

# Transmission of IPv6 Packets over Near Field Communication

*draft-ietf-6lo-nfc-03*

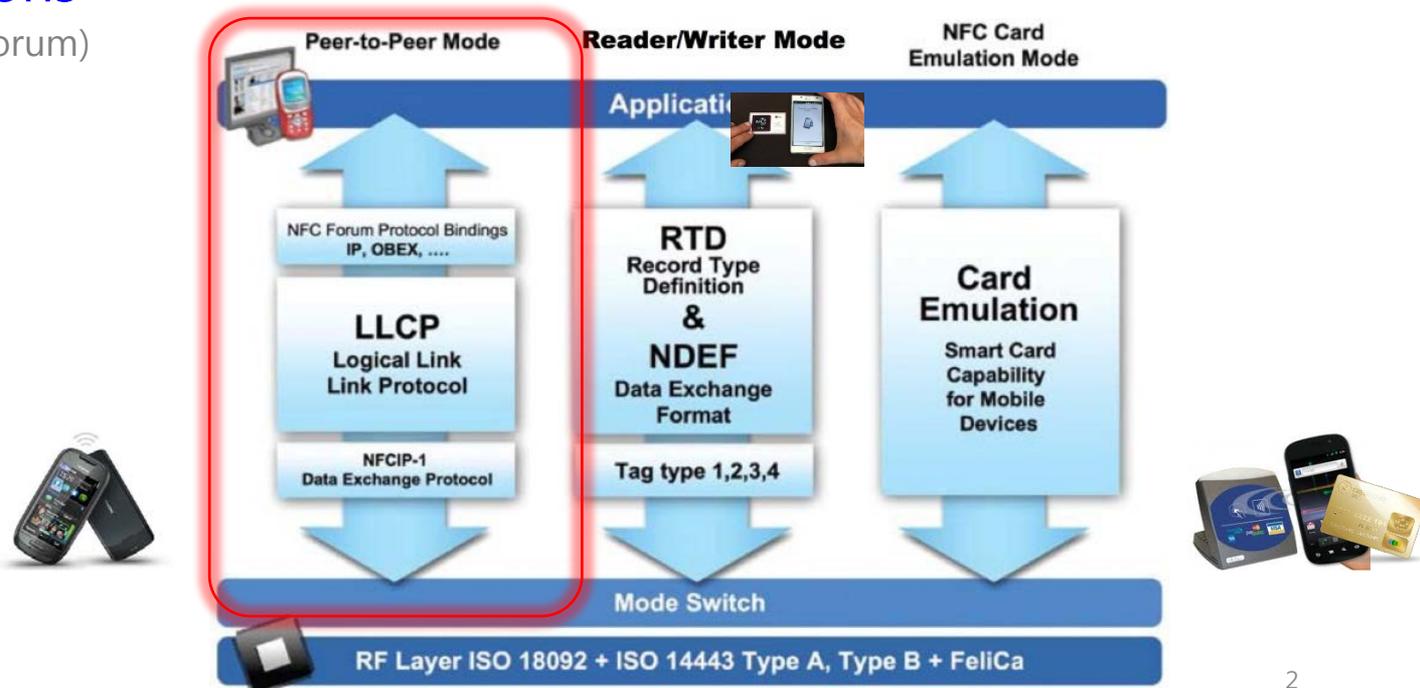
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**6lo WG Meeting@IETF 95 – Buenos Aires, Argentina  
2016. 4. 7.**

# 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)
- **1<sup>st</sup> Revision: draft-ietf-6lo-nfc-01** (July 05, 2015)
  - MAC PDU size and MTU
  - SLAAC and IPv6 link local address
  - Fragmentation and Reassembly
- **2<sup>nd</sup> Revision: draft-ietf-6lo-nfc-02** (Oct. 17, 2015)
  - Dispatch Header (added)
  - Header Compression (modified for GHC)
- **3<sup>rd</sup> Revision : draft-ietf-6lo-nfc-03** (Apr. 07, 2016)
  - Some typos fixed
  - Section 7. Security Considerations

# Updates Since the IETF 94 (1/3)

## 7. Security Considerations

- Various Threats
  - correlation of activities over time, location tracking, device-specific vulnerability exploitation, and address scanning
  - From the I-D., draft-ietf-6lo-privacy-considerations-00 (D. Thaler)
- NFC technology uses IPv6 IIDs
  - formed from "Short Address"
  - a set of well-known constant bits (such as padding with '0's)
  - for the modified EUI-64 format

