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# Simple Network Management Protocol (SNMP) over IEEE 802 Networks
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## Status of this Memo



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## Abstract

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

This document obsoletes RFC 1089.

Table of Contents

## 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].

## 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)
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                Send comments to <ietfmibs@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)."
        REFERENCE "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).

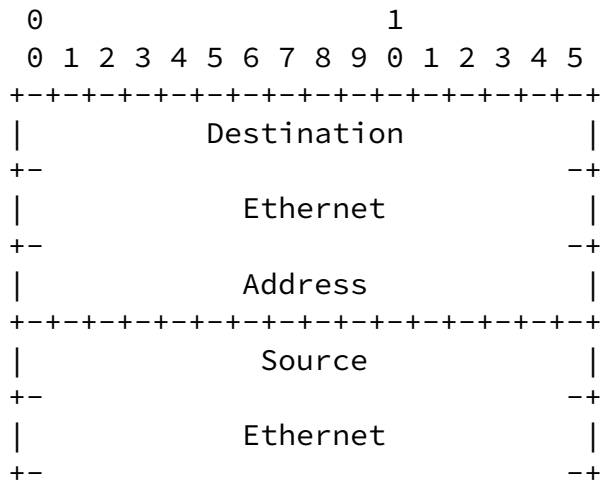
When serialized SNMP messages are sent in IEEE 802.3 frames (and in other IEEE 802 MAC frame types that can natively represent Ethernet type values), an Ethernet type field value of 33100 (hexadecimal 814C) is used as the link layer protocol identifier. In IEEE 802 LANs that use LLC as the means of link 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.

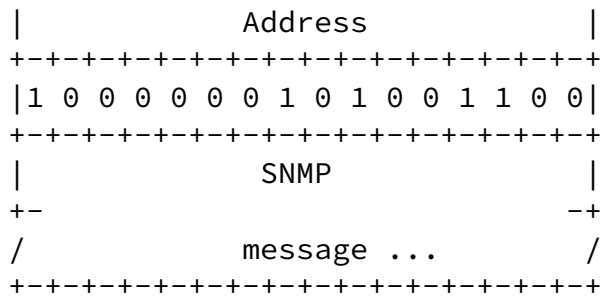
When an SNMP entity uses this transport mapping, it MUST be capable of accepting SNMP messages up to and including 484 octets in size. It is recommended that implementations be capable of accepting messages of up to 1472 octets in size. Implementation of larger values is encouraged whenever possible.





## 3.3. IEEE 802.3 Frame Format






(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].





Bert Wijnen and Dan Romascanu provided guidance on many aspects of

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.

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[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

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[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. McCloghrie, "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.

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