



IEEE Standard for Ethernet YANG Data Model Definitions

IEEE Computer Society

Developed by the
LAN/MAN Standards Committee

IEEE Std 802.3.2™-2025
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IEEE Standard for Ethernet YANG Data Model Definitions

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LAN/MAN Standards Committee
of the
IEEE Computer Society

Approved 10 September 2025
IEEE SA Standards Board

Abstract: YANG models for IEEE Std 802.3 are defined in this standard. This standard also publishes these models in a machine-readable format.

Keywords: Ethernet, IEEE 802.3, IEEE 802.3.2, YANG

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Introduction

This introduction is not part of IEEE Std 802.3.2-2025, IEEE Standard for Ethernet YANG Data Model Definitions.

The YANG modules included in this standard provide YANG versions of attributes defined in IEEE Std 802.3™-2022, Clause 30, as well as derivative attributes defined in other management information bases (e.g., SNMP attributes included in IEEE Std 802.3.1, YANG versions of IETF Etherlike MIB attributes). The YANG modules defined in this standard accommodate IEEE Std 802.3-2022, excluding any currently published or future amendments.

IEEE Std 802.3 will continue to evolve. New Ethernet capabilities are anticipated to be added within the next few years as amendments to this standard.

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IEEE Standard for Ethernet YANG Data Model Definitions

1. Overview

This standard defines YANG modules for various Ethernet functions specified in IEEE Std 802.3.

1.1 Scope

This standard defines YANG data models for IEEE Std 802.3 Ethernet.

1.2 Purpose

The purpose of the standard is to define YANG modules for IEEE Std 802.3 and publish these modules in a machine-readable format.

1.3 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*).^{6, 7}

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (*should* equals *is recommended that*).

The word *may* is used to indicate a course of action permissible within the limits of the standard (*may* equals *is permitted to*).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (*can* equals *is able to*).

⁶ The use of the word *must* is deprecated and cannot be used when stating mandatory requirements, *must* is used only to describe unavoidable situations.

⁷ The use of *will* is deprecated and cannot be used when stating mandatory requirements, *will* is only used in statements of fact.

1.4 Machine-readable YANG modules

The authoritative machine-readable YANG files are attached to this standard. A copy is also available for download at the following URL: <https://github.com/YangModels/yang/tree/main/standard/ieee/published/802.3> as text files with a *.yang* extension, for example, *ieee802-ethernet-interface.yang*. The use of specialized tools to view YANG modules may be useful to create tree, UML image, and HTML outputs from the YANG modules.

Like other languages, YANG (see IETF RFC 7950) has an accepted style for machine-readable files, which was followed during the development of this standard. This formatting may not be preserved when importing the machine-readable YANG modules into the PDF. In case of any discrepancies, the machine-readable files attached to this standard take precedence.

1.5 Summary of YANG-based management framework

The structure of YANG-based management framework closely resembles the structure of the Internet-Standard Management Framework, described in detail in section 7 of IETF RFC 3410.

Managed objects defined using the YANG modeling language are hosted on the managed device and accessed through NETCONF (see IETF RFC 7803) or RESTCONF (see IETF RFC 8040). This standard specifies YANG modules that are compliant to YANG 1.1 (see IETF RFC 7950).

1.6 Security considerations

The YANG modules defined in this standard are designed to be accessed via network management protocols, including NETCONF (see IETF RFC 7803) or RESTCONF (see IETF RFC 8040). The lowest NETCONF layer is the secure transport layer, and the mandatory-to-implement secure transport is Secure Shell (SSH) (see IETF RFC 6242) or TLS (see IETF RFC 8446). The lowest RESTCONF layer is HTTPS, and the mandatory-to-implement secure transport is TLS (see IETF RFC 8446).

The NETCONF access control model (see IETF RFC 8341) provides the means to restrict access for particular NETCONF or RESTCONF users to a pre-configured subset of all available NETCONF or RESTCONF protocol operations and content.

There are a number of data nodes defined in these YANG modules that are writable/creatable/deletable, that is, have the *config* property set to true, which is the default setting. These data nodes can be considered sensitive or vulnerable in some network environments. Write operations (e.g., *edit-config*) to these data nodes without proper protection can have a negative effect on network operations.

Some of the readable data nodes in these YANG modules can be considered sensitive or vulnerable in some network environments. It is thus important to control read access (e.g., via *get*, *get-config*, or *notification*) to these data nodes.

Some of the RPC operations in these YANG modules can be considered sensitive or vulnerable in some network environments. Therefore, it is important to control access to these operations.

1.7 YANG module syntax validation

All YANG modules included in this standard are YANG 1.1 (see IETF RFC 7950) compliant and pass automated checks using tools available at the time of publication.

The following open source and/or free versions of YANG validation tools may be used: Pyang (see <https://github.com/mbj4668/pyang>) as well as other YANG model validation tools listed at <https://www.yangvalidator.com>.

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.

IEEE Std 802.3TM-2022, IEEE Standard for Ethernet.^{8,9}

IEEE Std 802.3.1TM-2024, IEEE Standard for Ethernet Structure of Management Information version 2 (SMIv2) Data Model Definitions.

IETF RFC 3410, *Introduction and Applicability Statements for Internet Standard Management Framework*, J. Case, R. Mundy, D. Partain, and B. Stewart, December 2002.¹⁰

IETF RFC 6242, *Using the NETCONF Protocol over Secure Shell (SSH)*, M. Wasserman, June 2011.

IETF RFC 7803, *Changing the Registration Policy for the NETCONF Capability URNs Registry*, B. Leiba, February 2016.

IETF RFC 7950, *The YANG 1.1 Data Modeling Language*, M. Bjorklund, August 2016.

IETF RFC 8040, *RESTCONF Protocol*, A. Bierman, M. Bjorklund, and K. Watsen, January 2017.

IETF RFC 8341 (STD 91), *Network Configuration Access Control Model*, A. Bierman and M. Bjorklund, March 2018.

IETF RFC 8407, *Guidelines for Authors and Reviewers of Documents Containing YANG Data Models*, A. Bierman, October 2018.

IETF RFC 8446, *The Transport Layer Security (TLS) Protocol Version 1.3*, E. Rescorla, August 2018.

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For the purposes of this document, the following terms and definitions apply. Some terms used in this document are defined in IEEE Std 802.3, and where alternative definitions occur in the IEEE Standards Dictionary, the IEEE Std 802.3 definition should be used. The *IEEE Standards Dictionary Online* should be consulted for terms not defined in this clause.¹¹

3.1 data model: Model that describes how data are represented and accessed.

3.2 YANG module: Module that defines a hierarchy of nodes that can be used for NETCONF-based (see IETF RFC 7803) and RESTCONF-based (see IETF RFC 8040) operations.

NOTE—With its definitions and the definitions it imports or includes from elsewhere, a module is self-contained and can be compiled.

¹¹ The *IEEE Standards Dictionary Online* is available at: <http://dictionary.ieee.org/>.

4. Abbreviations

This standard contains the following abbreviations:

CO	central office
CPE	customer premises equipment
CSMA/CD	carrier sense multiple access with collision detection
DTE	data terminal equipment
EPON	Ethernet passive optical network
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
LLID	logical link identifier
MPCP	Multipoint Control Protocol
NETCONF	Network Configuration Protocol
OAM	operations, administration, and maintenance
OLT	optical line terminal
ONU	optical network unit
PoDL	Power over Data Lines
PoE	Power over Ethernet
RESTCONF	Representational State Transfer Configuration Protocol
WDM	wavelength division multiplexing
YANG	Yet Another Next Generation

5. Ethernet YANG modules

5.1 YANG module structure

Six modules defined in this clause are focused on the configuration and monitoring of IEEE Std 802.3 Ethernet interfaces.

The *ieee802-ethernet-interface* YANG module contains definitions of current attributes used widely in the industry in current products.

The *ieee802-ethernet-interface-half-duplex* YANG module contains definitions of half-duplex attributes.

The *ieee802-ethernet-lldp* YANG module contains definitions for configuring LLDP for IEEE Std 802.3 compliant interfaces.

The *ieee802-ethernet-mac-merge* module contains definitions for configuration of MAC Merge for IEEE Std 802.1Qcw [B2] frame preemption.

The *ieee802-ethernet-phy* YANG module contains definitions for Ethernet Phys, derived from IANA-MAU-MIB REVISION 202309070000Z, the YANG and definitions correct as per release of 2024-11-09.

