IP Performance Metrics (IPPM) Metrics Registry

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 IP Performance Metrics that are defined in the future and for encouraging all IP performance metrics to be registered here.

IANA has been assigned to administer this new registry.

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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. 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;
- to provide metrics identifiers for measurement interoperability;
- to take special care with the integration of future standardized metrics because it is a continuous process;
- to provide room where other standards bodies can register their metrics in order to encourage IP performance metrics to have OBJECT IDENTITIES rooted at a common point because the intent of the IPPM WG is to cooperate with other appropriate standards bodies (or fora) to promote consistent metrics;
- and, similarly, to provide room for enterprises to register metrics.

3. IP Performance Metrics Registry Framework

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

The registry has one branch. Metrics are identified in the ‘ianaIppmMetrics’ subtree.
This document defines an initial registry of the existing metrics defined in the IPPM WG and the rules to manage the registry.

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

4. Initial IPPM Metrics Registry Creation

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

1. IPPM Metrics for Measuring Connectivity, RFC 2678 [RFC2678]
2. One-way Delay Metrics, RFC 2679 [RFC2679]
3. One-way Packet Loss Metrics, RFC 2680 [RFC2680]
4. Round-trip Delay Metrics, RFC 2681 [RFC2681]
5. One-way Loss Pattern Sample Metrics, RFC 3357 [RFC3357]
6. IP Packet Delay Variation Metric, RFC 3393 [RFC3393]
7. IPPM Metrics for periodic streams, RFC 3432 [RFC3432]

These are sequentially registered in the node ianaIppmMetrics.

The naming conventions used for the existing metrics, and encouraged for new IPPM metrics, are:

- Metrics names conform SMIv2 rules for descriptors defined in section 3.1 of [RFC2578];
- The name starts with the prefix ‘ietf’;
- ’Type-P’ prefix is removed;
- ‘-’ are removed;
- The letter following a ‘-’ is changed to uppercase.
This section describes the rules for the management of the registry by IANA.

5.1. Management Rules

Registrations are done sequentially by IANA in the ianaIppmMetrics subtree on the basis of 'Specification Required', as defined in [RFC2434].

The reference of the specification must point to a stable document including a title, a revision, and a date.

The name always starts with the name of the organization and must respect the SMIv2 rules for descriptors defined in section 3.1 of [RFC2578].

A document that creates new metrics would have an "IANA Considerations" section in which it would describe new metrics to be registered.

An OBJECT IDENTITY 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.

5.2. Registration Template

The following is a proposed template to insert in the IANA considerations section. For each metric, that section would instantiate the following statement:

IANA has registred the following metric in the IANA-IPPM-METRICS-REGISTRY-MIB:

aNewMetricName OBJECT-IDENTITY
STATUS current
DESCRIPTION "The identifier for a new metric."
REFERENCE "Reference R, section n."
::= { ianaIppmMetrics nn } -- IANA assigns nn

6. Initial IPPM Registry Definition

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

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

ianaIppmMetricsRegistry MODULE-IDENTITY
LAST-UPDATED "200507280000Z"    -- July 28, 2005
ORGANIZATION "IANA"
CONTACT-INFO "Internet Assigned Numbers Authority
Postal: ICANN
4676 Admiralty Way, Suite 330
Marina del Rey, CA 90292
Tel:    +1 310 823 9358
E-Mail: iana@iana.org"

DESCRIPTION
"This module defines a registry for IP Performance Metrics.

Registrations are done sequentially by IANA in the ianaIppmMetrics subtree on the basis of ‘Specification Required’, as defined in [RFC2434].

The reference of the specification must point to a stable document including a title, a revision, and a date.

The name always starts with the name of the organization and must respect the SMIv2 rules for descriptors defined in section 3.1 of [RFC2578].

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

An OBJECT IDENTITY 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.

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REVISION      "2005072800000Z"    -- July 28, 2005
DESCRIPTION
"Initial version of the IPPM metrics registry module. This version published as RFC 4148."
::= { mib-2 128 }
ianaIppmMetrics OBJECT-IDENTITY
   STATUS    current
   DESCRIPTION
      "Registration point for IP Performance Metrics."
   ::= { ianaIppmMetricsRegistry 1 }

--
-- Registry of the metrics of the IPPM WG RFCs
--
--
-- RFC 2678 "IPPM Metrics for Measuring Connectivity"
--

ietfInstantUnidirConnectivity OBJECT-IDENTITY
   STATUS    current
   DESCRIPTION
      "Type-P-Instantaneous-Unidirectional-Connectivity"
   REFERENCE "RFC2678, section 2."
   ::= { ianaIppmMetrics 1 }

ietfInstantBidirConnectivity OBJECT-IDENTITY
   STATUS    current
   DESCRIPTION
      "Type-P-Instantaneous-Bidirectional-Connectivity"
   REFERENCE "RFC2678, section 3."
   ::= { ianaIppmMetrics 2 }

ietfIntervalUnidirConnectivity OBJECT-IDENTITY
   STATUS    current
   DESCRIPTION
      "Type-P-Interval-Unidirectional-Connectivity"
   REFERENCE "RFC2678, section 4."
   ::= { ianaIppmMetrics 3 }

