

Network Working Group
Internet-Draft
Intended status: Standards Track
Expires: May 25, 2014

T. Nadeau
Juniper Networks
Z. Ali
N. Akiya
Cisco Systems
November 21, 2013

**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](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any 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.

Copyright Notice

Copyright (c) 2013 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](http://trustee.ietf.org/license-info) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	The Internet-Standard Management Framework	2
2.	Introduction	2
3.	BFD Textual Conventions MIB Definitions	3
4.	Security Considerations	8
5.	IANA Considerations	8
6.	Acknowledgments	8
7.	References	8
7.1.	Normative References	8
7.2.	Informative References	9

[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.

Authors' Addresses

Thomas D. Nadeau
Juniper Networks

EMail: tnadeau@juniper.net

Zafar Ali
Cisco Systems

EMail: zali@cisco.com

Nobo Akiya
Cisco Systems

EMail: nobo@cisco.com