The *ieee802-ethernet-phy-type* YANG module contains definitions for Ethernet Phy types, derived from IANA-MAU-MIB REVISION 202309070000Z using smidump, the YANG and definitions are correct as per 2024-11-09.

NOTE—The *ieee802-ethernet-phy-type* module may, in future, be maintained by an external organization (IANA).¹²

This standard does not have a normative requirement for data nodes of the base ietf-interfaces YANG module, but the following data nodes are supported: name, description, type, enabled, admin-status, oper-status, if-index, and phys-address.

5.2 Mapping of IEEE Std 802.3, Clause 30 managed objects

This subclause contains the mapping between YANG data nodes included in the *ieee802-ethernet-interface* (see Table 5–1), *ieee802-ethernet-interface-half-duplex* (see Table 5–4), *ieee802-ethernet-mac-merge* (see Table 5–5), and *ieee802-ethernet-lldp* (see Table 5–6) YANG modules, and the managed objects and attributes defined in IEEE Std 802.3, Clause 30.

¹² Notes in text, tables, and figures are given for information only and do not contain requirements needed to implement this standard.

Table 5–1—Mapping between IEEE Std 802.3, Clause 30 managed objects and ieee802-ethernet-interface YANG data nodes

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-ethernet-interface</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
oAutoNegotiation	acAutoNegAdminControl	30.6.1.2.2	interfaces/interface/ethernet/	auto-negotiation/enable R/W
	aAutoNegAutoConfig	30.6.1.1.4		negotiation-status R
	N/A			flow-control/pause/direction R/W
oMACControl-FunctionEntity	aPAUSEMACCtrlFramesReceived	30.3.4.3		flow-control/pause/statistics/in-frames-pause R
	aPAUSEMACCtrlFramesTransmitted	30.3.4.2		flow-control/pause/statistics/out-frames-pause R
N/A	dot3HCOOutPFCFrames			
N/A	N/A			flow-control/force-flow-control R/W
N/A	N/A			speed R/W
oMACEntity	aDuplexStatus	30.3.1.1.32		duplex R/W
	aMaxFrameLength	30.3.1.1.37		max-frame-length R
	aSlowProtocolFrameLimit	30.3.1.1.38		frame-limit-slow-protocol R
oEXTENSION	aEXTENSIONMACCtrlStatus	30.3.8.3		mac-control-extension-control R
N/A	N/A			capabilities/auto-negotiation R

Table 5–1—Mapping between IEEE Std 802.3, Clause 30 managed objects and ieee802-ethernet-interface YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-ethernet-interface</i> YANG data nodes		
Managed object(s)	Attribute(s)		Container(s)	Data node(s)	R/W
oMACTEntity	aFramesReceivedOK	30.3.1.1.5	interfaces/interface/ethernet/statistics/frame	in-frames	R
	aMulticastFramesReceivedOK	30.3.1.1.21		in-multicast-frames	R
	aBroadcastFramesReceivedOK	30.3.1.1.22		in-broadcast-frames	R
	aFrameCheckSequenceErrors + aAlignmentErrors	30.4.3.1.6, 30.4.3.1.7		in-error-fcs-frames	R
	aFrameTooLongErrors	30.3.1.1.25		in-error-oversize-frames	R
	aFramesLostDueToIntMACRcvError	30.3.1.1.15		in-error-mac-internal-frames	R
	aFramesTransmittedOK	30.3.1.1.2		out-frames	R
	aMulticastFramesXmittedOK	30.3.1.1.18		out-multicast-frames	R
	aBroadcastFramesXmittedOK	30.3.1.1.19		out-broadcast-frames	R
oPHYEntity	aFramesLostDueToIntMACXmitError	30.3.1.1.12	interfaces/interface/ethernet/statistics/phy	out-error-mac-internal-frames	R
	aSymbolErrorDuringCarrier	30.3.2.1.5		in-error-symbol	R
	aReceiveLPITransitions	30.3.2.1.11		in-lpi-transitions	R
	aReceiveLPIMicroseconds	30.3.2.1.9		in-lpi-time	R
	aTransmitLPITransitions	30.3.2.1.10		out-lpi-transitions	R
	aTransmitLPIMicroseconds	30.3.2.1.8		out-lpi-time	R

Table 5–1—Mapping between IEEE Std 802.3, Clause 30 managed objects and ieee802-ethernet-interface YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-ethernet-interface</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
oMACControlEntity oEXTENSION	aUnsupportedOpCodesReceived	30.3.3.5	interfaces/interface/ethernet/statistics/mac-control	in-frames-mac-control-unknown R
	aEXTENSIONMACCtrlFramesReceived	30.3.8.2		in-frames-mac-control-extension R
	aEXTENSIONMACCtrlFramesTransmitted	30.3.8.1		out-frames-mac-control-extension R

Table 5–2—Mapping between IETF RFC 2819 [B3] managed objects and ieee802-ethernet-interface YANG data nodes

Corresponding <i>ieee802-ethernet-interface</i> YANG data nodes			
IETF RFC 2819 [B3] Attribute(s)		Container(s)	Data node(s) R/W
no direct object ^a etherStatsOctets etherStatsUndersizePkts + etherStatsFragments		interfaces/interface/ethernet/statistics/frame	in-total-frames R
			in-total-octets R
			in-error-undersize-frames R

^a Can be calculated as: aFramesReceivedOK + aFrameCheckSequenceErrors + aAlignmentErrors + aFrameTooLongErrors + aFramesLostDueToIntMACRevError.

Table 5–3—Mapping between IETF RFC 3635 [B5] managed objects and *ieee802-ethernet-interface* YANG data nodes

ETHERLIKE MIB Attribute(s)	Corresponding <i>ieee802-ethernet-interface</i> YANG data nodes		
	Container(s)	Data node(s)	R/W
dot3HCInPFCFrames	interfaces/interface/ethernet/	flow-control/pfc {ethernet-pfc} /statistics/in-frames-pfc	R
dot3HCOutPFCFrames		flow-control/pfc {ethernet-pfc} /statistics/out-frames-pfc	R

Table 5–4—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-ethernet-interface-half-duplex* YANG data nodes

IEEE Std 802.3, Clause 30		Corresponding <i>ieee802-ethernet-interface-half-duplex</i> YANG data nodes		
Managed object(s)	Attribute(s)	Reference	Container(s)	Data node(s) R/W
oMACEntity	aRateControlAbility	30.3.1.1.33	interfaces/interface/ethernet	dynamic-rate-control R/W
	aSQETestErrors	30.3.2.1.4	interfaces/interface/ethernet/capability	dynamic-rate-control-supported R
oPHYEntity oMACEntity	aSingleCollisionFrames	30.3.1.1.3	interfaces/interface/ethernet/statistics/frame/csmacd {csma-cd}	in-errors-sqe-test R
	aMultipleCollisionFrames	30.3.1.1.4		out-frames-collision-single R
	aFramesWithDeferredXmissions	30.3.1.1.9		out-frames-collision-multiple R
	aFramesAbortedDueToXSColls	30.3.1.1.11		out-frames-deferred R
	aLateCollisions	30.3.1.1.10		out-frames-collisions-excessive R
	aCarrierSenseErrors	30.3.1.1.13		out-collisions-late R
aCollisionFrames		30.3.1.1.30		out-errors-carrier-sense R
				collision-histogram/collision-count R
				collision-histogram/collision-count-frames R

Table 5-5—Mapping between IEEE Std 802.3, 30.14 managed objects and *ieee802-ethernet-mac-merge* YANG data nodes

