Notification Capabilities Model Extension for self-explanation data Node
tag capability support
draft-tao-netconf-notif-node-tag-capabilities-00

Abstract

Before a client application subscribes to updates from a datastore,
server capabilities related to "Subscription to YANG Datastores" can
be advertised using YANG Instance Data format. These server
capabilities can be documented at implement time or reported at run-
time.

This document proposes a YANG module for Data Node tag capability
support which augments YANG Push Notification Capabilities model and
provide additional self-explanation data node attributes associated
with node selector within per-node capabilities.

Status of This Memo

This Internet-Draft is submitted in full conformance with the
provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering
Task Force (IETF). Note that other groups may also distribute
working documents as Internet-Drafts. The list of current Internet-
Drafts is at https://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months
and may be updated, replaced, or obsoleted by other documents at any
time. It is inappropriate to use Internet-Drafts as reference
material or to cite them other than as "work in progress."

This Internet-Draft will expire on May 5, 2020.

Copyright Notice

Copyright (c) 2019 IETF Trust and the persons identified as the
document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust’s Legal
Provisions Relating to IETF Documents
(https://trustee.ietf.org/license-info) in effect on the date of
1. Introduction

As described in [I-D.netconf-notification-capabilities], a server supporting YANG-Push MAY have a number of capabilities such as

- Supported (reporting) periods for periodic subscriptions
- Maximum number of objects that can be sent in an update
- Supported dampening periods for on-change subscriptions
- The set of data nodes for which on-change notification is supported

Notification capability model defined in [I-D.netconf-notification-capabilities] allows a client to discover YANG-Push related capabilities both at implementation-time and run-time. Without using notification capability, it might lead to unexpected failure or additional message exchange for NETCONF clients to discover data models supported by a NETCONF server.

When the state of all subscriptions of a particular Subscriber to be fetched is huge, filtering queries of operational state on a server based on server capabilities can greatly reduce the amount of data to be streamed out to the destination.
However without self-explanation information on data node conveyed in Notification capability model [I-D.netconf-notification-capabilities], it is hard for NETCONF clients to automatically select which data objects are of interest using machine to machine interface, e.g., identify a set of objects which have a common characteristic, collect specific object type nodes.

This document proposes a YANG module for Data Node tag capability support which augments YANG Push Notification Capabilities model and provide additional self-explanation data node tag attributes associated with node selector for queries filtering.

1.1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. Notification Capability Model Extension

The YANG module ietf-notification-capabilities defined in [I-D.netconf-notification-capabilities] specify the following server capabilities related to YANG Push:

- a set of capabilities related to the amount of notifications the server can send out
- specification of which data nodes support on-change notifications.
- Capability values can be specified on server level, datastore level or on specific data nodes (and their contained sub-tree) of a specific datastore. Capability values on a smaller, more specific part of the server’s data always override more generic values.
- On-change capability is not specified on a server level as different datastores usually have different on-change capabilities. On a datastore level on-change capability for configuration and state data can be specified separately.

These server capabilities can be provided either at implementation time or reported at run time.

This document augments YANG Push Notification Capabilities model and provide additional data node attributes associated with node selector within per-node capabilities:
o specification of which object type nodes they can push to the target recipient.

o specification of which group of data nodes they can push to the target recipient.

2.1. Tree Diagram

The following tree diagram [RFC8340] provides an overview of the data model.

```
module: ietf-notification-node-tag-capabilities
    augment /inc:datastore-subscription-capabilities/inc:datastore-capabilities
        /inc:per-node-capabilities:
            +--ro node-tag             tags:tag
            +--ro group-id             string
```

3. YANG Module

<CODE BEGINS> file "ietf-notification-node-tag-capabilities.yang"
module ietf-notification-node-tag-capabilities {
    yang-version 1.1;
    prefix nntc;

    import ietf-notification-capabilities { prefix inc ; }
    import ietf-data-node-tags {prefix ntags;}

    organization
        "IETF NETMOD (Network Modeling) Working Group";
    contact
        "WG Web: <https://tools.ietf.org/wg/netconf/>
           WG List: <mailto:netconf@ietf.org>
           Editor: Ran Tao
           <mailto:taoran20@huawei.com>");

    description
        "This module defines an extension to YANG Push Notification Capabilities model and provides additional data node tag attributes associated with node selector for queries filtering.


        Copyright (c) 2019 IETF Trust and the persons identified as authors of the code. All rights reserved."
Redistribution and use in source and binary forms, with or without modification, is permitted pursuant to, and subject to the license terms contained in, the Simplified BSD License set forth in Section 4.c of the IETF Trust’s Legal Provisions Relating to IETF Documents (http://trustee.ietf.org/license-info).

This version of this YANG module is part of RFC XXXX; see the RFC itself for full legal notices.

```
augment /inc:datatype-subscription-capabilities/inc:datatype-capabilities
    /inc:per-node-capabilities
    description "Allows the get-config operation to use the
    factory-default datastore as a source";

    leaf node-tag { 
        type ntags:node-tag ;
        description
        "Tags associated with the data node within YANG module.
        See the IANA 'Yang Data Node Tag Prefixes' registry
        for reserved prefixes and the IANA
        'IETF Yang Data Node Tags' registry for IETF tags.";
    }

    leaf group-id { 
        type string;
        description
        "This group ID is used to identify a set of data nodes
        of the same group which have a common characteristic.";
    }
```

<CODE ENDS>

4. IANA Considerations

4.1. Updates to the IETF XML Registry

This document registers a URI in the "IETF XML Registry" [RFC3688]. Following the format in [RFC3688], the following registration has been made:

URI:


Registrant Contact:
The IESG.

XML:

    N/A; the requested URI is an XML namespace.
4.2. Updates to the YANG Module Names Registry

This document registers one YANG module in the "YANG Module Names" registry [RFC6020]. Following the format in [RFC6020], the following registration has been made:

name: ietf-notification-node-tag-capabilities

namespace:

prefix: nntc

reference:
  RFC XXXX (RFC Ed.: replace XXX with actual RFC number and remove this note.)

5. Security Considerations

The YANG module specified in this document defines a schema for data that is designed to be accessed via network management protocols such as NETCONF [RFC6241] or RESTCONF [RFC8040]. The lowest NETCONF layer is the secure transport layer, and the mandatory-to-implement secure transport is Secure Shell (SSH) [RFC6242]. The lowest RESTCONF layer is HTTPS, and the mandatory-to-implement secure transport is TLS [RFC8446].

The NETCONF Configuration Access Control Model (NACM) [RFC8341] provides the means to restrict access for particular NETCONF or RESTCONF users to a preconfigured subset of all available NETCONF or RESTCONF protocol operations and content.

There are a number of data nodes defined in this YANG module that are writable/creatable/deletable (i.e., config true, which is the default). These data nodes may be considered sensitive in some network environments. Write operations (e.g., edit-config) to these data nodes without proper protection can have a negative effect on network operations. These are the subtrees and data nodes and their sensitivity/vulnerability:

6. References
6.1. Normative References


6.2. Informative References


Authors’ Addresses

Ran Tao
Huawei
101 Software Avenue, Yuhua District
Nanjing, Jiangsu  210012
China

Email: taoran20@huawei.com

Bo Wu
Huawei
101 Software Avenue, Yuhua District
Nanjing, Jiangsu  210012
China

Email: lana.wubo@huawei.com