Transmission of IPv6 Packets over Near Field Communication

*draft-ietf-6lo-nfc-05*

Y-H. Choi, Y-G. Hong (ETRI),
J-S. Youn (DONG-EUI Univ.), D-K. Kim (KNU)
J-H. Choi (Samsung)

6lo WG Meeting@IETF 97 – Seoul, Rep. of Korea
2016. 11. 15.
What is Near Field Communication (NFC)?

• **NFC technology enables** (Source: NFC Forum)
  • simple and **safe two-way interactions** between electronic devices, allowing consumers to perform contactless transactions, access digital content, and connect electronic devices **with a single touch**.

• **NFC Functions**
  (Source: NFC forum)
History and Status

• **WG document:** draft-ietf-6lo-nfc-00 (Mar 03, 2015)
  - Update Stateless address autoconfiguration (RFC7136)

• **1st Revision:** draft-ietf-6lo-nfc-01 (July 05, 2015)
  - MAC PDU size and MTU
  - SLAAC and IPv6 link local address
  - Fragmentation and Reassembly

• **2nd Revision:** draft-ietf-6lo-nfc-02 (Oct. 17, 2015)
  - Dispatch Header (added)
  - Header Compression (modified for GHC)

• **3rd Revision:** draft-ietf-6lo-nfc-03 (Apr. 07, 2016)
  - Some typos fixed
  - Section 7. Security Considerations

• **4th Revision:** draft-ietf-6lo-nfc-04 (Jul. 08, 2016)
  - Section 3.2. a NFC FAR-related sentence updated
  - Section 4. a typo fixed
  - Section 4.2. Related to “multi-hop topologies”

• **5th Revision:** draft-ietf-6lo-nfc-05 (Oct. 11, 2016)
  - Feedback from NFC forum
  - IID generation (feedback from Dave)
Updates since the IETF96 (1/3)

• Resolution of Feedback from NFC Forum

  • **Clear separation required** between
    • Generation of IPv6 related information
    • Mapping of IPv6 information into LLCP PDUs
      → (Resolution) **NOT** required in this document. Only LLCP info. (e.g., address) is required. Adaptation layer does not give any info. into the LLCP PDUs.

  • It should not **repeat structural information** from the LLCP specification
    • Section 3.4, I PDU formats & Extension option format
      → (Resolution) deleted

  • The **use of DSAP/SSAP** is unclear
    • Section 3.3, about DSAP/SSAP
      → (Resolution) revised according to the spec LLCP-1.3 (latest version)
    • Section 4.2, a simple multi-hop
      → (Resolution) deleted
    • Section 4.3, the DSAP/SSAP value ranges
      → (Resolution) revised according to the spec LLCP-1.3 (latest version)
Updates since the IETF96 (2/3)

• Resolution of Feedback from NFC Forum (cont’d)

  • MTU extension in NFC link
    • Section 4.8, It cannot be assumed that current devices supports a Link MIU size of 1280 bytes why the connection for the transfer of IPv6 packets cannot rely on this MIU size.
      → (Resolution) the related texts revised. A sentence, “The default is 128 bytes, but if extensive, MIUX is used and FAR does not required.“ is added.

  • Examples of topology and application
    • Section 5.2, “3 or more devices can be touched to play multi-channel music” is not appear to be practical
      → (Resolution) this could not be practical because NFC link does not consider multi-hop forwarding, but this is a possible example in ipv6-over-nfc, the related texts are revised.
Updates since the IETF96 (3/3)

- IID generation & the others (feedback from Dave)
  - Almost all comments are editorial and related to grammar. → (Resolution) all the comments are reflected
  - Short lifetime of NFC’s link & the same IID lasting in multi-touch
    - Section 4.3, IID generated, by using 6-bit NFC link ID and ‘0’ padding (-04)
    - The comment: this could be targeted by attacks (e.g., address scanning)
      - short lifetime of NFC’s link → (resolution) IID format and texts are revised
      - the same IID lasting in multi-touch → (resolution) 6-bit NFC link id is logical value

![Figure 3: Formation of IID from NFC-enabled device address](image-url)
Others

• **Technical Review Request to NFC Forum**
  • (28/05/2015) *Firstly Informed* IPv6 over NFC in IETF 6lo working group
  • (09/05/2016) request for technical review of “draft-ietf-6lo-nfc”
    • Issues
      • IID generation by using NFC node ID
      • MTU extension of NFC Link Layer
      • NO liaison process between NFC Forum and IETF
  • (11/05/2016) **BoD meeting** (of NFC Forum)
    • discussed the review request
    • Replied: (conf-call & F2F meeting) with Technical Committee
  • (15/06/2016) **NFC Forum Member meeting (@Dallas)**
    • Decided to accept the review request
  • (04/07/2016) request for the discussion results (by e-mail)
  • (08/08/2016) request again for the discussion results (by e-mail)
  • (19/08/2016) received Feedback from NFC Forum (by e-mail)
  • (12/10/2016) resolution of Feedback to NFC Forum (by e-mail)
    • No more comments from NFC forum so far...
Next Step

• Ready for WGLC?