

Babel Information Model

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Near the Bangkok IETF meeting...



Editor's Draft and TR-181 Data Model

Can be found at:

<https://github.com/bhstark2/babel-information-model>

in .md format. Thanks to Carsten for helping change draft from xml to md.

README.md has links to very nice html rendition of draft and diff from latest datatracker version (-04),

and also has links to TR-181 draft (not quite fully updated to -04; will wait for -05) – both XML component definitions (in .txt file) and HTML-ized rendition.

Closed issues from -03 to -04

- introduced binary datatype and using that for all router-id parameters and hello history parameters
- did not change: babel-neighbor-address data type can be IPv4 or IPv6
- babel-implementation-version includes the name of the implementation
- deleted external-cost
- description of enable parameters updated to be useful for YANG and TR-181, using language consistent with YANG descriptions.

Other changes from -03 to -04

- changed babel-mcast-group-ipv6 to babel-mcast-group
- link type parameters changed to point to newly defined registry
- babel-ucast-hello-interval moved to neighbor object
- babel-ucast-hello-seqno moved to neighbor object
- babel-neighbor-ihu-interval deleted
- in log descriptions, included statement that there SHOULD be ability to clear logs
- added IANA registry for link types
- added "ro" and "rw" to tables for read-write and read-only
- added metric computation parameter to interface

Open Issue #7: Link Type Registry

- Please review new IANA Considerations section.
- Should ABNF be normative instead of bulleted descriptions?
- Should we go ahead and add more link types now (see longer list in YANG DM)?

Note: Issues are from -04 Appendix A

Open Issue #6: int

History: Info model has been using data type “int” as something that could be signed or unsigned and of indeterminate size.

Problem: This is too fuzzy.

Analysis: The following parameters use “int”: seqno parameters, interval parameters, udp port, txcost, rxcost, cost, and metric (received and calculated). All of these are 16-bit protocol fields. Therefore, there is no need for a fuzzy “int” data type. [babel-link-type under interfaces-obj also has “int”, but that’s a mistake – it should be string]

Proposed solution: Change “int” to “uint” (unsigned integer) data type. Should we specifically restrict to 16 bits, or does that matter? We could just mention max value is 2^{16} .

Additional question: Several descriptions mention “infinity”. Can we be specific and say something like 0xFFFF or 2^{16} ?

Open Issue #4: credentials

Need to model commands to add and delete credentials, and parameters that allow credential to be identified without allowing access to private credential info.

1. HMAC uses a shared key. Is format of this shared key sufficiently constrained that we can have specific tables and mechanisms for HMAC shared key, instead of nebulous “credentials”?
2. DTLS uses X.509 certificates (right?). So can we have specific tables and mechanisms for managing X.509 certificates instead of nebulous “credentials”?
3. Need to include language for modeling commands and use those for adding and deleting any of these credentials

Open Issue #3: security table

There has been negative feedback on design that has security-obj under interfaces-obj and directly under top level.

Recommendation:

- No security-obj under interfaces-obj.
- Include in security-obj an optional list parameter of references to interfaces-obj instances.
- If list parameter not present or empty, then enabled security mechanism is used on all interfaces.
- If list parameters has 1 or more referenced interfaces-obj, then security-obj entry applies only to referenced interfaces-obj.

Open Issue #2: statistics

Consider the following statistics:

1. Under interfaces-obj: sent multicast Hello, sent updates, received Babel messages
2. Under neighbors-obj: sent unicast Hello, sent updates, sent IHU, received Hello, received updates, received IHUs.
3. Would also need to enable/disable stats and clear stats.

Open Issue #1: logs

1. I want to get rid of the security log, because all Babel messages (which should be defined as all messages to/from the udp-port) would be logged by a general message log (in and out of udp port).
2. I don't like message log as it is. I think if logging is enabled it should just write to a text file. This will mean there also needs to be a means of downloading/reading the log file (a command, as with adding/deleting credentials).

Next steps

- produce updated revision to deal with items mentioned in these slides
- additional author: Mahesh Jethanandani
- update YANG and TR-181 data models
- when to start WGLC?

Backup

IANA Considerations

This document defines a Babel Link Type registry for the values of the babel-link-type and babel-supported-link-types parameters to be listed under the Babel Routing Protocol registry.

Valid Babel Link Type names are normatively defined as

- o MUST be at least 1 character and no more than 20 characters long
- o MUST contain only US-ASCII [RFC0020] letters 'A' - 'Z' and 'a' - 'z', digits '0' - '9', and hyphens ('-', ASCII 0x2D or decimal 45)
- o MUST contain at least one letter ('A' - 'Z' or 'a' - 'z')
- o MUST NOT begin or end with a hyphen
- o hyphens MUST NOT be adjacent to other hyphens

IANA Considerations (cont.)

The rules for Link Type names, excepting the limit of 20 characters maximum, are also expressed below (as a non-normative convenience) using ABNF [RFC5234].

SRVNAME = *(1*DIGIT [HYPHEN]) ALPHA *([HYPHEN] ALNUM)

ALNUM = ALPHA / DIGIT ; A-Z, a-z, 0-9

HYPHEN = %x2D ; "-"

ALPHA = %x41-5A / %x61-7A ; A-Z / a-z [RFC5234]

DIGIT = %x30-39 ; 0-9 [RFC5234]

The allocation policy of this registry is Specification Required [RFC8126].

IANA Considerations (cont.)

The initial values in the "Babel Link Type" registry are:

Name	Used for Links Defined By	Reference
ethernet	[IEEE-802.3-2018]	(this doc)
other	to be used when no link type information available	(this doc)
tunnel	to be used for a tunneled interface over unknown physical link	(this doc)
wireless	[IEEE-802.11-2016]	(this doc)
exp-*	Reserved for Experimental Use	(this doc)