IEEE Std 802.3, 30.14		Reference	Corresponding <i>ieee802-ethernet-mac-merge</i> YANG data nodes		
Managed object(s)	Attribute(s)		Container(s)	Data node(s)	R/W
oMacMergeEntity	aMACMergeSupport	30.14.1.1	Interfaces/interface/ethernet/mac-merge/admin-status	merge-support	R
	aMACMergeStatusVerify	30.14.1.2		verify-status	R
	aMACMergeStatusTx	30.14.1.5		status-tx	R
	aMACMergeEnableTx	30.14.1.3	Interfaces/interface/ethernet/mac-merge/admin-control	merge-enable-tx	R/W
	aMACMergeVerifyDisableTx	30.14.1.4		verify-disable-tx	R/W
	aMACMergeVerifyTime	30.14.1.6		verify-time	R/W
	aMACMergeAddFragSize	30.14.1.7		frag-size	R/W
	aMACMergeFrameAssErrorCount	30.14.1.8	Interfaces/interface/ethernet/mac-merge/statistics	assembly-error-count	R
	aMACMergeFrameSmdErrorCount	30.14.1.9		smd-error-count	R
	aMACMergeFrameAssOkCount	30.14.1.10		assembly-ok-count	R
	aMACMergeFragCountRx	30.14.1.11		fragment-count-rx	R
	aMACMergeFragCountTx	30.14.1.12		fragment-count-tx	R
	aMACMergeHoldCount	30.14.1.13		hold-count	R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-ethernet-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
oLldpXdot3LocSystemsGroup	aLldpXdot3PortConfigTLVsTxEnable	30.12.1.1.1	lldp/port	tlvs-port-config-enable R/W
	aLldpXdot3LocPortAutoNegSupported	30.12.2.1.1		auto-negotiation-supported R
	aLldpXdot3LocPortAutoNegEnabled	30.12.2.1.2		auto-negotiation-enabled R
	aLldpXdot3LocPortAutoNegAdvertisedCap	30.12.2.1.3		auto-negotiation-cap R
	aLldpXdot3LocPortOperMauType	30.12.2.1.4		operational-mau-type R
	aLldpXdot3LocPowerPortClass	30.12.2.1.5		power-port-class R
	aLldpXdot3LocPowerMDISupported	30.12.2.1.6		mdi-power-supported R
	aLldpXdot3LocPowerMDIEnabled	30.12.2.1.7		mdi-power-enabled R
	aLldpXdot3LocPowerPairControllable	30.12.2.1.8		power-pair-controllable R
	aLldpXdot3LocPowerPairs	30.12.2.1.9		power-pairs R
	aLldpXdot3LocPowerClass	30.12.2.1.10		local-power-class R
	aLldpXdot3LocLinkAggStatus	30.12.2.1.11		link-aggregation-status R
	aLldpXdot3LocLinkAggPortId	30.12.2.1.12		aggregation-port-id R
	aLldpXdot3LocMaxFrameSize	30.12.2.1.13		local-max-frame-size R
	aLldpXdot3LocPowerType	30.12.2.1.14		power-type R
	aLldpXdot3LocPowerSource	30.12.2.1.15		power-source R
	aLldpXdot3LocPowerPriority	30.12.2.1.16		local-power-priority R/W
	aLldpXdot3LocPDRRequestedPowerValue	30.12.2.1.17		pd-requested-power-value R
	aLldpXdot3LocPDRRequestedPowerValueA	30.12.2.1.18		pd-requested-power-value-a R
	aLldpXdot3LocPDRRequestedPowerValueB	30.12.2.1.19		pd-requested-power-value-b R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-ethernet-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
	aLldpXdot3LocPSEAllocatedPowerValue	30.12.2.1.20		pse-allocated-power-value R
	aLldpXdot3LocPSEAllocatedPowerValueA	30.12.2.1.21		pse-allocated-power-value-a R
	aLldpXdot3LocPSEAllocatedPowerValueB	30.12.2.1.22		pse-allocated-power-value-b R
	aLldpXdot3LocPSEPoweringStatus	30.12.2.1.23		pse-powering-status R
	aLldpXdot3LocPDPDPoweredStatus	30.12.2.1.24		pd-powered-status R
	aLldpXdot3LocPowerPairsExt	30.12.2.1.25		power-pairs-ext R
	aLldpXdot3LocPowerClassExtA	30.12.2.1.26		power-class-ext-A R
	aLldpXdot3LocPowerClassExtB	30.12.2.1.27		power-class-ext-B R
	aLldpXdot3LocPowerClassExt	30.12.2.1.28		power-class-ext R
	aLldpXdot3LocPowerTypeExt	30.12.2.1.29		power-type-ext R
	aLldpXdot3LocPDLLoad	30.12.2.1.30		pd-load R
	aLldpXdot3LocPD4PID	30.12.2.1.31		pd-4pid R
	aLldpXdot3LocPSEMaxAvailPower	30.12.2.1.32		pse-max-avail-power R
	aLldpXdot3LocPSEAutoclassSupport	30.12.2.1.33		pse-autoclass-support R
	aLldpXdot3LocAutoclassCompleted	30.12.2.1.34		autoclass-completed R
	aLldpXdot3LocAutoclassRequest	30.12.2.1.35		autoclass-request R
	aLldpXdot3LocPowerDownRequest	30.12.2.1.36		power-down-request R
	aLldpXdot3LocPowerDownTime	30.12.2.1.37		power-down-time R
	aLldpXdot3LocMeasVoltageSupport	30.12.2.1.38		meas-voltage-support R
	aLldpXdot3LocMeasCurrentSupport	30.12.2.1.39		meas-current-support R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
	aLldpXdot3LocMeasPowerSupport	30.12.2.1.40		meas-power-support R
	aLldpXdot3LocMeasEnergySupport	30.12.2.1.41		meas-energy-support R
	aLldpXdot3LocMeasurementSource	30.12.2.1.42		measurement-source R
	aLldpXdot3LocMeasVoltageRequest	30.12.2.1.43		meas-voltage-request R
	aLldpXdot3LocMeasCurrentRequest	30.12.2.1.44		meas-current-request R
	aLldpXdot3LocMeasPowerRequest	30.12.2.1.45		meas-power-request R
	aLldpXdot3LocMeasEnergyRequest	30.12.2.1.46		meas-energy-request R
	aLldpXdot3LocMeasVoltageValid	30.12.2.1.47		meas-voltage-valid R
	aLldpXdot3LocMeasCurrentValid	30.12.2.1.48		meas-current-valid R
	aLldpXdot3LocMeasPowerValid	30.12.2.1.49		meas-power-valid R
	aLldpXdot3LocMeasEnergyValid	30.12.2.1.50		meas-energy-valid R
	aLldpXdot3LocMeasVoltageUncertainty	30.12.2.1.51		meas-voltage-uncertainty R
	aLldpXdot3LocMeasCurrentUncertainty	30.12.2.1.52		meas-current-uncertainty R
	aLldpXdot3LocMeasPowerUncertainty	30.12.2.1.53		meas-power-uncertainty R
	aLldpXdot3LocMeasEnergyUncertainty	30.12.2.1.54		meas-energy-uncertainty R
	aLldpXdot3LocVoltageMeasurement	30.12.2.1.55		voltage-measurement R
	aLldpXdot3LocCurrentMeasurement	30.12.2.1.56		current-measurement R
	aLldpXdot3LocPowerMeasurement	30.12.2.1.57		power-measurement R
	aLldpXdot3LocEnergyMeasurement	30.12.2.1.58		energy-measurement R
	aLldpXdot3LocPSEPowerPriceIndex	30.12.2.1.59		pse-power-price-index R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
	aLldpXdot3LocResponseTime	30.12.2.1.60		local-response R
	aLldpXdot3LocReady	30.12.2.1.61		local-system-ready R
	aLldpXdot3LocTxTwSys	30.12.2.1.62		tx-system-value R
	aLldpXdot3LocTxTwSysEcho	30.12.2.1.63		tx-system-value-echo R
	aLldpXdot3LocRxTwSys	30.12.2.1.64		rx-system-value R
	aLldpXdot3LocRxTwSysEcho	30.12.2.1.65		rx-system-value-echo R
	aLldpXdot3LocFbTwSys	30.12.2.1.66		fallback-system-value R
	aLldpXdot3TxDllReady	30.12.2.1.67		tx-dll-ready R
	aLldpXdot3RxDllReady	30.12.2.1.68		rx-dll-ready R
	aLldpXdot3LocDllEnabled	30.12.2.1.69		dll-ready R
	aLldpXdot3LocTxFw	30.12.2.1.70		tx-system-fw R
	aLldpXdot3LocTxFwEcho	30.12.2.1.71		tx-system-fw-echo R
	aLldpXdot3LocRxFw	30.12.2.1.72		rx-system-fw R
	aLldpXdot3LocRxFwEcho	30.12.2.1.73		rx-system-fw-echo R
	aLldpXdot3LocPreemptSupported	30.12.2.1.74		preemption-supported R
	aLldpXdot3LocPreemptEnabled	30.12.2.1.75		preemption-enabled R
	aLldpXdot3LocPreemptActive	30.12.2.1.76		preemption-active R
	aLldpXdot3LocAddFragSize	30.12.2.1.77		additional-fragment-size R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
oLldpXdot3RemSystemsGroup	aLldpXdot3RemPortAutoNegSupported	30.12.3.1.1	lldp/port/remote-systems-data	auto-negotiation-supported R
	aLldpXdot3RemPortAutoNegEnabled	30.12.3.1.2		auto-negotiation-enabled R
	aLldpXdot3RemPortAutoNegAdvertisedCap	30.12.3.1.3		auto-negotiation-cap R
	aLldpXdot3RemPortOperMauType	30.12.3.1.4		operational-mau-type R
	aLldpXdot3RemPowerPortClass	30.12.3.1.5		power-port-class R
	aLldpXdot3RemPowerMDISupported	30.12.3.1.6		mdi-power-supported R
	aLldpXdot3RemPowerMDIEnabled	30.12.3.1.7		mdi-power-enabled R
	aLldpXdot3RemPowerPairControllable	30.12.3.1.8		power-pair-controllable R
	aLldpXdot3RemPowerPairs	30.12.3.1.9		power-pairs R
	aLldpXdot3RemPowerClass	30.12.3.1.10		power-class R
	aLldpXdot3RemLinkAggStatus	30.12.3.1.11		link-aggregation-status R
	aLldpXdot3RemLinkAggPortId	30.12.3.1.12		aggregation-port-id R
	aLldpXdot3RemMaxFrameSize	30.12.3.1.13		local-max-frame-size R
	aLldpXdot3RemPowerType	30.12.3.1.14		power-type R
	aLldpXdot3RemPowerSource	30.12.3.1.15		power-source R
	aLldpXdot3RemPowerPriority	30.12.3.1.16		power-priority RW
	aLldpXdot3RemPDRRequestedPowerValue	30.12.3.1.17		pd-requested-power-value R
	aLldpXdot3RemPDRRequestedPowerValueA	30.12.3.1.18		pd-requested-power-value-a R
	aLldpXdot3RemPDRRequestedPowerValueB	30.12.3.1.19		pd-requested-power-value-b R
	aLldpXdot3RemPSEAllocatedPowerValue	30.12.3.1.20		pse-allocated-power-value R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
	aLldpXdot3RemPSEAllocatedPowerValueA	30.12.3.1.21		pse-allocated-power-value-a R
	aLldpXdot3RemPSEAllocatedPowerValueB	30.12.3.1.22		pse-allocated-power-value-b R
	aLldpXdot3RemPSEPoweringStatus	30.12.3.1.23		pse-powering-status R
	aLldpXdot3RemPDPoweredStatus	30.12.3.1.24		pd-powered-status R
	aLldpXdot3RemPowerPairsExt	30.12.3.1.25		power-pairs-ext R
	aLldpXdot3RemPowerClassExtA	30.12.3.1.26		power-class-ext-A R
	aLldpXdot3RemPowerClassExtB	30.12.3.1.27		power-class-ext-B R
	aLldpXdot3RemPowerClassExt	30.12.3.1.28		power-class-ext R
	aLldpXdot3RemPowerTypeExt	30.12.3.1.29		power-type-ext R
	aLldpXdot3RemPDLLoad	30.12.3.1.30		pd-load R
	aLldpXdot3RemPDPID	30.12.3.1.31		pd-4pid R
	aLldpXdot3RemPSEMaxAvailPower	30.12.3.1.32		pse-max-avail-power R
	aLldpXdot3RemPSEAutoclassSupport	30.12.3.1.33		pse-autoclass-support R
	aLldpXdot3RemAutoclassCompleted	30.12.3.1.34		autoclass-completed R
	aLldpXdot3RemAutoclassRequest	30.12.3.1.35		autoclass-request R
	aLldpXdot3RemPowerDownRequest	30.12.3.1.36		power-down-request R
	aLldpXdot3RemPowerDownTime	30.12.3.1.37		power-down-time R
	aLldpXdot3RemMeasVoltageSupport	30.12.3.1.38		meas-voltage-support R
	aLldpXdot3RemMeasCurrentSupport	30.12.3.1.39		meas-current-support R
	aLldpXdot3RemMeasPowerSupport	30.12.3.1.40		meas-power-support R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
	aLldpXdot3RemMeasEnergySupport	30.12.3.1.41		meas-energy-support R
	aLldpXdot3RemMeasurementSource	30.12.3.1.42		measurement-source R
	aLldpXdot3RemMeasVoltageRequest	30.12.3.1.43		meas-voltage-request R
	aLldpXdot3RemMeasCurrentRequest	30.12.3.1.44		meas-current-request R
	aLldpXdot3RemMeasPowerRequest	30.12.3.1.45		meas-power-request R
	aLldpXdot3RemMeasEnergyRequest	30.12.3.1.46		meas-energy-request R
	aLldpXdot3RemMeasVoltageValid	30.12.3.1.47		meas-voltage-valid R
	aLldpXdot3RemMeasCurrentValid	30.12.3.1.48		meas-current-valid R
	aLldpXdot3RemMeasPowerValid	30.12.3.1.49		meas-power-valid R
	aLldpXdot3RemMeasEnergyValid	30.12.3.1.50		meas-energy-valid R
	aLldpXdot3RemMeasVoltageUncertainty	30.12.3.1.51		meas-voltage-uncertainty R
	aLldpXdot3RemMeasCurrentUncertainty	30.12.3.1.52		meas-current-uncertainty R
	aLldpXdot3RemMeasPowerUncertainty	30.12.3.1.53		meas-power-uncertainty R
	aLldpXdot3RemMeasEnergyUncertainty	30.12.3.1.54		meas-energy-uncertainty R
	aLldpXdot3RemVoltageMeasurement	30.12.3.1.55		voltage-measurement R
	aLldpXdot3RemCurrentMeasurement	30.12.3.1.56		current-measurement R
	aLldpXdot3RemPowerMeasurement	30.12.3.1.57		power-measurement R
	aLldpXdot3RemEnergyMeasurement	30.12.3.1.58		energy-measurement R
	aLldpXdot3RemPSEPowerPriceIndex	30.12.3.1.59		pse-power-price-index R
	aLldpXdot3RemTxTwSys	30.12.3.1.60		tx-system-value R

