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Precision Time Protocol Version 2 (PTPv2) Management Information Base

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Status of this Memo

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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 1588-2008].

This memo specifies a MIB module in a manner that is both compliant to the SNMPv2 SMI, and semantically identical to the peer SNMPv1 definitions.

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1. Introduction

This memo defines a portion of the Management Information Base (MIB) 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 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 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 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.

1.1. Relationship to other Profiles and MIBs

This MIB 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 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 MIBs defined as part of the profile, and this MIB is not intended to replace those MIBs.

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-ptp-mib

-00 Mar 11 Initial version; showed structure of MIB

draft-ietf-tictoc-ptp-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 "ptpbase"
- corrected some data types
- corrected references and typos

-02 Jul 12 Revised following comment at IETF83:
- changed "ptpbaseClockPortRunningIPversion" to the more generic "ptpbaseClockPortRunningTransport", 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 ptpbaseClockPortCurrentPeerAddressType, ptpbaseClockPortRunningTransport, ptpbaseClockPortAssociateAddressType, 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 ptpbaseClockPortSyncOneStep to ptpbaseClockPortSyncTwoStep 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

2. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- An overall architecture, described in STD62, [RFC 3411].

- 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].

- 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].

- 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].

- 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 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.

3. Overview

The objects defined in this MIB 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;


ptpbaseMIB MODULE-IDENTITY
    LAST-UPDATED    "201207230000Z"
    ORGANIZATION    "TICTOC Working Group"
    CONTACT-INFO
          "WG Email: tictoc@ietf.org

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

           Tim Frost,
           Symmetricom Inc.,
           Email: tfrost@symmetricom.com

           Greg Dowd,
           Symmetricom Inc.,
           Email: gdowd@symmetricom.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 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 is to support 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 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 MIBs defined as part of the profile, and this MIB is not intended to replace those MIBs.

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]
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:
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.

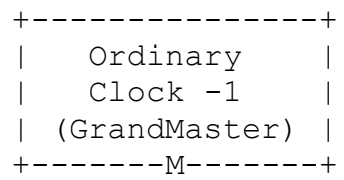
Transparent clock:
A device that measures the time taken for a Precision Time Protocol event message to transit the device and provides this information to clocks receiving this PTP event message.

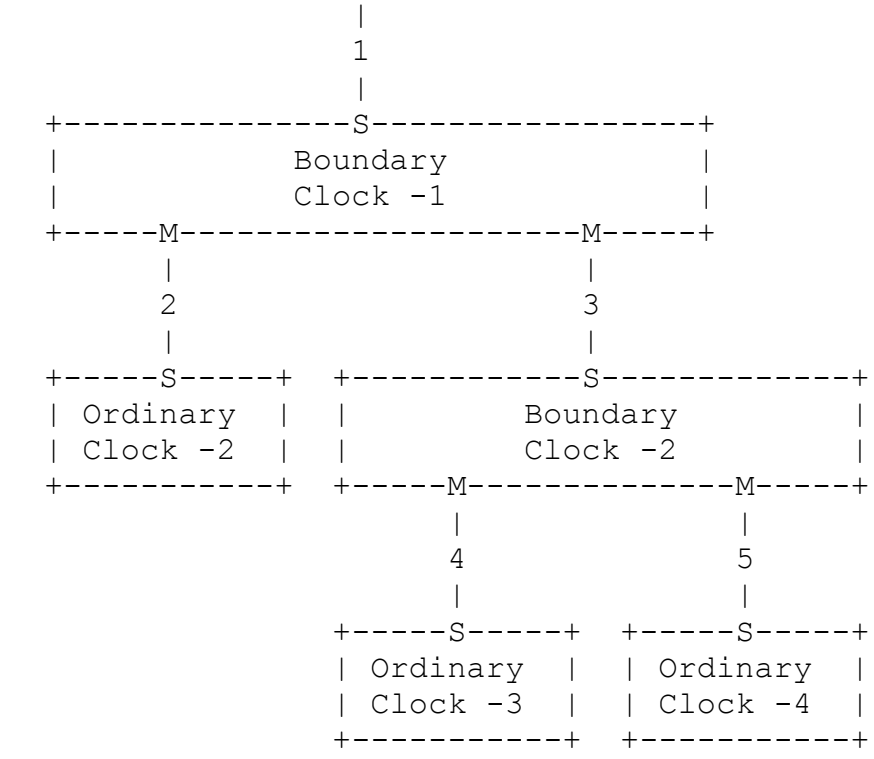
Two-step clock:
A clock that provides time information using the combination of an event message and a subsequent general message.

