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IEEE Standard for Management Information Base (MIB) Definitions for Ethernet

IEEE Computer Society

Sponsored by the
LAN/MAN Standards Committee

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USA

IEEE Std 802.3.1™-2013
(Revision of
IEEE Std 802.3.1-2011)

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IEEE Standard for Management Information Base (MIB) Definitions for Ethernet

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Abstract: The Management Information Base (MIB) module specifications for IEEE Std 802.3™, also known as Ethernet, are contained in this standard. It includes the Structure of Management Information Version 2 (SMIPv2) MIB module specifications formerly produced and published by the Internet Engineering Task Force (IETF), as well as extensions resulting from amendments to IEEE Std 802.3. The SMIPv2 MIB modules are intended for use with the Simple Network Management Protocol (SNMP), commonly used to manage Ethernet.

Keywords: Ethernet, IEEE 802.3.1™, Management Information Base (MIB), network management, Simple Network Management Protocol (SNMP), Structure of Management Information Version 2 (SMIPv2)

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Introduction

This introduction is not part of IEEE Std 802.3.1-2013, IEEE Standard for Management Information Base (MIB) Definitions for Ethernet.

The initial version of this standard was based on the managed object definitions provided in IEEE Std 802.3TM-2008, which subsumed and superseded IEEE Std 802.3anTM-2006, IEEE Std 802.3apTM-2007, IEEE Std 802.3aqTM-2006, and IEEE Std 802.3asTM-2006. It also includes the Logical Link Discovery Protocol Ethernet extensions provided in Annex F of IEEE Std 802.1ABTM-2009.^b In addition, the initial version of this standard incorporated and updated the MIB module definitions formerly defined in IETF RFC 2108 [B20],^c IETF RFC 3621 [B27], IETF RFC 3635 [B29], IETF RFC 3637 [B30], IETF RFC 4836 [B35], IETF RFC 4837 [B36], IETF RFC 4878 [B37], and IETF RFC 5066 [B38].

The first revision of this standard updated the MIB module definitions to reflect the managed object definitions provided in IEEE Std 802.3-2012, which subsumed and superseded IEEE Std 802.3-2008, IEEE Std 802.3atTM, IEEE Std 802.3avTM, IEEE Std 802.3azTM, IEEE Std 802.3baTM, IEEE Std 802.3bcTM, IEEE Std 802.3bdTM, IEEE Std 802.3bfTM, and IEEE Std 802.3bgTM.

^bInformation on references can be found in Clause 2.

^cThe numbers in brackets correspond to those of the bibliography in Annex A.

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IEEE Standard for Management Information Base (MIB) Definitions for Ethernet

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1. Overview

This document supersedes and makes obsolete Annex 30A and Annex 30B of IEEE Std 802.3™-2008, Annex F of IEEE Std 802.1AB™-2009,¹ IETF RFC 2108 [B20],² IETF RFC 3621 [B27], IETF RFC 3635 [B29], IETF RFC 3637 [B30], IETF RFC 4836 [B35], IETF RFC 4837 [B36], IETF RFC 4878 [B37], and IETF RFC 5066 [B38].

Ethernet technology, as defined by the IEEE 802.3 Working Group, continues to evolve, with scalable increases in speed, new types of cabling and interfaces, and new features. This evolution may require changes in the managed objects in order to reflect this new functionality. This document, as with other documents issued by this working group, reflects a certain stage in the evolution of Ethernet technology. In the future, this document might be revised, or new documents might be issued, in order to reflect the evolution of Ethernet technology.

The term “Ethernet-like interfaces” was historically used because the interfaces defined by the IEEE 802.3 Working Group were not considered “Ethernet” per se, but “Ethernet-like,” because “Ethernet” was taken to

¹Information on references can be found in Clause 2.

²The numbers in brackets correspond to those of the bibliography in Annex A.

mean “Ethernet version 2” according to the (DEC, Intel, Xerox) DIX “blue book.” Today and in the context of SNMP management and SMIPv2 MIB modules, “Ethernet,” “Ethernet-like,” and “IEEE 802.3” are synonymous and interchangeable in the marketplace. The term “Ethernet-like” is retained in this document because of its common usage in the SNMP-based network management community.

1.1 Scope

This standard contains the Management Information Base (MIB) module specifications for IEEE Std 802.3, also known as Ethernet. It includes the Structure of Management Information Version 2 (SMIPv2) MIB module specifications formerly produced and published by the Internet Engineering Task Force (IETF), and the managed object branch and leaf assignments provided in the Guidelines for the Definition of Managed Objects (GDMO) MIB modules formerly specified within IEEE Std 802.3, as well as extensions resulting from recent amendments to IEEE Std 802.3. The SMIPv2 MIB modules are intended for use with the Simple Network Management Protocol (SNMP), commonly used to manage Ethernet.

1.2 Purpose

The purpose of the standard is to publish the SMIPv2 MIB module specifications in a single document that is separate from IEEE Std 802.3, and that can be published in a machine-readable format. Future amendments and revisions to IEEE Std 802.3.1 will be performed to update the MIB specifications as required to track future amendments and revisions to IEEE Std 802.3.

1.3 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 IETF RFC 3410.

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the SNMP.

Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This standard specifies MIB modules that are compliant to the SMIPv2, which is described in IETF STD 58 (RFC 2578), IETF STD 58 (RFC 2579), and IETF STD 58 (RFC 2580).

1.4 Security considerations

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPSec), there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in a MIB module.

Implementers should consider the security features as provided by the SNMPv3 framework (see section 8 of IETF RFC 3410), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

SNMPv3 should be deployed, rather than previous versions of SNMP, and cryptographic security should be enabled. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

Throughout this standard, there are a number of accessible management objects that may be considered sensitive or vulnerable in some network environments. The support for some operations in a non-secure

environment without proper protection can have a negative effect on network operations. Such management objects are detailed in the clauses that define them.

The user of these MIB modules should therefore be aware that support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

The readable objects in these MIB modules (i.e., those with MAX-ACCESS other than not-accessible) may be considered sensitive in some environments since, collectively, they provide information about the performance of network interfaces and can reveal some aspects of their configuration. In such environments, it is important to control GET and NOTIFY access to these objects and possibly encrypt their values when sending them over the network via SNMP.

1.5 Conformance

Specific conformance statements and compliance statements, written in accordance with IETF STD 58, RFC 2580, are included in each MIB module. They can be found by searching for the text strings “Conformance statements” and “Compliance statements.”