Table 5–6—Mapping between IEEE Std 802.3, Clause 30 managed objects and *ieee802-lldp* YANG data nodes (continued)

IEEE Std 802.3, Clause 30		Reference	Corresponding <i>ieee802-lldp</i> YANG data nodes	
Managed object(s)	Attribute(s)		Container(s)	Data node(s) R/W
	aLldpXdot3RemTxTwSysEcho	30.12.3.1.61		tx-system-value-echo R
	aLldpXdot3RemRxTwSys	30.12.3.1.62		rx-system-value R
	aLldpXdot3RemRxTwSysEcho	30.12.3.1.63		rx-system-value-echo R
	aLldpXdot3RemFbTwSys	30.12.3.1.64		fallback-system-value R
	aLldpXdot3RemTxFw	30.12.3.1.65 ^a		tx-system-fw R
	aLldpXdot3RemTxFwEcho	30.12.3.1.66 ^a		tx-system-fw-echo R
	aLldpXdot3RemRxFw	30.12.3.1.67 ^a		rx-system-fw R
	aLldpXdot3RemRxFwEcho	30.12.3.1.68 ^a		rx-system-fw-echo R
	aLldpXdot3RemPreemptSupported	30.12.3.1.69 ^a		preemption-supported R
	aLldpXdot3RemPreemptEnabled	30.12.3.1.70 ^a		preemption-enabled R
	aLldpXdot3RemPreemptActive	30.12.3.1.71 ^a		preemption-active R
	aLldpXdot3RemAddFragSize	30.12.3.1.72 ^a		additional-fragment-size R

^a Subclauses 30.12.3.1.65 through 30.12.3.1.72 in IEEE Std 802.3-2022 can be found as the second instance of 30.12.3.1.24 through 30.12.3.1.31.

5.3 YANG module definition¹³

The YANG module tree hierarchy uses terms defined in IETF RFC 8407.