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

Data type mapping	Textual Convention	SYNTAX
5.3.2 TimeInterval	ClockTimeInterval	OCTET STRING(SIZE(1..255))
5.3.3 Timestamp	ClockTimestamp	OCTET STRING(SIZE(6))
5.3.4 ClockIdentity	ClockIdentity	OCTET STRING(SIZE(1..255))
5.3.5 PortIdentity	ClockPortNumber	INTEGER(1..65535)
5.3.7 ClockQuality	ClockQualityClassType	

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



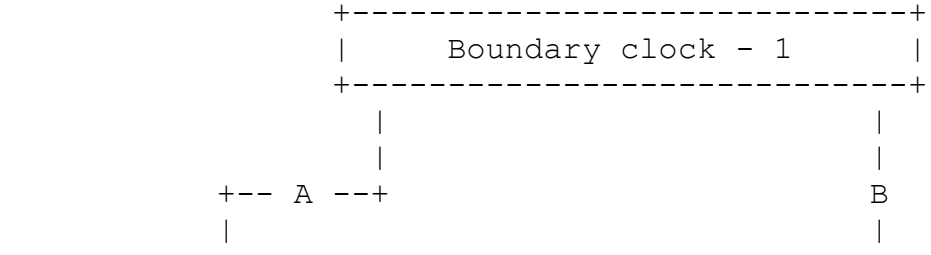


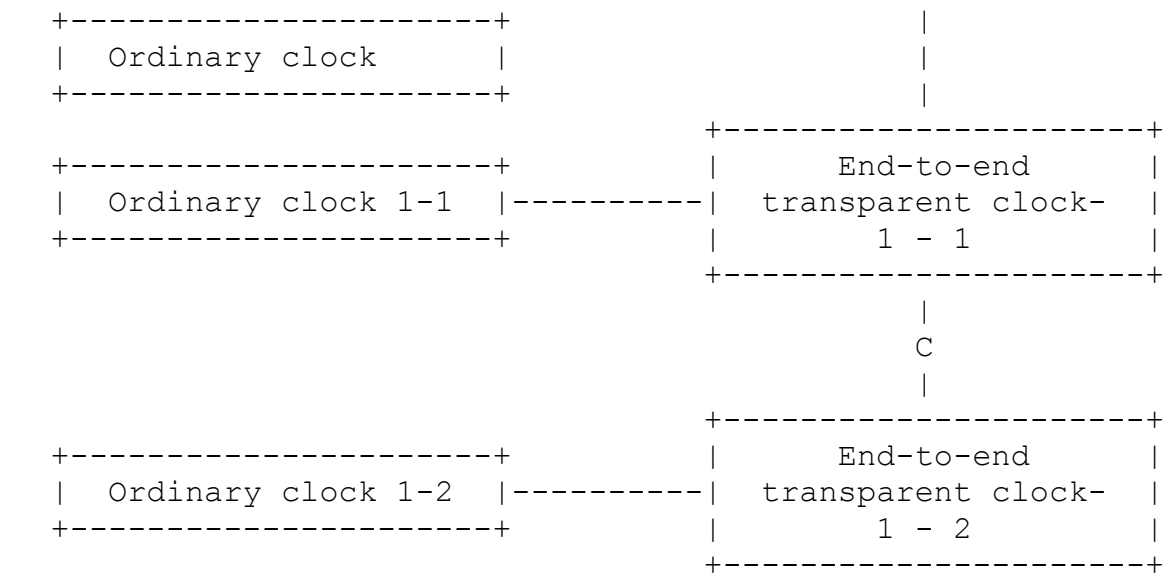
Grandmaster

Boundary Clock(0-N) Ordinary Clocks(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 refers to the sections of [IEEE 1588-2008]."