→ Thus, it is exposed from the various threats

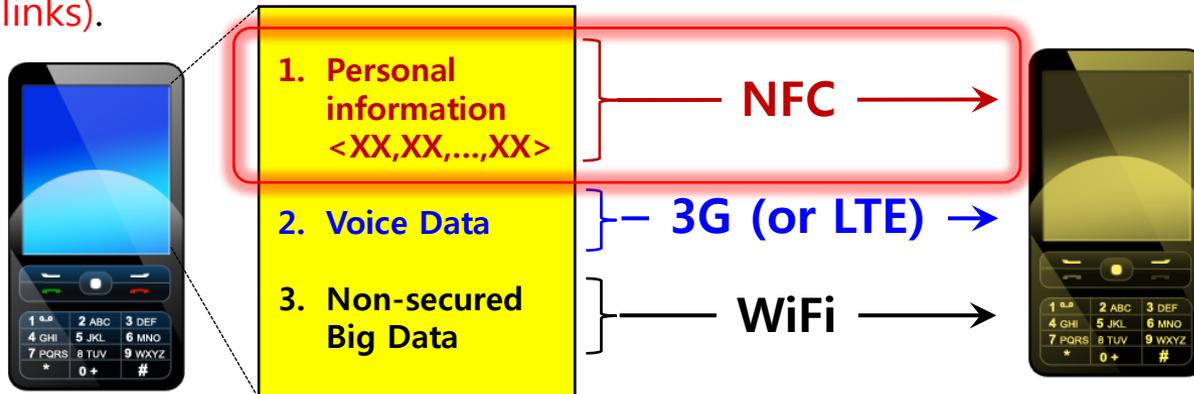
# Updates Since the IETF 94 (2/3)

## 7. Security Considerations (cont'd)

- However, NFC technology
    - is operated **single touch-based** approaches  
(This means **extremely short-lived links**)
- **This mitigates the threats of correlation of activities over time.**



- IPv6-over-NFC will be *(see the bellow figure in use cases)*
  - NOT used for big size data transfer or multimedia streaming (long-lived links), BUT used for **ID verification and mobile payment** (extremely short-lived links).



# Updates Since the IETF 94 (3/3)

## 7. Security Considerations (cont'd)

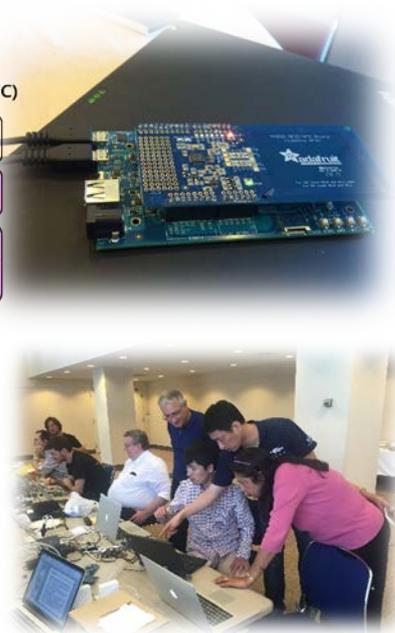
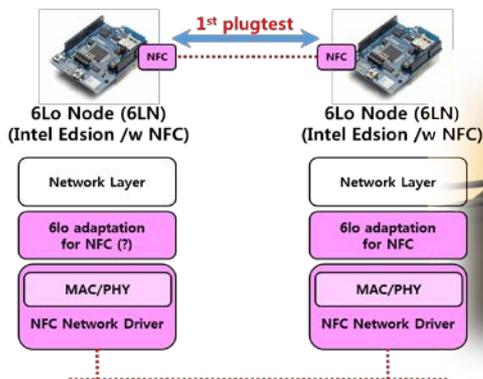
- The 6-bit short address of NFC link layer is not generated as a physically permanent value but **logically generated value for each connection**
- **Every single touch connection can use a different short address of NFC link with an extremely short-lived link**

→ **This can mitigate address scanning as well as location tracking and device-specific vulnerability exploitation.**

# Others

- **1<sup>ST</sup> ETSI 6Lo plugtests**

- in Yokohama (Japan), IETF 94
- A testbed between two different NFC-enabled devices
  - Intel Edison board (Yacto Linux 3.10.17)
  - Laptop PC (Fedora, Linux kernel 4.0.4)
- Results
  - **2/12 test items (passed)** in the test description for IPv6 over NFC.
  - NOT only Node-to-Node mode but also Node-to-Router mode in next plugtest



- **Informing the NFC Forum**

- Email response from Paula Hunter (NFC Forum Executive Director) (Oct.6.2015)
- And, we will participate in the [NFC Forum Member Meeting](#)
  - **June 2016, Dallas, TX, USA**
  - **to inform them of the work item, "IPv6-over-NFC"**

# Next Steps

- **Ready for WGLC?**
- **Implementations & 2<sup>nd</sup> ETSI 6lo plugtests in Berlin**
  - A testbed between two different NFC-enabled devices
    - Intel Edison board (Yacto Linux 3.10.17)
    - Laptop PC (Fedora, Linux kernel 4.0.4)
  - Further considerations
    - IID redundancy based on 6 bits of NFC Node ID
    - NOT support for MTU extension in NFC PN532 chipset (partially resolved)
    - Implementations for MAC procedures in ND functionality