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# IETF 103 NETMOD BBF YANG Update

broadband forum

# Outline

- Scope, and how we work
- Active projects, and how they’re published
- External dependencies
- Best practices
- NMDA

# Scope

- Emphasis on addressing BBF requirements rather than on general solutions
  - Contrast with “core” SDOs such as IETF, ITU-T and IEEE
  - Current BBF YANG emphasis is on Broadband Access Nodes, e.g. requirements from
    - TR-101 Issue 2: Migration to Ethernet-Based Broadband Aggregation
    - TR-301 Issue 2: Architecture and Requirements for Fiber to the Distribution Point
  - The TR-384 Broadband Access Abstraction (BAA) layer will generate additional YANG modeling requirements
    - TR-384: Cloud Central Office (CloudCO) Reference Architectural Framework
- What we will define in BBF
  - YANG for BBF-defined protocols, protocol extensions or interfaces
    - Example: DHCP option 82 usage and additional sub-options
  - YANG for non-BBF protocols or interfaces if the owner organization is not interested in defining the models
    - Example: ITU-T Gfast and VDSL interfaces

# How We Work

- We like to import and augment other organizations' YANG
  - Examples: ietf-interfaces, ietf-hardware
- Sometimes we can't do this
  - There's no standard YANG model
  - Inadequate segmentation of optional features
  - Mandatory nodes which should not be mandatory for all applications
- If so, **our members** might work directly in "owner" organizations
  - Contributing to existing work
    - Example: ietf-alarms (CCAMP)
  - Proposing and leading new work
    - Example: ietf-ipfix, ietf-psamp, ietf-bulk-data-export (individual submission)
- Or, as a last resort, we might address our requirements internally
  - This could be for technical or for timing reasons

# Active Projects

| Area | Project | Name | Status |
|---|---|---|---|
| Common YANG | WT-383 | Common YANG Modules for Access Networks | **Published TR-383 and a1**; a2 due in Q4 2018 |
| FTTdp Management | WT-355 | YANG Modules for FTTdp Management | **Published TR-355, c1, c2 and a1** |
| | WT-374 | YANG Models for Management of G.hn Systems | **Published TR-374** |
| | WT-393 | PMAA Management Model | In progress |
| PON Management | WT-385 | YANG model for management of ITU-T PON | **Published WT-385_draft1**; TR-385 due in early Q1 2019 |
| | WT-431 | YANG Modules to Support EPON in BBF Service Models | In progress |
| SDN and NFV | WT-411 | Definition of interfaces between CloudCO Functional Modules | In progress |
| | WT-413 | SDN Management and Control Interfaces for CloudCO Network Functions | In progress |
| | WT-435 | NETCONF requirements for Access Nodes and BAA | In progress |
| FANS | WT-386 | Fixed Access Network Sharing Interfaces | In progress |
| Open Broadband | OB-BAA | Open Broadband - Broadband Access Abstraction | **Published v1.0 and v1.1; uses schema mount!** |

# Active Projects: Additional Information

| Area | Project | Name | Status |
|---|---|---|---|
| Common YANG | WT-383 | Common YANG Modules | |
| FTTdp Management | WT-355 | YANG Modules for FTTdp | |
| | WT-374 | YANG Models for Management of G.hn Systems | Published TR-374 |
| | WT-393 | PMAA Management Model | In progress |
| PON Management | WT-385 | YANG model for manager | |
| | WT-431 | YANG Modules to Suppor | |
| SDN and NFV | WT-411 | Definition of interfaces between CloudCO Functional Modules | In progress |
| | WT-413 | SDN Management and Control Interfaces for CloudCO Network Functions | In progress |
| | WT-435 | NETCONF requirements for Access Nodes and BAA | In progress |
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TR-383: Forwarding, sub-interfaces, multicast, QoS, subscriber protocols, etc.

TR-355: Mostly ITU-T interface technologies, e.g. G.fast, VDSL and line testing

TR-374: Adds G.hn to the supported interface technologies

TR-393: Will use schema mount to aggregate multiple FTTdp access nodes

TR-385: **TBD**

OB-BAA: **TBD**

# Publication

- The BBF Software Release Registry lists all published BBF software
  - This includes both draft and standard YANG
- BBF YANG is published to a public GitHub repository
  - https://github.com/BroadbandForum/yang
- It's also in the YangModels/yang repository
  - https://github.com/YangModels/yang/standard "bbf" git submodule references the latest https://github.com/BroadbandForum/yang release
- It's also in the YANG catalog
  - https://github.com/BroadbandForum/yang YANG is in the catalog

# External Dependencies

- Policy
  - BBF YANG modules MUST use standard IANA/IETF YANG modules whenever possible
  - In this context, “use” implies adherence to the letter and spirit of such modules and of their defining RFCs
- Published YANG already depends directly on
  - ietf-inet-types, ietf-yang-types
  - iana-if-type, ietf-interfaces
  - iana-hardware, ietf-hardware, ietf-hardware-state
  - Ietf-yang-schema-mount (*IESG Evaluation::AD Followup*)
  - ietf-system
- In-progress YANG additionally depends on
  - ietf-alarms (*editors have proposed WGLC*)

# Best Practices

- BBF has an *OD-360: BBF YANG Best Current Practices* document
  - Based on and adhere to RFC 8407 as much as possible
  - Will incorporate aspects of other SDOs (e.g. ETSI, ONF, ITU, MEF, IEEE) as they adopt YANG BCPs
- Guideline categories
  - Qualifications to and extensions of RFC 8407 guidelines
  - Additional BBF-specific guidelines
- BBF intends to make these guidelines public
  - Will do this via GitHub pages at https://yang.broadband-forum.org

# NMDA

- We're still discussing how best to address NMDA
  - Many of our models were defined and published before NMDA came along
  - Implementers will switch to NMDA on their own timescales
  - ⚌ Need to continue to support both NMDA and non-NMDA servers
- Non-binding sneak preview of some of our thinking
  - Stick with non-NMDA ietf-interfaces@2014-05-08 (RFC 7223) for now
    - Applies to existing and (for now) new ietf-interfaces-dependent modules
  - Use NMDA ietf-hardware@2018-03-13 (RFC 8348)
    - There's no alternative; we certainly don't want to reference the non-NMDA draft
  - Follow NMDA transition guidelines (RFC 8407) if/when ietf-interfaces-dependent modules are updated, and for new "standalone" modules
    - For non-NMDA versions, define -state modules
    - Currently considering whether to
      - Define deprecated -state trees as IETF is doing, or
      - Add any necessary operational data leaves directly