

Network Working Group
Internet-Draft
Obsoletes: [RFC1089](#) (if approved)
Expires: March 25, 2007

J. Schoenwaelder
International University Bremen
T. Jeffree
Consultant
September 21, 2006

Simple Network Management Protocol (SNMP) over IEEE 802 Networks
draft-schoenw-snmp-ether-02.txt

Status of this Memo

By submitting this Internet-Draft, each author represents that any applicable patent or other IPR claims of which he or she is aware have been or will be disclosed, and any of which he or she becomes aware will be disclosed, in accordance with [Section 6 of BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

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."

The list of current Internet-Drafts can be accessed at
<http://www.ietf.org/ietf/lid-abstracts.txt>.

The list of Internet-Draft Shadow Directories can be accessed at
<http://www.ietf.org/shadow.html>.

This Internet-Draft will expire on March 25, 2007.

Copyright Notice

Copyright (C) The Internet Society (2006).

Abstract

This document specifies how Simple Network Management Protocol (SNMP) messages can be transmitted directly over IEEE 802 networks.

This document obsoletes [RFC 1089](#).

Internet-Draft

SNMP over IEEE 802

September 2006

Table of Contents

1.	Introduction	3
2.	Definitions	4
3.	SNMP over IEEE 802 Networks	5
3.1.	Serialization	5
3.2.	Well-known Values	5
3.3.	IEEE 802.3 Frame Format	6
4.	Relationship to Other MIB Modules	6
5.	IANA Considerations	6
6.	Security Considerations	7
7.	Acknowledgments	7
8.	References	8
8.1.	Normative References	8
8.2.	Informative References	8
	Authors' Addresses	10
	Intellectual Property and Copyright Statements	11

Internet-Draft

SNMP over IEEE 802

September 2006

1. Introduction

This document specifies how Simple Network Management Protocol (SNMP) messages can be transmitted directly over IEEE 802 networks. For a detailed overview of the documents that describe the Internet-Standard management framework, please refer to [section 7 of RFC 3410](#) [RFC3410]. This document supplements the standard SNMP transport mappings defined in [RFC 3417](#) [RFC3417].

This document obsoletes [RFC 1089](#).

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].

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 [RFC 2119](#) [RFC2119].

Internet-Draft

SNMP over IEEE 802

September 2006

[2.](#) Definitions

```
SNMP-IEEE802-TM-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    MODULE-IDENTITY, OBJECT-IDENTITY, snmpModules, snmpDomains
    FROM SNMPv2-SMI;
```

```
snmpIeee802TmMib MODULE-IDENTITY
```

```
    LAST-UPDATED "200605290000Z"
```

```
    ORGANIZATION "IETF Operations and Management Area"
```

```
    CONTACT-INFO
```

```
        "Juergen Schoenwaelder (Editor)
        International University Bremen
        P.O. Box 750 561
        28725 Bremen, Germany
```

```
        Phone: +49 421 200-3587
```

```
        EMail: j.schoenwaelder@iu-bremen.de
```

```
        Send comments to <ietf-mibs@ops.ietf.org>."
```

```
DESCRIPTION
```

```
    "This MIB module defines the SNMP over IEEE 802
    transport mapping.
```

```
    Copyright (C) The Internet Society (2006). This version
    of this MIB module is part of RFC XXXX; see the RFC
    itself for full legal notices."
```

```
REVISION "200605290000Z"
```

```

        DESCRIPTION
            "The initial version, published as RFC XXXX."
-- RFC Ed.: replace XXXX with actual RFC number & remove this note
        ::= { snmpModules xxx }
-- RFC Ed.: replace xxx with IANA-assigned number & remove this note

snmpIeee802Domain OBJECT-IDENTITY
    STATUS    current
    DESCRIPTION
        "The SNMP over IEEE 802 networks transport domain. The
        corresponding transport address is of type MacAddress
        as defined in the SNMPv2-TC module (RFC 2579)."RFC 2579"
    ::= { snmpDomains xxx }
-- RFC Ed.: replace xxx with IANA-assigned number & remove this note
END

```

[3.](#) SNMP over IEEE 802 Networks

This is an optional transport mapping.

