Exporting MIB Variables using the IPFIX Protocol

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<draft-johnson-ipfix-mib-variable-export-03>

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Changes from -02:

- Split "Extended Field Specifier Format for an Indexed MIB Object" into two sections:

   "Extended Field Specifier Format for an Indexed MIB Object, With an MIB OID as Index"
   "Extended Field Specifier Format for an Indexed MIB Object, With an IPFIX IE as Index".

- Added "Indices Considerations".
- Made open issues list visible.
- Organised and corrected Example Use Cases.
- Added missing "Index Field length" to figure 9.
- Minor corrections for consistency and typos.

Changes: field length

- The "Field Length" was in different places for MIB fields and indices.

- The format for MIBS is unchanged:

|0| MIBObjectIdentifierMarker | Field Length | Index Count | MIB OID Len | MIB Object Identifier ... |

- The format for index fields was changed for consistency:

|0| MIBObjectIdentifierMarker | MIB OID Len | MIB Object Identifier ... | Field Length |

|0| MIBObjectIdentifierMarker | Field Length | MIB OID Len | MIB Object Identifier ... |

- Note that index fields have no "Index Count", because indices cannot be indexed.

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Changes: Index Field #1

- Added a description of Index Field length:

```
Index Field Length

The length of the encoded index field, in octets, per the Field
Length definition in [RFC5101].  Note that the Index Field
Length can be expressed using reduced size encoding per
[RFC5101].
```

- Note that this allows the index length to be a variable length field.

Changes: Index Field #2

- There is a related open issue:

  The value of the MIB OID acting as an index may not be of fixed length and may have no default length, for example the OID can be of type string or type MIB OID.

Changes: fixed "lengths"

- Added missing "field length" for index MIB in Figure 9.

- Added missing "MIB OID Len" to MIB index in Figure 15, correcting original "Length" error.

- Reworked Figure 22: inserted missing 16-bit "Scope Field 1 index Length" and "Field 1 index Length" fields, re-organised figure to accommodate; adjusted set length.

- Reworked Figures 15 and 17, moving the incorrectly placed "length" fields immediately after the MIB OID marker, and prior to the MIB specifiers.

Changes

- Consistent terms throughout eg "MIB OID Len"
- Corrected the field descriptions below Figure 9.
- Changed Figure 9 from "MIB Object Identifier 1" / "MIB Object Identifier 2" to "MIB Object Identifier" / "Index MIB Object Identifier".
- Renumbered Template ID / Set ID so they're sequential: 260->259, 261->260, 259->261.
- Tidied up the XML a little.
- Spell-checked and corrected some typos.

To do

- Add an MIB variable data type in the IANA considerations.

- IPFIX Structured Data: how should it work? Add example to "sectionStructuredData".

- How does the example in 5.8.2 work, since the ifName is indexed by ifIndex which comes after - so the value is not already known.

- Explain the link with Exporting Type Information for IP Flow Information Export (IPFIX) Information Elements (RFC 5610)

- Etc… Some more in the document

Open Issues

- **Indexed MIB Object with an OID**
  - Example: ifOutQLen indexed by: ifIndex
  - The Template Record contains the OID of ifOutQLen and the OID of the ifIndex
  - For <ifOutQLen.Value>, the SNMP agent only knows the ifOutQLen OID and the Value (not the Value OID)
  - Currently investigating
- The value of the MIB OID acting as an index may not be of fixed length and may have no default length, for example the OID can be of type string or type MIB OID.
- Index is an IPFIX IE that didn't appear in the flow record? Do we preclude this case?

Conclusions:

- Still some to do and open issues

- However, the draft is maturing.

- We believe the draft is ready for adoption by the WG.