              Definitions of Textual Conventions (TCs) for
          Bidirectional Forwarding Detection (BFD) Management
                        draft-ietf-bfd-tc-mib-04

Abstract

   This draft defines a Management Information Base (MIB) module which
   contains Textual Conventions to represent commonly used Bidirectional
   Forwarding Detection (BFD) management information. The intent is
   that these TEXTUAL CONVENTIONS (TCs) will be imported and used in BFD
   related MIB modules that would otherwise define their own
   representations.

Requirements Language

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
   document are to be interpreted as described in BCP 14, RFC 2119
   [RFC2119].

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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   Task Force (IETF). Note that other groups may also distribute
   working documents as Internet-Drafts. The list of current Internet-
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   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 May 25, 2014.

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1. The Internet-Standard Management Framework

   For a detailed overview of the documents that describe the current
   Internet-Standard Management Framework, please refer to section 7 of
   RFC 3410 [RFC3410].

   Managed objects are accessed via a virtual information store, termed
   the Management Information Base or MIB. MIB objects are generally
   accessed through the Simple Network Management Protocol (SNMP).
   Objects in the MIB are defined using the mechanisms defined in the
   Structure of Management Information (SMI). This memo specifies a MIB
   module that is compliant to the SMIv2, which is described in STD 58,
   RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580
   [RFC2580].

2. Introduction

   This document defines a MIB module which contains Textual Conventions
   for Bidirectional Forwarding Detection (BFD) protocols. These
   Textual Conventions should be imported by MIB modules which manage
   BFD protocols.

Note that names of Textual Conventions defined in this document are
prefixed with "IANA" to make it obvious to readers that they are IANA
maintained.

For an introduction to the concepts of BFD, see [RFC5880], [RFC5881]
and [RFC5883].

