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 YANG Grouping for UDP Clients and UDP Servers

Abstract

This document defines two YANG 1.1 modules to support the configuration of UDP clients and UDP servers.

Requirements Language

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.

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1. Introduction

This document defines two YANG 1.1 [RFC7950] modules to support the configuration of UDP clients and UDP servers, either as standalone or in conjunction with configuration of other protocol layers.

2. The "ietf-udp-client" Module

The "ietf-udp-client" YANG module defines the "udp-client-grouping" grouping for configuring UDP clients.

2.1. The "udp-client-grouping" Grouping

The following tree diagram [RFC8340] illustrates the "udp-client-grouping" grouping:

```
module: ietf-udp-client
```

```
grouping udp-client-grouping:  
  +- remote-address    inet:ip-address-no-zone  
  +- remote-port       inet:port-number
```

2.2. YANG Module

The "ietf-udp-client" YANG module defines the "udp-client-grouping" grouping.

```
<CODE BEGINS> file "ietf-udp-client@2024-01-22.yang"
```

```
module ietf-udp-client {
  yang-version 1.1;
  namespace
    "urn:ietf:params:xml:ns:yang:ietf-udp-client";
  prefix udpc;
  import ietf-inet-types {
    prefix inet;
    reference
      "RFC 6991: Common YANG Data Types";
  }

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

    Authors: Alex Huang Feng
              <mailto:alex.huang-feng@insa-lyon.fr>
              Pierre Francois
              <mailto:pierre.francois@insa-lyon.fr>";

  description
    "Defines a generic grouping for UDP-based client applications.

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    (https://trustee.ietf.org/license-info)."

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

  revision 2024-01-22 {
    description
      "Initial revision";
    reference
      "RFC-to-be: YANG Grouping for UDP Clients and UDP Servers";
  }

  grouping udp-client-grouping {
    description
      "Provides a reusable grouping for configuring a UDP client.";

    leaf remote-address {
```

```
    type inet:ip-address-no-zone;
    mandatory true;
    description
      "IP address of the UDP client, which can be an
      IPv4 address or an IPV6 address.";
  }

  leaf remote-port {
    type inet:port-number;
    mandatory true;
    description
      "Port number of the UDP client.";
  }
}
}
```

<CODE ENDS>

3. The "ietf-udp-server" Module

The "ietf-udp-server" YANG module defines the "udp-server-grouping" grouping for configuring UDP servers.

3.1. The "udp-server-grouping" Grouping

The following tree diagram [[RFC8340](#)] illustrates the "udp-server-grouping" grouping:

```
module: ietf-udp-server
```

```
grouping udp-server-grouping:  
  +-- local-address    inet:ip-address-no-zone  
  +-- local-port       inet:port-number
```

3.2. YANG Module

The "ietf-udp-server" YANG module defines the "udp-server-grouping" grouping.

```
<CODE BEGINS> file "ietf-udp-server@2024-01-22.yang"
```

```
module ietf-udp-server {
  yang-version 1.1;
  namespace
    "urn:ietf:params:xml:ns:yang:ietf-udp-server";
  prefix udps;
  import ietf-inet-types {
    prefix inet;
    reference
      "RFC 6991: Common YANG Data Types";
  }

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

    Authors: Alex Huang Feng
              <mailto:alex.huang-feng@insa-lyon.fr>
              Pierre Francois
              <mailto:pierre.francois@insa-lyon.fr>";

  description
    "Defines a generic grouping for UDP-based server applications.

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

  revision 2024-01-22 {
    description
      "Initial revision";
    reference
      "RFC-to-be: YANG Grouping for UDP Clients and UDP Servers";
  }

  grouping udp-server-grouping {
    description
      "Provides a reusable grouping for configuring a UDP servers.";

    leaf local-address {
```

```
    type inet:ip-address-no-zone;
    mandatory true;
    description
      "IP address of the UDP server, which can be an
      IPv4 address or an IPV6 address.";
  }

  leaf local-port {
    type inet:port-number;
    mandatory true;
    description
      "Port number of the UDP server.";
  }
}
}
```

<CODE ENDS>

4. Security Considerations

Following the guidelines for UDP applications defined in [\[RFC8085\]](#), "applications that need to protect their communications against eavesdropping, tampering, or message forgery SHOULD employ end-to-end security services provided by other IETF protocols". A UDP client and server can use DTLS [\[RFC9147\]](#) [\[RFC7525\]](#) to encrypt the payloads.

For configuring a UDP application with DTLS encryption, the groupings "tls-client-grouping" and "tls-server-grouping" defined in "ietf-tls-client" and "ietf-tls-server" modules can be used [\[I-D.ietf-netconf-tls-client-server\]](#).

5. IANA Considerations

This document describes the URIs from IETF XML Registry and the registration of a two new YANG module names

5.1. URI

IANA is requested to assign two new URI from the [IETF XML Registry](#) [\[RFC3688\]](#). The following two URIs are suggested:

URI: urn:ietf:params:xml:ns:yang:ietf-udp-client
Registrant Contact: The IESG.
XML: N/A; the requested URI is an XML namespace.

URI: urn:ietf:params:xml:ns:yang:ietf-udp-server
Registrant Contact: The IESG.
XML: N/A; the requested URI is an XML namespace.

5.2. YANG module name

This document also requests two new YANG module names in the [YANG Module Names registry](#) [\[RFC8342\]](#) with the following suggestions:

name: ietf-udp-client
namespace: urn:ietf:params:xml:ns:yang:ietf-udp-client
prefix: udpc
reference: RFC-to-be

name: ietf-udp-server
namespace: urn:ietf:params:xml:ns:yang:ietf-udp-server
prefix: udps
reference: RFC-to-be

6. Acknowledgements

The authors would like to thank xxx for their review and valuable comments.

7. References

7.1. Normative References

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- [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>>.

7.2. Informative References

[I-D.ietf-netconf-tls-client-server]

Watsen, K., "YANG Groupings for TLS Clients and TLS Servers", Work in Progress, Internet-Draft, draft-ietf-netconf-tls-client-server-34, 28 December 2023, <<https://datatracker.ietf.org/doc/html/draft-ietf-netconf-tls-client-server-34>>.

- [RFC7525] Sheffer, Y., Holz, R., and P. Saint-Andre, "Recommendations for Secure Use of Transport Layer Security (TLS) and Datagram Transport Layer Security (DTLS)", RFC 7525, DOI 10.17487/RFC7525, May 2015, <<https://www.rfc-editor.org/info/rfc7525>>.

[RFC8085]

Eggert, L., Fairhurst, G., and G. Shepherd, "UDP Usage Guidelines", BCP 145, RFC 8085, DOI 10.17487/RFC8085, March 2017, <<https://www.rfc-editor.org/info/rfc8085>>.

[RFC9147]

Rescorla, E., Tschofenig, H., and N. Modadugu, "The Datagram Transport Layer Security (DTLS) Protocol Version 1.3", RFC 9147, DOI 10.17487/RFC9147, April 2022, <<https://www.rfc-editor.org/info/rfc9147>>.

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