

```
module ietf-dots-telemetry {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:yang:ietf-dots-telemetry";
  prefix dots-telemetry;

  import ietf-dots-signal-channel {
    prefix ietf-signal;
    reference
      "RFC 8782: Distributed Denial-of-Service Open Threat
        Signaling (DOTS) Signal Channel Specification";
  }
  import ietf-dots-data-channel {
    prefix ietf-data;
    reference
      "RFC 8783: Distributed Denial-of-Service Open Threat
        Signaling (DOTS) Data Channel Specification";
  }
  import ietf-yang-types {
    prefix yang;
    reference
      "Section 3 of RFC 6991";
  }
  import ietf-inet-types {
    prefix inet;
    reference
      "Section 4 of RFC 6991";
  }
  import ietf-network-topology {
    prefix nt;
    reference
      "Section 6.2 of RFC 8345: A YANG Data Model for Network
        Topologies";
  }
  import ietf-yang-structure-ext {
    prefix sx;
    reference
      "RFC 8791: YANG Data Structure Extensions";
  }

  organization
    "IETF DDoS Open Threat Signaling (DOTS) Working Group";
  contact
    "WG Web:   <https://datatracker.ietf.org/wg/dots/>
      WG List: <mailto:dots@ietf.org>

    Author: Mohamed Boucadair
      <mailto:mohamed.boucadair@orange.com>

    Author: Konda, Tirumaleswar Reddy
      <mailto:TirumaleswarReddy\_Konda@McAfee.com>";
  description
    "This module contains YANG definitions for the signaling
      of DOTS telemetry exchanged between a DOTS client and
      a DOTS server, by means of the DOTS signal channel."
```

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

```
revision 2020-05-04 2020-07-03 {
  description
    "Initial revision.";
  reference
    "RFC XXXX: Distributed Denial-of-Service Open Threat
      Signaling (DOTS) Telemetry";
}

feature dots-telemetry {
  description
    "This feature indicates that the DOTS signal channel is able
      to convey DOTS telemetry data between DOTS clients and
      servers.";
}

typedef attack-severity {
  type enumeration {
    enum none {
      value 1;
      description
        "No effect on the DOTS client domain.";
    }
    enum low {
      value 2;
      description
        "Minimal effect on the DOTS client domain.";
    }
    enum medium {
      value 3;
      description
        "A subset of DOTS client domain resources are
          out of service.";
    }
    enum high {
      value 4;
      description
        "The DOTS client domain is under extremely severe
          conditions.";
    }
    enum unknown {
      value 5;
      description
        "The impact of the attack is not known.";
    }
  }
}
```

```
    }
  }
  description
    "Enumeration for attack severity.";
  reference
    "RFC 7970: The Incident Object Description Exchange
      Format Version 2";
}

typedef unit-type {
  type enumeration {
    enum packet-ps {
      value 1;
      description
        "Packets per second (pps).";
    }
    enum bit-ps {
      value 2;
      description
        "Bits per Second (bit/s).";
    }
    enum byte-ps {
      value 3;
      description
        "Bytes per second (Byte/s).";
    }
  }
  description
    "Enumeration to indicate which unit type is used.";
}

typedef unit {
  type enumeration {
    enum packet-ps {
      value 1;
      description
        "Packets per second (pps).";
    }
    enum bit-ps {
      value 2;
      description
        "Bits per Second (bps).";
    }
    enum byte-ps {
      value 3;
      description
        "Bytes per second (Bps).";
    }
    enum kilopacket-ps {
      value 4;
      description
        "Kilo packets per second (kpps).";
    }
    enum kilobit-ps {
      value 5;
      description
```

```
        "Kilobits per second (kbps).";
    }
    enum kilobyte-ps {
        value 6;
        description
            "Kilobytes per second (kBps).";
    }
    enum megapacket-ps {
        value 7;
        description
            "Mega packets per second (Mpps).";
    }
    enum megabit-ps {
        value 8;
        description
            "Megabits per second (Mbps).";
    }
    enum megabyte-ps {
        value 9;
        description
            "Megabytes per second (MBps).";
    }
    enum gigapacket-ps {
        value 10;
        description
            "Giga packets per second (Gpps).";
    }
    enum gigabit-ps {
        value 11;
        description
            "Gigabits per second (Gbps).";
    }
    enum gigabyte-ps {
        value 12;
        description
            "Gigabytes per second (GBps).";
    }
    enum terapacket-ps {
        value 13;
        description
            "Tera packets per second (Tpps).";
    }
    enum terabit-ps {
        value 14;
        description
            "Terabits per second (Tbps).";
    }
    enum terabyte-ps {
        value 15;
        description
