

TICTOC Working Group
INTERNET DRAFT
Intended status: Standards Track

Vinay Shankarkumar
Laurent Montini
Cisco Systems

Tim Frost
Calnex Solutions Ltd.

Greg Dowd
Microsemi

Expires: February 22, 2017

August 22, 2016

**Precision Time Protocol Version 2 (PTPv2)
Management Information Base
draft-ietf-tictoc-ntp-mib-10.txt**

Status of this Memo

This Internet-Draft is submitted to IETF in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

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

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/1id-abstracts.txt>

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

This Internet-Draft will expire on February 22, 2017.

Copyright Notice

Copyright (c) 2016 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents

(<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing networks using Precision Time Protocol, specified in IEEE Std. 1588(TM)-2008.

This memo specifies a MIB module in a manner that is both compliant to the SMIV2, and semantically identical to the peer SMIV1 definitions.

Table of Contents

1.	Introduction	2
1.1.	Relationship to other Profiles and MIBs	3
1.2.	Change Log	3
2.	The SNMP Management Framework	5
3.	Overview	6
4.	IETF PTP MIB Definition	6
5.	Security Considerations	6
6.	IANA Considerations	79
7.	References	79
7.1.	Normative References	79
7.2.	Informative References	79
8.	Acknowledgements	81
9.	Author's Addresses	82

[1. Introduction](#)

This memo defines a portion of the Management Information Base (MIB) module for use with network management protocols in the Internet Community. In particular, it describes managed objects used for managing PTP devices including the ordinary clock, transparent clock, boundary clocks.

This MIB module is restricted to reading standard PTP data elements, as described in [IEEE 1588-2008]. This enables it to monitor the operation of PTP clocks within the network. It is envisioned this MIB module will complement other managed objects to be defined that will provide more detailed information on the performance of PTP

clocks supporting the Telecom Profile defined in [[G.8265.1](#)], and any future profiles that may be defined. Those objects are considered out of scope for the current draft.

Similarly, this MIB module is read-only and not intended to provide the ability to configure PTP clocks. Since PTP clocks are often embedded in other network elements such as routers, switches and gateways, this ability is generally provided via the configuration interface for the network element.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC 2119](#)].

1.1. Relationship to other Profiles and MIBs

This MIB module is intended to be used with the default PTP profile described in [IEEE 1588-2008] when running over the IP network layer. As stated above, it is envisioned this MIB module will complement other managed objects to be defined to monitor and measure the performance of PTP clocks supporting specific PTP profiles, e.g. the Telecom Profile defined in [[G.8265.1](#)].

Some other PTP profiles have their own MIB modules defined as part of the profile, and this MIB module is not intended to replace those MIB modules.

1.2. Change Log

This section tracks changes made to the revisions of the Internet Drafts of this document. It will be *deleted* when the document is published as an RFC.

[draft-vinay-tictoc-ntp-mib](#)

-00 Mar 11 Initial version; showed structure of MIB

[draft-ietf-tictoc-ntp-mib](#)

-00 Jul 11 First full, syntactically correct and compileable MIB

-01 Jan 12 Revised following comments from Bert Wijnen:

- revised introduction to clarify the scope, and the relationship to other MIBs and profiles
- changed name to "ntpbases"
- corrected some data types
- corrected references and typos

-02 Jul 12 Revised following comment at IETF83:

- changed "ptpbasedClockPortRunningIPversion" to the more generic "ptpbasedClockPortRunningTransport", covering all transport types defined in [IEEE 1588-2008] (i.e. IPv4, IPv6, Ethernet, DeviceNet and ControlNet).
 - changed addresses associated with transports from "InetAddress" (for the IP transport) to a string, to allow for the different transport types.
- 03 Jul 12 Minor changes following comments from Andy Bierman:
- corrected some compilation errors
 - moved OBJECT-GROUP and MODULE-COMPLIANCE macros to the end
- 04 Jan 13 Changes:
- Use of 'AutonomousType' import
 - Display hint being specified for ClockIdentity, ClockInterval, ClockPortTransportTypeAddress Textual Conventions
 - Removal of the Textual convention ClockPortTransportType, replaced with the wellKnownTransportTypes
 - Modified ptpbasedClockPortCurrentPeerAddressType, ptpbasedClockPortRunningTransport, ptpbasedClockPortAssociateAddressType, to use AutonomousType.
 - various textual changes to descriptive text in response to comments
- 05 Feb 13 Several changes in response to comments from Alun Luchuk and Kevin Gross:
- Modified the use of wellKnownTransportTypes and wellKnownEncapsulationTypes
 - changed ptpbasedClockPortSyncOneStep to ptpbasedClockPortSyncTwoStep to match IEEE1588 semantics
 - Re-ordered textual conventions to be alphabetic
 - Changed some types from Integer32 to use defined textual conventions
 - various minor descriptive text changes
- 06 Mar 14 Updated author information, and fixed typos
- 07 Mar 15 Updated author information, and fixed typo/enum
- 08 Feb 16 Updated MIB in response to Brian Haberman's comments:
- Fixed MIB date
 - Fixed references to IEEE1588-2008
 - Changed "router" for "node"

- 09 Apr 16 Updated following Dan Romascanu's MIB Doctor comments
- 10 Aug 16 Update following further feedback from Dan Romascanu.
Also updated security section to list out all objects with MAX-ACCESS other than non-accessible, in response to comments from Deborah Brungard and Alissa Cooper.

2. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in STD62, [[RFC 3411](#)].
- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in STD 16: [[RFC 1155](#)], [[RFC 1212](#)] and [[RFC 1215](#)].
The second version, called SMIV2, is described in STD 58: [[RFC 2578](#)], [[RFC 2579](#)] and [[RFC 2580](#)].
- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15 [[RFC 1157](#)]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [[RFC 1901](#)] and [[RFC 1906](#)]. The third version of the message protocol is called SNMPv3 and described in STD62: [[RFC 3417](#)], [[RFC 3412](#)] and [[RFC 3414](#)].
- o Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in STD 15 [[RFC 1157](#)]. A second set of protocol operations and associated PDU formats is described in STD 62 [[RFC 3416](#)].
- o A set of fundamental applications described in STD 62 [[RFC 3413](#)] and the view-based access control mechanism described in STD 62 [[RFC 3415](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB module conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (e.g., use of Counter64). Some

machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the MIB module.

3. Overview

The objects defined in this MIB module are to be used when describing the Precision Time Protocol (PTPv2).

4. IETF PTP MIB Definition

```
PTPBASE-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    MODULE-IDENTITY,
    OBJECT-TYPE,
    OBJECT-IDENTITY,
    Gauge32,
    Unsigned32,
    Counter32,
    Counter64,
    mib-2,
    Integer32
        FROM SNMPv2-SMI
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
    TEXTUAL-CONVENTION,
    TruthValue,
    DisplayString,
    AutonomousType
        FROM SNMPv2-TC
    InterfaceIndexOrZero
        FROM IF-MIB;
```

```
ptpbasesMIB MODULE-IDENTITY
```

```
    LAST-UPDATED      "201604200000Z"
    ORGANIZATION      "TICTOC Working Group"
    CONTACT-INFO
        "WG Email: tictoc@ietf.org

        Vinay Shankarkumar
```

Cisco Systems,
Email: vinays@cisco.com

Laurent Montini,
Cisco Systems,
Email: lmontini@cisco.com

Tim Frost,
Calnex Solutions Ltd.,
Email: tim.frost@calnexsol.com

Greg Dowd,
Microsemi Inc.,
Email: greg.dowd@microsemi.com"

DESCRIPTION

"The MIB module for PTP version 2 (IEEE Std. 1588(TM)-2008)

Overview of PTP version 2 (IEEE Std. 1588(TM)-2008)

[IEEE 1588-2008] defines a protocol enabling precise synchronization of clocks in measurement and control systems implemented with packet-based networks, the Precision Time Protocol Version 2 (PTPv2). This MIB module does not address the earlier version IEEE Std. 1588(TM)-2002 (PTPv1). The protocol is applicable to network elements communicating using IP. The protocol enables heterogeneous systems that include clocks of various inherent precision, resolution, and stability to synchronize to a grandmaster clock.

The protocol supports system-wide synchronization accuracy in the sub-microsecond range with minimal network and local clock computing resources. [IEEE 1588-2008] uses UDP/IP or Ethernet and can be adapted to other mappings. It includes formal mechanisms for message extensions, higher sampling rates, correction for asymmetry, a clock type to reduce error accumulation in large topologies, and specifications on how to incorporate the resulting additional data into the synchronization protocol. The [IEEE 1588-2008] defines conformance and management capability also.

MIB description

This MIB module supports the Precision Time Protocol version 2 (PTPV2, hereafter designated as PTP) features of network element system devices, when using the default PTP profile described in [IEEE 1588-2008] when running over the IP network layer.

It is envisioned this MIB module will complement other managed objects to be defined to monitor and measure the performance of the PTP devices and telecom clocks supporting specific PTP profiles.

Some other PTP profiles have their own MIB modules defined as part of the profile, and this MIB module is not intended to replace those MIB modules.

Acronyms:

ARB	Arbitrary Timescale
E2E	End-to-End
EUI	Extended Unique Identifier
GPS	Global Positioning System
IANA	Internet Assigned Numbers Authority
IP	Internet Protocol
MAC	Media Access Control according to [IEEE 802.3-2008]
MAC-48	Used to identify hardware instances within 802-based networking applications. This is obsolete now.
NIST	National Institute of Standards and Technology
NTP	Network Time Protocol (see IETF [RFC 5905])
OUI	Organizational Unique Identifier (allocated by the IEEE)
P2P	Peer-to-Peer
PTP	Precision Time Protocol
TAI	International Atomic Time
TC	Transparent Clock
UDP	User Datagram Protocol
UTC	Coordinated Universal Time

References:

[IEEE 1588-2008] IEEE Standard for A Precision Clock
Synchronization Protocol for Networked Measurement and
Control Systems, IEEE Std. 1588(TM)-2008, 24 July 2008.

As defined in [IEEE 1588-2008]:

Accuracy:

The mean of the time or frequency error between the clock under test and a perfect reference clock, over an ensemble of measurements. Stability is a measure of how the mean varies with respect to variables such as time, temperature, and so on, while the precision is a measure of the deviation of the error from the mean.

Atomic process:

A process is atomic if the values of all inputs to the process are not permitted to change until all of the results of the process are instantiated, and the outputs of the process are not visible to other processes until the processing of each output is complete.

Boundary clock:

A clock that has multiple Precision Time Protocol (PTP) ports in a domain and maintains the timescale used in the domain. It may serve as the source of time, i.e., be a master clock, and may synchronize to another clock, i.e., be a slave clock.

Boundary node clock:

A clock that has multiple Precision Time Protocol (PTP) ports in a domain and maintains the timescale used in the domain. It differs from a boundary clock in that the clock roles can change.

Clock:

A node participating in the Precision Time Protocol (PTP) that is capable of providing a measurement of the passage of time since a defined epoch.

Domain:

A logical grouping of clocks that synchronize to each other using the protocol, but that are not necessarily synchronized to clocks in another domain.

End-to-end transparent clock:

A transparent clock that supports the use of the end-to-end delay measurement mechanism between slave clocks and the master clock. Each node must measure the residence time of PTP event messages and accumulate it in Correction Field.

Epoch:

The origin of a timescale.

Event:

An abstraction of the mechanism by which signals or conditions are generated and represented.

Foreign master:

An ordinary or boundary clock sending Announce messages to another clock that is not the current master recognized by the other clock.

Grandmaster clock:

Within a domain, a clock that is the ultimate source of time for clock synchronization using the protocol.

Holdover:

A clock previously synchronized/syntonized to another clock (normally a primary reference or a master clock) but now free-running based on its own internal oscillator, whose frequency is being adjusted using data acquired while it had been synchronized/syntonized to the other clock. It is said to be in holdover or in the holdover mode, as long as it is within its accuracy requirements.

Link:

A network segment between two Precision Time Protocol ports supporting the peer delay mechanism of this standard. The peer delay mechanism is designed to measure the propagation time over such a link.

Management node:

A device that configures and monitors clocks.

Master clock:

In the context of a single Precision Time Protocol communication path, a clock that is the source of time to which all other clocks on that path synchronize.

Message timestamp point:

A point within a Precision Time Protocol event message serving as a reference point in the message. A timestamp is defined by

the instant a message timestamp point passes the reference plane of a clock.

Multicast communication:

A communication model in which each Precision Time Protocol message sent from any PTP port is capable of being received and processed by all PTP ports on the same PTP communication path.

Node:

A device that can issue or receive Precision Time Protocol communications on a network.

One-step clock:

A clock that provides time information using a single event message.

On-pass support:

Indicates that each node in the synchronization chain from master to slave can support IEEE-1588.

Ordinary clock:

A clock that has a single Precision Time Protocol port in a domain and maintains the timescale used in the domain. It may serve as a source of time, i.e., be a master clock, or may synchronize to another clock, i.e., be a slave clock.

Parent clock:

The master clock to which a clock is synchronized.

Peer-to-peer transparent clock:

A transparent clock that, in addition to providing Precision Time Protocol event transit time information, also provides corrections for the propagation delay of the link connected to the port receiving the PTP event message. In the presence of peer-to-peer transparent clocks, delay measurements between slave clocks and the master clock are performed using the peer-to-peer delay measurement mechanism.

Phase change rate:

The observed rate of change in the measured time with respect to the reference time. The phase change rate is equal to the fractional frequency offset between the measured frequency and the reference frequency.

PortNumber:

An index identifying a specific Precision Time Protocol port on a PTP node.