-- revision log

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

```
-- Textual Conventions

ClockDomainType ::= 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)

ClockIdentity ::= 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 ClockIdentity 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 (1..255))

ClockInstanceType ::= 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)

ClockIntervalBase2 ::= 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)

ClockMechanismType ::= 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, 6.6.4, 7.4.2 of [IEEE 1588-2008]."
    SYNTAX      INTEGER {
                    e2e(1),
                    p2p(2),
                    disabled(254)
                    }

ClockPortNumber ::= 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 and 5.3.5 of [IEEE 1588-2008]"
    SYNTAX      Unsigned32 (0..65535)

ClockPortState ::= 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 of
                     [IEEE 1588-2008]"
    SYNTAX          INTEGER  {
                        initializing(1),
                        faulty(2),
                        disabled(3),
                        listening(4),
                        preMaster(5),
                        master(6),
                        passive(7),
                        uncalibrated(8),
                        slave(9)
                    }

ClockPortTransportTypeAddress ::= 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 address of type IP version 4, IP version 6,
         Ethernet, DeviceNET, ControlNET and 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))

ClockProfileType ::= 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 and 19.3 PTP profiles of
                     [IEEE 1588-2008]"
    SYNTAX          INTEGER  {
                        default(1),
```

```
                    telecom(2),
                    vendorspecific(3)
                }

ClockQualityAccuracyType ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "The ClockQuality as specified in section 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 RFC2578 allows for
        gaps and enumerate values to start with zero when indicated by
        the protocol."

    REFERENCE       "Section 5.3.7, 7.6.2.5 and Table 6 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
                }

ClockQualityClassType ::= TEXTUAL-CONVENTION
    DISPLAY-HINT    "d"
    STATUS          current
    DESCRIPTION
        "The ClockQuality as specified in section 5.3.7, 7.6.2.4 and
        Table 5 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)
```

```
ClockRoleType ::= 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)
                    }

ClockStateType ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "The clock state returned by 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)
                    }

ClockTimeInterval ::= 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 and setion 7.7.2.1 Timer interval
         specification of [IEEE 1588-2008]"
    SYNTAX          OCTET STRING (SIZE (1..255))

ClockTimeSourceType ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "The ClockQuality as specified in section 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 RFC2578 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
                        ptp(64), -- 0x40
                        ntp(80), -- 0x50
                        handSet(96), -- 0x60
                        other(144), -- 0x90
                        internalOscillator(160) -- 0xA0
                    }

ClockTxModeType ::= 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)
                    }

ClockType ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "The clock types as defined in the MIB module description."

    REFERENCE       "Section 6.5.1 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           ClockDomainType,
        ptpInstanceIndex         ClockInstanceType,
        ptpDomainClockPortsTotal Gauge32
}

ptpDomainIndex OBJECT-TYPE
    SYNTAX          ClockDomainType
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This object specifies the domain number used to create 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          ClockInstanceType
    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."
    ::= { ptpbaseSystemEntry 3 }



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

ptpbaseSystemDomainEntry OBJECT-TYPE
    SYNTAX          PtpbaseSystemDomainEntry
    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 router."
    INDEX           { ptpbaseSystemDomainClockTypeIndex }
    ::= { ptpbaseSystemDomainTable 1 }

PtpbaseSystemDomainEntry ::= SEQUENCE {
```

```
        ptpbaseSystemDomainClockTypeIndex ClockType,
        ptpbaseSystemDomainTotals         Unsigned32
}

ptpbaseSystemDomainClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This object specifies the clock type as defined in the
