Requirements of Name Resolution Service in ICN
draft-dong-NRS-requirement-00

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Critical issue in ICN: name resolution

- **How to map content name to the actual content within the network**
- **Different approaches for name resolution**
    - Out of band
    - Inband
    - Hybrid
    - Manifest
- **Critical issue**
    - For availability
    - Security
- **Attempted to write down the key requirements of a name resolution system**
- **Open up conversation, all feedback and contribution welcome!**

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NRS: Definition

- **Definition:** The Name Resolution Service (NRS) is defined as the service that is provided by ICN infrastructure to help a client to reach a specific piece of content, service, or host using a persistent name.

- **Examples :** iDNS [18], Global Name Resolution Service (GNRS)[9], and Locator/ID Separation Protocol (LISP)[26][27] based approaches, etc…

Inband vs Out of band

- **In the draft, denoted as 'standalone' and 'name based routing' approaches**
- **Standalone: a specific infrastructure to return a content location based upon a content name**
- **Name-based routing: combines the name resolution step with a name-based routing**
- **Hybrid: a subset of the nodes perform a name based routing, with (some form of) tunneling in between these nodes**
- **Manifest: resolve the name into a manifest that includes more names and/or locations**

Requirements I

- **Some "must", some "should"!**

- **Guarantee**
    - Name resolution returns a result if name exists
- **Delay Sensitivity**
    - In a timely manner
- **Minimum Inter-Domain Traffic**
    - Without too much impact on traffic
- **Failure Resilience**
    - NRS nodes may fail, should be graceful
- **Accuracy**
    - Good results

Requirements II

- **Security and accessibility**
  - □ Tamper proof, scoped, DoS,
- **Scalability**
  - □ A lot of objects out there
- **Time Transiency**
  - □ Content may be ephemeral/short lived
- **Support for manifest**
  - □ Allow for some indirection in the resolution
- **Interoperability**
  - □ With some other resolution mechanisms, for instance in the context of IoT
- **Resolution Result Selection**
- **Heterogeneity**

Requirements III

- **Resolution Result Selection**
  - All results, best result, any result? One or more?
- **Heterogeneity**
  - Multiple naming schemes
- **Unspecified Content Name**
  - Parameter based resolution? Resolution without a name?

Conclusions

- **Trying to focus the conversation**

- **Involvement/feedback/contributions welcome**

- **Converge onto a set of "musts"**

Thank you

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