5.3.1 Tree hierarchy

5.3.1.1 ieee802-ethernet-interface

module: ieee802-ethernet-interface

```
augment /if:interfaces/if:interface:
  +--rw ethernet
    +--rw auto-negotiation!
      | +--rw enable?          boolean
      | +--ro negotiation-status? enumeration
    +--ro phy-type?            identityref
    +--ro pmd-type?            identityref
    +--rw duplex?              duplex-type
    o--rw speed?               eth-if-speed-type
    x--rw flow-control
      | +--rw pause {ethernet-pause}?
      | | +--rw direction?      pause-fc-direction-type
      | | +--ro statistics
      | |   +--ro in-frames-pause? yang:counter64
      | |   +--ro out-frames-pause? yang:counter64
      | +--rw pfc {ethernet-pfc}?
      | | +--rw enable?         boolean
      | | x--ro statistics
      | |   +--ro in-frames-pfc?  yang:counter64
      | |   +--ro out-frames-pfc? yang:counter64
      | +--rw force-flow-control? boolean
    +--ro max-frame-length?    uint16
    +--ro mac-control-extension-control? boolean
    +--ro frame-limit-slow-protocol? uint64
    +--ro capabilities
      | +--ro auto-negotiation? boolean
    +--rw ethernet-pause {ethernet-pause}?
      | +--rw control-and-status
      | | +--rw pause-admin-control? pause-fc-direction-type
      | | +--ro pause-oper-status?   pause-fc-direction-type
      | | +--rw link-delay-allowance? uint32
      | | +--ro pfc-enable-status?   boolean
      | +--ro statistics
      |   +--ro in-frames-pause?     yang:counter64
      |   +--ro out-frames-pause?    yang:counter64
    +--ro statistics
      +--ro frame
        | +--ro in-total-frames?      yang:counter64
        | +--ro in-total-octets?      yang:counter64
        | +--ro in-frames?            yang:counter64
        | +--ro in-multicast-frames?  yang:counter64
        | +--ro in-broadcast-frames?  yang:counter64
        | +--ro in-error-fcs-frames?  yang:counter64
        | x--ro in-error-undersize-frames? yang:counter64
        | +--ro in-error-oversize-frames? yang:counter64
```

¹³ Copyright release for YANG modules: Users of this standard may freely reproduce the YANG module contained in this subclause so that it can be used for its intended purpose.

```

| +--ro in-error-mac-internal-frames?   yang:counter64
| +--ro out-frames?                     yang:counter64
| +--ro out-multicast-frames?           yang:counter64
| +--ro out-broadcast-frames?           yang:counter64
| +--ro out-error-mac-internal-frames?   yang:counter64
+--ro phy
| +--ro in-error-symbol?                 yang:counter64
| +--ro lpi
| | +--ro in-lpi-transitions?            yang:counter64
| | +--ro in-lpi-time?                   decimal64
| | +--ro out-lpi-transitions?           yang:counter64
| | +--ro out-lpi-time?                   decimal64
+--ro mac-control
| +--ro in-frames-mac-control-unknown?   yang:counter64
| +--ro in-frames-mac-control-extension? yang:counter64
| +--ro out-frames-mac-control-extension? yang:counter64

```

5.3.1.2 ieee802-ethernet-interface-half-duplex

module: ieee802-ethernet-interface-half-duplex

```

augment /if:interfaces/if:interface/ieee802-eth-if:ethernet:
  o--rw dynamic-rate-control? dynamic-rate-control-type {dynamic-rate-control}?
augment /if:interfaces/if:interface/ieee802-eth-if:ethernet/ieee802-eth-if:capabilities:
  o--ro dynamic-rate-control-supported? boolean {dynamic-rate-control}?
augment /if:interfaces/if:interface/ieee802-eth-if:ethernet/ieee802-eth-if:statistics/ieee802-eth-if:frame:
  +--ro csma-cd {csma-cd}?
  | +--ro in-errors-sqe-test?           yang:counter64
  | +--ro out-frames-collision-single?  yang:counter64
  | +--ro out-frames-collision-multiple? yang:counter64
  | +--ro out-frames-deferred?          yang:counter64
  | +--ro out-frames-collisions-excessive? yang:counter64
  | +--ro out-collisions-late?          yang:counter64
  | +--ro out-errors-carrier-sense?     yang:counter64
  | +--ro collision-histogram* [collision-count]
  | +--ro collision-count               yang:counter64
  +--ro collision-count-frames?         yang:counter64

```

5.3.1.3 ieee802-ethernet-mac-merge

module: ieee802-ethernet-mac-merge

```
augment /if:interfaces/if:interface/ieee802-eth-if:ethernet:
  +--rw mac-merge {mac-merge}?
    +--rw admin-control
      | +--rw merge-enable-tx?      enumeration
      | +--rw verify-disable-tx?    enumeration
      | +--rw verify-time?          uint16
      | +--rw frag-size?            uint8
    +--ro admin-status
      | +--ro merge-support?        enumeration
      | +--ro verify-status?        enumeration
      | +--ro status-tx?            enumeration
    +--ro statistics
      +--ro assembly-error-count?   yang:counter64
      +--ro smd-error-count?         yang:counter64
      +--ro assembly-ok-count?       yang:counter64
      +--ro fragment-count-rx?       yang:counter64
      +--ro fragment-count-tx?       yang:counter64
      +--ro hold-count?              yang:counter64
```

5.3.1.4 ieee802-ethernet-lldp

module: ieee802-ethernet-lldp

```
augment /lldp:lldp/lldp:port:
  +--ro auto-negotiation-supported?  boolean
  +--ro auto-negotiation-enabled?    boolean
  x--ro auto-negotiation-cap?        binary
  x--ro operational-mau-type?         int32
  +--rw auto-negotiation-cap-bits?    ieee802-phy:auto-neg-ability-bits
  +--rw operational-pmd-type?         identityref
  +--rw power-port-class?             port-class-type
  +--rw mdi-power-supported?          boolean
  +--rw mdi-power-enabled?            boolean
  +--rw power-pair-controlable?       boolean
  +--rw power-pairs?                  pse-pinout-type
  +--rw local-power-class?            pse-power-class-type
  o--ro link-aggregation-status?      bits
  o--ro aggregation-port-id?          int32
  o--ro local-max-frame-size?         int32
  +--ro power-type?                   bits
  +--rw power-support?                bits
  +--ro power-source?                 power-source-type
  +--ro pd-requested-power-value?     int32
  +--ro pd-requested-power-value-a?   int32
  +--ro pd-requested-power-value-b?   int32
  +--ro pse-allocated-power-value?    int32
  +--ro pse-allocated-power-value-a?  int32
  +--ro pse-allocated-power-value-b?  int32
  +--ro pse-powering-status?          powering-status-type
  +--ro pd-powered-status?            powered-status-type
  +--ro power-pairs-ext?              power-pairs-type
  +--ro power-class-ext-A?            power-class-ext-AB-type
  +--ro power-class-ext-B?            power-class-ext-AB-type
```

+--ro power-class-ext?	power-class-ext-type
+--ro power-type-ext?	power-type
+--ro pd-load?	boolean
+--ro pd-4pid?	boolean
+--ro pse-max-avail-power?	int32
+--ro pse-autoclass-support?	boolean
+--ro autoclass-completed?	boolean
+--ro autoclass-request?	boolean
+--rw power-down-request?	int32
+--rw power-down-time?	int32
+--rw meas-voltage-support?	boolean
+--rw meas-current-support?	boolean
+--rw meas-power-support?	boolean
+--rw meas-energy-support?	boolean
o--rw measurement-source?	bits
+--ro meas-voltage-request?	boolean
+--ro meas-current-request?	boolean
+--ro meas-power-request?	boolean
+--ro meas-energy-request?	boolean
+--ro meas-voltage-valid?	boolean
+--ro meas-current-valid?	boolean
+--ro meas-power-valid?	boolean
+--ro meas-energy-valid?	boolean
+--ro meas-voltage-uncertainty?	int32
+--ro meas-current-uncertainty?	int32
+--ro meas-power-uncertainty?	int32
+--ro meas-energy-uncertainty?	int32
+--ro voltage-measurement?	int32
+--ro current-measurement?	int32
+--ro power-measurement?	int32
+--ro energy-measurement?	int32
+--ro pse-power-price-index?	int32
+--ro local-response?	int32
+--ro local-system-ready?	boolean
+--ro tx-system-value?	int32
+--ro tx-system-value-echo?	int32
+--ro rx-system-value?	int32
+--ro rx-system-value-echo?	int32
+--ro fallback-system-value?	int32
+--ro tx-dll-ready?	boolean
+--ro rx-dll-ready?	boolean
+--ro dll-enabled?	boolean
+--ro tx-system-fw?	boolean
+--ro tx-system-fw-echo?	boolean
+--ro rx-system-fw?	boolean
+--ro rx-system-fw-echo?	boolean
+--ro preemption-supported?	boolean
+--ro preemption-enabled?	boolean
+--ro preemption-active?	boolean
+--ro additional-fragment-size?	int32
augment /lldp:lldp/lldp:port:	
+--rw tlvs-port-config-enable?	bits
+--rw local-power-priority?	power-priority-type
+--rw local-measurement-source?	measurement-source-type
augment /lldp:lldp/lldp:port/lldp:remote-systems-data:	
+--ro auto-negotiation-supported?	boolean
+--ro auto-negotiation-enabled?	boolean
o--ro auto-negotiation-cap?	binary
o--ro operational-mau-type?	int32