            "Terabytes per second (TBps).";
    }
}
description
    "Enumeration to indicate which unit is used.";
}
```

```
typedef interval {
    type enumeration {
        enum hour {
            value 1;
            description
                "Hour.";
        }
        enum day {
            value 2;
            description
                "Day.";
        }
        enum week {
            value 3;
            description
                "Week.";
        }
        enum month {
            value 4;
            description
                "Month.";
        }
    }
    description
        "Enumeration to indicate the overall measurement period.";
}
```

```
typedef sample {
    type enumeration {
        enum second {
            value 1;
            description
                " A one second measurement period.";
        }
        enum 5-seconds {
            value 2;
            description
                "5 seconds measurement period.";
        }
        enum 30-seconds {
            value 3;
            description
                "30 seconds measurement period.";
        }
        enum minute {
            value 4;
            description
                "One minute measurement period.";
        }
        enum 5-minutes {
            value 5;
            description
                "5 minutes measurement period.";
        }
        enum 10-minutes {
```

```
        value 6;
        description
            "10 minutes measurement period.";
    }
    enum 30-minutes {
        value 7;
        description
            "30 minutes measurement period.";
    }
    enum hour {
        value 8;
        description
            "One hour measurement period.";
    }
}
description
    "Enumeration to indicate the measurement period.";
}

typedef percentile {
    type decimal64 {
        fraction-digits 2;
    }
    description
        "The nth percentile of a set of data is the
        value at which n percent of the data is below it.";
}

typedef query-type {
    type enumeration {
        enum target-prefix {
            value 1;
            description
                "Query based on target prefix.";
        }
        enum target-port {
            value 2;
            description
                "Query based on target port number.";
        }
        enum target-protocol {
            value 3;
            description
                "Query based on target protocol.";
        }
        enum target-fqdn {
            value 4;
            description
                "Query based on target FQDN.";
        }
        enum target-uri {
            value 5;
            description
                "Query based on target URI.";
        }
        enum target-alias {
```

```
        value 6;
        description
            "Query based on target alias.";
    }
    enum mid {
        value 7;
        description
            "Query based on mitigation identifier (mid).";
    }
    enum source-prefix {
        value 8;
        description
            "Query based on source prefix.";
    }
    enum source-port {
        value 9;
        description
            "Query based on source port number.";
    }
    enum source-icmp-type {
        value 10;
        description
            "Query based on ICMP type";
    }
    enum content {
        value 11;
        description
            "Query based on 'c' Uri-Query option that is used
            to control the selection of configuration
            and non-configuration data nodes.";
        reference
            "Section 4.4.2 of RFC SSSS.";
    }
}
description
    "Enumeration support for query types that can be used
    in a GET request to filter out data.";
}

grouping percentile-config {
    description
        "Configuration of low, mid, and high percentile values.";
    leaf measurement-interval {
        type interval;
        description
            "Defines the period on which percentiles are computed.";
    }
    leaf measurement-sample {
        type sample;
        description
            "Defines the time distribution for measuring
            values that are used to compute percentiles.";
    }
    leaf low-percentile {
        type percentile;
        default "10.00";
    }
}
```

```
    description
      "Low percentile. If set to '0', this means low-percentiles
        are disabled.";
  }
  leaf mid-percentile {
    type percentile;
    must '. >= ../low-percentile' {
      error-message
        "The mid-percentile must be greater than
          or equal to the low-percentile.";
    }
    default "50.00";
    description
      "Mid percentile. If set to the same value as low-percentiles,
        this means mid-percentiles are disabled.";
  }
  leaf high-percentile {
    type percentile;
    must '. >= ../mid-percentile' {
