



Guidelines for Defining Packet Timestamp Formats

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[draft-mizrahi-intarea-packet-timestamps-00](#)

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Timestamps

Text-based Timestamps

```
<rpc-reply message-id="101"
  xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <data>
    <netconf xmlns="urn:ietf:params:xml:ns:netmod:notification">
      <streams>
        <stream>
          <name>NETCONF</name>
          <description>default NETCONF event stream
          </description>
          <replaySupport>true</replaySupport>
          <replayLogCreationTime>
            2007-07-08T00:00:00Z
          </replayLogCreationTime>
        </stream>
      </streams>
    </netconf>
  </data>
</rpc-reply>
```

...

from [RFC 5277]

Packet Timestamps

```
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
+-----+-----+-----+-----+-----+-----+-----+-----+
|LI | VN |Mode | Stratum | Poll | Precision |
+-----+-----+-----+-----+-----+-----+-----+
| Root Delay |
+-----+-----+-----+-----+-----+-----+-----+
| Root Dispersion |
+-----+-----+-----+-----+-----+-----+-----+
| Reference ID |
+-----+-----+-----+-----+-----+-----+-----+
+ Reference Timestamp (64) +
+-----+-----+-----+-----+-----+-----+-----+
+ Origin Timestamp (64) +
+-----+-----+-----+-----+-----+-----+-----+
+ Receive Timestamp (64) +
+-----+-----+-----+-----+-----+-----+-----+
+ Transmit Timestamp (64) +
+-----+-----+-----+-----+-----+-----+-----+
| |
: |
: |
: |
```

from [RFC 5905]

Timestamps

Text-based Timestamps

Format defined in [RFC 3339]

Widely used, e.g.:

[RFC 5277] – NETCONF Notifications

[RFC 6991] – YANG Data Types

[RFC 7493] – I-JSON

[RFC 5646] – Language Tags

[RFC 7937] – CDNI Logging

Packet Timestamps

Format defined in ?

Widely used, e.g.:

[RFC 5905] – NTP

[RFC 4656] – OWAMP

[RFC 5357] – TWAMP

[RFC 1323] – TCP

[RFC 6374] – MPLS

Packet Timestamps – The Problem

- No common timestamp format(s).
- No common format for defining a new timestamp.

[RFC 5905] – NTP
[RFC 4656] – OWAMP
[RFC 5357] – TWAMP
[RFC 1323] – TCP
[RFC 6374] – MPLS
[RFC 7456] – TRILL
[RFC 3550] – RTP

...

draft-brockners-inband-oam-data
draft-morton-ippm-mbm-registry
draft-lijo-6lo-expiration-time
draft-foschiano-erspan
draft-ooamdt-rtgwg-ooam-header
draft-mymb-sfc-nsh-allocation-timestamp
draft-browne-sfc-nsh-kpi-stamp

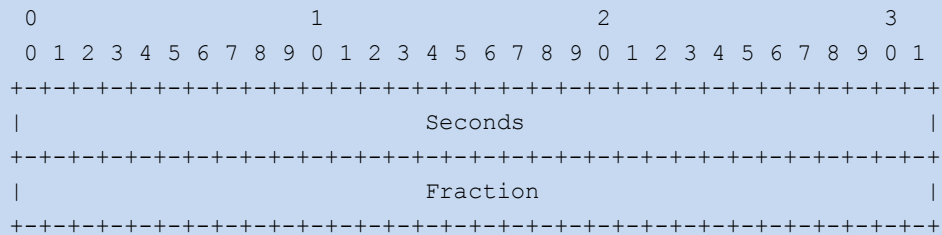
...

Goals of this Draft

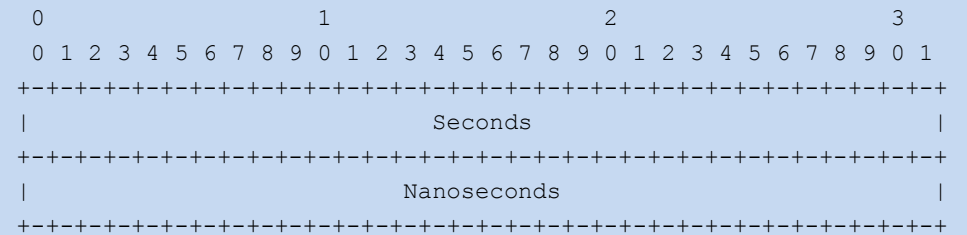
- **Recommended** timestamp formats.
- **Guidelines** for defining new timestamp formats.