+--ro auto-negotiation-cap-bits?	ieee802-phy:auto-neg-ability-bits
+--ro operational-pmd-type?	identityref
+--ro power-port-class?	port-class-type
+--ro mdi-power-supported?	boolean
+--ro mdi-power-enabled?	boolean
+--ro power-pair-controlable?	boolean
+--ro power-pairs?	pse-pinout-type
+--ro power-class?	pse-power-class-type
o--ro link-aggregation-status?	bits
o--ro aggregation-port-id?	int32
o--ro local-max-frame-size?	int32
o--ro power-type?	bits
+--ro power-source?	power-source-type
+--ro power-priority?	power-priority-type
+--ro pd-requested-power-value?	int32
+--ro pd-requested-power-value-a?	int32
+--ro pd-requested-power-value-b?	int32
+--ro pse-allocated-power-value?	int32
+--ro pse-allocated-power-value-a?	int32
+--ro pse-allocated-power-value-b?	int32
+--ro pse-powering-status?	powering-status-type
+--ro pd-powered-status?	powered-status-type
+--ro power-pairs-ext?	power-pairs-type
+--ro power-class-ext-A?	power-class-ext-AB-type
+--ro power-class-ext-B?	power-class-ext-AB-type
+--ro power-class-ext?	power-class-ext-type
+--ro power-type-ext?	power-type
+--ro pd-load?	boolean
+--ro pd-4pid?	boolean
+--ro pse-max-avail-power?	int32
+--ro pse-autoclass-support?	boolean
+--ro autoclass-completed?	boolean
+--ro autoclass-request?	boolean
+--ro power-down-request?	int32
+--ro power-down-time?	int32
+--ro meas-voltage-support?	boolean
+--ro meas-current-support?	boolean
+--ro meas-power-support?	boolean
+--ro meas-energy-support?	boolean
o--ro measurement-source?	bits
+--ro rem-measurement-source?	measurement-source-type
+--ro meas-voltage-request?	boolean
+--ro meas-current-request?	boolean
+--ro meas-power-request?	boolean
+--ro meas-energy-request?	boolean
+--ro meas-voltage-valid?	boolean
+--ro meas-current-valid?	boolean
+--ro meas-power-valid?	boolean
+--ro meas-energy-valid?	boolean
+--ro meas-voltage-uncertainty?	int32
+--ro meas-current-uncertainty?	int32
+--ro meas-power-uncertainty?	int32
+--ro meas-energy-uncertainty?	int32
+--ro voltage-measurement?	int32
+--ro current-measurement?	int32
+--ro power-measurement?	int32
+--ro energy-measurement?	int32
+--ro pse-power-price-index?	int32
+--ro tx-system-value?	int32

```
+--ro tx-system-value-echo?          int32
+--ro rx-system-value?                int32
+--ro rx-system-value-echo?          int32
+--ro fallback-system-value?         int32
+--ro tx-system-fw?                  boolean
+--ro tx-system-fw-echo?             boolean
+--ro rx-system-fw?                  boolean
+--ro rx-system-fw-echo?             boolean
+--ro preemption-supported?          boolean
+--ro preemption-enabled?            boolean
+--ro preemption-active?             boolean
+--ro additional-fragment-size?      int32
```

5.3.1.5 ieee802-ethernet-phy

module: ieee802-ethernet-phy

```
augment /if:interfaces/if:interface:
+--rw phy-table
| +--rw control
| | +--rw phy-reset?          boolean
| | +--rw phy-admin-control?  enumeration
| | +--rw fec-control! {fec-support}?
| | | +--rw fec-mode-control?  enumeration
| | | +--rw rs-fec-bypass-control?  enabled-state
| +--ro status
| | +--ro phy-type?            identityref
| | +--ro pmd-type?            identityref
| | +--ro pmd-type-list?       ieee802-phy:pmd-type-list
| | +--ro phy-status?          enumeration
| | +--ro phy-media-available? ieee802-phy:media-available-type
| | +--ro jabber-state?        enumeration
| | +--ro jabbering-state-enters? yang:counter64
| | +--ro fec-status! {fec-support}?
| | | +--ro fec-ability?          bits
| | | +--ro fec-mode-status?      enumeration
| | | +--ro rs-fec-bypass-enabled-status?  enabled-state
| | +--ro baset-snr! {baset-snr-support}?
| | | +--ro snr-op-margin-chnl-a?  snr-value
| | | +--ro snr-op-margin-chnl-b?  snr-value
| | | +--ro snr-op-margin-chnl-c?  snr-value
| | | +--ro snr-op-margin-chnl-d?  snr-value
| | +--ro time-sync! {time-sync-support}?
| | | +--ro time-sync-ability?    bits
| | | +--ro time-sync-delay-tx-max? uint32
| | | +--ro time-sync-delay-tx-min? uint32
| | | +--ro time-sync-delay-rx-max? int32
| | | +--ro time-sync-delay-rx-min? int32
| +--ro statistics
| | +--ro phy-media-losts?        yang:counter64
| | +--ro jabbering-state-enters? yang:counter64
| | +--ro false-carriers?         yang:counter64
| | +--ro pcs-coding-violations?  yang:counter64
| | +--ro fast-retrain-count-local? counter-1000-second
| | +--ro fast-retrain-count-peer? counter-1000-second
| +--ro pcs-lane-statistics {pcs-lane-statistics-support}?
| | +--ro pcs-lane* [pcs-lane-index]
```

```

|         +--ro pcs-lane-index          uint32
|         +--ro fec-corrected-blocks?   counter-pcs-lane
|         +--ro fec-uncorrected-blocks? counter-pcs-lane
+--rw auto-neg-table {auto-negotiation-support}?
  +--rw control
  |   +--rw auto-neg-control?   boolean
  |   +--rw auto-neg-restart?   boolean
  +--ro status
  |   +--ro auto-neg-enabled?     boolean
  |   +--ro auto-neg-remote-signaling? boolean
  |   +--ro auto-neg-status?     enumeration
  |   +--ro auto-neg-capability-bits? ieee802-phy:auto-neg-ability-bits
  |   +--ro auto-neg-cap-advertised-bits? ieee802-phy:auto-neg-ability-bits
  |   +--ro auto-neg-cap-received-bits? ieee802-phy:auto-neg-ability-bits

```

5.3.2 YANG modules

In the YANG module definition, should any discrepancy between the text of the description for individual YANG nodes in the YANG modules of this clause and the corresponding definition in 5.2 through 5.3 of this clause occur, the definitions in the YANG modules attached to this standard shall take precedence.

