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# UDP Checksum Trailer in OWAMP and TWAMP

**draft-mizrahi-owamp-twamp-checksum-trailer**

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

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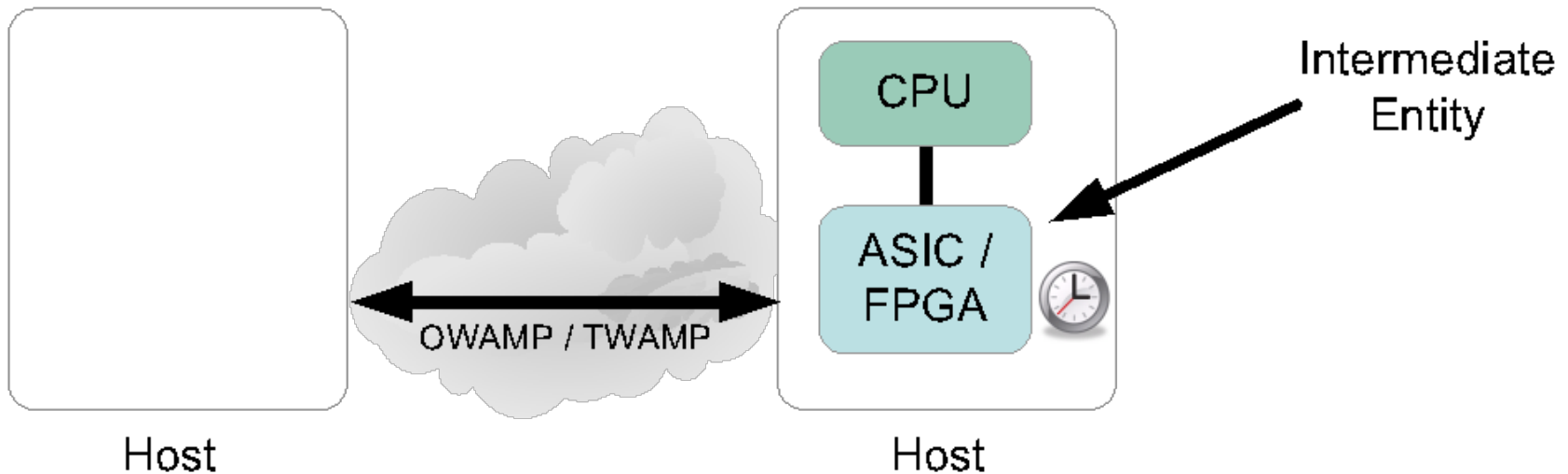
IETF Meeting 87, July 2013

# Background

- ▶ **OWAMP and TWAMP are 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 OWAMP/TWAMP test packets → need to update UDP checksum.

# Overview

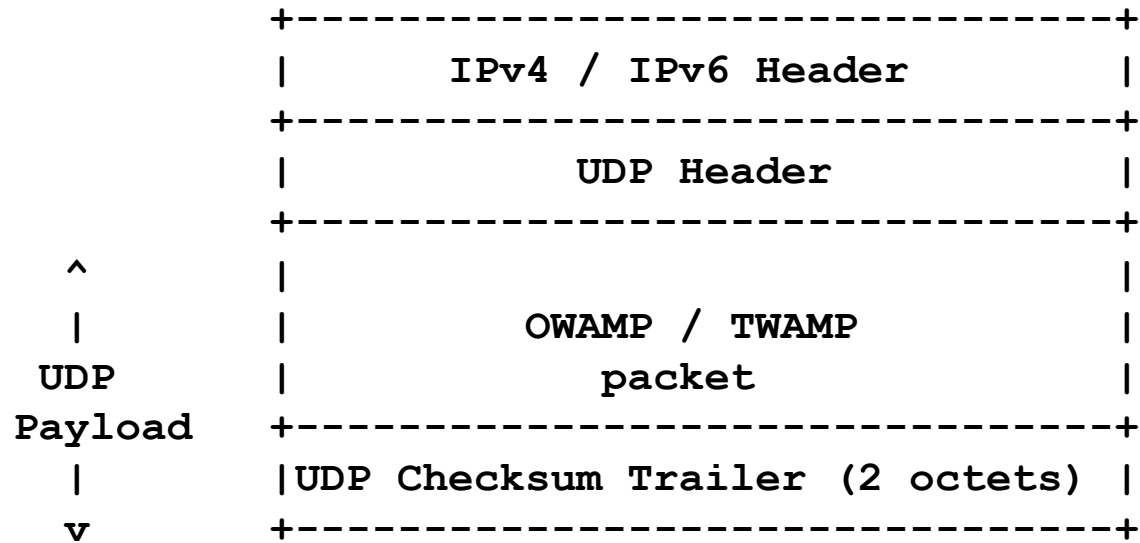
## ▶ **PTP over IPv6 (Annex E of IEEE 1588):**