SNMP over IEEE 802 networks has some inherent restrictions. Using the SNMP over IEEE 802 transport mapping restricts messages to a single logical IEEE 802 LAN, bridged LAN or VLAN. Furthermore, only a single SNMP engine can be addressed on a given IEEE 802 network interface. In particular, command generators and notification receivers as well as command responders and notification originators must share a single transport endpoint.

[3.1.](#) Serialization

SNMP messages are serialized as described in [Section 8 of RFC 3417 \[RFC3417\]](#). The resulting serialized message is shipped in the data portion of an IEEE LAN MAC frame.

[3.2.](#) Well-known Values

Serialized SNMP messages are sent in IEEE 802.3 frames with an Ethernet type field of 33100 (hexadecimal 814C).

When serialized SNMP messages are sent in IEEE 802.3 frames (and in other IEEE 802 MAC frame types that can natively represent Ethernet type values), an Ethernet type field value of 33100 (hexadecimal 814C) is used as the link layer protocol identifier. In IEEE 802 LANs that use LLC as the means of link layer protocol identification, such as IEEE 802.11 Wireless LANs, the SNAP encapsulation method described in subclause 10.5 "Encapsulation of Ethernet frames over LLC" in [IEEE802] is used.

When an SNMP entity uses this transport mapping, it **MUST** be capable of accepting SNMP messages up to and including 484 octets in size. It is recommended that implementations be capable of accepting messages of up to 1472 octets in size. Implementation of larger values is encouraged whenever possible.

3.3. IEEE 802.3 Frame Format

```

0                                     1
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|                               Destination                               |
+-----+-----+-----+-----+-----+-----+-----+-----+
|                               Ethernet                               |
+-----+-----+-----+-----+-----+-----+-----+-----+
|                               Address                               |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|                               Source                               |
+-----+-----+-----+-----+-----+-----+-----+-----+
|                               Ethernet                               |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