Primary reference:

A source of time and or frequency that is traceable to international standards.

Profile:

The set of allowed Precision Time Protocol features applicable to a device.

Precision Time Protocol communication:

Information used in the operation of the protocol, transmitted in a PTP message over a PTP communication path.

Precision Time Protocol communication path:

The signaling path portion of a particular network enabling direct communication among ordinary and boundary clocks.

Precision Time Protocol node:

A PTP ordinary, boundary, or transparent clock or a device that generates or parses PTP messages.

Precision Time Protocol port:

A logical access point of a clock for PTP communications to the communications network.

Recognized standard time source:

A recognized standard time source is a source external to Precision Time Protocol that provides time and/or frequency as appropriate that is traceable to the international standards laboratories maintaining clocks that form the basis for the International Atomic Time and Universal Coordinated Time timescales. Examples of these are GPS, NTP, and NIST timeservers.

Requestor:

The port implementing the peer-to-peer delay mechanism that initiates the mechanism by sending a Pdelay_Req message.

Responder:

The port responding to the receipt of a Pdelay_Req message as part of the operation of the peer-to-peer delay mechanism.

Synchronized clocks:

Two clocks are synchronized to a specified uncertainty if they have the same epoch and their measurements of the time of a single event at an arbitrary time differ by no more than that uncertainty.

Syntonized clocks:

Two clocks are syntonized if the duration of the second is the same on both, which means the time as measured by each advances at the same rate. They may or may not share the same epoch.

Timeout:

A mechanism for terminating requested activity that, at least from the requester's perspective, does not complete within the specified time.

Timescale:

A linear measure of time from an epoch.

Traceability:

A property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties.

Translation device:

A boundary clock or, in some cases, a transparent clock that translates the protocol messages between regions implementing different transport and messaging protocols, between different versions of [IEEE 1588-2008], or different PTP profiles.

Transparent clock:

A device that measures the time taken for a Precision Time Protocol event message to transit the device and provides this information to clocks receiving this PTP event message.

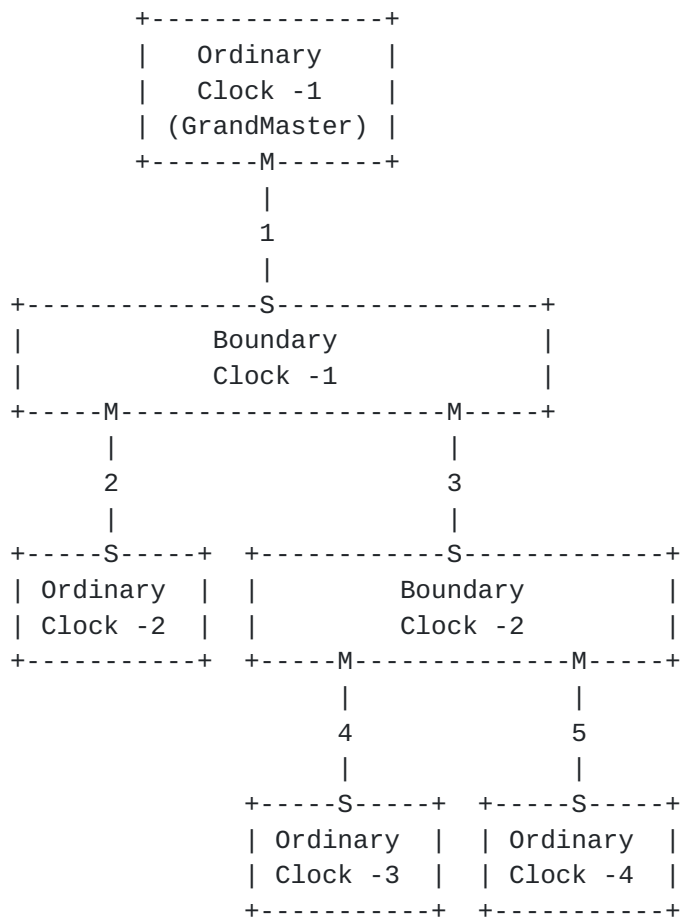
Two-step clock:

A clock that provides time information using the combination of an event message and a subsequent general message.

The below table specifies the object formats of the various textual conventions used.

Data type mapping	Textual Convention	SYNTAX
5.3.2 TimeInterval	PtpClockTimeInterval	OCTET STRING(SIZE(1..255))
5.3.3 Timestamp	PtpClockTimestamp	OCTET STRING(SIZE(6))
5.3.4 ClockIdentity	PtpClockIdentity	OCTET STRING(SIZE(8))
5.3.5 PortIdentity	PtpClockPortNumber	INTEGER(1..65535)
5.3.7 ClockQuality	PtpClockQualityClassType	

Simple master-slave hierarchy, [section 6.6.2.4](#) [IEEE 1588-2008]:



Grandmaster

Boundary Clock(0-N)
 Ordinary Clocks(0-N)

Relationship cardinality:

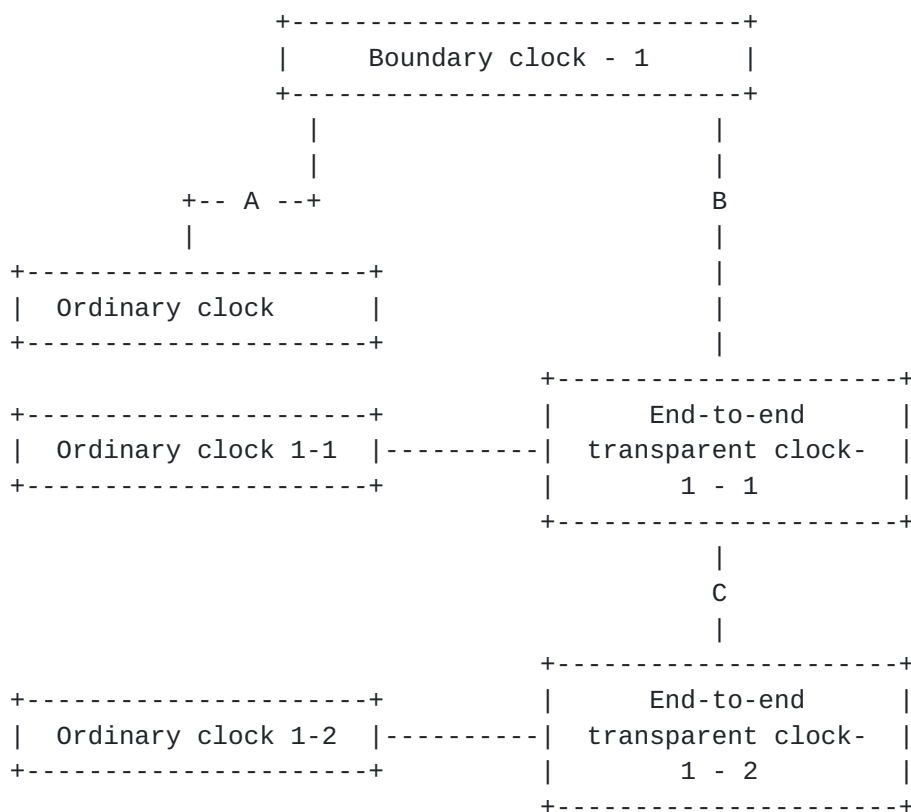
PTP system 1 : N PTP Clocks

PTP Clock 1 : 1 Domain

PTP Clock 1 : N PTP Ports

PTP Ports N : M Physical Ports (interface in IF-MIB)

Transparent clock diagram, [section 6.7.1.3](#) of [IEEE 1588-2008]:



The MIB module refers to the sections of [IEEE 1588-2008]."

-- revision log

REVISION "201604200000Z"

DESCRIPTION "Draft 9, for IESG approval."

REVISION "201602220000Z"
 DESCRIPTION "Draft 8, for IETF last call."

::= { mib-2 XXX } -- XXX to be assigned by IANA

-- Textual Conventions

PtpClockDomainType ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The Domain is identified by an integer, the domainNumber, in the range of 0 to 255. An integer value that is used to assign each PTP device to a particular domain. The following values define the valid domains.

Value	Definition
-----	-----
0	Default domain
1	Alternate domain 1
2	Alternate domain 2
3	Alternate domain 3
4 - 127	User-defined domains
128 - 255	Reserved"

REFERENCE "[Section 7.1](#) Domains, Table 2 of [IEEE 1588-2008]"

SYNTAX Unsigned32 (0..255)

PtpClockIdentity ::= TEXTUAL-CONVENTION

DISPLAY-HINT "255a"

STATUS current

DESCRIPTION

"The clock Identity is an 8-octet array and will be presented in the form of a character array. Network byte order is assumed.

The value of the PtpClockIdentity should be taken from the IEEE EUI-64 individual assigned numbers as indicated in [Section 7.5.2.2.2](#) of [IEEE 1588-2008].

The EUI-64 address is divided into the following fields:

OUI bytes (0-2)

Extension identifier bytes (3-7)

The clock identifier can be constructed from existing EUI-48 assignments and here is an abbreviated example extracted from [section 7.5.2.2.2](#) [IEEE 1588-2008].

Company EUI-48 = 0xACDE4823456716
EUI-64 = ACDE48FFFE23456716

It is important to note the IEEE Registration Authority has deprecated the use of MAC-48 in any new design."

REFERENCE "[Section 7.5.2.2.1](#) of [IEEE 1588-2008]"
SYNTAX OCTET STRING (SIZE (8))

PtpClockInstanceType ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The instance of the Clock of a given clock type in a given domain."

SYNTAX Unsigned32 (0..255)

PtpClockIntervalBase2 ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The interval included in message types Announce, Sync, Delay_Req, and Pdelay_Req as indicated in [section 7.7.2.1](#) of [IEEE 1588-2008].

The mean time interval between successive messages shall be represented as the logarithm to the base 2 of this time interval measured in seconds on the local clock of the device sending the message. The values of these logarithmic attributes shall be selected from integers in the range -128 to 127 subject to further limits established in an applicable PTP profile."

REFERENCE "[Section 7.7.2.1](#) General interval specification of [IEEE 1588-2008]"
SYNTAX Integer32 (-128..127)

PtpClockMechanismType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The clock type based on whether end-to-end or peer-to-peer mechanisms are used. The mechanism used to calculate the Mean Path Delay as indicated in Table 9 of [IEEE 1588-2008].

Delay mechanism	Value(hex)	Specification
-----	-----	-----
E2E	01	The port is configured to use the delay request-response mechanism.
P2P	02	The port is configured to use the peer delay mechanism.
DISABLED	FE	The port does not implement the delay mechanism."

REFERENCE

"Sections [8.2.5.4.4](#) portDS.delayMechanism,
6.6.4 Measuring link propagation delay in clocks supporting
peer-to-peer path correction,
7.4.2 communication path asymmetry of [IEEE 1588-2008]."

SYNTAX INTEGER {
 e2e(1),
 p2p(2),
 disabled(254)
}

PtpClockPortNumber ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"An index identifying a specific Precision Time Protocol (PTP) port on a PTP node."

REFERENCE "Sections [7.5.2.3](#) portNumber and 5.3.5 PortIdentity of [IEEE 1588-2008]"

SYNTAX Unsigned32 (0..65535)

PtpClockPortState ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This is the value of the current state of the protocol engine associated with this port.

Port state	Value	Description
------------	-------	-------------

initializing	1	In this state a port initializes its data sets, hardware, and communication facilities.
faulty	2	The fault state of the protocol.
disabled	3	The port shall not place any messages on its communication path.
listening	4	The port is waiting for the announceReceiptTimeout to expire or to receive an Announce message from a master.
preMaster	5	The port shall behave in all respects as though it were in the MASTER state except that it shall not place any messages on its communication path except for Pdelay_Req, Pdelay_Resp, Pdelay_Resp_Follow_Up, signaling, or management messages.
master	6	The port is behaving as a master port.
passive	7	The port shall not place any messages on its communication path except for Pdelay_Req, Pdelay_Resp, Pdelay_Resp_Follow_Up, or signaling messages, or management messages that are a required response to another management message
uncalibrated	8	The local port is preparing to synchronize to the master port.
slave	9	The port is synchronizing to the selected master port."
REFERENCE	"Section 8.2.5.3.1 portState and 9.2.5 State machines of [IEEE 1588-2008]"	
SYNTAX	INTEGER { initializing(1), faulty(2), disabled(3), listening(4), preMaster(5), master(6), passive(7), uncalibrated(8), slave(9)	

}

PtpClockPortTransportTypeAddress ::= TEXTUAL-CONVENTION

DISPLAY-HINT "255a"

STATUS current

DESCRIPTION

"The Clock port transport protocol address used for this communication between the clock nodes. This is a string corresponding to the address type as specified by the transport type used. The transport types can be defined elsewhere, in addition to the ones defined in this document. This can be an address of type IP version 4, IP version 6, Ethernet, DeviceNET, ControlNET or IEC61158."

REFERENCE "Annex D (IPv4), Annex E (IPv6), Annex F (Ethernet), Annex G (DeviceNET), Annex H (ControlNET) and Annex I (IEC61158) of [IEEE 1588-2008]"

SYNTAX OCTET STRING (SIZE (1..255))

PtpClockProfileType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Clock Profile used. A profile is the set of allowed Precision Time Protocol (PTP) features applicable to a device."

REFERENCE "[Section 3.1.30](#) profile and 19.3 PTP profiles of [IEEE 1588-2008]"

SYNTAX INTEGER {
 default(1),
 telecom(2),
 vendorspecific(3)
}

PtpClockQualityAccuracyType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The ClockQuality as specified in sections [5.3.7](#), [7.6.2.5](#) and Table 6 of [IEEE 1588-2008].

