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IPPM metrics registry
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Status of this Memo

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Abstract

This memo defines a registry for IP Performance Metrics (IPPM). It assigns and registers an initial set of OBJECT IDENTITIES to currently defined metrics in the IETF.

This memo also defines the rules for adding new IP Performance Metrics in the future, both those standardized inside and outside the IETF.

IANA has been assigned to administer this new registry.

Table of Contents

1. The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410]. Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

2. Terms

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14, RFC 2119 [RFC2119].

3. The IPPM Framework

The IPPM Framework consists in four major components:

- A general framework for defining performance metrics described in the Framework for IP Performance Metrics RFC2330 [RFC2330];
- A set of standardized metrics, which conform to this framework.
- Emerging metrics which are being specified in respect of this framework;
- The IPPM-REPORTING-MIB for reporting the results of the measures and for interfacing heterogeneous measurement systems with management entities.

4. Overview

This memo defines a registry of the current metrics and a framework for the integration of future metrics for the following reasons:

- to permit metrics to be clearly referenced by MIB modules or other data models;
- Metrics identifiers are needed to allow measurement interoperability; As specification of new metrics is a continuous process, special care must be taken for the integration of future

standardized metrics;

- As the intent of the IPPM WG is to cooperate with other appropriate standards bodies and other areas of IETF to promote consistent metrics, there is a need to permit registration of such metrics.

5. IPPM metrics Registry framework

MIB modules need to be able to precisely reference IPPM Metrics. The registry associates an OBJECT-IDENTITY with each metric. As an example Type-P-One-way-Delay and Type-P-One-way-Delay-Poisson-Stream have different OBJECT IDENTITIES.

The registry has 3 main branches. The origin of the document determines the node which branch the metric is identified in:

- Metrics defined by IETF are identified in the 'ietf' tree;
- Metrics defined in cooperation with other organizations may be identified in the 'otherOrganizations' tree.
- Vendors may register private metrics in the 'enterprises' tree.

This document defines an initial registry of the existing metrics and the rules to manage the registry.

Documents defining metrics in the future will include in the IANA section the registration information to unambiguously identify these metrics.

6. Initial IPPM metrics registry creation

The initial registry identifies the metrics currently defined in the RFCs produced in the IPPM WG. By now, the IPPM WG defined 33 metrics related to 7 topics:

- IPPM Metrics for Measuring Connectivity, RFC 2678 [RFC2678];
- One-way Delay Metrics, RFC 2679 [RFC2679];
- One-way Packet Loss Metrics, RFC 2680 [RFC2680];
- Round-trip Delay Metrics, RFC 2681 [RFC2681];
- One-way Loss Pattern Sample Metrics, RFC 3357 [RFC3357];

- IP Packet Delay Variation Metric, RFC 3393 [RFC3393];
- IPPM Metrics for periodic streams, RFC 3432 [RFC3432];

7. IANA considerations

This section describes the rules for the management of the registry by IANA.

7.1 Management rules

7.1.1 Naming Conventions

The name of the metric in the registry must respect the SMIv2 rules for descriptors ([RFC2578], section 3.1) and should be easily readable. Consequently the following is applied to adapt the name used in the metric definition:

- The name always starts with the prefix of the organization.

- 'Type-P' prefix is removed.
- '-' are removed;
- The letter following a '-' is changed to upper case;
- A node assigned to a metric is definitive and cannot be reused.
- If a new version of a metric is produced then it is assigned with a new name and a new identifier.

7.1.2 Metrics defined by IETF

Such metrics are registered in the node ietf(1) after approval of the document by the IESG.

The name always starts with the prefix 'ietf'. They are registered in the node ietf(1). They are numbered using the metrics definitions order in each memo.

7.1.3 Metrics defined in cooperation with other bodies

After approval of the document by the IESG, IANA will assign the organization with a subtree under the branch otherOrganizations(2).

