Using NTP Extension Fields without Authentication

draft-mizrahi-ntp-extension-field-01

Tal Mizrahi   **Marvell**

Danny Mayer   **Network Time Foundation**

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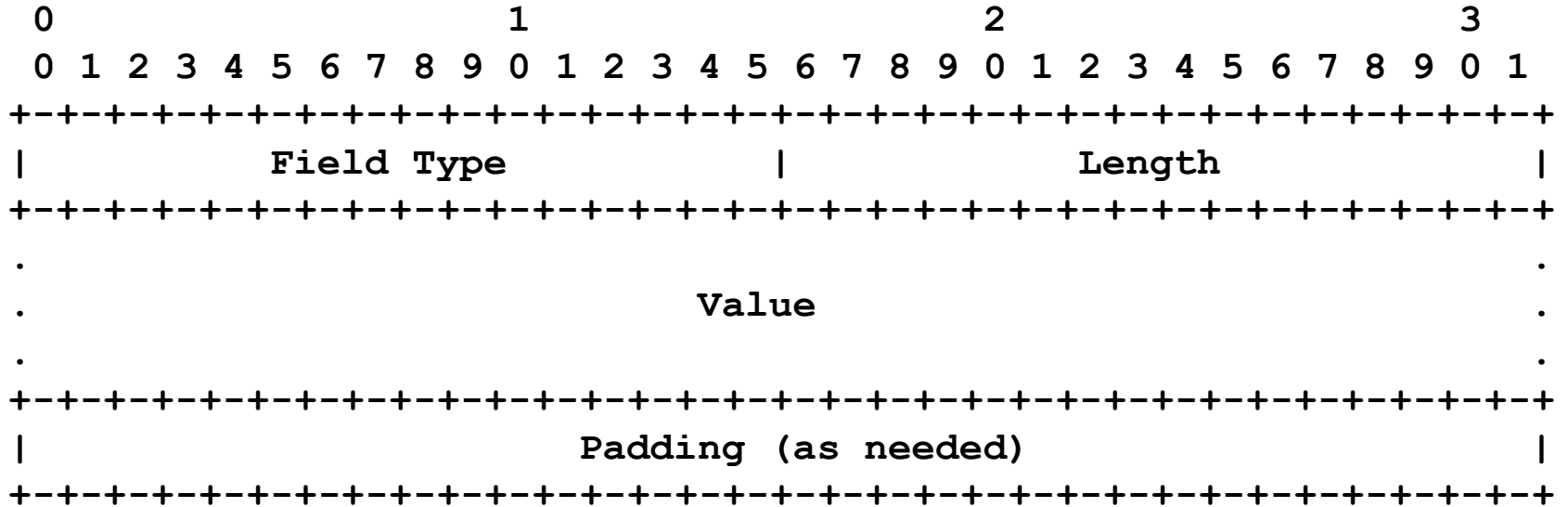
Background

▶ **The NTP header includes:**

- Fixed fields.
- Optional fields.

▶ **Optional fields (NTPv4):**

- Message Authentication Code (MAC)
- Extension fields

Extension Field Format (NTPv4)

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|           Field Type          |             Length            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
.                                                               .
.                             Value                             .
.                                                               .
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                      Padding (as needed)                      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Goal of this Draft

▶ **The problem:**

- RFC 5905, 5906 imply that extension fields are <u>generic</u> tools for future features, independent of authentication.

- RFC 5905, 5906 imply that extension fields can only be used when a MAC is present.

▶ **2 Goals:**

- <u>Clarify</u> the ambiguity in RFC 5905 / 5906.

- <u>Update</u> RFC 5905 / 5906 WRT usage of extension fields, allowing a more flexible and unambiguous usage.

Updates to RFC 5905 / 5906

▶ **Extension field with MAC:**
Extension field specifies

- Existence of MAC.

- MAC algorithm.

- MAC length.

- Note: needed for Autokey v2

▶ **Unknown extension fields:**

- Receiver ignores the extension field.

- MAY drop the extension field if causes inconsistent parsing, or if policy requires it.

Changes in the Current Draft

▸ **Danny Mayer has joined as a co-author.**

▸ **We have separated the draft into two sections:**
- Section 3 describes how extension fields can be used in the absence of a MAC according to the existing RFC 5905 and 5906.
- Section 4 defines further extensions for using extension fields, and therefore updates RFC 5905.

▸ **Intended status changed to "Standards Track".**

Next Steps

▶ **Feedback from WG.**

▶ **Adopt as WG document.**

▶ **Issue an erratum for RFC 5905, rephrasing:**

"In NTPv4, one or more extension fields can be inserted after the header and before the MAC, which is always present when an extension field is present."