The following values are not represented in the enumerated values.

0x01-0x1F Reserved

0x32-0x7F Reserved

It is important to note that [section 7.1.1 of \[RFC 2578\]](#) allows for gaps and enumerate values starting at zero when indicated by the protocol."

REFERENCE

"[Section 5.3.7](#) ClockQuality, 7.6.2.5 clockAccuracy and Table 6 clockAccuracy enumeration of [IEEE 1588-2008]"

```
SYNTAX      INTEGER {
    -- reserved00(0:31), 0x00 to 0x1F
    nanoSecond25(32),      -- 0x20
    nanoSecond100(33),     -- 0x21
    nanoSecond250(34),     -- 0x22
    microSec1(35),         -- 0x23
    microSec2dot5(36),     -- 0x24
    microSec10(37),        -- 0x25
    microSec25(38),        -- 0x26
    microSec100(39),       -- 0x27
    microSec250(40),       -- 0x28
    milliSec1(41),         -- 0x29
    milliSec2dot5(42),     -- 0x2A
    milliSec10(43),        -- 0x2B
    milliSec25(44),        -- 0x2C
    milliSec100(45),       -- 0x2D
    milliSec250(46),       -- 0x2E
    second1(47),           -- 0x2F
    second10(48),          -- 0x30
    secondGreater10(49),   -- 0x31
    unknown(254)           -- 0xFE
    -- reserved255(255),    0xFF
}
```

PtpClockQualityClassType ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The ClockQuality as specified in [section 5.3.7](#) ClockQuality, 7.6.2.4 clockClass and Table 5 clockClass specifications of [IEEE 1588-2008].

Value	Description
-----	-----

- 0 Reserved to enable compatibility with future versions.
- 1-5 Reserved
- 6 Shall designate a clock that is synchronized to a primary reference time source. The timescale distributed shall be PTP. A clockClass 6 clock shall not be a slave to another clock in the domain.
- 7 Shall designate a clock that has previously been designated as clockClass 6 but that has lost the ability to synchronize to a primary reference time source and is in holdover mode and within holdover specifications. The timescale distributed shall be PTP. A clockClass 7 clock shall not be a slave to another clock in the domain.
- 8 Reserved.
- 9-10 Reserved to enable compatibility with future versions.
- 11-12 Reserved.
- 13 Shall designate a clock that is synchronized to an application-specific source of time. The timescale distributed shall be ARB. A clockClass 13 clock shall not be a slave to another clock in the domain.
- 14 Shall designate a clock that has previously been designated as clockClass 13 but that has lost the ability to synchronize to an application-specific source of time and is in holdover mode and within holdover specifications. The timescale distributed shall be ARB. A clockClass 14 clock shall not be a slave to another clock in the domain.
- 15-51 Reserved.
- 52 Degradation alternative A for a clock of clockClass 7 that is not within holdover specification. A clock of clockClass 52 shall not be a slave to another clock in the domain.
- 53-57 Reserved.
- 58 Degradation alternative A for a clock of clockClass 14 that is not within holdover specification. A clock of clockClass 58 shall

not be a slave to another clock in the domain.

59-67 Reserved.

68-122 For use by alternate PTP profiles.

123-127 Reserved.

128-132 Reserved.

133-170 For use by alternate PTP profiles.

171-186 Reserved.

187 Degradation alternative B for a clock of clockClass 7 that is not within holdover specification. A clock of clockClass 187 may be a slave to another clock in the domain.

188-192 Reserved.

193 Degradation alternative B for a clock of clockClass 14 that is not within holdover specification. A clock of clockClass 193 may be a slave to another clock in the domain.

194-215 Reserved.

216-232 For use by alternate PTP profiles.

233-247 Reserved.

248 Default. This clockClass shall be used if none of the other clockClass definitions apply.

249-250 Reserved.

251 Reserved for version 1 compatibility; see Clause 18.

252-254 Reserved.

255 Shall be the clockClass of a slave-only clock; see 9.2.2."

REFERENCE "[Section 5.3.7](#), 7.6.2.4 and Table 5 of [IEEE 1588-2008]."

SYNTAX Unsigned32 (0..255)

PtpClockRoleType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The Clock Role. The protocol generates a Master Slave relationship among the clocks in the system.

Clock Role	Value	Description
Master clock	1	A clock that is the source of time to which all other clocks on that path synchronize.

Slave clock 2 A clock which synchronizes to
another clock (master)."

SYNTAX INTEGER {
 master(1),
 slave(2)
 }

PtpClockStateType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The clock state returned by a PTP engine.

Clock State	Value	Description

Freerun state	1	Applies to a slave device that is not locked to a master. This is the initial state a slave starts out with when it is not getting any PTP packets from the master or because of some other input error (erroneous packets, etc).
Holdover state	2	In this state the slave device is locked to a master but communication with the master has been lost or the timestamps in the PTP packets are incorrect. Since the slave was locked to the master, it can run in this state, with similar accuracy for some time. If communication with the master is not restored for an extended period (dependent on the clock implementation), the device should move to the Freerun state.
Acquiring state	3	The slave device is receiving packets from a master and is trying to acquire a lock.
Freq_locked state	4	Slave device is locked to the Master with respect to frequency, but not phase aligned
Phase_aligned state	5	Locked to the master with respect to

```
                                frequency and phase."
SYNTAX      INTEGER {
                                freerun(1),
                                holdover(2),
                                acquiring(3),
                                frequencyLocked(4),
                                phaseAligned(5)
                                }

```

PtpClockTimeInterval ::= TEXTUAL-CONVENTION

```
DISPLAY-HINT  "255a"
STATUS        current
DESCRIPTION

```

"This textual convention corresponds to the TimeInterval structure indicated in [section 5.3.2](#) of [IEEE 1588-2008]. It will be presented in the form of a character array. Network byte order is assumed.

The TimeInterval type represents time intervals.

```
struct TimeInterval
{
    Integer64 scaledNanoseconds;
};

```

The scaledNanoseconds member is the time interval expressed in units of nanoseconds and multiplied by 2**16.

Positive or negative time intervals outside the maximum range of this data type shall be encoded as the largest positive and negative values of the data type, respectively.

For example, 2.5 ns is expressed as 0000 0000 0002 8000 in Base16."

REFERENCE

"[Section 5.3.2](#) TimeInterval and [section 7.7.2.1](#) Timer interval specification of [IEEE 1588-2008]"

```
SYNTAX      OCTET STRING (SIZE (1..255))

```

PtpClockTimeSourceType ::= TEXTUAL-CONVENTION

```
STATUS        current
DESCRIPTION

```

"The ClockQuality as specified in Sections [5.3.7](#), [7.6.2.6](#) and Table 7 of [IEEE 1588-2008].

The following values are not represented in the enumerated values.

0xF0-0xFE For use by alternate PTP profiles
0xFF Reserved

It is important to note that [section 7.1.1 RFC 2578](#) allows for gaps and enumerate values to start with zero when indicated by the protocol."

REFERENCE "Section [5.3.7](#), 7.6.2.6 and Table 7 of [IEEE 1588-2008]."

SYNTAX INTEGER {
 atomicClock(16), -- 0x10
 gps(32), -- 0x20
 terrestrialRadio(48), -- 0x22
 ntp(64), -- 0x40
 ntp(80), -- 0x50
 handSet(96), -- 0x60
 other(144), -- 0x90
 internalOscillator(160) -- 0xA0
}

PtpClockTxModeType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Transmission mode.

Unicast: Using unicast communication channel.

Multicast: Using Multicast communication channel.

multicast-mix: Using multicast-unicast communication channel"

SYNTAX INTEGER {
 unicast(1),
 multicast(2),
 multicastmix(3)
}

PtpClockType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The clock types as defined in the MIB module description."

REFERENCE "[Section 6.5.1](#) PTP device types of [IEEE 1588-2008]."

SYNTAX INTEGER {
 ordinaryClock(1),
 boundaryClock(2),
 transparentClock(3),
 boundaryNode(4)
 }

ptpbaseMIBNotifs OBJECT IDENTIFIER
 ::= { ptpbaseMIB 0 }

ptpbaseMIBObjects OBJECT IDENTIFIER
 ::= { ptpbaseMIB 1 }

ptpbaseMIBConformance OBJECT IDENTIFIER
 ::= { ptpbaseMIB 2 }

ptpbaseMIBSystemInfo OBJECT IDENTIFIER
 ::= { ptpbaseMIBObjects 1 }

ptpbaseMIBClockInfo OBJECT IDENTIFIER
 ::= { ptpbaseMIBObjects 2 }

ptpbaseSystemTable OBJECT-TYPE
 SYNTAX SEQUENCE OF PtpbaseSystemEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "Table of count information about the PTP system for all
 domains."
 ::= { ptpbaseMIBSystemInfo 1 }

ptpbaseSystemEntry OBJECT-TYPE
 SYNTAX PtpbaseSystemEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "An entry in the table, containing count information about a
 single domain. New row entries are added when the PTP clock for
 this domain is configured, while the unconfiguration of the PTP


```

        clock removes it."
INDEX      {
            ptpDomainIndex,
            ptpInstanceIndex
        }
 ::= { ptpbaseSystemTable 1 }

PtpbaseSystemEntry ::= SEQUENCE {
    ptpDomainIndex          PtpClockDomainType,
    ptpInstanceIndex        PtpClockInstanceType,
    ptpDomainClockPortsTotal Gauge32
}

ptpDomainIndex OBJECT-TYPE
    SYNTAX          PtpClockDomainType
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "This object specifies the domain number used to create a
logical
        group of PTP devices. The Clock Domain is a logical group of
        clocks and devices that synchronize with each other using the
        PTP protocol.

        0           Default domain
        1           Alternate domain 1
        2           Alternate domain 2
        3           Alternate domain 3
        4 - 127     User-defined domains
        128 - 255   Reserved"
 ::= { ptpbaseSystemEntry 1 }

ptpInstanceIndex OBJECT-TYPE
    SYNTAX          PtpClockInstanceType
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "This object specifies the instance of the Clock for this
        domain."
 ::= { ptpbaseSystemEntry 2 }

ptpDomainClockPortsTotal OBJECT-TYPE
    SYNTAX          Gauge32

```

UNITS "ptp ports"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object specifies the total number of clock ports
configured within a domain in the system."
::= { ptptimeSystemEntry 3 }

ptptimeSystemDomainTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpptimeSystemDomainEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Table of information about the PTP system for all clock modes
-- ordinary, boundary or transparent."
::= { ptptimeMIBSystemInfo 2 }

ptptimeSystemDomainEntry OBJECT-TYPE

SYNTAX PtpptimeSystemDomainEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"An entry in the table, containing information about a single
clock mode for the PTP system. A row entry gets added when PTP
clocks are configured on the node."
INDEX { ptptimeSystemDomainClockTypeIndex }
::= { ptptimeSystemDomainTable 1 }

PtpptimeSystemDomainEntry ::= SEQUENCE {
ptptimeSystemDomainClockTypeIndex PtpClockType,
ptptimeSystemDomainTotals Unsigned32
}

ptptimeSystemDomainClockTypeIndex OBJECT-TYPE

SYNTAX PtpClockType
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This object specifies the clock type as defined in the
Textual convention description."
::= { ptptimeSystemDomainEntry 1 }

ptpbaseSystemDomainTotals OBJECT-TYPE

SYNTAX Unsigned32

UNITS "domains"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the total number of PTP domains for this particular clock type configured in this node."

::= { ptpbaseSystemDomainEntry 2 }

ptpbaseSystemProfile OBJECT-TYPE

SYNTAX PtpClockProfileType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the PTP Profile implemented on the system."

REFERENCE ["Section 19.3](#) PTP profiles of [IEEE 1588-2008]"

::= { ptpbaseMIBSystemInfo 3 }

ptpbaseClockCurrentDSTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockCurrentDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of information about the PTP clock Current Datasets for all domains."

::= { ptpbaseMIBClockInfo 1 }

ptpbaseClockCurrentDSEntry OBJECT-TYPE

SYNTAX PtpbaseClockCurrentDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information about a single PTP clock Current Datasets for a domain."

REFERENCE ["Section 8.2.2](#) currentDS data set member specifications of [IEEE 1588-2008]"INDEX {
ptpbaseClockCurrentDSDomainIndex,

```

        ptpbaseClockCurrentDSClockTypeIndex,
        ptpbaseClockCurrentDSInstanceIndex
    }
    ::= { ptpbaseClockCurrentDSTable 1 }

PtpbaseClockCurrentDSEntry ::= SEQUENCE {
    ptpbaseClockCurrentDSDomainIndex      PtpClockDomainType,
    ptpbaseClockCurrentDSClockTypeIndex   PtpClockType,
    ptpbaseClockCurrentDSInstanceIndex    PtpClockInstanceType,
    ptpbaseClockCurrentDSStepsRemoved     Unsigned32,
    ptpbaseClockCurrentDSOffsetFromMaster PtpClockTimeInterval,
    ptpbaseClockCurrentDSMeanPathDelay    PtpClockTimeInterval
}

ptpbaseClockCurrentDSDomainIndex OBJECT-TYPE
    SYNTAX      PtpClockDomainType
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "This object specifies the domain number used to create a
        logical
        group of PTP devices."
    ::= { ptpbaseClockCurrentDSEntry 1 }

ptpbaseClockCurrentDSClockTypeIndex OBJECT-TYPE
    SYNTAX      PtpClockType
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "This object specifies the clock type as defined in the
        Textual convention description."
    ::= { ptpbaseClockCurrentDSEntry 2 }

ptpbaseClockCurrentDSInstanceIndex OBJECT-TYPE
    SYNTAX      PtpClockInstanceType
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "This object specifies the instance of the clock for this clock
        type in the given domain."
    ::= { ptpbaseClockCurrentDSEntry 3 }

ptpbaseClockCurrentDSStepsRemoved OBJECT-TYPE

```

SYNTAX Unsigned32

UNITS "Steps"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The current clock dataset StepsRemoved value.