        Textual convention description."
    ::= { ptpbaseSystemDomainEntry 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          ClockProfileType
    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
        "1588 Version 2.0 Section 8.2.2 currentDS data set member
        specifications of [IEEE 1588-2008]"
    INDEX           {
                        ptpbaseClockCurrentDSDomainIndex,
                        ptpbaseClockCurrentDSClockTypeIndex,
                        ptpbaseClockCurrentDSInstanceIndex
                    }
    ::= { ptpbaseClockCurrentDSTable 1 }

PtpbaseClockCurrentDSEntry ::= SEQUENCE {
        ptpbaseClockCurrentDSDomainIndex      ClockDomainType,
        ptpbaseClockCurrentDSClockTypeIndex   ClockType,
        ptpbaseClockCurrentDSInstanceIndex    ClockInstanceType,
        ptpbaseClockCurrentDSStepsRemoved     Unsigned32,
        ptpbaseClockCurrentDSOffsetFromMaster ClockTimeInterval,
        ptpbaseClockCurrentDSMeanPathDelay    ClockTimeInterval
}

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

ptpbaseClockCurrentDSClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    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          ClockInstanceType
    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       "1588 Version 2.0 Section 8.2.2.2 stepsRemoved"
    ::= { ptpbaseClockCurrentDSEntry 4 }

ptpbaseClockCurrentDSOffsetFromMaster OBJECT-TYPE
    SYNTAX          ClockTimeInterval
    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       "1588 Version 2.0 Section 8.2.2.3 of
                     [IEEE 1588-2008]"
    ::= { ptpbaseClockCurrentDSEntry 5 }

ptpbaseClockCurrentDSMeanPathDelay OBJECT-TYPE
    SYNTAX          ClockTimeInterval
    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 measure by the
        delay request-response mechanism."
    REFERENCE       "1588 Version 2.0 Section 8.2.2.4 mean path delay"
    ::= { ptpbaseClockCurrentDSEntry 6 }



ptpbaseClockParentDSTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF PtpbaseClockParentDSEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "Table of information about the PTP clock Parent Datasets for
        all domains."
    ::= { ptpbaseMIBClockInfo 2 }

ptpbaseClockParentDSEntry OBJECT-TYPE
    SYNTAX          PtpbaseClockParentDSEntry
    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           {
                        ptpbaseClockParentDSDomainIndex,
                        ptpbaseClockParentDSClockTypeIndex,
                        ptpbaseClockParentDSInstanceIndex
                    }
    ::= { ptpbaseClockParentDSTable 1 }

PtpbaseClockParentDSEntry ::= SEQUENCE {
    ptpbaseClockParentDSDomainIndex           ClockDomainType,
    ptpbaseClockParentDSClockTypeIndex        ClockType,
    ptpbaseClockParentDSInstanceIndex         ClockInstanceType,
    ptpbaseClockParentDSParentPortIdentity    OCTET STRING,
    ptpbaseClockParentDSParentStats           TruthValue,
```

```
    ptpbaseClockParentDSOffset                 ClockIntervalBase2,
    ptpbaseClockParentDSClockPhChRate          Integer32,
    ptpbaseClockParentDSGMClockIdentity        ClockIdentity,
    ptpbaseClockParentDSGMClockPriority1       Unsigned32,
    ptpbaseClockParentDSGMClockPriority2       Unsigned32,
    ptpbaseClockParentDSGMClockQualityClass    ClockQualityClassType,
    ptpbaseClockParentDSGMClockQualityAccuracy ClockQualityAccuracyType,
    ptpbaseClockParentDSGMClockQualityOffset   Unsigned32
}

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

ptpbaseClockParentDSClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    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          ClockInstanceType
    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          ClockIntervalBase2 (-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 clocks 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 clocks 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          ClockIdentity
    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          ClockQualityClassType (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          ClockQualityAccuracyType
    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     ClockDomainType,
        ptpbaseClockDefaultDSClockTypeIndex  ClockType,
        ptpbaseClockDefaultDSInstanceIndex   ClockInstanceType,
        ptpbaseClockDefaultDSTwoStepFlag     TruthValue,
        ptpbaseClockDefaultDSClockIdentity   ClockIdentity,
        ptpbaseClockDefaultDSPriority1       Unsigned32,
        ptpbaseClockDefaultDSPriority2       Unsigned32,
        ptpbaseClockDefaultDSSlaveOnly       TruthValue,
        ptpbaseClockDefaultDSQualityClass    ClockQualityClassType,
        ptpbaseClockDefaultDSQualityAccuracy ClockQualityAccuracyType,
        ptpbaseClockDefaultDSQualityOffset   Integer32
}

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

