           Network Time Protocol Extended Information Extension Field
                 draft-stenn-ntp-extended-information-00

Abstract

   The network packet format used by NTP has changed very little between
   NTPv1, defined by RFC 958 [RFC0958] in 1985, and NTPv4, defined by
   RFC 5905 [RFC5905]. The core network packet used by NTP has no spare
   bits available for reporting additinal state information and no
   larger data areas available for larger amounts of information. This
   proposal offers a new extension field that would contains this
   additional information.

Status of This Memo

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1. Introduction
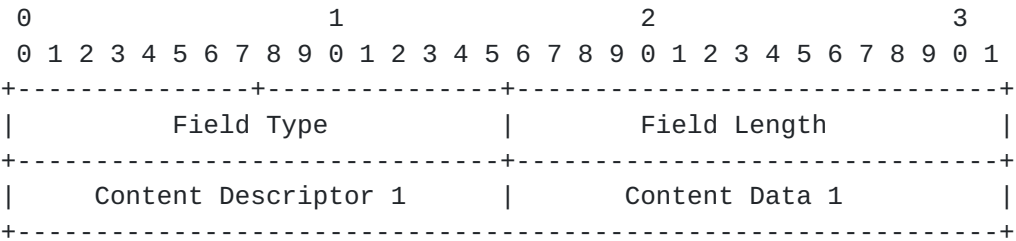
   The core NTP packet format has changed little since RFC 958 [RFC0958]
   was published in 1985. Since then, there has been demonstrated need
   to convey additional information about NTP's state in an NTP packet,
   but no backward-compatible way to usurp the few otherwise potentially
   available bits has been found, and no larger data areas are available
   in the core packet structure. This proposal offers a new extension
   field that would contain this additional information.

1.1. Requirements Language

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
   document are to be interpreted as described in RFC 2119 [RFC2119].

2. The Extended Information Extension Field

   The Field Type of the Extended Information EF includes a version
   specification, to make it easier to evolve this specification.

```
    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         |         Field Length          |
   +---------------------------+-------------------------------+
   |     Content Descriptor 1      |        Content Data 1         |
   +---------------------------------------------------------------+
```

                 NTP Extension Field: Extended Information

   Field Type: TBD (Recommendation for IANA: 0x0009 (Extended-
   Information, MAC required), 0x2009 (Extended-Information, MAC

   OPTIONAL), 0x0109 (Extended-Information Version 1, MAC required),
   0x2109 (Extended-Information Version 1, MAC OPTIONAL)

   Field Length: as needed

   Payload: For Version 1, a two octet Content Descriptor field and a
   two octet Content Data field, as described below.

   Version 1 Content fields.

    Content Descriptor 1   Content Data 1
          0x0001   TAI offset in the low-order 8 bits, 24-31
          0x0002   Interleave Mode indicator in Bit 23
          0xFFFD   Reserved (Zeroes)

    Interleave Mode: 1 if the sender is in interleave mode, 0 otherwise

    NTP Extension Field: Extended Information Version 1 Content Fields

   Example: A system that wants to convey an offset to TAI of 36
   seconds, and show it is in interleave mode.

```
    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 (0x2109)        |    Field Length (0x0008)    |
   +-----------------------------+-------------------------------+
   |           0x0003            |            0x0124            |
   +-----------------------------+-------------------------------+
```

           NTP Extension Field: Extended Information V1, Example

3. Acknowledgements

   The author wishes to acknowledge the contributions of Martin
   Burnicki.

4. IANA Considerations

   This memo requests IANA to allocate NTP Extension Field Types

      0x0009 (Extended-Information, MAC Required)

      0x2009 (Extended-Information, MAC OPTIONAL)

      0x0109 (Extended-Information Version 1, MAC Required)

      0x2109 (Extended-Information Version 1, MAC OPTIONAL)

for this proposal.

5. Security Considerations

Additional information TBD

6. Normative References

[RFC0958] Mills, D., "Network Time Protocol (NTP)", RFC 958,
           DOI 10.17487/RFC0958, September 1985,
           <http://www.rfc-editor.org/info/rfc958>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
           Requirement Levels", BCP 14, RFC 2119,
           DOI 10.17487/RFC2119, March 1997,
           <http://www.rfc-editor.org/info/rfc2119>.

[RFC5905] Mills, D., Martin, J., Ed., Burbank, J., and W. Kasch,
           "Network Time Protocol Version 4: Protocol and Algorithms
           Specification", RFC 5905, DOI 10.17487/RFC5905, June 2010,
           <http://www.rfc-editor.org/info/rfc5905>.

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