The organization registers metrics under the branch

otherOrganizations(2), in the corresponding subtree. The name of the metric always starts with the prefix of the organization. The prefix is the name of the subtree assigned to the organization.

Nothing prevents these bodies from registering metrics in their own OBJECT INDENTIFIER trees.

7.1.4 Private Metrics registration

IANA already assigns enterprises with unambiguous identifiers named enterprise numbers or vendorID. See http://www.iana.org/numbers.html.

After approval of the document by the IESG, an enterprise may register private metrics under the branch enterprises(3), in the

subtree corresponding to its enterprise number. The name of the metric always starts with the prefix of the company.

The enterprise is responsible for the assignment of the number if its subtree.

Example: The enterprise Acme,which enterprise number is 100000, will register its metrics in the subtree ippmMetricsRegistry(x).enterprises(3).100000.

7.2 Registration templates

A document that creates new Metrics would have an IANA considerations section in which it would describe new metrics to register.

7.2.1 IETF RFCs

For each metric, that section would have a statement aka:

IANA has registed the following Metric in the IANA-IPPM-METRICS-MIB:

```
ietfSomeNewMetricName OBJECT-IDENTITY
   STATUS       current
   DESCRIPTION "The identifier for the Type-P-Some-New_Metric-Name
                                  metric."
   REFERENCE   "RFCxxxx, section n."  -- RFC-Editor fills in xxxx
   ::=         { ietf nn }            -- IANA assigns nn
```


7.2.2 Other Organizations

For each metric, that section would have a statement aka:

IANA has registed the following Metric in the IANA-IPPM-METRICS-MIB:

```
orgSomeNewMetricName OBJECT-IDENTITY
```

```
        STATUS       current
        DESCRIPTION "The identifier for the Some-New_Metric-Name
                                    metric."
        REFERENCE   "URL, section n."    -- link to the org document.
        ::=         { org nn }           -- org assigns nn
```

7.2.3 Enterprises

For each metric, that section would have a statement aka:

Vendor has registed the following Metric:

```
     vendorSomeNewMetricName OBJECT-IDENTITY
        STATUS       current
        DESCRIPTION "The identifier for the Some-New_Metric-Name
                                    metric."
        REFERENCE   "URL, section n."    -- link to the vendor document.
        ::=         { vendorID nn }      -- vendor assigns nn
```