```

|               Address               |
+---+---+---+---+---+---+---+---+
|1 0 0 0 0 0 1 0 1 0 0 1 1 0 0|
+---+---+---+---+---+---+---+---+
|               SNMP               |
+-                               -+
/               message ...       /
+---+---+---+---+---+---+---+---+

```

(Each tic mark represents one bit.)

4. Relationship to Other MIB Modules

Several core SNMP MIB modules use TDomain/TAddress pairs to identify SNMP transport endpoints. The SNMP-TARGET-MIB [[RFC3413](#)] uses TDomain/TAddress pairs to identify targets that can be used as notification receivers. TDomain/TAddress pairs are used by the NOTIFICATION-LOG-MIB [[RFC3014](#)] to record the source from which a notification was received. The ENTITY-MIB [[RFC4133](#)] uses TDomain/TAddress pairs to provide the transport endpoint of logical entities.

The MIB module contained in this document introduces the object identifier constant `snmpIeee802Domain`. This constant can be assigned to an object of type TDomain to identify an SNMP over IEEE 802 endpoint, in which case the corresponding TAddress will have a value that conforms to the MacAddress textual convention. By providing these definitions, it is possible to use the generic MIB modules to refer to SNMP over IEEE 802 endpoints.

5. IANA Considerations

IANA has to make a MIB OID assignment under the `snmpModules` branch for the SNMP-IEEE802-TM-MIB module.

IANA has to assign an OID value below `snmpDomains` for the transport domain. This requires to first setup a registry for OIDs under `snmpDomains`. At the point of this writing, the following assignments already exist:

Prefix: iso.org.dod.internet.snmpv2.snmpDomains (1.3.6.1.6.1)

Decimal	Name	Description	References
-----	----	-----	-----
1	snmpUDPDomain	SNMP over UDP	[RFC3417]
2	snmpCLNSDomain	SNMP over CLNS	[RFC3417]
3	snmpCONSDomain	SNMP over CONS	[RFC3417]
4	snmpDDPDomain	SNMP over DDP	[RFC3417]
5	snmpIPXDomain	SNMP over IPX	[RFC3417]

For new assignments a specification is required as per [[RFC2434](#)].

6. Security Considerations

This module does not define any management objects. Instead, it defines an OBJECT-IDENTIFIER which may be used by other MIB modules to identify a SNMP transport mapping. Meaningful security considerations can only be written in the MIB modules that define management objects. The MIB module in this document has therefore no impact on the security of the Internet.

SNMPv1 and SNMPv2c messages are not considered secure. It is recommended that the implementors consider the use of SNMPv3 messages and the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model STD 62, [RFC 3414](#) [[RFC3414](#)] and the View-based Access Control Model STD 62, [RFC 3415](#) [[RFC3415](#)] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to a MIB is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change) them.

7. Acknowledgments

The original SNMP over Ethernet definition was written by Marty Schoffstall, Chuck Davin, Mark Fedor, and Jeff Case and published as [RFC 1089](#) [[RFC1089](#)].

this revised specification. David Harrington provided useful comments that improved the presentation.

8. References

8.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.
- [RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.
- [RFC3417] Presuhn (Editor), R., "Transport Mappings for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3417](#), December 2002.
- [IEEE802] "IEEE Standard for Local Area Networks: Overview and Architecture", IEEE Std. 802-2001.
- [RFC2434] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 2434](#), October 1998.

8.2. 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.
- [RFC3413] Levi, D., Meyer, P., and B. Stewart, "Simple Network Management Protocol (SNMP) Applications", [RFC 3413](#), December 2002.
- [RFC3014] Kavasseri, R., "Notification Log MIB", [RFC 3014](#), November 2000.

- [RFC4133] Bierman, A. and K. McCloaghrie, "Entity MIB (Version 3)", [RFC 4133](#), August 2005.
- [RFC1089] Schoffstall, M., Davin, C., Fedor, M., and J. Case, "SNMP over Ethernet", [RFC 1089](#), February 1989.

Internet-Draft

SNMP over IEEE 802

September 2006

Authors' Addresses

Juergen Schoenwaelder
International University Bremen
Campus Ring 1
28725 Bremen
Germany

Phone: +49 421 200-3587
Email: j.schoenwaelder@iu-bremen.de

Tony Jeffree
Consultant
11a Poplar Grove
Sale, Cheshire, M33 3AX
United Kingdom

Phone: +44-161-973-4278
Email: tony@jeffree.co.uk

Internet-Draft

SNMP over IEEE 802

September 2006

Intellectual Property Statement

The IETF takes no position regarding the validity or scope of any Intellectual Property Rights or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; nor does it represent that it has made any independent effort to identify any such rights. Information on the procedures with respect to rights in RFC documents can be found in [BCP 78](#) and [BCP 79](#).

Copies of IPR disclosures made to the IETF Secretariat and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the IETF on-line IPR repository at <http://www.ietf.org/ipr>.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights that may cover technology that may be required to implement this standard. Please address the information to the IETF at ietf-ipr@ietf.org.

Disclaimer of Validity

This document and the information contained herein are provided on an "AS IS" basis and THE CONTRIBUTOR, THE ORGANIZATION HE/SHE REPRESENTS OR IS SPONSORED BY (IF ANY), THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE

INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED
WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Copyright Statement

Copyright (C) The Internet Society (2006). This document is subject to the rights, licenses and restrictions contained in [BCP 78](#), and except as set forth therein, the authors retain all their rights.

Acknowledgment

Funding for the RFC Editor function is currently provided by the Internet Society.