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

ANSI T1.231-1997, Layer 1 In-Service Digital Transmission Performance Monitoring.³

ANSI T1.424-2004, Interface Between Networks and Customer Installation—Very-high-bit-rate Digital Subscriber Lines (VDSL) Metallic Interface (DMT Based).

ETSI TS1 101 270-1 (1999), Transmission and Multiplexing (TM); Access transmission systems on metallic access cables; Very high speed Digital Subscriber Line (VDSL); Part 1: Functional requirements.⁴

IEEE Std 802[®], IEEE Standard for Local and Metropolitan Area Networks—Architecture and Overview.^{5, 6}

IEEE Std 802.1D[™], IEEE Standard for Local and Metropolitan Area Networks—Media Access Control (MAC) Bridges.

IEEE Std 802.1AB[™]-2009, IEEE Standard for Local and Metropolitan Area Networks—Station and Media Access Control Discovery.

IEEE Std 802.3[™], IEEE Standard for Ethernet.

IEEE Std 802.9a[™]-1995, IEEE Standards for Local and Metropolitan Area Networks—Supplement to Integrated Services (IS) LAN Interface at the Medium Access Control (MAC) and Physical (PHY) Layers—Specification of IsLAN16-T.

IETF RFC 1213, Management Information Base for Network Management of TCP/IP-based internets: MIB-II, McCloghrie, K., and Rose, M., Mar. 1991.⁷

IETF RFC 1516, Definitions of Managed Objects for IEEE 802.3 Repeater Devices, McMaster, D., and McCloghrie, K., Sept. 1993.

IETF RFC 2119, Keywords for use in RFCs to Indicate Requirement Levels, Bradner, S., Mar. 1997.

IETF RFC 2434, Guidelines for Writing an IANA Considerations Section in RFCs, Narten, T. and Alvestrand, H., Oct. 1998.

IETF STD 58 (RFC 2578), Structure of Management Information Version 2 (SMIv2), McCloghrie, K., Perkins, D., and Schoenwaelder, J., Apr. 1999.

IETF STD 58 (RFC 2579), Textual Conventions for SMIv2, McCloghrie, K., Perkins, D., and Schoenwaelder, J., Apr. 1999.

IETF STD 58 (RFC 2580), Conformance Statements for SMIv2, McCloghrie, K., Perkins, D., and Schoenwaelder, J., Apr. 1999.

³ANSI publications are available from the American National Standards Institute (<http://www.ansi.org/>).

⁴ETSI publications are available from the European Telecommunications Standards Institute (<http://www.etsi.org/>).

⁵IEEE publications are available from The Institute of Electrical and Electronics Engineers (<http://standards.ieee.org/>).

⁶The IEEE standards or products referred to in this clause are trademarks of The Institute of Electrical and Electronics Engineers, Inc.

⁷IETF documents (i.e., RFCs) are available for download at <http://www.rfc-archive.org/>.

IETF RFC 2856, Textual Conventions for Additional High Capacity Data Types, Bierman, A., McCloghrie, K., and Presuhn, R., June 2000.

IETF RFC 2863, The Interfaces Group MIB, McCloghrie, K., and Kastenholz, F., June 2000.

IETF RFC 2864, The Inverted Stack Table Extension to the Interfaces Group MIB, McCloghrie, K., and Hanson, G., June 2000.

IETF RFC 3410, Introduction and Applicability Statements for Internet Standard Management Framework, Case, J., Mundy R., Partain, D., and Stewart, B., Dec. 2002.

IETF RFC 3411, An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks, Harrington, D., Presuhn, R., and Wijnen, B., Dec. 2002.

IETF RFC 3592, Definitions of Managed Objects for the Synchronous Optical Network/Synchronous Digital Hierarchy (SONET/SDH) Interface Type, Tesink, K., Sept. 2003.

ITU-T Recommendation G.983.1, 1998—Optical line systems for local and access networks—Broadband optical access systems based on Passive Optical Networks (PON).⁸

ITU-T Recommendation G.991.2, 2003—Single-pair High-speed Digital Subscriber Line (SHDSL) transceivers.

ITU-T Recommendation G.993.1, 2004—Very high speed digital subscriber line transceivers.

⁸ITU-T publications are available from the International Telecommunications Union (<http://www.itu.int/>).

3. Definitions

For the purposes of this document, the following terms and definitions apply. *The IEEE Standards Dictionary Online* should be consulted for terms not defined in this clause.⁹

agent: An entity, typically implemented in software, which provides remote access to management instrumentation, via the Simple Network Management Protocol (SNMP).

group: Within the context of the repeater management Management Information Base (MIB) module defined in Clause 7 of IEEE Std 802.3.1-2013: A recommended, but optional, entity defined in Clause 30 of IEEE Std 802.3, in order to support a modular numbering scheme. The classic example allows an implementor to represent field-replaceable units as groups of ports, with the port numbering matching the modular hardware implementation.

jack type: The jack connector type, as it appears on the outside of the system. The type of mechanical interface to the transmission medium.

Loss of Codegroup Delineation: See 50.3.5.3 of IEEE Std 802.3.

managed object: An abstract representation of network resources that are managed. A managed object is defined according to the *Structure of Management Information version 2* (SMIv2) defined in IETF STD 58, RFC 2578.

managed repeater: A repeater as defined by IEEE Std 802.3 incorporating a management entity that complies with the Management Information Base (MIB) module definition contained in Clause 7 of IEEE Std 802.3.1-2013.

module: A building block in a modular system. In the context of the MIB definitions, a specification of management capabilities related to the system. In the context of a chassis, it typically maps into one “slot”; however, the range of configurations may be very large, with several modules entering one slot, or one module covering several slots.

non-trivial repeater: A repeater as defined by IEEE Std 802.3 having multiple ports.

Path Coding violations: In IEEE Std 802.3, the path layer coding violations count is based on block errors and not on BIP-8 errors; i.e., it is incremented only once for each B3 byte that indicates incorrect parity, regardless of the number of bits in error. Note that Section 8.4.5.1 of ANSI T1.231-1997 allows either path BIP-8 errors or path block errors to be used for the path layer error count.

repeater system: A managed entity compliant with this standard and incorporating at least one managed IEEE 802.3 repeater.

repeater-unit: The portion of a repeater that is inboard of its Physical Medium Attachment (PMA)/Physical Signaling Sublayer (PLS) or PMA/Physical Coding Sublayer (PCS).