3. BFD Textual Conventions MIB Definitions

This MIB module makes references to the following documents:
[RFC2578], [RFC2579], [RFC5880], [RFC5881] and [RFC5883].

```
   IANA-BFD-TC-STD-MIB DEFINITIONS ::= BEGIN

   IMPORTS
       MODULE-IDENTITY, mib-2, Unsigned32
           FROM SNMPv2-SMI                                 -- [RFC2578]

       TEXTUAL-CONVENTION
           FROM SNMPv2-TC;                                 -- [RFC2579]

   ianaBfdTCStdMib MODULE-IDENTITY
       LAST-UPDATED
                   "201311211200Z" -- 21 Nov. 2013 12:00:00 EST
       ORGANIZATION
                   "IANA"
       CONTACT-INFO
                   "Internet Assigned Numbers Authority
                    Postal: 4676 Admiralty Way, Suite 330
                            Marina del Rey, CA 90292
                    Tel:    +1 310 823 9358
                    E-Mail: iana@iana.org"

       DESCRIPTION
          "Copyright (C) The IETF Trust (2013). The initial version
           of this MIB module was published in RFC xxxx. For full legal
           notices see the RFC itself. Supplementary information
           may be available on:
           http://www.ietf.org/copyrights/ianamib.html"
   -- RFC Ed.: RFC-editor pls fill in xxxx

       REVISION
          "201311211200Z" -- 21 Nov. 2013 12:00:00 EST
       DESCRIPTION
          "Initial version. Published as RFC xxxx."
    -- RFC Ed.: RFC-editor pls fill in xxxx
    ::= { mib-2 XXX }
    -- RFC Ed.: assigned by IANA, see section 5 for details
```

```
    IANAbfdSessIndexTC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT    "d"
    STATUS          current
    DESCRIPTION
        "An index used to uniquely identify BFD sessions."
    SYNTAX Unsigned32 (1..4294967295)

    IANAbfdIntervalTC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT    "d"
    STATUS          current
    DESCRIPTION
        "The BFD interval in microseconds."
    SYNTAX Unsigned32 (0..4294967295)

    IANAbfdMultiplierTC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT      "d"
    STATUS            current
    DESCRIPTION
        "The BFD failure detection multiplier."
    SYNTAX Unsigned32 (1..255)

    IANAbfdDiagTC ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "A common BFD diagnostic code."
    SYNTAX INTEGER {
        noDiagnostic(0),
        controlDetectionTimeExpired(1),
        echoFunctionFailed(2),
        neighborSignaledSessionDown(3),
        forwardingPlaneReset(4),
        pathDown(5),
        concatenatedPathDown(6),
        administrativelyDown(7),
        reverseConcatenatedPathDown(8)
    }

    IANAbfdSessTypeTC ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "BFD session type"
    REFERENCE
        "Katz, D. and D. Ward, Bidirectional Forwarding
             Detection (BFD), RFC 5880, June 2010.

         Katz, D. and D. Ward, Bidirectional Forwarding
             Detection (BFD) for IPv4 and IPv6 (Single Hop),
             RFC 5881, June 2010.
```

```
        Katz, D. and D. Ward, Bidirectional Forwarding
            Detection (BFD) for Multihop Paths, RFC 5883,
            June 2010."
SYNTAX INTEGER {
    singleHop(1),
    multiHopTotallyArbitraryPaths(2),
    multiHopOutOfBandSignaling(3),
    multiHopUnidirectionalLinks(4),
    multiPointHead(5),
    multiPointTail(6)
}


IANAbfdSessOperModeTC ::= TEXTUAL-CONVENTION
STATUS            current
DESCRIPTION
    "BFD session operating mode"
REFERENCE
    "Katz, D. and D. Ward, Bidirectional Forwarding
        Detection (BFD), RFC 5880, June 2010."
SYNTAX INTEGER {
    asyncModeWEchoFunction(1),
    asynchModeWOEchoFunction(2),
    demandModeWEchoFunction(3),
    demandModeWOEchoFunction(4)
}


IANAbfdCtrlDestPortNumberTC ::= TEXTUAL-CONVENTION
DISPLAY-HINT            "d"
STATUS                 current
DESCRIPTION
    "UDP destination port number of BFD control packets.
     3784 represents single hop BFD session.
     4784 represents multi hop BFD session.
     However, syntax is left open to wider range of values
     purposely for two reasons:
     1. implementation uses non-compliant port number for
        valid proprietary reason.
     2. potential future extension drafts."
REFERENCE
    "Use of port 3784 from Katz, D. and D. Ward,
        Bidirectional Forwarding Detection (BFD) for
        IPv4 and IPv6 (Single Hop), RFC 5881, June 2010.

     Use of port 4784 from Katz, D. and D. Ward,
        Bidirectional Forwarding Detection (BFD) for
        Multihop Paths, RFC 5883, June 2010."
SYNTAX Unsigned32 (0..65535)
```

```
    IANAbfdCtrlSourcePortNumberTC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT                "d"
    STATUS                      current
    DESCRIPTION
        "UDP source port number of BFD control packets.
         However, syntax is left open to wider range of values
         purposely for two reasons:
         1. implementation uses non-compliant port number for
            valid proprietary reason.
         2. potential future extension drafts."
    REFERENCE
        "Port 49152..65535 (RFC5881)"
    SYNTAX Unsigned32 (0..65535)


    IANAbfdSessStateTC ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "BFD session state. State failing(5) is only applicable if
         corresponding session is running in BFD version 0."
    REFERENCE
        "RFC 5880 - Bidirectional Forwarding Detection (BFD), Katz,
         D., Ward, D., June 2010."
    SYNTAX INTEGER {
        adminDown(1),
        down(2),
        init(3),
        up(4),
        failing(5)
    }


    IANAbfdSessAuthenticationTypeTC ::= TEXTUAL-CONVENTION
    STATUS                      current
    DESCRIPTION
        "BFD authentication type"
    REFERENCE
        "Sections 4.2 - 4.4 from Katz, D. and D. Ward,
         Bidirectional Forwarding Detection (BFD),
         RFC 5880, June 2010."
    SYNTAX INTEGER {
        noAuthentication(-1),
        reserved(0),
        simplePassword(1),
        keyedMD5(2),
        meticulousKeyedMD5(3),
        keyedSHA1(4),
        meticulousKeyedSHA1(5)
    }
```

```
    IANAbfdSessAuthenticationKeyTC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT                    "1x "
    STATUS                          current
    DESCRIPTION
        "BFD authentication key type.

        An IANAbfdSessAuthenticationKeyTC is always interpreted
        within the context of an IANAbfdSessAuthenticationTypeTC
        value.  Every usage of the IANAbfdSessAuthenticationTypeTC
        textual convention is required to specify the
        IANAbfdSessAuthenticationKeyTC object that provides the
        context.  It is suggested that the
        IANAbfdSessAuthenticationKeyTC object be logically registered
        before the object(s) that use the
        IANAbfdSessAuthenticationKeyTC textual convention, if they
        appear in the same logical row.

        The value of a IANAbfdSessAuthenticationKeyTC must
        always be consistent with the value of the associated
        IANAbfdSessAuthenticationTypeTC object.  Attempts to set a
        IANAbfdSessAuthenticationKeyTC object to a value inconsistent
        with the associated IANAbfdSessAuthenticationTypeTC must fail
        with an inconsistentValue error.

        The following size constraints for a
        IANAbfdSessAuthenticationKeyTC object are defined for the
        associated IANAbfdSessAuthenticationTypeTC values show below:

        noAuthentication(-1): SIZE(0)
        reserved(0): SIZE(0)
        simplePassword(1): SIZE(1..16)
        keyedMD5(2): SIZE(16)
        meticulousKeyedMD5(3): SIZE(16)
        keyedSHA1(4): SIZE(20)
        meticulousKeyedSHA1(5): SIZE(20)

        When this textual convention is used as the syntax of an
        index object, there may be issues with the limit of 128
        sub-identifiers specified in SMIv2, STD 58.  In this case,
        the object definition MUST include a 'SIZE' clause to limit
        the number of potential instance sub-identifiers; otherwise
        the applicable constraints MUST be stated in the appropriate
        conceptual row DESCRIPTION clauses, or in the surrounding
        documentation if there is no single DESCRIPTION clause that
        is appropriate."
    REFERENCE
        "RFC5880, Sections 4.2 - 4.4"
    SYNTAX OCTET STRING(SIZE(0..252))
```

```
   END
```

