. for seamless mobility)
Thank you!