This object specifies the distance measured by the number of Boundary clocks between the local clock and the Foreign master as indicated in the stepsRemoved field of Announce messages."

REFERENCE "[Section 8.2.2.2](#) stepsRemoved of [IEEE 1588-2008]"
::= { ptpbaseClockCurrentDSEntry 4 }

ptpbaseClockCurrentDSOffsetFromMaster OBJECT-TYPE

SYNTAX PtpClockTimeInterval

UNITS "Time Interval"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the current clock dataset ClockOffset value. The value of the computation of the offset in time between a slave and a master clock."

REFERENCE "[Section 8.2.2.3](#) currentDS.offsetFromMaster of [IEEE 1588-2008]"
::= { ptpbaseClockCurrentDSEntry 5 }

ptpbaseClockCurrentDSMeanPathDelay OBJECT-TYPE

SYNTAX PtpClockTimeInterval

UNITS "Time Interval"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the current clock dataset MeanPathDelay value.

The mean path delay between a pair of ports as measured by the delay request-response mechanism."

REFERENCE "[Section 8.2.2.4](#) currentDS.meanPathDelay mean path Delay of [IEEE1588-2008]"
::= { ptpbaseClockCurrentDSEntry 6 }

ptpbasedClockParentDSTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbasedClockParentDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of information about the PTP clock Parent Datasets for all domains."

::= { ptpbaseMIBClockInfo 2 }

ptpbasedClockParentDSEntry OBJECT-TYPE

SYNTAX PtpbasedClockParentDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information about a single PTP clock Parent Datasets for a domain."

REFERENCE

"[Section 8.2.3](#) parentDS data set member specifications of [IEEE 1588-2008]"

INDEX {
 ptpbasedClockParentDSDomainIndex,
 ptpbasedClockParentDSClockTypeIndex,
 ptpbasedClockParentDSInstanceIndex
 }

::= { ptpbasedClockParentDSTable 1 }

PtpbasedClockParentDSEntry ::= SEQUENCE {

ptpbasedClockParentDSDomainIndex	PtpClockDomainType,
ptpbasedClockParentDSClockTypeIndex	PtpClockType,
ptpbasedClockParentDSInstanceIndex	PtpClockInstanceType,
ptpbasedClockParentDSParentPortIdentity	OCTET STRING,
ptpbasedClockParentDSParentStats	TruthValue,
ptpbasedClockParentDSOffset	PtpClockIntervalBase2,
ptpbasedClockParentDSClockPhChRate	Integer32,
ptpbasedClockParentDSGMClockIdentity	PtpClockIdentity,
ptpbasedClockParentDSGMClockPriority1	Unsigned32,
ptpbasedClockParentDSGMClockPriority2	Unsigned32,
ptpbasedClockParentDSGMClockQualityClass	PtpClockQualityClassType,
ptpbasedClockParentDSGMClockQualityAccuracy	
PtpClockQualityAccuracyType,	
ptpbasedClockParentDSGMClockQualityOffset	Unsigned32

}

ptpbaseClockParentDSDomainIndex OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the domain number used to create a logical

group of PTP devices."

::= { ptpbaseClockParentDSEntry 1 }

ptpbaseClockParentDSClockTypeIndex OBJECT-TYPE

SYNTAX PtpClockType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the clock type as defined in the Textual convention description."

::= { ptpbaseClockParentDSEntry 2 }

ptpbaseClockParentDSInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the instance of the clock for this clock type in the given domain."

::= { ptpbaseClockParentDSEntry 3 }

ptpbaseClockParentDSParentPortIdentity OBJECT-TYPE

SYNTAX OCTET STRING(SIZE(1..256))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the value of portIdentity of the port on the master that issues the Sync messages used in synchronizing this clock."

REFERENCE

"[Section 8.2.3.2](#) parentDS.parentPortIdentity of [IEEE 1588-2008]"

::= { ptpbaseClockParentDSEntry 4 }

ptpbaseClockParentDSParentStats OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the Parent Dataset ParentStats value.

 This value indicates whether the values of ParentDSOffset
 and ParentDSClockPhChRate have been measured and are valid.
 A TRUE value shall indicate valid data."
REFERENCE "[Section 8.2.3.3](#) parentDS.parentStats of
 [IEEE 1588-2008]"
::= { ptpbaseClockParentDSEntry 5 }

ptpbaseClockParentDSOffset OBJECT-TYPE

SYNTAX PtpClockIntervalBase2 (-128..127)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the Parent Dataset
 ParentOffsetScaledLogVariance value.

 This value is the variance of the parent clock's phase as
 measured by the local clock."
REFERENCE
 "[Section 8.2.3.4](#)
 parentDS.observedParentOffsetScaledLogVariance
 [IEEE 1588-2008]"
::= { ptpbaseClockParentDSEntry 6 }

ptpbaseClockParentDSClockPhChRate OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the clock's parent dataset
 ParentClockPhaseChangeRate value.

 This value is an estimate of the parent clock's phase change
 rate as measured by the slave clock."
REFERENCE
 "[Section 8.2.3.5](#)
 parentDS.observedParentClockPhaseChangeRate of
 [IEEE 1588-2008]"
::= { ptpbaseClockParentDSEntry 7 }

ptpbaseClockParentDSGMClockIdentity OBJECT-TYPE

SYNTAX PtpClockIdentity

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the parent dataset Grandmaster clock identity."

REFERENCE

"[Section 8.2.3.6](#) parentDS.grandmasterIdentity of [IEEE 1588-2008]"

::= { ptpbaseClockParentDSEntry 8 }

ptpbaseClockParentDSGMClockPriority1 OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the parent dataset Grandmaster clock priority1."

REFERENCE

"[Section 8.2.3.8](#) parentDS.grandmasterPriority1 of [IEEE 1588-2008]"

::= { ptpbaseClockParentDSEntry 9 }

ptpbaseClockParentDSGMClockPriority2 OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the parent dataset grandmaster clock priority2."

REFERENCE

"[Section 8.2.3.9](#) parentDS.grandmasterPriority2 of [IEEE 1588-2008]"

::= { ptpbaseClockParentDSEntry 10 }

ptpbaseClockParentDSGMClockQualityClass OBJECT-TYPE

SYNTAX PtpClockQualityClassType (0..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the parent dataset grandmaster clock

```
    quality class."
REFERENCE
    "Section 8.2.3.7 parentDS.grandmasterClockQuality of
    [IEEE 1588-2008]"
 ::= { ptpbaseClockParentDSEntry 11 }
```

ptpbaseClockParentDSGMClockQualityAccuracy OBJECT-TYPE

```
SYNTAX          PtpClockQualityAccuracyType
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "This object specifies the parent dataset grandmaster clock
    quality accuracy."
REFERENCE
    "Section 8.2.3.7 parentDS.grandmasterClockQuality of
    [IEEE 1588-2008]"
 ::= { ptpbaseClockParentDSEntry 12 }
```

ptpbaseClockParentDSGMClockQualityOffset OBJECT-TYPE

```
SYNTAX          Unsigned32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "This object specifies the parent dataset grandmaster clock
    quality offset."
REFERENCE
    "Section 8.2.3.7 parentDS.grandmasterClockQuality of
    [IEEE 1588-2008]"
 ::= { ptpbaseClockParentDSEntry 13 }
```

ptpbaseClockDefaultDSTable OBJECT-TYPE

```
SYNTAX          SEQUENCE OF PtpbaseClockDefaultDSEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "Table of information about the PTP clock Default Datasets for
    all domains."
 ::= { ptpbaseMIBClockInfo 3 }
```

ptpbaseClockDefaultDSEntry OBJECT-TYPE

```
SYNTAX          PtpbaseClockDefaultDSEntry
```

```

MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "An entry in the table, containing information about a single
    PTP clock Default Datasets for a domain."
INDEX           {
                ptpbaseClockDefaultDSDomainIndex,
                ptpbaseClockDefaultDSClockTypeIndex,
                ptpbaseClockDefaultDSInstanceIndex
            }
 ::= { ptpbaseClockDefaultDSTable 1 }

```

```

PtpbaseClockDefaultDSEntry ::= SEQUENCE {
    ptpbaseClockDefaultDSDomainIndex      PtpClockDomainType,
    ptpbaseClockDefaultDSClockTypeIndex   PtpClockType,
    ptpbaseClockDefaultDSInstanceIndex    PtpClockInstanceType,
    ptpbaseClockDefaultDSTwoStepFlag      TruthValue,
    ptpbaseClockDefaultDSClockIdentity    PtpClockIdentity,
    ptpbaseClockDefaultDSPriority1        Unsigned32,
    ptpbaseClockDefaultDSPriority2        Unsigned32,
    ptpbaseClockDefaultDSSlaveOnly        TruthValue,
    ptpbaseClockDefaultDSQualityClass     PtpClockQualityClassType,
    ptpbaseClockDefaultDSQualityAccuracy  PtpClockQualityAccuracyType,
    ptpbaseClockDefaultDSQualityOffset    Integer32
}

```

```

ptpbaseClockDefaultDSDomainIndex OBJECT-TYPE
    SYNTAX      PtpClockDomainType
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This object specifies the domain number used to create a
        logical
        group of PTP devices."
    ::= { ptpbaseClockDefaultDSEntry 1 }

```

```

ptpbaseClockDefaultDSClockTypeIndex OBJECT-TYPE
    SYNTAX      PtpClockType
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This object specifies the clock type as defined in the

```

Textual convention description."
 ::= { ptpbaseClockDefaultDSEntry 2 }

ptpbaseClockDefaultDSInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"This object specifies the instance of the clock for this clock
type in the given domain."

::= { ptpbaseClockDefaultDSEntry 3 }

ptpbaseClockDefaultDSTwoStepFlag OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object specifies whether the Two Step process is used."

::= { ptpbaseClockDefaultDSEntry 4 }

ptpbaseClockDefaultDSClockIdentity OBJECT-TYPE

SYNTAX PtpClockIdentity
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object specifies the default Datasets clock identity."

::= { ptpbaseClockDefaultDSEntry 5 }

ptpbaseClockDefaultDSPriority1 OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object specifies the default Datasets clock Priority1."

::= { ptpbaseClockDefaultDSEntry 6 }

ptpbaseClockDefaultDSPriority2 OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object specifies the default Datasets clock Priority2."

::= { ptpbaseClockDefaultDSEntry 7 }

ptpbasedefaultSlaveOnly OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Whether the SlaveOnly flag is set."
 ::= { ptpbasedefaultEntry 8 }

ptpbasedefaultQualityClass OBJECT-TYPE

SYNTAX PtpClockQualityClassType (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object specifies the default dataset Quality Class."
 ::= { ptpbasedefaultEntry 9 }

ptpbasedefaultQualityAccuracy OBJECT-TYPE

SYNTAX PtpClockQualityAccuracyType
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object specifies the default dataset Quality Accuracy."
 ::= { ptpbasedefaultEntry 10 }

ptpbasedefaultQualityOffset OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object specifies the default dataset Quality offset."
 ::= { ptpbasedefaultEntry 11 }

ptpbaseClockRunningTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockRunningEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Table of information about the PTP clock Running Datasets for all domains."
 ::= { ptpbaseMIBClockInfo 4 }

ptpbasedClockRunningEntry OBJECT-TYPE

SYNTAX PtpbasedClockRunningEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information about a single PTP clock running Datasets for a domain."

INDEX {
ptpbasedClockRunningDomainIndex,
ptpbasedClockRunningClockTypeIndex,
ptpbasedClockRunningInstanceIndex
}

::= { ptpbasedClockRunningTable 1 }

PtpbasedClockRunningEntry ::= SEQUENCE {

ptpbasedClockRunningDomainIndex PtpClockDomainType,

ptpbasedClockRunningClockTypeIndex PtpClockType,

ptpbasedClockRunningInstanceIndex PtpClockInstanceType,

ptpbasedClockRunningState PtpClockStateType,

ptpbasedClockRunningPacketsSent Counter64,

ptpbasedClockRunningPacketsReceived Counter64

}

ptpbasedClockRunningDomainIndex OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the domain number used to create a logical group of PTP devices."

::= { ptpbasedClockRunningEntry 1 }

ptpbasedClockRunningClockTypeIndex OBJECT-TYPE

SYNTAX PtpClockType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the clock type as defined in the Textual convention description."

::= { ptpbasedClockRunningEntry 2 }

ptpbaseClockRunningInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the instance of the clock for this clock type in the given domain."

```
::= { ptpbaseClockRunningEntry 3 }
```

ptpbaseClockRunningState OBJECT-TYPE

SYNTAX PtpClockStateType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the Clock state returned by a PTP engine which was described earlier.

Freerun state. Applies to a slave device that is not locked to a master. This is the initial state a slave starts out with when it is not getting any PTP packets from the master, or because of some other input error (erroneous packets, etc).

Holdover state. In this state the slave device is locked to a master but communication with the master has been lost or the timestamps in the PTP packets are incorrect. Since the slave was previously locked to the master, it can run in this state, with similar accuracy for some time. If communication with the master is not restored for an extended period (dependent on the clock implementation), the device should move to the FREERUN state.

Acquiring state. The slave device is receiving packets from a master and is trying to acquire a lock.

