Guidelines for Authors and Reviewers of IPFIX IEs
(draft-trammell-ipfix-ie-doctors-01)

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IE-DOCTORS in a nutshell

• IPFIX is expanding into new application areas
  – Expansion up and down the stack (e.g. SIPCLF, data link layer)
  – New metrics (e.g., draft-akhter-ipfix-perfmon)
• Most new applications just need new IEs
• → Streamline IE definition process
  – Enable domain experts to specify new IEs and applications with assistance from IPFIX experts, or IE-DOCTORS.
  – Provide processes in line with RFC 5102 and existing IANA Expert Review process.
Contents

• 1. Introduction
  – Intended audience: IETF contributors extending the applicability of IPFIX; IPFIX Experts (IE-DOCTORS) assisting and reviewing these extensions; and IANA, which manages the registry

• 2. Terminology
  – Application: a candidate protocol, task, or domain to which IPFIX export, collection, and/or storage is applied.

• 3. How to apply IPFIX
  – Criteria for good candidate applications
More contents

• 4. Defining new IEs
  – Guidelines for defining IEs: naming, typing, structure, etc; based on RFC5102.
  – New since -00: numbering (v9 compatible vs. normal, policy for number assignment)

• 5. The IE Lifecycle
  – Defines deprecated and obsolete status, and procedures for managing them

• 6. When not to define new IEs
  – Guidelines for reducing IE space explosion through reuse and application of enterprise-specific IEs where appropriate.
Yet more contents

• 7. Applying IPFIX to non-Flow Applications
• 8. Writing I-Ds for IPFIX Applications
  – new since -00: guidelines for applying IPFIX in an I-D, IANA Considerations, and an example I-D IE definition subsection
• 9. A Textual Format for Specifying IEs and Templates
  – adapted from expired draft-trammell-ipfix-text-iespec
Defining Information Elements

• "Make Information Elements that look like those in 5102"
• Many of these taken direct from 5102 or 5153: this is a superset
• Descriptive interCapped English names, naming related protocol
• Only v9-compatible IEs use numbers below 128
• Use unsigned64/signed64 and reduced size encoding for maximum flexibility with integers, unless there's a native width
• Data type semantics and units should be defined when appropriate
• Information elements should have no internal structure
  – Use Structured Data when necessary
• Use sub-registries when appropriate
• Non-reversible Information Elements should be noted
Not defining Information Elements

• Use existing Information Elements whenever possible:
  – Simply changing the context in which an Information Element
    will be used is insufficient reason for the definition of a new
    Information Element.
  – Use RFC5103 for reversible Information Elements
  – Reuse observationTime* timestamps for events, and flow
    (Start,End) for events with duration.
  – Use absolute timestamps whenever possible
• Use enterprise-specific Information Elements when appropriate:
  – Implementation-specific information
  – Information derived in a commercially-sensitive or proprietary
    way
  – Pre-standardization or experimental testing.
Modification and Deprecation

• Information Elements may be **modified**
  – if such modification is *interoperable*, or
  – if the Information Element is not yet widely implemented ("grace period" for trivial, editorial, or errate changes to new IEs)

• Information Elements may be **deprecated**
  – when not modifiable, and a new IE is required to address an error, a change in the application, or a change in the IPFIX Protocol

• Deprecated IEs transition to **obsolete** after some (as yet unspecified) time
Writing I-Ds to define IEs/Templates

- IPFIX applications should not specify mandatory templates.
- However, *recommended* templates can help illustrate the application, as long as they are
  - order-independent and extensible,
  - coexistent with other templates in a stream, and
  - defined with appropriate flow keys
- Examples provided to assist I-D authors
- Textual IE specification provided for simple definition of recommended templates.
  - List of bracket-delimited tuples
  - `name(number)<type>[size]`
The IE-DOCTORS Process (Proposed)

- IE Doctors nominated by WG, appointed by IESG
- Requests for IEs sent to ipfix-ie-doctors@ietf.org (or similar)
- IE Doctors review and modify changes during a review period (e.g. 4 weeks)
- Mutually-acceptable IE registry entries, in XML format, sent to IANA by IE Doctors and immediately added to registry
  - Expert Review considered complete by IE Doctors
- Separate Expert Review process for V9 IEs.
Next steps

• Draft ready for WG adoption
  – Additions from Prague to be incorporated into ietf-00 revision

• Draft needs input from the WG, IANA, and future IE-DOCTORS themselves
  – This will show us the way to take applications of IPFIX forward

• Resolve the largest open issue: versioning
  – Should the whole registry be versioned?
  – Should specific IEs be versioned?
    • (especially those with "reserved" values)