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

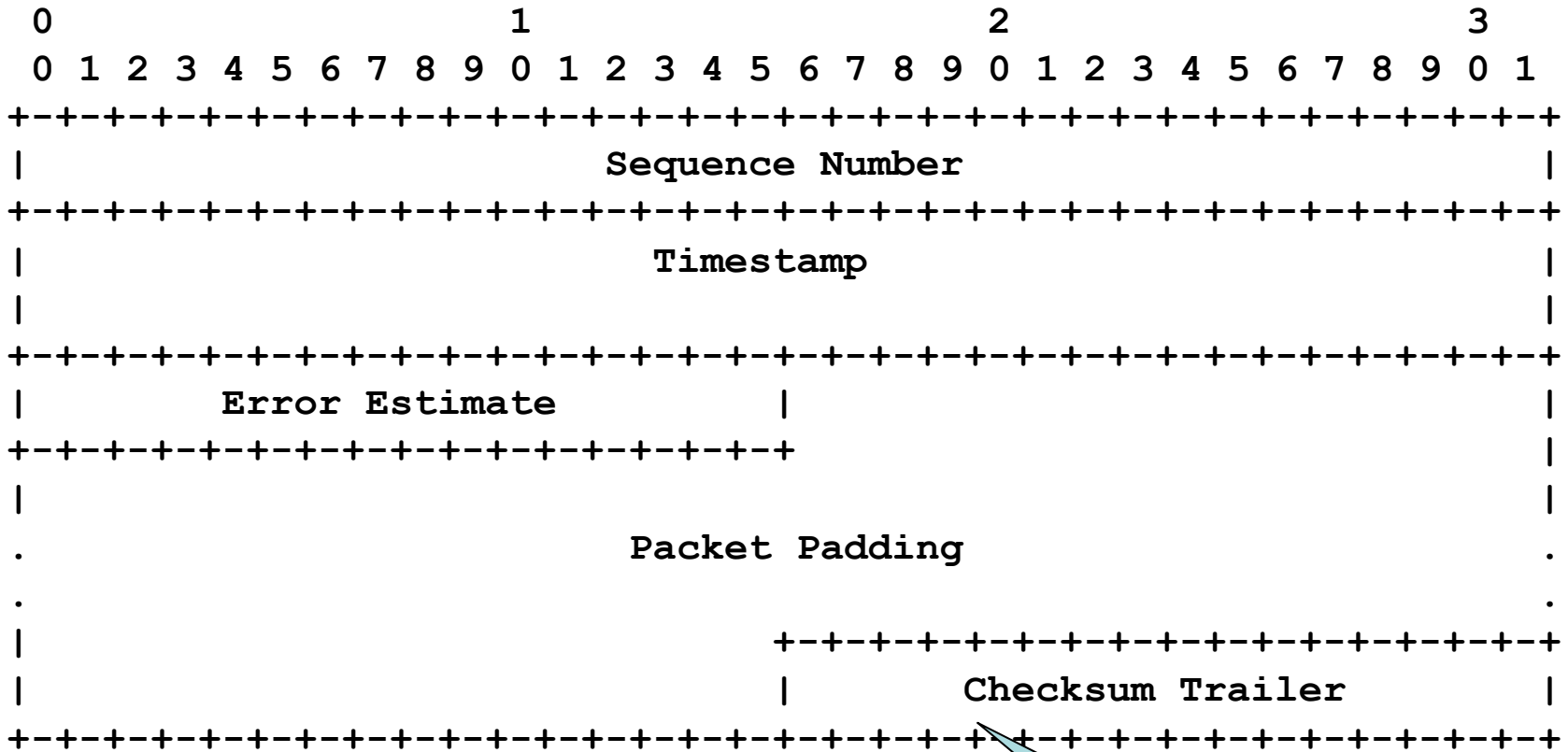
## ▶ **Current draft:**

- Defines using the last two bytes of the OWAMP/TWAMP test packet as a UDP checksum trailer.
- Allow intermediate entity to perform incremental checksum update.