Freq_locked state. Slave device is locked to the Master with respect to frequency, but not phase aligned

Phase_aligned state. Locked to the master with respect to frequency and phase."

```
::= { ptpbaseClockRunningEntry 4 }
```

ptpbaseClockRunningPacketsSent OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the total number of all unicast and
 multicast packets that have been sent out for this clock in this
 domain for this type."
 ::= { ptpbaseClockRunningEntry 5 }

ptpbaseClockRunningPacketsReceived OBJECT-TYPE

SYNTAX Counter64
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the total number of all unicast and
 multicast packets that have been received for this clock in this
 domain for this type."
 ::= { ptpbaseClockRunningEntry 6 }

ptpbaseClockTimePropertiesDSTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockTimePropertiesDSEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "Table of information about the PTP clock time properties
 datasets for all domains."
 ::= { ptpbaseMIBClockInfo 5 }

ptpbaseClockTimePropertiesDSEntry OBJECT-TYPE

SYNTAX PtpbaseClockTimePropertiesDSEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "An entry in the table, containing information about a single
 PTP clock timeproperties Datasets for a domain."
REFERENCE "[Section 8.2.4](#) timePropertiesDS data set member
 specifications of [IEEE 1588-2008]"
INDEX {
 ptpbaseClockTimePropertiesDSDomainIndex,
 ptpbaseClockTimePropertiesDSClockTypeIndex,
 ptpbaseClockTimePropertiesDSInstanceIndex
 }


```
 ::= { ptpbaseClockTimePropertiesDSTable 1 }
```

```
 PtpbaseClockTimePropertiesDSEntry ::= SEQUENCE {
     ptpbaseClockTimePropertiesDSDomainIndex      PtpClockDomainType,
     ptpbaseClockTimePropertiesDSClockTypeIndex    PtpClockType,
     ptpbaseClockTimePropertiesDSInstanceIndex
 PtpClockInstanceType,
     ptpbaseClockTimePropertiesDSCurrentUTCOffsetValid TruthValue,
     ptpbaseClockTimePropertiesDSCurrentUTCOffset    Integer32,
     ptpbaseClockTimePropertiesDSLeap59              TruthValue,
     ptpbaseClockTimePropertiesDSLeap61              TruthValue,
     ptpbaseClockTimePropertiesDSTimeTraceable       TruthValue,
     ptpbaseClockTimePropertiesDSFreqTraceable       TruthValue,
     ptpbaseClockTimePropertiesDSPTPTimescale        TruthValue,
     ptpbaseClockTimePropertiesDSSource
 PtpClockTimeSourceType
 }
```

```
 ptpbaseClockTimePropertiesDSDomainIndex OBJECT-TYPE
```

```
     SYNTAX      PtpClockDomainType
```

```
     MAX-ACCESS  not-accessible
```

```
     STATUS      current
```

```
     DESCRIPTION
```

```
         "This object specifies the domain number used to create a
logical
group of PTP devices."
```

```
 ::= { ptpbaseClockTimePropertiesDSEntry 1 }
```

```
 ptpbaseClockTimePropertiesDSClockTypeIndex OBJECT-TYPE
```

```
     SYNTAX      PtpClockType
```

```
     MAX-ACCESS  not-accessible
```

```
     STATUS      current
```

```
     DESCRIPTION
```

```
         "This object specifies the clock type as defined in the
Textual convention description."
```

```
 ::= { ptpbaseClockTimePropertiesDSEntry 2 }
```

```
 ptpbaseClockTimePropertiesDSInstanceIndex OBJECT-TYPE
```

```
     SYNTAX      PtpClockInstanceType
```

```
     MAX-ACCESS  not-accessible
```

```
     STATUS      current
```

```
     DESCRIPTION
```

```
         "This object specifies the instance of the clock for this clock"
```

type in the given domain."
 ::= { ptptimePropertiesDSEntry 3 }

ptptimePropertiesDSCurrentUTCOffsetValid OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the timeproperties dataset value of
 whether the current UTC offset is valid."
REFERENCE "Section 8.2.4.2 timePropertiesDS.currentUtcOffset
 of [IEEE 1588-2008]"
 ::= { ptptimePropertiesDSEntry 4 }

ptptimePropertiesDSCurrentUTCOffset OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the timeproperties dataset value of
 the current UTC offset.

 In PTP systems whose epoch is the PTP epoch, the value of
 timePropertiesDS.currentUtcOffset is the offset
 between TAI and UTC; otherwise the value has no meaning. The
 value shall be in units of seconds.
 The initialization value shall be selected as follows:
 a) If the timePropertiesDS.ptpTimescale (see 8.2.4.8) is TRUE,
 the value is the value obtained from a
 primary reference if the value is known at the time of
 initialization, else,
 b) The value shall be the current number of leap seconds (7.2.3)
 when the node is designed."
REFERENCE "Section 8.2.4.3
 timePropertiesDS.currentUtcOffsetValid
 of [IEEE 1588-2008]"
 ::= { ptptimePropertiesDSEntry 5 }

ptptimePropertiesDSLeap59 OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object specifies the Leap59 value in the clock Current Dataset."

REFERENCE "[Section 8.2.4.4](#) timePropertiesDS.leap59 of [IEEE 1588-2008]"

::= { ptpbaseClockTimePropertiesDSEntry 6 }

ptpbaseClockTimePropertiesDSLeap61 OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the Leap61 value in the clock Current Dataset."

REFERENCE "[Section 8.2.4.5](#) timePropertiesDS.leap61 of [IEEE 1588-2008]"

::= { ptpbaseClockTimePropertiesDSEntry 7 }

ptpbaseClockTimePropertiesDSTimeTraceable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the Timetraceable value in the clock Current Dataset."

REFERENCE "[Section 8.2.4.6](#) timePropertiesDS.timeTraceable of [IEEE 1588-2008]"

::= { ptpbaseClockTimePropertiesDSEntry 8 }

ptpbaseClockTimePropertiesDSFreqTraceable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the Frequency Traceable value in the clock Current Dataset."

REFERENCE "[Section 8.2.4.7](#) timePropertiesDS.frequencyTraceable of [IEEE 1588-2008]"

::= { ptpbaseClockTimePropertiesDSEntry 9 }

ptpbaseClockTimePropertiesDSPTPTimescale OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the PTP Timescale value in the clock Current Dataset."

REFERENCE "[Section 8.2.4.8](#) timePropertiesDS.ptpTimescale of [IEEE 1588-2008]"

::= { ptpbaseClockTimePropertiesDSEntry 10 }

ptpbaseClockTimePropertiesDSSource OBJECT-TYPE

SYNTAX PtpClockTimeSourceType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the Timesource value in the clock Current Dataset."

REFERENCE "[Section 8.2.4.9](#) timePropertiesDS.timeSource of [IEEE 1588-2008]"

::= { ptpbaseClockTimePropertiesDSEntry 11 }

ptpbaseClockTransDefaultDSTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockTransDefaultDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of information about the PTP Transparent clock Default Datasets for all domains."

::= { ptpbaseMIBClockInfo 6 }

ptpbaseClockTransDefaultDSEntry OBJECT-TYPE

SYNTAX PtpbaseClockTransDefaultDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information about a single PTP Transparent clock Default Datasets for a domain."

REFERENCE "[Section 8.3.2](#) transparentClockDefaultDS data set member specifications of [IEEE 1588-2008]"

INDEX {
 ptpbaseClockTransDefaultDSDomainIndex,
 ptpbaseClockTransDefaultDSInstanceIndex
 }

::= { ptpbaseClockTransDefaultDSTable 1 }

```
PtpbaseClockTransDefaultDSEntry ::= SEQUENCE {  
    ptpbaseClockTransDefaultDSDomainIndex PtpClockDomainType,  
    ptpbaseClockTransDefaultDSInstanceIndex PtpClockInstanceType,  
    ptpbaseClockTransDefaultDSClockIdentity PtpClockIdentity,  
    ptpbaseClockTransDefaultDSNumOfPorts Counter32,  
    ptpbaseClockTransDefaultDSDelay PtpClockMechanismType,  
    ptpbaseClockTransDefaultDSPrimaryDomain PtpClockDomainType  
}
```

ptpbaseClockTransDefaultDSDomainIndex OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the domain number used to create a
logical
group of PTP devices."

::= { ptpbaseClockTransDefaultDSEntry 1 }

ptpbaseClockTransDefaultDSInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the instance of the clock for this clock
type in the given domain."

::= { ptpbaseClockTransDefaultDSEntry 2 }

ptpbaseClockTransDefaultDSClockIdentity OBJECT-TYPE

SYNTAX PtpClockIdentity

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the value of the clockIdentity attribute
of the local clock."

REFERENCE "[Section 8.3.2.2.1](#)

transparentClockDefaultDS.clockIdentity of [IEEE 1588-2008]"

::= { ptpbaseClockTransDefaultDSEntry 3 }

ptpbaseClockTransDefaultDSNumOfPorts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the number of PTP ports of the device."

REFERENCE

"[Section 8.3.2.2.2](#) transparentClockDefaultDS.numberPorts of [IEEE 1588-2008]"

::= { ptpbaseClockTransDefaultDSEntry 4 }

ptpbaseClockTransDefaultDSDelay OBJECT-TYPE

SYNTAX PtpClockMechanismType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object, if the transparent clock is an end-to-end transparent clock, has the value of E2E; if the transparent clock is a peer-to-peer transparent clock, the value shall be P2P."

REFERENCE

"[Section 8.3.2.3.1](#) transparentClockDefaultDS.delayMechanism of [IEEE 1588-2008]"

::= { ptpbaseClockTransDefaultDSEntry 5 }

ptpbaseClockTransDefaultDSPrimaryDomain OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the value of the primary syntonization domain. The initialization value shall be 0."

REFERENCE

"[Section 8.3.2.3.2](#) transparentClockDefaultDS.primaryDomain of [IEEE 1588-2008]"

::= { ptpbaseClockTransDefaultDSEntry 6 }

ptpbaseClockPortTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of information about the clock ports for a particular

```

        domain."
 ::= { ptpbaseMIBClockInfo 7 }

ptpbaseClockPortEntry OBJECT-TYPE
    SYNTAX          PtpbaseClockPortEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "An entry in the table, containing information about a single
        clock port."
    INDEX           {
                    ptpbaseClockPortDomainIndex,
                    ptpbaseClockPortClockTypeIndex,
                    ptpbaseClockPortClockInstanceIndex,
                    ptpbaseClockPortTablePortNumberIndex
                    }
 ::= { ptpbaseClockPortTable 1 }

PtpbaseClockPortEntry ::= SEQUENCE {
    ptpbaseClockPortDomainIndex      PtpClockDomainType,
    ptpbaseClockPortClockTypeIndex   PtpClockType,
    ptpbaseClockPortClockInstanceIndex PtpClockInstanceType,
    ptpbaseClockPortTablePortNumberIndex PtpClockPortNumber,
    ptpbaseClockPortName              DisplayString,
    ptpbaseClockPortRole              PtpClockRoleType,
    ptpbaseClockPortSyncTwoStep       TruthValue,
    ptpbaseClockPortCurrentPeerAddressType AutonomousType,
    ptpbaseClockPortCurrentPeerAddress
PtpClockPortTransportTypeAddress,
    ptpbaseClockPortNumOfAssociatedPorts Gauge32
}

ptpbaseClockPortDomainIndex OBJECT-TYPE
    SYNTAX          PtpClockDomainType
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This object specifies the domain number used to create a
        logical
        group of PTP devices."
 ::= { ptpbaseClockPortEntry 1 }

ptpbaseClockPortClockTypeIndex OBJECT-TYPE

```

SYNTAX PtpClockType
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "This object specifies the clock type as defined in the
 Textual convention description."
::= { ptpbaseClockPortEntry 2 }

ptpbaseClockPortClockInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "This object specifies the instance of the clock for this clock
 type in the given domain."
::= { ptpbaseClockPortEntry 3 }

ptpbaseClockPortTablePortNumberIndex OBJECT-TYPE

SYNTAX PtpClockPortNumber
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "This object specifies the PTP Portnumber for this port."
::= { ptpbaseClockPortEntry 4 }

ptpbaseClockPortName OBJECT-TYPE

SYNTAX DisplayString (SIZE (1..64))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the PTP clock port name configured on the
 node."
::= { ptpbaseClockPortEntry 5 }

ptpbaseClockPortRole OBJECT-TYPE

SYNTAX PtpClockRoleType
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object describes the current role (slave/master) of the
 port."
::= { ptpbaseClockPortEntry 6 }

ptpbaseClockPortSyncTwoStep OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies that two-step clock operation between the PTP master and slave device is enabled."

::= { ptpbaseClockPortEntry 7 }

ptpbaseClockPortCurrentPeerAddressType OBJECT-TYPE

SYNTAX AutonomousType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the current peer's network address type used for PTP communication."

::= { ptpbaseClockPortEntry 8 }

ptpbaseClockPortCurrentPeerAddress OBJECT-TYPE

SYNTAX PtpClockPortTransportTypeAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the current peer's network address used for PTP communication."

::= { ptpbaseClockPortEntry 9 }

ptpbaseClockPortNumOfAssociatedPorts OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies -

For a master port - the number of PTP slave sessions (peers) associated with this PTP port.

For a slave port - the number of masters available to this slave port (might or might not be peered)."

::= { ptpbaseClockPortEntry 10 }

ptpbaseClockPortDSTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockPortDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of information about the clock ports dataset for a particular domain."

::= { ptpbaseMIBClockInfo 8 }

ptpbaseClockPortDSEntry OBJECT-TYPE

SYNTAX PtpbaseClockPortDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing port dataset information for a single clock port."