```
ptpbaseClockDefaultDSClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    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          ClockInstanceType
    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          ClockIdentity
    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 }

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

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

ptpbaseClockDefaultDSQualityAccuracy OBJECT-TYPE
    SYNTAX          ClockQualityAccuracyType
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "This object specifies the default dataset Quality Accuracy."
    ::= { ptpbaseClockDefaultDSEntry 10 }

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

ptpbaseClockRunningEntry OBJECT-TYPE
    SYNTAX          PtpbaseClockRunningEntry
    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           {
                        ptpbaseClockRunningDomainIndex,
                        ptpbaseClockRunningClockTypeIndex,
                        ptpbaseClockRunningInstanceIndex
                    }
    ::= { ptpbaseClockRunningTable 1 }

PtpbaseClockRunningEntry ::= SEQUENCE {
        ptpbaseClockRunningDomainIndex     ClockDomainType,
        ptpbaseClockRunningClockTypeIndex  ClockType,
        ptpbaseClockRunningInstanceIndex   ClockInstanceType,
        ptpbaseClockRunningState           ClockStateType,
        ptpbaseClockRunningPacketsSent     Counter64,
        ptpbaseClockRunningPacketsReceived Counter64
}

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

ptpbaseClockRunningClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    MAX-ACCESS      not-accessible
```

```
    STATUS          current
    DESCRIPTION
        "This object specifies the clock type as defined in the
        Textual convention description."
    ::= { ptpbaseClockRunningEntry 2 }

ptpbaseClockRunningInstanceIndex OBJECT-TYPE
    SYNTAX          ClockInstanceType
    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          ClockStateType
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "This object specifies the Clock state returned by 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 packet Unicast
        and multicast 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 packet Unicast
        and multicast 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 of [IEEE 1588-2008]"
```

```
    INDEX           {
                        ptpbaseClockTimePropertiesDSDomainIndex,
                        ptpbaseClockTimePropertiesDSClockTypeIndex,
                        ptpbaseClockTimePropertiesDSInstanceIndex
                    }
    ::= { ptpbaseClockTimePropertiesDSTable 1 }

PtpbaseClockTimePropertiesDSEntry ::= SEQUENCE {
  ptpbaseClockTimePropertiesDSDomainIndex           ClockDomainType,
  ptpbaseClockTimePropertiesDSClockTypeIndex        ClockType,
  ptpbaseClockTimePropertiesDSInstanceIndex         ClockInstanceType,
  ptpbaseClockTimePropertiesDSCurrentUTCOffsetValid TruthValue,
  ptpbaseClockTimePropertiesDSCurrentUTCOffset      Integer32,
  ptpbaseClockTimePropertiesDSLeap59                TruthValue,
  ptpbaseClockTimePropertiesDSLeap61                TruthValue,
  ptpbaseClockTimePropertiesDSTimeTraceable         TruthValue,
  ptpbaseClockTimePropertiesDSFreqTraceable         TruthValue,
  ptpbaseClockTimePropertiesDSPTPTimescale          TruthValue,
  ptpbaseClockTimePropertiesDSSource                ClockTimeSourceType
}

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

ptpbaseClockTimePropertiesDSClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    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          ClockInstanceType
    MAX-ACCESS      not-accessible
    STATUS          current
```

```
    DESCRIPTION
        "This object specifies the instance of the clock for this clock
        type in the given domain."
    ::= { ptpbaseClockTimePropertiesDSEntry 3 }

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

ptpbaseClockTimePropertiesDSCurrentUTCOffset OBJECT-TYPE
    SYNTAX          Integer32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "This object specifies the timeproperties dataset value of
        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 of [IEEE 1588-2008]"
    ::= { ptpbaseClockTimePropertiesDSEntry 5 }

ptpbaseClockTimePropertiesDSLeap59 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 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 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 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 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 of [IEEE 1588-2008]"
    ::= { ptpbaseClockTimePropertiesDSEntry 10 }
```

