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YANG Module Library
draft-ietf-netconf-yang-library-00

Abstract

This document describes a YANG library, which provides information about all the YANG modules used by a device to represent management and protocol information. A YANG library can be shared by multiple protocols within the same device. Simple caching mechanisms are needed to allow clients to minimize retrieval of this information.

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1. Introduction

There is a need for standard mechanisms to identify the YANG modules and submodules that are in use by each server that utilizes YANG-based data abstraction. If a large number of YANG modules are utilized by the server, then the YANG library information needed can be relatively large. This information changes very infrequently, so it is important that clients be able to cache the YANG library and easily identify if their cache is out-of-date.

YANG library information can be different on every server, and can change at run-time or across a server reboot. Typically firmware upgrades are required to change the set of YANG modules used by a server.

The following information is needed by a client application (for each YANG module in the library) to fully utilize the YANG data modeling language.

- o name: The mandatory YANG module name MUST be unique within a YANG library. All modules and submodules share the same namespace, including modules used for deviations.

- o revision date: Each YANG module within the library MUST have a revision date. This is derived from the most recent revision statement within the module or submodule.
- o submodule list: The name and revision date of each submodule used by main module MUST be identified.
- o feature list: The name of each YANG feature supported by the server MUST be identified.
- o deviation list: The name of each YANG module used for deviation statements SHOULD be identified.

1.1. Terminology

The keywords "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](#)].

1.1.1. NETCONF

The following terms are defined in [[RFC6241](#)]:

- o client
- o server

1.1.2. YANG

The following terms are defined in [[RFC6020](#)]:

- o module
- o submodule

1.1.3. Terms

The following terms are used within this document:

- o YANG library: a collection of YANG modules and submodules used by a server

1.1.4. Tree Diagrams

A simplified graphical representation of the data model is used in this document. The meaning of the symbols in these diagrams is as follows:

- o Brackets "[" and "]" enclose list keys.
- o Abbreviations before data node names: "rw" means configuration data (read-write) and "ro" state data (read-only).
- o Symbols after data node names: "?" means an optional node, "!" means a presence container, and "*" denotes a list and leaf-list.
- o Parentheses enclose choice and case nodes, and case nodes are also marked with a colon (":").
- o Ellipsis ("...") stands for contents of subtrees that are not shown.

2. YANG Module Library

The "ietf-yang-library" module provides information about the YANG library used by a server.

YANG Tree Diagram for "ietf-yang-library" module:

```

+--ro modules
  +--ro module-set-id?  string
  +--ro module* [name revision]
    +--ro name          yang:yang-identifier
    +--ro revision      union
    +--ro schema?       inet:uri
    +--ro namespace     inet:uri
    +--ro feature*      yang:yang-identifier
    +--ro deviation*    yang:yang-identifier
    +--ro conformance   boolean
    +--ro submodules
      +--ro submodule* [name revision]
        +--ro name      yang:yang-identifier
        +--ro revision  union
        +--ro schema?   inet:uri

```

2.1. modules

This mandatory container holds the identifiers for the YANG data model modules supported by the server.

2.1.1. modules/module

This mandatory list contains one entry for each YANG data model module supported by the server. There MUST be an instance of this list for every YANG module that is used by the server.

2.2. YANG Library Module

The "ietf-yang-library" module defines monitoring information for the YANG modules used by a RESTCONF server.

The "ietf-yang-types" and "ietf-inet-types" modules from [RFC6991] are used by this module for some type definitions.

RFC Ed.: update the date below with the date of RFC publication and remove this note.

```
<CODE BEGINS> file "ietf-yang-library@2015-01-30.yang"
```

```
module ietf-yang-library {
  namespace "urn:ietf:params:xml:ns:yang:ietf-yang-library";
  prefix "yanglib";

  import ietf-yang-types { prefix yang; }
  import ietf-inet-types { prefix inet; }

  organization
    "IETF NETCONF (Network Configuration) Working Group";

  contact
    "WG Web: <http://tools.ietf.org/wg/netconf/>
    WG List: <mailto:netconf@ietf.org>

    WG Chair: Mehmet Ersue
              <mailto:mehmet.ersue@nsn.com>

    WG Chair: Mahesh Jethanandani
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    Editor: Andy Bierman
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    Editor: Martin Bjorklund
            <mailto:mbj@tail-f.com>

    Editor: Kent Watsen
            <mailto:kwatsen@juniper.net>";

  description
    "This module contains monitoring information about the YANG
    modules and submodules that are used within a YANG-based
    server."
```

