Updates on NRS documents

IETF105 ICNRG meeting in Montreal

Jungha Hong

ETRI
Contents

• Two ICNRG documents (adopted after IETF102)

• Requirements for Name Resolution Service in ICN

→ Design Guidelines for Name Resolution Service in ICN (Title changed)
  • draft-irtf-icnrg-nrs-requirements-02

• Architectural Considerations of ICN using Name Resolution Service
  • draft-irtf-icnrg-nrsarch-considerations-02
Design Guidelines for NRS in ICN

• draft-irtf-icnrg-nrs-requirements-02
• Authors
  • Jungha Hong, Tae-Wan You, Yong-Geun Hong (ETRI)
  • Lijun Dong, Cedric Westphal (Futurewei)
  • Borje Ohlman (Ericsson)
Document scope

- *Design Guidelines for Name Resolution Service in ICN*
  - Focus on NRS itself as a service or a system in ICN
  - Defines NRS in ICN
    - Categorizes NRS approaches
  - Provides the functionalities of NRS in ICN
    - How NRS is used in ICN architectures
  - Provides the design guidelines for NRS in ICN
  - Provides the security considerations
3. Name Resolution Service in ICN

4. Objectives of NRS in ICN

4.1. To support heterogeneous types of names
4.2. To support dynamic features
4.3. To support efficient routing
4.4. Use cases of NRS
4.4.1. To support flat name based routing
4.4.2. To support producer mobility
4.4.3. To support scalable routing system
4.4.4. To support off-path caching
4.4.5. To support nameless object
4.4.6. To support manifest

5. Requirements for NRS in ICN

5.1. Requirements as a service
5.1.1. Resolution response time
5.1.2. Response accuracy
5.1.3. Resolution guarantee
5.1.4. Resolution fairness

5.2. Requirements as a system
5.2.1. Scalability
5.2.2. Manageability
5.2.3. Deployed system
5.2.4. Fault tolerance

5.3. Requirements on Security aspect
5.3.1. Accessibility
5.3.2. Authentication
5.3.3. Data confidentiality
5.3.4. Privacy protection
5.3.5. Robustness/resiliency
5.3.6. Network privacy

3.1. Explicit name resolution approach
3.2. Name-based routing approach
3.3. Hybrid approach
3.4. Comparisons of name resolution approaches

4. Functionalities of NRS in ICN

4.1. Support heterogeneous name types
4.2. Support producer mobility
4.3. Support scalable routing system
4.4. Support off-path caching
4.5. Support nameless object
4.6. Support manifest
4.7. Support metadata

5. Design guidelines for NRS in ICN

5.1. Resolution response time
5.2. Response accuracy
5.3. Resolution guarantee
5.4. Resolution fairness
5.5. Scalability
5.6. Manageability
5.7. Deployed system
5.8. Fault tolerance

6. IANA Considerations

7. Security Considerations

7.1. Accessibility
7.2. Authentication
7.3. Data confidentiality
7.4. Privacy protection
7.5. Robustness/resiliency
7.6. Network privacy
Updates

• Section 4
  • Title: Objectives → Functionalities
  • Use cases were integrated into functionalities
  • Added new functionality, “Support metadata”
    • NRS could return a rich set of metadata
    • Metadata: alternative object locations, supported object transfer protocol(s), caching policy, security parameters, data format, hash of object data, etc.
    • This metadata could be used for selection of object transfer protocol, security mechanism, egress interface, etc.

• Section 5
  • Title: Requirements → Design guidelines
Architectural Considerations of ICN using NRS

- draft-irtf-icnrg-nrsarch-considerations-02
- Authors
  - Jungha Hong, Tae-Wan You, Yong-Geun Hong (ETRI)
  - Ved Kafle (NICT)
  - Bastiaan Wissingh (TNO)
Document scope

• *Architectural Considerations of ICN using Name Resolution Service*
  • Focus on things related to ICN architecture
  • Discuss the changes of ICN routing system when NRS is integrated into ICN
    • Procedure, Latency, Security
  • Provides the ICN architectural considerations for NRS
    • Procedures of NRS system with Name mapping records
      • Who/when performs the name resolution
    • ICN protocol design for NRS system
    • How to process the results of name resolution

2019-07-23

Updates on NRS documents
Updates on NRS documents

Terminology added

1. Introduction
2. Conventions and Terminology
3. Background
4. Implications of NRS in ICN
5. ICN Architectural Considerations for NRS
   5.1. Name resolution
   5.2. Protocols and Semantics
   5.3. Routing System
5.1. Name mapping records registration, resolution, and update
6. Security Considerations

6.1. Name Space Separation
6.2. NRS System
6.3. NRS Protocols and Messages
Updates

• Section 2
  • Terminologies added
    • NRS server and NRS resolver as main NRS components
    • Name registration and Name resolution as main NRS processes

• Subsection 5.1
  • Name registration
  • Name resolution
  • Name record update
Ready for RG Last Call?