```
ptpbaseClockTimePropertiesDSSource OBJECT-TYPE
    SYNTAX          ClockTimeSourceType
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "This object specifies the Timesource value in the clock Current
        Dataset."
    REFERENCE       "Section 8.2.4.9 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 of [IEEE 1588-2008]"
    INDEX           {
                        ptpbaseClockTransDefaultDSDomainIndex,
                        ptpbaseClockTransDefaultDSInstanceIndex
                    }
    ::= { ptpbaseClockTransDefaultDSTable 1 }

PtpbaseClockTransDefaultDSEntry ::= SEQUENCE {
        ptpbaseClockTransDefaultDSDomainIndex   ClockDomainType,
        ptpbaseClockTransDefaultDSInstanceIndex ClockInstanceType,
        ptpbaseClockTransDefaultDSClockIdentity ClockIdentity,
        ptpbaseClockTransDefaultDSNumOfPorts    Counter32,
        ptpbaseClockTransDefaultDSDelay         ClockMechanismType,
        ptpbaseClockTransDefaultDSPrimaryDomain ClockDomainType
```

```
}

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

ptpbaseClockTransDefaultDSInstanceIndex OBJECT-TYPE
    SYNTAX          ClockInstanceType
    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          ClockIdentity
    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 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 of [IEEE 1588-2008]"
    ::= { ptpbaseClockTransDefaultDSEntry 4 }

ptpbaseClockTransDefaultDSDelay OBJECT-TYPE
    SYNTAX          ClockMechanismType
    MAX-ACCESS      read-only
    STATUS          current
```

```
    DESCRIPTION
        "This object, if the transparent clock is an end-to-end
        transparent clock, has the value shall be E2E; If the
        transparent clock is a peer-to-peer transparent clock, the
        value
        shall be P2P."
    REFERENCE       "Section 8.3.2.3.1 of [IEEE 1588-2008]"
    ::= { ptpbaseClockTransDefaultDSEntry 5 }

ptpbaseClockTransDefaultDSPrimaryDomain OBJECT-TYPE
    SYNTAX          ClockDomainType
    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 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            ClockDomainType,
        ptpbaseClockPortClockTypeIndex         ClockType,
        ptpbaseClockPortClockInstanceIndex     ClockInstanceType,
        ptpbaseClockPortTablePortNumberIndex   ClockPortNumber,
        ptpbaseClockPortName                   DisplayString,
        ptpbaseClockPortRole                   ClockRoleType,
        ptpbaseClockPortSyncTwoStep            TruthValue,
        ptpbaseClockPortCurrentPeerAddressType AutonomousType,
        ptpbaseClockPortCurrentPeerAddress
ClockPortTransportTypeAddress,
        ptpbaseClockPortNumOfAssociatedPorts   Gauge32
}

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

ptpbaseClockPortClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    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          ClockInstanceType
    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          ClockPortNumber
    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
        router."
    ::= { ptpbaseClockPortEntry 5 }

ptpbaseClockPortRole OBJECT-TYPE
    SYNTAX          ClockRoleType
    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 used
        for PTP communication."
    ::= { ptpbaseClockPortEntry 8 }
```

```
ptpbaseClockPortCurrentPeerAddress OBJECT-TYPE
    SYNTAX          ClockPortTransportTypeAddress
    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          ClockDomainType,
        ptpbaseClockPortDSClockTypeIndex       ClockType,
        ptpbaseClockPortDSClockInstanceIndex   ClockInstanceType,
        ptpbaseClockPortDSPortNumberIndex      ClockPortNumber,
        ptpbaseClockPortDSName                 DisplayString,
        ptpbaseClockPortDSPortIdentity         OCTET STRING,
        ptpbaseClockPortDSlogAnnouncementInterval ClockIntervalBase2,
        ptpbaseClockPortDSAnnounceRctTimeout   Integer32,
        ptpbaseClockPortDlogSSyncInterval      ClockIntervalBase2,
        ptpbaseClockPortDSMinDelayReqInterval  Integer32,
        ptpbaseClockPortDSPeerDelayReqInterval Integer32,
        ptpbaseClockPortDSDelayMech            ClockMechanismType,
        ptpbaseClockPortDSPeerMeanPathDelay    ClockTimeInterval,
        ptpbaseClockPortDSGrantDuration        Unsigned32,
        ptpbaseClockPortDSPTPVersion           Unsigned32
}