INDEX {
 ptpbaseClockPortDSDomainIndex,
 ptpbaseClockPortDSClockTypeIndex,
 ptpbaseClockPortDSClockInstanceIndex,
 ptpbaseClockPortDSPortNumberIndex
 }

::= { ptpbaseClockPortDSTable 1 }

PtpbaseClockPortDSEntry ::= SEQUENCE {

ptpbaseClockPortDSDomainIndex	PtpClockDomainType,
ptpbaseClockPortDSClockTypeIndex	PtpClockType,
ptpbaseClockPortDSClockInstanceIndex	PtpClockInstanceType,
ptpbaseClockPortDSPortNumberIndex	PtpClockPortNumber,
ptpbaseClockPortDSName	DisplayString,
ptpbaseClockPortDSPortIdentity	OCTET STRING,
ptpbaseClockPortDSlogAnnouncementInterval	PtpClockIntervalBase2,
ptpbaseClockPortDSAnnounceRctTimeout	Integer32,
ptpbaseClockPortDSlogSyncInterval	PtpClockIntervalBase2,
ptpbaseClockPortDSMinDelayReqInterval	Integer32,
ptpbaseClockPortDSPeerDelayReqInterval	Integer32,
ptpbaseClockPortDSDelayMech	PtpClockMechanismType,
ptpbaseClockPortDSPeerMeanPathDelay	PtpClockTimeInterval,
ptpbaseClockPortDSGrantDuration	Unsigned32,
ptpbaseClockPortDSPTPVersion	Unsigned32

}

ptpbaseClockPortDSDomainIndex OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the domain number used to create a logical

group of PTP devices."

::= { ptpbaseClockPortDSEntry 1 }

ptpbaseClockPortDSClockTypeIndex OBJECT-TYPE

SYNTAX PtpClockType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the clock type as defined in the Textual convention description."

::= { ptpbaseClockPortDSEntry 2 }

ptpbaseClockPortDSClockInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the instance of the clock for this clock type in the given domain."

::= { ptpbaseClockPortDSEntry 3 }

ptpbaseClockPortDSPortNumberIndex OBJECT-TYPE

SYNTAX PtpClockPortNumber

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the PTP portnumber associated with this PTP port."

::= { ptpbaseClockPortDSEntry 4 }

ptpbaseClockPortDSName OBJECT-TYPE

SYNTAX DisplayString (SIZE (1..64))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the PTP clock port dataset name."

::= { ptpbaseClockPortDSEntry 5 }

ptpbaseClockPortDSPortIdentity OBJECT-TYPE

SYNTAX OCTET STRING(SIZE(1..256))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the PTP clock port Identity."
 ::= { ptpbaseClockPortDSEntry 6 }

ptpbaseClockPortDSlogAnnouncementInterval OBJECT-TYPE

SYNTAX PtpClockIntervalBase2
UNITS "Time Interval"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the Announce message transmission
 interval associated with this clock port."
 ::= { ptpbaseClockPortDSEntry 7 }

ptpbaseClockPortDSAnnounceRctTimeout OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the Announce receipt timeout associated
 with this clock port."
 ::= { ptpbaseClockPortDSEntry 8 }

ptpbaseClockPortDSlogSyncInterval OBJECT-TYPE

SYNTAX PtpClockIntervalBase2
UNITS "Time Interval"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the Sync message transmission interval."
 ::= { ptpbaseClockPortDSEntry 9 }

ptpbaseClockPortDSMinDelayReqInterval OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the Delay_Req message transmission
 interval."
 ::= { ptpbaseClockPortDSEntry 10 }

ptpbaseClockPortDSPeerDelayReqInterval OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the Pdelay_Req message transmission interval."

::= { ptpbaseClockPortDSEntry 11 }

ptpbaseClockPortDSDelayMech OBJECT-TYPE

SYNTAX PtpClockMechanismType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the delay mechanism used. If the clock is an end-to-end clock, the value of the is e2e, else if the clock is a peer to-peer clock, the value shall be p2p."

::= { ptpbaseClockPortDSEntry 12 }

ptpbaseClockPortDSPeerMeanPathDelay OBJECT-TYPE

SYNTAX PtpClockTimeInterval

UNITS "Time Interval"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the peer meanPathDelay."

::= { ptpbaseClockPortDSEntry 13 }

ptpbaseClockPortDSGrantDuration OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the grant duration allocated by the master."

::= { ptpbaseClockPortDSEntry 14 }

ptpbaseClockPortDSPTPVersion OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the PTP version being used."
 ::= { ptpbaseClockPortDSEntry 15 }

ptpbaseClockPortRunningTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockPortRunningEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of information about the clock ports running datasets for a particular domain."
 ::= { ptpbaseMIBClockInfo 9 }

ptpbaseClockPortRunningEntry OBJECT-TYPE

SYNTAX PtpbaseClockPortRunningEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing running dataset information about a single clock port."

INDEX {
 ptpbaseClockPortRunningDomainIndex,
 ptpbaseClockPortRunningClockTypeIndex,
 ptpbaseClockPortRunningClockInstanceIndex,
 ptpbaseClockPortRunningPortNumberIndex
 }

::= { ptpbaseClockPortRunningTable 1 }

PtpbaseClockPortRunningEntry ::= SEQUENCE {

ptpbaseClockPortRunningDomainIndex	PtpClockDomainType,
ptpbaseClockPortRunningClockTypeIndex	PtpClockType,
ptpbaseClockPortRunningClockInstanceIndex	PtpClockInstanceType,
ptpbaseClockPortRunningPortNumberIndex	PtpClockPortNumber,
ptpbaseClockPortRunningName	DisplayString,
ptpbaseClockPortRunningState	PtpClockPortState,
ptpbaseClockPortRunningRole	PtpClockRoleType,
ptpbaseClockPortRunningInterfaceIndex	InterfaceIndexOrZero,
ptpbaseClockPortRunningTransport	AutonomousType,
ptpbaseClockPortRunningEncapsulationType	AutonomousType,
ptpbaseClockPortRunningTxMode	PtpClockTxModeType,
ptpbaseClockPortRunningRxMode	PtpClockTxModeType,

```
        ptpbaseClockPortRunningPacketsReceived    Counter64,  
        ptpbaseClockPortRunningPacketsSent        Counter64  
    }
```

ptpbaseClockPortRunningDomainIndex OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the domain number used to create a
logical
group of PTP devices."

::= { ptpbaseClockPortRunningEntry 1 }

ptpbaseClockPortRunningClockTypeIndex OBJECT-TYPE

SYNTAX PtpClockType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the clock type as defined in the
Textual convention description."

::= { ptpbaseClockPortRunningEntry 2 }

ptpbaseClockPortRunningClockInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the instance of the clock for this clock
type in the given domain."

::= { ptpbaseClockPortRunningEntry 3 }

ptpbaseClockPortRunningPortNumberIndex OBJECT-TYPE

SYNTAX PtpClockPortNumber

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the PTP portnumber associated with this
clock port."

::= { ptpbaseClockPortRunningEntry 4 }

ptpbaseClockPortRunningName OBJECT-TYPE

SYNTAX DisplayString (SIZE (1..64))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the PTP clock port name."

::= { ptpbaseClockPortRunningEntry 5 }

ptpbaseClockPortRunningState OBJECT-TYPE

SYNTAX PtpClockPortState

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the port state returned by PTP engine."

initializing - In this state a port initializes
its data sets, hardware, and
communication facilities.

faulty - The fault state of the protocol.

disabled - The port shall not place any
messages on its communication path.

listening - The port is waiting for the
announceReceiptTimeout to expire or
to receive an Announce message from
a master.

preMaster - The port shall behave in all respects
as though it were in the MASTER state
except that it shall not place any
messages on its communication path
except for Pdelay_Req, Pdelay_Resp,
Pdelay_Resp_Follow_Up, signaling, or
management messages.

master - The port is behaving as a master port.

passive - The port shall not place any
messages on its communication path
except for Pdelay_Req, Pdelay_Resp,
Pdelay_Resp_Follow_Up, or signaling
messages, or management messages
that are a required response to
another management message

uncalibrated - The local port is preparing to
synchronize to the master port.

slave - The port is synchronizing to the
selected master port."

::= { ptpbaseClockPortRunningEntry 6 }

ptpbaseClockPortRunningRole OBJECT-TYPE

SYNTAX PtpClockRoleType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the Clock Role."

::= { ptpbaseClockPortRunningEntry 7 }

ptpbaseClockPortRunningInterfaceIndex OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the interface on the node being used by the PTP Clock for PTP communication."

::= { ptpbaseClockPortRunningEntry 8 }

ptpbaseClockPortRunningTransport OBJECT-TYPE

SYNTAX AutonomousType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the transport protocol being used for PTP communication (the mapping used)."

::= { ptpbaseClockPortRunningEntry 9 }

ptpbaseClockPortRunningEncapsulationType OBJECT-TYPE

SYNTAX AutonomousType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the type of encapsulation if the interface is adding extra layers (e.g., VLAN, Pseudowire encapsulation...) for the PTP messages."

::= { ptpbaseClockPortRunningEntry 10 }

ptpbaseClockPortRunningTxMode OBJECT-TYPE

SYNTAX PtpClockTxModeType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the clock transmission mode as

```
    unicast:      Using unicast communication channel.
    multicast:    Using Multicast communication channel.
    multicast-mix: Using multicast-unicast communication channel"
 ::= { ptpbaseClockPortRunningEntry 11 }
```

ptpbaseClockPortRunningRxMode OBJECT-TYPE

```
SYNTAX          PtpClockTxModeType
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "This object specifies the clock receive mode as

    unicast:      Using unicast communication channel.
    multicast:    Using Multicast communication channel.
    multicast-mix: Using multicast-unicast communication channel"
 ::= { ptpbaseClockPortRunningEntry 12 }
```

ptpbaseClockPortRunningPacketsReceived OBJECT-TYPE

```
SYNTAX          Counter64
UNITS           "packets"
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "This object specifies the packets received on the clock port
    (cumulative)."
 ::= { ptpbaseClockPortRunningEntry 13 }
```

ptpbaseClockPortRunningPacketsSent OBJECT-TYPE

```
SYNTAX          Counter64
UNITS           "packets"
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "This object specifies the packets sent on the clock port
    (cumulative)."
 ::= { ptpbaseClockPortRunningEntry 14 }
```

ptpbaseClockPortTransDSTable OBJECT-TYPE

```
SYNTAX          SEQUENCE OF PtpbaseClockPortTransDSEntry
MAX-ACCESS      not-accessible
```

STATUS current

DESCRIPTION

"Table of information about the Transparent clock ports running dataset for a particular domain."

::= { ptpbaseMIBClockInfo 10 }

ptpbaseClockPortTransDSEntry OBJECT-TYPE

SYNTAX PtpbaseClockPortTransDSEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing clock port Transparent dataset information about a single clock port"

INDEX {
 ptpbaseClockPortTransDSDomainIndex,
 ptpbaseClockPortTransDSInstanceIndex,
 ptpbaseClockPortTransDSPortNumberIndex
 }

::= { ptpbaseClockPortTransDSTable 1 }

PtpbaseClockPortTransDSEntry ::= SEQUENCE {

ptpbaseClockPortTransDSDomainIndex	PtpClockDomainType,
ptpbaseClockPortTransDSInstanceIndex	PtpClockInstanceType,
ptpbaseClockPortTransDSPortNumberIndex	PtpClockPortNumber,
ptpbaseClockPortTransDSPortIdentity	PtpClockIdentity,
ptpbaseClockPortTransDSlogMinPdelayReqInt	PtpClockIntervalBase2,
ptpbaseClockPortTransDSFaultyFlag	TruthValue,
ptpbaseClockPortTransDSPeerMeanPathDelay	PtpClockTimeInterval

}

ptpbaseClockPortTransDSDomainIndex OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the domain number used to create a logical group of PTP devices."

::= { ptpbaseClockPortTransDSEntry 1 }

ptpbaseClockPortTransDSInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the instance of the clock for this clock type in the given domain."

::= { ptpbaseClockPortTransDSEntry 2 }

ptpbaseClockPortTransDSPortNumberIndex OBJECT-TYPE

SYNTAX PtpClockPortNumber

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the PTP port number associated with this port."

REFERENCE "Section 7.5.2 Port Identity of [IEEE 1588-2008]"

::= { ptpbaseClockPortTransDSEntry 3 }

ptpbaseClockPortTransDSPortIdentity OBJECT-TYPE

SYNTAX PtpClockIdentity

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the value of the PortIdentity attribute of the local port."

REFERENCE

"Section 8.3.3.2.1 transparentClockPortDS.portIdentity of [IEEE 1588-2008]"

::= { ptpbaseClockPortTransDSEntry 4 }

ptpbaseClockPortTransDSlogMinPdelayReqInt OBJECT-TYPE

SYNTAX PtpClockIntervalBase2

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the value of the logarithm to the base 2 of the minPdelayReqInterval."

REFERENCE

"Section 8.3.3.3.1 transparentClockPortDS.logMinPdelayReqInterval of [IEEE 1588-2008]"

::= { ptpbaseClockPortTransDSEntry 5 }

ptpbaseClockPortTransDSFaultyFlag OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies the value TRUE if the port is faulty
 and FALSE if the port is operating normally."
REFERENCE
 "[Section 8.3.3.3.2](#) transparentClockPortDS.faultyFlag of
 [IEEE 1588-2008]"
::= { ptpbaseClockPortTransDSEntry 6 }

ptpbaseClockPortTransDSPeerMeanPathDelay OBJECT-TYPE

SYNTAX PtpClockTimeInterval
UNITS "Time Interval"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This object specifies, if the delayMechanism used is P2P, the
 value of the estimate of the current one-way propagation delay,
 i.e., <meanPathDelay> on the link attached to this port,
 computed using the peer delay mechanism. If the value of the
 delayMechanism used is E2E, then the value will be zero."
REFERENCE
 "[Section 8.3.3.3.3](#) transparentClockPortDS.peerMeanPathDelay of
 [IEEE 1588-2008]"
::= { ptpbaseClockPortTransDSEntry 7 }

ptpbaseClockPortAssociateTable OBJECT-TYPE

SYNTAX SEQUENCE OF PtpbaseClockPortAssociateEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "Table of information about a given port's associated ports.