Signal Label Mismatch: This defect is called Payload Label Mismatch (PLM) in IEEE Std 802.3. It is reported by setting both the `sonetPathSignalLabelMismatch` bit in the appropriate instance of `sonetPathCurrentStatus` (defined in IETF RFC 3592) and the `etherWisPathPLM` bit in the corresponding instance of `etherWisPathCurrentStatus`.

stack: A scalable system in which modularity is achieved by interconnecting a number of different systems.

⁹The *IEEE Standards Dictionary Online* subscription is available at http://www.ieee.org/portal/innovate/products/standard/standards_dictionary.html.

STS-Path Remote Defect Indication: IEEE Std 802.3 mandates the use of ERDI-P (Enhanced Remote Defect Indication-Path) defined in ANSI T1.231-1997 to signal remote server defects (triggered by path AIS or path LOP) and remote payload defects (triggered by Payload Label Mismatch or Loss of Codegroup Delineation). IETF RFC 3592 defines the one-bit RDI-P (Remote Defect Indication-Path), which signals remote server detects (i.e., path AIS and path LOP) only. An implementation of the MIB module defined in Clause 12 of IEEE Std 802.3.1-2013 sets the sonetPathSTSRDI bit in the appropriate instance of sonetPathCurrentStatus when it receives an ERDI-P server defect indication from the remote end. Both ERDI-P payload defects and ERDI-P server defects are reported in the object etherWisFarEndPathCurrentStatus.

system: An entity compliant with one or more Management Information Base (MIB) modules of this standard.

system interconnect segment: An internal segment allowing interconnection of ports belonging to different physical entities into the same logical managed repeater, bridge, or other system. Examples of implementation might be backplane busses in modular hubs, or chaining cables in stacks of bridges/switches. It is not uncommon for such segments to be a proprietary implementation.

trivial repeater-unit: An isolated port that can gather statistics.

4. Abbreviations

ACK	acknowledge
AIS	Alarm Indication Signal
ARP	address resolution protocol
ASCII	American Standard Code for Information Interchange
Atn	attenuation
BER	bit error ratio
BIP	bit interleaved parity
BW	bandwidth
CO	central office
CPE	customer premises equipment
CRC	cyclic redundancy check
DTE	data terminal equipment
EFM	Ethernet in the First Mile
EFMCu	EFM copper
ELTE	Ethernet line termination equipment
EPON	Ethernet passive optical network
ERDI-P	enhanced remote defect indication—path
FCS	frame check sequence
FEC	forward error correction
GDMO	Guidelines for Definition of Managed Objects
GMII	gigabit media independent interface
IANA	Internet Assigned Numbers Authority
IETF	Internet Engineering Task Force
IFG	inter-frame gap
ITU	International Telecommunication Union
LAN	local area network
LCD	Loss of Codegroup Deliniation
LLC	logical link control
LLDP	logical link discovery protocol
LLDPDU	logical link discovery protocol data unit
LLID	logical link identifier
LOP	Loss of Pointer
LTE	line termination equipment
MAC	media access control
MAU	medium attachment unit
Mb/s	megabit per second
MDI	medium dependent interface
MDIO	management data input/output
MII	media independent interface
MP2PE	multipoint-to-point emulation
MPCP	multipoint control protocol
MPCPDU	multipoint control protocol data unit
MTU	maximum transmission unit
NMS	network management system

OAM	operations, administration, and maintenance
OAMPDU	operations, administration, and maintenance protocol data unit
OID	object identifier
OLT	optical line terminal
OMP	optical multipoint
ONU	optical network unit
OSI	Open Systems Interconnection
P2MP	point-to-multipoint
P2PE	point-to-point emulation
PAF	PME aggregation function
PBO	power back-off
PCS	physical coding sublayer
PD	powered device
PDU	protocol data unit
PHY	Physical Layer entity
PLM	Payload Label Mismatch
PMA	physical medium attachment
PMD	physical medium dependent
PME	physical medium entity
PON	passive optical network
PSD	power spectral density
PSE	power sourcing equipment
RFC	Request for Comments
ROM	read-only-memory
RS	reconciliation sublayer
RTT	round-trip time
SDH	Synchronous Digital Hierarchy
SLA	service level agreement
SLD	start of LLID delimiter
SMIv2	structure of management information version 2
SNMP	simple network management protocol
SNR	signal-to-noise ratio
SONET	Synchronous Optical Network
TCPAM	trellis coded pulse amplitude modulation
TDM	time division multiplexing
TDMA	time division multiple access
TLV	type/length/value
TQ	time quanta
WAN	wide area network
WDM	wavelength division multiplexing
WIS	WAN interface sublayer

5. Ethernet logical link discovery protocol (LLDP) extension MIB module

The logical link discovery protocol (LLDP) is defined in IEEE Std 802.1AB-2009, Station and Media Access Control Discovery. Extensions to this protocol for Ethernet are defined in Clause 79 of IEEE Std 802.3.

5.1 Structure of the IEEE 802.3 LLDP extension MIB

Table 5-1 summarizes the particular object groups that are required for each operating mode. The implemented MIB shall comply with the MIB conformance section for the particular operating mode being supported.

Table 5-1—IEEE 802.3 LLDP extension MIB object group conformance requirements

MIB group	Rx mode	Tx mode	Tx/Rx mode
lldpV2Xdot3ConfigGroup	M ^a	M	M
lldpV2Xdot1LocSysGroup	M	—	M
lldpV2Xdot1RemSysGroup	—	M	M
ifGeneralInformationGroup	M	M	M

^aM = Mandatory.

Table 5-2 shows the structure of the MIB and the relationship of the MIB objects to the LLDP operational status/control variables, LLDP statistics variables, and TLV variables.

5.2 Relationship to other MIBs

Version 1 of the IEEE 802.3 LLDP extension MIB module is deprecated.