Recommended Timestamp Formats

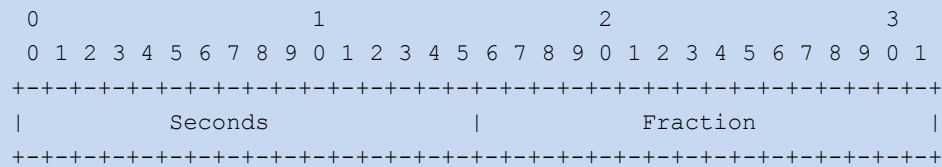
NTP 64-bit Timestamp



PTP [IEEE 1588] 64-bit Concatenated Timestamp



NTP 32-bit Timestamp

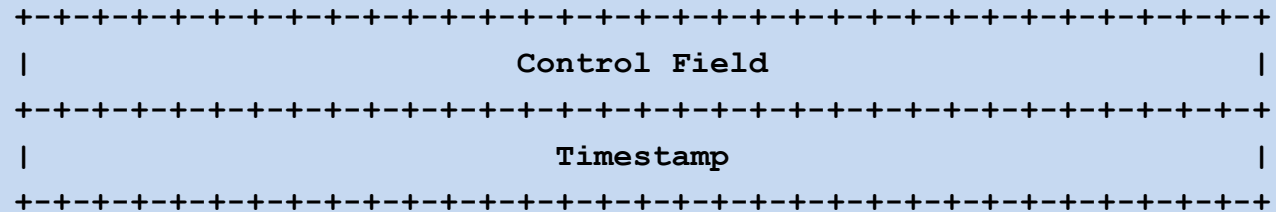


Template for Defining a Timestamp Format

- Timestamp field format
 - Number of bits.
 - Units.
- Epoch
- Wraparound considerations
- Synchronization considerations

Optional Control Field for Timestamps

Control field includes control information about the timestamp



Control field – sub-fields (work in progress):

- Timestamp format
- Precision
- Epoch
- Era

Draft Status and Next Steps

- June 2017 – draft 00 submitted.
- Next steps:
 - Looking for the right working group.
 - Collect requirements for control field.
 - Feedback will be appreciated.

Thanks!

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References

- [1] Mizrahi, T., Fabini, J. and A. Morton, “Guidelines for Defining Packet Timestamps”, [draft-mizrahi-intarea-packet-timestamps-00](#), work in progress, 2017.
- [2] Mirsky, G., Kumar, N., Kumar, D., Chen, M., Li, Y. and D. Dolson, “OAM Header for use in Overlay Networks”, [draft-ooamdt-rtgwg-ooam-header](#), work in progress, 2017.
- [3] Brockners, F., Bhandari, S., Pignataro, C., Gredler, H., Leddy, J., Youell, S., Mizrahi, T., Mozes, D., Lapukhov, P., Chang, R. and D. Bernier "Data Fields for In-situ OAM", [draft-brockners-inband-oam-data](#), work in progress, 2017.
- [4] Foschiano, M., Ghosh, K. and M. Mehta, “Cisco Systems' Encapsulated Remote Switch Port Analyzer (ERSPAN)”, [draft-foschiano-erspan-03](#), work in progress, 2017.
- [5] Thomas, L., Akshay, P., Anamalamudi, S., Anand, S., Hegde, M., Perkins, C., “Packet expiration time in 6LoWPAN Routing Header”, [draft-lijo-6lo-expiration-time-02](#), work in progress, 2017.
- [6] Mizrahi, T., Yerushalmi, I., Melman, D. and R. Browne, “Network Service Header (NSH) Context Header Allocation: Timestamp”, [draft-myumb-sfc-nsh-allocation-timestamp-01](#), work in progress, 2017.
- [7] Browne, R., Chilikin, A. and T. Mizrahi, “Network Service Header KPI Stamping”, [draft-browne-sfc-nsh-kpi-stamp-01](#), work in progress, 2017.
- [8] Morton, A. and M. Mathis, "Initial Performance Metric Registry Entries Part 2: MBM", [draft-morton-ippm-mbm-registry-01](#) (work in progress), 2017.