An ASCII text version of the Ethernet YANG module can be found at the following URL:
<https://github.com/YangModels/yang/tree/main/standard/ieee/published/802.3>.¹⁴

5.3.2.1 Ethernet interface module

```

module ieee802-ethernet-interface {
  yang-version 1.1;
  namespace "urn:ieee:std:802.3:yang:ieee802-ethernet-interface";
  prefix ieee802-eth-if;

  import ietf-yang-types {
    prefix yang;
    reference
      "IETF RFC 6991";
  }
  import iana-if-type {
    prefix ianaift;
    reference
      "http://www.iana.org/assignments/yang-parameters/
      iana-if-type@2023-01-26.yang";
  }
  import ietf-interfaces {
    prefix if;
    reference
      "IETF RFC 8343";
  }
  import ieee802-ethernet-phy-type {
    prefix ieee802-phy;
    reference
      "IEEE Std 802.3-2022";
  }
}

```

¹⁴ Copyright release for YANG modules: Users of this standard may freely reproduce the YANG module contained in this subclause so that it can be used for its intended purpose.

```
organization
  "IEEE Std 802.3 Ethernet Working Group
  Web URL: http://www.ieee802.org/3/";
contact
  "Web URL: http://www.ieee802.org/3/";
description
  "This module contains YANG definitions for configuring IEEE Std
  802.3 Ethernet Interfaces.
  In this YANG module, 'Ethernet interface' can be interpreted
  as referring to 'IEEE Std 802.3 compliant Ethernet
  interfaces'.";

revision 2025-09-10 {
  description
    "Updates under IEEE Std 802.3.2-2025";
  reference
    "IEEE Std 802.3-2022 and IEEE Std 802.3.1-2024, unless dated
    explicitly";
}

feature ethernet-pfc {
  description
    "This device supports Ethernet priority flow control.";
}

feature ethernet-pause {
  description
    "This device supports Ethernet PAUSE.";
}

typedef eth-if-speed-type {
  type decimal64 {
    fraction-digits 3;
  }
  units "Gb/s";
  status obsolete;
  description
    "Used to represent the configured, negotiated, or actual
    speed of an Ethernet interface in Gigabits per second
    (Gb/s), accurate to 3 decimal places (i.e., accurate to
    1 Mb/s).";
}

typedef duplex-type {
  type enumeration {
    enum full {
      description
        "Full duplex.";
    }
    enum half {
      description
        "Half duplex.";
    }
    enum unknown {
      description
        "Link is currently disconnected or initializing.";
    }
  }
  default "full";
}
```

```
description
  "Used to represent the configured, negotiated, or actual
  duplex mode of an Ethernet interface.";
reference
  "IEEE Std 802.3, 30.3.1.1.32, aDuplexStatus";
}

typedef pause-fc-direction-type {
  type enumeration {
    enum disabled {
      description
        "Flow control disabled in both ingress and egress
        directions.";
    }
    enum ingress-only {
      description
        "PAUSE frame-based flow control is enabled in the ingress
        direction only.";
    }
    enum egress-only {
      description
        "PAUSE frame-based flow control is enabled in the egress
        direction only.";
    }
    enum bi-directional {
      description
        "PAUSE frame-based flow control is enabled in both
        ingress and egress directions.";
    }
    enum undefined {
      description
        "Link is currently disconnected or initializing.";
    }
  }
  description
    "Used to represent the configured, negotiated, or actual
    PAUSE frame-based flow control setting.";
  reference
    "IEEE Std 802.3.1, dot3PauseAdminMode and dot3PauseOperMode";
}

augment "/if:interfaces/if:interface" {
  when "derived-from-or-self(if:type, 'ianaift:ethernetCsmacd')" {
    description
      "Applies to all Ethernet interfaces.";
  }
  description
    "Augment interface model with Ethernet interface
    specific configuration nodes.";
  container ethernet {
    description
      "Contains all Ethernet interface related configuration.";
    container auto-negotiation {
      presence "The presence of this container indicates that
        auto-negotiation is supported on this Ethernet
        interface.";
      description
        "Contains auto-negotiation transmission parameters.
```

This container contains a data node that allows the advertised duplex value in the negotiation to be restricted.

If not specified then the default behavior for the duplex data node is to negotiate all available values for the particular type of Ethernet PHY associated with the interface.";

```
reference
  "IEEE Std 802.3, Clause 28 and Annexes 28A-D";
leaf enable {
  type boolean;
  default "true";
  description
    "Controls whether auto-negotiation is enabled or
    disabled.
    For interface types that support auto-negotiation then
    it defaults to being enabled.

    For interface types that do not support
    auto-negotiation, the related configuration data is
    ignored.";
}
leaf negotiation-status {
  when "../enable = 'true'";
  type enumeration {
    enum in-progress {
      description
        "The auto-negotiation protocol is running and
        negotiation is currently in-progress.";
    }
    enum complete {
      description
        "The auto-negotiation protocol has completed
        successfully.";
    }
    enum failed {
      description
        "The auto-negotiation protocol has failed.";
    }
    enum unknown {
      description
        "The auto-negotiation status is not currently known,
        this could be because it is still negotiating or the
        protocol cannot run
        (e.g., if no medium is present).";
    }
    enum no-negotiation {
      description
        "No auto-negotiation is executed.
        The auto-negotiation function is either not
        supported on this interface or has not been
        enabled.";
    }
  }
}
config false;
description
  "The status of the auto-negotiation protocol.";
reference
```

```
        "IEEE 802.3, 30.6.1.1.4, aAutoNegAutoConfig";
    }
}
leaf phy-type {
    type identityref {
        base ieee802-phy:phy-type;
    }
    config false;
    description
        "A value that uniquely identifies the IEEE 802.3 PHY type
        of the interface.";
    reference
        "IEEE Std 802.3, 30.3.2.1.2 aPhyType";
}
leaf pmd-type {
    type identityref {
        base ieee802-phy:pmd-type;
    }
    config false;
    description
        "A value that uniquely identifies the IEEE 802.3 PMD type
        of the interface.";
    reference
        "IEEE Std 802.3, 30.5.1.1.2 aMAUType";
}
leaf duplex {
    type duplex-type;
    description
        "Operational duplex mode of the Ethernet interface.";
    reference
        "IEEE Std 802.3, 30.3.1.1.32 aDuplexStatus";
}
leaf speed {
    type eth-if-speed-type;
    units "Gb/s";
    status obsolete;
    description
        "Operational speed (data rate) of the Ethernet interface.
        The default value is implementation dependent.
        Superseded by speed in /if:interfaces/if:interface";
}
/* deprecated flow-control container */
container flow-control {
    status deprecated;
    description
        "Holds the different types of Ethernet PAUSE frame-based
        flow control that can be enabled.
        Superseded by new container - pause.";
    container pause {
        if-feature "ethernet-pause";
        description
            "IEEE Std 802.3 PAUSE frame-based flow control.";
        reference
            "IEEE Std 802.3, Annex 31B";
        leaf direction {
            type pause-fc-direction-type;
            description
                "Indicates which direction PAUSE frame-based flow
                control is enabled in, or whether it is disabled.
```

```

    The default flow-control settings are vendor
    specific. If auto-negotiation is enabled, then PAUSE
    based flow control is negotiated by default.
    The default value is implementation dependent.";
}
container statistics {
    config false;
    description
        "Contains the number of PAUSE frames received or
        transmitted.

        Discontinuities in the values of counters in
        this container can occur at re-initialization of
        the management system, and at other times as
        indicated by the value of the 'discontinuity-time'
        leaf defined in the ietf-interfaces YANG module
        (IETF RFC 8343).";
    leaf in-frames-pause {
        type yang:counter64;
        units "frames";
        description
            "A count of PAUSE MAC Control frames transmitted on
            this Ethernet interface.";
        reference
            "IEEE Std 802.3, 30.3.4.3
            aPAUSEMACCtrlFramesReceived";
    }
    leaf out-frames-pause {
        type yang:counter64;
        units "frames";
        description
            "A count of PAUSE MAC Control frames transmitted on
            this Ethernet interface.";
        reference
            "IEEE Std 802.3, 30.3.4.2
            aPAUSEMACCtrlFramesTransmitted";
    }
}
}
container pfc {
    if-feature "ethernet-pfc";
    description
        "IEEE Std 802.3 Priority-based flow control.";
    reference
        "IEEE Std 802.3, Annex 31D";
    leaf enable {
        type boolean;
        description
            "True indicates that IEEE Std 802.3 priority-based
            flow control is enabled, false indicates that
            IEEE Std 802.3 priority-based flow control is
            disabled. For interfaces that have auto-negotiation,
            the priority-based flow control is enabled by
            default.";
    }
    container statistics {
        config false;
        status deprecated;
        description

```

"This container collects all statistics for Ethernet interfaces.