Table 5-2—IEEE 802.3/LLDP extension MIB cross reference

MIB table	MIB object	LLDP reference
<i>Configuration group</i>		
lldpV2Xdot3PortConfigTable		Augments lldpV2PortConfigEntry
	lldpV2Xdot3PortConfigTLVsTxEnable	Normal LLDPDUs
<i>Local devices information group</i>		
lldpV2Xdot3LocPortTable		
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot3LocPortAutoNegSupported	Auto-Negotiation support/status
	lldpV2Xdot3LocPortAutoNegEnabled	Auto-Negotiation support/status
	lldpV2Xdot3LocPortAutoNegAdvertisedCap	Auto-Negotiation advertised
	lldpV2Xdot3LocPortOperMauType	Operational MAU type
lldpV2Xdot3LocPowerTable		
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot3LocPowerPortClass	MDI power support
	lldpV2Xdot3LocPowerMDISupported	MDI power support
	lldpV2Xdot3LocPowerMDIEnabled	MDI power support
	lldpV2Xdot3LocPowerPairControlable	MDI power support
	lldpV2Xdot3LocPowerPairs	PSE power pair
	lldpV2Xdot3LocPowerClass	Power class
lldpV2Xdot3LocMaxFrameSizeTable		
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot3LocMaxFrameSize	Maximum frame size
<i>Remote devices information group</i>		
lldpV2Xdot3RemPortTable		
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot3RemPortAutoNegSupported	Auto-Negotiation support/status
	lldpV2Xdot3RemPortAutoNegEnabled	Auto-Negotiation support/status
	lldpV2Xdot3RemPortAutoNegAdvertisedCap	Auto-Negotiation advertised
	lldpV2Xdot3RemPortOperMauType	Operational MAU type

Table 5-2—IEEE 802.3/LLDP extension MIB cross reference (continued)

MIB table	MIB object	LLDP reference
lldpV2Xdot3RemPowerTable		
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot3RemPowerPortClass	MDI power support
	lldpV2Xdot3RemPowerMDISupported	MDI power support
	lldpV2Xdot3RemPowerMDIEnabled	MDI power support
	lldpV2Xdot3RemPowerPairControlable	MDI power support
	lldpV2Xdot3RemPowerPairs	PSE power pair
	lldpV2Xdot3RemPowerClass	Power class
lldpV2Xdot3RemMaxFrameSizeTable		
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot3RemMaxFrameSize	Maximum frame size

5.3 Security considerations for IEEE 802.3 LLDP extension MIB module

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write.¹⁰ Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

Setting the object, `lldpV2Xdot3PortConfigTLVsTxEnable`, to incorrect values can result in improper operation of LLDP.

The following readable objects in this MIB module may be considered to be sensitive or vulnerable in some network environments:

a) Objects that are associated with the transmit mode are as follows:

- 1) `lldpV2Xdot3LocPortAutoNegSupported`
- 2) `lldpV2Xdot3LocPortAutoNegEnabled`
- 3) `lldpV2Xdot3LocPortAutoNegAdvertisedCap`
- 4) `lldpV2Xdot3LocPortOperMauType`
- 5) `lldpV2Xdot3LocPowerPortClass`
- 6) `lldpV2Xdot3LocPowerMDISupported`
- 7) `lldpV2Xdot3LocPowerMDIEnabled`
- 8) `lldpV2Xdot3LocPowerPairControlable`
- 9) `lldpV2Xdot3LocPowerPairs`
- 10) `lldpV2Xdot3LocPowerClass`
- 11) `lldpV2Xdot3LocMaxFrameSize`

b) Objects that are associated with the receive mode are as follows:

- 1) `lldpV2Xdot3RemPortAutoNegSupported`
- 2) `lldpV2Xdot3RemPortAutoNegEnabled`
- 3) `lldpV2Xdot3RemPortAutoNegAdvertisedCap`
- 4) `lldpV2Xdot3RemPortOperMauType`
- 5) `lldpV2Xdot3RemPowerPortClass`
- 6) `lldpV2Xdot3RemPowerMDISupported`
- 7) `lldpV2Xdot3RemPowerMDIEnabled`
- 8) `lldpV2Xdot3RemPowerPairControlable`
- 9) `lldpV2Xdot3RemPowerPairs`
- 10) `lldpV2Xdot3RemPowerClass`
- 11) `lldpV2Xdot3RemMaxFrameSize`

This concern applies both objects that describe the configuration of the local host, as well as objects that describe information from the remote hosts, acquired via LLDP and displayed by the objects in this MIB module. It is thus also important to control GET and/or NOTIFY access to these objects and possibly to encrypt the values of these objects when sending them over the network via SNMP.

¹⁰In IETF MIB definitions, the MAX-ACCESS clause defines the type of access that is allowed for particular data elements in the MIB. An explanation of the MAX-ACCESS mapping is given in section 7.3 of IETF STD 58, RFC 2578.

5.4 MIB module definition

In the following MIB definition, should any discrepancy between the DESCRIPTION text and the corresponding definition in 5.2 through 5.3 of this clause occur, the definitions in 5.2 through 5.3 shall take precedence.

An ASCII text version of the MIB definition can be found at the following URL¹¹:

http://www.ieee802.org/3/1/public/mib_modules/20130411/802dot3dot1C5mib.txt

Two additional modules must be imported when compiling the IEEE 802.3 LLDP extension MIB module, and they can be found at the following URLs:

