

NETCONF Working Group Q.
Wu
Internet-Draft
Huawei
Intended status: Standards Track B.
Lengyel
Expires: April 14, 2019 Ericsson
Hungary Y.

Niu

Huawei

2018 October 11,

Factory default Setting
draft-wu-netconf-restconf-factory-restore-03

Abstract

This document defines a method to reset a YANG datastore to its factory-default content. The reset operation may be used e.g. during initial zero-touch configuration or when the existing configuration has major errors, so re-starting the configuration process from scratch is the best option.

A new reset-datastore RPC is defined. Several methods of documenting the factory-default content are specified.

Optionally a new "factory-default" read-only datastore is defined, that contains the data that will be copied over to the running datastore at reset.

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 April 14, 2019.

Copyright Notice

Copyright (c) 2018 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 publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

- [1.](#) Introduction
- [2](#)
- [1.1.](#) Terminology
- [3](#)
- [2.](#) Reset-Datastore RPC
- [3](#)
- [3.](#) Factory-Default Datastore
- [4](#)
- [4.](#) YANG Module
- [5](#)
- [5.](#) IANA Considerations
- [7](#)
- [6.](#) Security Considerations
- [7](#)
- [7.](#) Acknowledgements
- [8](#)
- [8.](#) Contributors
- [8](#)
- [9.](#) References
- [8](#)
- [9.1.](#) Normative References
- [8](#)
- [9.2.](#) Informative References
- [9](#)
- [Appendix A.](#) Open Issues
- [9](#)
- [Appendix B.](#) Changes between revisions
- [9](#)
- Authors' Addresses
- [9](#)

[1.](#) Introduction

This document defines a method to reset a YANG datastore to its

factory-default content. The reset operation may be used e.g. during initial zero-touch configuration or when the existing configuration has major errors, so re-starting the configuration process from scratch is the best option. When resetting a datastore all previous configuration settings will be lost and replaced by the factory-default content.

A new reset-datastore RPC is defined. Several methods of documenting the factory-default content are specified.

Optionally a new "factory-default" read-only datastore is defined, that contains the data that will be copied over to the running

datastore at reset. This datastore can be used in <get-data> or <copy-config> operations.

NETCONF defines the <delete> operation that allows resetting the <startup> datastore, and the <discard-changes> operation that copies the content of the <running> datastore into the <candidate> datastore. However it is not possible to reset the running datastore, to reset the candidate datastore without changing the running datastore or to reset any dynamic datastore.

A RESTCONF server MAY implement the above NETCONF operations, but that would still not allow it to reset the running configuration.

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.

The following terms are defined in [[RFC8342](#)] and are not redefined here:

- o startup configuration datastore
- o candidate configuration datastore
- o running configuration datastore
- o intended configuration datastore
- o operational state datastore

The following terms are defined in this document as follows:

- o factory-default datastore: A read-only datastore holding a preconfigured minimal initial configuration that can be used to initialize the configuration of a server. The content of the datastore is usually static, but MAY depend on external factors like available HW.

2. Reset-Datastore RPC

A new "reset-datastore" RPC is introduced. It will have a target datastore as a parameter. Upon receiving the RPC the YANG server resets the content of the target datastore to its factory-default content. Only writable datastores can be specified as a target.

Read-only datastores receive their content from other datastores (e.g. <intended> gets its content from <running>).

Factory-default content SHALL be specified by one of the following means in order of precedence

1. For the <running>, <candidate> and <startup> datastores as the content of the <factory-default> datastore, if it exists
2. YANG Instance Data [[I-D.lengyel-netmod-yang-instance-data](#)]
3. In some implementation specific manner
4. For dynamic datastores unless otherwise specified the factory-default content is empty.

3. Factory-Default Datastore

This document introduces a new datastore resource named 'Factory-Default' that represents a preconfigured minimal initial configuration that can be used to initialize the configuration of a server.

- o Name: "factory-default"
- o YANG modules: all
- o YANG nodes: all "config true" data nodes
- o Management operations: The content of the datastore is set by the YANG server in an implementation dependent manner. The content can not be changed by management operations via NETCONF, RESTCONF, the CLI etc. unless specialized, dedicated operations are provided. The contents of the datastore can be read using NETCONF, RESTCONF <get-data> operation. The operations <reset-datastore> or <copy-config> can be used to copy the content of the datastore to another datastore. The content of the datastore is not propagated automatically to any other datastores.
- o Origin: This document does not define a new origin identity as it does not interact with <operational> datastore.
- o Protocols: All e.g. Restconf, Netconf
- o Defining YANG module: "ietf-factory-reset"

The datastore content is usually defined by the device vendor. It is usually static, but MAY change e.g. depending on external factors like HW available or during device upgrade.

On devices that support non-volatile storage, the contents of <factory > MUST persist across restarts

4. YANG Module

```
<CODE BEGINS> file "ietf-factory-reset.yang"
module ietf-factory-reset {
  yang-version 1.1;
  namespace urn:ietf:params:xml:ns:yang:ietf-factory-reset ;
  prefix fres ;

  import ietf-netconf { prefix nc ; }
  import ietf-datastores { prefix ds; }

  organization
    "IETF NETCONF (Network Configuration) Working Group";
  contact
    "WG Web: <https://tools.ietf.org/wg/netconf/>
    WG List: <mailto:netconf@ietf.org>

    WG Chair: Kent Watsen
              <mailto:kwatsen@juniper.net>

    WG Chair: Mahesh Jethanandani
              <mailto:mjethanandani@gmail.com>

    Editor: Balazs Lengyel
            <mailto:balazs.lengyel@ericsson.com>

    Editor: Qin Wu
            <mailto:bill.wu@huawei.com>";
```

```
description
  "This module defines the
  - reset-datastore RPC
  - factory-default datastore
  - an extension to the Netconf <copy-config> operation to
  allow it to operate on the factory-default datastore.
```

It provides functionality to reset a YANG datastore to its factory-default content.

