Transmission of IPv6 Packets over Near Field Communication

draft-ietf-6lo-nfc-05

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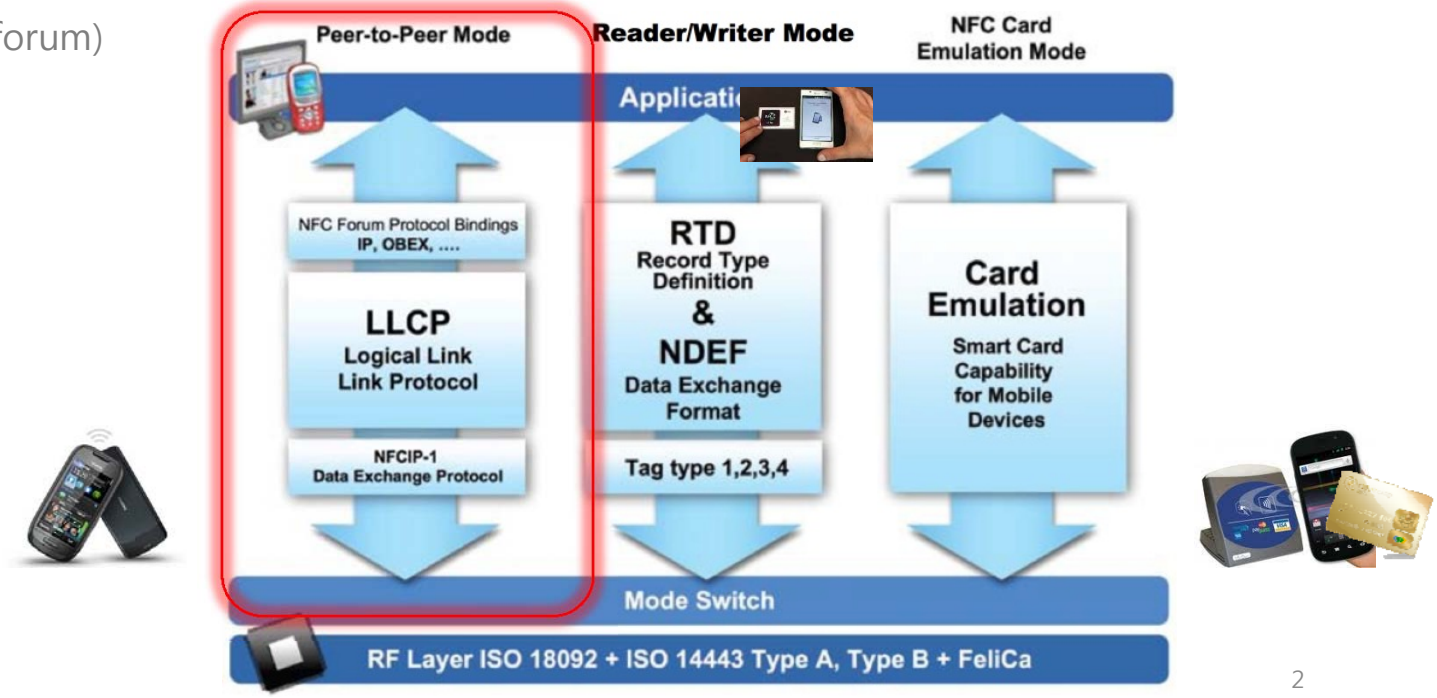
What is Near Field Communication (NFC) ?

- 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

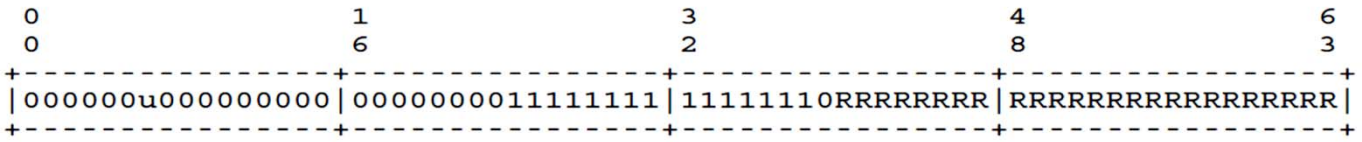


Figure 3: Formation of IID from NFC-enabled device address

The 'R' bits are random values which MAY be created by mechanisms like hash function with the SSAP as an input value because the 6-bit address of SSAP is easy and short to be targeted by attacks of third party (e.g., address scanning). In addition, the "Universal/Local" bit (i.e., the 'u' bit) of an NFC-enabled device address MUST be set to 0 RFC 4291 [7].

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?**