

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 @Motreal (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)

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

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!