Copyright (c) 2018 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 (<https://trustee.ietf.org/license-info>).

The key words 'MUST', 'MUST NOT', 'REQUIRED', 'SHALL', 'SHALL NOT', 'SHOULD', 'SHOULD NOT', 'RECOMMENDED', 'MAY', and 'OPTIONAL' in the module text are to be interpreted as described in [RFC 2119](#) (<https://tools.ietf.org/html/rfc2119>).

This version of this YANG module is part of RFC XXXX (<https://tools.ietf.org/html/rfcXXXX>); see the RFC itself for full legal notices.";

```
revision 2018-10-09 {
  description
    "Initial revision.";
  reference "RFC XXXX: Factory default Setting Capability for
    RESTCONF";
}

feature factory-default-as-datastore {
  description "Indicates that the factory default configuration is
    also available as a separate datastore";
}

rpc reset-datastore {
  description "The target datastore is reset to its factory
    default content. ";

  input {
    leaf-list target-datasore {
      type identityref {
        base "ds:datastore" ;
      }
      min-elements 1;
      description "The datastore(s) whose content will be
        replaced by the factory-default configuration.";
    }
    // Do we need an extra parameter that may order a restart of
    // the YANG-server or the whole system?
  }
}

identity factory-default {
  if-feature factory-default-as-datastore;
```



```
    base ds:datastore;
    description "The read-only datastore contains the configuration
that
    will be copied into e.g. the running datastore by the
    reset-datastore operation if the target is the running
    datastore.";
}

augment /nc:copy-config/nc:input/nc:source/nc:config-source {
  if-feature factory-default-as-datastore;
  description " Allows the copy-config operation to use the
  factory-default datastore as a source";
  leaf factory-default {
    type empty ;
    description
      "The factory-default datastore is the source.";  }
}
}
<CODE ENDS>
```

5. IANA Considerations

This document registers one URI in the IETF XML Registry [[RFC3688](#)]. The following registration has been made:

URI: urn:ietf:params:xml:ns:yang:ietf-factory-reset

Registrant Contact: The IESG.

XML: N/A, the requested URI is an XML namespace.

This document registers one YANG module in the YANG Module Names Registry [[RFC6020](#)]. The following registration has been made:

name: ietf-factory-reset

namespace: urn:ietf:params:xml:ns:yang:ietf-factory-reset

prefix: fres

RFC: xxxx

6. Security Considerations

The <reset-datastore> RPC can overwrite important and security sensitive information in one of the other datastores e.g. running, therefore it is important to restrict access to this RPC using the standard NETCONF/RESTCONF access control methods. [[RFC8341](#)]

The content of the factory-default datastore is usually not security sensitive as it is the same on any device of a certain type.

7. Acknowledgements

Thanks to Juergen Schoenwaelder, Ladislav Lhotka to review this draft and provide important input to this document.

8. Contributors

Rohit R Ranade
Huawei
Email: rohitrranade@huawei.com

9. References

9.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.

- [RFC6241] Enns, R., Ed., Bjorklund, M., Ed., Schoenwaelder, J., Ed., and A. Bierman, Ed., "Network Configuration Protocol (NETCONF)", [RFC 6241](#), DOI 10.17487/RFC6241, June 2011, <<https://www.rfc-editor.org/info/rfc6241>>.

- [RFC7950] Bjorklund, M., Ed., "The YANG 1.1 Data Modeling Language", [RFC 7950](#), DOI 10.17487/RFC7950, August 2016, <<https://www.rfc-editor.org/info/rfc7950>>.

- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in [RFC 2119](#) Key Words", [BCP 14](#), [RFC 8174](#), DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

- [RFC8341] Bierman, A. and M. Bjorklund, "Network Configuration Access Control Model", STD 91, [RFC 8341](#), DOI 10.17487/RFC8341, March 2018, <<https://www.rfc-editor.org/info/rfc8341>>.

- [RFC8342] Bjorklund, M., Schoenwaelder, J., Shafer, P., Watsen, K., and R. Wilton, "Network Management Datastore Architecture (NMDA)", [RFC 8342](#), DOI 10.17487/RFC8342, March 2018, <<https://www.rfc-editor.org/info/rfc8342>>.

9.2. Informative References

[I-D.ietf-netconf-zerotouch]

Watsen, K., Abrahamsson, M., and I. Farrer, "Zero Touch Provisioning for Networking Devices", [draft-ietf-netconf-zerotouch-25](#) (work in progress), September 2018.

[I-D.lengyel-netmod-yang-instance-data]

Lengyel, B. and B. Claise, "YANG Instance Data Files and their use for Documenting Server Capabilities", [draft-lengyel-netmod-yang-instance-data-03](#) (work in progress), July 2018.

Appendix A. Open Issues

- o Do we need a restart after <reset-datastore> ? What kind of restart, just the Yang-Server or the full system?
- o Do we need the concept of reboot? How is that different from a restart? Does it result in some sort of reset-datastore?

Appendix B. Changes between revisions

v02 - v03

- o Restructured
- o Made new datastore optional
- o Removed Netconf capability
- o Listed Open issues

v01 - v02

o -

v00 - v01

o -

Authors' Addresses

Internet-Draft
2018

Factory Default Setting

October

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

Email: bill.wu@huawei.com

Balazs Lengyel
Ericsson Hungary
Magyar Tudosok korutja 11
1117 Budapest
Hungary

Phone: +36-70-330-7909
Email: balazs.lengyel@ericsson.com

Ye Niu
Huawei

Email: niuye@huawei.com

