
Using UDP Checksum Trailers in the Network Time Protocol (NTP)

draft-mizrahi-ntp-checksum-trailer

<http://tools.ietf.org/html/draft-mizrahi-ntp-checksum-trailer>

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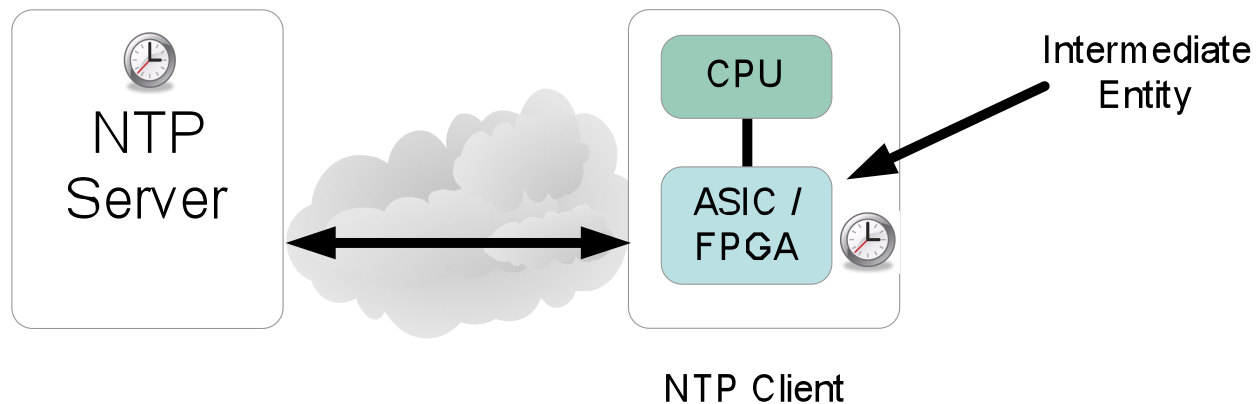
IETF Meeting 87, July 2013

Background

- ▶ **NTP is transported over UDP.**
- ▶ **UDP over IPv4 (RFC 768):**
 - Checksum can be 0, causing receiver to ignore checksum.
- ▶ **UDP over IPv6 (RFC 2460):**
 - Checksum is mandatory.

Intermediate Entities

► Intermediate entity – example:



► Intermediate entity timestamps outgoing NTP packets → need to update UDP checksum.

Overview

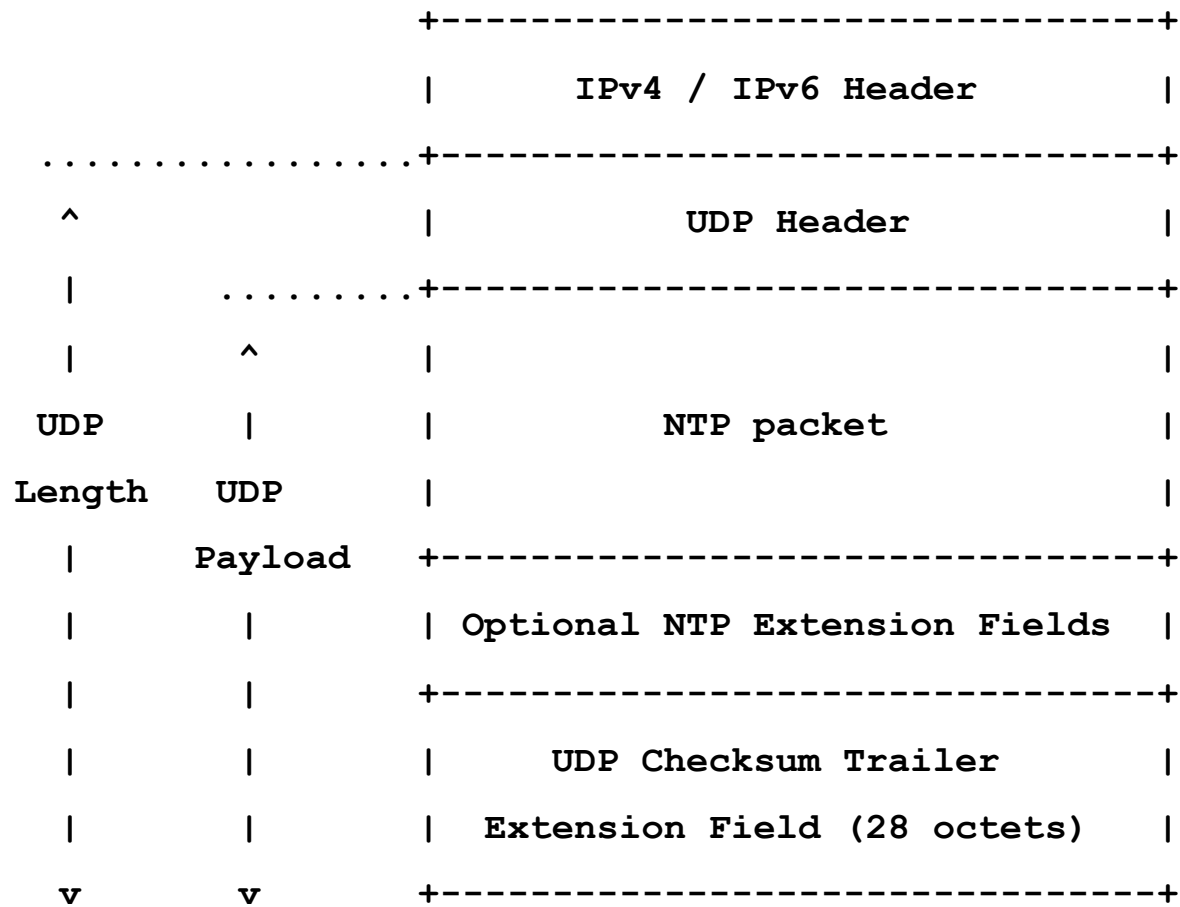
▶ **PTP over IPv6 (Annex E of IEEE 1588):**

- 2 bytes added to the end of the PTP payload.
- Can be used by an intermediate entity for incremental checksum update.