 For a master port: multiple slave ports that have established
 sessions with the current master port.
 For a slave port: the list of masters available for a given
 slave port.

 Session information (packets, errors) to be displayed based on
 availability and scenario."
::= { ptpbaseMIBClockInfo 11 }

```
--
-- Well Known transport types for PTP communication.
--
ptpbaseWellKnownTransportTypes OBJECT IDENTIFIER ::= {
ptpbaseMIBClockInfo 12 }

ptpbaseTransportTypeIPv4 OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "IP version 4"
    ::= { ptpbaseWellKnownTransportTypes 1 }

ptpbaseTransportTypeIPv6 OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "IP version 6"
    ::= { ptpbaseWellKnownTransportTypes 2 }

ptpbaseTransportTypeEthernet OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "Ethernet"
    ::= { ptpbaseWellKnownTransportTypes 3 }

ptpbaseTransportTypeDeviceNET OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "Device NET"
    ::= { ptpbaseWellKnownTransportTypes 4 }

ptpbaseTransportTypeControlNET OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "Control NET"
    ::= { ptpbaseWellKnownTransportTypes 5 }

ptpbaseTransportTypeIEC61158 OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "IEC61158"
```

```
 ::= { ptpbaseWellKnownTransportTypes 6 }

--
-- Well Known encapsulation types for PTP communication.
--
ptpbaseWellKnownEncapsulationTypes OBJECT IDENTIFIER ::= {
ptpbaseMIBClockInfo 13 }

ptpbaseEncapsulationTypeEthernet OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "Ethernet Encapsulation type."
    ::= { ptpbaseWellKnownEncapsulationTypes 1 }

ptpbaseEncapsulationTypeVLAN OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "VLAN Encapsulation type."
    ::= { ptpbaseWellKnownEncapsulationTypes 2 }

ptpbaseEncapsulationTypeUDPIPLSP OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "UDP/IP over MPLS Encapsulation type."
    ::= { ptpbaseWellKnownEncapsulationTypes 3 }

ptpbaseEncapsulationTypePWUDPIPLSP OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "UDP/IP Pseudowire over MPLS Encapsulation type."
    ::= { ptpbaseWellKnownEncapsulationTypes 4 }

ptpbaseEncapsulationTypePWEthernetLSP OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "Ethernet Pseudowire over MPLS Encapsulation type."
    ::= { ptpbaseWellKnownEncapsulationTypes 5 }

ptpbaseClockPortAssociateEntry OBJECT-TYPE
```

SYNTAX PtpbaseClockPortAssociateEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information about a single associated port for the given clockport."

```
INDEX      {
            ptpClockPortCurrentDomainIndex,
            ptpClockPortCurrentClockTypeIndex,
            ptpClockPortCurrentClockInstanceIndex,
            ptpClockPortCurrentPortNumberIndex,
            ptpbaseClockPortAssociatePortIndex
          }
```

::= { ptpbaseClockPortAssociateTable 1 }

```
PtpbaseClockPortAssociateEntry ::= SEQUENCE {
    ptpClockPortCurrentDomainIndex      PtpClockDomainType,
    ptpClockPortCurrentClockTypeIndex   PtpClockType,
    ptpClockPortCurrentClockInstanceIndex PtpClockInstanceType,
    ptpClockPortCurrentPortNumberIndex  PtpClockPortNumber,
    ptpbaseClockPortAssociatePortIndex  Unsigned32,
    ptpbaseClockPortAssociateAddressType AutonomousType,
    ptpbaseClockPortAssociateAddress
PtpClockPortTransportTypeAddress,
    ptpbaseClockPortAssociatePacketsSent Counter64,
    ptpbaseClockPortAssociatePacketsReceived Counter64,
    ptpbaseClockPortAssociateInErrors    Counter64,
    ptpbaseClockPortAssociateOutErrors   Counter64
}
```

ptpClockPortCurrentDomainIndex OBJECT-TYPE

SYNTAX PtpClockDomainType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the given port's domain number."

::= { ptpbaseClockPortAssociateEntry 1 }

ptpClockPortCurrentClockTypeIndex OBJECT-TYPE

SYNTAX PtpClockType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the given port's clock type."
 ::= { ptpbaseClockPortAssociateEntry 2 }

ptpClockPortCurrentClockInstanceIndex OBJECT-TYPE

SYNTAX PtpClockInstanceType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the instance of the clock for this clock type in the given domain."

::= { ptpbaseClockPortAssociateEntry 3 }

ptpClockPortCurrentPortNumberIndex OBJECT-TYPE

SYNTAX PtpClockPortNumber

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the PTP Port Number for the given port."

::= { ptpbaseClockPortAssociateEntry 4 }

ptpbaseClockPortAssociatePortIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object specifies the associated port's serial number in the current port's context."

::= { ptpbaseClockPortAssociateEntry 5 }

ptpbaseClockPortAssociateAddressType OBJECT-TYPE

SYNTAX AutonomousType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the peer port's network address type used for PTP communication."

::= { ptpbaseClockPortAssociateEntry 6 }

ptpbaseClockPortAssociateAddress OBJECT-TYPE

SYNTAX PtpClockPortTransportTypeAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the peer port's network address used for PTP communication."

::= { ptpbaseClockPortAssociateEntry 7 }

ptpbaseClockPortAssociatePacketsSent OBJECT-TYPE

SYNTAX Counter64

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of packets sent to this peer port from the current port."

::= { ptpbaseClockPortAssociateEntry 8 }

ptpbaseClockPortAssociatePacketsReceived OBJECT-TYPE

SYNTAX Counter64

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of packets received from this peer port by the current port."

::= { ptpbaseClockPortAssociateEntry 9 }

ptpbaseClockPortAssociateInErrors OBJECT-TYPE

SYNTAX Counter64

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the input errors associated with the peer port."

::= { ptpbaseClockPortAssociateEntry 10 }

ptpbaseClockPortAssociateOutErrors OBJECT-TYPE

SYNTAX Counter64

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object specifies the output errors associated with the peer port."

::= { ptpbaseClockPortAssociateEntry 11 }

-- Conformance Information Definition

ptpbasesMIBCompliances OBJECT IDENTIFIER
 ::= { ptpbasesMIBConformance 1 }

ptpbasesMIBGroups OBJECT IDENTIFIER
 ::= { ptpbasesMIBConformance 2 }

ptpbasesMIBCompliancesSystemInfo MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"Compliance statement for agents that provide read-only support for PTPBASE-MIB to provide system level information of clock devices.

Such devices can only be monitored using this MIB module.

The Module is implemented with support for read-only. In other words, only monitoring is available by implementing this MODULE-COMPLIANCE."

MODULE -- this module

MANDATORY-GROUPS { ptpbasesMIBSystemInfoGroup }

::= { ptpbasesMIBCompliances 1 }

ptpbasesMIBCompliancesClockInfo MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"Compliance statement for agents that provide read-only support for PTPBASE-MIB to provide clock related information.

Such devices can only be monitored using this MIB module.

The Module is implemented with support for read-only. In other words, only monitoring is available by implementing this MODULE-COMPLIANCE."

MODULE -- this module

MANDATORY-GROUPS {

ptpbasesMIBClockCurrentDSGroup,
ptpbasesMIBClockParentDSGroup,
ptpbasesMIBClockDefaultDSGroup,
ptpbasesMIBClockRunningGroup,
ptpbasesMIBClockTimepropertiesGroup

```
    }
    ::= { ptpbaseMIBCompliances 2 }

ptpbaseMIBCompliancesClockPortInfo MODULE-COMPLIANCE
    STATUS                current
    DESCRIPTION
        "Compliance statement for agents that provide read-only support
        for PTPBASE-MIB to provide clock port related information.
        Such devices can only be monitored using this MIB module.

        The Module is implemented with support for read-only. In other
        words, only monitoring is available by implementing this
        MODULE-COMPLIANCE."
    MODULE                -- this module
    MANDATORY-GROUPS {
        ptpbaseMIBClockPortGroup,
        ptpbaseMIBClockPortDSGroup,
        ptpbaseMIBClockPortRunningGroup,
        ptpbaseMIBClockPortAssociateGroup
    }
    ::= { ptpbaseMIBCompliances 3 }

ptpbaseMIBCompliancesTransparentClockInfo MODULE-COMPLIANCE
    STATUS                current
    DESCRIPTION
        "Compliance statement for agents that provide read-only support
        for PTPBASE-MIB to provide Transparent clock related
        information.
        Such devices can only be monitored using this MIB module.

        The Module is implemented with support for read-only. In other
        words, only monitoring is available by implementing this
        MODULE-COMPLIANCE."
    MODULE                -- this module
    MANDATORY-GROUPS {
        ptpbaseMIBClockTranparentDSGroup,
        ptpbaseMIBClockPortTransDSGroup
    }
    ::= { ptpbaseMIBCompliances 4 }

ptpbaseMIBSystemInfoGroup OBJECT-GROUP
    OBJECTS                {
        ptpbaseSystemDomainTotals,
```

```
        ptpDomainClockPortsTotal,
        ptpbaseSystemProfile
    }
    STATUS          current
    DESCRIPTION
        "Group which aggregates objects describing system-wide
        information"
    ::= { ptpbaseMIBGroups 1 }
```

ptpbaseMIBClockCurrentDSGroup OBJECT-GROUP

```
    OBJECTS          {
        ptpbaseClockCurrentDSStepsRemoved,
        ptpbaseClockCurrentDSOffsetFromMaster,
        ptpbaseClockCurrentDSMeanPathDelay
    }
    STATUS          current
    DESCRIPTION
        "Group which aggregates objects describing PTP Current Dataset
        information"
    ::= { ptpbaseMIBGroups 2 }
```

ptpbaseMIBClockParentDSGroup OBJECT-GROUP

```
    OBJECTS          {
        ptpbaseClockParentDSParentPortIdentity,
        ptpbaseClockParentDSParentStats,
        ptpbaseClockParentDSOffset,
        ptpbaseClockParentDSClockPhChRate,
        ptpbaseClockParentDSGMClockIdentity,
        ptpbaseClockParentDSGMClockPriority1,
        ptpbaseClockParentDSGMClockPriority2,
        ptpbaseClockParentDSGMClockQualityClass,
        ptpbaseClockParentDSGMClockQualityAccuracy,
        ptpbaseClockParentDSGMClockQualityOffset
    }
    STATUS          current
    DESCRIPTION
        "Group which aggregates objects describing PTP Parent Dataset
        information"
    ::= { ptpbaseMIBGroups 3 }
```

ptpbaseMIBClockDefaultDSGroup OBJECT-GROUP

```
    OBJECTS          {
        ptpbaseClockDefaultDSTwoStepFlag,
```

```
        ptpbaseClockDefaultDSClockIdentity,
        ptpbaseClockDefaultDSPriority1,
        ptpbaseClockDefaultDSPriority2,
        ptpbaseClockDefaultDSSlaveOnly,
        ptpbaseClockDefaultDSQualityClass,
        ptpbaseClockDefaultDSQualityAccuracy,
        ptpbaseClockDefaultDSQualityOffset
    }
STATUS          current
DESCRIPTION
    "Group which aggregates objects describing PTP Default Dataset
    information"
 ::= { ptpbaseMIBGroups 4 }

ptpbaseMIBClockRunningGroup OBJECT-GROUP
OBJECTS          {
        ptpbaseClockRunningState,
        ptpbaseClockRunningPacketsSent,
        ptpbaseClockRunningPacketsReceived
    }
STATUS          current
DESCRIPTION
    "Group which aggregates objects describing PTP running state
    information"
 ::= { ptpbaseMIBGroups 5 }

ptpbaseMIBClockTimepropertiesGroup OBJECT-GROUP
OBJECTS          {
        ptpbaseClockTimePropertiesDSCurrentUTCOffsetValid,
        ptpbaseClockTimePropertiesDSCurrentUTCOffset,
        ptpbaseClockTimePropertiesDSLeap59,
        ptpbaseClockTimePropertiesDSLeap61,
        ptpbaseClockTimePropertiesDSTimeTraceable,
        ptpbaseClockTimePropertiesDSFreqTraceable,
        ptpbaseClockTimePropertiesDSPTPTimescale,
        ptpbaseClockTimePropertiesDSSource
    }
STATUS          current
DESCRIPTION
    "Group which aggregates objects describing PTP Time Properties
    information"
 ::= { ptpbaseMIBGroups 6 }
```

ptpbaseMIBClockTransparentDSGroup OBJECT-GROUP

```
OBJECTS      {
    ptpbaseClockTransDefaultDSClockIdentity,
    ptpbaseClockTransDefaultDSNumOfPorts,
    ptpbaseClockTransDefaultDSDelay,
    ptpbaseClockTransDefaultDSPrimaryDomain
}
STATUS      current
DESCRIPTION
    "Group which aggregates objects describing PTP Transparent
    Dataset
    information"
 ::= { ptpbaseMIBGroups 7 }
```

ptpbaseMIBClockPortGroup OBJECT-GROUP

```
OBJECTS      {
    ptpbaseClockPortName,
    ptpbaseClockPortSyncTwoStep,
    ptpbaseClockPortCurrentPeerAddress,
    ptpbaseClockPortNumOfAssociatedPorts,
    ptpbaseClockPortCurrentPeerAddressType,
    ptpbaseClockPortRole
}
STATUS      current
DESCRIPTION
    "Group which aggregates objects describing information for a
    given PTP Port."
 ::= { ptpbaseMIBGroups 8 }
```

ptpbaseMIBClockPortDSGroup OBJECT-GROUP

```
OBJECTS      {
    ptpbaseClockPortDSName,
    ptpbaseClockPortDSPortIdentity,
    ptpbaseClockPortDSlogAnnouncementInterval,
    ptpbaseClockPortDSAnnounceRctTimeout,
    ptpbaseClockPortDSlogSyncInterval,
    ptpbaseClockPortDSMinDelayReqInterval,
    ptpbaseClockPortDSPeerDelayReqInterval,
    ptpbaseClockPortDSDelayMech,
    ptpbaseClockPortDSPeerMeanPathDelay,
    ptpbaseClockPortDSGrantDuration,
    ptpbaseClockPortDSPTPVersion
}
```