4. Security Considerations

   This module does not define any management objects. Instead, it
   defines a set of textual conventions which may be used by other BFD
   MIB modules to define management objects.

   Meaningful security considerations can only be written in the MIB
   modules that define management objects. Therefore, this document has
   no impact on the security of the Internet.

5. IANA Considerations

   This document provides the base definition of the IANA-BFD-TC-STD-MIB
   module. This MIB module is under the direct control of IANA. Please
   see the most updated version of this MIB at <http://www.iana.org/
   assignments/bfdtc-mib>. [RFC-Editor's Note (to be removed prior to
   publication): the IANA is requested to create page pointed to by
   URL.]

   This MIB makes reference to the following documents: [RFC2578],
   [RFC2579], [RFC5880], [RFC5881] and [RFC5883].

   IANA assigned an OID to the IANA-BFD-TC-STD-MIB module specified in
   this document as { mib-2 XXX }. [RFC-Editor's Note (to be removed
   prior to publication): the IANA is requested to assign a value for
   "XXX" under the 'mib-2' subtree and to record the assignment in the
   SMI Numbers registry. When the assignment has been made, the RFC
   Editor is asked to replace "XXX" (here and in the MIB module) with
   the assigned value and to remove this note.]

6. Acknowledgments

   Authors would like to thank David Ward and Jeffrey Haas for their
   comments and suggestions.

7. References

7.1. Normative References

   [RFC2119]   Bradner, S., "Key words for use in RFCs to Indicate
               Requirement Levels", BCP 14, RFC 2119, March 1997.

   [RFC2578]   McCloghrie, K., Ed., Perkins, D., Ed., and J.
               Schoenwaelder, Ed., "Structure of Management Information
               Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

   [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J.
              Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD
              58, RFC 2579, April 1999.

   [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder,
              "Conformance Statements for SMIv2", STD 58, RFC 2580,
              April 1999.

   [RFC5880] Katz, D. and D. Ward, "Bidirectional Forwarding Detection
              (BFD)", RFC 5880, June 2010.

   [RFC5881] Katz, D. and D. Ward, "Bidirectional Forwarding Detection
              (BFD) for IPv4 and IPv6 (Single Hop)", RFC 5881, June
              2010.

   [RFC5883] Katz, D. and D. Ward, "Bidirectional Forwarding Detection
              (BFD) for Multihop Paths", RFC 5883, June 2010.

7.2. Informative References

   [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart,
              "Introduction and Applicability Statements for Internet-
              Standard Management Framework", RFC 3410, December 2002.

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