<http://www.ieee802.org/1/files/public/MIBs/LLDP-V2-MIB-200906080000Z.txt>

<http://www.ieee802.org/1/files/public/MIBs/LLDP-V2-TC-MIB-200906080000Z.txt>

¹¹Copyright release for MIB modules: Users of this standard may freely reproduce the MIB module contained in this subclause so that it can be used for its intended purpose.


```

IEEE8023-DOT3-LLDP-EXT-V2-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Unsigned32,
    Integer32,
    org
        FROM SNMPv2-SMI
    TruthValue
        FROM SNMPv2-TC
    MODULE-COMPLIANCE,
    OBJECT-GROUP
        FROM SNMPv2-CONF
    ifGeneralInformationGroup
        FROM IF-MIB
    lldpV2LocPortIfIndex,
    lldpV2RemLocalIfIndex,
    lldpV2RemTimeMark,
    lldpV2RemLocalDestMACAddress,
    lldpV2RemIndex,
    lldpV2PortConfigEntry
        FROM LLDP-V2-MIB
-- http://www.ieee802.org/1/files/public/MIBs/LLDP-V2-MIB-200906080000Z.txt
    LldpV2PowerPortClass
        FROM LLDP-V2-TC-MIB
-- http://www.ieee802.org/1/files/public/MIBs/LLDP-V2-TC-MIB-200906080000Z.txt
;

ieee8023lldpV2Xdot3MIB MODULE-IDENTITY
    LAST-UPDATED "201304110000Z" -- April 11, 2013
    ORGANIZATION "IEEE 802.3 Working Group"
    CONTACT-INFO
        "WG-URL: http://www.ieee802.org/3/index.html
        WG-EMail: STDS-802-3-MIB@LISTSERV.IEEE.ORG

        Contact: Howard Frazier
        Postal: 3151 Zanker Road
              San Jose, CA 95134
              USA
        Tel: +1.408.922.8164
        E-mail: hfrazier@broadcom.com"
    DESCRIPTION
        "The LLDP Management Information Base extension module for
        IEEE 802.3 organizationally defined discovery information."

    REVISION "201304110000Z" -- April 11, 2013
    DESCRIPTION
        "Revision, based on an earlier version in IEEE Std 802.3.1-2011."

    REVISION "201102020000Z" -- February 2, 2011
    DESCRIPTION
        "This revision incorporated changes to the MIB module to
        add objects to support management of Energy Efficient
        Ethernet (EEE) and Enhanced DTE Power via the MDI (PoE+)."
```

```

 ::= { org ieee(111)
       standards-association-numbers-series-standards(2)
       lan-man-stds(802)ieee802dot3(3) ieee802dot3dot1mibs(1) 5 }

-----
--
-- Organizational Defined Information Extension - IEEE 802.3
--
-----

lldpV2Xdot3Objects    OBJECT IDENTIFIER ::= { ieee8023lldpV2Xdot3MIB 1 }

-- LLDP IEEE 802.3 extension MIB groups
lldpV2Xdot3Config     OBJECT IDENTIFIER ::= { lldpV2Xdot3Objects 1 }
lldpV2Xdot3LocalData  OBJECT IDENTIFIER ::= { lldpV2Xdot3Objects 2 }
lldpV2Xdot3RemoteData OBJECT IDENTIFIER ::= { lldpV2Xdot3Objects 3 }

-----

-- IEEE 802.3 - Configuration
-----

--
-- Version 2 of lldpV2Xdot3PortConfigTable
-- supports use of multiple destination MAC addresses
--

lldpV2Xdot3PortConfigTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LldpV2Xdot3PortConfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table that controls selection of LLDP TLVs to be transmitted
         on individual ports."
    ::= { lldpV2Xdot3Config 1 }

lldpV2Xdot3PortConfigEntry OBJECT-TYPE
    SYNTAX      LldpV2Xdot3PortConfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "LLDP configuration information that controls the
         transmission of IEEE 802.3 organizationally defined TLVs on
         LLDP transmission capable ports.

        This configuration object augments the lldpV2PortConfigEntry of
        the LLDP-MIB, therefore it is only present along with the port
        configuration defined by the associated lldpV2PortConfigEntry
        entry.

        Each active lldpV2Xdot3PortConfigEntry is restored from non-volatile
        storage (along with the corresponding lldpV2PortConfigEntry)
        after a re-initialization of the management system."
    AUGMENTS { lldpV2PortConfigEntry }

```

```

 ::= { lldpV2Xdot3PortConfigTable 1 }

LldpV2Xdot3PortConfigEntry ::= SEQUENCE {
    lldpV2Xdot3PortConfigTLVsTxEnable BITS
}

lldpV2Xdot3PortConfigTLVsTxEnable OBJECT-TYPE
    SYNTAX      BITS {
        macPhyConfigStatus(0),
        powerViaMDI(1),
        unused(2), --avoids re-use of the old link agg bit number
        maxFrameSize(3)
    }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The lldpV2Xdot3PortConfigTLVsTxEnable, defined as a bitmap,
        includes the IEEE 802.3 organizationally defined set of LLDP
        TLVs whose transmission is allowed by the local LLDP agent by
        the network management. Each bit in the bitmap corresponds
        to an IEEE 802.3 subtype associated with a specific IEEE
        802.3 optional TLV.

        The bit 'macPhyConfigStatus(0)' indicates that the LLDP agent
        should transmit 'MAC/PHY configuration/status TLV'.

        The bit 'powerViaMDI(1)' indicates that the LLDP agent should
        transmit 'Power via MDI TLV'.

        The bit 'unused(2)' is no longer used; this was used for
        the 'Link Aggregation TLV' in the previous version.

        The bit 'maxFrameSize(3)' indicates that the LLDP agent should
        transmit 'Maximum-frame-size TLV'.

        The default value for lldpV2Xdot3PortConfigTLVsTxEnable object
        is an empty set, which means no enumerated values are set.

        The value of this object is restored from non-volatile
        storage after a re-initialization of the management system."
    REFERENCE
        "IEEE Std 802.3 30.12.1.1.1"
    DEFVAL { { } }
    ::= { lldpV2Xdot3PortConfigEntry 1 }

```

```

-----
-- IEEE 802.3 - Local Device Information
-----

```

```

---
--- lldpV2Xdot3LocPortTable: Ethernet Port AutoNeg/Speed/Duplex
---                               Information Table
--- V2 modified to be indexed by ifIndex.
---

```

```

lldpV2Xdot3LocPortTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LldpV2Xdot3LocPortEntry

```

```

MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
    "This table contains one row per port of Ethernet port
    information (as a part of the LLDP 802.3 organizational
    extension) on the local system known to this agent."
 ::= { lldpV2Xdot3LocalData 1 }

```

```

lldpV2Xdot3LocPortEntry OBJECT-TYPE
    SYNTAX      LldpV2Xdot3LocPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Information about a particular port component."
    INDEX       { lldpV2LocPortIfIndex }
    ::= { lldpV2Xdot3LocPortTable 1 }

```

```

LldpV2Xdot3LocPortEntry ::= SEQUENCE {
    lldpV2Xdot3LocPortAutoNegSupported    TruthValue,
    lldpV2Xdot3LocPortAutoNegEnabled      TruthValue,
    lldpV2Xdot3LocPortAutoNegAdvertisedCap OCTET STRING,
    lldpV2Xdot3LocPortOperMauType         Unsigned32
}

```

```

lldpV2Xdot3LocPortAutoNegSupported OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The truth value used to indicate whether the given port
        (associated with the local system) supports Auto-negotiation."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.1"
    ::= { lldpV2Xdot3LocPortEntry 1 }

```

```

lldpV2Xdot3LocPortAutoNegEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The truth value used to indicate whether port
        Auto-negotiation is enabled on the given port associated
        with the local system."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.2"
    ::= { lldpV2Xdot3LocPortEntry 2 }

```

```

lldpV2Xdot3LocPortAutoNegAdvertisedCap OBJECT-TYPE
    SYNTAX      OCTET STRING(SIZE(2))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object contains the value (bitmap) of the
        ifMauAutoNegCapAdvertisedBits object (defined in IETF RFC
        3636) which is associated with the given port on the
        local system."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.3"
    ::= { lldpV2Xdot3LocPortEntry 3 }

```

lldpV2Xdot3LocPortOperMauType OBJECT-TYPE

SYNTAX Unsigned32(0..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An integer value that indicates the operational MAU type of the given port on the local system.