STATUS current

DESCRIPTION

"Group which aggregates objects describing PTP Port Dataset
information"

::= { ptpbaseMIBGroups 9 }

ptpbaseMIBClockPortRunningGroup OBJECT-GROUP

OBJECTS {
ptpbaseClockPortRunningName,
ptpbaseClockPortRunningState,
ptpbaseClockPortRunningRole,
ptpbaseClockPortRunningInterfaceIndex,
ptpbaseClockPortRunningTransport,
ptpbaseClockPortRunningEncapsulationType,
ptpbaseClockPortRunningTxMode,
ptpbaseClockPortRunningRxMode,
ptpbaseClockPortRunningPacketsReceived,
ptpbaseClockPortRunningPacketsSent
}

STATUS current

DESCRIPTION

"Group which aggregates objects describing PTP running interface
information"

::= { ptpbaseMIBGroups 10 }

ptpbaseMIBClockPortTransDSGroup OBJECT-GROUP

OBJECTS {
ptpbaseClockPortTransDSPortIdentity,
ptpbaseClockPortTransDSlogMinPdelayReqInt,
ptpbaseClockPortTransDSFaultyFlag,
ptpbaseClockPortTransDSPeerMeanPathDelay
}

STATUS current

DESCRIPTION

"Group which aggregates objects describing PTP TransparentDS
information"

::= { ptpbaseMIBGroups 11 }

ptpbaseMIBClockPortAssociateGroup OBJECT-GROUP

OBJECTS {
ptpbaseClockPortAssociatePacketsSent,
ptpbaseClockPortAssociatePacketsReceived,
ptpbaseClockPortAssociateAddress,
}


```
        ptptimeClockPortAssociateAddressType,
        ptptimeClockPortAssociateInErrors,
        ptptimeClockPortAssociateOutErrors
    }
STATUS      current
DESCRIPTION
    "Group which aggregates objects describing information on peer
    PTP ports for a given PTP clock-port."
 ::= { ptptimeMIBGroups 12 }
```

END

5. Security Considerations

There are no management objects defined in this MIB module that have a MAX-ACCESS clause of read-write and/or read-create. So, if this MIB module is implemented correctly, then there is no risk that an intruder can alter or create any management objects of this MIB module via direct SNMP SET operations.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP.

The following objects all have a MAX-ACCESS of read-only:

```
ptptimeDomainClockPortsTotal,
ptptimeSystemDomainTotals,
ptptimeSystemProfile expose general information about the clock
system.

ptptimeClockRunningState,
ptptimeClockRunningPacketsSent,
ptptimeClockRunningPacketsReceived expose a clock's current running
status.

ptptimeClockCurrentDSStepsRemoved,
ptptimeClockCurrentDSOffsetFromMaster,
ptptimeClockCurrentDSMeanPathDelay expose the values of a clock's
current dataset (currentDS).

ptptimeClockParentDSParentPortIdentity,
```


ptpbasedClockParentDSParentStats,
ptpbasedClockParentDSOffset,
ptpbasedClockParentDSClockPhChRate,
ptpbasedClockParentDSGMClockIdentity,
ptpbasedClockParentDSGMClockPriority1,
ptpbasedClockParentDSGMClockPriority2,
ptpbasedClockParentDSGMClockQualityClass,
ptpbasedClockParentDSGMClockQualityAccuracy,
ptpbasedClockParentDSGMClockQualityOffset expose the values of a
clock's parent dataset (parentDS).

ptpbasedClockDefaultDSTwoStepFlag,
ptpbasedClockDefaultDSClockIdentity,
ptpbasedClockDefaultDSPriority1,
ptpbasedClockDefaultDSPriority2,
ptpbasedClockDefaultDSSlaveOnly,
ptpbasedClockDefaultDSQualityClass,
ptpbasedClockDefaultDSQualityAccuracy,
ptpbasedClockDefaultDSQualityOffset expose the values of a clock's
default dataset (defaultDS).

ptpbasedClockTimePropertiesDSCurrentUTCOffsetValid,
ptpbasedClockTimePropertiesDSCurrentUTCOffset,
ptpbasedClockTimePropertiesDSLeap59,
ptpbasedClockTimePropertiesDSLeap61,
ptpbasedClockTimePropertiesDSTimeTraceable,
ptpbasedClockTimePropertiesDSFreqTraceable,
ptpbasedClockTimePropertiesDSPTPTimescale,
ptpbasedClockTimePropertiesDSSource expose the values of a clock's
time properties dataset (timePropertiesDS).

ptpbasedClockTransDefaultDSClockIdentity,
ptpbasedClockTransDefaultDSNumOfPorts,
ptpbasedClockTransDefaultDSDelay,
ptpbasedClockTransDefaultDSPrimaryDomain expose the values of a
transparent clock's default dataset (transparentClockDefaultDS).

ptpbasedClockPortName,
ptpbasedClockPortRole,
ptpbasedClockPortSyncTwoStep,
ptpbasedClockPortCurrentPeerAddressType,
ptpbasedClockPortCurrentPeerAddress,
ptpbasedClockPortNumOfAssociatedPorts expose general information
about a clock port.

ptpbasedClockPortRunningName,
ptpbasedClockPortRunningState,
ptpbasedClockPortRunningRole,

ptpbaseClockPortRunningInterfaceIndex,

ptpbasedClockPortRunningTransport,
ptpbasedClockPortRunningEncapsulationType,
ptpbasedClockPortRunningTxMode,
ptpbasedClockPortRunningRxMode,
ptpbasedClockPortRunningPacketsReceived,
ptpbasedClockPortRunningPacketsSent expose a clock port's current running status.

ptpbasedClockPortDSName,
ptpbasedClockPortDSPortIdentity,
ptpbasedClockPortDSLogAnnouncementInterval,
ptpbasedClockPortDSAnnounceRctTimeout,
ptpbasedClockPortDSLogSyncInterval,
ptpbasedClockPortDSMinDelayReqInterval,
ptpbasedClockPortDSPeerDelayReqInterval,
ptpbasedClockPortDSDelayMech,
ptpbasedClockPortDSPeerMeanPathDelay,
ptpbasedClockPortDSGrantDuration,
ptpbasedClockPortDSPTPVersion expose the values of a clock port's port dataset (portDS).

ptpbasedClockPortTransDSPortIdentity,
ptpbasedClockPortTransDSLogMinPdelayReqInt,
ptpbasedClockPortTransDSFaultyFlag,
ptpbasedClockPortTransDSPeerMeanPathDelay expose the values of a transparent clock port's port dataset (transparentClockPortDS).

ptpbasedClockPortAssociateAddressType,
ptpbasedClockPortAssociateAddress,
ptpbasedClockPortAssociatePacketsSent,
ptpbasedClockPortAssociatePacketsReceived,
ptpbasedClockPortAssociateInErrors,
ptpbasedClockPortAssociateOutErrors expose information about a clock port's peer node.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET (read) the objects in this MIB module.

Implementations SHOULD provide the security features described by the SNMPv3 framework (see [RFC 3410]), and implementations claiming compliance to the SNMPv3 standard MUST include full support for authentication and privacy via the User-based Security Model (USM) [RFC 3414] with the AES cipher algorithm [RFC 3826]. Implementations MAY also provide support for the Transport Security Model (TSM) [RFC 5591] in combination with a secure transport such as SSH [RFC 5592] or TLS/DTLS [RFC 6353].

Further, deployment of SNMP versions prior to SNMPv3 is NOT recommended. Instead, it is recommended to deploy SNMPv3 and to enable cryptographic security. 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 those objects only to those principals (users) that have legitimate rights to access them.

6. IANA Considerations

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

Descriptor	OBJECT IDENTIFIER value
-----	-----
ptpbasesMIB	{ mib-2 xxx }

[NOTE for IANA: Please allocate an object identifier at <http://www.iana.org/assignments/smi-numbers> for object ptpbasesMIB.]

7. References

7.1. Normative References

[IEEE 1588-2008] "IEEE Standard for A Precision Clock Synchronization Protocol for Networked Measurement and Control Systems", IEEE Std. 1588(TM)-2008, 24 July 2008

7.2. Informative References

[RFC 1155] Rose, M., and K. McCloghrie, "Structure and Identification of Management Information for TCP/IP-based Internets", STD 16, [RFC 1155](#), Performance Systems International, Hughes LAN Systems, May 1990

[RFC 1157] Case, J., Fedor, M., Schoffstall, M., and J. Davin, "Simple Network Management Protocol", STD 15, [RFC 1157](#), SNMP Research, Performance Systems International, Performance Systems International, MIT Laboratory for Computer Science, May 1990.

[RFC 1212] Rose, M., and K. McCloghrie, "Concise MIB Definitions", STD 16, [RFC 1212](#), Performance Systems International, Hughes LAN Systems, March 1991

[RFC 1215] M. Rose, "A Convention for Defining Traps for use with the

SNMP", [RFC 1215](#), Performance Systems International, March 1991

[RFC 1901] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Introduction to Community-based SNMPv2", [RFC 1901](#), SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[RFC 1906] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1906](#), SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[RFC 2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [RFC 2119](#) Harvard University, March 1997.

[RFC 2578] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.

[RFC 2579] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.

[RFC 2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.

[RFC 3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet Standard Management Framework", [RFC 3410](#) SNMP Research, Inc., Network Associates Laboratories, Ericsson, December 2002.

[RFC 3411] Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks", STD 62, [RFC 3411](#), Enterasys Networks, BMC Software, Inc., Lucent Technologies, December 2002

[RFC 3412] Case, J., Harrington D., Presuhn R., and B. Wijnen, "Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3412](#), SNMP Research, Inc., Enterasys Networks, BMC Software, Inc., Lucent Technologies, December 2002.

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

[RFC 3414] Blumenthal, U., and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", STD 62, [RFC 3414](#), Lucent Technologies, December 2002.

[RFC 3415] Wijnen, B., Presuhn, R., and K. McCloghrie, "View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3415](#), Lucent Technologies, BMC Software, Inc., Cisco Systems, Inc., December 2002.

[RFC 3416] Presuhn, R. (Ed.), "Version 2 of the Protocol Operations for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3416](#), BMC Software, Inc., December 2002.

[RFC 3417] Presuhn, R. (Ed.), "Transport Mappings for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3417](#), BMC Software, Inc., December 2002.

[RFC 3826] Blumenthal, U., Maino, F., and K. McCloghrie, "The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model", [RFC 3826](#), Lucent Technologies, Andiamo Systems, Inc., Cisco Systems, Inc., June 2004.

[RFC 5591] Harrington, D., and W. Hardraker, "Transport Security Model for the Simple Network Management Protocol (SNMP)", [RFC 5591](#), Huawei Technologies (USA), Cobham Analytic Solutions, June 2009.

[RFC 5592] Harrington, D., Salowey, J., and W. Hardraker, "Secure Shell Transport Model for the Simple Network Management Protocol (SNMP)", [RFC 5592](#), Huawei Technologies (USA), Cisco Systems, Cobham Analytic Solutions, June 2009.

[RFC 5905] David L. Mills, "Network Time Protocol Version 4: Protocol and Algorithms Specification", [RFC 5905](#), University of Delaware, June 2010.

[RFC 6353] Hardraker, W., "Transport Layer Security (TLS) Transport Model for the Simple Network Management Protocol (SNMP)", [RFC 6353](#), SPARTA, Inc., July 2011.

[IEEE 802.3-2012] "IEEE Standard for Ethernet", IEEE Std. 802.3 - 2012, 30 August 2012

[G.8265.1] "Precision time protocol telecom profile for frequency synchronization", ITU-T Recommendation G.8265.1, July 2014.

8. Acknowledgements

Thanks to John Linton and Danny Lee for valuable comments, and to Bert Wijnen, Kevin Gross, Alan Luchuk, Chris Elliot, Brian Haberman and Dan Romascanu for their reviews of this MIB module.

9. Author's Addresses

Vinay Shankarkumar
Cisco Systems,
7100-9 Kit Creek Road,
Research Triangle Park,
NC 27709,
USA.

Email: vinays@cisco.com

Laurent Montini,
Cisco Systems,
11, rue Camille Desmoulins,
92782 Issy-les-Moulineaux,
France.

Email: lmontini@cisco.com

Tim Frost,
Calnex Solutions Ltd.,
Oracle Campus,
Linlithgow,
EH49 7LR,
UK.

Email: tim.frost@calnexsol.com

Greg Dowd,
Microsemi Inc.,
3870 North First Street,
San Jose,
CA 95134,
USA.

Email: greg.dowd@microsemi.com

