YANG Models for CPE Management

(draft-faq-netmod-cpe-yang-profile-00)

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@SOFTWIRE-WG, ietf94, Nov 2015

Motivation

- Within the IETF, work on YANG modeling is currently progressing at a frenetic rate!
- Increasingly, this makes the prospect of using YANG as the single 'end-to-end, top-to-bottom' modeling language a realistic possibility
- But…
  - YANG models are created at the micro level
    - Each WG is developing the YANG models to manage their protocols/area
- **You also need to manage devices / elements at the macro level – all of their functionality needs to be accessible using YANG as the single modeling language**

What the CPE YANG Profile Draft is Trying to do…

- Basically, it's a list...
- It collects together the requirements for functions that the CPE may implement and links the necessary YANG models to manage these functions
  - Reference to RFCs, drafts, work in other SDOs
  - Updated as work on the references progresses
  - Identifies where there is currently no (known) YANG modeling work
  - A gap-analysis of what is needed and what exists
- The aim is to create a reference 'CPE YANG profile'. A device that implements the necessary YANG models references here could be completely managed solely using YANG

What the CPE YANG Profile Draft does NOT do…

- The draft does not define a CPE YANG model in its own right
- It does not state: “All of these YANG models, (and by extension, their managed functions) must be implemented”
  - Only the YANG management models/functionality necessary for implemented functions need to be present on the device

What's Missing?

- The draft was written based on what the authors are familiar with, so
  - A (large) number of functions/protocols/interfaces are currently not included
- To be comprehensive (and useful), input from other operators (esp. using diverse access technologies)
- There are a number of areas that are outside of the IETF's scope (e.g. IEEE for Ethernet). Liasons to these SDOs will be needed for a complete profile.

Is This a Good Idea?

- If the answer to the above question is ‘yes’, then logically the idea should be extended to other devices in the network
  - I’m not necessarily volunteering ☺
- We chose the CPE as the target as this is the device that the authors are most familiar with
- This draft format can serve as a template that can be re-used for other devices as well

Next Steps

- Please review / comment
  - Any leads to relevant YANG models that are not currently list (IETF or elsewhere) greatly appreciated
  - Input from other operators (esp. using other access technologies) necessary for completeness
- Adopt as a WG document?

Thank you!

IETF94, Yokohama

Backup

Excerpt from the draft

3.5. DHCP/SLAAC/ND Management

3.5.1. Requirements

The following requirements are necessary for management of DHCP, SLAAC and ND.

V6CONF-1: The CPE YANG implementation MUST provide support for management of its DHCPv4 server, which typically runs at the IPv4 LAN side.

V6CONF-2: The CPE YANG implementation MUST provide support for the management of its DHCPv6 server, which can run at the IPv6 LAN side.

V6CONF-3: The CPE YANG implementation MUST provide support for the management of its DHCPv6 client, which typically runs at the IPv6 WAN side.

V6CONF-4: The CPE YANG implementation MUST provide support for the management of its DHCPv6 Prefix Delegation configuration (as a requesting router).

V6CONF-5: The CPE YANG implementation MUST provide support for the management of SLAAC for stateless IPv6 configuration.

3.5.2. Development Status of Relevent YANG Models

Existing RFCs:

- None

Work In Progress:

- YANG models for DHCPv4: [I-D.liu-dhc-dhcp-yang-model].
- YANG Data Model for DHCPv6 Configuration: [I-D.cui-dhc-dhcpv6-yang].

To Be Defined:

- YANG model for SLAAC (Router Advertisement)
- YANG model for Neighbour Discovery Protocol (NDP)
- YANG model for DHCPv6 Prefix Delegation (requesting router)
- YANG model for IPCP.
- YANG model for IPv6CP.