YANG Conformance

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Agenda

- Problems with YANG conformance mechanisms

- Solution proposal

  - YANG Package specification
  - YANG Package capability

- Need new YANG conformance work?

YANG Conformance Problems 1/3

- Data definition drift
  - Definitions in 1 module change as imported modules are updated

- Import by revision unusable
  - Have to specify exact revisions and need to be used everywhere to prevent ambiguity

- Wrong abstraction level
  - Should be modeling service level conformance, which can be spread across several YANG modules

YANG Conformance Problems 2/3

- Conformance levels are too course-grained

  - Mandatory core + set of purely optional features (objects with **if-feature** statements)

  - No way to machine-specify a YANG feature to be required for some service level

  - No way to machine-specify a NETCONF capability to be required for some service level

  - No way to specify a new conformance level using a subset of the core or a YANG feature without republishing the original module
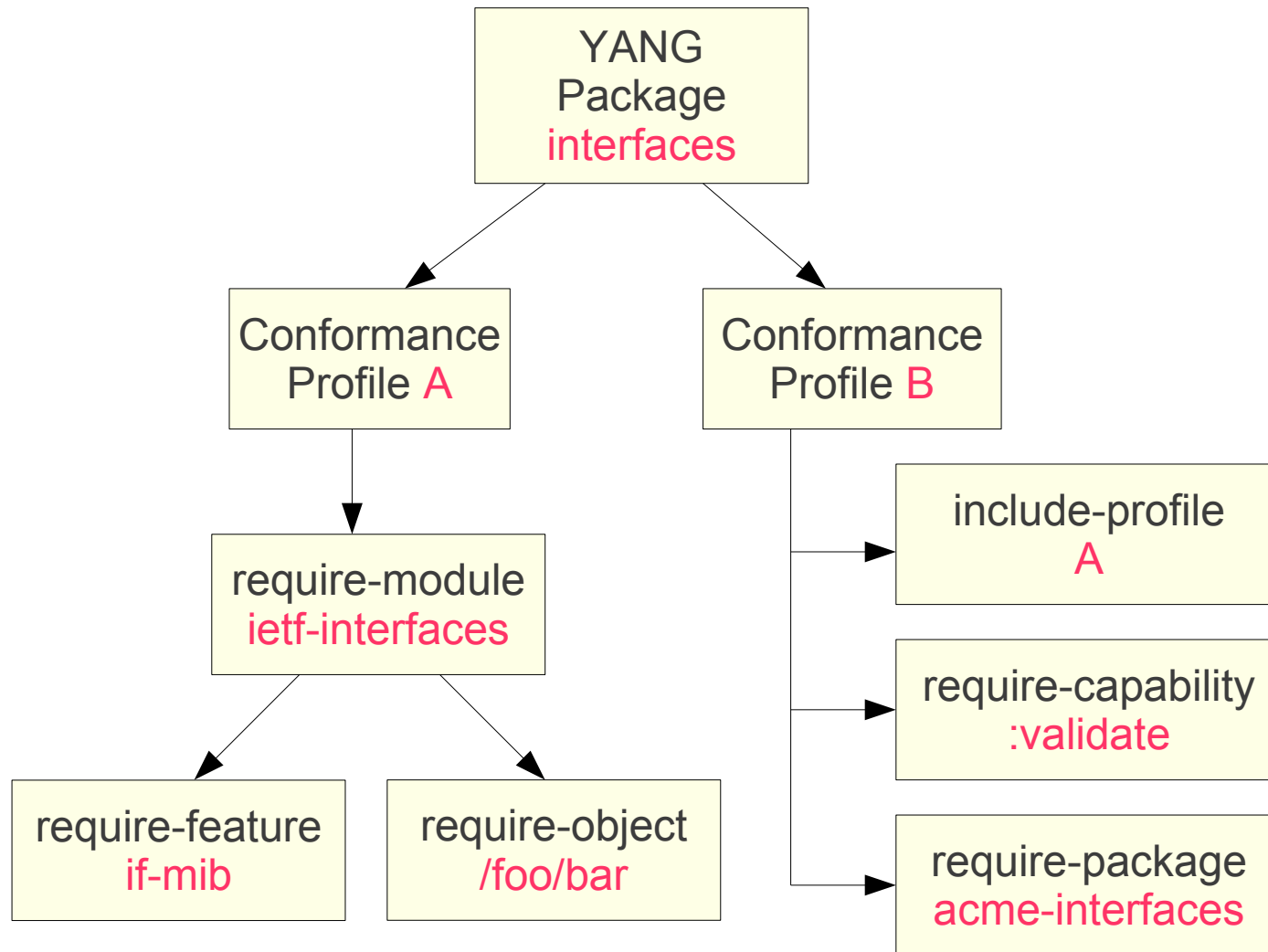
YANG Conformance Problems 3/3

- Conformance should be based on use cases, not YANG modules

    - Several conformance profiles can be supported by a single YANG module, or set of YANG modules

    - A single use-case can require serveral YANG modules or subsets of YANG modules, and possibly some specific protocol capabilities

    - A new YANG module to for a new use case should be able to specify new conformance subsets without breaking old use cases or requiring any edits to existing data definitions

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Solution Proposal

- YANG Package Specification

  - Text file containing conformance profiles

  - Separate from YANG modules since use-case aligned, not module aligned

  - Defines minimum service conformance levels, which can vary from loose to exact requirements

  - Simple design allows package and profile reuse and a lot of flexibility how profiles are specified

YANG Package Contents

```
                        YANG
                       Package
                      interfaces

          Conformance                    Conformance
          Profile A                      Profile B

                                                   include-profile
                                                        A

          require-module
          ietf-interfaces                      require-capability
                                                    :validate

  require-feature      require-object           require-package
      if-mib            /foo/bar                acme-interfaces
```

Solution Proposal

- YANG Package Capability

  - NETCONF server will advertise each YANG package it supports, including 3 parameters

    - package identifier

    - package revision date

    - conformance profile identifier

  - YANG module capabilities still needed to advertise exact revisions and YANG features

    - conformance profile is minimum requirements, which may be less than actual implementation

Need YANG Conformance Work?

- Should better YANG conformance mechanisms be standardized?
    - YANG Packages allow service level conformance specification
    - No changes to existing YANG conformance mechanisms are needed
    - No NETCONF protocol changes are needed