      error-message
        "The high-percentile must be greater than
          or equal to the mid-percentile.";
    }
    default "90.00";
    description
      "High percentile. If set to the same value as mid-percentiles,
        this means high-percentiles are disabled.";
  }
}

grouping percentile {
  description
    "Generic grouping for percentile.";
  leaf low-percentile-g {
    type yang:gauge64;
    description
      "Low percentile value.";
  }
  leaf mid-percentile-g {
    type yang:gauge64;
    description
      "Mid percentile value.";
  }
  leaf high-percentile-g {
    type yang:gauge64;
    description
      "High percentile value.";
  }
  leaf peak-g {
    type yang:gauge64;
    description
      "Peak value.";
  }
}

grouping unit-config {
```



```
description
  "Generic grouping for unit configuration.";
list unit-config {
  key "unit";
  description
    "Controls which unit types are allowed when sharing
    telemetry data.";
  leaf unit {
    type unit-type;
    description
      "Can be packet-ps, bit-ps, or byte-ps.";
  }
  leaf unit-status {
    type boolean;
    mandatory true;
    description
      "Enable/disable the use of the measurement unit type.";
  }
}

grouping traffic-unit {
  description
    "Grouping of traffic as a function of the measurement unit.";
  leaf unit {
    type unit;
    description
      "The traffic can be measured using unit types: packet-ps,
      bit-ps, or byte-ps. DOTS agents auto-scale to the appropriate
      units (e.g., megabit-ps, kilobit-ps).";
  }
  uses percentile;
}

grouping traffic-unit-protocol {
  description
    "Grouping of traffic of a given transport protocol as
    a function of the measurement unit.";
  leaf protocol {
    type uint8;
    description
      "The transport protocol.
      Values are taken from the IANA Protocol Numbers registry:
      <https://www.iana.org/assignments/protocol-numbers/>.

      For example, this parameter contains 6 for TCP,
      17 for UDP, 33 for DCCP, or 132 for SCTP.";
  }
  uses traffic-unit;
}

grouping traffic-unit-port {
  description
    "Grouping of traffic bound to a port number as
    a function of the measurement unit.";
  leaf port {
```

```
    type inet:port-number;
    description
        "Port number.";
}
uses traffic-unit;
}

grouping total-connection-capacity {
    description
        "Total Connections Capacity. These attributes are
        useful to detect resource consuming DDoS attacks";
    leaf connection {
        type uint64;
        description
            "The maximum number of simultaneous connections that
            are allowed to the target server.";
    }
    leaf connection-client {
        type uint64;
        description
            "The maximum number of simultaneous connections that
            are allowed to the target server per client.";
    }
    leaf embryonic {
        type uint64;
        description
            "The maximum number of simultaneous embryonic connections
            that are allowed to the target server. The term 'embryonic
            connection' refers to a connection whose connection handshake
            is not finished. Embryonic connection is only possible in
            connection-oriented transport protocols like TCP or SCTP.";
    }
    leaf embryonic-client {
        type uint64;
        description
            "The maximum number of simultaneous embryonic connections
            that are allowed to the target server per client.";
    }
    leaf connection-ps {
        type uint64;
        description
            "The maximum number of connections allowed per second
            to the target server.";
    }
    leaf connection-client-ps {
        type uint64;
        description
            "The maximum number of connections allowed per second
            to the target server per client.";
    }
    leaf request-ps {
        type uint64;
        description
            "The maximum number of requests allowed per second
            to the target server.";
    }
}
```

```
leaf request-client-ps {
  type uint64;
  description
    "The maximum number of requests allowed per second
    to the target server per client.";
}
leaf partial-request-ps {
  type uint64;
  description
    "The maximum number of partial requests allowed per
    second to the target server.";
}
leaf partial-request-client-ps {
  type uint64;
  description
    "The maximum number of partial requests allowed per
    second to the target server per client.";
}
}

grouping total-connection-capacity-protocol {
  description
    "Total Connections Capacity per protocol. These attributes are
    useful to detect resource consuming DDoS attacks.";
  leaf protocol {
    type uint8;
    description
      "The transport protocol.
