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**Definitions of Textual Conventions (TCs) for
Bidirectional Forwarding Detection (BFD) Management
draft-ietf-bfd-tc-mib-00**

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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.

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[1.](#) 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.

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 [[RFC2119](#)].

For an introduction to the concepts of BFD, see [[BFD](#)], [[BFD-1HOP](#)] and [[BFD-MH](#)].

2. 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 \[RFC3410\]](#).

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, [[RFC2578](#)], STD 58, [[RFC2579](#)] and STD 58, [[RFC2580](#)].

3. BFD Textual Conventions MIB Definitions

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

```
IMPORTS
```

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

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

```
bfdTCStdMib MODULE-IDENTITY
```

```
    LAST-UPDATED "201009071200Z" -- 7 September 2010 12:00:00 EST
```

```
    ORGANIZATION "IETF Bidirectional Forwarding Detection
    Working Group"
```

```
    CONTACT-INFO
```

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        Cisco Systems, G.K.
        Email: nobo@cisco.com"
```

```
    DESCRIPTION
```

```
        "This MIB module defines TEXTUAL-CONVENTIONS for concepts
        used in Bidirectional Forwarding Detection (BFD)
```



```
        protocols."
    REVISION "201009071200Z" -- 7 September 2010 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

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

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

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

BfdDiagTC ::= 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)
    }

BfdSessTypeTC ::= TEXTUAL-CONVENTION
    STATUS        current
    DESCRIPTION
```

"BFD session type"

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REFERENCE

"[RFC5880](#), [RFC5881](#), [RFC5883](#)"

```
SYNTAX INTEGER {
    singleHop(1),
    multiHopTotallyArbitraryPaths(2),
    multiHopOutOfBandSignaling(3),
    multiHopUnidirectionalLinks(4),
    multiPointHead(5),
    multiPointTail(6)
}
```

BfdSessOperModeTC ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"BFD session operating mode"

REFERENCE

"[RFC5880](#), [Section 3.2](#)"

```
SYNTAX INTEGER {
    asyncModeWEchoFunction(1),
    asynchModeWOEchoFunction(2),
    demandModeWEchoFunction(3),
    demandModeWOEchoFunction(4)
}
```

BfdCtrlDestPortNumberTC ::= 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

"Port 3784 ([RFC5881](#)) and Port 4784 ([RFC5883](#))"

SYNTAX Unsigned32 (0..65535)

BfdCtrlSourcePortNumberTC ::= 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.

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2. potential future extension drafts."

REFERENCE

"Port 49152..65535 ([RFC5881](#))"

SYNTAX Unsigned32 (0..65535)

BfdSessStateTC ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"BFD session state. State failing(5) is only applicable if corresponding session is running in BFD version 0."

REFERENCE

"[draft-katz-ward-bfd-02.txt](#), [RFC5880](#)"

SYNTAX INTEGER {

adminDown(1),

down(2),

init(3),

up(4),

failing(5)

}

BfdSessAuthenticationTypeTC ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"BFD authentication type"

REFERENCE

"[RFC5880](#), Sections [4.2](#) - [4.4](#)"

SYNTAX INTEGER {

noAuthentication(-1),

reserved(0),

simplePassword(1),

keyedMD5(2),

meticulousKeyedMD5(3),

keyedSHA1(4),

meticulousKeyedSHA1(5)

}

BfdSessionAuthenticationKeyTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "1x "

STATUS current

DESCRIPTION

"BFD authentication key type."

A BfdSessionAuthenticationKeyTC is always interpreted within the context of an BfdSessAuthenticationTypeTC value. Every usage of the BfdSessionAuthenticationTypeTC textual convention is required to specify the the BfdSessionAuthenticationKeyTC object that provides the context. It is suggested that the

BfdSessionAuthenticcationTypeTC object be logically registered

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before the object(s) that use the BfdSessionAuthenticationKeyTC textual convention, if they appear in the same logical row.

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

The following size constraints for a BfdSessionAuthenticationKeyTC object are defined for the associated BfdSessionAuthenticationTypeTC 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

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

Descriptor -----	OBJECT IDENTIFIER value -----
bfdTCStdMib	{ mib-2 XXX }

[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. References

6.1. Normative References

- [BFD] Katz, D. and D. Ward, "Bidirectional Forwarding Detection (BFD)", [RFC 5880](#), June 2010.
- [BFD-1HOP] Katz, D. and D. Ward, "Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop)", [RFC 5881](#), June 2010.
- [BFD-MH] Katz, D. and D. Ward, "Bidirectional Forwarding Detection (BFD) for Multihop Paths", [RFC 5883](#), June 2010.
- [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.

6.2. Informative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-

Standard Management Framework", [RFC 3410](#), December 2002.

[RFC3413] Levi, D., Meyer, P., and B. Stewart, "Simple Network Management Protocol (SNMP) Applications", STD 62, [RFC 3413](#), December 2002.

Appendix A. Acknowledgments

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