# Checksum Trailer

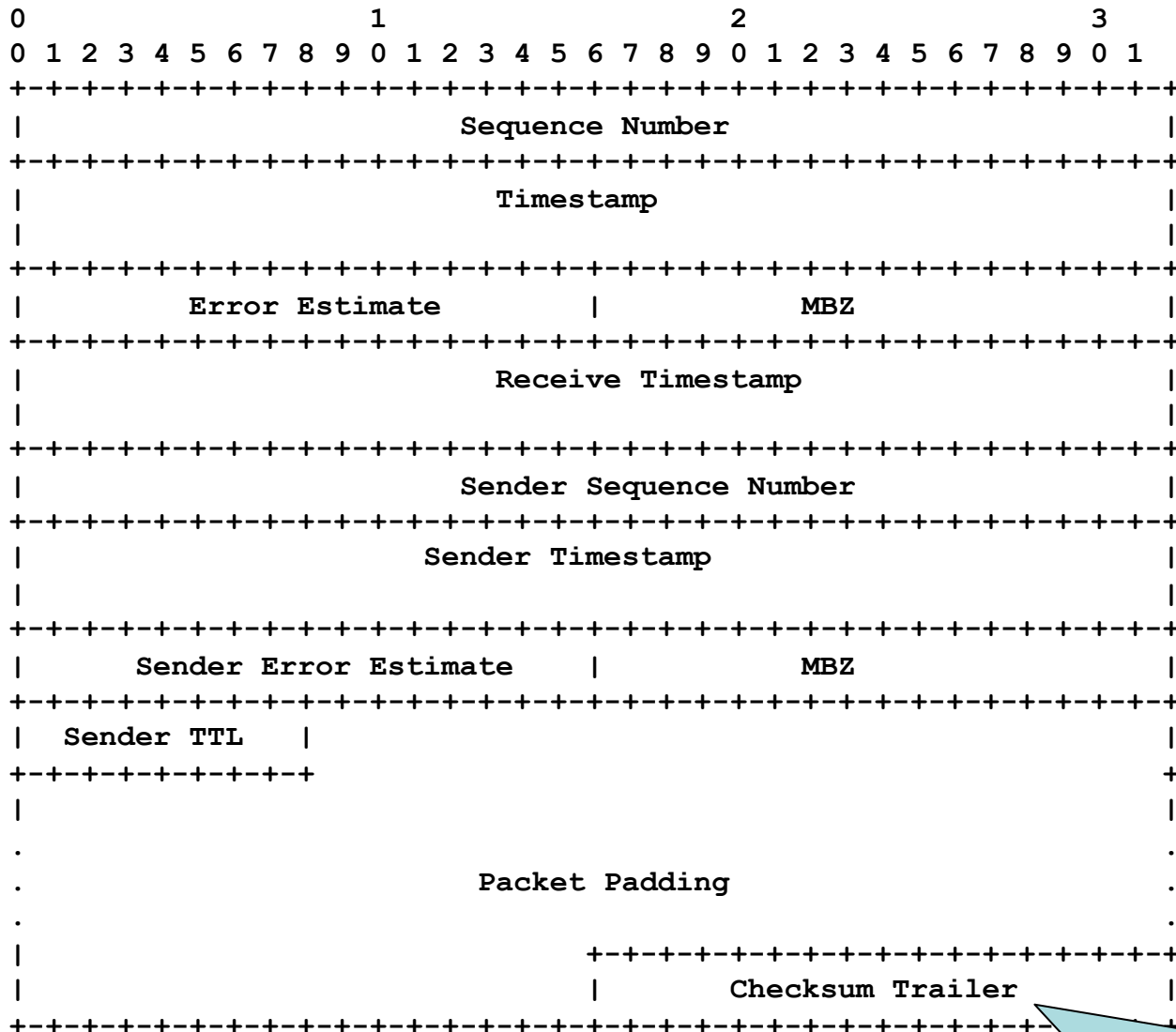


# OWAMP Test Packet with Checksum Trailer



**Checksum trailer is "hidden" in the padding field.**

# TWAMP Test Packet with Checksum Trailer



Checksum trailer is "hidden" in the padding field.

# Checksum Trailer with/without Authentication

- ▶ **Checksum Trailer can be used when a MAC is present.**
  - Intermediate entity updates checksum trailer + re-computes MAC.
- ▶ **Checksum trailer is more useful in unauthenticated mode.**



## Interoperability with Existing Implementations

- ▶ **Existing host that supports OWAMP/TWAMP receives test packet with checksum trailer:**
  - UDP stack correctly verifies the UDP checksum.
  - OWAMP/TWAMP layer is agnostic to the checksum trailer as it appears as part of the padding.

# 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.