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

```
// RFC Ed.: replace XXXX with actual RFC number and remove this
// note.

// RFC Ed.: remove this note
// Note: extracted from draft-ietf-netconf-yang-library-00.txt

// RFC Ed.: update the date below with the date of RFC publication
// and remove this note.
revision 2015-01-30 {
  description
    "Initial revision.";
  reference
    "RFC XXXX: YANG Module Library.";
}

typedef revision-identifier {
  type string {
    pattern '\d{4}-\d{2}-\d{2}';
  }
  description
    "Represents a specific date in YYYY-MM-DD format.
    TBD: make pattern more precise to exclude leading zeros.";
}

grouping module {
  description
    "The module data structure is represented as a grouping
    so it can be reused in configuration or another monitoring
    data structure.";

  grouping common-leafs {
    description
      "Common parameters for YANG modules and submodules.";

    leaf name {
      type yang:yang-identifier;
    }
  }
}
```



```
    description "The YANG module or submodule name.";
  }
  leaf revision {
    type union {
      type revision-identifier;
      type string { length 0; }
    }
    description
      "The YANG module or submodule revision date.
      An empty string is used if no revision statement
      is present in the YANG module or submodule.";
  }
  leaf schema {
    type inet:uri;
    description
      "Contains a URL that represents the YANG schema
      resource for this module or submodule.

      This leaf will only be present if there is a URL
      available for retrieval of the schema for this entry.";
  }
}

list module {
  key "name revision";
  description
    "Each entry represents one module currently
    supported by the server.";

  uses common-leafs;

  leaf namespace {
    type inet:uri;
    mandatory true;
    description
      "The XML namespace identifier for this module.";
  }
  leaf-list feature {
    type yang:yang-identifier;
    description
      "List of YANG feature names from this module that are
      supported by the server.";
  }
  leaf-list deviation {
    type yang:yang-identifier;
    description
      "List of YANG deviation module names used by this
      server to modify the conformance of the module
```



```
        associated with this entry.";
    }
    leaf conformance {
        type boolean;
        mandatory true;
        description
            "If 'true', then the server is claiming conformance to
            the YANG module identified in this entry.

            If 'false', then the server is not claiming any
            conformance for the YANG module identified by this
            entry. The module may be needed for reusable definitions
            such as extensions, features, identifies, typedefs,
            or groupings.";
    }
    container submodules {
        description
            "Contains information about all the submodules used
            by the parent module entry";

        list submodule {
            key "name revision";
            description
                "Each entry represents one submodule within the
                parent module.";
            uses common-leafs;
        }
    }
} // list module
} // grouping module

container modules {
    config false;
    description
        "Contains YANG module monitoring information.";

    leaf module-set-id {
        type string;
        description
            "Contains a server-specific identifier representing
            the current set of modules and submodules. The
            server MUST change the value of this leaf if the
            information represented by the 'module' list instances
            has changed.";
    }
}

uses module;
```



```
}  
  
}  
  
<CODE ENDS>
```

3. IANA Considerations

3.1. YANG Module Registry

This document registers one URI in the IETF XML registry [[RFC3688](#)]. Following the format in [RFC 3688](#), the following registration is requested to be made.

```
URI: urn:ietf:params:xml:ns:yang:ietf-yang-library  
Registrant Contact: The NETMOD WG of the IETF.  
XML: N/A, the requested URI is an XML namespace.
```

This document registers one YANG module in the YANG Module Names registry [[RFC6020](#)].

```
name:          ietf-yang-library  
namespace:     urn:ietf:params:xml:ns:yang:ietf-yang-library  
prefix:        yanglib  
// RFC Ed.: replace XXXX with RFC number and remove this note  
reference:     RFC XXXX
```

4. Security Considerations

This section provides security considerations for the information that is defined by the "ietf-yang-library" module.

[FIXME: follow template for sec. considerations]

5. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC3688] Mealling, M., "The IETF XML Registry", [BCP 81](#), [RFC 3688](#), January 2004.
- [RFC6020] Bjorklund, M., "YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)", [RFC 6020](#), October 2010.

[RFC6241] Enns, R., Ed., Bjorklund, M., Ed., Schoenwaelder, J., Ed., and A. Bierman, Ed., "Network Configuration Protocol (NETCONF)", [RFC 6241](#), June 2011.

[RFC6991] Schoenwaelder, J., "Common YANG Data Types", [RFC 6991](#), July 2013.

Appendix A. Change Log

-- RFC Ed.: remove this section before publication.

A.1. draft-ietf-netconf-restconf-03 to 00

- o moved ietf-yang-library from RESTCONF draft to new draft

Appendix B. Open Issues

-- RFC Ed.: remove this section before publication.

- o conformance information: should 'conformance' leaf be removed and let real YANG conformance module augment as needed?
- o multi-protocol: should information be added to identify which protocols use each module or should each protocol define their own augmentations?

The YANG Library issue tracker can be found here:

<https://github.com/netconf-wg/yang-library/issues>

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