

# Updates on NRS documents

IETF105 ICNRG meeting in Montreal

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# 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

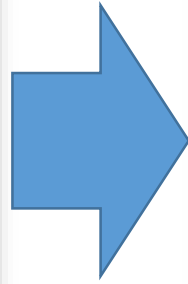
# Design Guidelines for NRS in ICN

- draft-irtf-icnrg-nrs-requirements-02
- Authors
  - Jung-ha 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.	Name Resolution Service in ICN . . . . .
3.1.	Explicit name resolution approach . . . . .
3.2.	Name-based routing approach . . . . .
3.3.	Hybrid approach . . . . .
3.4.	Comparisons of name resolution approaches . . . . .
4.	<u>Functionalities of NRS in ICN . . . . .</u>
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.	<u>Support metadata . . . . .</u>
5.	<u>Design guidelines for NRS in ICN . . . . .</u>
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.	<u>Security Considerations . . . . .</u>
7.1.	Accessibility . . . . .
7.2.	Authentication . . . . .
7.3.	Data confidentiality . . . . .
7.4.	Privacy protection . . . . .
7.5.	Robustness/resiliency . . . . .
7.6.	Network privacy . . . . .

Put it back

# 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

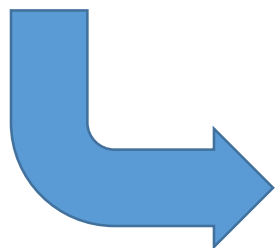
- draft-irtf-icnrg-nrsarch-considerations-02
- Authors
  - Jungha Hong, Tae-Wan You, Yong-Geun Hong (ETRI)
  - Ved Kafle (NICT)
  - Bastiaan Wissingh (TNO)

# 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



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	. . . . .
6.	Security Considerations	. . . . .
6.1.	Name Space Separation	. . . . .
6.2.	NRS System	. . . . .
6.3.	NRS Protocols and Messages	. . . . .

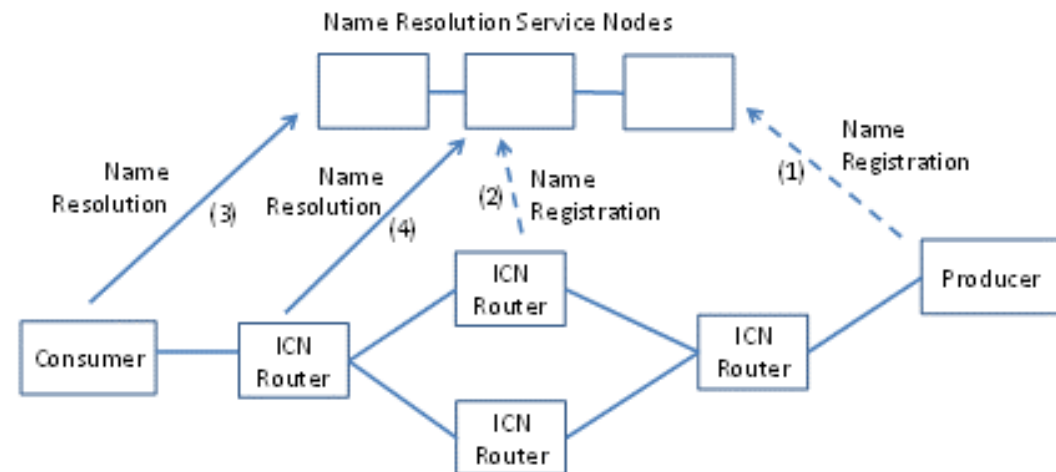


**Terminology added**

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

# 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?**