ietfIntervalBidirConnectivity OBJECT-IDENTITY
   STATUS    current
   DESCRIPTION
      "Type-P-Interval-Bidirectional-Connectivity"
   REFERENCE "RFC2678, section 5."
   ::= { ianaIppmMetrics 4 }

ietfIntervalTemporalConnectivity OBJECT-IDENTITY
   STATUS    current
   DESCRIPTION
      "Type-P1-P2-Interval-Temporal-Connectivity"
   REFERENCE "RFC2678, section 6."
   ::= { ianaIppmMetrics 5 }
ietfOneWayDelay OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Delay"
REFERENCE "RFC2679, section 3."
::= { ianaIppmMetrics 6 }

ietfOneWayDelayPoissonStream OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Delay-Poisson-Stream"
REFERENCE "RFC2679, section 4."
::= { ianaIppmMetrics 7 }

ietfOneWayDelayPercentile OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Delay-Percentile"
REFERENCE "RFC2679, section 5.1."
::= { ianaIppmMetrics 8 }

ietfOneWayDelayMedian OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Delay-Median"
REFERENCE "RFC2679, section 5.2."
::= { ianaIppmMetrics 9 }

ietfOneWayDelayMinimum OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Delay-Minimum"
REFERENCE "RFC2679, section 5.3."
::= { ianaIppmMetrics 10 }

ietfOneWayDelayInversePercentile OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Delay-Inverse-Percentile"
REFERENCE "RFC2679, section 5.4."
::= { ianaIppmMetrics 11 }
ietfOneWayPktLoss OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Packet-Loss"
REFERENCE "RFC2680, section 2."
 ::= { ianaIppmMetrics 12 }

ietfOneWayPktLossPoissonStream OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Packet-Loss-Poisson-Stream"
REFERENCE "RFC2680, section 3."
 ::= { ianaIppmMetrics 13 }

ietfOneWayPktLossAverage OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-One-way-Packet-Loss-Average"
REFERENCE "RFC2680, section 4."
 ::= { ianaIppmMetrics 14 }

ietfRoundTripDelay OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-Round-trip-Delay"
REFERENCE "section 2 of the RFC2681."
 ::= { ianaIppmMetrics 15 }

ietfRoundTripDelayPoissonStream OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-Round-trip-Delay-Poisson-Stream"
REFERENCE "RFC2681, section 4."
 ::= { ianaIppmMetrics 16 }

ietfRoundTripDelayPercentile OBJECT-IDENTITY
STATUS current
DESCRIPTION
"Type-P-Round-trip-Delay-Percentile"
REFERENCE "RFC2681, section 4.1."
::= { ianaIppmMetrics 17 }

ietfRoundTripDelayMedian OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-Round-trip-Delay-Median"
  REFERENCE "RFC2681, section 4.2."
  ::= { ianaIppmMetrics 18 }

ietfRoundTripDelayMinimum OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-Round-trip-Delay-Minimum"
  REFERENCE "RFC2681, section 4.3."
  ::= { ianaIppmMetrics 19 }

ietfRoundTripDelayInvPercentile OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-Round-trip-Inverse-Percentile"
  REFERENCE "RFC2681, section 4.4."
  ::= { ianaIppmMetrics 20 }

--
-- RFC 3357: "One-way Loss Pattern Sample Metrics"
--

ietfOneWayLossDistanceStream OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-Way-Loss-Distance-Stream"
  REFERENCE "RFC3357, section 5.4.1."
  ::= { ianaIppmMetrics 21}

ietfOneWayLossPeriodStream OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-Way-Loss-Period-Stream"
  REFERENCE "RFC3357, section 5.4.2."
  ::= { ianaIppmMetrics 22}

ietfOneWayLossNoticeableRate OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-Way-Loss-Noticeable-Rate"
  REFERENCE "RFC3357, section 6.1."
  ::= { ianaIppmMetrics 23 }
ietfOneWayLossPeriodTotal OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-Way-Loss-Period-Total"
  REFERENCE "RFC3357, section 6.2."
  ::= { ianaIppmMetrics 24 }

ietfOneWayLossPeriodLengths OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-Way-Loss-Period-Lengths"
  REFERENCE "RFC3357, section 6.3."
  ::= { ianaIppmMetrics 25 }

ietfOneWayInterLossPeriodLengths OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-Way-Inter-Loss-Period-Lengths"
  REFERENCE "RFC3357, section 6.4."
  ::= { ianaIppmMetrics 26 }

--
-- RFC 3393: "IP Packet Delay Variation Metric
-- for IP Performance Metrics (IPPM)"

ietfOneWayIpdv OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-way-ipdv"
  REFERENCE "RFC3393, section 2."
  ::= { ianaIppmMetrics 27 }

ietfOneWayIpdvPoissonStream OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-way-ipdv-Poisson-stream"
  REFERENCE "RFC3393, section 3."
  ::= { ianaIppmMetrics 28 }

ietfOneWayIpdvPercentile OBJECT-IDENTITY
  STATUS current
  DESCRIPTION "Type-P-One-way-ipdv-percentile"
  REFERENCE "RFC3393, section 4.3."
  ::= { ianaIppmMetrics 29 }

ietfOneWayIpdvInversePercentile OBJECT-IDENTITY
  STATUS current
7. 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.
8. References

8.1. Normative References


8.2. Informative References


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Stephan                  Best Current Practice                 [Page 14]