▶ **Current draft:**

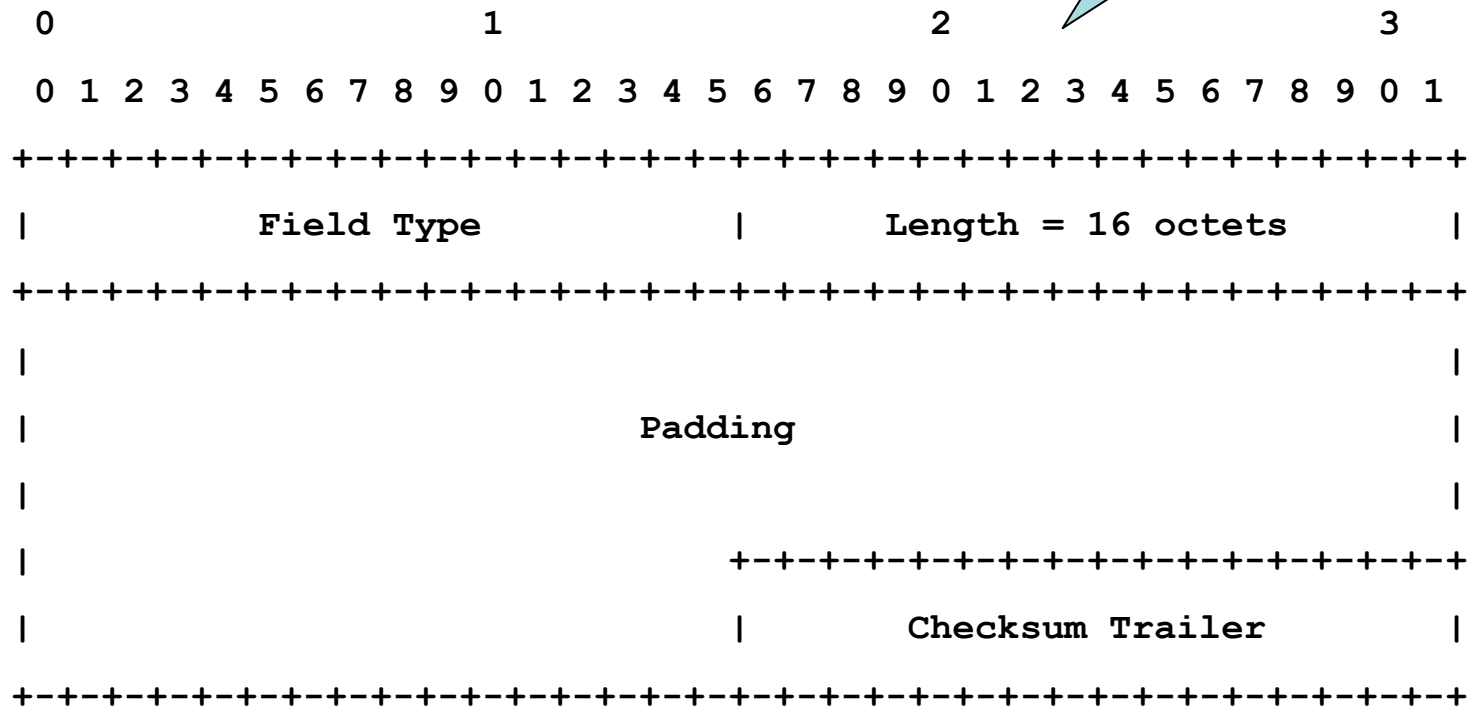
- Defines Checksum Trailer for NTP using extension field.
- Allow intermediate entity to perform incremental checksum update.

Checksum Trailer



NTP Checksum Trailer

- Use NTP Extension Field.
- Need to define Field Type for Checksum Trailer.



Checksum Trailer Extension with/without Authentication

- ▶ **Checksum Trailer Extension Field can be used when a MAC is present.**

- Intermediate entity adds extension field + re-computes MAC.

- ▶ **Checksum trailer is more useful in unauthenticated mode.**

- Extension fields can be used with / without authentication (Erratum 3627:
http://www.rfc-editor.org/errata_search.php?rfc=5905&eid=3627)

Interoperability with Existing Implementations

▶ **Existing NTP clock that receives Checksum Trailer Extension Field:**

- UDP stack correctly verifies the UDP checksum.
- NTP layer simply ignores the checksum trailer extension fields.

History and Next Steps

▶ **History:**

- <http://tools.ietf.org/html/draft-mizrahi-tictoc-checksum-trailer-00>
Originally submitted to TICTOC in 2011 - NTP and OWAMP/TWAMP.
- Discussion in the mailing list:
<http://www.ietf.org/mail-archive/web/ntp/current/msg00492.html>
- Discussion in IETF 81: <http://tools.ietf.org/wg/tictoc/minutes?item=minutes81.html>

▶ **Current version:** **split into 2 drafts:**

- <http://tools.ietf.org/html/draft-mizrahi-ntp-checksum-trailer-00>
- <http://tools.ietf.org/html/draft-mizrahi-owamp-twamp-checksum-trailer-00>

▶ **Next steps:**

- Receive feedback from WG.