

YANG Groupings for HTTP Clients and HTTP Servers
draft-kwatsen-netconf-http-client-server-01

Abstract

This document defines two YANG modules: the first defines a grouping for configuring a generic HTTP client, and the second defines a grouping for configuring a generic HTTP server. It is intended that these groupings will be used by applications using the HTTP protocol.

Editorial Note (To be removed by RFC Editor)

This draft contains many placeholder values that need to be replaced with finalized values at the time of publication. This note summarizes all of the substitutions that are needed. No other RFC Editor instructions are specified elsewhere in this document.

Artwork in this document contains placeholder values for the date of publication of this draft. Please apply the following replacement:

- o "2019-04-07" --> the publication date of this draft

The following Appendix section is to be removed prior to publication:

- o [Appendix A](#). Change Log

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

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[1. Introduction](#)

This document defines two YANG 1.1 [[RFC7950](#)] modules: the first defines a grouping for configuring a generic HTTP client, and the second defines a grouping for configuring a generic HTTP server. It is intended that these groupings will be used by applications using the HTTP protocol.

2. 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.

3. The HTTP Client Model

3.1. Tree Diagram

This section provides a tree diagram [[RFC8340](#)] for the "ietf-http-client" module.

```
module: ietf-http-client

grouping http-client-grouping
  +-- http-client-parameters
    +-- protocol-version? enumeration
    +-- client-identity
      | +-- (auth-type)?
      |   +--:(basic)
      |     | +-- basic {basic-auth}?
      |     |   +-- user-id? string
      |     |   +-- password? string
      |     +--:(bearer)
      |       | +-- bearer {bearer-auth}?
      |       |   +-- token? string
      |       +--:(digest)
      |         | +-- digest {digest-auth}?
      |         |   +-- username? string
      |         |   +-- password? string
      |         +--:(hoba)
      |           | +-- hoba {hoba-auth}?
      |           +--:(mutual)
      |             | +-- mutual {mutual-auth}?
      |             +--:(negotiate)
      |               | +-- negotiate {negotiate-auth}?
      |               +--:(oauth)
      |                 | +-- oauth {oauth-auth}?
      |                 +--:(scram-sha-1)
      |                   | +-- scram-sha-1 {scram-sha-1-auth}?
      |                   +--:(scram-sha-256)
      |                     | +-- scram-sha-256 {scram-sha-256-auth}?
      |                     +--:(vapid)
      |                       +-- vapid {vapid-auth}?
      +-- proxy-server! {proxy-connect}?
        +---u tcpc:tcp-client-grouping
        +---u tlsc:tls-client-grouping
        +-- proxy-client-identity
          +-- user-id? string
          +-- password? string
```

[3.2.](#) Example Usage

This section presents an example showing the http-client-grouping populated with some data.


```
<http-client xmlns="urn:ietf:params:xml:ns:yang:ietf-http-client">
  <http-client-parameters>
    <protocol-version>HTTP/1.1</protocol-version>
    <client-identity>
      <basic>
        <user-id>bob</user-id>
        <password>secret</password>
      </basic>
    </client-identity>
  </http-client-parameters>
</http-client>
```

3.3. YANG Module

This YANG module has normative references to [\[RFC6991\]](#).

```
<CODE BEGINS> file "ietf-http-client@2019-04-07.yang"
module ietf-http-client {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:yang:ietf-http-client";
  prefix httpc;

  import ietf-tcp-client {
    prefix tcpc;
    reference
      "RFC AAAA: YANG Groupings for TCP Clients and TCP Servers";
  }

  import ietf-tls-client {
    prefix tlsc;
    reference
      "RFC BBBB: YANG Groupings for TLS Clients and TLS Servers";
  }

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

  contact
    "WG Web: <http://datatracker.ietf.org/wg/netconf/>
    WG List: <mailto:netconf@ietf.org>
    Author: Kent Watsen <mailto:kent+ietf@watsen.net>";

  description
    "This module defines reusable groupings for HTTP clients that
    can be used as a basis for specific HTTP client instances.

    Copyright (c) 2019 IETF Trust and the persons identified
    as authors of the code. All rights reserved."
```


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This version of this YANG module is part of RFC XXXX (<https://www.rfc-editor.org/info/rfcXXXX>); see the RFC itself for full legal notices.;