      Values are taken from the IANA Protocol Numbers registry:
      <https://www.iana.org/assignments/protocol-numbers/>.";
  }
  uses total-connection-capacity;
}

grouping connection {
  description
    "A set of attributes which represent the attack
    characteristics";
  leaf connection {
    type yang:gauge64;
    description
      "The number of simultaneous attack connections to
      the target server.";
  }
  leaf embryonic {
    type yang:gauge64;
    description
      "The number of simultaneous embryonic connections to
      the target server.";
  }
  leaf connection-ps {
    type yang:gauge64;
    description
      "The number of attack connections per second to
      the target server.";
  }
}
```

```
leaf request-ps {
  type yang:gauge64;
  description
    "The number of attack requests per second to
    the target server.";
}
leaf partial-request-ps {
  type yang:gauge64;
  description
    "The number of attack partial requests to
    the target server.";
}
}

grouping connection-percentile {
  description
    "Total attack connections.";
  container low-percentile-c {
    description
      "Low percentile of attack connections.";
    uses connection;
  }
  container mid-percentile-c {
    description
      "Mid percentile of attack connections.";
    uses connection;
  }
  container high-percentile-c {
    description
      "High percentile of attack connections.";
    uses connection;
  }
  container peak-c {
    description
      "Peak attack connections.";
    uses connection;
  }
}

grouping connection-protocol {
  description
    "Total attack connections.";
  leaf protocol {
    type uint8;
    description
      "The transport protocol.
      Values are taken from the IANA Protocol Numbers registry:
      <https://www.iana.org/assignments/protocol-numbers/>.";
  }
  uses connection;
}

grouping connection-port {
  description
    "Total attack connections per port number.";
  leaf port {
```

```
    type inet:port-number;
    description
        "Port number.";
}
uses connection-protocol;
}

grouping connection-protocol-percentile {
    description
        "Total attack connections per protocol.";
    list low-percentile-1 {
        key "protocol";
        description
            "Low percentile of attack connections per protocol.";
        uses connection-protocol;
    }
    list mid-percentile-1 {
        key "protocol";
        description
            "Mid percentile of attack connections per protocol.";
        uses connection-protocol;
    }
    list high-percentile-1 {
        key "protocol";
        description
            "High percentile of attack connections per protocol.";
        uses connection-protocol;
    }
    list peak-1 {
        key "protocol";
        description
            "Peak attack connections per protocol.";
        uses connection-protocol;
    }
}

grouping connection-protocol-port-percentile {
    description
        "Total attack connections per port number.";
    list low-percentile-1 {
        key "protocol port";
        description
            "Low percentile of attack connections per port number.";
        uses connection-port;
    }
    list mid-percentile-1 {
        key "protocol port";
        description
            "Mid percentile of attack connections per port number.";
        uses connection-port;
    }
    list high-percentile-1 {
        key "protocol port";
        description
            "High percentile of attack connections per port number.";
        uses connection-port;
    }
}
```

```
}
list peak-1 {
    key "protocol port";
    description
        "Peak attack connections per port number.";
    uses connection-port;
}

grouping attack-detail {
    description
        "Various details that describe the on-going
        attacks that need to be mitigated by the DOTS server.
        The attack details need to cover well-known and common attacks
        (such as a SYN Flood) along with new emerging or vendor-specific
        attacks.";
    leaf vendor-id {
        type uint32;
        description
            "Vendor ID is a security vendor's Enterprise Number.";
    }
    leaf attack-id {
        type uint32;
        description
            "Unique identifier assigned by the vendor for the attack.";
    }
    leaf attack-description {
        type string;
        description
            "Textual representation of attack description. Natural Language
            Processing techniques (e.g., word embedding) can possibly be used
            to map the attack description to an attack type.";
    }
    leaf attack-severity {
        type attack-severity;
        description
            "Severity level of an attack. How this level is determined
            is implementation-specific.";
    }
    leaf start-time {
        type uint64;
        description
            "The time the attack started. Start time is represented in seconds
            relative to 1970-01-01T00:00:00Z in UTC time.";
    }
    leaf end-time {
        type uint64;
        description
            "The time the attack ended. End time is represented in seconds
            relative to 1970-01-01T00:00:00Z in UTC time.";
    }
    container source-count {
        description
            "Indicates the count of unique sources involved
            in the attack.";
        uses percentile;
    }
}
```

```
    }  
  }  
  
  grouping top-talker-aggregate {  
    description  
      "Top attack sources.";   
    list talker {  
      key "source-prefix";  
      description  