8. Initial IPPM registry definition

```
IANA-IPPM-METRICS-REGISTRY DEFINITIONS ::= BEGIN

IMPORTS
    OBJECT-IDENTITY, MODULE-IDENTITY, mib-2
        FROM SNMPv2-SMI;

ippmMetricsRegistry MODULE-IDENTITY
REVISION      "200405190000Z"    -- May 19th, 2004
ORGANIZATION       "IETF IPPM working Group"
CONTACT-INFO       "
                     Emile STEPHAN
                     France Telecom R&D
        Tel: +1 33 2 96 05 36 10
     E-mail: emile.stephan@francetelecom.com
     Postal: 2, avenue Pierre Marzin
                     Lannion, FRANCE 22307

     Send comments to ippm@ietf.org
     Mailing list subscription info:
     https://www1.ietf.org/mailman/listinfo/ippm "
DESCRIPTION
     "This memo defines a registry of the IPPM working group
     metrics.
     Copyright (C) The Internet Society (2004). This version of
     this MIB module is part of RFC yyyy; see the RFC itself for
     full legal notices."
REVISION      "200405190000Z"    -- May 19th, 2004
DESCRIPTION
     "Initial version of the IPPM metrics registry module.
      This version published as RFC yyyy."
::= { mib-2 XXX }  -- XXX to be assigned by IANA

ietf               OBJECT IDENTIFIER   ::= { ippmMetricsRegistry 1 }
otherOrganizations OBJECT IDENTIFIER   ::= { ippmMetricsRegistry 2 }
enterprises        OBJECT IDENTIFIER   ::= { ippmMetricsRegistry 3 }

  --
  -- Registry of the metrics of the IPPM WG RFCs
  --




  --
  -- RFC 2678 " IPPM Metrics for Measuring Connectivity"
  --

ietfInstantUnidirConnectivity OBJECT-IDENTITY
```

```
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-Instantaneous-Unidirectional-
            Connectivity metric."
        REFERENCE "RFC2678, section 2."
        ::={rfc 1}

    ietfInstantBidirConnectivity OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-Instantaneous-Bidirectional-
            Connectivity metric."
        REFERENCE "RFC2678, section 3."
        ::={rfc 2}

    ietfIntervalUnidirConnectivity OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-Interval-Unidirectional-
            Connectivity metric."
        REFERENCE "RFC2678, section 4."
        ::= { rfc 3 }

    ietfIntervalBidirConnectivity OBJECT-IDENTITY
        STATUS current
        DESCRIPTION
            "The identifier for the Type-P-Interval-Bidirectional-
            Connectivity metric."
        REFERENCE "RFC2678, section 5."
        ::= { rfc  4 }

    ietfIntervalTemporalConnectivity OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P1-P2-Interval-Temporal-
            Connectivity metric."
        REFERENCE "RFC2678, section 6."
        ::= { rfc  5 }



    --
```

```
   -- RFC 2679 "A One-way Delay Metric for IPPM"
   --

   ietfOneWayDelay OBJECT-IDENTITY
       STATUS     current
```



```
       DESCRIPTION
           "The identifier for the Type-P-One-way-Delay metric."
       REFERENCE "RFC2679, section 3."
       ::= { rfc  6 }

   ietfOneWayDelayPoissonStream OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-way-Delay-Poisson-Stream
           metric."
       REFERENCE "RFC2679, section 4."
       ::= { rfc  7 }

   ietfOneWayDelayPercentile OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-way-Delay-Percentile
           metric."
       REFERENCE "RFC2679, section 5.1."
       ::= { rfc  8 }

   ietfOneWayDelayMedian OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-way-Delay-Median metric."
       REFERENCE "RFC2679, section 5.2."
       ::= { rfc  9 }

   ietfOneWayDelayMinimum OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-way-Delay-Minimum metric."
       REFERENCE "RFC2679, section 5.3."
       ::= { rfc 10 }

   ietfOneWayDelayInversePercentile OBJECT-IDENTITY
```

```
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-way-Delay-Inverse-
            Percentile metric. "
        REFERENCE "RFC2679, section 5.4."
        ::= { rfc 11 }
```



```
    --
    -- RFC 2680  "One Way Packet Loss Metric for IPPM"
    --

    ietfOneWayPktLoss OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-way-Packet-Loss metric."
        REFERENCE "RFC2680, section 2."
        ::= { rfc 12 }

    ietfOneWayPktLossPoissonStream OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-way-Packet-Loss-Poisson-
            Stream metric."
        REFERENCE "RFC2680, section 3."
        ::= { rfc 13 }

    ietfOneWayPktLossAverage OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-way-Packet-Loss-Average
            metric."
        REFERENCE "RFC2680, section 4."
        ::= { rfc 14 }
```

```
   -- TODO remnae as V5 in v5 dir
   -- RFC2681 "A Round-trip Delay Metric for IPPM"
   --

   ietfRoundTripDelay OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-Round-trip-Delay metric."
