

Simple Two-way Active Measurement Protocol (STAMP): base protocol and data model draft-ietf-ippm-stamp draft-ietf-ippm-stamp-yang

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Update from -00

- Welcome Richard Foote “Footer”
- Added Introduction section
- Minor update of terms:
 - s/Sender/Session/Sender/
 - s/Reflector/Session-Reflector/
- Reference model updated to be less YANG-centric:

The configuration and management of the STAMP Session-Sender, Session-Reflector and management of the STAMP sessions can be achieved through various means. Command Line Interface, OSS/BSS using SNMP or SDN using Netconf/YANG are but a few examples.
- Clarified use of Z field in Error Estimate field:

The STAMP Session-Sender and Session-Reflector MAY use, not use, or set value of the Z field in accordance with the timestamp format in use. This optional field is to enhance operations but local configuration or defaults could be used in its place.
- Spawned STAMP Extensions document
- Added section Interoperability with TWAMP Light (TWL)

STAMP interoperability with TWAMP Light

Scenarios considered:

- **STAMP Session-Sender with TWLSession-Reflector:**
 - because TWL Session-Reflector MAY not support use of UDP port 862, STAMP Session-Sender MUST be able to send test packets to UDP destination port from the Dynamic Ports range 49152-65535;
 - if any of TLV-based STAMP extensions are used, the TWL Session- Reflector will view them as Packet Padding field;
 - the Session-Sender SHOULD use the default format for its timestamps - NTP. And it MAY use PTPv2 timestamp format.
- **TWL Session-Sender with STAMP Session-Reflector:**
 - STAMP Session-Reflector SHOULD use UDP port number from the Dynamic Ports range;
 - Packet Padding above 27 octets will be processed by the STAMP Session-Reflector according to RFC 6038 and symmetrical size reflected packet transmitted to the TWL Session-Sender;
 - the Session-Reflector MUST use the default format for its timestamps - NTP.

Open issues

- STAMP security:
 - Authenticated mode
 - Encrypted mode

STAMP YANG data model update from -00

- Terminology update to sync with STAMP base specification
- “stamp-security” replaced “stamp-authentication”
- New type timestamp-format defined
- sender-ip and sender-udp-port for container stamp-session-reflector update
- Security Consideration section updated according to [yang-security-guidelines](#)
- STAMP session configuration examples

typedef time-format

```
typedef timestamp-format {
    type enumeration {
        enum ntp-format {
            description
            "NTP 64 bit format of a timestamp";
        }
        enum ptp-format {
            description
            "PTPv2 truncated format of a timestamp";
        }
    }
    description
    "Timestamp format used by Session-Sender
    or Session-Reflector.";
}
...
leaf sender-timestamp-format {
    type timestamp-format;
    default ntp-format;
    description "Sender Timestamp format";
}
...
leaf reflector-timestamp-format {
    type timestamp-format;
    default ntp-format;
    description "Reflector Timestamp format";
}
```

sender-ip and sender-udp-port

```
leaf sender-ip {
  type union {
    type inet:ip-address;
    type enumeration {
      enum any {
        description
        "Indicates that the Session-Reflector accepts
        STAMP test packets from any Session-Sender";
      }
    }
  }
  default any;
  description
  "This value determines whether specific IPv4/IPv6 address of the
  Session-Sender or the wildcard, i.e. any address";
}

leaf sender-udp-port {
  type union {
    type inet:port-number {
      range "49152..65535";
    }
    type enumeration {
      enum any {
        description
        "Indicates that the Session-Reflector accepts STAMP
        test packets from any Session-Sender";
      }
    }
  }
  default any;
  description
  "This value determines whether specific port number
  of the Session-Sender or the wildcard, i.e. any";
}
```

STAMP Session-Sender configuration example

```
<?xml version="1.0" encoding="utf-8"?>
<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <stamp xmlns="urn:ietf:params:xml:ns:yang:ietf-stamp">
    <stamp-session-sender>
      <session-enable>enable</session-enable>
      <session-id>10</session-id>
      <test-session-enable>enable</test-session-enable>
      <number-of-packets>forever</number-of-packets>
      <packet-padding-size/> <!-- use default 27 octets -->
      <interval>10</interval> <!-- 10 microseconds -->
      <measurement-interval/> <!-- use default 60 seconds -->
      <!-- use default 0 repetitions, i.e. do not repeat this session -->
      <repeat/>
      <dscp-value/> <!-- use default 0 (CS0) -->
      <!-- use default 'stateless' -->
      <test-session-reflector-mode/>
      <sender-ip></sender-ip>
      <sender-udp-port></sender-udp-port>
      <reflector-ip></reflector-ip>
      <reflector-udp-port/> <!-- use default 862 -->
      <sender-timestamp-format/>
      <!-- No authentication or encryption -->
      <first-percentile/> <!-- use default 95 -->
      <second-percentile/> <!-- use default 99 -->
      <third-percentile/> <!-- use default 99.9 -->
    </stamp-session-sender>
  </stamp>
</data>...
```


STAMP Session-Reflector configuration example

```
<?xml version="1.0" encoding="utf-8"?>
<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <stamp xmlns="urn:ietf:params:xml:ns:yang:ietf-stamp">
    <stamp-session-reflector>
      <session-enable>enable</session-enable>
      <ref-wait/> <!-- use default 900 seconds -->
      <!-- use default 'stateless' -->
      <reflector-mode-state/>
      <session-id></session-id>
      <!-- use default 'copy-received-value' -->
      <dscp-handling-mode/>
      <!-- not used because of dscp-handling-mode being 'copy-received-value' -->
      <dscp-value/>
      <sender-ip/> <!-- use default 'any' -->
      <sender-udp-port/> <!-- use default 'any' -->
      <reflector-ip/> <!-- use default 'any' -->
      <reflector-udp-port/> <!-- use default 862 -->
      <reflector-timestamp-format/>
      <!-- No authentication or encryption -->
    </stamp-session-reflector>
  </stamp>
</data>...
```

Next steps

- Comments are welcome
- Yearly YANG Doctors review