        "IPv4 or IPv6 prefix identifying the attacker(s).";  
      leaf spoofed-status {  
        type boolean;  
        description  
          "Indicates whether this address is spoofed.";  
      }  
      leaf source-prefix {  
        type inet:ip-prefix;  
        description  
          "IPv4 or IPv6 prefix identifying the attacker(s).";  
      }  
      list source-port-range {  
        key "lower-port";  
        description  
          "Port range. When only lower-port is  
          present, it represents a single port number.";  
        leaf lower-port {  
          type inet:port-number;  
          mandatory true;  
          description  
            "Lower port number of the port range.";  
        }  
        leaf upper-port {  
          type inet:port-number;  
          must '. >= ../lower-port' {  
            error-message  
              "The upper port number must be greater than  
              or equal to lower port number.";  
          }  
          description  
            "Upper port number of the port range.";  
        }  
      }  
    }  
    list source-icmp-type-range {  
      key "lower-type";  
      description  
        "ICMP type range. When only lower-type is  
        present, it represents a single ICMP type.";  
      leaf lower-type {  
        type uint8;  
        mandatory true;  
        description  
          "Lower ICMP type of the ICMP type range.";  
      }  
      leaf upper-type {  
        type uint8;  
        must '. >= ../lower-type' {  

```

```
        error-message
        "The upper ICMP type must be greater than
        or equal to lower ICMP type.";
    }
    description
    "Upper type of the ICMP type range.";
}
}
list total-attack-traffic {
    key "unit";
    description
    "Total attack traffic issued from this source.";
    uses traffic-unit;
}
container total-attack-connection {
    description
    "Total attack connections issued from this source.";
    uses connection-percentile;
}
}
}

grouping top-talker {
    description
    "Top attack sources.";
    list talker {
        key "source-prefix";
        description
        "IPv4 or IPv6 prefix identifying the attacker(s).";
        leaf spoofed-status {
            type boolean;
            description
            "Indicates whether this address is spoofed.";
        }
        leaf source-prefix {
            type inet:ip-prefix;
            description
            "IPv4 or IPv6 prefix identifying the attacker(s).";
        }
        list source-port-range {
            key "lower-port";
            description
            "Port range. When only lower-port is
            present, it represents a single port number.";
            leaf lower-port {
                type inet:port-number;
                mandatory true;
                description
                "Lower port number of the port range.";
            }
            leaf upper-port {
                type inet:port-number;
                must ' . >= ../lower-port ' {
                    error-message
                    "The upper port number must be greater than
                    or equal to lower port number.";
                }
            }
        }
    }
}
```



```
    }
    description
      "Upper port number of the port range.";
  }
}
list source-icmp-type-range {
  key "lower-type";
  description
    "ICMP type range. When only lower-type is
    present, it represents a single ICMP type.";
  leaf lower-type {
    type uint8;
    mandatory true;
    description
      "Lower ICMP type of the ICMP type range.";
  }
  leaf upper-type {
    type uint8;
    must '. >= ../lower-type' {
      error-message
        "The upper ICMP type must be greater than
        or equal to lower ICMP type.";
    }
    description
      "Upper type of the ICMP type range.";
  }
}
list total-attack-traffic {
  key "unit";
  description
    "Total attack traffic issued from this source.";
  uses traffic-unit;
}
container total-attack-connection {
  description
    "Total attack connections issued from this source.";
  uses connection-protocol-percentile;
}
}

grouping baseline {
  description
    "Grouping for the telemetry baseline.";
  uses ietf-data:target;
  leaf-list alias-name {
    type string;
    description
      "An alias name that points to a resource.";
  }
  list total-traffic-normal {
    key "unit";
    description
      "Total traffic normal baselines.";
    uses traffic-unit;
  }
}
```

```
list total-traffic-normal-per-protocol {
  key "unit protocol";
  description
    "Total traffic normal baselines per protocol.";
  uses traffic-unit-protocol;
}
list total-traffic-normal-per-port {
  key "unit port";
  description
    "Total traffic normal baselines per port number.";
  uses traffic-unit-port;
}
list total-connection-capacity {
  key "protocol";
  description
    "Total connection capacity.";
  uses total-connection-capacity-protocol;
}
list total-connection-capacity-per-port {
  key "protocol port";
  description
    "Total connection capacity per port number.";
  leaf port {
    type inet:port-number;
    description
      "The target port number.";
  }
  uses total-connection-capacity-protocol;
}
}

grouping pre-or-ongoing-mitigation {
  description
    "Grouping for the telemetry data.";
  list total-traffic {
    key "unit";
    description
      "Total traffic.";
    uses traffic-unit;
  }
  list total-traffic-protocol {
    key "unit protocol";
    description
      "Total traffic per protocol.";