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](#) ([RFC 2119](#)) ([RFC 8174](#)) when, and only when, they appear in all capitals, as shown here.";

```
revision 2019-04-07 {
  description
    "Initial version";
  reference
    "RFC XXXX: YANG Groupings for HTTP Clients and HTTP Servers";
}

// Features

feature proxy-connect {
  description
    "Proxy connection configuration is configurable for
    HTTP clients on the server implementing this feature.";
}

feature basic-auth {
  description
    "fixme";
}

feature bearer-auth {
  description
    "fixme";
}

feature digest-auth {
  description
    "fixme";
}
```



```
feature hoba-auth {
  description
    "fixme";
}

feature mutual-auth {
  description
    "fixme";
}

feature negotiate-auth {
  description
    "fixme";
}

feature oauth-auth {
  description
    "fixme";
}

feature scram-sha-1-auth {
  description
    "fixme";
}

feature scram-sha-256-auth {
  description
    "fixme";
}

feature vapid-auth {
  description
    "fixme";
}

// Groupings

grouping http-client-grouping {
  description
    "A reusable grouping for configuring a HTTP client,
    including the IP address and port number it initiates
    a connections to.";

  container http-client-parameters {
    description
      "A container to hold HTTP client configuration. As HTTP
      clients vary wildly, it is expected that this container
      will be augmented by application-level modules as needed.";
  }
}
```



```
leaf protocol-version {
  type enumeration {
    enum HTTP/1.0 {
      description
        "The client should use the 'HTTP/1.0' protocol.";
    }
    enum HTTP/1.1 {
      description
        "The client should use the 'HTTP/1.1' protocol.";
    }
    enum HTTP/2.0 {
      description
        "The client should use the 'HTTP/2.0' protocol.";
    }
  }
  description
    "The HTTP protocol version the client should use.";
} // leaf protocol-version

container client-identity {
  description
    "The credentials used by the client to authenticate to
    the HTTP server.";
  choice auth-type {
    description
      "The authentication type.";
    container basic {
      if-feature "basic-auth";
      leaf user-id {
        type string;
        description
          "The user-id for the authenticating client.";
      }
      leaf password {
        type string;
        description
          "The password for the authenticating client.";
      }
    }
    description
      "The 'basic' HTTP scheme credentials.";
    reference
      "RFC 7617: The 'Basic' HTTP Authentication Scheme";
  }
  container bearer {
    if-feature "bearer-auth";
    leaf token {
      type string;
      description
```



```
        "The bearer token for the authenticating client,  
        encoded in base64, as described in RFC 6750,  
        Section 2.1.";
    }
    description  
        "The 'bearer' HTTP scheme credentials.";
    reference  
        "RFC 6750: The OAuth 2.0 Authorization Framework:  
        Bearer Token Usage";
}
container digest {
    if-feature "digest-auth";
    leaf username {
        type string;
        description  
            "The username for the authenticating client.";
    }
    leaf password {
        type string;
        description  
            "The password for the authenticating client.";
    }
    description  
        "The 'digest' HTTP scheme credentials.";
    reference  
        "RFC 7616: HTTP Digest Access Authentication";
}
container hoba {
    if-feature "hoba-auth";
    // FIXME
    description  
        "The 'hoba' HTTP scheme credentials.";
    reference  
        "RFC 7486: HTTP Origin-Bound Authentication (HOBA)";
}
container mutual {
    if-feature "mutual-auth";
    // FIXME
    description  
        "The 'mutual' HTTP scheme credentials.";
    reference  
        "RFC 8120: Mutual Authentication Protocol for HTTP";
}
container negotiate {
    if-feature "negotiate-auth";
    // FIXME
    description  
        "The 'negotiate' HTTP scheme credentials.";
```



```
        reference
            "RFC 4559: SPNEGO-based Kerberos and NTLM HTTP
              Authentication in Microsoft Windows";
    }
    container oauth {
        if-feature "oauth-auth";
        // FIXME
        description
            "The 'oauth' HTTP scheme credentials.";
        reference
            "RFC 6749: The OAuth 2.0 Authorization Framework";
    }
    container scram-sha-1 {
        if-feature "scram-sha-1-auth";
        // FIXME
        description
            "The 'scram-sha-1' HTTP scheme credentials.";
        reference
            "RFC 7804: Salted Challenge Response HTTP
              Authentication Mechanism";
    }
    container scram-sha-256 {
        if-feature "scram-sha-256-auth";
        // FIXME
        description
            "The 'scram-sha-256' HTTP scheme credentials.";
        reference
            "RFC 7804: Salted Challenge Response HTTP
              Authentication Mechanism";
    }
    container vapid {
        if-feature "vapid-auth";
        // FIXME
        description
            "The 'vapid' HTTP scheme credentials.";
        reference
            "RFC 8292: Voluntary Application Server
              Identification (VAPID) for Web Push";
    }
}
} // container client-identity

container proxy-server {
    if-feature "proxy-connect";
    presence true; // only so ex-http-client can pass validation?
    uses "tcp:tcp-client-grouping";
    uses "tls:tls-client-grouping";
    container proxy-client-identity {
```



```
    leaf user-id {
      type string;
      description
        "The user-id for the authenticating client.";
    }
    leaf password {
      type string;
      description
        "The password for the authenticating client.";
    }
    description
      "The 'basic' HTTP scheme credentials.";
    reference
      "RFC 7617: The 'Basic' HTTP Authentication Scheme";
  }
  description
    "Proxy server settings.";
} // container proxy-server
} // container http-client-parameters
} //grouping http-client-grouping
}
<CODE ENDS>
```

[4.](#) The HTTP Server Model

[4.1.](#) Tree Diagram

This section provides a tree diagram [[RFC8340](#)] for the "ietf-http-server" module.

