STAMP Extensions for Hop-by-Hop OAM Data Collection

draft-wang-ippm-stamp-hbh-extensions-06

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**HbH STAMP: Motivation**

- STAMP (RFC8762) enables active measurements of one-way and round-trip performance between a Sender and a Reflector.
  - However, the performance of intermediate nodes and links is not available.
  - HbH STAMP Reference Model is introduced

![Diagram of STAMP packet structure]

- This document introduces optional TLVs to STAMP, in order to enable HbH performance measurement at each intermediate node and link.

TLV Format in a STAMP Extended Packet as per RFC8972
TLV Extensions to STAMP

- The information is collected in the TLV at each intermediate node and then sent back by the Reflector to the Sender.

**HbH Delay TLV:** It records the ingress and egress timestamp at every intermediate node.

```plaintext
+--------------------------------------------------------+
| STAMP TLV Flags | HbH Delay Type | Length |
+--------------------------------------------------------+
|               |               |        |
| Timestamp Tuple list [1]                               |
|   ...                                                  |
| Timestamp Tuple list [n]                               |
+--------------------------------------------------------+
```

**HbH Loss TLV:** It records the number of test packets received and transmitted by every intermediate node.

```plaintext
+--------------------------------------------------------+
| STAMP TLV Flags | HbH Loss Type | Length |
+--------------------------------------------------------+
|               |               |        |
| Counter Tuple list [1]                                 |
|   ...                                                  |
| Counter Tuple list [n]                                 |
+--------------------------------------------------------+
```

**HbH Bandwidth Utilization TLV:** It records the ingress and egress BW Utilization at every intermediate node.

```plaintext
+--------------------------------------------------------+
| STAMP TLV Flags | HbH BW U. Type | Length |
+--------------------------------------------------------+
|               |               |        |
| BW Utilization Tuple list [1]                          |
|   ...                                                  |
| BW Utilization Tuple list [n]                          |
+--------------------------------------------------------+
```

**HbH Interface Errors TLV:** It records the errors detected on the interface of every intermediate node used to receive the test packets.

```plaintext
+--------------------------------------------------------+
| STAMP TLV Flags | HbH I.E. Type | Length |
+--------------------------------------------------------+
|               |               |        |
| Interface Errors list [1]                              |
|   ...                                                  |
| Interface Errors list [n]                              |
+--------------------------------------------------------+
```

- Note that the TLVs can be activated selectively according to the need.
STAMP Extensions for HbH PM

- STAMP is only end to end:
- This draft introduces STAMP with hop by hop capabilities:

Advantages:
- It simplifies the configuration of the node on the path.
- Collector independent: Head node can quickly get the collect data.
Changes from -04

• After the discussion at IETF 117 and on the list, the draft has been revised to cover only the STAMP extensions for Hop-by-Hop active measurements.

• While the STAMP extension to carry IOAM data is now discussed in a separate document: draft-gandhi-ippm-stamp-ioam
Thank You

Comments are welcome!