    uses traffic-unit-protocol;
  }
  list total-traffic-port {
    key "unit port";
    description
      "Total traffic per port.";
    uses traffic-unit-port;
  }
  list total-attack-traffic {
    key "unit";
    description
      "Total attack traffic.";
  }
}
```

```

    uses traffic-unit-protocol;
}
list total-attack-traffic-protocol {
    key "unit protocol";
    description
        "Total attack traffic per protocol.";
    uses traffic-unit-protocol;
}
list total-attack-traffic-port {
    key "unit port";
    description
        "Total attack traffic per port.";
    uses traffic-unit-port;
}
container total-attack-connection {
    description
        "Total attack connections.";
    uses connection-protocol-percentile;
}
container total-attack-connection-port {
    description
        "Total attack connections.";
    uses connection-protocol-port-percentile;
}
list attack-detail {
    key "vendor-id attack-id";
    description
        "Provides a set of attack details.";
    uses attack-detail;
    container top-talker {
        description
            "Lists the top attack sources.";
        uses top-talker;
    }
}
}

```

~~augment~~

```

sx:augment-structure "/ietf-signal:dots-signal/ietf-signal:message-type/"
    + "ietf-signal:mitigation-scope/ietf-signal:scope" {
if-feature "dots-telemetry";
description
    "Extends mitigation scope with telemetry update data.";
choice direction {
    description
        "Indicates the communication direction in which the
        attributes can be included.";
    case server-to-client {
        description
            "These attributes appear only in a mitigation message
            sent from the server to the client.";
        list total-traffic {
            key "unit";
config false;
            description

```

```

        "Total traffic.";
        uses traffic-unit;
    }
list total-attack-traffic
    container total-attack-connection {
key "unit";
        description
            "Total attack traffic. connections.";
        uses traffic-unit; connection-percentile;
    }
container total-attack-connection
}
}
    list total-attack-traffic {
config false;
        key "unit";
        description
            "Total attack connections. traffic.";
        uses connection-percentile; traffic-unit;
    }
    list attack-detail {
        key "vendor-id attack-id";
        description
            "Attack details";
        uses attack-detail;
        container top-talker {
            description
                "Top attack sources.";
            uses top-talker-aggregate;
        }
    }
}

augment

sx:augment-structure "/ietf-signal:dots-signal/ietf-signal:message-type" {
    if-feature "dots-telemetry";
    description
        "Add a new choice to enclose telemetry data in DOTS
        signal channel.";
    case telemetry-setup {
        description
            "Indicates the message is about telemetry.";
        choice direction {
            description
                "Indicates the communication direction in which the
                attributes can be included.";
            case server-to-client {
                description
                    "These attributes appear only in a mitigation message
                    sent from the server to the client.";
                container max-config-values {
config false;
                    description
                        "Maximum acceptable configuration values.";
                    uses percentile-config;
                }
            }
        }
    }
}

```

```
leaf server-originated-telemetry {
  type boolean;
  description
    "Indicates whether the DOTS server can be instructed
    to send pre-or-ongoing-mitigation telemetry. If set to FALSE
    or the attribute is not present, this is an indication
    that the server does not support this capability.";
}
leaf telemetry-notify-interval {
  type uint32 {
    range "1 .. 3600";
  }
  must '. >= ../../min-config-values/telemetry-notify-interval' {
    error-message
      "The value must be greater than or equal
      to the telemetry-notify-interval in the min-config-values";
  }
  units "seconds";
  description
    "Minimum number of seconds between successive
    telemetry notifications.";
}
}
container min-config-values {
config false;
  description
    "Minimum acceptable configuration values.";
  uses percentile-config;
  leaf telemetry-notify-interval {
    type uint32 {
      range "1 .. 3600";
    }
    units "seconds";
    description
      "Minimum number of seconds between successive
      telemetry notifications.";
  }
}
container supported-units {
config false;
  description
    "Supported units and default activation status.";
  uses unit-config;
}
leaf-list query-type {
  type query-type;
config false;
  description
    "Indicates which query types are supported by
    the server.";
}
}
}
list telemetry {
  key "cuid tsid";
  description
```

```
"The telemetry data per DOTS client.";
leaf cuid {
  type string;
  description
    "A unique identifier that is
    generated by a DOTS client to prevent
    request collisions. It is expected that the
    cuid will remain consistent throughout the
    lifetime of the DOTS client.";
}
leaf cdid {
  type string;
  description
    "The cdid should be included by a server-domain
    DOTS gateway to propagate the client domain
    identification information from the
    gateway's client-facing-side to the gateway's
    server-facing-side, and from the gateway's
    server-facing-side to the DOTS server.

