Exporting MIB Variables using the IPFIX Protocol

draft-johnson-ipfix-mib-variable-export-04

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Overview

- This document specifies a way to complement IPFIX Flow Records with Management Base (MIB) objects, avoiding the need to define new IPFIX Information Elements for existing Management Information Base objects that are already fully specified.

Recent updates

- New section + example for indexed MIBs.

- IANA Considerations:

    - new Set IDs

    - new Data Types

    - new Information Elements.

- Closed a few open issues

    - Still several more to be addressed.

Indexed MIBs

- **Issue:** some Exporters may not have the knowledge to convey the full information on how the MIB objects being exported are indexed.

- Eg, they may not know the index count and/or the OID's of the objects that are used to index a MIB object.

- **Solution:** the Exporter can send the the values of the index OID's identifying the instance of the object being exported as one string that conveys the instance identifier part of an object being exported.

- The Collecting Process may know how a MIB object is indexed by some other means.

Indexed MIBs - example

- The MIB object **ipIfStatsOutOctets** ("1.3.6.1.2.1.4.31.3.1.32"), is indexed by **ipIfStatsIPVersion** and **ipIfStatsIfIndex** as detailed in IP-MIB [RFC4293].

```
+--------------------+--------------------+--------------------+
| ipIfStatsIPVersion | ipIfStatsIfIndex   | ipIfStatsOutOctets |
+--------------------+--------------------+--------------------+
|        1(IPv4)     |        10          |        235876      |
|        2(IPv6)     |        11          |         38688      |
+--------------------+--------------------+--------------------+
```

- We want to export:

  1.3.6.1.2.1.4.31.3.1.32.**1.10** = **235876**

  1.3.6.1.2.1.4.31.3.1.32.**2.11** = **38688**

- The Exporter doesn't know that the indices are ipIfStatsIPVersion and ipIfStatsIfIndex.

Indexed MIB - solution

```
+--------------------+-------------------+--------------------+
| ipIfStatsIPVersion | ipIfStatsIfIndex  | ipIfStatsOutOctets |
+--------------------+-------------------+--------------------+
|          1(IPv4)   |          10       |          235876    |
|          2(IPv6)   |          11       |           38688    |
+--------------------+-------------------+--------------------+
```

- The template contains MIB Object Identifier = "1.3.6.1.2.1.4.31.3.1.32"

- New "MIBInstanceIdentifier" Information Element.

- ipIfStatsOutOctets for the IPv4 protocol on ifIndex 10 is identified in the data record with the <u>instance identifier</u> "**1.10**".

- ipIfStatsOutOctets for the IPv6 protocol on ifIndex 11 is identified in the data record with the <u>instance identifier</u> "**2.11**".

New Open Issue: skipping the length.

- Standard Field Specifier format:

```
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|E|   Information Element ident. |        Field Length           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                        Enterprise Number                      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- MIB Object Identifier Extended Field Specifier Format:

```
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|E|          MIB OID IE         |         Field Length          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|Index Count = 0|  MIB OID Len  |   MIB Object Identifier ...   |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|             ... MIB Object Identifier continued              |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

New Open Issue: skipping the length.

- The draft requires two new Set IDs:

  The Set ID field MUST contain the value TBD1 for any Template Set that contains a MIB Object Identifier Extended Field Specifier.

  The Set ID field MUST contain the value TBD2 for any Option Template Set that contains a MIB Object Identifier Extended Field Specifier.

- Is a new Set ID the right solution?

Next Steps

- Work is continuing.

    - long list of open issues.

- Looking for WG adoption under item 5 of current charter:

    5. The IPFIX WG will investigate the use of the IPFIX protocol for exporting MIB objects, avoiding the need to define new IPFIX information elements for existing management information base objects that are already fully specified. This method requires the specification of new template set and options template sets to allow the export of MIB objects along with IPFIX information elements.

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~~draft-johnson-ipfix-mib-variable-export-04~~
draft-ietf-ipfix-mib-variable-export-00

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