This object contains the integer value derived from the list position of the corresponding dot3MauType as listed in Clause 13 and is equal to the last number in the respective dot3MauType OID.

For example, if the ifMauType object is dot3MauType1000BaseTHD which corresponds to {dot3MauType 29}, the numerical value of this field is 29. For MAU types not listed in Clause 13, the value of this field shall be set to zero."

REFERENCE

"IEEE Std 802.3 30.12.2.1.4"

::= { lldpV2Xdot3LocPortEntry 4 }

--- lldpV2Xdot3LocPowerTable: Power Ethernet Information Table

--- V2 modified to be indexed by ifIndex.

lldpV2Xdot3LocPowerTable OBJECT-TYPE

SYNTAX SEQUENCE OF LldpV2Xdot3LocPowerEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains one row per port of power Ethernet information (as a part of the LLDP IEEE 802.3 organizational extension) on the local system known to this agent."

::= { lldpV2Xdot3LocalData 2 }

lldpV2Xdot3LocPowerEntry OBJECT-TYPE

SYNTAX LldpV2Xdot3LocPowerEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Information about a particular port component."

INDEX { lldpV2LocPortIfIndex }

::= { lldpV2Xdot3LocPowerTable 1 }

LldpV2Xdot3LocPowerEntry ::= SEQUENCE {

lldpV2Xdot3LocPowerPortClass	LldpV2PowerPortClass,
lldpV2Xdot3LocPowerMDISupported	TruthValue,
lldpV2Xdot3LocPowerMDIEnabled	TruthValue,
lldpV2Xdot3LocPowerPairControlable	TruthValue,
lldpV2Xdot3LocPowerPairs	Unsigned32,
lldpV2Xdot3LocPowerClass	Unsigned32,
lldpV2Xdot3LocPowerType	INTEGER,
lldpV2Xdot3LocPowerSource	INTEGER,

```

        lldpV2Xdot3LocPowerPriority          INTEGER,
        lldpV2Xdot3LocPDRequestedPowerValue Integer32,
        lldpV2Xdot3LocPSEAllocatedPowerValue Integer32,
        lldpV2Xdot3LocResponseTime          Integer32,
        lldpV2Xdot3LocReady                  TruthValue,
        lldpV2Xdot3LocReducedOperationPowerValue Integer32
    }

```

lldpV2Xdot3LocPowerPortClass OBJECT-TYPE

SYNTAX LldpV2PowerPortClass

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value that identifies the port Class of the given port associated with the local system."

REFERENCE

"IEEE Std 802.3 30.12.2.1.5"

::= { lldpV2Xdot3LocPowerEntry 1 }

lldpV2Xdot3LocPowerMDISupported OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The truth value used to indicate whether the MDI power is supported on the given port associated with the local system."

REFERENCE

"IEEE Std 802.3 30.12.2.1.6"

::= { lldpV2Xdot3LocPowerEntry 2 }

lldpV2Xdot3LocPowerMDIEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The truth value used to identify whether MDI power is enabled on the given port associated with the local system."

REFERENCE

"IEEE Std 802.3 30.12.2.1.7"

::= { lldpV2Xdot3LocPowerEntry 3 }

lldpV2Xdot3LocPowerPairControlable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The truth value is derived from the value of pethPsePortPowerPairsControlAbility object (defined in Clause 8) and is used to indicate whether the pair selection can be controlled on the given port associated with the local system."

REFERENCE

"IEEE Std 802.3 30.12.2.1.8"

::= { lldpV2Xdot3LocPowerEntry 4 }

lldpV2Xdot3LocPowerPairs OBJECT-TYPE

SYNTAX Unsigned32(1|2)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the value of the pethPsePortPowerPairs object (defined in Clause 8) which is associated with the given port on the local system."

REFERENCE

"IEEE Std 802.3 30.12.2.1.9"

::= { lldpV2Xdot3LocPowerEntry 5 }

lldpV2Xdot3LocPowerClass OBJECT-TYPE

SYNTAX Unsigned32(1|2|3|4|5)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the value of the pethPsePortPowerClassifications object (defined in Clause 8) which is associated with the given port on the local system."

REFERENCE

"IEEE Std 802.3 30.12.2.1.10"

::= { lldpV2Xdot3LocPowerEntry 6 }

lldpV2Xdot3LocPowerType OBJECT-TYPE

SYNTAX INTEGER {
 psetype1(0),
 psetype2(1),
 pdtype(2),
 pdtype2(3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A GET returns an integer indicating whether the local system is a PSE or a PD and whether it is Type 1 or Type 2."

REFERENCE

"IEEE Std 802.3 30.12.2.1.14"

::= { lldpV2Xdot3LocPowerEntry 7 }

lldpV2Xdot3LocPowerSource OBJECT-TYPE

SYNTAX INTEGER {
 pseprimary(0),
 psebackup(1),
 pseunknown(2),
 pdpseandlocal(3),
 pdpseonly(4),
 pdunknown(5)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A GET returns an integer indicating the power sources of the local system. A PSE indicates whether it is being powered by a primary power source; a backup power source; or unknown. A PD indicates whether it is being powered by a PSE and locally; by a PSE only; or unknown."