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

ptpbaseClockPortDSClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    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          ClockInstanceType
```

```
    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          ClockPortNumber
    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 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          ClockIntervalBase2
    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          ClockIntervalBase2
    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          ClockMechanismType
    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          ClockTimeInterval
    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 dataset for
        a particular domain."
    ::= { ptpbaseMIBClockInfo 9 }

ptpbaseClockPortRunningEntry OBJECT-TYPE
    SYNTAX          PtpbaseClockPortRunningEntry
    MAX-ACCESS      not-accessible
```

```
    STATUS          current
    DESCRIPTION
        "An entry in the table, containing runing dataset information
        about a single clock port."
    INDEX           {
                        ptpbaseClockPortRunningDomainIndex,
                        ptpbaseClockPortRunningClockTypeIndex,
                        ptpbaseClockPortRunningClockInstanceIndex,
                        ptpbaseClockPortRunningPortNumberIndex
                    }
    ::= { ptpbaseClockPortRunningTable 1 }

PtpbaseClockPortRunningEntry ::= SEQUENCE {
        ptpbaseClockPortRunningDomainIndex        ClockDomainType,
        ptpbaseClockPortRunningClockTypeIndex     ClockType,
        ptpbaseClockPortRunningClockInstanceIndex ClockInstanceType,
        ptpbaseClockPortRunningPortNumberIndex    ClockPortNumber,
        ptpbaseClockPortRunningName               DisplayString,
        ptpbaseClockPortRunningState              ClockPortState,
        ptpbaseClockPortRunningRole               ClockRoleType,
        ptpbaseClockPortRunningInterfaceIndex     InterfaceIndexOrZero,
        ptpbaseClockPortRunningTransport          AutonomousType,
        ptpbaseClockPortRunningEncapsulationType  AutonomousType,
        ptpbaseClockPortRunningTxMode             ClockTxModeType,
        ptpbaseClockPortRunningRxMode             ClockTxModeType,
        ptpbaseClockPortRunningPacketsReceived    Counter64,
        ptpbaseClockPortRunningPacketsSent        Counter64
}

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

ptpbaseClockPortRunningClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    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          ClockInstanceType
    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          ClockPortNumber
    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          ClockPortState
    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          ClockRoleType
    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 router 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 (eg. VLAN, Pseudowire
        encapsulation...) for the PTP messages."
    ::= { ptpbaseClockPortRunningEntry 10 }

ptpbaseClockPortRunningTxMode OBJECT-TYPE
    SYNTAX          ClockTxModeType
    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          ClockTxModeType
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "This object specifie 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
        (cummulative)."
    ::= { 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
        (cummulative)."
    ::= { 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        ClockDomainType,
        ptpbaseClockPortTransDSInstanceIndex      ClockInstanceType,
        ptpbaseClockPortTransDSPortNumberIndex    ClockPortNumber,
        ptpbaseClockPortTransDSPortIdentity       ClockIdentity,
        ptpbaseClockPortTransDSlogMinPdelayReqInt ClockIntervalBase2,
        ptpbaseClockPortTransDSFaultyFlag         TruthValue,
        ptpbaseClockPortTransDSPeerMeanPathDelay  ClockTimeInterval
}

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

ptpbaseClockPortTransDSInstanceIndex OBJECT-TYPE
    SYNTAX          ClockInstanceType
    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          ClockPortNumber
    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 [IEEE 1588-2008]"
    ::= { ptpbaseClockPortTransDSEntry 3 }

ptpbaseClockPortTransDSPortIdentity OBJECT-TYPE
    SYNTAX          ClockIdentity
    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 of [IEEE 1588-2008]"
    ::= { ptpbaseClockPortTransDSEntry 4 }

ptpbaseClockPortTransDSlogMinPdelayReqInt OBJECT-TYPE
    SYNTAX          ClockIntervalBase2
    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 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 of [IEEE 1588-2008]"
    ::= { ptpbaseClockPortTransDSEntry 6 }