       REFERENCE " section 2 of the rfc2681."
       ::= { rfc 15 }

   ietfRoundTripDelayPoissonStream OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-Round-trip-Delay-Poisson
           -Stream metric."
       REFERENCE "RFC2681, section 4."
       ::= { rfc 16 }
```



```
   ietfRoundTripDelayPercentile OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-Round-trip-Delay-Percentile
           metric."
       REFERENCE "RFC2681, section 4.1."
       ::= { rfc 17 }

   ietfRoundTripDelayMedian OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
                "The identifier for the Type-P-Round-trip-Delay-Median
                 metric."
        REFERENCE "RFC2681, section 4.2."
        ::= { rfc 18 }

   ietfRoundTripDelayMinimum OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-Round-trip-Delay-Minimum
           metric."
       REFERENCE "RFC2681, section 4.3."
```

```
        ::= { rfc 19 }

    ietfRoundTripDelayInversePercentile OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-Round-trip-Inverse-Percentile
            metric."
        REFERENCE "RFC2681, section 4.4."
        ::= { rfc 20 }




    --
    -- RFC3357: "One-way Loss Pattern Sample Metrics"
    --

    ietfOneWayLossDistanceStream OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-Way-Loss-Distance-Stream
            metric."
        REFERENCE " RFC3357, section 5.4.1."
        ::={ rfc 21}

    ietfOneWayLossPeriodStream OBJECT-IDENTITY
```



```
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-Way-Loss-Period-Stream
            metric."
        REFERENCE " RFC3357, section 5.4.2."
        ::={ rfc 22}

    ietfOneWayLossNoticeableRate OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-Way-Loss-Noticeable-Rate
            metric."
        REFERENCE " RFC3357, section 6.1."
        ::= { rfc 23 }
```

```
   ietfOneWayLossPeriodTotal OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-Way-Loss-Period-Total
           metric."
       REFERENCE " RFC3357, section 6.2."
       ::= { rfc 24 }

   ietfOneWayLossPeriodLengths OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-Way-Loss-Period-Lengths
           metric."
       REFERENCE " RFC3357, section 6.3."
       ::= { rfc  25 }

   ietfOneWayInterLossPeriodLengths OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-Way-Inter-Loss-Period-
           Lengths metric."
       REFERENCE " RFC3357, section 6.4."
       ::= { rfc 26 }




   --
   -- RFC3393:
   -- IP Packet Delay Variation Metric for IP Performance Metrics (IPPM)

   ietfOneWayIpdv OBJECT-IDENTITY
       STATUS     current
```



```
       DESCRIPTION
           "The identifier for the Type-P-One-way-ipdv metric."
       REFERENCE " RFC3393, section 2."
       ::= { rfc 27 }

   ietfOneWayIpdvPoissonStream OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
```

```
            "The identifier for the Type-P-One-way-ipdv-Poisson-stream
            metric."
        REFERENCE " RFC3393, section 3."
        ::= { rfc 28 }

    ietfOneWayIpdvPercentile OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
          "The identifier for the Type-P-One-way-ipdv-percentile metric."
        REFERENCE " RFC3393, section 4.3."
        ::= { rfc 29 }

    ietfOneWayIpdvInversePercentile OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-way-ipdv-inverse
            -percentile metric."
        REFERENCE " RFC3393, section 4.4."
        ::= { rfc 30 }

    ietfOneWayIpdvJitter OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-way-ipdv-jitter metric."
        REFERENCE " RFC3393, section 4.5."
        ::= { rfc 31 }

    ietfOneWayPeakToPeakIpdv OBJECT-IDENTITY
        STATUS     current
        DESCRIPTION
            "The identifier for the Type-P-One-way-peak-to-peak-ipdv
            metric."
        REFERENCE " RFC3393, section 4.6."
        ::= { rfc 32 }
```



```
    --
```

```
   -- RFC3432: "Network performance measurement with periodic streams"
   --

   ietfOneWayDelayPeriodicStream OBJECT-IDENTITY
       STATUS     current
       DESCRIPTION
           "The identifier for the Type-P-One-way-Delay-Periodic-Stream
           metric."
       REFERENCE " RFC3432, section 4."
       ::= { rfc 33 }

   END
```

9. Security Considerations

This module does not define any management objects. Instead, it assigns a set of OBJECT-IDENTITIES which may be used by other MIB modules to identify specific IP Performance Metrics.

Meaningful security considerations can only be written in the MIB modules that define management objects. This document has therefore no impact on the security of the Internet.

10. References

10.1 Normative References

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