REFERENCE

"IEEE Std 802.3 30.12.2.1.15"

::= { lldpV2Xdot3LocPowerEntry 8 }

```

lldpV2Xdot3LocPowerPriority OBJECT-TYPE
    SYNTAX      INTEGER {
                    low(0),
                    high(1),
                    critical(2),
                    unknown(3)
                }
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "A GET returns the priority of a PD system. For a PSE, this
        is the priority that the PSE assigns to the PD. For a PD, this
        is the priority that the PD requests from the PSE. A SET
        operation changes the priority of the PD system to the indicated
        value."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.16"
    ::= { lldpV2Xdot3LocPowerEntry 9 }

lldpV2Xdot3LocPDRequestedPowerValue OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "A GET returns the PD requested power value.
        For a PD, it is the power value that the PD has currently
        requested from the remote system. PD requested power value
        is the maximum input average power the PD ever draws under
        this power allocation if accepted. For a PSE, it is the power
        value that the PSE mirrors back to the remote system. This is
        the PD requested power value that was used by the PSE to compute
        the power it has currently allocated to the remote system.
        The PD requested power value is encoded according to
        IEEE Std 802.3 Equation (79-1), where X is the decimal value of
        aLldpXdot3LocPDRequestedPowerValue."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.17"
    ::= { lldpV2Xdot3LocPowerEntry 10 }

lldpV2Xdot3LocPSEAllocatedPowerValue OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "A GET returns the PSE allocated power value.
        For a PSE, it is the power value that the PSE has currently
        allocated to the remote system. The PSE allocated power value
        is the maximum input average power that the PSE wants the PD
        to ever draw under this allocation if it is accepted. For a PD,
        it is the power value that the PD mirrors back to the remote
        system. This is the PSE allocated power value that was used by
        the PD to compute the power that it has currently requested from
        the remote system. The PSE allocated power value is encoded
        according to IEEE Std 802.3 Equation (79-2), where X is the
        decimal value of aLldpXdot3LocPSEAllocatedPowerValue."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.18"
    ::= { lldpV2Xdot3LocPowerEntry 11 }

```

lldpV2Xdot3LocResponseTime OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A GET returns the response time in seconds of the local system. For a PD, it is the maximum time required to update the value of lldpV2Xdot3LocPDRequestedPowerValue when the remote system requests the PD to change its max power draw. For a PSE, it is the maximum time required to update the value of lldpV2Xdot3LocPDRequestedPowerValue when the remote system requests of the PSE a new power value."

REFERENCE

"IEEE Std 802.3 30.12.2.1.19"

::= { lldpV2Xdot3LocPowerEntry 12 }

lldpV2Xdot3LocReady OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The truth value used to identify whether the local Data Link Layer classification engine has completed initialization and is ready to receive and transmit LLDPDUs."

REFERENCE

"IEEE Std 802.3 30.12.2.1.20"

::= { lldpV2Xdot3LocPowerEntry 13 }

lldpV2Xdot3LocReducedOperationPowerValue OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A GET returns the reduced operation power value. For a PD, it is a power value that is lower than the currently requested power value. This reduced operation power value represents a power state in which the PD could continue to operate, but with less functionality than at the current PD requested power value. The PSE could optionally use this information in the event that the PSE subsequently requests a lower PD power value than the PD requested power value. For a PSE, it is a power value that the PSE could ask the PD to move to if the PSE wants the PD to move to a lower power state. The definition and encoding of PD requested power value is the same as described in lldpV2Xdot3LocPDRequestedPowerValue. The default value for this field is the hexadecimal value FFFF"

REFERENCE

"IEEE Std 802.3 30.12.2.1.21"

::= { lldpV2Xdot3LocPowerEntry 14 }

--- lldpV2Xdot3LocMaxFrameSizeTable: Maximum Frame Size information

--- V2 modified to be indexed by ifIndex.

lldpV2Xdot3LocMaxFrameSizeTable OBJECT-TYPE

SYNTAX SEQUENCE OF LldpV2Xdot3LocMaxFrameSizeEntry

MAX-ACCESS not-accessible

```

STATUS      current
DESCRIPTION
    "This table contains one row per port of maximum frame
    size information (as a part of the LLDP IEEE 802.3 organizational
    extension) on the local system known to this agent."
 ::= { lldpV2Xdot3LocalData 3 }

```

```

lldpV2Xdot3LocMaxFrameSizeEntry OBJECT-TYPE
SYNTAX      LldpV2Xdot3LocMaxFrameSizeEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Maximum Frame Size information about a particular port
    component."
INDEX       { lldpV2LocPortIfIndex }
 ::= { lldpV2Xdot3LocMaxFrameSizeTable 1 }

```

```

LldpV2Xdot3LocMaxFrameSizeEntry ::= SEQUENCE {
    lldpV2Xdot3LocMaxFrameSize      Unsigned32
}

```

```

lldpV2Xdot3LocMaxFrameSize OBJECT-TYPE
SYNTAX      Unsigned32(0..65535)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "An integer value indicating the maximum supported frame
    size in octets on the given port of the local system."
REFERENCE
    "IEEE Std 802.3 30.12.2.1.13"
 ::= { lldpV2Xdot3LocMaxFrameSizeEntry 1 }

```

```

---
---
--- lldpV2Xdot3LocEEETable: Energy Efficient Ethernet Information Table
--- V2 modified to be indexed by ifIndex.
---
---

```

```

lldpV2Xdot3LocEEETable OBJECT-TYPE
SYNTAX      SEQUENCE OF LldpV2Xdot3LocEEEEEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This table contains one row per port of Energy Efficient Ethernet
    information (as a part of the LLDP IEEE 802.3 organizational
    extension) on the local system known to this agent."
 ::= { lldpV2Xdot3LocalData 4 }

```

```

lldpV2Xdot3LocEEEEEntry OBJECT-TYPE
SYNTAX      LldpV2Xdot3LocEEEEEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Information about a particular port component."
INDEX       { lldpV2LocPortIfIndex }
 ::= { lldpV2Xdot3LocEEETable 1 }

