YANG Updating and Versioning impact on IEEE 802.1

Scott Mansfield (Ericsson)
IEEE 802.1 YANGsters

- [https://1.ieee802.org/yangsters/](https://1.ieee802.org/yangsters/)
- Has some guidelines to help ensure consistency when creating YANG modules for IEEE 802.1

- This presentation looks at the latest work in the IETF on versioning and module updating
References

• RFC 7950 Section 11
  • https://datatracker.ietf.org/doc/html/rfc7950#section-11

• RFC 8407 Section 4.27
  • https://datatracker.ietf.org/doc/html/rfc8407#section-4.27

• YANG Module Versioning Requirements
Review of RFC 7950 Section 11

• What must NOT be changed
  • Module Name or namespace
  • Obsolete definitions MUST NOT be removed

• If semantics change, then a new object (leaf, list etc…) must be added

• Don’t reorder data definition statements
  • data definition statement: A statement that defines new data nodes. One of "container", "leaf", "leaf-list", "list", "choice", "case", "augment", "uses", "anydata", and "anyxml".
status statement

• current
  • current and valid
• deprecated
  • obsolete but permits new/continued usage
• obsolete
  • should not be used, can be removed from implementations
  • but... the data definition statement must not be removed from the module
RFC 7950 list of allowed changes

• An "enumeration" type may have new enums added, provided the old enums's values do not change.
• A "bits" type may have new bits added, provided the old bit positions do not change.
• A "range", "length", or "pattern" statement may expand the allowed value space.
• A "default" statement may be added to a leaf that does not have a default value (either directly or indirectly through its type).
• A "units" statement may be added.
• A "reference" statement may be added or updated.
• A "must" statement may be removed or its constraint relaxed.
• A "when" statement may be removed or its constraint relaxed.
• A "mandatory" statement may be removed or changed from "true" to "false".
• A "min-elements" statement may be removed, or changed to require fewer elements.
• A "max-elements" statement may be removed, or changed to allow more elements.
• A "description" statement may be added or changed without changing the semantics of the definition.
• A "base" statement may be added to an "identity" statement.

• A "base" statement may be removed from an "identityref" type, provided there is at least one "base" statement left.
• New typedefs, groupings, rpcs, notifications, extensions, features, and identities may be added.
• New data definition statements may be added if they do not add mandatory nodes (Section 3) to existing nodes or at the top level in a module or submodule, or if they are conditionally dependent on a new feature.
• A new "case" statement may be added.
• A node that represented state data may be changed to represent configuration, provided it is not mandatory (Section 3).
• An "if-feature" statement may be removed, provided its node is not mandatory (Section 3).
• A "status" statement may be added, or changed from "current" to "deprecated" or "obsolete", or changed from "deprecated" to "obsolete".
• A "type" statement may be replaced with another "type" statement that does not change the syntax or semantics of the type.
• Any set of data definition nodes may be replaced with another set of syntactically and semantically equivalent nodes.
• A module may be split into a set of submodules or a submodule may be removed, provided the definitions in the module do not change in any way other than those allowed here.
• The "prefix" statement may be changed, provided all local uses of the prefix are also changed.
draft-ietf-netmod-yang-versioning-reqs

• Provides new guidance and describes some problems when modifying modules
• Provides guidelines and new mechanisms to indicate how backwards-compatible a YANG module is
• Some modules are not backwards compatible
Example Diffs

• [https://github.com/YangModels/yang/commit/913ba431596a88e5d25267522d92c9d30cb84c69#diff-71afc089b10d34938374690dcbe8d66418996db2791604e56328e50609db38b6](https://github.com/YangModels/yang/commit/913ba431596a88e5d25267522d92c9d30cb84c69#diff-71afc089b10d34938374690dcbe8d66418996db2791604e56328e50609db38b6)

• bridge module Qrev – Pub
  • 450c444,446
    `< when ".././bridge-type != 'two-port-mac-relay-bridge'' {`
    `---`
    `> when "not(derived-from-or-self(.././bridge-type, "+
    `> "'two-port-mac-relay-bridge'))" {`

• Changes that need discussion
  • Changing the key of a list (may require a new object)
  • Changing from string to leafref
  • Pretty printing --- shouldn’t cause a NBC, but may violate the 7950 rule about reordering statements