YANG Full Embed

draft-jouqui-netmod-yang-full-include

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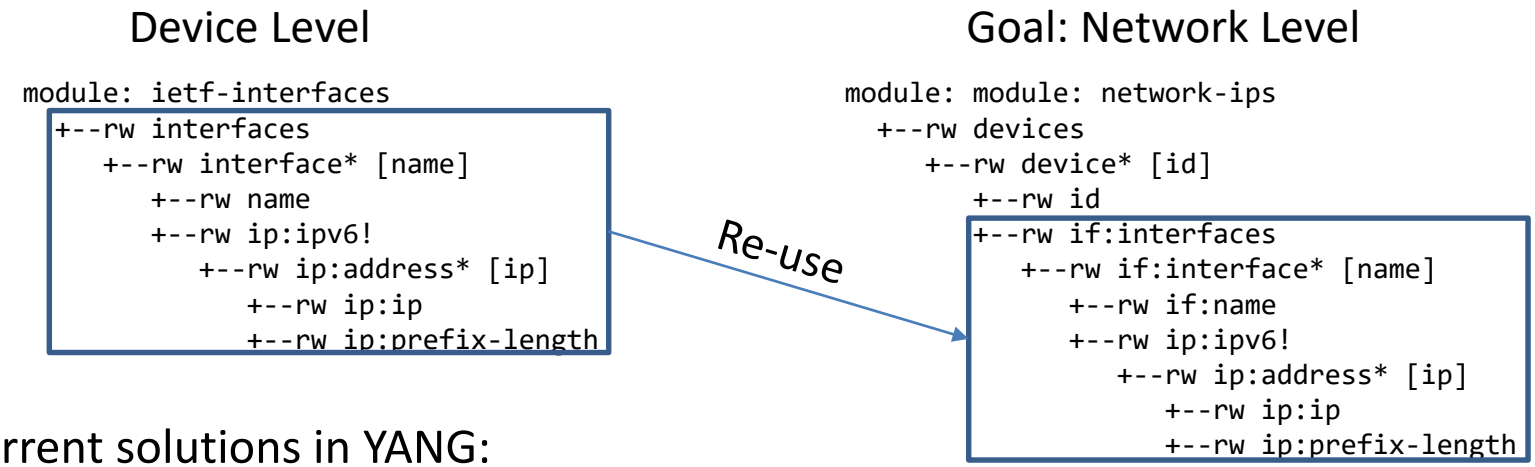
Goal & Problem Statement

Trigger of this work: reuse YANG library RFC8525 and YANG Push RFC8641 modules in the modules for draft-ietf-opsawg-collected-data-manifest .

Fictitious use case: re-use ietf-interfaces and ietf-ip to model all IP addresses in a network. (trees are simplified for presentation)



Current solutions in YANG:

- Copy/pasting
- Rewrite ietf-interfaces to have all top nodes in a grouping (also rewrite ietf-ip to augment the path in the network-level module as well)
- YANG mount RFC8528

More realistic use cases: Digital Map, Network-level inventory

Positioning w.r.t YANG mount

- These issues have already been identified in RFC8528 (YANG Schema Mount), which proposes 3 ways of mounting modules (page 4):

1. Design time: The mounted schema is defined along with the mount point in the parent YANG module. In this case, the mounted schema has to be the same for every implementation of the parent module.

2. Implementation time: The mounted schema is defined by a server implementor and is as stable as the YANG library information of the server.

3. Run time: The mounted schema is defined by instance data that is part of the mounted data model. If there are multiple instances of the same mount point (e.g., in multiple entries of a list), the mounted data model may be different for each instance.

This draft

Covered by RFC8528

Proposal: Full Embed extension

Pseudo-YANG for network-ips module

```
module network-ips {
…
import ietf-yang-full-embed {prefix full}
import ietf-interfaces {prefix if}
import ietf-ip {prefix ip}
…
container devices {
  list device {
    key id
    leaf id {…}
    anydata contents {
      full:embed “if”
      full:embed “ip”
    }
  }
}
```

Import extension + modules to embed

Container for embedded modules is “anydata” for clients not supporting the extension.

Specify the list of modules to be embedded by their prefix.

Semantics: reuse RFC8528, the embedded contents is an independent YANG context.

For instance, leafrefs point to nodes within that context.

Protobuf, json-schema/OpenAPI, Relax-NG, … have a similar feature.

Open Questions

- Is the full:embed mechanism useful? Does it already exist and we missed it?
- Do we need the parent-nodes mechanism from YANG Schema Mount to expose nodes from the top-level module into the context of the embedded module?
- Should we consider a finer granularity (for instance import a list of paths to embed only the subtree at that path)?
- Next step: implementation, any volunteers?

Feedback, suggestions, issues, PRs:

https://github.com/thomas-joubert/ieft-draft-yang-full-include