    It may be used by the final DOTS server
    for policy enforcement purposes.";
}
leaf tsid {
  type uint32;
  description
    "An identifier for the DOTS telemetry setup
    data.";
}
choice setup-type {
  description
    "Can be a mitigation configuration, a pipe capacity,
    or baseline message.";
  case telemetry-config {
    description
      "Uses to set low, mid, and high percentile values.";
    container current-config {
      description
        "Current configuration values.";
      uses percentile-config;
      uses unit-config;
      leaf server-originated-telemetry {
        type boolean;
        description
          "Used by a DOTS client to enable/disable whether it
          accepts pre-or-ongoing-mitigation telemetry from
          the DOTS server.";
      }
    }
    leaf telemetry-notify-interval {
      type uint32 {
        range "1 .. 3600";
      }
      units "seconds";
      description
        "Minimum number of seconds between successive
        telemetry notifications.";
    }
  }
}
```

```
    }
  }
}
case pipe {
  description
    "Total pipe capacity of a DOTS client domain";
  list total-pipe-capacity {
    key "link-id unit";
    description
      "Total pipe capacity of a DOTS client domain.";
    leaf link-id {
      type nt:link-id;
      description
        "Identifier of an interconnection link.";
    }
    leaf capacity {
      type uint64;
      mandatory true;
      description
        "Pipe capacity.";
    }
    leaf unit {
      type unit;
      description
        "The traffic can be measured using unit types: packets
        per second (PPS), Bits per Second (BPS), and/or
        bytes per second. DOTS agents auto-scale to the
        appropriate units (e.g., megabit-ps, kilobit-ps).";
    }
  }
}
case baseline {
  description
    "Traffic baseline information";
  list baseline {
    key "id";
    description
      "Traffic baseline information";
    leaf id {
      type uint32;
      must '. >= 1';
      description
        "A baseline entry identifier.";
    }
    uses baseline;
  }
}
}
}
case telemetry {
  description
    "Indicates the message is about telemetry.";
  list pre-or-ongoing-mitigation {
    key "cuid tmid";
    description
```

```
    "Pre-or-ongoing-mitigation telemetry per DOTS client.";
  leaf cuid {
    type string;
    description
      "A unique identifier that is
       generated by a DOTS client to prevent
       request collisions. It is expected that the
       cuid will remain consistent throughout the
       lifetime of the DOTS client.";
  }
  leaf cdid {
    type string;
    description
      "The cdid should be included by a server-domain
       DOTS gateway to propagate the client domain
       identification information from the
       gateway's client-facing-side to the gateway's
       server-facing-side, and from the gateway's
       server-facing-side to the DOTS server.

       It may be used by the final DOTS server
       for policy enforcement purposes.";
  }
  leaf tmid {
    type uint32;
    description
      "An identifier to uniquely demux telemetry data sent
       using the same message.";
  }
  container target {
    description
      "Indicates the target.";
    uses ietf-data:target;
    leaf-list alias-name {
      type string;
      description
        "An alias name that points to a resource.";
    }
    leaf-list mid-list {
      type uint32;
      description
        "Reference a list of associated mitigation requests.";
    }
  }
}
uses pre-or-ongoing-mitigation;
}
}
```