Discontinuities in the values of counters in this container can occur at re-initialization of the management system, and at other times as indicated by the value of the 'discontinuity-time' leaf defined in the ietf-interfaces YANG module (IETF RFC 8343).";

```
leaf in-frames-pfc {
  type yang:counter64;
  units "frames";
  description
    "Deprecated in-frames-pfc as not defined in base
    standard. A count of PFC MAC Control frames
    received on this Ethernet interface.";
  reference
    "IEEE Std 802.3.1, dot3HCInPFCFrames";
}
```

```
leaf out-frames-pfc {
  type yang:counter64;
  units "frames";
  description
    "Deprecated out-frames-pfc as not defined in base
    standard. A count of PFC MAC Control frames
    transmitted on this interface.";
  reference
    "IEEE Std 802.3.1, dot3HCInPFCFrames";
}
```

```
}
```

```
leaf force-flow-control {
  type boolean;
  default "false";
  description
    "Explicitly forces the local PAUSE frame-based flow
    control settings regardless of what has been
    negotiated.
```

Since the auto-negotiation of flow control settings does not allow all sane combinations to be negotiated (e.g., consider a device that is only capable of sending PAUSE frames connected to a peer device that is only capable of receiving and acting on PAUSE frames) and failing to agree on the flow control settings does not cause the auto-negotiation to fail completely, then it is sometimes useful to be able to explicitly enable particular PAUSE frame-based flow control settings on the local device regardless of what is being advertised or negotiated.";

```
reference
  "IEEE Std 802.3, Table 28B-3";
}
```

```
}
```

```
leaf max-frame-length {
  type uint16;
  units "octets";
  config false;
  description
```

```
        "This indicates the MAC frame length (including FCS bytes)
        at which frames are dropped for being too long.";
    reference
        "IEEE Std 802.3, 30.3.1.1.37 aMaxFrameLength";
}
leaf mac-control-extension-control {
    type boolean;
    config false;
    description
        "A value that identifies the current EXTENSION
        MAC Control function, as specified in
        IEEE Std 802.3, Annex 31C.";
    reference
        "IEEE Std 802.3, 30.3.8.3 aEXTENSIONMACCtrlStatus
        IEEE Std 802.3.1, dot3ExtensionMacCtrlStatus ";
}
leaf frame-limit-slow-protocol {
    type uint64;
    units "f/s";
    default "10";
    config false;
    description
        "The maximum number of Slow Protocol frames of a given
        subtype that can be transmitted in a one second
        interval.
        The default value is 10.";
    reference
        "IEEE Std 802.3, 30.3.1.1.38 aSlowProtocolFrameLimit";
}
container capabilities {
    config false;
    description
        "Contains all Ethernet interface specific capabilities.";
    leaf auto-negotiation {
        type boolean;
        description
            "Indicates whether auto-negotiation may be configured on
            this interface.";
    }
}
container ethernet-pause {
    if-feature "ethernet-pause";
    description
        "IEEE Std 802.3 PAUSE flow control.

        Discontinuities in the values of counters in
        this container can occur at re-initialization of
        the management system, and at other times as
        indicated by the value of the 'discontinuity-time'
        leaf defined in the ietf-interfaces YANG module
        (IETF RFC 8343).";
    reference
        "IEEE Std 802.3, 30.3.4 PAUSE entity managed object class
        and Clause 31, Annex 31B)";
    container control-and-status {
        description
            "PAUSE function control and status objects.";
        leaf pause-admin-control {
            type pause-fc-direction-type;
```

```
    default "disabled";
    description
      "What PAUSE functionality will run on this interface
       when Auto-Negotiation is not implemented
       or disabled.";
    reference
      "IEEE Std 802.3.1, dot3PauseAdminMode";
  }
  leaf pause-oper-status {
    type pause-fc-direction-type;
    config false;
    description
      "What PAUSE functionality is running on this
       interface, as a result of Auto-Negotiation or
       setting pause-admin-control.";
    reference
      "IEEE Std 802.3.1, dot3PauseOperMode";
  }
  leaf link-delay-allowance {
    type uint32;
    description
      "The value in bit-times of the allowance made by the
       MAC Control PAUSE entity for round-trip propagation
       delay.
       The default value is implementation dependent.";
  }
  leaf pfc-enable-status {
    type boolean;
    config false;
    description
      "Is IEEE 802.1 Priority-based Flow Control (PFC)
       enabled on the interface. If PFC is enabled, then
       802.3 PAUSE flow control is disabled.";
    reference
      "IEEE Std 802.3, 30.3.3.6 aPFCEnableStatus";
  }
}

container statistics {
  config false;
  description
    "PAUSE frame counters.";
  leaf in-frames-pause {
    type yang:counter64;
    units "frames";
    description
      "A count of MAC Control PAUSE frames transmitted on
       this Ethernet interface.";
    reference
      "IEEE Std 802.3, 30.3.4.3
       aPAUSEMACCtrlFramesReceived";
  }
  leaf out-frames-pause {
    type yang:counter64;
    units "frames";
    description
      "A count of MAC Control PAUSE frames transmitted on
       this Ethernet interface.";
    reference
      "IEEE Std 802.3, 30.3.4.2
```

```
        aPAUSEMACCtrlFramesTransmitted";
    }
}
}
container statistics {
    config false;
    description
        "Contains statistics specific to Ethernet interfaces.

        Discontinuities in the values of counters in the
        container can occur at re-initialization of the
        management system, and at other times as indicated by
        the value of the 'discontinuity-time' leaf defined in
        the ietf-interfaces YANG module (IETF RFC 8343).";
    container frame {
        description
            "Contains frame statistics specific to Ethernet
            interfaces.

            All octet frame lengths include the 4-byte FCS.

            Error counters are only reported once. The count
            represented by an instance of this object is
            incremented when the frameCheckError status is
            returned by the MAC service to the MAC Client.
            Received frames for which multiple error conditions
            pertain are, according to the conventions of
            IEEE Std 802.3 Layer Management, counted exclusively
            according to the error status presented to the MAC
            Client.

            A frame that is counted by an instance of this object
            is also counted by the corresponding instance of
            'in-errors' leaf defined in the ietf-interfaces YANG
            module (IETF RFC 8343).";
        leaf in-total-frames {
            type yang:counter64;
            units "frames";
            description
                "The total number of frames (including bad frames)
                received on the Ethernet interface.

                This counter is calculated by summing the following
                IEEE Std 802.3, Clause 30 counters:
                aFramesReceivedOK +
                aFrameCheckSequenceErrors +
                aAlignmentErrors +
                aFrameTooLongErrors +
                aFramesLostDueToIntMACRcvError";
            reference
                "IEEE Std 802.3, Clause 30 counters, as specified
                in the description above.";
        }
        leaf in-total-octets {
            type yang:counter64;
            units "octets";
            description
                "The total number of octets of data (including those
                in bad frames) received on the Ethernet interface.
```

```
        Includes the 4-octet FCS.";
    reference
        "IETF RFC 2819, etherStatsOctets";
}
leaf in-frames {
    type yang:counter64;
    units "frames";
    description
        "A count of frames (including unicast, multicast, and
        broadcast) that have been successfully received on
        the Ethernet interface.

        This count does not include frames received with
        frame-too-long, FCS, length, or alignment errors, or
        frames lost due to internal MAC sublayer error.";
    reference
        "IEEE Std 802.3, 30.3.1.1.5 aFramesReceivedOK";
}
leaf in-multicast-frames {
    type yang:counter64;
    units "frames";
    description
        "A count of multicast frames that have been
        successfully received on the Ethernet interface.

        This counter represents a subset of the frames
        counted by in-frames.

        This count does not include frames received with
        frame-too-long, FCS, length, or alignment errors, or
        frames lost due to internal MAC sublayer error.";
    reference
        "IEEE Std 802.3, 30.3.1.1.21
        aMulticastFramesReceivedOK";
}
leaf in-broadcast-frames {
    type yang:counter64;
    units "frames";
    description
        "A count of broadcast frames that have been
        successfully received on the Ethernet interface.

        This counter represents a subset of the frames
        counted by in-frames.

        This count does not include frames received with
        frame-too-long, FCS, length, or alignment errors, or
        frames lost due to internal MAC sublayer error.";
    reference
        "IEEE Std 802.3, 30.3.1.1.22
        aBroadcastFramesReceivedOK";
}
leaf in-error-fcs-frames {
    type yang:counter64;
    units "frames";
    description
        "A count of receive frames that are of valid length,
        but do not pass the FCS check, regardless of whether
```