

YANG/NETCONF/RESTCONF

IETF 95, Aries
Apr 2016

Protocol Work

YANG Pub Sub

- Extending OpenDaylight's [YANG PubSub Client implementation](#) released in Beryllium.
- See [draft-ietf-netconf-yang-push](#))
- Contact: Eric Voit

NETCONF Call Home

- <https://github.com/Juniper/netconf-call-home>
- Contact: Kent Watsen

YANG Data Model Catalog

YANG Data Model Catalog

- A tool to extract the info from YANG models to populate a YANG model catalog, for the industry
 - Based on the previous hackathon (Carl Moberg)
- Based on draft-openconfig-netmod-model-catalog-00
 - +--rw name string
 - +--rw namespace? string
 - +--rw prefix? string
 - +--rw revision? string
- Contact: Carl, Ignas, Qin, Michael, Ning
- <https://github.com/cmoberg/confd-module-catalog>

YAM (YDK App Maker) - YDK

CONTACTS

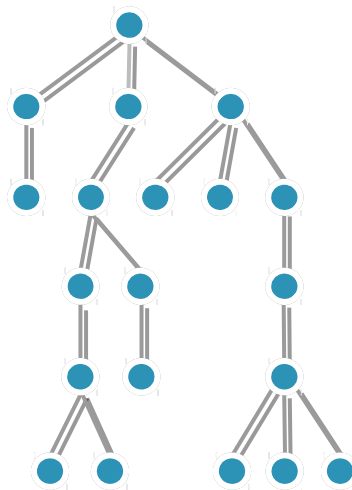
REMOTE: Munish Nayyar, Pravin Gohite, Abhishek Keshav

LOCAL: Mahesh Jethanandani (Sunday)

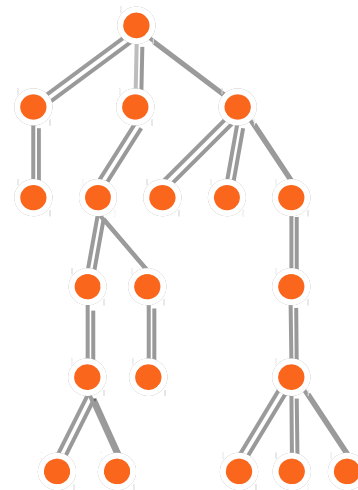
Model-Driven APIs

- Simplify app development
- Abstract transport and encoding
- API generated from YANG model
- One-to-one correspondence between model and class hierarchy
- Multi-language (Python, C++, Ruby, Go, etc.)

YANG Model



**Class Hierarchy
(Python, C++, Ruby, Go)**



Yang Explorer

Yang Explorer 0.0.1

Admin

Refresh

Reset

prgohite

Explorer	Values	Operat...
▼ ietf-interfaces		
▼ interfaces		
▼ interface		
name	GigabitEthernet0/0	
description	ietf-demo	
type	ianaift:ethernetCsmac	
enabled	true	
link-up-down-trap-enable		
interfaces-state		
▶ ietf-system		

Build Collections

Operations Device Settings Protocol Settings

Source Datastore

Target Datastore

NetConf RestConf RPC Capabilities

Encoding Console

```
<rpc message-id="101" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <edit-config>
    <target>
      <candidate/>
    </target>
    <config xmlns:xc="urn:ietf:params:xml:ns:netconf:base:1.0">
      <interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
        <interface>
          <name>GigabitEthernet0/0</name>
          <description>ietf-demo</description>
          <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</type>
          <enabled>true</enabled>
        </interface>
      </interfaces>
    </config>
  </edit-config>
</rpc>
```

Run Save Clear Copy

Property	Value
Name	enabled
Node Type	leaf
Data Type	boolean
Access	read-write
Presence	
Key	
Mandatory	
Default	true
Path	ietf-interfaces/interfaces/interface/enabled
Description	This leaf contains the configured, desired state of the interface. Systems that implement the IF-MIB use the value of this leaf in the 'running' datastore to set IF-MIB.ifAdminStatus to 'up' or 'down' after an ifEntry has been initialized, as described in RFC 2863.

Status : Received HTTP Result for request type rpc

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YAM - is it for you?

- Starting programmer, use GUI to give data to YANG model and auto-generate YDK app.
- Have NETCONF, RESTCONF payload and want to migrate to YDK based app with minimal effort via tool.
- Looking for an educational channel on how to use YDK objects.
- YANG data model payload transcoding (convert XML to YDK to JSON to YDK toor vice versa)

YAM – development items

- CODECService in YDK

developed to expose API that allows binding of Payload (XML/JSON) to YDKObjects and vice-versa.

- Reflection API in YDK

that reflect object and provide methods to reflect object values, types with granularity of yang properties.

- YangExplorer enhancements

Frontend and backend trigger for YAM interfaces

YAM Resources

- Contact: Python library for NETCONF clients (<http://ncclient.org/>)
- YANG Explorer (<https://git.io/vg7Jm>)
- YDK-py (<https://goo.gl/kM00f2>)
- YDK-gen (<https://goo.gl/8Fokc4>)
- Cisco IOS XR at DevNet (<https://goo.gl/uaxrpN>)
- Cisco IOS XR YANG models (<https://git.io/vg7fk>)
- Getting Started With OpenConfig in Cisco IOS XR (<https://git.io/vg7vF>)
- Getting Started With gRPC in Cisco IOS XR (<https://git.io/vg7vP>)

YANG Tooling

YANG Tooling

- Qin Wu: pyang in the submission tool ⇒ include all the existing YANG models in the path.
- Hariharan Ananthakrishnan: symd improvement for depending YANG data models
 - See <http://gitlab.cisco.com/einarnn/symd>
- David Lamparter: code generation bridge between YANG schemas and Cap'n Proto schemas
- Benoit Claise: improve YANG model monitoring tools on claise.be
- Some more ...
- Please join



CISCO

TOMORROW starts here.

Model-Driven Programmability Stack