module: ietf-http-server

```
grouping http-server-grouping
  +-- http-server-parameters
    +-- server-name?      string
    +-- protocol-versions
      +-- protocol-version* enumeration
```

[4.2.](#) Example Usage

This section presents an example showing the http-server-grouping populated with some data.


```
<http-server xmlns="urn:ietf:params:xml:ns:yang:ietf-http-server">
  <http-server-parameters>
    <server-name>foo.example.com</server-name>
    <protocol-versions>
      <protocol-version>HTTP/1.1</protocol-version>
      <protocol-version>HTTP/2.0</protocol-version>
    </protocol-versions>
  </http-server-parameters>
</http-server>
```

4.3. YANG Module

This YANG module has normative references to [\[RFC6991\]](#).

```
<CODE BEGINS> file "ietf-http-server@2019-04-07.yang"
module ietf-http-server {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:yang:ietf-http-server";
  prefix https;

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

  contact
    "WG Web:   <http://datatracker.ietf.org/wg/netconf/>
    WG List:   <mailto:netconf@ietf.org>
    Author:    Kent Watsen <mailto:kent+ietf@watsen.net>";

  description
    "This module defines reusable groupings for HTTP servers that
    can be used as a basis for specific HTTP server instances.

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    Legal Provisions Relating to IETF Documents
    (https://trustee.ietf.org/license-info).

    This version of this YANG module is part of RFC XXXX
    (https://www.rfc-editor.org/info/rfcXXXX); see the RFC
    itself for full legal notices.;

    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](#) ([RFC 2119](#)) ([RFC 8174](#)) when, and only when, they appear in all capitals, as shown here.";

```
revision 2019-04-07 {
  description
    "Initial version";
  reference
    "RFC XXXX: YANG Groupings for HTTP Clients and HTTP Servers";
}

// Groupings

grouping http-server-grouping {
  description
    "A reusable grouping for configuring an HTTP server.";

  container http-server-parameters {
    description
      "A container that holds HTTP server configuration. As HTTP
      servers vary wildly, it is expected that this container will
      be augmented by application-level modules as needed.";

    leaf server-name {
      type string;
      description
        "The value of the 'Server' header field. If not set, then
        underlying software's default value is used. Set to the
        empty string to disable.";
    }

    container protocol-versions {
      description
        "A list of HTTP protocol versions supported by this
        server.";
      leaf-list protocol-version {
        type enumeration {
          enum "HTTP/1.0" {
            description
              "The server supports the 'HTTP/1.0' protocol.";
          }
          enum "HTTP/1.1" {
            description
              "The server supports the 'HTTP/1.1' protocol.";
          }
          enum "HTTP/2.0" {
            description

```

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```

        "The server supports the 'HTTP/2.0' protocol.";
    }
}
description
    "An HTTP protocol version supported by this server.";
}
}
}
}
}
<CODE ENDS>

```


important to control access to these operations. These are the operations and their sensitivity/vulnerability:

The modules defined in this document do not define any 'RPC' or 'action' statements.

6. IANA Considerations

6.1. The IETF XML Registry

This document registers two URIs in the "ns" subregistry of the IETF XML Registry [[RFC3688](#)]. Following the format in [[RFC3688](#)], the following registrations are requested:

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

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

6.2. The YANG Module Names Registry

This document registers two YANG modules in the YANG Module Names registry [[RFC6020](#)]. Following the format in [[RFC6020](#)], the following registrations are requested:

name: ietf-http-client
namespace: urn:ietf:params:xml:ns:yang:ietf-http-client
prefix: httpc
reference: RFC XXXX

name: ietf-http-server
namespace: urn:ietf:params:xml:ns:yang:ietf-http-server
prefix: https
reference: RFC XXXX

7. References

7.1. 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>>.

- [RFC6020] Bjorklund, M., Ed., "YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)", [RFC 6020](#), DOI 10.17487/RFC6020, October 2010, <<https://www.rfc-editor.org/info/rfc6020>>.
- [RFC6991] Schoenwaelder, J., Ed., "Common YANG Data Types", [RFC 6991](#), DOI 10.17487/RFC6991, July 2013, <<https://www.rfc-editor.org/info/rfc6991>>.
- [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>>.

7.2. Informative References

- [RFC3688] Mealling, M., "The IETF XML Registry", [BCP 81](#), [RFC 3688](#), DOI 10.17487/RFC3688, January 2004, <<https://www.rfc-editor.org/info/rfc3688>>.
- [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>>.
- [RFC8040] Bierman, A., Bjorklund, M., and K. Watsen, "RESTCONF Protocol", [RFC 8040](#), DOI 10.17487/RFC8040, January 2017, <<https://www.rfc-editor.org/info/rfc8040>>.
- [RFC8340] Bjorklund, M. and L. Berger, Ed., "YANG Tree Diagrams", [BCP 215](#), [RFC 8340](#), DOI 10.17487/RFC8340, March 2018, <<https://www.rfc-editor.org/info/rfc8340>>.

Author's Address

Kent Watsen
Watsen Networks

EMail: kent+ietf@watsen.net