```

```

LldpV2Xdot3LocEEEEEntry ::= SEQUENCE {

```

```

        lldpV2Xdot3LocTxTwSys          Integer32,
        lldpV2Xdot3LocTxTwSysEcho      Integer32,
        lldpV2Xdot3LocRxTwSys          Integer32,
        lldpV2Xdot3LocRxTwSysEcho      Integer32,
        lldpV2Xdot3LocFbTwSys          Integer32,
        lldpV2Xdot3TxDllReady          TruthValue,
        lldpV2Xdot3RxDllReady          TruthValue,
        lldpV2Xdot3LocDllEnabled        TruthValue
    }

lldpV2Xdot3LocTxTwSys      OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A GET returns the value of Tw_sys_tx that the local system
        can support in the transmit direction.
        This object maps to the variable LocTxSystemValue as defined
        in IEEE Std 802.3 78.4.2.3."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.22"
    ::= {lldpV2Xdot3LocEEEEEntry 1 }

lldpV2Xdot3LocTxTwSysEcho  OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A GET returns the value of Tw_sys_tx that the remote system is
        advertising that it can support in the transmit direction and is
        echoed by the local system under the control of the EEE DLL receiver
        state diagram. This object maps to the variable
        LocTxSystemValueEcho as defined in IEEE Std 802.3 78.4.2.3"
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.23"
    ::= {lldpV2Xdot3LocEEEEEntry 2 }

lldpV2Xdot3LocRxTwSys      OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A GET returns the value of Tw_sys_tx that
        the local system is requesting in the receive direction.
        This object maps to the variable LocRxSystemValue as
        defined in IEEE Std 802.3 78.4.2.3."
    REFERENCE
        "IEEE Std 802.3 30.12.2.1.24"
    ::= {lldpV2Xdot3LocEEEEEntry 3 }

lldpV2Xdot3LocRxTwSysEcho  OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A GET returns the value of Tw_sys_tx that
        the remote system is advertising that it is requesting in the
        receive direction and is echoed by the local system under the
        control of the EEE DLL transmitter state diagram. This object

```

maps to the variable LocRxSystemValueEcho as defined in
IEEE Std 802.3 78.4.2.3."

REFERENCE

"IEEE Std 802.3 30.12.2.1.25"

::= {lldpV2Xdot3LocEEEEEntry 4 }

lldpV2Xdot3LocFbTwSys OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A GET returns the value of the fallback Tw_sys_tx
that the local system is advertising to the remote system.
This object maps to the variable LocFbSystemValue as defined
in IEEE Std 802.3 78.4.2.3."

REFERENCE

"IEEE Std 802.3 30.12.2.1.26"

::= {lldpV2Xdot3LocEEEEEntry 5 }

lldpV2Xdot3TxDllReady OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The truth value used to identify whether the local Data Link Layer
EEE layer management function has completed initialization and
is ready to receive and transmit LLDPDUs."

REFERENCE

"IEEE Std 802.3 30.12.2.1.27"

::= {lldpV2Xdot3LocEEEEEntry 6 }

lldpV2Xdot3RxDllReady OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The truth value used to identify whether the local Data Link Layer
EEE layer management function has completed initialization and
is ready to receive and transmit LLDPDUs."

REFERENCE

"IEEE Std 802.3 30.12.2.1.28"

::= {lldpV2Xdot3LocEEEEEntry 7 }

lldpV2Xdot3LocDllEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The truth value used to identify whether the local system has
completed auto-negotiation with a link partner that has
indicated at least one EEE capability."

REFERENCE

"IEEE Std 802.3 30.12.2.1.29"

::= {lldpV2Xdot3LocEEEEEntry 8 }

-- IEEE 802.3 - Remote Devices Information

```

-----

---
---
--- lldpV2Xdot3RemPortTable: Ethernet Information Table
--- V2 modified to be indexed by ifIndex and destination MAC address.
---
---

lldpV2Xdot3RemPortTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LldpV2Xdot3RemPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains Ethernet port information (as a part
        of the LLDP IEEE 802.3 organizational extension) of the remote
        system."
    ::= { lldpV2Xdot3RemoteData 1 }

lldpV2Xdot3RemPortEntry OBJECT-TYPE
    SYNTAX      LldpV2Xdot3RemPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Information about a particular physical network connection."
    INDEX       { lldpV2RemTimeMark,
                  lldpV2RemLocalIfIndex,
                  lldpV2RemLocalDestMACAddress,
                  lldpV2RemIndex }
    ::= { lldpV2Xdot3RemPortTable 1 }

LldpV2Xdot3RemPortEntry ::= SEQUENCE {
    lldpV2Xdot3RemPortAutoNegSupported      TruthValue,
    lldpV2Xdot3RemPortAutoNegEnabled        TruthValue,
    lldpV2Xdot3RemPortAutoNegAdvertisedCap OCTET STRING,
    lldpV2Xdot3RemPortOperMauType           Unsigned32
}

lldpV2Xdot3RemPortAutoNegSupported OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The truth value used to indicate whether the given port
        (associated with remote system) supports Auto-negotiation."
    REFERENCE
        "IEEE Std 802.3 30.12.3.1.1"
    ::= { lldpV2Xdot3RemPortEntry 1 }

lldpV2Xdot3RemPortAutoNegEnabled OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The truth value used to indicate whether port
        Auto-negotiation is enabled on the given port associated
        with the remote system."
    REFERENCE

```

```

        "IEEE Std 802.3 30.12.3.1.2"
 ::= { lldpV2Xdot3RemPortEntry 2 }

lldpV2Xdot3RemPortAutoNegAdvertisedCap OBJECT-TYPE
    SYNTAX      OCTET STRING(SIZE(2))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object contains the value (bitmap) of the
         ifMauAutoNegCapAdvertisedBits object (defined in IETF RFC
         3636) which is associated with the given port on the
         remote system."
    REFERENCE
        "IEEE Std 802.3 30.12.3.1.3"
 ::= { lldpV2Xdot3RemPortEntry 3 }

lldpV2Xdot3RemPortOperMauType OBJECT-TYPE
    SYNTAX      Unsigned32(0..2147483647)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "An integer value that indicates the operational MAU type
         of the sending device.

        This object contains the integer value derived from the
        list position of the corresponding dot3MauType as listed in
        in Clause 13 and is equal to the last number in
        the respective dot3MauType OID.

        For example, if the ifMauType object is dot3MauType1000BaseTHD
        which corresponds to {dot3MauType 29}, the numerical value of
        this field is 29. For MAU types not listed in Clause 13,
        the value of this field shall be set to zero."
    REFERENCE
        "IEEE Std 802.3 30.12.3.1.4"
 ::= { lldpV2Xdot3RemPortEntry 4 }

---
---
--- lldpV2Xdot3RemPowerTable: Power Ethernet Information Table
--- V2 modified to be indexed by ifIndex and destination MAC address.
---
---

lldpV2Xdot3RemPowerTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF LldpV2Xdot3RemPowerEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains Ethernet power information (as a part
         of the LLDP IEEE 802.3 organizational extension) of the remote
         system."
 ::= { lldpV2Xdot3RemoteData 2 }

lldpV2Xdot3RemPowerEntry OBJECT-TYPE
    SYNTAX      LldpV2Xdot3RemPowerEntry
    MAX-ACCESS  not-accessible
    STATUS      current

```