Options for Session ID and Control Code for STAMP Message Format

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STAMP Control Code Field

For a Query: TX Control Code

0x0: Out-of-band Response Requested.

This is also the default behavior.

0x1: In-band Response Requested.

Indicates that this query has been sent over a bidirectional path and the probe response is required over the same path in the reverse direction. The bidirectional path does not have to be an SR path.

For a Response -> RX Control Code - Used to return Errors

0x1: Error - Invalid Message.

Indicates that the operation failed because the received query message could not be processed.

0xN: Additional Error will be defined in future

Option 1: Variable Length Session ID Part of Existing Sequence Number

```
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
                         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
Session ID / Sequence Number
                                 Sequence Number
Timestamp
                                  Timestamp
Error Estimate
                 Control Code
                            Error Estimate
                                          Control Code
Receive Timestamp
                         MBZ (28 octets)
                           Sender Session ID / Sender Sequence Number
                         Session-Sender Timestamp
                         Session-Sender Error Estimate
                         Ses-Sender TTL
Figure: Sender Message Format in STAMP
                              Figure: Reflector Message Format in STAMP
```

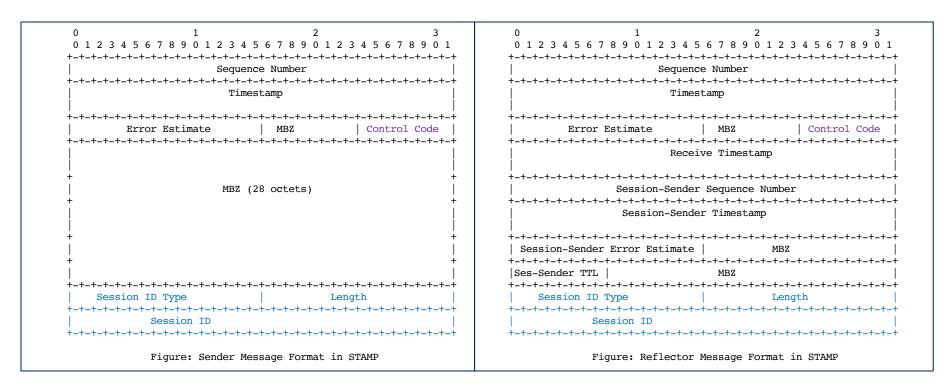
✓ No change for Session ID – local implementation behavior at Sender

Option 2: 24-bit Session ID Field

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 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 Sequence Number Sequence Number Timestamp Timestamp Control Code Error Estimate Control Code Error Estimate Session ID Receive Timestamp MBZ (24 octets) Sequence Number Session-Sender Timestamp Session-Sender Error Estimate Session-Sender Session ID |Ses-Sender TTL | Figure: Sender Message Format in STAMP Figure: Reflector Message Format in STAMP

- ✓ Session ID has 24-bits
- Requires the reflector to copy it elsewhere in the packet to return it back not desired
- o It's also difficult to find a good place in authenticated test packets

Option 3: 32-bit Session ID in TLV



- ✓ Session ID has 32-bits
- Session ID is preferably placed in a fixed position of the test packets TLV not desired

Option 4: 16-bit Session ID Field - 1

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 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 Sequence Number Sequence Number Timestamp Timestamp Error Estimate Session ID Error Estimate Session ID Receive Timestamp MBZ (28 octets) Session-Sender Sequence Number Session-Sender Timestamp Session-Sender Error Estimate Ses-Sender TTL Control Code Type Control Code Type Control Code Control Code Figure: Sender Message Format in STAMP Figure: Reflector Message Format in STAMP

- ✓ Session ID has only 16-bits is this good enough?
- Control code not compatible with existing TWAMP message not favorable
- o Control code is desired to be at fixed location when reflector implemented in hardware

Option 5: 16-bit Session ID Field - 2

```
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
                          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
                         Sequence Number
                                  Sequence Number
Timestamp
                                   Timestamp
Error Estimate
            Session ID
                             Error Estimate
                                      Session ID
TX Control Code
                                   Receive Timestamp
MBZ (24 octets)
                                Session-Sender Sequence Number
                         Session-Sender Timestamp
                         Session-Sender Error Estimate | RX Control Code | MBZ
                         Ses-Sender TTL
Figure: Sender Message Format in STAMP
                              Figure: Reflector Message Format in STAMP
```

- ✓ Session ID has only 16-bits is this good enough?
- ✓ Control code is TX and RX direction specific hence copy of TX to RX not required

Option 6: 16-bit Session ID Field - 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
                           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
                          Sequence Number
                                    Sequence Number
Timestamp
                                    Timestamp
Error Estimate
                                        Session ID
             Session ID
                              Error Estimate
TX Control Code
                                    Receive Timestamp
                          MBZ (24 octets)
                                 Session-Sender Sequence Number
                           Session-Sender Timestamp
                          Session-Sender Error Estimate | MBZ
                                            RX Control Code
                          Ses-Sender TTL
                          Figure: Sender Message Format in STAMP
                               Figure: Reflector Message Format in STAMP
```

- ✓ Session ID has only 16-bits is this good enough?
- ✓ Control code is TX and RX direction specific hence copy of TX to RX not required

Next Steps

- Converge on an option for STAMP message format
- Update the respective drafts with the agreed option

Thank you