ptpbaseClockPortTransDSPeerMeanPathDelay OBJECT-TYPE
    SYNTAX          ClockTimeInterval
    UNITS           "Time Interval"
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "This object specifies, (if the delayMechanism used is P2P) the
        value is 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 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 which 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 }

ptpbaseTransportTypeIPversion4 OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "IP version 4"
    ::= { ptpbaseWellKnownTransportTypes 1 }

ptpbaseTransportTypeIPversion6 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           ClockDomainType,
        ptpClockPortCurrentClockTypeIndex        ClockType,
        ptpClockPortCurrentClockInstanceIndex    ClockInstanceType,
        ptpClockPortCurrentPortNumberIndex       ClockPortNumber,
        ptpbaseClockPortAssociatePortIndex       Unsigned32,
        ptpbaseClockPortAssociateAddressType     AutonomousType,
        ptpbaseClockPortAssociateAddress
ClockPortTransportTypeAddress,
        ptpbaseClockPortAssociatePacketsSent     Counter64,
        ptpbaseClockPortAssociatePacketsReceived Counter64,
        ptpbaseClockPortAssociateInErrors        Counter64,
        ptpbaseClockPortAssociateOutErrors       Counter64
}
```

```
ptpClockPortCurrentDomainIndex OBJECT-TYPE
    SYNTAX          ClockDomainType
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This object specifies the given port's domain number."
    ::= { ptpbaseClockPortAssociateEntry 1 }

ptpClockPortCurrentClockTypeIndex OBJECT-TYPE
    SYNTAX          ClockType
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This object specifies the given port's clock type."
    ::= { ptpbaseClockPortAssociateEntry 2 }

ptpClockPortCurrentClockInstanceIndex OBJECT-TYPE
    SYNTAX          ClockInstanceType
    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          ClockPortNumber
    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          ClockPortTransportTypeAddress
    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

ptpbaseMIBCompliances  OBJECT IDENTIFIER
    ::= { ptpbaseMIBConformance 1 }

ptpbaseMIBGroups  OBJECT IDENTIFIER
    ::= { ptpbaseMIBConformance 2 }


ptpbaseMIBCompliancesSystemInfo 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 { ptpbaseMIBSystemInfoGroup }
    ::= { ptpbaseMIBCompliances 1 }

ptpbaseMIBCompliancesClockInfo 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 {
                        ptpbaseMIBClockCurrentDSGroup,
                        ptpbaseMIBClockParentDSGroup,
                        ptpbaseMIBClockDefaultDSGroup,
                        ptpbaseMIBClockRunningGroup,
                        ptpbaseMIBClockTimepropertiesGroup
                    }
    ::= { 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 }

ptpbaseMIBClockTranparentDSGroup 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
        Dataset
        information"
    ::= { ptpbaseMIBGroups 11 }

ptpbaseMIBClockPortAssociateGroup OBJECT-GROUP
    OBJECTS         {
                        ptpbaseClockPortAssociatePacketsSent,
                        ptpbaseClockPortAssociatePacketsReceived,
                        ptpbaseClockPortAssociateAddress,
                        ptpbaseClockPortAssociateAddressType,
                        ptpbaseClockPortAssociateInErrors,
                        ptpbaseClockPortAssociateOutErrors
                    }
    STATUS          current
    DESCRIPTION
        "Group which aggregates objects describing information on peer
        PTP ports for a given PTP clock-port."
    ::= { ptpbaseMIBGroups 12 }


END
```

5. Security Considerations

This MIB contains readable objects whose values provide information related to PTP objects. It does not contain writable objects.

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.

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.

It is recommended that the implementers consider the security features as provided by the SNMPv3 framework (see [RFC 3410], section 8). Specifically, the use of the User-based Security Model [RFC 3414] and the View-based Access Control Model [RFC 3415] is recommended.

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 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
ptpbaseMIB	{ mib-2 xxx }

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

7. References

7.1. Normative References

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7.2. Informative References

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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

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[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.

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

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